

FINAL

**COMMUNITY RELATIONS PLAN
FOR THE ST. LOUIS FUSRAP SITES
REVISION 4**

FOR

ST. LOUIS, MISSOURI

Prepared for



**U.S. Army Corps
of Engineers®**

**Contract No. DACW43-00-D-0515
Delivery Order No. 0006**

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Prepared by
U.S. Army Corps of Engineers
St. Louis District Office
Formerly Utilized Sites Remedial Action Program

FOREWORD

This Community Relations Plan (CRP) is an ancillary document for the remediation process to be performed by the St. Louis District, U.S. Army Corps of Engineers (USACE) to support cleanup activities at the Formerly Utilized Sites Remedial Action Program (FUSRAP) in St. Louis, Missouri and Madison, Illinois. These properties include the Downtown St. Louis Area and the North St. Louis County sites, consisting of the St. Louis Airport Site (SLAPS); the SLAPS Vicinity Properties (VPs); Hazelwood Interim Storage Site, including the Latty Avenue VPs; and the Madison, Illinois area. These properties are located in Hazelwood, Berkeley, and St. Louis, Missouri and in Madison, Illinois. Although collectively referred to as the St. Louis Sites, USACE recognizes the unique nature and perspective of each of the communities in which these properties are located.

This CRP describes the community's concerns, as identified during community interviews, and provides a description of community relations activities that have been and will be implemented to respond to those concerns and to facilitate public input to the decision-making process. The plan contains a brief description of the site and community background, a summary of concerns, highlights of the community relations program, and the timing of community relations activities. It contains a contact list of key community leaders and interested parties, suggested locations for public meetings, and actual locations of Administrative Records and Administrative Record files. The plan also identifies the USACE FUSRAP Program and Project Managers, whom members of the public may contact if they are interested in becoming involved in St. Louis FUSRAP decisions. While the plan includes an overview of the activities that have been or will be conducted at all properties during remediation, the extent and focus of these activities will be determined by the needs of each property and its related community.

TABLE OF CONTENTS

<i>Section</i>		<i>Page</i>
1.0	INTRODUCTION	1-1
1.1	OVERVIEW OF FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM, ST. LOUIS SITES	1-1
1.2	OVERVIEW OF SUPERFUND REGULATIONS	1-1
1.3	BACKGROUND OF THE COMMUNITY RELATIONS PLAN.....	1-2
2.0	THE CERCLA CLEANUP PROCESS, PROJECT ORGANIZATION, AND AGENCY AGREEMENTS	2-1
2.1	THE SUPERFUND REMEDIATION PROCESS	2-1
2.1.1	Preliminary Assessment/Site Inspection	2-3
2.1.2	Remedial Investigation.....	2-3
2.1.3	Feasibility Study/Proposed Plan	2-3
2.1.4	Record of Decision.....	2-3
2.1.5	Remedial Design/Remedial Action	2-4
2.1.6	Site Closeout	2-4
2.1.7	Five- Year Review/Long-Term Monitoring, Operation, and Maintenance	2-4
2.2	THE SUPERFUND REMOVAL PROCESS	2-4
2.2.1	Engineering Evaluation/Cost Analysis.....	2-4
2.2.2	Removal Action.....	2-6
2.3	ROLES AND RELATIONSHIPS OF THE AGENCIES AND PARTIES INVOLVED AT FUSRAP.....	2-6
2.4	FORMAL AGREEMENTS AT THE ST. LOUIS SITES	2-8
2.5	COMMUNITY RELATIONS ROLES AND RESPONSIBILITIES.....	2-8

TABLE OF CONTENTS
(continued)

<i>Section</i>	<i>Page</i>
3.0 FUSRAP ST. LOUIS SITE DESCRIPTIONS.....	3-1
3.1 ST. LOUIS DOWNTOWN SITE AND VICINITY PROPERTIES	3-1
3.1.1 Location.....	3-1
3.1.2 History.....	3-1
3.1.3 FUSRAP Work Accomplished to Date.....	3-6
3.2 ST. LOUIS AIRPORT SITE	3-9
3.2.1 Location.....	3-9
3.2.2 History.....	3-12
3.2.3 FUSRAP Work Accomplished to Date.....	3-13
3.3 ST. LOUIS AIRPORT SITE VICINITY PROPERTIES.....	3-17
3.3.1 Location.....	3-17
3.3.2 History.....	3-17
3.3.3 FUSRAP Work Accomplished to Date.....	3-17
3.4 HAZELWOOD INTERIM STORAGE SITE and LATTY AVENUE VICINITY PROPERTIES	3-20
3.4.1 Location.....	3-20
3.4.2 History.....	3-20
3.4.3 FUSRAP Work Accomplished to Date.....	3-23
3.5 MADISON SITE.....	3-26
3.5.1 Location.....	3-26
3.5.2 History.....	3-26
3.5.3 FUSRAP Work Accomplished to Date.....	3-26

TABLE OF CONTENTS
(continued)

<i>Section</i>	<i>Page</i>
4.0 COMMUNITY BACKGROUND.....	4-1
4.1 HISTORY OF ST. LOUIS AREA.....	4-1
4.2 COMMUNITY PROFILES.....	4-2
4.2.1 Downtown St. Louis Area.....	4-2
4.2.2 North St. Louis County Area.....	4-3
4.2.3 St. Louis Airport Site Vicinity Properties.....	4-4
4.2.4 Madison, Illinois Area.....	4-4
5.0 COMMUNITY CONCERNS.....	5-1
5.1 CHRONOLOGY OF COMMUNITY CONCERNS.....	5-1
5.2 KEY COMMUNITY CONCERNS.....	5-9
5.2.1 Primary Concerns Raised During the Interviews.....	5-9
5.2.2 Other Important Issues Raised by the Community.....	5-9
5.2.3 Public Feedback on Community Relations Techniques and Strategies.....	5-10
6.0 COMMUNICATION OBJECTIVES AND ACTIVITIES.....	6-1
6.1 COMMUNITY RELATIONS OBJECTIVES.....	6-1
6.1.1 Inform Area Residents, Media, and Local Officials of the Superfund Cleanup Process and the Role of the U.S. Army Corps of Engineers.....	6-1
6.1.2 Inform Area Residents, Media, and Local Officials of the Progress of Each Site in Relation to the Superfund Process.....	6-1

TABLE OF CONTENTS
(continued)

<i>Section</i>	<i>Page</i>
6.1.3 Inform the Community of Potential Risk of Site Contaminants on Human Health, Wildlife, and the Environment	6-2
6.1.4 Provide Updated Information.....	6-2
6.1.5 Establish a Communication Link between the FUSRAP Project Team and Other Interested Parties Involved at the Sites	6-2
6.2 COMMUNITY RELATIONS ACTIVITIES	6-2
6.2.1 Establish Administrative Record and Administrative Record Files	6-3
6.2.2 Public Comment Periods.....	6-3
6.2.3 Published Notices.....	6-4
6.2.4 Public Meetings	6-5
6.2.5 Public Meeting Transcripts	6-5
6.2.6 Responsiveness Summary.....	6-5
6.2.7 Meetings with Local Officials and Interested Groups	6-6
6.2.8 Fact Sheets	6-6
6.2.9 Newsletter	6-7
6.2.10 Press Releases	6-7
6.2.11 Mailing List.....	6-7
6.2.12 Establish an Information Contact.....	6-8
6.2.13 Revisions or Future Updates to this Community Relations Plan	6-8

TABLE OF CONTENTS
(continued)

<i>List of Figures</i>	<i>Page</i>
FIGURE 2.1 Superfund Site Remediation Process	2-2
FIGURE 2.2 The Superfund Removal Process	2-5
FIGURE 2.3 Superfund Site Organization, FUSRAP St. Louis Sites.....	2-7
FIGURE 3.1 Locations of FUSRAP Properties in the St. Louis, Missouri, Area	3-2
FIGURE 3.2 Aerial View of the St. Louis Downtown Site	3-3
FIGURE 3.3 St. Louis Downtown Site and Vicinity Properties Chronology	3-5
FIGURE 3.4 Aerial View of the St. Louis Airport Site and the Ballfields Cleanup Area.....	3-10
FIGURE 3.5 Coldwater Creek Floodplain (Map)	3-11
FIGURE 3.6 North St. Louis County Sites Chronology	3-14
FIGURE 3.7 Aerial View of the Hazelwood Interim Storage Site Piles and Latty Avenue Vicinity Properties	3-21
FIGURE 3.8 Aerial View of Hazelwood Interim Storage Site Piles after Removal.....	3-24
FIGURE 3.9 Madison Site	3-27
FIGURE 3.10 Aerial View of the Madison Site.....	3-28
FIGURE 5.1 Timing of Community Relations Activities	5-12

TABLE OF CONTENTS
(continued)

<i>Appendices</i>	<i>Page</i>
APPENDIX A Chronology of Community Relations Activities to Date.....	A-1
APPENDIX B Community Interview Questionnaire.....	B-1
APPENDIX C Potential Meeting Locations	C-1
APPENDIX D Administrative Record Locations	D-1
APPENDIX E Key Points of Contact	E-1
APPENDIX F List of Acronyms.....	F-1
APPENDIX G Glossary of Terms	G-1
APPENDIX H Fact Sheets Issued to Date	H-1
APPENDIX I Newsletters Issued to Date.....	I-1
APPENDIX J Principal Laws and Regulations.....	J-1

1.0 INTRODUCTION

1.1 Overview of Formerly Utilized Sites Remedial Action Program, St. Louis Sites

Most citizens want to be aware of and participate in decision-making processes that might affect their community. The purpose of this Community Relations Plan (CRP) is to establish avenues for sharing knowledge and to encourage community participation related to cleanup of radioactive contamination at sites in the St. Louis, Missouri, area resulting from the activities associated with the Manhattan Engineer District (MED)/Atomic Energy Commission (AEC). In the St. Louis area, these sites are comprised of properties in three distinct geographical areas: the North St. Louis County area, the Downtown St. Louis area, and the Madison, Illinois area. Located in northern St. Louis County near the Lambert-St. Louis International Airport, the North St. Louis County sites include the St. Louis Airport Site (SLAPS), the SLAPS Vicinity Properties (VPs), and the Hazelwood Interim Storage Site (HISS)/Latty Avenue VPs.

Cleanup activities on these sites are part of a larger U.S. Department of Defense (DOD)/U.S. Army Corps of Engineers (USACE) environmental program called the Formerly Utilized Sites Remedial Action Program (FUSRAP). FUSRAP was transferred from the U.S. Department of Energy (DOE) to USACE in October 1997 under the Energy and Water Development Appropriations Act. Cleanup activities will follow guidelines established by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and will incorporate values of the National Oil and Hazardous Substances Contingency Plan (NCP).

1.2 Overview of Superfund Regulations

FUSRAP activities are governed primarily by CERCLA (commonly known as Superfund), which was passed by Congress in 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) passed in 1986. It establishes the legal requirements for identifying, investigating, and addressing inactive hazardous waste sites. Section 2.0 presents detailed information on the Superfund cleanup process.

USACE, St. Louis District has been charged with carrying out the cleanup of the St. Louis FUSRAP sites. USACE is taking action in accordance with CERCLA to support the decision-making process addressing remedial action alternatives. Section 3.0 provides site-specific information on location, history, and work accomplished to date on the St. Louis FUSRAP sites.

1.3 Background of the Community Relations Plan

Section 4.0 presents profiles of the various affected communities: the Downtown St. Louis area, the North St. Louis County area, and the Madison, Illinois area.

The most usable and effective CRPs are those that reflect the specific concerns, priorities, and personalities of the communities involved. To obtain this in-depth information, USACE conducted interviews in the St. Louis, Missouri, area. Recognizing the unique nature and perspective of the geographical areas in which the properties are located, USACE conducted interviews with community representatives from each area impacted by the sites. Individuals interviewed included private citizens, elected officials, representatives of local municipalities, citizen and environmental groups, the business community, the educational community, and local environmental agencies. The original interviews were conducted during the summer of 1993. Follow-on interviews were conducted during the fall of 1998 and again during the spring of 2003. Community interviews conducted in 2003 were held in conjunction with the five-year review process for the St. Louis Sites. Concerns and issues raised during these interviews are summarized in Section 5.0

Section 6.0 outlines the goals and objectives of this CRP and details specific activities that have been and will be conducted in establishing two-way communication between USACE and the various area communities. USACE technical and management personnel are responsible for implementing this CRP.

The remainder of the document consists of the following appendices containing supporting information:

Appendix A Chronology of Community Relations Activities to Date
Provides a listing of community relations activities that have been conducted to date.

Appendix B Community Interview Questionnaire
Contains the questions posed to community representatives during the Five-Year Review interviews conducted in the spring of 2003.

Appendix C Potential Meeting Locations
Provides a listing of recommended locations for public meetings, along with addresses, telephone numbers, and points of contact.

- Appendix D** **Administrative Record Locations**
Lists the locations of Administrative Records and Administrative Record files that contain documents related to the St. Louis, Missouri FUSRAP sites program.
- Appendix E** **Key Points of Contact**
Lists names, addresses, and telephone numbers of key representatives of the various local communities; federal, state, and local elected officials; citizen and environmental groups; federal, state, and local environmental agencies; and the local media.
- Appendix F** **List of Acronyms**
Lists acronyms and abbreviations for technical terms used in this document.
- Appendix G** **Glossary of Terms**
Defines technical terms used in this document.
- Appendix H** **Fact Sheets Issued to Date**
Provides copies of public information factsheets developed for the St. Louis FUSRAP sites program.
- Appendix I** **Newsletters Issued to Date**
Provides copies of public information newsletters developed for the St. Louis FUSRAP sites program.
- Appendix J** **Principal Laws and Regulations**
Lists and describes principal laws and regulations governing FUSRAP activities.

2.0 THE CERCLA CLEANUP PROCESS, PROJECT ORGANIZATION, AND AGENCY AGREEMENTS

USACE, St. Louis District is addressing the St. Louis Sites in accordance with CERCLA. Cleanup activities at the sites are being conducted under FUSRAP. Values of the NCP are also integrated into the cleanup process.

The CERCLA response program is divided into two broad categories: removal actions and remedial actions. Removal actions are intended to be relatively quick actions designed to address imminent threats to human health and the environment. Remedial actions are longer-term activities that complete site cleanup if the removal action does not or cannot present a complete solution. Removal actions can be of three types: emergency, time-critical, and non-time-critical.

2.1 The Superfund Remediation Process

Once a contaminated site has been placed on the U.S. Environmental Protection Agency's (EPA) National Priorities List (NPL), remediation is conducted in accordance with the Superfund cleanup or remedial action processes (see Figure 2.1). These processes include the following steps:

- preliminary assessment (PA)/site inspection (SI);
- remedial investigation (RI);
- feasibility study (FS)/proposed plan (PP);
- record of decision (ROD);
- remedial design/remedial action;
- site closeout; and
- five-year review/long-term monitoring, operations, and maintenance.

The St. Louis Sites have been and continue to be addressed with a mixture of removal and remedial actions. The St. Louis FUSRAP sites include:

- St. Louis Downtown Site (SLDS) and its VPs;
- SLAPS, SLAPS VPs, HISS/Latty Avenue VPs; and
- the Madison Site.

The defining characteristics of each of these sites are presented in detail in Section 3.0, "St. Louis FUSRAP Site Descriptions."

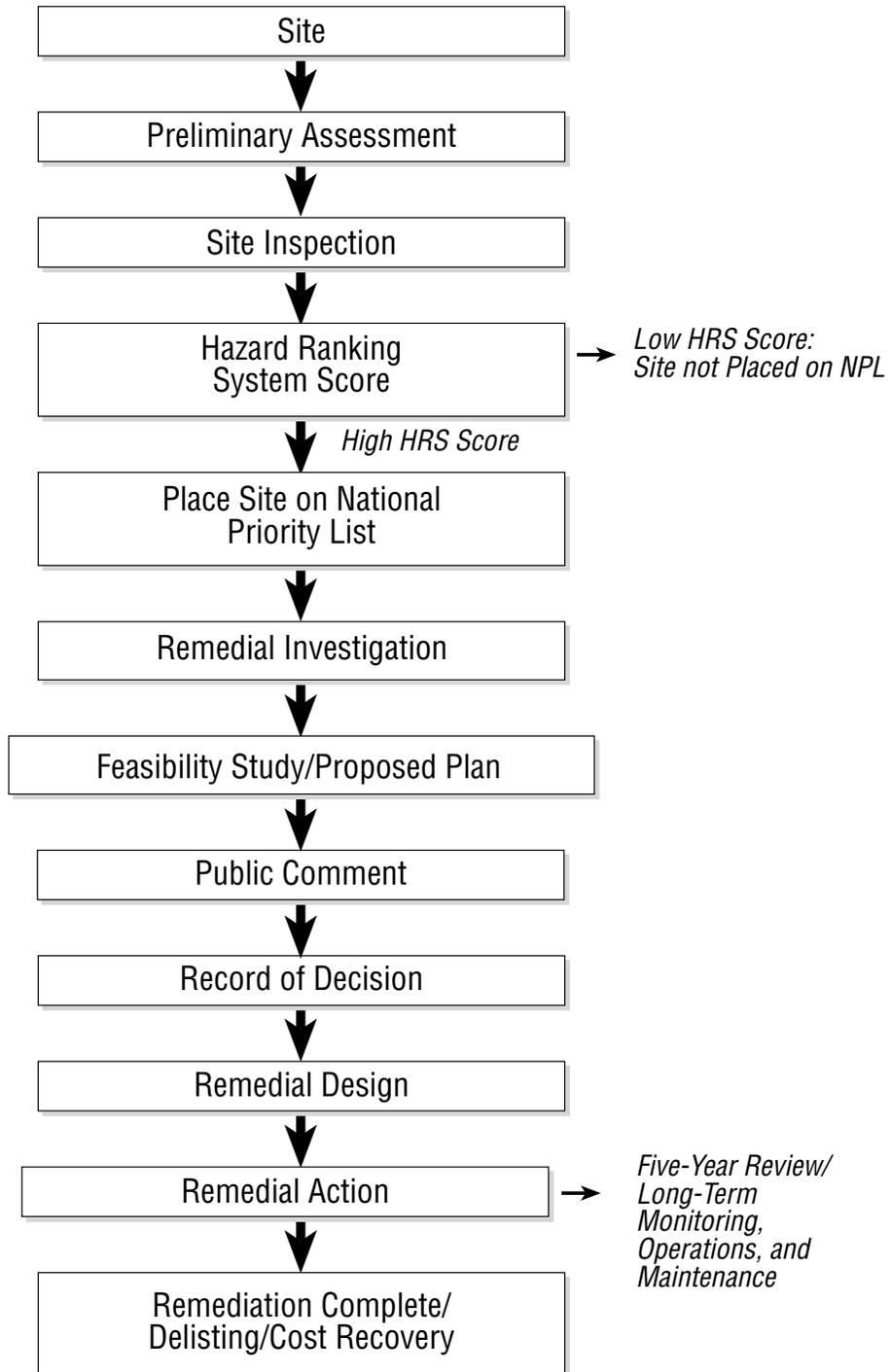


Figure 2.1. Superfund Site Remediation Process

2.1.1 Preliminary Assessment/Site Inspection

The PA is an historical record review of activities at the site that is used to determine the probable locations of hazardous waste disposal areas. Initially, the PA establishes the extent of contamination. This phase generally entails interviewing active and retired employees who work or worked at the site; as well as reviewing records, permits, and files. The SI is a physical inspection of the site to verify information obtained during the PA. The SI often involves limited soil and water sampling.

2.1.2 Remedial Investigation

The RI identifies the type of contaminants present at or near the site, assesses the degree and extent of contamination, and characterizes potential risks to public health and the environment.

2.1.3 Feasibility Study/Proposed Plan

The FS is conducted to develop and analyze various cleanup alternatives. Upon finalization of the FS, a public meeting is held to present the alternatives, and a 30-day public comment period is held to obtain public input.

The PP is a CERCLA document developed simultaneously with the FS. The PP summarizes the alternatives and provides the rationale for USACE's preferred alternative. Typically, the PP is presented along with the FS at a public meeting and submitted for a 30-day public review and comment period. Upon conclusion of the public comment period, the final remedy is selected based in part on public comments received.

2.1.4 Record of Decision

A ROD is a final document that describes the selected cleanup alternative. As the primary decision document, the ROD substantiates the need for a remedial action, describes the selected remedy, and justifies the action selected. Public comments, USACE responses, and any new information are detailed in a section of the ROD known as the Responsiveness Summary. The responsible federal agency or department is required to commence physical on-site remedial action within 15 months of the effective approval date of the ROD.

2.1.5 Remedial Design/Remedial Action

The remedial design/remedial action involves the actual design, development, and implementation of the cleanup method(s) selected in the ROD. The remedial design is the preparation of technical drawings and engineering specifications for the remedial action, which is the physical cleanup of the site. When the remedial design plan is complete, the community is notified through a fact sheet or a community briefing held before the start of the remedial action that explains the chosen cleanup process.

2.1.6 Site Closeout

USACE will restore the sites to the criteria described in the ROD. During this stage the site will be inspected by EPA to confirm the complete remediation of the contamination.

2.1.7 Five-Year Review/Long-Term Monitoring, Operations, and Maintenance

Following initiation of a remedial action, each site is reviewed at least every five years to ensure that human health and the environment are being protected by the response action being implemented. In addition, long-term monitoring is conducted in conjunction with operations and maintenance of the sites to monitor conditions before removing the sites from the NPL.

If after a five-year review further action or modification of the remedial action at a site is necessary in accordance with Section 104 or 106 of Superfund, the lead agency or potentially responsible party for the site shall implement such additional or modified action.

2.2 The Superfund Removal Process

The Superfund removal process is similar to the remediation process. However, cleanup actions are performed much sooner in the study of a site's contamination. Once a site has received a Hazardous Ranking System score, a removal action may be performed to address imminent threats to human health and the environment. The resulting response might or might not be the final solution for the site involved. Removal actions are conducted in accordance with Superfund prescribed processes (see Figure 2.2).

2.2.1 Engineering Evaluation/Cost Analysis

An engineering evaluation/cost analysis (EE/CA) evaluates technically and administratively feasible alternatives to address a site. EE/CAs are used to identify cleanup alternatives for use in removal actions of current concern. By reducing the potential for exposure to contaminants or other hazards, human health, wildlife, and the environment can be protected. To date, EE/CAs for the St. Louis Sites have

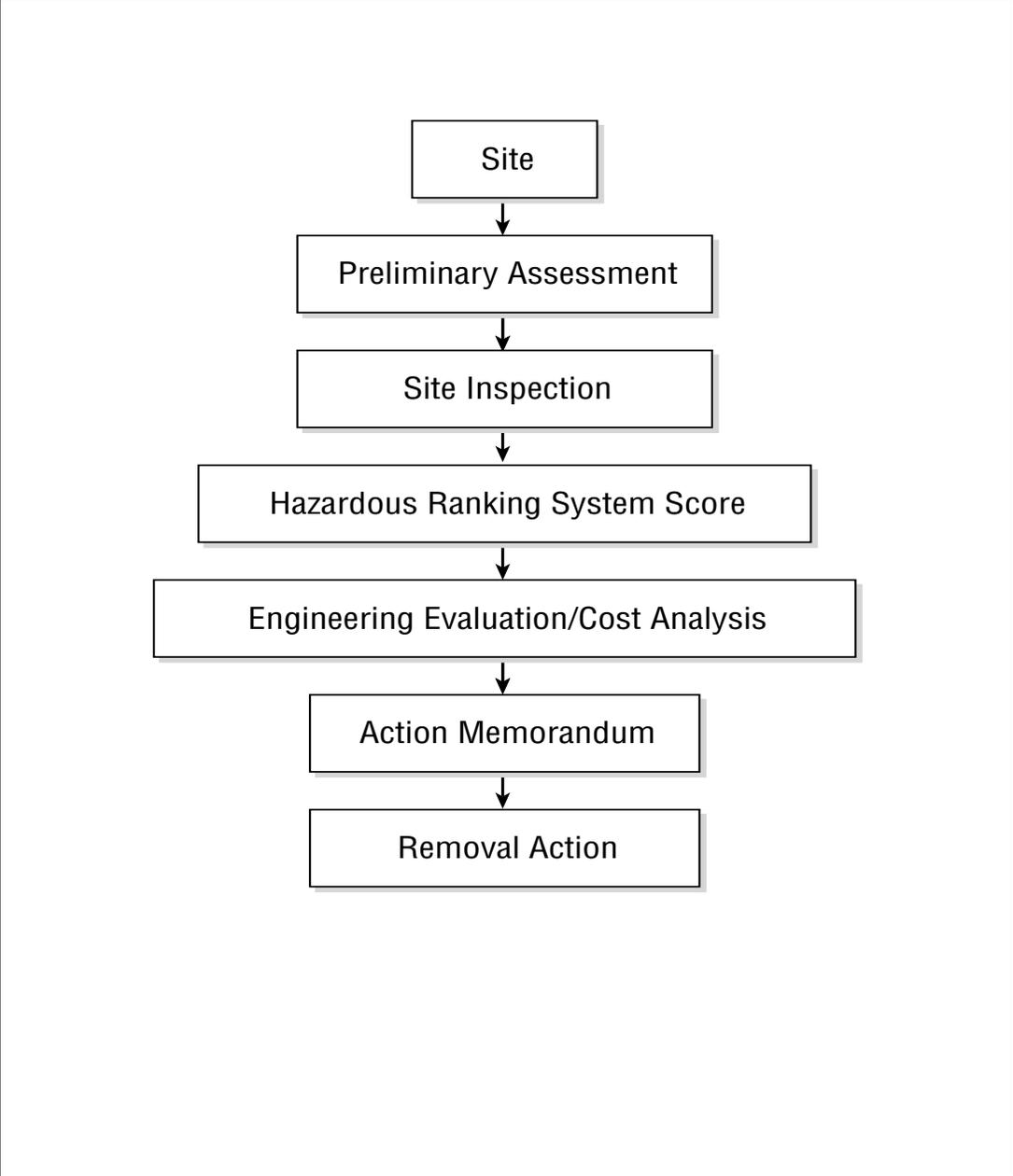


Figure 2.2. The Superfund Removal Process

been for removals that are not time-critical. A non-time-critical removal action could start more than six months after a determination has been made that a response is necessary.

2.2.2 Removal Action

The CERCLA response program is divided into two broad categories: removal actions and remedial actions. Removal actions are intended to be relatively quick actions designed to address imminent threats to human health and the environment. Remedial actions are longer-term activities that complete site cleanup if the removal action does not or cannot present a complete solution. Removal actions can be of three types: emergency, time-critical, and non-time-critical.

2.3 Roles and Relationships of the Agencies and Parties Involved at FUSRAP

The roles and responsibilities of federal and state agencies and private parties at federal facilities under FUSRAP are defined in Section 120 of Superfund, as amended in SARA, and the NCP.

The agencies and parties involved in the Superfund cleanup activities under FUSRAP are described below. The formal agreements between these agencies are also described in this section, and the St. Louis FUSRAP Sites project organization chart is presented in Figure 2.3.

USACE. A federal agency, that assumed responsibility for FUSRAP from DOE as directed by Congress. USACE was directed by Congress in the Energy and Water Resources Appropriations Act of 1997 to conduct and execute response actions at the FUSRAP sites. USACE functions as the lead agency for FUSRAP actions, but EPA continues to monitor the progress of work at these sites.

EPA. A federal agency with responsibility delegated by the President to implement the Superfund law and its regulations. EPA is involved in the initiation, development, selection, and implementation of the response actions to be taken under FUSRAP. Under a Federal Facilities Agreement (FFA) negotiated with EPA Region VII, EPA plays a consultative role to the lead agency for the Missouri FUSRAP sites and provides project oversight to ensure that compliance requirements and schedules are achieved.

Missouri Department of Natural Resources (MDNR). The designated state agency whose responsibilities are to evaluate proposals, recommendations, and plans submitted by USACE in accordance with state or federal laws, regulations, policies, and guidance. MDNR provides independent field oversight of response actions carried out at Missouri FUSRAP sites. This oversight is funded by USACE under a Cooperative Agreement. MDNR's participation ensures Missouri citizens that compliance requirements and schedules are achieved and response actions are of a high quality.

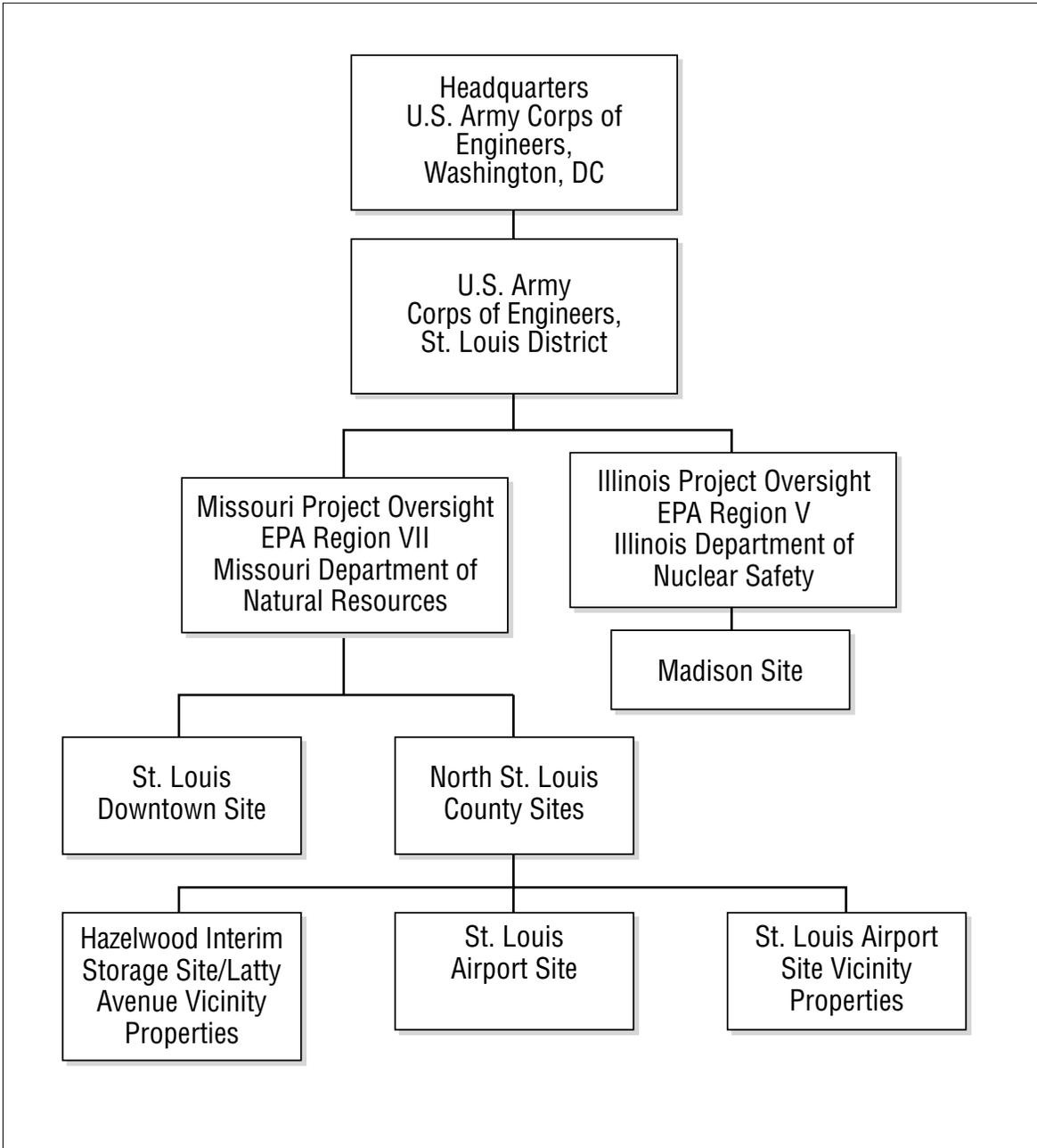


Figure 2.3. Superfund Site Organization, FUSRAP St. Louis Sites

Illinois Department of Nuclear Safety (IDNS). The Illinois agency that was involved in a consultative role similar to EPA in the initiation, development, selection, and implementation of the remedial response undertaken at the Madison Site. IDNS was responsible for reviewing all available data and for ensuring state regulations were integrated into the remedial action process.

Oversight Committee. A group of community leaders who serve in a consultative and participatory role in the cleanup of the Missouri FUSRAP sites. As a consultant, the committee provides comments, recommendations, and constructive criticism for USACE in its efforts to address the FUSRAP sites. Members of the committee are actively involved in their neighborhoods, businesses, and governmental units. They assist USACE by clarifying community concerns and conveying information to other members of the community to ensure that residents are fully informed about response actions. The committee ensures that residents' questions are answered to the fullest extent possible.

DOE. Under the Memorandum of Understanding between DOE and USACE, active cleanup operations, surveillance, operation and maintenance through the first two years after site closeout are the responsibility of USACE. Beginning two years after closeout, DOE assumes long-term responsibility for surveillance, operation, and maintenance, including monitoring and enforcing any institutional controls that have been imposed on a site or vicinity properties.

2.4 Formal Agreements at the St. Louis Sites

In June 1990, EPA Region VII (Missouri Sites) and DOE signed an FFA as required by Superfund regulations. Although DOE is no longer involved in the work on the FUSRAP sites, USACE honors this agreement. The FFA outlines the scope of the investigation/ remediation schedule for Missouri FUSRAP sites in St. Louis. The FFA requires an RI/FS be drafted and executed for the FUSRAP sites, with EPA serving in a consultative role, and mandates interagency coordination for all activities regarding the sites.

2.5 Community Relations Roles and Responsibilities

USACE, St. Louis District is the lead agency responsible for implementing specific activities at each site. Planned community relations activities will be initiated to address community concerns and information needs identified through community interviews and other interactions with public officials, citizen interest groups, and residents. These activities are detailed in Section 6.2. Community relations coordinators and points of contact are listed in Appendix E.

3.0 FUSRAP ST. LOUIS SITE DESCRIPTIONS

USACE is conducting RI/cleanup at 21 sites in 9 states under FUSRAP. Five of these sites, which constitute the St. Louis Sites, are located in the St. Louis area: SLDS and its VPs; SLAPS; the SLAPS Vicinity Properties (SLAPS VPs); the HISS and Latty Avenue VPs; and the Madison Site.

Figure 3.1 shows the locations of these sites. The following sections describe them and provide background information.

3.1 St. Louis Downtown Site and Vicinity Properties

3.1.1 Location

SLDS is located in an industrial area on the eastern border of St. Louis, approximately 300 feet west of the Mississippi River. The property is about 11 miles southeast of SLAPS and the Lambert-St. Louis International Airport.

SLDS encompasses nearly 45 acres and is presently owned and operated by Mallinckrodt, Inc. (formerly Mallinckrodt Chemical Works). The property includes many buildings and other facilities involved in chemical production (see Figure 3.2).

3.1.2 History

From 1942 to 1957, under contracts with MED and AEC, the site was used for processing various forms of uranium compounds, machining, and recovery of uranium metal.

Mallinckrodt currently owns the buildings formerly used under the MED/AEC contract. At the time of the MED/AEC operations, the plants were owned by Mallinckrodt and/or leased by AEC. Certain buildings in those plants were also constructed for and owned by AEC. From 1942 through 1945, uranium processing was conducted at Plants 1, 2, and 4. In 1945 operations at Plant 2 were terminated. Some uranium metallurgical research continued at Plant 4 through 1956. From 1945 to 1957, uranium concentrate or ore was processed in buildings at Destrehan Street (Plants 6, 6E, and 7). All uranium extraction operations at the Destrehan Street location ceased in 1957.

In 1946 the manufacture of uranium dioxide from pitchblende ore began at a newly constructed plant. The pitchblende ore was acquired from the African Metals Company. Because this company retained ownership of the radium content of the ore, it was required that radium-226 and its daughter products be extracted along with the lead content. The radium and lead were precipitated, and the precipitate was sent to the Lake Ontario Ordnance Works in Lewiston, New York, and to the Feed Material Production Center in Fernald, Ohio, for storage.

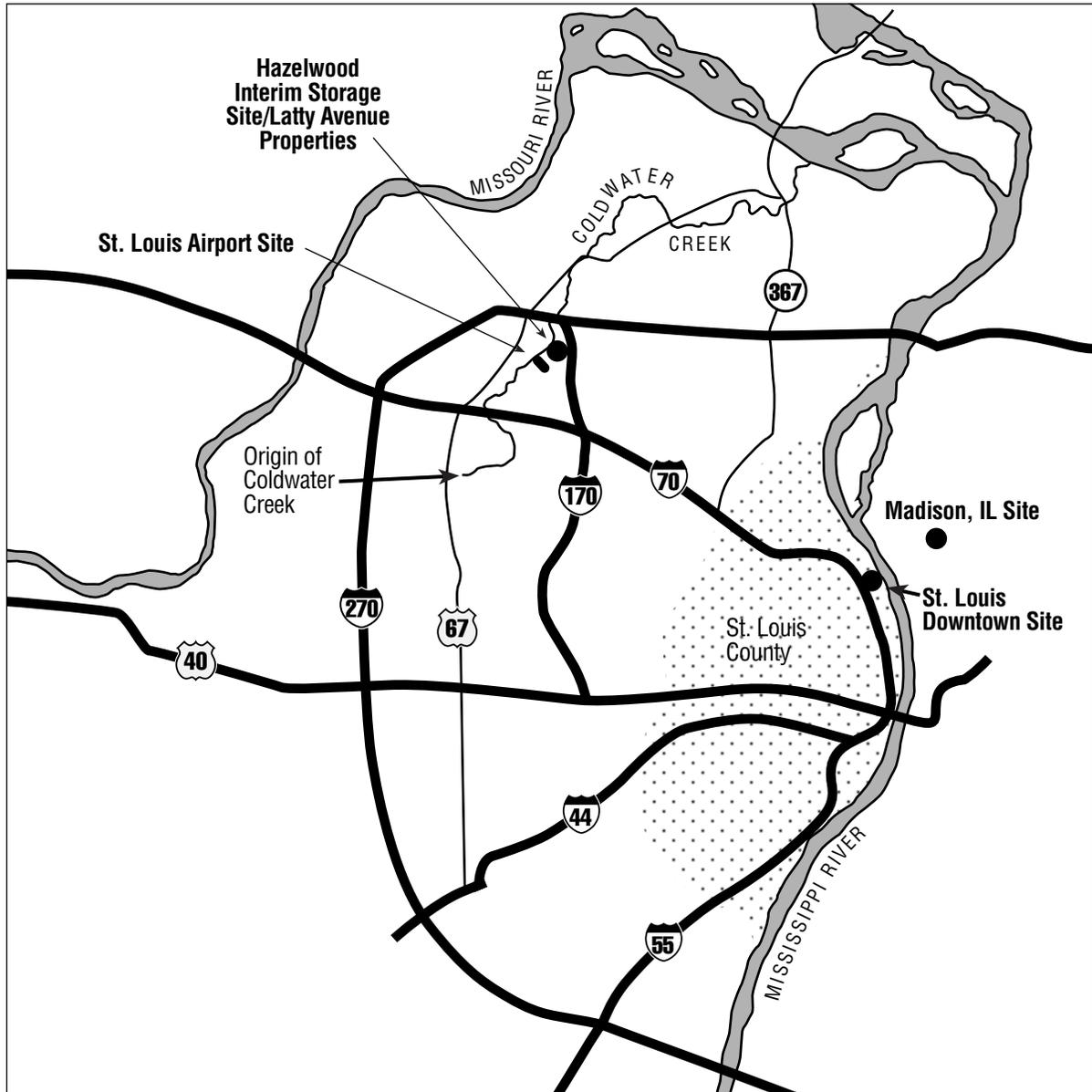


Figure 3.1. Locations of FUSRAP Properties in the St. Louis, Missouri, Area



Figure 3.2. Aerial View of the St. Louis Downtown Site (facing east)

Decontamination was performed at two plants from 1948 through 1950. In 1951 the plants were released to Mallinckrodt for use without radiological restrictions. From 1950 to 1951, an on-site plant was modified and subsequently used as a metallurgical pilot plant for uranium metal operations until it was closed in 1956. This plant was released to Mallinckrodt in 1962 after decontamination work was conducted.

When the St. Louis MED/AEC operations were terminated, buildings owned by the government were either demolished or transferred to Mallinckrodt as part of the settlement. Several plants within the Mallinckrodt facility, containing about 60 buildings, were involved; fewer than 20 of these buildings remain. A number of new buildings have been constructed on the property; since 1962 they have been used for the commercial production of chemicals.

In 1994 two committees were established for the purpose of working closely with FUSRAP representatives and serving as a “voice of the people.” These organizations were the St. Louis Radioactive and Hazardous Waste Oversight Committee and the City of St. Louis Mayor’s Advisory Task Force on Radioactive Waste. In 1994 the St. Louis Sites Remediation Task Force (SLSRTF) was made up of members from the above two groups plus other community stakeholders. In 1996 the SLSRTF issued a report detailing the community’s recommendations for cleanup and removal of MED/AEC contaminants in St. Louis under FUSRAP. Eventually, in 1997, the smaller St. Louis Oversight Committee was formed from members of these organizations. These organizations have developed strong working relationships with FUSRAP and have been active participants in the decision-making process.

Until 1997 DOE led the cleanup of SLDS as part of its responsibility for the cleanup of FUSRAP sites. FUSRAP was transferred from DOE to USACE in October 1997 under the Energy and Water Development Appropriations Act. Future cleanup activities will follow CERCLA guidelines and will incorporate values of the NCP.

Figure 3.3 provides a chronology illustrating the history of SLDS contamination and cleanup activities from 1942 to 2003.



The St. Louis Downtown Site Contaminant Chronology

FUSRAP

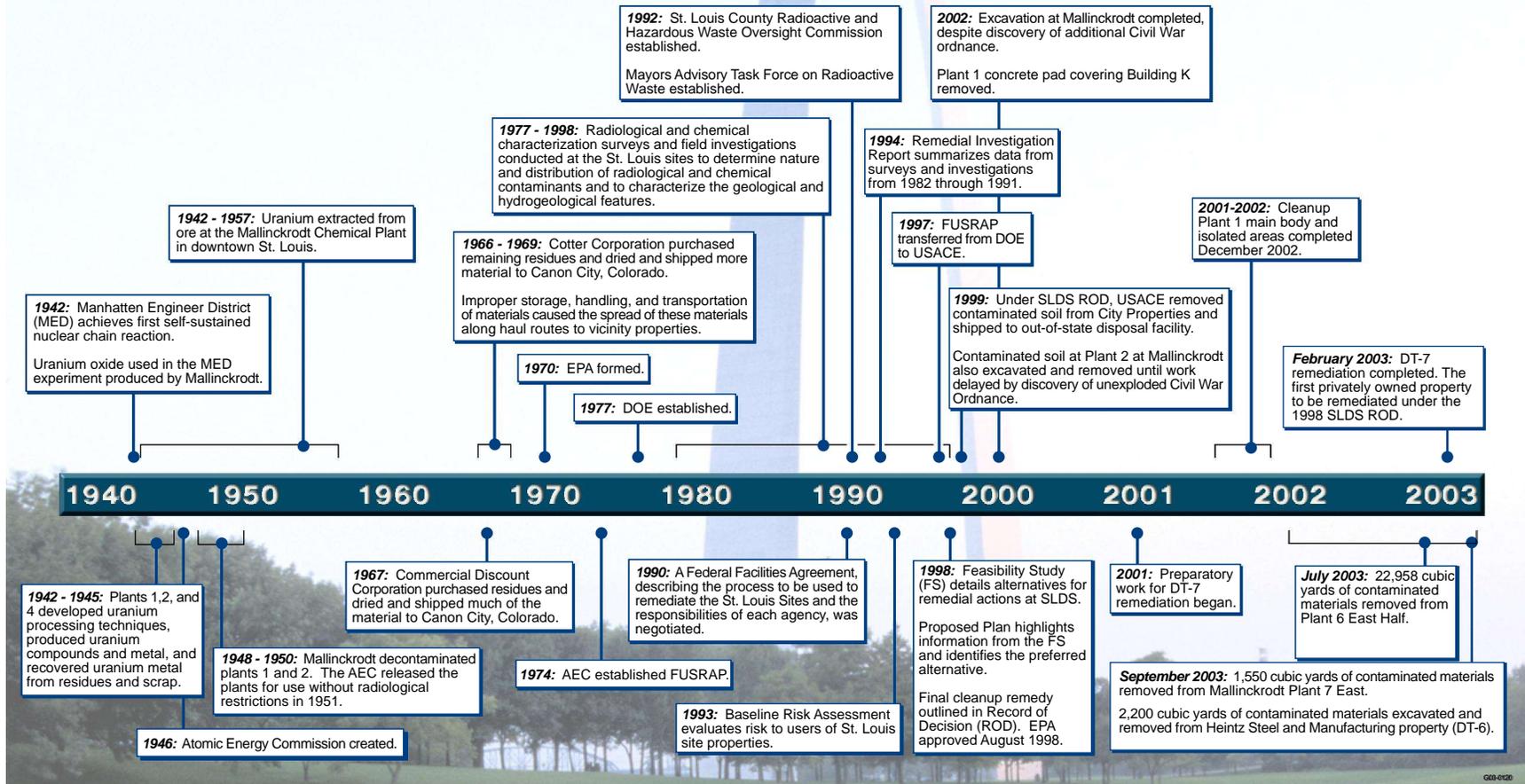


Figure 3.3. St. Louis Downtown Site and Vicinity Properties Site Chronology

3.1.3 FUSRAP Work Accomplished to Date

In 1977 the Oak Ridge National Laboratory (ORNL) conducted a radiological survey of portions of SLDS at the request of DOE. Results of the ORNL survey showed alpha and beta-gamma contamination levels in excess of limits set by federal guidelines for release of property for use with no radiological restrictions. Elevated gamma radiation levels were measured at selected outdoor locations and in selected buildings. Above-guidance concentrations of uranium and radium-226 were found in subsurface soil samples, and elevated gamma radiation levels were measured in some indoor drains. Radon and radon daughter concentrations in three buildings were in excess of federal guidelines for nonoccupational radiation exposure.

Radiological characterization, which consisted of sampling and analyses to determine the nature and extent of contamination, was performed at SLDS in 1988 and 1989. Radiological characterization activities were conducted during 1990 on six properties adjacent to Mallinckrodt to determine whether contamination extended beyond the Mallinckrodt property boundaries.

The scope of interim removal actions at SLDS was outlined in an EE/CA prepared in 1991 by DOE. The EE/CA was reviewed by the public, and DOE prepared a responsiveness summary to address the comments received. Subsequently, limited removal action activities were undertaken at SLDS.

The purpose of these removal actions was to minimize human exposure to contaminated material and allow for consolidation of the impacted materials at temporary on-site storage areas.

Five interim actions were performed between 1995 and 1998:

1. In 1995, 15,043 cubic yards of contaminated soil were excavated from the Mallinckrodt Plant 10 (formerly Plant 4) area and shipped off-site for disposal at the Envirocare facility in Utah.
2. In 1996, 750 cubic yards of contaminated soil were excavated from the City Property, Riverfront Trail area, and shipped off-site for disposal at the Envirocare facility in Utah.
3. In 1996 the 50-series buildings from Plant 2 on the Mallinckrodt property were decontaminated and demolished. Contaminated materials were transported by covered gondola cars for disposal at the Envirocare facility in Utah. Brick and cinder blocks were crushed and piled on-site to await disposition.

4. In 1997 select buildings in Plants 6 and 7 were decontaminated and demolished. Again, contaminated materials were transported by covered gondola cars for disposal at the Envirocare facility in Utah. Brick and cinder blocks were crushed and piled on-site to await disposition.
5. In 1998 Building K was decontaminated by the government and demolished by Mallinckrodt. Contaminated materials were transported by covered gondola cars for disposal at the Envirocare facility in Utah.

Since assuming responsibility for FUSRAP in 1997, USACE, St. Louis District has based its approach to cleaning up SLDS on data and findings contained within four key documents: the Baseline Risk Assessment, Initial Screening of Alternatives, the RI, and the FS. A PP detailing USACE's preferred alternative was issued in April 1998. The final cleanup remedy for accessible soils was outlined in a ROD, which EPA approved in August 1998.

Below are details of remedial actions that have been accomplished since obtaining approval for the SLDS ROD in 1998.

1. Between October 1998 and July 1999, 4,260 cubic yards of contaminated soil were excavated from the City Property, which is located along the Riverfront Trail just east of Mallinckrodt. Contaminated materials were transported by covered gondola cars for disposal at an out-of-state licensed or properly permitted facility.
2. Between October 1998 and August 2000, crews worked to excavate 10,806 cubic yards of accessible soil in Mallinckrodt's Plant 2 for disposal at an out-of-state licensed facility. In late August 1999, remedial work in Plant 2 stopped when unexploded Civil War ordnance was discovered in the excavation. Work was delayed until the remedial action plan could be modified to ensure worker safety and to account for the presence of ordnance. Thirty pieces of ordnance recovered from the excavation site were turned over to law enforcement authorities for disposal.
3. Between February 2000 and January 2002, USACE collected and analyzed samples from the Acher Daniels Midland property (identified as DT-2) located at the end of Angelrodt Street east of the Burlington Norfolk Southern Railroad. Based on the analyses of the sample results and comparison to the remedial goals identified in the SLDS ROD, no actions were required, and the property was released without radiological restrictions.

4. Between May 2001 and February 2003, 3,910 cubic yards of material were excavated from the Midwest Waste property (identified as DT-7), located at the end of Angelrodt Street immediately west of the Burlington Norfolk Southern Railroad. Contaminated materials were transported by covered gondola cars for disposal at a licensed out-of-state facility.
5. Since July 2000 crews have been working to remove contaminated soil from accessible areas of Mallinckrodt's Plant 1. As of the writing of this document, 2,410 cubic yards of contaminated material had been excavated and shipped to an out-of-state disposal facility. The main area requiring remediation (beneath the former Building K) was completed in June 2001, and the 11 small, isolated areas of contamination throughout the remainder of the plant were completed in December 2002. The remaining accessible area waiting to be addressed consists of the portion of a rail spur south of Building X. USACE expects to complete the cleanup of accessible areas of Plant 1 in September 2003.
6. Between November 2000 and July 2003, 22,958 cubic yards of contaminated material were removed from Mallinckrodt Plant 6 East/East Half. Contaminated materials were transported by covered gondola cars for disposal at an out-of-state licensed or properly permitted facility.
7. Between July and September 2003, 1,550 cubic yards of contaminated material were removed from Mallinckrodt Plant 7 East. Contaminated materials were transported by covered gondola cars for disposal at an out-of-state licensed or properly permitted facility.
8. Between May and September 2003, USACE excavated and removed 2,200 cubic yards of contaminated soil from the Heintz Steel and Manufacturing property (identified as DT-6). Contaminated materials were transported by covered gondola cars for disposal at an out-of-state licensed or properly permitted facility.

Investigations to identify the full depth and extent of contamination on other surrounding properties are ongoing. The results of these investigations will help identify areas of concern or allow USACE to certify the property meets the ROD criteria for MED/AEC contamination.

In accordance with CERCLA requirements, a five-year review was initiated in January 2003 to ensure that human health and the environment are being protected by the response actions being implemented. A team led by USACE and including representatives from EPA and MDNR documented conditions at each site and the surrounding area. In addition, members of the community were contacted for their views about the cleanup process to date. USACE released a draft report documenting the findings of the review in September 2003.

3.2 St. Louis Airport Site

3.2.1 Location

SLAPS is a 21.7-acre property in St. Louis County, approximately 15 miles from downtown St. Louis. SLAPS is immediately north of the Lambert-St. Louis International Airport and is bounded by the Norfolk and Western Railroad and Banshee Road on the south, Coldwater Creek on the west, and McDonnell Boulevard and adjacent recreational fields on the north and east.

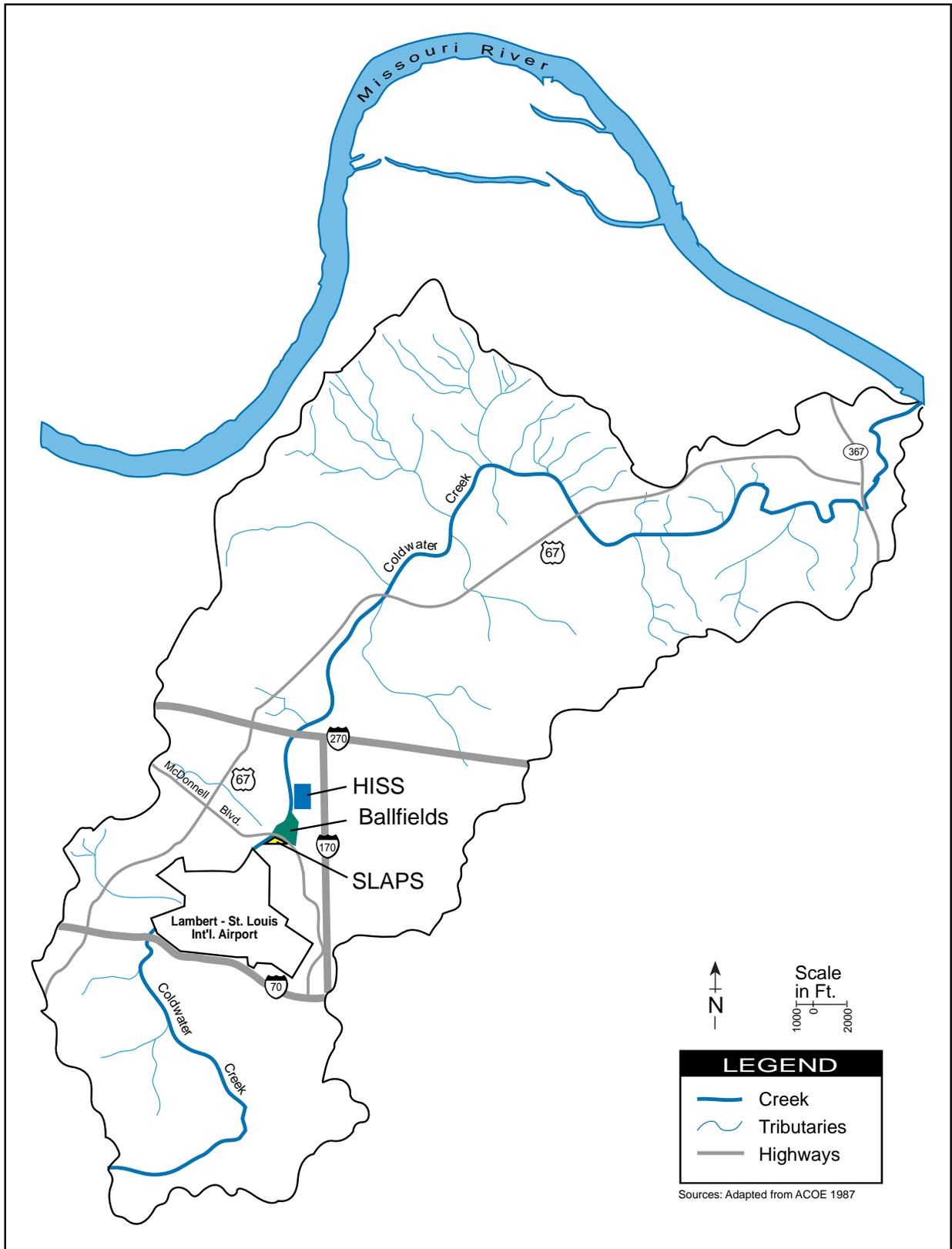
The Coldwater Creek basin lies in the northern part of St. Louis County. The 47-square-mile watershed is elongated, with a 19.5-mile-long main channel and relatively short tributary streams (see Figure 3.5). Coldwater Creek generally flows northward from Overland; through Breckenridge Hills and St. Ann; under Lambert-St. Louis International Airport; through Hazelwood, Florissant, and unincorporated St. Louis County; and along the northern edge of Black Jack before joining the Missouri River. The mouth of Coldwater Creek is at mile 6.9 on the Missouri River.

Parks along Coldwater Creek and downstream from SLAPS include Fort Bellefontaine County Park, Coldwater Creek County Park, Black Jack Park, Wedgewood Park, St. Ferdinand Park, Duchesne Park, St. Cin Park, and Khoury Park. Fort Bellefontaine County Park is a 36-acre park on a landfill on the left bank of Coldwater Creek between stream miles 1.6 and 1.2; it is in unincorporated St. Louis County immediately east of Lewis and Clark Boulevard. Coldwater Creek County Park is a 234-acre park that lies principally on the right bank of the stream and extends from mile 1.25 to 0.0. The park is being developed to display and enhance the ecological and other natural features of the area. It includes extensive trails and limestone structures that were erected by the Works Progress Administration in the 1930s, as well as high-quality areas of climax flora. Black Jack Park, between miles 5.3 and 4.8, is in the city of Black Jack between Old Halls Ferry Road and Jamestown Road. Wedgewood Park, in St. Louis County on Lindbergh Boulevard and New Halls Ferry Road, is located on Coldwater Creek between miles 7.4 and 7.0. St. Ferdinand Park is in Florissant, north of Lindbergh Boulevard from mile 7.4 to 7.0. St. Ferdinand Shrine, at mile 10.4, is considered an historic landmark. Duchesne Park, also in Florissant, is between I-270 and Lindbergh Boulevard between miles 11.2 and 11.1. On mile 11.7 to 11.6 in Hazelwood just off I-270 (Dunn Road) is St. Cin Park. Khoury Park, also known as the Ballfields (leased by Berkeley from the city of St. Louis), is located between miles 13.5 and 13.2 in Berkeley, north of McDonnell Boulevard.

Land use adjacent to SLAPS is varied. More than two-thirds of the land within a half mile of the property is used for transportation-related purposes (primarily the airport). Land adjacent to the property is generally used for transportation and commercial functions.



Figure 3.4. Aerial View of the St. Louis Airport Site and the Ballfields Cleanup Area (facing west)



FUS St. Louis 06/97

Figure 3.5. Coldwater Creek Floodplain

3.2.2 History

In 1946 MED acquired the 21.7-acre tract of land now known as SLAPS to store residues from uranium processing at the Mallinckrodt facility in St. Louis.

The uranium processing, conducted under a contract with MED/AEC, continued through 1957; the resulting radioactive residues accumulated at SLAPS. These materials included pitchblende raffinate residues, radium-bearing residues, barium sulfate cake, Colorado raffinate residues, and contaminated scrap. Most of the residues were stored in bulk on open ground. Some contaminated materials and scrap were buried at the western end and in other parts of the property. To limit direct radiation exposure of the public, the property was fenced to prevent casual entry.

In 1966 and 1967 most of the stored residues were sold and removed from SLAPS. On-site structures were razed, buried on the property, and covered with 1 to 3 feet of clean fill material. Although these activities reduced the surface dose rate to acceptable levels, buried deposits of uranium-238, radium-226, and thorium-230 remain on the property.

In 1973 the tract was transferred by quitclaim deed from AEC to the city of St. Louis. The 1984 Energy and Water Development Appropriations Act (Public Law 98-360) authorized DOE to reacquire the property from the city for use as a permanent disposal site for the waste already on the property; contaminated soil in the surrounding ditches and waste from HISS, approximately a half mile to the north.

From 1976 through 1978, ORNL conducted a radiological investigation of SLAPS. This survey indicated elevated concentrations of uranium-238 and radium-226 in drainage ditches north and south of McDonnell Boulevard. In 1981 the drainage ditches were designated for remedial action under FUSRAP. In October 1989 EPA placed SLAPS on the NPL, thus requiring the cleanup to proceed under the guidelines of CERCLA/SARA.

In 1990 the St. Louis Board of Aldermen adopted a plan to transfer the SLAPS property to DOE. DOE had previously stated that the property would be used as a storage site for contaminated soil from the cleanup of the St. Louis Sites. The city of St. Louis offered to transfer the SLAPS property back to DOE under the condition that a permanent disposal cell for radioactive wastes would not be constructed on the site. DOE declined acceptance of the SLAPS property from the city until the environmental review process was conducted.

After the site was placed on the NPL, DOE worked closely with EPA to determine how the site would be cleaned up and where the contaminated soil would be stored. In July 1990 DOE and EPA signed an agreement that established an environmental

review process and schedule for the remediation of SLAPS, SLDS, and the Latty Avenue VPs. The process required DOE to evaluate alternatives for waste management, one of which was storage at SLAPS.

In 1994 two citizen committees were established for the purpose of working closely with FUSRAP representatives and serving as a “voice of the people.” These organizations were the St. Louis Radioactive and Hazardous Waste Oversight Committee and the City of St. Louis Mayor’s Advisory Task Force on Radioactive Waste. In 1994 the SLSRTF was made up of members from the above two groups plus other community stakeholders. In 1996 the SLSRTF issued a report detailing the community’s recommendations for cleanup and removal of contaminants in St. Louis under FUSRAP. Eventually, in 1997, the St. Louis Oversight Committee was formed. These organizations have developed strong working relationships with FUSRAP and have been active participants in the decision-making process.

Until 1997 DOE was the lead agency responsible for the cleanup of SLAPS. In October 1997 FUSRAP was transferred from DOE to USACE by Congress through the Energy and Water Development Appropriations Act. Since that transition took place, SLAPS has fallen under the responsibility of USACE, St. Louis District.

In early 2000 USACE collected samples from SLAPS, SLAPS VPs, HISS/Latty Avenue VPs, Futura, and Coldwater Creek. Analysis of samples of soil and sediment at these sites confirmed the presence of MED/AEC contamination on these sites. USACE chose to develop cleanup alternatives to address all of these sites under the same decision document. Cleanup alternatives were presented to the public for review in the FS and PP for the North St. Louis County sites, which were released in May 2003. Comments on the documents were accepted through July 14, 2003. The final cleanup remedy will be outlined in the Record of Decision for the North St. Louis County, Missouri Sites (SLAPS, HISS/Latty Avenue, and SLAPS VPs), to be released in 2004.

Figure 3.7 provides a chronology illustrating the history of the North St. Louis County sites, including SLAPS, contamination and cleanup activities from 1942 to 2003.

3.2.3 FUSRAP Work Accomplished to Date

In 1982 a preliminary radiological characterization of the ditches on either side of McDonnell Boulevard and portions of Coldwater Creek was performed. This survey established the vertical and horizontal limits of uranium-238 and radium-226 contamination, but did not define the limits of thorium-230.



US Army Corps
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St. Louis District

The North St. Louis County Sites Contaminant Chronology

FUSRAP

3-14

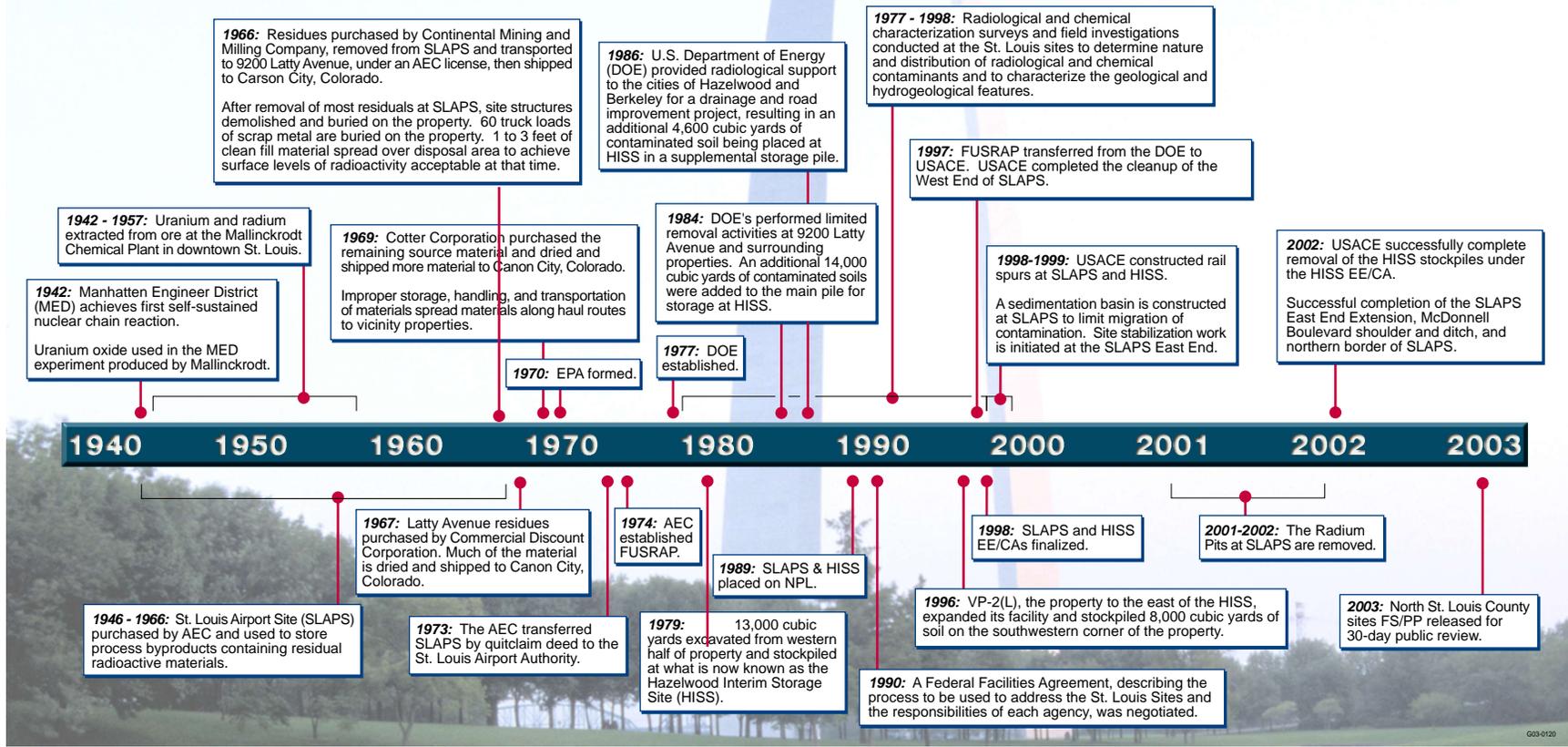


Figure 3.6. North St. Louis County Sites Chronology

In 1985 erosion on the western side of SLAPS along Coldwater Creek necessitated emergency maintenance. Sloughing and seepage were causing erosion of contaminated fill and loess (soil) materials into the creek. The problem was temporarily corrected by installing a gabion wall (constructed of rock-filled wire baskets) along the western edge of the property.

During 1986 boreholes were drilled at SLAPS and SLAPS VPs to define the nature and extent of contamination and to determine geologic conditions. Also in 1986 further surveys by ORNL identified additional areas of contamination along the shoulders of McDonnell Boulevard, Hazelwood Avenue, and Pershall Road. This contamination probably resulted from spillage from trucks hauling materials from SLAPS to the location now known as HISS during the 1960s. Further investigation of transportation routes was conducted in 1987 and 1988, and a chemical characterization of SLAPS was completed in 1987. Characterization studies of the section of Coldwater Creek from Banshee Road to Old Halls Ferry Road completed during 1989 and 1990 revealed radioactive materials in the sediments in the Coldwater Creek channel.

Quarterly environmental monitoring is conducted at SLAPS to test air, groundwater, surface water, and direct radiation. Additional characterization was conducted during summer and fall 1992. This work was reviewed by and/or coordinated with EPA.

Surveys and field investigations were conducted at SLAPS from 1977 through 1997. The purpose of these studies was to help determine the extent of chemical and radioactive contamination and to review the geology and hydrology of the site.

In 1997 an EE/CA proposing cleanup of the West End of SLAPS was prepared, and USACE received public approval to proceed. The removal action began in September 1997 immediately east of the gabion wall on the bank of Coldwater Creek. Completion of this removal action resulted in the removal of 5,100 cubic yards of contaminated material, which were subsequently shipped by rail in covered gondola cars for disposal at an out-of-state licensed facility.

In October 1997 FUSRAP was transferred from DOE to USACE under the Energy and Water Appropriations Act. Cleanup activities continued to follow CERCLA guidelines and incorporate NCP values. In March 1998 USACE prepared an EE/CA proposing measures to stabilize SLAPS and the adjacent Ballfields until a comprehensive cleanup could be achieved. The proposal received public approval, and plans were developed to allow work to proceed.

Since the approval of the 1998 EE/CA, the following removal actions and environmental documentation have been performed:

1. In 1998 USACE completed construction of a 1,200-foot rail spur on SLAPS. A sedimentation basin was also constructed on the west end of the site to control surface water and off-site migration of contamination. In all, 10,135 cubic yards of material were removed from the site for disposal in a licensed, out-of-state facility.
2. Since 1998, 55,745 cubic yards of material have been removed from the SLAPS East End and East End Right-of-Way, encompassing the eastern third of the site as well as the drainage ditch along McDonnell Boulevard. Although most of the work on this area is complete, removal actions for the western portion of the McDonnell Boulevard drainage ditch remain to be completed. Contaminated materials excavated to date have been transported by covered gondola cars for disposal at an out-of-state licensed or properly permitted facility.
3. Between March and October 2000, 39,995 cubic yards of material were removed from the Radium Pits. Contaminated materials were transported by covered gondola cars for disposal at an out-of-state licensed or properly permitted facility.
4. Between December 2001 and May 2003, 79,000 cubic yards of material were removed from the Phase 1 area. Contaminated materials were transported by covered gondola cars for disposal at an out-of-state licensed or properly permitted facility.
5. Since December 2002 approximately 24,300 cubic yards of material have been removed from Phases 2 and 3. Contaminated materials excavated to date have been transported by covered gondola cars for disposal at an out-of-state licensed or properly permitted facility.
6. In early 2000 USACE began to refer to SLAPS, SLAPS VPs, HISS/Latty Avenue VPs, Futura, and Coldwater Creek as the North St. Louis County sites. USACE chose to develop cleanup alternatives to address all of these sites. Cleanup alternatives for the North St. Louis County sites, identified in the FS and PP, were released for public review in May 2003. Comments on the documents were accepted through July 14, 2003. The final cleanup remedy will be outlined in the Record of Decision for the North St. Louis County, Missouri Sites (SLAPS, HISS/Latty Avenue, and SLAPS VPs), to be released in 2004.
7. In accordance with CERCLA requirements, a five-year review was initiated in January 2003 to ensure that human health and the environment are being protected by the response action being implemented. A team led by USACE

and including representatives from EPA and MDNR documented conditions at each site and the surrounding area. In addition, members of the community were contacted for their views about the cleanup process to date. USACE released the draft report documenting the findings of the review in September 2003.

3.3 St. Louis Airport Site Vicinity Properties

3.3.1 Location

The SLAPS VPs are located in the cities of Hazelwood and Berkeley, Missouri. These properties (totaling approximately 80) include Coldwater Creek and its VPs to the west; adjacent ball fields to the north and east; Norfolk and Western Railroad properties adjacent to Coldwater Creek; Banshee Road to the south; ditches to the north and south; and St. Louis Airport Authority property to the south. Also included are the transportation routes (haul roads) and properties adjacent to them. The haul routes include portions of Latty Avenue, McDonnell Boulevard, Pershall Road, Hazelwood Avenue, Eva Avenue, Frost Avenue, and other miscellaneous VPs.

3.3.2 History

Low-level radioactive contamination at the SLAPS VPs is linked to both the St. Louis Airport Site and the HISS/Latty Avenue VPs. In 1966 Continental Mining and Milling Company of Chicago purchased uranium-bearing residues from MED and removed them from SLAPS. The company placed the residues in storage at Latty Avenue under AEC license. Over time residues migrated from other sites or were deposited when waste was hauled along transportation routes, and the soil and sediment at the SLAPS VPs became contaminated. The contamination was estimated at 195,000 cubic yards in 1996. Commercial enterprises, private residences, or local governments own the SLAPS VPs.

In early 2000 USACE collected samples from SLAPS, SLAPS VPs, HISS/Latty Avenue VPs, Futura, and Coldwater Creek. USACE chose to develop cleanup alternatives to address all of these sites. Cleanup alternatives for the North St. Louis County sites, identified in the FS and PP, were released for public review in May 2003. Comments on the documents were accepted through July 14, 2003. The final cleanup remedy will be outlined in the Record of Decision for the North St. Louis County, Missouri Sites (SLAPS, HISS/Latty Avenue, and SLAPS VPs), to be released in 2004.

3.3.3 FUSRAP Work Accomplished to Date

In 1987 a complete radiological characterization, which consisted of sampling and analysis to determine the nature and extent of contamination, was conducted at HISS, Coldwater Creek, and about 70 haul road properties. Contamination on the haul

road properties was found on road shoulders and adjacent properties. Contamination was shallow (less than 1 foot deep), and concentrations were low. Although characterization was essentially complete, some additional investigation in the creek and along haul roads was still required.

Collection and analysis of soil from a 6.3-mile area of Coldwater Creek from Pershall Road to Old Halls Ferry was completed in 1989. Low-level contamination was found at some sampling locations. In 1990 the remaining 5.9-mile section of the creek from Old Halls Ferry Road to the Missouri River was sampled.

In October 1997 FUSRAP was transferred from DOE to USACE under the Energy and Water Appropriations Act. Cleanup activities continued to follow CERCLA guidelines and incorporate NCP values.

An EE/CA-Environmental Assessment for the proposed decontamination of properties in the vicinity of HISS was released to the public in spring 1992. In 1995 the EE/CA was approved with the modification that any soil excavated under the document be shipped to an out-of-state disposal facility. Between 1995 and 1997 DOE worked to remove contaminated soil from the road frontages of 30 VPs along Frost, Hazelwood, and Latty Avenues. Other removal actions and environmental documentation undertaken since the approval of the EE/CA include:

1. In 1998 USACE removed and backfilled 450 cubic yards of contaminated soil and concrete in support of the city of Florissant's upgrade of the St. Denis Bridge over Coldwater Creek.
2. In 1999, 550 cubic yards of contaminated soil were removed from VP-56. USACE also renegotiated the St. Louis Utility Response Plan for all underground utilities affected by contamination from the MED/AEC. USACE trained and supported all affected utility companies.
3. In March 2000, excavation of contaminated materials from a portion of SLAPS VP-38 on SuperValu, Inc. property commenced pursuant to the 1992 EE/CA developed by DOE. Approximately 5,000 cubic yards of radioactively contaminated materials were excavated and transported out-of-state for disposal at a permitted and licensed facility in Idaho. Analysis indicated that the entire floor of the excavated area met the cleanup and release criteria. However, only the west and northwest walls of the excavated area met these criteria. Residual soil concentrations in the other walls were determined to be in excess of the removal action goals and, as a result, these walls were not released. Areas of the walls that were not released were covered with geotextile material. Placement of clean backfill in the excavated area and against the geotextile material was completed in June 2000. The post-removal action report for this property is now

being prepared. Currently, the USACE field project office complex and on-site laboratory facility are located on the remediated portion of VP-38.

4. In July 2000 the FUSRAP Project Offices were relocated from 9170 Latty Avenue to 8945 Latty Avenue to provide more operating room for heavy construction equipment removing the nearby HISS piles.

Until a comprehensive response action is selected, USACE's primary goals for these properties are to restrict the release of contaminated materials and minimize potential impacts to human health, wildlife, and the environment. Its secondary goal is to restore the SLAPS VPs for potential reuse.

In August 2002 USACE offered a two-day training session to members of the public to familiarize people with technical processes and terms used to accomplish FUSRAP work. The training, targeted at SLAPS VP owners, was limited to general information and did not identify or discuss final cleanup alternatives that were still under development at the time. About 50 people from widely varied backgrounds attended the training session.

In 2002 USACE supported a property owner's plans to construct a warehouse on the western portion of VP-24. Surveys detected a small area of contamination consisting of 124 cubic yards of contaminated soil, which were subsequently removed from the property. Contaminated materials were transported by covered gondola cars for disposal at an out-of-state licensed or properly permitted facility.

In early 2000 USACE collected samples from SLAPS, SLAPS VPs, HISS/Latty Avenue VPs, Futura, and Coldwater Creek. USACE chose to develop cleanup alternatives to address all of these sites. Accordingly, USACE conducted a Baseline Ecological Risk Assessment on Coldwater Creek. Cleanup alternatives for the North St. Louis County sites, identified in the FS and PP, were released for public review in May 2003. Comments on the documents were accepted through July 14, 2003. The final cleanup remedy will be outlined in the Record of Decision for the North St. Louis County, Missouri Sites (SLAPS, HISS/Latty Avenue, and SLAPS VPs), to be released in 2004.

In accordance with CERCLA requirements, a five-year review was initiated in January 2003 to ensure that human health and the environment are being protected by the response action being implemented. A team led by USACE and including representatives from EPA and MDNR documented conditions at each site and the surrounding area. In addition, members of the community were contacted for their views about the cleanup process to date. USACE released the draft report documenting the findings of the review in September 2003.

3.4 Hazelwood Interim Storage Site and Latty Avenue Vicinity Properties

3.4.1 Location

The HISS and Latty Avenue VPs are in northern St. Louis County within the city limits of Hazelwood and Berkeley (see Figure 3.7). HISS is located at 9200 Latty Avenue, 3.2 miles northeast of the control tower of the Lambert-St. Louis International Airport and approximately a half mile northeast of SLAPS. HISS is separated from the western half of 9200 Latty Avenue by a chain-link fence. Both properties are privately owned.

Land use near the properties is primarily industrial; other uses are transportation-related, commercial, and residential. Some land in the vicinity is vacant. The residential areas nearest the property are approximately 0.3 mile to the east in Hazelwood. The residences in Berkeley are southeast of the properties.

3.4.2 History

In early 1966 ore residues and uranium- and radium-bearing process wastes that had been stored at SLAPS were purchased by the Continental Mining and Milling Company and moved to a storage site on Latty Avenue. These wastes had been generated at the Mallinckrodt plant in St. Louis from 1942 through the late 1950s under contracts with MED/AEC. Residues on the property at that time included 74,000 tons of Belgian Congo pitchblende raffinate containing approximately 13 tons of uranium; 32,500 tons of Colorado raffinate containing roughly 48 tons of uranium; and 8,700 tons of leached barium sulfate containing about 7 tons of uranium. The Commercial Discount Corporation of Chicago, Illinois, purchased the residues in January 1967; much of the material was then dried and shipped to Canon City, Colorado. The material remaining at the Latty Avenue storage site was sold to Cotter Corporation in December 1969. From August through November 1970, Cotter Corporation dried some of the remaining residues and shipped them to its mill in Canon City. In December 1970 an estimated 10,000 tons of Colorado raffinate and 8,700 tons of leached barium sulfate remained at the Latty Avenue properties.

In April 1974 the Nuclear Regulatory Commission (NRC) was informed by Cotter Corporation that the remaining Colorado raffinate had been shipped in mid-1973 to Canon City without drying and that the leached barium sulfate had been diluted with 12 to 18 inches of soil and transported to a landfill in St. Louis County.

Before the present owner occupied the property, ORNL performed a radiological characterization. Thorium and radium contamination in excess of federal guidelines was found in and around the buildings and in the soil to depths of 18



Figure 3.7. Hazelwood Interim Storage Site Piles and Latty Avenue Vicinity Properties (facing south)

inches. Subsequently, in preparing the property for use, the owner demolished one building, excavated portions of the western half of the property, paved certain areas, and erected several new buildings. Material excavated during these activities (approximately 13,000 cubic yards) was piled on the eastern portion of the property.

An additional 14,000 cubic yards of contaminated soil, from cleanup along Latty Avenue in 1984 and 1985 and from an area used for office trailers and a decontamination pad, was added to the pile. Approximately 4,600 cubic yards of contaminated soil were stored adjacent to the existing pile; the soil had been excavated during road and drainage improvements along Latty Avenue in support of a municipal storm sewer project. A total of approximately 32,000 cubic yards of contaminated soil is stored at the property.

In 1981 Oak Ridge Associated Universities conducted a radiological characterization of the pile and surveyed portions of the northern and eastern VPs for radioactivity. Levels of contamination (principally thorium-230) similar to those in the pile were found in both areas. As a follow-up to this survey, ORNL conducted a detailed radiological survey of the northern and southern shoulders of Latty Avenue in January and February 1984; the results indicated that contamination in excess of federal guidelines was present. Properties adjacent to HISS were also found to be contaminated in excess of guidelines.

A decontamination research and development project was conducted, under the authority of the 1984 Energy and Water Appropriations Act (Public Law 98-360), at four sites throughout the nation, including 9200 Latty Avenue and properties in its vicinity. Subsequently, Congress added the Latty Avenue properties to FUSRAP to expedite decontamination.

In October 1989 EPA placed the HISS and Futura properties on the NPL. This list required the cleanup to proceed under the guidelines of the CERCLA, as amended by the SARA.

In July 1990 DOE and EPA Region VII signed an FFA that established a procedure and schedule for remediation of the Latty Avenue properties.

In 1994 two citizen committees were established for the purpose of working closely with FUSRAP representatives and serving as a “voice of the people.” These organizations were the St. Louis Radioactive and Hazardous Waste Oversight Committee and the City of St. Louis Mayor’s Advisory Task Force on Radioactive Waste. In 1994 the SLSRTF was made up of members from the above two groups plus other community stakeholders. In 1996 the SLSRTF issued a report detailing the

community's recommendations for cleanup and removal of contaminants in St. Louis under FUSRAP. Eventually, in 1997, the St. Louis Oversight Committee was formed. These organizations have developed strong working relationships with FUSRAP and have been active participants in the decision-making process.

In 1996 the owner of 9150 Latty Avenue (Latty Avenue VP-2L), located to the east of HISS, expanded the facility and stockpiled about 8,000 cubic yards of contaminated soil. This stockpile, consisting of two piles known as the Eastern Piles, is located on the southwestern corner of the property.

HISS and the Latty Avenue VPs were part of the DOE FUSRAP until it was transferred to USACE in October 1997, under the Energy and Water Appropriations Act. After the transfer cleanup activities continued to follow CERCLA guidelines and incorporate NCP values.

Figure 3.6 provides a chronology illustrating the history of the North St. Louis County sites, including HISS and Latty Avenue VPs, contamination and cleanup activities from 1942 to 2003.

3.4.3 FUSRAP Work Accomplished to Date

In 1984 the HISS site and selected adjacent properties were cleared to allow construction of a vehicle decontamination facility, installation of the perimeter fence, excavation and backfill along the edges and shoulders of Latty Avenue, and consolidation and coverage of the contaminated soil storage pile. The 1984 activities resulted in the addition of 14,000 cubic yards of contaminated soil to the HISS pile.

In 1987 a complete radiological characterization, which consisted of sampling and analysis to determine the nature and extent of contamination, was conducted at HISS, Coldwater Creek, and about 70 haul road properties. Contamination on the haul road properties was found on road shoulders and adjacent properties. Contamination was shallow (less than 1 foot deep), and concentrations were low. Although characterization was essentially complete, some additional investigation in the creek and along haul roads was still required.

Surveys and field investigations were conducted at HISS from 1977 through 1997. These studies determined the nature and distribution of chemical and radioactive contaminants and reviewed the geology and hydrology of the site.

In March 1998 USACE prepared an EE/CA proposing to remove the HISS piles and impacted soil from three adjacent Latty Avenue properties until a comprehensive cleanup could be achieved. The proposal received public approval, and plans were developed to allow work to proceed.



Figure 3.8. Aerial View of Hazelwood Interim Storage Site Piles after Removal

Since the approval of the 1998 EE/CA, the following removal actions have been performed:

1. In 1999 USACE completed construction of the HISS/Latty Avenue rail spur, which is capable of holding 11 rail cars or 770 cubic yards of material. USACE also completed negotiations with an 8(a) woman-owned small business for a firm fixed-price contract to remove the two Eastern Piles.
2. Between April and June 2000, 6,880 cubic yards of material were removed during the removal of East Piles 1 and 2, stockpiles located adjacent to HISS at 9150 Latty Avenue (Latty Avenue VP-2L).
3. Between March and June 2000, 5,590 cubic yards of material were removed during the removal of Spoil Piles A and B, which resulted from the construction of the HISS rail spur in 1999, and were temporarily stored on-site between the HISS Main and Supplemental Piles.
4. Between September and October 2000, 4,710 cubic yards of material were removed during the removal of the Supplemental Pile from HISS.
5. Between November 2000 and January 2001, 4,440 cubic yards of material were removed during the removal of the northern portion of the Main Pile from HISS.
6. Between March and May 2001, 11,950 cubic yards of material were removed during the removal of the southern half of the Main Pile from HISS.
7. Between September and October 2001, 5,915 cubic yards of material were removed during the removal of the remainder of the Main Pile from HISS.

(Note: All contaminated materials removed from HISS and the Latty Avenue properties to date have been transported by covered gondola cars for disposal at an out-of-state licensed or properly permitted facility.)

In early 2000 USACE collected samples from SLAPS, SLAPS VPs, HISS/Latty Avenue VPs, Futura, and Coldwater Creek. USACE chose to develop cleanup alternatives to address all of these sites under the same decisional document. Cleanup alternatives for the North St. Louis County sites, identified in the FS and PP, were released for public review in May 2003. Comments on the documents were accepted through July 14, 2003. The final cleanup remedy will be outlined in the Record of Decision for the North St. Louis County, Missouri Sites (SLAPS, HISS/Latty Avenue, and SLAPS VPs), to be released in 2004.

In accordance with CERCLA requirements, a five-year review was initiated in January 2003 to ensure that human health and the environment are being protected by the response action being implemented. A team led by USACE and including representatives from EPA and MDNR documented conditions at each site and the surrounding area. In addition, members of the community were contacted for their views about the cleanup process to date. USACE released the draft report documenting the findings of the review in September 2003.

3.5 Madison Site

3.5.1 Location

The Madison Site is located at an active industrial site across the Mississippi River from SLDS (Figures 3.9 and 3.10) in Illinois. The site is located at College and Weaver Streets in Madison. It consists of two buildings owned by a component manufacturer in Madison, Illinois.

3.5.2 History

The Madison Site was part of an operating facility formerly known as Dow Chemical Company, a division of Dow Metal Products. The firm worked with Mallinckrodt to support AEC needs during the late 1950s and early 1960s. A uranium extrusion and rod-straightening facility was operated at the site. A 1989 survey indicated Building 6 contained low-level radioactive contamination in dust located on overhead surfaces. About 2 cubic yards of contaminated uranium/thorium dust exceeding guidelines from MED/AEC operations were identified on roof beams at the facility.

In 1992 the Madison Site was added to the FUSRAP list of sites slated for cleanup. The FUSRAP site is located within a limited area of an active facility. The plant is in heavy production use, extruding aluminum and magnesium metal. Because cleanup was ultimately necessary, the operator worked with USACE to identify a timeframe for cleanup and to ensure that the cleanup did not disrupt production operations and that the safety of maintenance and production personnel continued to be protected.

3.5.3 FUSRAP Work Accomplished to Date

In October 1997, through the 1997 Energy and Water Appropriations Act, Congress transferred FUSRAP from DOE to USACE. Cleanup under USACE continued to follow the provisions of CERCLA. Under the DOE program, the Madison Site's remediation would have been performed through its Ohio Sites office. However, because of the district's boundaries, administration of the cleanup of the Madison Site was placed under the direction of the St. Louis District.

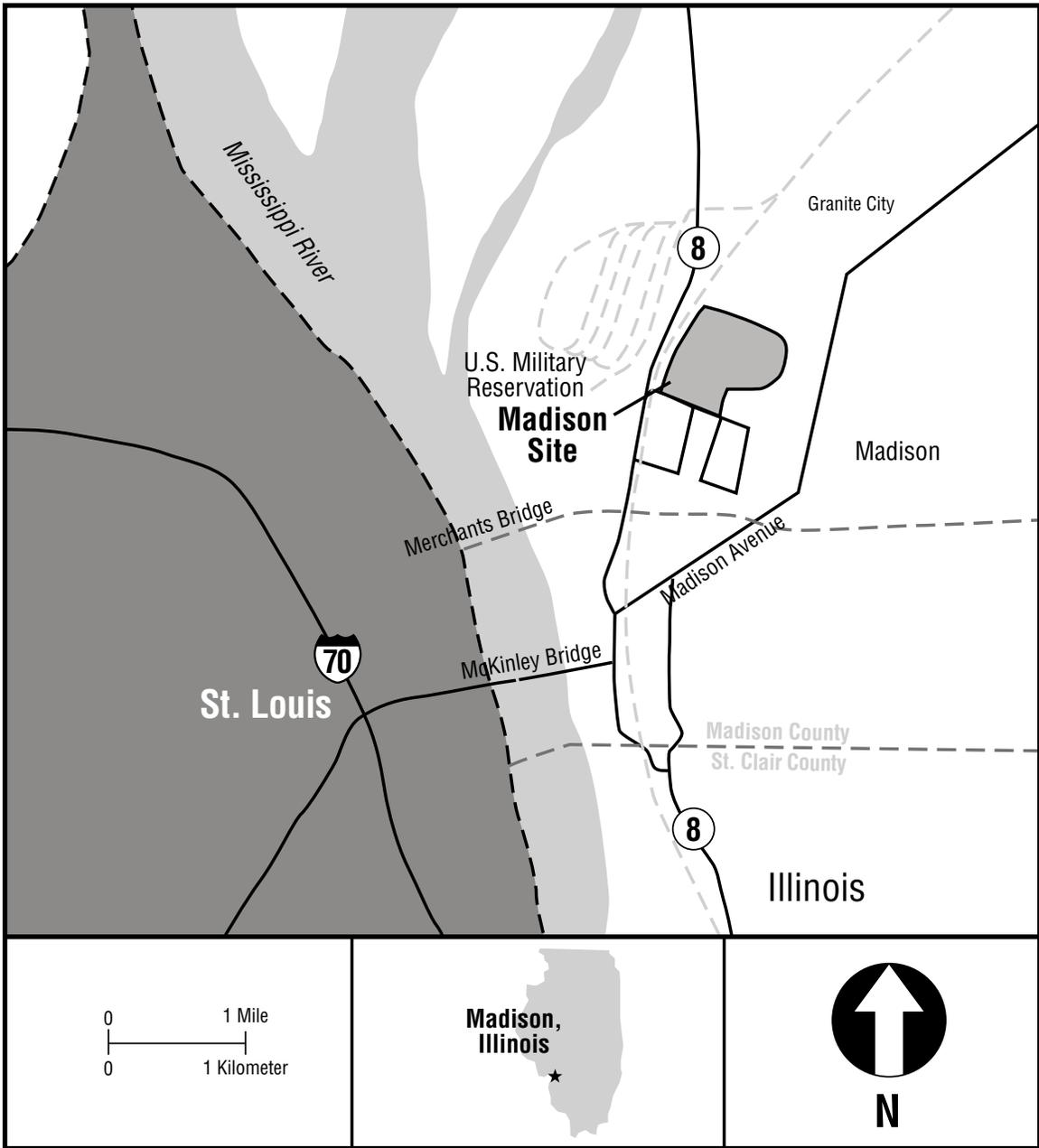


Figure 3.9. Madison Site

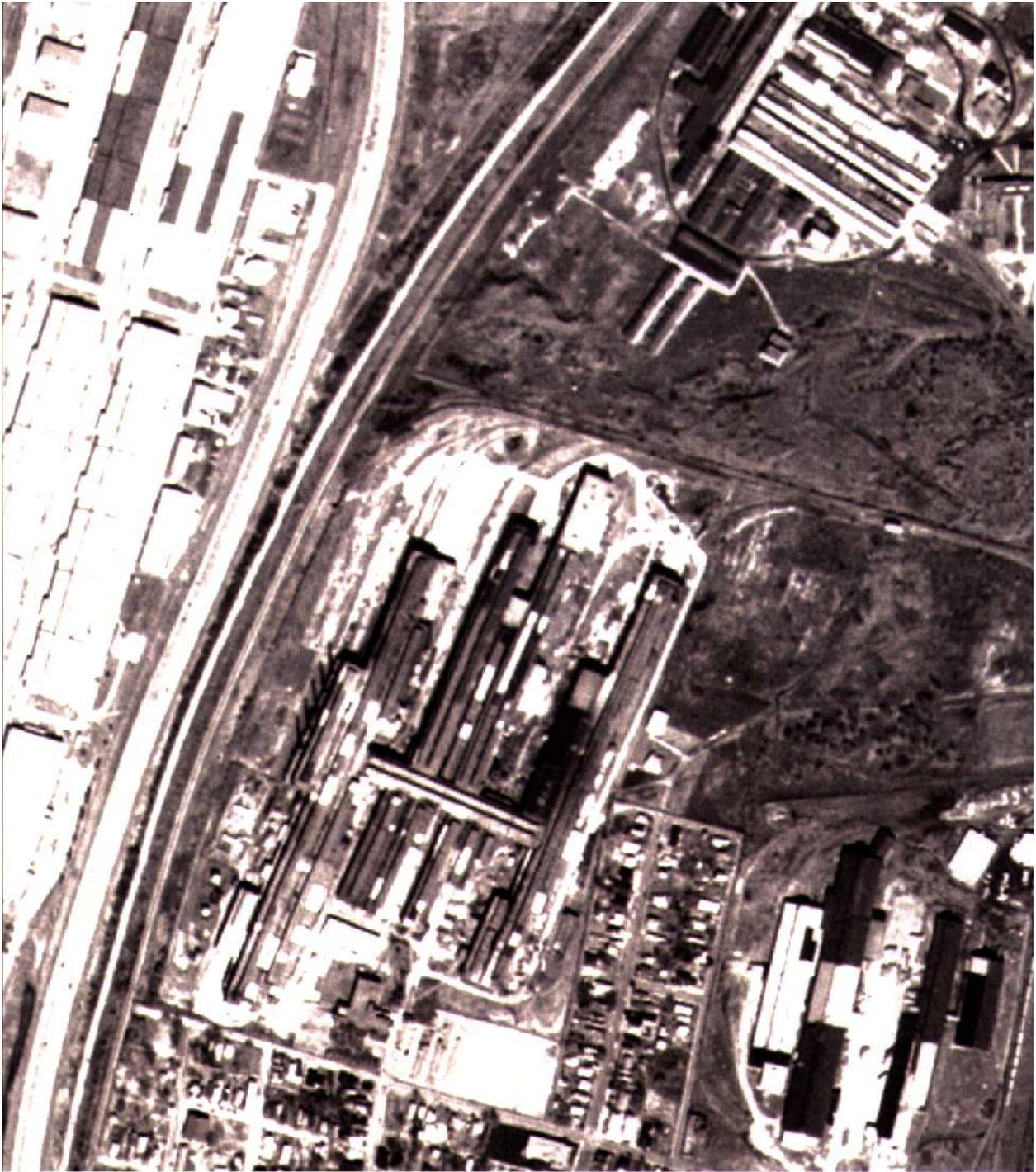


Figure 3.10. Aerial View of the Madison Site

Field investigations at the site consisted of a radiological survey in 1989 and site scoping visits in 1993 and 1998. The survey included scanning for gamma radiation on accessible floor and wall surfaces throughout the building and on overhead beams, collection and analysis of indoor dust and debris, and determination of radioactivity levels on overhead beam surfaces. Uranium-238 and thorium-232 were found at concentrations exceeding current guidelines. Additional sampling and monitoring of environmental media were accomplished inside a building involved in daily production. While contamination was known to be present on the beams, other areas also could have been affected.

In 1999 USACE developed a characterization report for the Madison Site. Samples were taken to validate existing site data, define site contamination, and update the risk associated with its presence. The characterization report confirmed the presence of contamination in dust on overhead surfaces, while the floors and equipment were below criteria.

In February 2000 USACE presented the RI/FS for the Madison Site to the public for review. A PP detailing USACE's preferred alternative was also issued. The final remedy was outlined in the final ROD released in early June 2000.

In late June 2000 USACE mobilized its contractor to the site. By mid July independent surveys had confirmed that USACE had successfully decontaminated the site ahead of schedule and under budget. Forty cubic yards of contaminated dust and materials were sent to a licensed, out-of-state facility for disposal. Having completed the remediation of the site, USACE initiated site closeout to successfully remove it from the list of active FUSRAP sites.

In September 2000 USACE issued the Post Remedial Action Report for the Madison Site. IDNS reviewed the report and concurred with USACE's assessment that its response action had attained the cleanup requirements specified in the ROD.

The Declaration of Remedial Action Completion statement for the Madison Site was signed in September 2001. Notification of the remedial action completion was sent to the site owner. A notice of availability for the closeout report was published in the *St. Louis Post-Dispatch* in November 2001.

Short-term maintenance, consisting of records management for the Madison Site, was initiated by USACE in July 2000. Under the Memorandum of Understanding between USACE and DOE, long-term stewardship responsibilities, again consisting of records management for the site, were transferred to DOE in July 2002.

4.0 COMMUNITY BACKGROUND

4.1 History of St. Louis Area

St. Louis first began in 1764 when Pierre Laclède selected the site as a trading post for French fur traders. St. Louis offered convenient access to major rivers (the Missouri and the Mississippi) and to the port of New Orleans. Animal pelts could be easily shipped and managed from this location. The city was named for King Louis IX, who had been named a saint.

Settlers, trappers, and explorers gradually arrived, expanding the city's population. The Louisiana Purchase helped to open the West, and St. Louis became a key point in the westward expansion of the United States. In 1857 a rail link to the East Coast was completed. This link opened the city to immigrants from Ireland, Germany, and many other countries.

By the 1870s the city boasted a population of 300,000 and thriving industry. In 1874 a railroad bridge was constructed across the Mississippi River, which made it easier to reach Illinois coal fields. With plentiful fuel supplies, the city's suburbs began to grow, and the city became an important manufacturing center.

St. Louis continued its growth throughout the early 1900s, hosting a World's Fair and sponsoring the Olympic games. Growth slowed during War I, the Great Depression, and Prohibition, but St. Louis' vitality was carried by Charles Lindbergh on his historic flight from the United States to France. Lindbergh's plane, the Spirit of St. Louis, was sponsored by the St. Louis business community.

During World War II St. Louis factories were put to work manufacturing military equipment for the Allies.

By 1950 the city of St. Louis had reached nearly 857,000 people, but this population decreased to 750,000 by 1960. As in other American communities, the suburbs absorbed much of the population, and living conditions declined in the city. Community leaders in St. Louis responded with public works programs to build new schools, expressways, and housing.

From 1970 to 1980 the population decreased from 622,000 to 453,000; from 1980 to 1990 it experienced a further drop to 397,000. City leaders responded aggressively with federal programs; the opening of a new convention center in 1977; and construction of the St. Louis Arch, Busch stadium, an entertainment district called Laclède's Landing, and downtown malls. These amenities and others helped revitalize the city and again brought life to downtown.

The St. Louis area has one of the largest railroad terminals in the country. Area residents work in a variety of fields, including retail, transportation, construction, recreation, and manufacturing. Major corporations include the automobile manufacturers Chrysler, Ford, and General Motors. Firms headquartered in St. Louis include Anheuser Busch, Emerson Electric, Boeing, Monsanto, and Ralston Purina. Schnuck Markets, the U.S. Air Force, BJC Health System, and United Health System are also major employers.

The greater St. Louis area is comprised of 12 counties, 5 in Illinois and 7 in Missouri. In 1997 it was the 17th most populous metropolitan area in the United States, with a population of 2,561,400. The metropolitan area includes 13 universities, 7 junior college districts, and 17 colleges.

4.2 Community Profiles

The FUSRAP St. Louis Sites are located in several communities within the larger St. Louis metropolitan area.

SLDS and the SLDS VPs lie within the city limits of St. Louis proper.

SLAPS and the SLAPS VPs are located in the cities of Hazelwood and Berkeley. SLAPS is owned by the city of St. Louis through the Airport Authority, even though it lies outside the St. Louis city limits.

HISS and the Latty Avenue VPs are located in the cities of Hazelwood and Berkeley.

The Madison Site is located in Madison, Illinois, across the river from St. Louis, Missouri.

4.2.1 Downtown St. Louis Area

SLDS and the SLDS VPs are located within the city of St. Louis. The city had an estimated population of 348,189 in the 2000 census. Of those residents who were working, 82,480 worked within the city, while 54,563 worked outside the city limits within Missouri state boundaries. Some 3,704 worked outside the state.

The city of St. Louis is governed by an elected mayor and by a board of aldermen of 28 members elected from wards.

The St. Louis downtown area contains many landmarks and historic buildings, including the St. Louis Arch, the Old Cathedral, and the Old Courthouse where the Dred Scott slavery case was first tried. Memorial Plaza, which lies west of the business district, houses City Hall, as well as other municipal and federal buildings. Sports complexes, including Busch Stadium, the Savvis Center, and the Edward Jones Dome, are also located in downtown St. Louis.

The city of St. Louis also hosts Forest Park, which includes the St. Louis Zoo, the St. Louis Science Center, a planetarium, an Art Museum, and public sports fields. The Missouri Botanical Garden is also located in St. Louis.

4.2.2 North St. Louis County Area

The North St. Louis County sites include SLAPS, the SLAPS VPs, and the HISS/Latty Avenue VPs.

Hazelwood. HISS and the Latty Avenue VPs are located 0.6 mile north of the St. Louis Airport within the community of Hazelwood. According to 2000 census data, Hazelwood had a population of 15,324. The city lists its current population as 27,000. A recent annexation has boosted Hazelwood's size.

The Hazelwood community was first settled in 1797 by the Musick family, which ran a ferry business across the Missouri River. New families entered the area, forming a farming community. In 1828 Kentucky Senator Henry Clay gave the area its name. Incorporated as a village in 1949, Hazelwood became an incorporated city in 1970.

Economic activity is concentrated in manufacturing (approximately 15 percent) and retail trade (approximately 12 percent). Educational institutions, health services, transportation, and finance institutions make up much of the remaining business activity.

The city has a council/manager form of government. The eight-member council consists of six members elected from districts, one member elected at large, and a mayor elected at large.

Berkeley. This area had a population of 10,063 according to 2000 census data; however, the city lists its current population as 12,240 and was incorporated in 1937. In the early 1800s Berkeley established itself as a home for the well-to-do and contained large estates. In 1910 Berkeley opened an airfield and entered the age of aviation. The first St. Louis-built airplane took off from the field. Berkeley further pioneered in aviation, hosting the first International Air Meet. Until December 1996 Berkeley was the home of McDonnell Douglas World Headquarters. At that time the firm merged with Boeing to become part of the Boeing Company.

Berkeley is within 1 mile of Lambert-St. Louis International Airport and accesses several interstate highways.

Economic activity is concentrated in manufacturing, especially that related to aircraft (approximately 14 percent), retail trade (9.9 percent), education (5.4 percent), transportation (8.6 percent), and health services (15.4 percent). Finance institutions, personal services, and accommodations and food services make up much of the remainder of business activity.

The city has a council city manager form of government. The seven-member council consists of six members elected from districts and a mayor elected at large.

4.2.3 St. Louis Airport Site Vicinity Properties

The SLAPS VPs include those properties contiguous to SLAPS; the Ballfields north of SLAPS; Coldwater Creek from SLAPS northward to the Missouri River; and the VPs along Hazelwood Avenue, Pershall Road, McDonnell Boulevard, Eva Road, and Frost Avenue.

The VPs are owned by commercial enterprises, local governments, and private residents. The cleanup actions that have been completed or are being performed assume that the land use of the SLAPS VPs will be the same as the current uses, which include residential, recreational, commercial, and industrial.

4.2.4 Madison, Illinois Area

Madison, Illinois, is located northeast of St. Louis in Madison County, Illinois.

Located directly across the Mississippi from St. Louis, Madison was started as a township in 1892 and became a city in the early 1900s. Like its county namesake, Madison was named after James Madison, the fourth President of the United States.

The rise of industry at the turn of the century lured thousands of immigrants to Madison and its sister cities, Granite City and Venice. These three cities attracted large numbers of Bulgarian peasants and laborers. From 1900 to 1918, the tri-city area was known as the capital of Bulgarian immigration in North America. Poles, Czechs, and immigrants of many other nationalities were also represented in the area.

The three cities grew together, as each supported factories and companies belonging to Frederick and William F. Niedringhaus. The Niedringhaus' enterprises needed large numbers of unskilled workers, and Illinois factory sites cost less than those in St. Louis and were more convenient. Other economic incentives were also at work: rates for transporting coal were cheaper, water costs were lower, labor laws allowed longer workdays and workweeks, and pollution regulations were weaker than those in Missouri.

While the Bulgarian community was gradually absorbed into the American culture, echoes of the past can be heard through such common family names as Popov, Tsigalero, and Velchev. City streets are still lined with churches and other buildings from that era.

According to the U.S. Geological Survey, the estimated population for Madison was 4,280 in 1994. (Because the city is unincorporated, no census data are available for 1990.) In 1995 Madison County business was dominated by services that employed approximately 30 percent of the county's employees. Manufacturing and retail trade each accounted for nearly a quarter of the employees in that region. Lesser numbers from a variety of fields, including construction, transportation, and wholesale trade, rounded out the employment figures. Key businesses in Madison and nearby communities include National Steel, American Steel, and Lantern Corporation. Gateway International Raceway provides a popular venue for fans of NASCAR and other auto races.

The city is governed by a mayor, in collaboration with a city council and aldermen.

5.0 COMMUNITY CONCERNS

5.1 Chronology of Community Concerns

1981. DOE, in conjunction with EPA, MDNR, and the NRC, held a meeting in October at the Bridgeton Town Hall to provide information about several properties in the St. Louis area, including SLAPS, HISS, SLDS, Weldon Springs, and the West Lake Landfill. The meeting was designed to help the public understand the problems posed by radioactive contamination of the properties and response actions being planned. (At that time, HISS and the West Lake Landfill were under the purview of NRC. HISS was assigned to DOE by congressional action effective in fiscal year 1984.)

The League of Women Voters, in cooperation with MDNR, met with 85 individuals at the Bridgeton Community Center. State and local officials and the Airport Director expressed frustration with the lack of DOE action to clean up the radioactively contaminated properties in the St. Louis area. The concerns discussed included assignment of final responsibility for the properties, the cost of cleanup, and health problems of residents and Mallinckrodt workers.

1982. DOE announced plans to clean the SLAPS ditches and to take resulting waste to Weldon Springs. DOE also proposed developing Weldon Springs as a permanent disposal site for all Missouri FUSRAP waste and for a small amount of FUSRAP waste from other states. This proposal met with considerable opposition, culminating at a public meeting in Weldon Springs on August 10, 1982. In response to this concern, DOE postponed action on the SLAPS ditches and the Weldon Springs disposal site pending further study.

Members of the Coalition for the Environment held a public hearing on health and how it is affected by radiation. The coalition urged federal officials to clean all area properties and remove waste from the St. Louis area. A select Interim U.S. House Energy and Atomic Energy Commission conducted a series of hearings across the state to review the problems of low-level radioactive waste disposal. Hazelwood city officials requested that the contaminated soil be moved from Latty Avenue. Local environmentalists opposed storage at Latty Avenue and preferred that the soil be moved and stored at the Callaway Nuclear Power Plant. One environmental group, the Crawdad Alliance, suggested that the contaminated soil be taken to a DOE-operated and -licensed site.

The Missouri House and Energy Committee held a public hearing at the Florissant City Hall, which was attended by 50 people. The purpose of the hearing was to discuss possible solutions to the problem of low-level radioactive waste disposal. The federal plan to bury low-level radioactive waste at Weldon Springs was opposed by politicians, residents, and environmental groups.

1984 and 1985. DOE coordinated activities with local governments during remedial action for the ditches along Latty Avenue and during the repair of erosion on the western side of the SLAPS property.

On November 19, 1985, USACE held a public hearing on a proposed flood control project for Coldwater Creek. At that meeting several individuals and organizations expressed concern about the potential for Coldwater Creek to contain contaminated materials from SLAPS.

1986. DOE held discussions with the St. Louis Mayor and Board of Aldermen early in the year concerning transfer of the SLAPS property to DOE. The board postponed action on the transfer until DOE conducted further characterization to define the quantity and extent of contamination.

1987. In April DOE reported to officials of St. Louis, Berkeley, and Hazelwood that studies had shown the SLAPS property would not accommodate a disposal cell large enough for all the contaminated material from SLAPS, the Latty Avenue properties, and SLDS. DOE further reported that it was initiating studies to determine the feasibility of acquiring additional land in the airport area for a disposal cell site. A news release describing the situation was issued. Subsequently, DOE representatives met on several occasions with the Berkeley and Hazelwood City Councils, the St. Louis Mayor and Board of Aldermen, and MDNR to discuss disposal alternatives. These meetings were reported in the media.

1988. DOE conducted community interviews to identify public issues and concerns related to the St. Louis Sites. DOE participated in meetings and made presentations to public officials, citizen/special interest groups, and the general public. DOE took part in a series of hearings held by the Transportation and Commerce Committee of the St. Louis Board of Aldermen to discuss the matter of transferring land at SLAPS from the city to DOE. Information on the site and on the remediation process was provided to the public during meetings sponsored by the Airport Community Program Committee and the St. Louis Municipal League. DOE and EPA participated in a hazardous waste forum sponsored by Congressman Jack Buechner in 1989. This public meeting was conducted to update St. Louis residents on the Superfund status of the sites.

1989. Congressman Buechner introduced a proposal for legislation (H.R. 1559) that would require DOE to consider alternative sites for the disposal of St. Louis waste. Should DOE fail to find an appropriate alternative, this proposed legislation would forbid storage at the airport site of any waste from outside North County. The 1990 Congress closed without taking action on this proposed legislation.

The *St. Louis Post-Dispatch* published a seven-part newspaper series entitled “Legacy of the Bomb” about St. Louis nuclear waste.

1990. The St. Louis Board of Aldermen adopted a plan to transfer the property near Lambert Field to DOE. Citizens opposed to that action collected signatures on petitions to place the issue of the land transfer on the city ballot.

USACE postponed a project that would prevent Coldwater Creek from flooding areas of north St. Louis County because segments of the creek banks and sediment that would be excavated were radioactively contaminated.

Community interviews were updated to identify issues and concerns of affected residents. In response to community concerns and to make information more available, a DOE Public Information Center was opened at 9170 Latty Avenue in Hazelwood. (The center provides opportunities for public comment and information on all the St. Louis Sites.)

The St. Louis Board of Aldermen voted to place a non-binding referendum on the November 1990 ballot that would require voters to decide whether they favored a nuclear waste disposal cell at Lambert Field. Supporters of the referendum rallied at the site of the original Mallinckrodt Chemical Works, where the waste was first generated during World War II. A similar non-binding referendum was also placed on the ballot in St. Louis County through the efforts of Citizens Against a Radioactive Environment. Results of the referendum in both the city and county of St. Louis indicated that citizens strongly opposed the storage of radioactive waste near Lambert Field.

The Media Research Bureau of the University of Missouri at Columbia conducted a survey of 480 registered voters in St. Louis for the Post Dispatch and KMOX Radio. Those surveyed opposed a radioactive waste disposal cell at Lambert by 81.9 percent to 7.3 percent, with 10.8 percent undecided.

Senator Christopher S. Bond sent a letter to DOE Secretary James D. Watkins to inform him that voters in the city and county of St. Louis rejected the construction of a permanent disposal cell to store radioactive waste. Senator Bond requested that DOE examine the option of moving the waste out of state to a storage site approved and certified by DOE and expressed his belief that an in-depth analysis of other potential storage sites would enable better evaluation of the alternatives.

Councilman Anthony Green held a special meeting for Berkeley residents to discuss issues related to airport expansion and Natural Bridge business and to provide updated information on the proposed radioactive waste dump.

On December 6, 1990, DOE held a public scoping meeting pertaining to the programmatic Environmental Impact Statement (EIS) in St. Louis. The meeting was one of a series held nationally to notify the public of DOE's intent to prepare a statement on its proposed integrated environmental restoration and waste management program. The purpose of this program was to provide a broad, systematic approach to addressing cleanup activities and waste management practices. Of the 177 attendees, 97 made comments. Speakers identified themselves as citizens, housewives and mothers, environmentalists, politicians, educators, students, religious representatives, organization members, state agency representatives, media representatives, and employees. Most of the speakers addressed site problems. The most frequent comment was that storage of radioactive waste should be moved to a non-urban, less heavily populated area either elsewhere in Missouri or out of state.

1991. Public officials announced their intent to draft a plan to move contaminated soil from the St. Louis area to a less populated area in the state. Representative Joan Kelly Horn, St. Louis County Executive George R. "Buzz" Westfall, and County Councilman John R. Shear said the plan would include the establishment of a search committee to locate a community willing to take the waste and the possible use of incentives to compensate that community.

Representative James H. Schueuer (Chairman of the Science, Space, and Technology Subcommittee on the Environment) and Representative Horn sent a letter to Secretary Watkins requesting his assistance in dealing with waste at the FUSRAP properties in St. Louis. They requested additional information and technical assistance in resolving the problem as soon as possible.

1992. As part of the process of conducting a comprehensive environmental review of the St. Louis Sites, DOE held a public scoping meeting on January 28th at Berkeley Senior High School. More than 250 individuals attended, with 30 private citizens and 16 public officials presenting testimony.

The proposed interim removal action for the North St. Louis County VPs was discussed in detail in an EE/CA released to the public in spring 1992.

The St. Louis County Radioactive and Hazardous Waste Oversight Commission was appointed by St. Louis County to address concerns raised during the public comment period; these concerns were related to the techniques and equipment used for waste management and transportation. This group worked with DOE representatives to resolve potential conflicts and identify a mutually agreeable approach to the removal action.

1993. In an effort to begin final remediation activities for the St. Louis Sites, DOE drafted documents required by CERCLA for public review. The list of documents prepared for public comment in 1994 included the Baseline Risk Assessment, EIS, RI, Initial Screening of Alternatives, FS, Work Plan-Implementation Plan, CRP, and PP.

1994. DOE released a plan for St. Louis site remediation, which detailed a plan to consolidate radioactive waste from the St. Louis Sites into a disposal cell located at SLAPS near Lambert Airport. DOE encountered strong opposition as a result of this proposal.

Mr. Thomas Grumbly, DOE Assistant Secretary for Environmental Management, met with St. Louis stakeholders to discuss concerns regarding DOE's remediation plans for the sites. DOE withdrew its proposal and urged interested stakeholders to form a group to work with DOE representatives to find a suitable alternative. As a result, the SLSRTF was established to identify and evaluate remedial action alternatives for the cleanup and disposal of radioactive waste materials at the St. Louis Sites and West Lake Landfill.

In September a technology demonstration was held to compare contemporary treatment methods with those traditionally used to clean up the sites.

1995. The SLSRTF held a series of public meetings to examine remediation alternatives for the eventual disposal of radioactive material from the St. Louis Sites. The task force established working groups to review alternate sites; health risks/cleanup standards; priorities; remediation alternatives; technologies; communications; and membership. A delegation from the task force traveled to South Carolina for a tour of the Clemson Technical Center Laboratory to further examine soil separation, a promising soil treatment technique shown at the technology demonstration held at SLAPS in 1994.

1996. The task force released its report in September detailing its recommendations for cleanup and removal of radioactive contaminants from the St. Louis area. The recommendations presented were based in part upon the characterization data as well as information provided to the SLSRTF by DOE representatives and DOE contractors. The task force also included background information on the St. Louis Sites to provide others with an understanding of the rationale behind their recommendations.

1997. In May DOE, EPA, MDNR, and public-office-holding stakeholders attended a two-day session in Meramec State Park to discuss site issues and develop a path forward for remediating the St. Louis Sites. At the end of the workshop, DOE was directed by these stakeholders to begin cleanup of the SLAPS West End to a level of 5/15/50 pCi/g.

At the direction of stakeholders attending the workshop in May, DOE held a technology review to reexamine the available technologies for a more cost-effective remediation of all the sites. Eleven technology vendors provided proposals and abstracts for evaluation by DOE representatives and technical experts in a public meeting held at the World Trade Center in St. Louis County in July.

In September 1997 DOE held a public meeting at the Hazelwood Civic Center to gather comments on an EE/CA for cleanup work on the western end of SLAPS, with contaminated material being shipped to a licensed out-of-state disposal facility. Although the public approved of this work proceeding, they strongly recommended that cleanup proceed at a level of 5/15/50 pCi/g rather than the higher levels suggested in the preferred alternative.

At the request of local utility companies, a policy was implemented to make site personnel available 24 hours per day to respond to requests for support of utility workers in possible radiologically contaminated areas.

Under the Energy and Water Resources Appropriations Act of 1997, Congress directed that USACE assume responsibility for executing FUSRAP. Beginning in October USACE began functioning as the lead agency for FUSRAP actions, with EPA continuing to monitor progress at these sites.

In November USACE, St. Louis District opted not to pursue alternative technologies as a stand-alone event. Rather, USACE chose to contractually direct contractors to evaluate and implement, as deemed appropriate, effective and cost-efficient technologies.

1998. In March USACE held a public meeting at the Hazelwood Civic Center on Dunn Road to gather public comments on two EE/CA documents for SLAPS and HISS, respectively. At that meeting the public approved the construction of rail spurs on both sites. The public also emphatically requested that contaminated material above background, but below cleanup criteria, not be used as backfill. USACE, St. Louis District complied with this request in its work on both sites.

In April USACE held a public meeting at the Henry Clay Elementary School near SLDS to solicit comments on the SLDS FS/PP. A complete transcript of the meeting was kept and provided to individuals upon request. The detailed responsiveness summary, including responses to comments received during the public meeting, on the FS/PP was included in the final SLDS ROD, Appendix A. USACE accepted and complied with the public's recommendation for remediation work to follow Alternative 6 rather than USACE's preferred Alternative 4. In August 1998 EPA signed the final ROD developed by USACE in accordance with Alternative 6. The SLDS ROD is available to the public through the Administrative Record or upon request.

In June USACE, St. Louis District began the process of updating the 1993 DOE CRP, resulting in Revision 0 of this document.

1999. In February USACE held an open house at the Henry Clay Elementary School to explain the remedial design developed to implement the approved criteria described in the SLDS ROD.

On June 5th and 6th USACE participated in the St. Louis Earth Day Community Festival. An exhibit display was set up, and project representatives were available to answer stakeholder's questions and distribute informational materials.

In September USACE participated in two open houses sponsored by local groups. On September 18th, Mallinckrodt held an open house for its employees. On September 23rd USACE also set up and manned a display, at the invitation of MDNR, for its open house in St. Ferdinand Park in Florissant. Project representatives were available at both events to answer questions and distribute informational materials.

In December USACE released the St. Louis District FUSRAP Web site for public access.

2000. In February USACE held a public meeting in the Madison City Hall to solicit comments on the Madison Site RI/FS and PP. A complete transcript of the meeting was provided to individuals upon request. Detailed responses to comments, including those received during the public meeting, on the PP were included in the final Madison Site ROD as a responsiveness summary. USACE accepted and complied with the public's recommendation for remediation work to follow Alternative 4, "Decontamination for Accessible Surfaces and Release of Buildings." In June USACE issued the final approved ROD outlining the final cleanup remedy for the site. The Madison Site ROD is available to the public through the site's Administrative Record.

In December USACE released the updated FUSRAP St. Louis Sites' CRP in preparation for release of the North St. Louis County sites decisional documents.

2001. On April 22 USACE participated in the St. Louis Earth Day Celebration at Forest Park. The second annual Earth Day symposium highlighted national, regional, and local models of environmental topics. Intended participants were elected officials and staff of municipal, county, and state government; consulting engineers; agencies; and interested citizens.

In June 2001 USACE issued letters regarding FUSRAP contamination to property owners and tenants of the SLAPS VPs. Although owners were aware of the presence of contamination on their properties, the letters were sent to ensure that everyone understood how to request assistance with managing contamination on their properties. Owners were encouraged to contact the FUSRAP Project Office before making property improvements. USACE could then verify the presence of radiological contamination in the impacted area and advise owners of potential impacts it might have on their work, thereby minimizing the adverse effects of contamination.

2002. In March USACE distributed a letter to SLDS property owners similar to the one issued to North County property owners in June 2001. The letter offered help and provided guidance as to how to get assistance from USACE in obtaining radiological support during subsurface work on impacted properties.

Long-term stewardship responsibilities (consisting of records management) for the Madison Site in Madison, Illinois, were transferred to DOE in July 2002.

In August 2002 USACE hosted a two-day public workshop/training session on a series of environmental and legal topics affecting site work to facilitate review of the North St. Louis County sites FS and PP. The training session was open to any interested parties but targeted North St. Louis County property owners and tenants.

2003. In accordance with CERCLA requirements, a five-year review was initiated in January 2003 to ensure that human health and the environment are being protected by the response action being implemented at SLDS and at the North County Site. A team led by USACE and including representatives from EPA and MDNR documented conditions at each site and the surrounding area. Initiation of the review was announced through issuance of a news release to local media and the newsletter in March. A special Web page was designed and published on the Internet to provide additional information to the public regarding the review, and a briefing was presented at the March St. Louis Oversight Committee meeting, which was open to the public. In addition, members of the community were contacted for their views about the cleanup process to date. USACE released the draft report documenting the findings of the review in September 2003.

In May the North St. Louis County sites FS and PP were released for public review and comment over a 30-day period. Six alternatives to address the presence of MED/AEC-related contamination in northern St. Louis County were presented in the FS. The North St. Louis County sites include SLAPS, HISS/Latty Avenue VPs; and the SLAPS VPs. The PP summarized the six alternatives proposed and identified USACE's preferred alternative.

To more widely disseminate information related to the North St. Louis County sites FS/PP, USACE launched a Web page providing copies of both documents. The Web page also contained site background information, public information fact sheets, Administrative Record locations, USACE telephone and project office locations, and public announcements relative to the FS and PP process. The Web page also provided the ability to e-mail comments directly to USACE.

USACE extended the 30-day comment period on the FS and PP, originally scheduled to close on May 30, 2003, to July 14, 2003, in response to public request. USACE also held a public meeting at the Hazelwood Civic Center-East on May 29, 2003. The meeting consisted of a poster/question-and-answer session, a USACE presentation on the North St. Louis County sites FS/PP and the USACE-preferred alternative, and a public hearing. After reviewing the public comments received, USACE will select the final remedy for the North St. Louis County sites. The final remedy for the site and responses to comments received on the FS/PP will be outlined in the Record of Decision for the North St. Louis County, Missouri Sites (SLAPS, HISS/Latty Avenue, and SLAPS VPs), to be released in 2004.

5.2 Key Current Community Concerns

In April and May 2003, the USACE conducted 30 St. Louis Sites community interviews. These interviews were conducted as a part of the FUSRAP five-year review. Respondents included property owners; business owners; city, county, state and federal elected officials; utility company representatives; citizen interest groups (e.g. St. Louis Oversight Committee, Gracehill); residents not otherwise affiliated with interest groups; local school officials; state and local government agency representatives; and community religious leaders.

Respondents generally reported feeling well informed of the site activities and progress. They reported they were satisfied with the current communication plan (means and frequency of information distribution through various meetings, newsletters, and news releases) and the USACE's responsiveness to community concerns. Currently, community concern about contamination from the St. Louis Sites is moderate, which does not mean that citizens are indifferent to the environmental problem posed by the sites. On the contrary, conversations with community members have revealed that many stakeholders are keenly interested in site response actions and regularly check the continued progress of cleanup activities.

Many of the people interviewed also expressed satisfaction with the progress of cleanup activities at the FUSRAP sites as well as USACE's openness in sharing information regarding site activities and efforts to build relationships with the various entities impacted by the project. A summary of concerns and other related issues raised during the interviews follows.

5.2.1 Primary Concerns Raised During the Interviews

Contaminant Migration Issues. The public expressed concerns regarding the migration of contamination during cleanup activities. USACE should continue to take appropriate steps to minimize the potential for contaminant migration.

Inaccessible Soil and Long-Term Stewardship (LTS) Issues. Utility companies expressed concerns about whether the existing utility support agreement will be honored once responsibility for FUSRAP sites transfers to another agency 2 years after closeout. The current agreement provides utilities with a sense of security and reassurance that their people will be supported during work in impacted areas. State and local representatives wanted broader community involvement in the development of the final LTS plan for the various sites to ensure stewardship requirements fit the current and planned future land use.

5.2.2 Other Important Issues Raised by the Community

Community Awareness Issues. The community relations program at the St. Louis Sites should educate area residents and local officials about the procedures, policies,

and requirements of the Superfund program. Discussions with community members indicate that more work is needed to make the community aware of the presence of contamination in the area and how to get information about the work being performed.

The CERCLA Cleanup Process. The community relations program at the St. Louis Sites should continue to educate area residents and local officials about the procedures, policies, and requirements of the Superfund program. The community expressed great satisfaction with past education efforts and encouraged continuation of this effort.

The Pace of the Community Relations Program. The pace of the community relations program will be set by the needs of the local stakeholders. Community relations activities will be set up to encourage community participation. Stakeholders have requested continuation of the following communication methods to relate information about progress and problems encountered during cleanup efforts: telephone contacts, letters, reports, newsletters, Internet resources, and regularly scheduled meetings with citizen groups.

5.2.3 Public Feedback on Community Relations Techniques and Strategies

The activities described below are required by CERCLA for the St. Louis Sites community relations program. Figure 5.1 illustrates the timing of each activity during the remedial schedule for the site. Because construction (cleanup) schedules are heavily impacted by the availability of funding and the weather, it is difficult to forecast years in advance the exact dates that specific work will occur. Instead, USACE has chosen to keep the public abreast of site activities by providing a calendar of events in the quarterly newsletter and presenting updates at the monthly oversight committee meeting, which is open to the public (and whose meeting minutes are available through the Web).

Residents are encouraged to attend the monthly Oversight Committee meetings at the FUSRAP Project Office at 8945 Latty Avenue at which a progress report is given by USACE. These meetings are typically held on the second Friday of each month; the dates and times of these meetings are published in the quarterly newsletter. Concerned citizens are also encouraged to call or visit this office during regular business hours to obtain information regarding current site progress.

The Administrative Record is a legal file containing only the documents used to select a particular cleanup technique for a site as documented in the ROD. Its purpose is to provide the public with access to site-related information so that they can make informed comments on the selection of a cleanup remedy. A copy of the Administrative Record is available for public review at the FUSRAP Project Office

for the St. Louis Sites. Copies of the Administrative Records for the Missouri sites are also available for public review during normal business hours at the St. Louis Public Library located at 1301 Olive Street in St. Louis, Missouri. The Administrative Record for the Madison Site is available for public review at the Madison Public Library located at 1700 5th Street in Madison, Illinois.

CERCLA has specific reporting requirements and requires that an Administrative Record be compiled. This legal file must include documents used to help select a cleanup method, including documents on site activities, general information about the Superfund program, and site-specific information. Until all required documents have been developed and all necessary data have been gathered to select a response action, a complete Administrative Record for that particular site does not exist. In the meantime, a temporary file called an Administrative Record File or Record File is maintained with all available information. This Record File documents current progress and provides the public with current data for the sites. Record Files for each operable unit are available for review at the FUSRAP Project Office and the St. Louis Public Library in downtown St. Louis.

RI/FS and Proposed Plan Notification and Analysis. A notice of the availability of the RI/FS and PP, including a brief summary of the PP, will be published in a major local newspaper of general circulation. Notification will also be mailed to all individuals on the site's mailing list to highlight the event.

Public Comment Period on Draft FS Report and PP. A minimum 30-day public comment period will be held to allow citizens to express their opinions on USACE's preferred alternative for remedial action at the St. Louis Sites. USACE will consider community opinions submitted on the documents during the selection of the final remedy for the site.

Public Meeting/Meeting Transcript. A public meeting held during the public comment period will provide an opportunity for USACE, St. Louis District to answer citizens' questions directly and to discuss the recommended remedial alternative. According to community residents, as few as 20 or as many as 200 community residents might attend such a meeting; therefore, planning should be flexible. This meeting might be held at the Hazelwood Civic Center-East, at the Henry Clay Elementary School Gymnasium, or at the Madison City Hall. The meeting will be coordinated with local city and county officials as well as the St. Louis Oversight Committee. A meeting transcript will be prepared and made available to the public.

Responsiveness Summary. This document is required as part of the ROD for the site. It summarizes community concerns and issues raised during the public comment period on the draft FS and PP. The ROD and responsiveness summary shall be available for public inspection and copying at or near the site before commencement

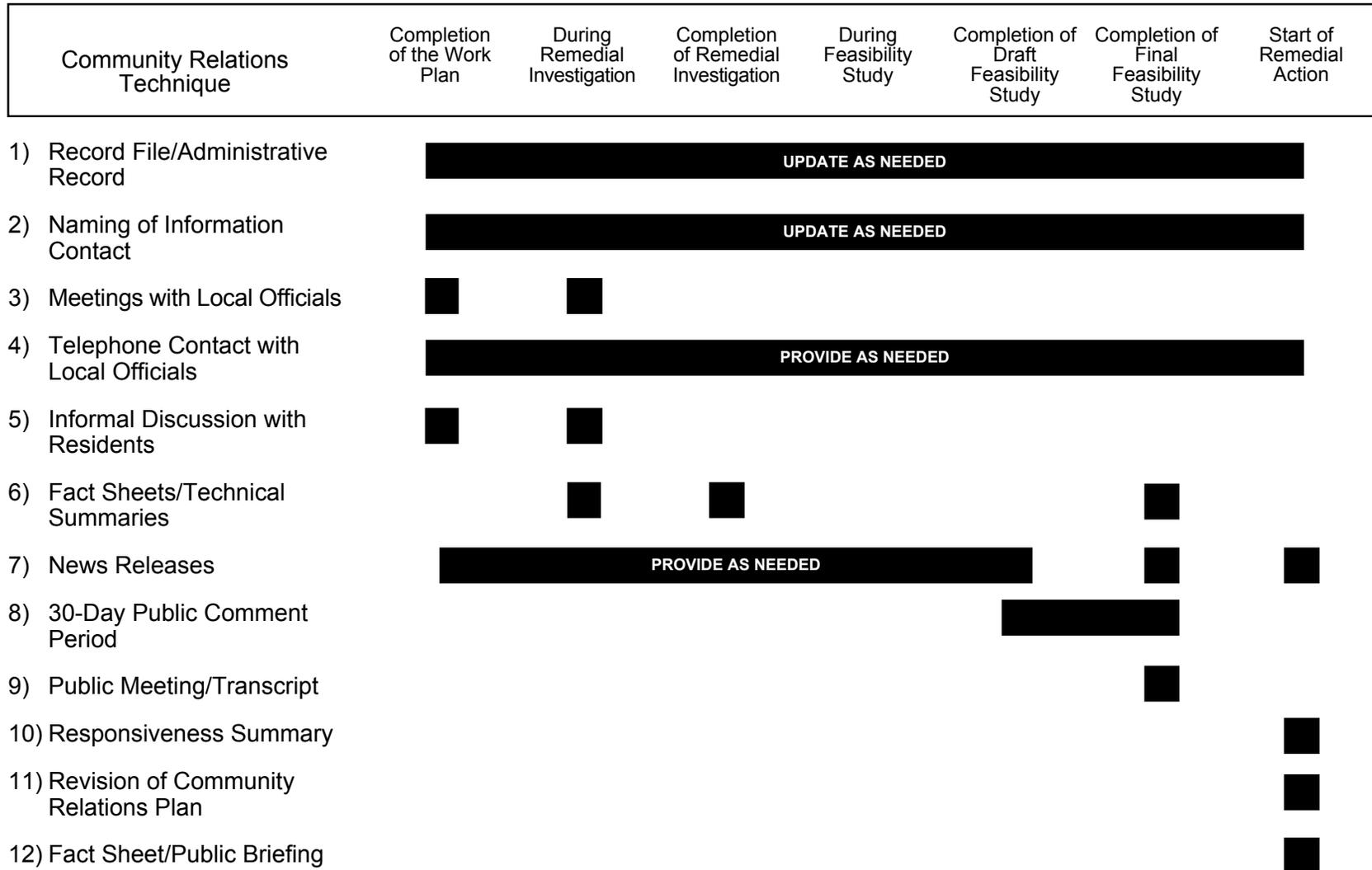


Figure 5.1. Timing of Community Relations Activities

of remedial action. A notice of the availability of the ROD and responsiveness summary will be published in a major local newspaper of general circulation.

Revision of the CRP. This CRP will be reviewed by USACE before initiation of the remedial design to determine whether it should be revised to describe further public involvement activities during the remedial design/remedial action phase of the project that are not already addressed or provided for in the CRP. The revision of the CRP should do the following:

- update facts and verify information in the CRP prepared for the RI/FS,
- assess the community relations program to date and indicate if the same or different approaches will be taken during remedial design/remedial action,
- develop a strategy to prepare the community for future roles during remedial design/remedial action and operations and maintenance, and
- hold community interviews at least once every 5 years before revision of the CRP.

Fact Sheet/Public Briefing. A detailed fact sheet describing the final engineering design will be issued, and as appropriate, a public briefing will be held before initiation of remedial action.

In addition to these basic requirements for a community relations program at the St. Louis Sites, a number of activities will be undertaken to ensure that the community is well informed about site activities and has the opportunity to express its concerns. Planned activities and their timing in the cleanup effort of the St. Louis Sites are illustrated in Figure 5.1.

Because construction (cleanup) schedules are heavily impacted by the availability of funding and the weather, it is difficult to forecast years in advance the exact dates that specific work will occur. Instead, USACE has chosen to keep the public informed of site activities by providing a calendar of events in the newsletter and giving updates at the monthly oversight committee meeting, which is open to the public.

Establish an Information Contact. A technical or community relations staff person will be designated to respond directly to public inquiries regarding site activities.

Meet with Local Officials and Telephone Them Periodically. State and federal officials have indicated that they want to be informed about site plans and findings. At a minimum, meetings with local officials should be held at the following technical milestones:

- completion of the final work plan,
- completion of the draft RI/FS, and
- before remedial action starts.

Conduct Informal Meetings with Residents. A meeting with the residents is advisable before any on-site activities involving use of earthmoving devices or other heavy machinery. The meeting should include interested citizens, the USACE FUSRAP Program Manager, and technical and community relations assistance as necessary.

Prepare Fact Sheets and Technical Summaries. One fact sheet might be released at the beginning of the remedial design/remedial action to inform area residents and other interested citizens about USACE's site plans and the procedures of the Superfund program. In addition, each fact sheet should identify how the public can obtain additional information (e.g., address/telephone number of the FUSRAP Project Office).

Provide News Releases to Local Media. Prepared statements might be released to local papers, such as the *St. Louis Post-Dispatch* and to local radio and television stations to announce discovery of any significant findings at the site during the RI/FS or to notify the community of any public meetings. Additional news releases are advisable at the following milestones:

- when the draft FS report is completed and
- before remedial action starts.

Addresses and phone numbers of local newspapers are included in Appendix E.

6.0 COMMUNICATION OBJECTIVES AND ACTIVITIES

Effective, efficient communication is essential for a coordinated community relations effort. The purpose of this CRP is to facilitate communication between USACE, St. Louis District, which is responsible for the St. Louis FUSRAP, and its stakeholders. Planning and coordination provide the foundation for this plan. Effective communication between USACE and the public—government officials, interest groups, area residents—will encourage understanding and knowledge of FUSRAP activities, minimizing or avoiding rumors and misinformation.

This plan is intended to continue to enhance open lines of communication with the public. It will, among other benefits, enable public participation in the decision-making process to be conducted in as well-informed a manner as possible.

6.1 Community Relations Objectives

The CRP is the framework for ongoing communications between the public and personnel involved with the St. Louis Sites. The following subsections detail objectives developed as guidelines to be implemented in St. Louis FUSRAP community relations activities.

6.1.1 Inform Area Residents, Media, and Local Officials of the Superfund Cleanup Process and the Role of the U.S. Army Corps of Engineers

Not all area residents, local news media, and others constituting the public are familiar with the Superfund cleanup process or the role of USACE, St. Louis District in site investigation and remediation activities. Information distinguishing between the St. Louis District's other programs and FUSRAP will be provided to enhance community understanding of the roles of those involved in the investigation and cleanup at the sites.

6.1.2 Inform Area Residents, Media, and Local Officials of the Progress of Each Site in Relation to the Cleanup Process

It is recognized that St. Louis FUSRAP is a complicated combination of decisions and activities to understand. Among other considerations is the fact that, at any one time, each of the St. Louis Sites is at a different stage of completion in the remediation process. A specific objective of the FUSRAP community relations program will be to try to clarify these processes whenever and wherever possible. This objective can be achieved by multiple means including, but not limited to, monthly public meetings facilitated by the oversight committee; fact sheets with information about individual sites to be distributed at functions such as neighborhood association meetings; mailing campaigns to interested stakeholders; public speaking events; newsletter publications; and related activities. All printed materials prepared for distribution to the public will be written in a clear, concise, and easily understood format.

6.1.3 Inform the Community of Potential Risks of Site Contaminants on Human Health, Wildlife, and the Environment

Area residents will continue to receive information on actual and potential human health and environmental risks associated with these sites, which is especially important because the St. Louis Sites are in or near the heavily populated St. Louis metropolitan area.

This information will be available to the public through fact sheets, community meetings, press releases, and public speaking events or related activities. The public will receive information regarding the agency's cleanup and responses to site-specific risks. The primary goal of FUSRAP is to protect human health, wildlife, and the environment from unacceptable levels of risk.

6.1.4 Provide Updated Information

Local citizens and government officials alike are concerned about any impact on areas near the St. Louis Sites, activities associated with their cleanup, and the welfare of area residents and businesses. The FUSRAP Project Office will regularly provide relevant communities with current and accurate information about site activities to reduce or eliminate misinformation. Tools such as newsletters and fact sheets will be provided in quantity, whenever appropriate, to area officials, civic groups, and others who can assist in the dissemination of information.

6.1.5 Establish a Communication Link between the FUSRAP Project Team and Other Interested Parties Involved at the Sites

Regular communication will result in a strong, positive, professional relationship with all parties interested in the sites. This relationship will be facilitated through the FUSRAP Project Office, which will regularly listen to the questions and concerns of the public, provide answers, and relay feedback to the project team. The Project Office will establish communication through periodic phone or in-person contacts with community members, interested organizations, local officials, and media members. The Project Office phone, home page address, and mailing address shall be consistently displayed in site publications and advertisements.

6.2 Community Relations Activities

CERCLA requires that community relations activities be conducted throughout the various stages of investigation and cleanup for each site. St. Louis District FUSRAP has undertaken and continues to engage in activities to strengthen communications with interested parties.

6.2.1 Administrative Record and Administrative Record Files

The Administrative Record is a legal file containing only the documents used to select a particular cleanup technique for a site as documented in the ROD. Its purpose is to provide the public with access to site-related information so they can make informed comments on the selection of a cleanup remedy. A copy of the Administrative Record is available for public review at the FUSRAP Project Office for the five St. Louis Sites. Copies of the Administrative Records for the four Missouri sites are available for public review during normal business hours at the St. Louis Public Library located at 1301 Olive Street in St. Louis, Missouri. Copies of the Administrative Records for the Madison, Illinois site are available for public review during normal business hours at the Madison Public Library located at 1700 5th Avenue in Madison, Illinois.

CERCLA has specific reporting requirements and requires that an Administrative Record be collected. This legal file must include documents used to help select a cleanup method, including documents on site activities, general information about the Superfund program, and site-specific information. Until all required documents have been developed and all necessary data have been gathered to select a response action, a complete Administrative Record for that particular site does not exist. In the meantime, a temporary file called an Administrative Record File or Record File is maintained with all available information. This Record File documents current progress and provides the public with current data for the St. Louis Sites. Record Files for each operable unit are available for review at the FUSRAP Project Office and at the St. Louis Public Library located at 1301 Olive Street in St. Louis, Missouri, during normal business hours

Locations of the Administrative Record and Administrative Record Files are listed in Appendix D. Contact names and numbers are also provided so that assistance can be obtained.

While parties interested in reviewing the complete Administrative Record (or Record File) for an operable unit are referred to the St. Louis Public Library or the FUSRAP Project Office, general SLDS information is being maintained at the request of the community in the Henry Clay Elementary School Library. This repository contains only copies of documents contained in the Administrative Record deemed to be of particular interest to the community and not the entire Administrative Record.

6.2.2 Public Comment Periods

A 30-day public comment period is required after the completion of the FS and publication of the lead agency's proposal of a recommended alternative for each site (also known as the PP). The purpose of the comment period is to provide all interested parties, including local officials, residents, and interest groups, an

opportunity to express their opinions on the FS/PP based on the content of the Administrative Record File. The comment period also facilitates public participation in the final decision-making process for site remediation. Comment periods will be announced in major local newspapers of general circulation, such as the *St. Louis Post-Dispatch* or the *Suburban Journals*. In addition, the Project Office shall make appropriate news media contacts to announce comment periods.

Documents for which public comment is sought can be requested by interested parties or reviewed at the locations published in the public notices. Although more appropriate locations could be used in conjunction with or instead of those listed here, historically documents for which public comment is sought have been made available for review at the Julia Davis Branch, St. Louis Public Library; Prairie Commons Branch, St. Louis County Library; St. Louis County Library Headquarters; Washington University, Planetary School Library; and FUSRAP Project Office.

6.2.3 Published Notices

SARA requires a notice and brief description of a PP for remediation of sites to be published in a major local newspaper of general circulation. A notice explaining the remedial design/remedial action for each site must also be published by the lead agency, and the plans must be made available to the public before commencement of any remedial action. Notices or advertisements should also be published to announce public meetings sponsored by the lead agency.

In compliance with the requirements of SARA and in an effort to provide the public with the maximum opportunity to participate in the public involvement activities for each site, St. Louis District FUSRAP will continue to publish announcements for public meetings. While CERCLA requires that public notices be published in a newspaper of general circulation for various milestones in the CERCLA process, further publication may be implemented. Notification of the release of a document for public review/comment, its public comment period, and public meeting information (date, time, location) may be further publicized through the issuance of fliers. Fliers may be distributed by sending them home with area students, forwarding fliers to churches for distribution after services, placing fliers in local shops, or door-to-door distribution at least one week before the meeting. Every effort will be made to encourage coverage by local media through mailed notifications of the event to personnel and faxed notices up to and on the scheduled date of the event. Public meeting notices may also be published, as appropriate, in the *Federal Register*.

In addition, public notices will be published to announce a public review period on a document, the public meeting following the completion of a PP, and the availability of an Administrative Record following the completion of a ROD for a site.

6.2.4 Public Meetings

SARA also requires a public meeting during the comment period and before selection of a remedial action for an NPL site. The public meeting held during the public comment period will provide stakeholders an opportunity to directly express concerns to FUSRAP representatives and to ask questions or provide comments on the recommended remedial alternatives.

Public meetings may be held at other times during the RI/FS process of each site, such as at the start of the fieldwork phase of the RI/FS and at the conclusion of the RI. Planning for public meetings should remain flexible to account for fluctuations in public interest. Possible meeting locations are listed in Appendix C.

FUSRAP will continue to provide the public with an opportunity to speak with representatives of the government agencies involved at the St. Louis Sites at public meetings.

6.2.5 Public Meeting Transcripts

USACE will ensure that a verbatim transcript is taken of each public meeting, as appropriate, held during the public comment period for a recommended alternative. A copy of each public meeting transcript shall be maintained in the appropriate Administrative Record or Administrative Record File and at the FUSRAP Project Office. Public meeting transcripts will be available for the public, and copies can be obtained upon request.

6.2.6 Responsiveness Summary

All substantive comments received during public comment periods will be addressed in a responsiveness summary. The ROD for each operable unit identifies the final cleanup remedy and summarizes the way in which the remedy was chosen by the lead agency. The responsiveness summary documents the comments raised by the public on the selected remedy and records the lead agency's responses to all substantial public comments. Copies of the responsiveness summary appear within the appropriate decisional document in the appropriate Administrative Record or Administrative Record File.

6.2.7 Meetings with Local Officials and Interested Groups

Local government officials and interested community groups will be kept informed of investigation and cleanup activities at the St. Louis Sites, primarily through the St. Louis Sites Oversight Committee. Regularly scheduled phone contact is maintained with EPA and MDNR (known as St. Louis FUSRAP's Missouri regulators). FUSRAP officials will continue to maintain regular contact on a schedule satisfactory to all parties. Additionally, FUSRAP will periodically contact local officials, representatives of interest groups, and the media to update them regarding progress at each site. FUSRAP will also publicize any reasonable opportunities for members of the community to attend public meetings.

FUSRAP representatives are especially attentive to the site information needs of the community, local government, and interest groups in the area. A Speakers Bureau has been made available to the community to discuss areas of interest with concerned groups at their request. USACE site representatives have and will continue to discuss cleanup efforts or areas of expertise such as engineering, management, chemistry, geology, health, and safety. In addition to the public meetings, public hearings, and availability sessions held in the St. Louis area, USACE representatives will continue to meet with community groups, local officials, and others. The phone number and address of the St. Louis FUSRAP Project Office are included in all publications, notices, advertisements, press releases, and other printed material in an attempt to make information as available to the public as possible.

6.2.8 Fact Sheets

Fact sheets, developed at regular intervals during the FUSRAP process for each site, are intended to provide the community with information about site activities in layman's language. Fact sheets have been released at the beginning of the RI for several sites to explain the FUSRAP process and the activities to be conducted during the study. A second fact sheet is often prepared to explain the findings of the RI for each site. Following the FS and development of the PP, a detailed description of the alternatives being considered for the remediation of the St. Louis Sites is provided in a third fact sheet.

An additional fact sheet will be issued to describe the remedial design and remedial action phases to be implemented at each site or to address specific community concerns unique to the site. Copies of the fact sheets will be placed in the Administrative Record/Administrative Record Files for the sites. Adobe Acrobat files of many of the fact sheets are also available on USACE's public-access Web site for the St. Louis FUSRAP sites.

6.2.9 Newsletter

A newsletter will be issued by FUSRAP to inform the community of the status and progress of work at the St. Louis Sites. The newsletters will be developed and distributed regularly during the FUSRAP process. Copies of the newsletters will be placed in each Administrative Record or Administrative Record File for the sites. Adobe Acrobat files of these newsletters are also available on USACE's public-access Web site for the St. Louis FUSRAP sites.

6.2.10 Press Releases

Prepared statements will be released to local newspapers, radio, and television stations to announce any significant actions at the sites. Additional press releases will be issued at the completion of the draft FS report for each site and before initiation of any remedial actions. Press releases will be sent to those on the media list in Appendix E. Press releases will be placed in the Administrative Record and/or the Administrative Record File for the sites and will be available for at least 30 days on USACE's public-access Web site for the St. Louis FUSRAP sites.

Press releases have been used as one of several methods of communicating the findings and activities at the St. Louis Sites to the public. The information in these press releases is often supplemented by fact sheets or discussed at public meetings. FUSRAP will continue to issue press releases to keep the media and the public informed about FUSRAP activities at the St. Louis Sites.

6.2.11 Mailing List

A mailing list of contacts and interested parties was created when the St. Louis Sites were placed on the NPL and/or in FUSRAP. This list contains names of residents, government officials, interest-group representatives, media contacts, and other interested individuals and is maintained by the FUSRAP Project Office. Periodic updating throughout the RI/FS and remedial design/remedial action process for each site and following local political elections will keep the list current. An opportunity for individuals to be included on the mailing list is provided in each fact sheet, newsletter, and public announcement as well as in other public information documents.

A mailing list compiling the names of several hundred individuals and organizations interested in activities at the St. Louis Sites will continue to be maintained. This mailing list will continually be reviewed and updated by the FUSRAP Project Office to provide an up-to-date source for all government and media contacts, in addition to a list of residents and groups. Sign-up cards will be provided at public events to provide the opportunity for interested parties to be included on the mailing list.

6.2.12 Information Contact

The St. Louis District FUSRAP Project Office will serve as the main point of contact to receive and respond to requests for information on St. Louis FUSRAP activities and to coordinate the implementation of this plan. The project coordinator's name, telephone number, and mailing address will be prominently displayed in all site publications and advertisements published by the lead agency.

The St. Louis FUSRAP Program Manager has played an active role in providing site-related information to the public. The Project Office's mailing address and phone number have been displayed on all public notices, fact sheets, updates, and other correspondence. Appendix E lists the names, addresses, and phone numbers of managers for each agency involved in the remediation process.

6.2.13 Revisions or Future Updates to This Community Relations Plan

During the CERCLA remediation process, USACE will revise this CRP every 5 years, or as needed, to account for the changing concerns of the community. Revisions to the CRP will include an assessment of the community relations activities appropriate for the remediation phases of each FUSRAP site. A copy of the revised plan will be placed in each Administrative Record and/or Administrative Record File.

Other CRPs have been prepared for the St. Louis FUSRAP sites in the past under DOE. These plans cited the goals and objectives for community relations efforts at the sites. The original plan, prepared in 1993, included an assessment of community relations activities initiated until that time to facilitate effective communication between FUSRAP representatives and stakeholders. The plan described tasks that had been implemented by the agencies during remedial activities at the St. Louis Sites and identified opportunities for public participation in future activities.

The *Community Relations Plan for the Formerly Utilized Sites Remedial Action Program (FUSRAP), St. Louis Sites (Rev. 1)* was prepared in the fall of 1998 as the first plan developed by USACE, St. Louis District. The plan updated information regarding remediation and public involvement activities conducted since 1993 and identified other activities to be conducted in the near future.

The issuance of revised pages of this plan (marked Revision 4) will mark the third of USACE's routine scheduled updates to ensure that the document remains an effective communication tool.

APPENDIX A
CHRONOLOGY OF COMMUNITY RELATIONS ACTIVITIES TO DATE

APPENDIX A
Chronology of Community Relations Activities to Date

<i>Date</i>	<i>Major Activity</i>	<i>Activity Description</i>
October 1989	National Priorities List (NPL) Listing	St. Louis Airport Site (SLAPS) and Hazelwood Interim Storage Site (HISS) placed on the NPL by EPA
January 1990	Fact Sheet	U.S. Department of Energy (DOE) Evaluating Three Sites in St. Louis Area
January 1990	Fact Sheet	EPA Superfund Technical Assistance Grants
July 1990	Fact Sheet	DOE, EPA Sign Agreement to Coordinate St. Louis Cleanup Activities
August 1990	Fact Sheet	DOE, EPA Sign Agreement to Coordinate St. Louis Cleanup Activities
September 1990	Fact Sheet	DOE, EPA Sign Agreement to Coordinate St. Louis Cleanup Activities
October 1990	Fact Sheet	DOE Responds to Resident Requests for Site Information
November 1990	Fact Sheet	DOE Responds to Resident Requests for Site Information
June 1991	Press Release	DOE Announces the Opening of a Public Comment Period on the St. Louis Downtown Site (SLDS) Engineering Evaluation/Cost Analysis (EE/CA)
June 1991	Public Notice	Newspaper Display by DOE Announcing the Availability of the Administrative Record Files

<i>Date</i>	<i>Major Activity</i>	<i>Activity Description</i>
June 1991	Public Notice	Newspaper Display by DOE Requesting Public Comment and Announcing a Public Meeting for an EE/CA for SLDS Removal Activities
June 1991	Public Notice	<i>Federal Register</i> Floodplain Notice for Remedial Work on HISS Vicinity Properties (VPs)
January 1992	Public Notice	<i>Federal Register</i> Notice of Intent to Prepare a RI/FS - Environmental Impact Statement
January 1992	Press Release	DOE Announces a Public Meeting to Discuss the Development of Environmental Studies
January 1992	Public Notice	DOE Newspaper Display Ad Announcing a Public Meeting to Review Environmental Studies Being Developed
April 1992	Newsletter	Formerly Utilized Sites Remedial Action Program (FUSRAP) Update: The St. Louis Sites
April 1992	Public Notice	DOE Newspaper Display Ad Announcing a Public Meeting to Review an EE/CA for Cleanup of HISS VPs
August 1992	Fact Sheet	FUSRAP
August 1992	Fact Sheet	Principal Laws and Regulations Affecting the FUSRAP Cleanup Program
August 1992	Fact Sheet	Administrative Record Requirements for FUSRAP
August 1992	Fact Sheet	The St. Louis Site
August 1992	Newsletter	FUSRAP Update: The St. Louis Sites
February 1993	Newsletter	FUSRAP Update: St. Louis Information Update

<i>Date</i>	<i>Major Activity</i>	<i>Activity Description</i>
May 1993	Press Release	DOE Announces Availability of Speakers Bureau
May 1993	Fact Sheet	The St. Louis Site, St. Louis, Missouri
June 1993	Public Workshop	Public Workshop Held for Government Officials and Staff Members to Receive Update on DOE Cleanup and Disposal Options Being Developed in the FS
July 1993	Open House	DOE Open House at the Public Information Office at HISS
July 1993	Newsletter	FUSRAP Update: The St. Louis Sites
September 1993	Document	DOE Issues a Revised Community Relations Plan
December 1993	Newsletter	FUSRAP Update: The St. Louis Sites
August 1994	Press Release	DOE Announces Plans to Begin Remediation Efforts in St. Louis
November 1994	Newsletter	FUSRAP Update: The St. Louis Sites
Fall 1995	Newsletter	FUSRAP Update: The St. Louis Sites
Spring 1996	Newsletter	FUSRAP Update: The St. Louis Sites
March 1997	Fact Sheet	St. Louis Sites, St. Louis, Missouri
Spring 1997	Newsletter	FUSRAP Update: The St. Louis Sites
June 1997	Press Release	DOE Announces Technology Demonstration to Be Held at SLAPS
August 1997	Public Notice	DOE Newspaper Display Ad Announcing a Public Meeting to Review a SLAPS EE/CA
Summer 1997	Newsletter	FUSRAP Update: The St. Louis Sites

<i>Date</i>	<i>Major Activity</i>	<i>Activity Description</i>
December 1997	Press Release	U.S. Army Corps of Engineers (USACE) Announces the Completion of SLAPS Phase I-A Activities
February 1998	Newsletter	FUSRAP Update: The St. Louis Sites
March 1998	Fact Sheet	Summary of Activities at SLAPS
March 1998	Fact Sheet	Summary of Activities at HISS
March 1998	Public Notice	USACE Newspaper Display Ad Announcing a Public Meeting to Be Held for a SLAPS EE/CA and a HISS EE/CA
March 1998	Public Notice	USACE Newspaper Display Ad Announcing the Public Availability of the SLAPS EE/CA and the HISS EE/CA
March 1998	Public Meeting	Meeting to Discuss SLAPS EE/CA and HISS EE/CA
April 1998	Fact Sheet	Summary of Activities at SLDS
April 1998	Fact Sheet	SLDS FS
April 1998	Fact Sheet	SLDS Proposed Plan (PP)
April 1998	Public Notice	<i>Federal Register</i> Notice Announcing the Availability of the SLDS FS/PP and the Intent to Hold a Public Meeting to Discuss the Documents
April 1998	Public Notice	USACE Legal Notice Announcing the Public Meeting to Discuss the SLDS FS/PP
April 1998	Public Meeting	Meeting to Discuss the SLDS FS/PP
June 1998	Newsletter	FUSRAP Update: The St. Louis Sites

<i>Date</i>	<i>Major Activity</i>	<i>Activity Description</i>
October 1998	Public Notice	USACE Legal Notice Announcing the Availability of the Administrative Record for SLDS
December 1998	Newsletter	FUSRAP Update: The St. Louis Sites
January 1999	Document	USACE Issues the Revised St. Louis Sites Community Relations Plan
February 1999	Newsletter	FUSRAP Update: The St. Louis Sites
February 1999	Public Notice	USACE Notice Announcing an Open House for the Start of Work on SLDS
February 1999	Fact Sheet	SLDS Record of Decision (ROD)
February 1999	Fact Sheet	SLDS Remedial Action/Remedial Design
February 1999	Open House	USACE holds an Open House at the Henry Clay Elementary School near SLDS to discuss the Beginning of Remedial Action/Remedial Design Work
May 1999	Newsletter	FUSRAP Update: The St. Louis Sites
June 1999	Fact Sheet	What Is FUSRAP?
August 1999	Newsletter	FUSRAP Update: The St. Louis Sites
September 1999	Public Notice	USACE Announces the Availability of the Speakers Bureau
November 1999	Newsletter	FUSRAP Update: The St. Louis Sites
December 1999	Web Site	USACE Releases the Updated St. Louis District FUSRAP Web Site for Public Access
January 2000	Document	USACE Issues the Updated Version of the Revised St. Louis Sites Community Relations Plan

<i>Date</i>	<i>Major Activity</i>	<i>Activity Description</i>
January 2000	Public Notice	<i>Federal Register</i> Notice Announcing Availability of the Madison RI/FS and PP and Intent to Hold a Public Meeting to Discuss the Documents
January 2000	Public Notice	USACE Newspaper Display Ad Announcing the Availability of the Madison RI/FS and PP and Intent to Hold a Public Meeting to Discuss the Documents
February 2000	Public Meeting	Meeting to Discuss the Madison RI/FS and PP
February 2000	Fact Sheet	Summary of the Madison Site RI Report
February 2000	Fact Sheet	Summary of the Madison Site FS
February 2000	Fact Sheet	Summary of the Madison Site PP
April 2000	Public Notice	Madison Site ROD/Administrative Record Completion
May 2000	Newsletter	FUSRAP Update: The St. Louis Sites
September 2000	Newsletter	FUSRAP Update: The St. Louis Sites
September 2000	Public Notice	Madison Site Closeout Report
November 2000	Newsletter	FUSRAP Update: The St. Louis Sites
December 2000	Web Site	St. Louis District FUSRAP Web Site is Updated for Public Access
January 2001	Document	USACE Issues the Updated Version of the Revised St. Louis Sites Community Relations Plans
February 2001	Newsletter	FUSRAP Update: The St. Louis Sites
April 2001	Exhibit	St. Louis Earth Day – Forest Park

<i>Date</i>	<i>Major Activity</i>	<i>Activity Description</i>
June 2001	Newsletter	FUSRAP Update: The St. Louis Sites
June 2001	Correspondence	Landowner/Tenant Contamination Reminder
October 2001	Newsletter	FUSRAP Update: The St. Louis Sites
December 2001	Newsletter	FUSRAP Update: The St. Louis Sites
February 2002	Newsletter	FUSRAP Update: The St. Louis Site
March 2002	Correspondence	Landowner/Tenant Contamination Reminder
April 2002	Exhibit	St. Louis Earth Day - Forest Park
July 2002	Public Notice	Madison Site Completion, Closure Report Issuance, and Transfer of Site Long-Term Stewardship Responsibilities
August 2002	Public Notice	Announcing Environmental Training for the General Public
August 2002	News Release	Announcing Environmental Training for the General Public
August 2002	Workshop	Two-Day Environmental Training Session
August 2002	Fact Sheets	Radiation Basics, Risk Assessment, Applicable or Relevant and Appropriate Requirements, Risk Range, Release, Cleanup, Long-Term Stewardship
September 2002	Correspondence	Forwarding Copies of the August 2002 Fact Sheets to Landowners/Tenants
November 2002	Newsletter	FUSRAP Update: The St. Louis Sites

<i>Date</i>	<i>Major Activity</i>	<i>Activity Description</i>
April 2003	Public Notice	Five-Year Review
April 2003	Correspondence	Letters to Landowners/Tenants on the Activity of the North County FS/PP
May 2003	Interviews	Five-Year Review Community Interviews
May 2003	Public Notice	<i>Federal Register</i> Notice Announcing the Availability of the St. Louis North County Site FS/PP for 30-Day Review
May 2003	Public Notice	USACE Newspaper Display Ad Announcing the Availability of the St. Louis North County Site FS/PP for 30-Day Review
May 2003	Web Site	St. Louis North County Site Web Page Is Launched for Public Access
May 2003	Fact Sheet	North County FS
May 2003	Fact Sheet	North County PP
May 2003	Fact Sheet	North County FS/PP Overview
May 2003	Newsletter	FUSRAP Update: The St. Louis Sites
May 2003	Public Meeting	St. Louis North County Site FS/PP
September 2003	Newsletter	FUSRAP Update: The St. Louis Sites
December 2003	Document	USACE Issues the Updated Version of the Revised St. Louis Sites Community Relations Plan

APPENDIX B
COMMUNITY INTERVIEW QUESTIONNAIRE

Appendix B

Community Interview Questionnaire

In April and May 2003, USACE conducted 30 St. Louis Sites community interviews. These interviews were conducted as a part of the Formerly Utilized Sites remedial Action Program five-year review of the St. Louis Sites program. Respondents were selected to represent communities affected by response actions at the sites.

Respondents included

- property owners,
- business owners,
- elected officials,
- citizen interest groups,
- residents not otherwise affiliated with interest groups,
- local school officials,
- government representatives, and
- community religious leaders.

Five-Year Review Community Interview

Background Information (Neighbors, Community Representatives)

1. What is your overall impression of the project? (general sentiment)
2. What contacts have you had with representatives of the site? Do you feel they were responsive to your concerns?
3. What are your current concerns about the site?
4. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.
5. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency response from local authorities? If so, please give details.
6. Do you feel well-informed about the site's activities and progress? Do you have any suggestions for how information concerning the site should be distributed to the community?
7. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

State and Local Considerations (State Representatives and Local Authorities)

8. What is your overall impression of the project? (general sentiment)
9. What contacts have you had with representatives of the site? Do you feel they were responsive to your concerns?
10. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.
11. What effects have site operations had on the surrounding community?
12. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.
13. Do you feel well informed about the site's activities and progress?
14. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Construction Considerations (Contractor, Manager, Environmental Restoration Officials)

15. What is your overall impression of the project?
16. What is the current status of construction (e.g., budget and schedule)?
17. Have any problems been encountered which required, or will require changes to this remedial design of this Record of Decision?
18. Have any problems or difficulties been encountered that have impacted construction progress or implementability?
19. Do you have any comments, suggestions, or recommendations regarding the project (design, construction documents, constructability, management, regulatory agencies, etc.)?

Technical Considerations (Oversight Agencies, On-Site Representatives)

20. Is the remedy functioning as expected? How well is the remedy performing?
21. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?
22. Is there a continuous on-site presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspection and activities.
23. Have there been any significant changes in the requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.
24. Have there been unexpected difficulties or costs at the site since start-up or in the last five years? If so, please give details.
25. Have there been opportunities to optimize construction or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency.
26. Do you have any comments or suggestions, or recommendations regarding the project?

APPENDIX C
POTENTIAL MEETING LOCATIONS

APPENDIX C
Potential Meeting Locations

Hazelwood Civic Center-East
8969 Dunn Road
Hazelwood, MO 63042
(314) 731-0980

St. Louis County Government Center
7900 Forsythe Boulevard
Clayton, MO 63105
(314) 889-2000

Henry Clay Elementary School
3820 North 14th Street
St. Louis, MO 63107
(314) 231-9608

APPENDIX D
ADMINISTRATIVE RECORD LOCATIONS

APPENDIX D
Administrative Record Locations

St. Louis Public Library
Government Information Section
Ms. Barbara Rehkop
1301 Olive Street
St. Louis, MO 63103
(314) 241-2288

Madison Public Library
1700 5th Street
Madison, IL 62060

U.S. Army Corps of Engineers
FUSRAP Project Office
Ms. Jacqueline Mattingly
8945 Latty Avenue
Berkeley, MO 63134
(314) 260-3924

APPENDIX E
KEY POINTS OF CONTACT

APPENDIX E
Key Points of Contact

Governor

Bob Holden (D)
Missouri Capitol Building, Room 216, P.O. Box 720, Jefferson City, MO 65102-0720
Telephone: (573) 751-3222; Fax: (573) 751-1495
St. Louis Office: (314) 340-6900; Fax: (314) 340-7292

U.S. Senate

Christopher “Kit” Bond (R)
274 Russell Senate Office Building, Washington, DC 20510
Telephone: (202) 224-5721; Fax: (202) 224-8149
E-mail: kit_bond@bond.senate.gov
Internet: bond.senate.gov
St. Louis Office: 7700 Bonhomme, Suite #615, St. Louis, MO 63105
Telephone: (314) 725-4484

Jim Talent (R)
517 Hart Senate Office Building, Washington, DC 20510
Telephone: (202) 224-6154; Fax: (202) 228-1518
Internet: talent.senate.gov
E-mail: senator_talent@talent.senate.gov
St. Louis Office: 111 South Tenth Street, Suite 23.360, St. Louis, MO 63102
Telephone: (314) 436-3416

U.S. House of Representatives

District 1 (St. Louis Downtown Site, St. Louis Airport Site, SLAPS Vivinity Properties (VPs), Hazelwood Interim Storage Site/Latty Avenue VPs): William Lacy Clay, Jr. (D)
131 Cannon House Office Building, Washington, DC 20515
Internet: www.house.gov/clay
Telephone: (202) 225-2406; Fax: (202) 225-1725
St. Louis Office: 625 North Euclid, St. Louis, MO 63108
Telephone: (314) 367-1970; Fax: (314) 367-1341

District 2 (St. Louis Area): Todd Akin (R)
117 Cannon House Office Building, Washington, DC 20515-2502
Telephone: (202) 225-2561; Fax: (202) 225-2563
E-mail: Rep. Akin@mail.house.gov
Internet: www.house.gov/akin
St. Louis Office: 301 Sovereign Court, Suite 201, St. Louis, MO 63011
Telephone: (314) 590-0029; Fax: (314) 590-0037

District 3 (St. Louis Area): Richard “Dick” Gephardt (D)
1226 Longworth House Office Building, Washington, DC 20515-2503
Telephone: (202) 225-2671; Fax: (202) 225-7452
E-mail: gephardt@mail.house.gov
Internet: www.house.gov/gephardt
St. Louis Office: 11140 South Towne Square, Suite 201, St. Louis, MO 63123
Telephone: (314) 894-3400; Fax: (314) 845-8675

Missouri Senate: State Capitol Bldg., Jefferson City, MO 65101

5th District (St. Louis City): Maida Coleman (D); (573) 751-2606; Fax: (573) 751-7638;
E-mail: maida_coleman@senate.state.mo.us

7th District (Hazelwood, Bridgeton, Chesterfield, Champ, Maryland Heights, Country Life Acres, Ballwin, Ellisville, Clarkson Valley): John Loudon (R), (573) 751-9763;
Fax: (573) 522-3379

13th District (Florissant, Spanish Lake CDP, Bellefontaine Neighbors, Riverview): Wayne Goode (D); (573) 751-2420; Fax: (573) 751-2745; E-mail: wgoode@services.state.mo.us

14th District (Berkeley, Ferguson, Calverton Park, Charlack, Norwood Court, Normandy, Pagedale, University City, Pine Lawn): Rita Heard Days (D), (573) 751-4106;
Fax:(573) 751-0467

Missouri House of Representatives: 201 West Capitol Avenue, Jefferson City, MO 65101

58th District (St. Louis City): Rodney R. Hubbard (D); (573) 751-2383;
Fax: (573) 526-0568; E-mail: rhubbard@services.state.mo.us

61st District (St. Louis City): Connie “LaJoyce” Johnson (D); (573) 751-7605; Fax (573) 522-9494; E-mail: cjohnson@services.state.mo.us

70th District (Berkeley, Jennings): Matt Muckler (D); (573) 751-4726; Fax: (573) 522-1778;
E-mail: mmuckler@services.state.mo.us

74th District (Florissant): Thomas E. George (D); (573) 751-2135; Fax: 573-522-2458;
E-mail: tgeorge@services.state.mo.us

75th District (Florissant): Bruce Darroug (D); (573) 751-9760; Fax: (573) 526-1393;
E-mail: bdarroug@services.state.mo.us

76th District (Hazelwood): Michael Spreng (D); (573) 751-9628; Fax: (573) 526-8479;
E-mail: mspreng@services.state.mo.us

78th District (Hazelwood, Bridgeton): Clint Zweifel (D); (573) 751-5365;
Fax: (573) 526-9776; E-mail: czweifel@services.state.mo.us

79th District (Maryland Heights): Albert Joseph Liese (D); (573) 751-1832;
Fax: (573) 751-5123; E-mail: aliese@services.state.mo.us

80th District (Calverton Park, Ferguson): Theodore Hoskins (D); (573) 751-0169;
Fax: (573) 526-9867; E-mail: thoskins@services.state.mo.us

81st District (Spanish Lake): Juanita Head Walton (D); (573) 751-5538;
Fax: (573) 526-0572; E-mail: jwalton@services.state.mo.us

U.S. Army Corps of Engineers

Formerly Utilized Sites Remedial Action Program (FUSRAP) Project Office, Sharon Cotner, FUSRAP Program Manager, 8945 Latty Avenue, Berkeley, MO 63134 (314) 260-3905;
Fax: (314) 260-3941

FUSRAP North St. Louis County Sites Project Manager, Lou Dell' Orco, (314) 260-3932;
Fax: (314) 260-3941

FUSRAP Downtown Site Project Manager, Jacqueline Mattingly, (314) 260-3905;
Fax: (314) 260-3941

Primary Contact: Jacqueline Mattingly, FUSRAP Project Manager; (314) 260-3905;
Fax: (314) 260-3941

Regulatory Contacts

Missouri Department of Natural Resources, Stephen Mahfood, Director, P.O. Box 176, Jefferson City, MO 65102, (573) 751-4732; Fax: (573) 751-7627;
Primary contacts: Ron Kucera (573) 751-3195;
Bob Geller (573) 751-3907; Larry Erickson (573) 751-3907

Missouri Department of Health, Director for Environmental Public Health Sections,
Bryant McNally, Chief; Daryel Brock, Environmental Section Chief,
P.O. Box 570, Jefferson City, MO 65109,
(573) 751-6102; Fax: (573) 526-7377

U.S. Environmental Protection Agency Region VII, Superfund Branch
James Gulliford, Regional Administrator,
901 North 5th St., Kansas City, KS 66101
Primary contact: Dan Wall (913) 551-7710; Fax (573) 551-7063;
Gene Gunn (913) 551-7776

Federal Emergency Management Agency,
Richard (Dick) Hainje, Regional Director, 2323 Grand Blvd., Suite 900,
Kansas City, MO 64108-2670; (816) 283-7060; Fax: (816) 283-7582

Agency for Toxic Substances and Disease Registry, Attn. Shawn Blackshear, 500
State Avenue, Suite 182, Kansas City, KS 66101; (913) 551-1311; Fax: (913) 551-1315

Community Involvement

St. Louis Municipal League, Attn. Tim Fischesser, Executive Director; 121 S.
Meramec Ave., Suite 400; Clayton, MO 63105; (314) 726-4747; Fax: (314) 726-1520

Missouri Coalition for the Environment, Attn. Bea Covington, Executive Director; 6267
Delmar Rd., Suite 2E, St. Louis, MO 63130; (314) 727-0600; Fax: (314) 727-1665

St. Louis Oversight Committee:

Richard Cavanagh (Chair) (314) 615-1635; Fax (314) 854-6435
Anna Ginsburg (Co-Chair) (314) 622-4628; Fax (314) 622-4398

Members: Jack Fraenhoffer, William Brandes, Jan Titus, Thomas Manning,
Sally Price, Nancy Lubiewski John Langerak, Michelle Morgenstern, and Tom Binz

City of St. Louis

City Hall, 1200 Market Street, St. Louis, MO 63103; (314) 622-4089

The city of St. Louis is governed by a mayor and board of aldermen. The mayor is the chief executive, and the 28-member board (elected from wards) is the legislative body. The Airport Authority is an independent agency that is part of the city government.

Mayor: Francis G. Slay (D); (314) 622-3201; Fax: (314) 622-4061

President of Board of Aldermen: James F. Shrewsbury (314) 622-4114

Board of Aldermen: Irene J. Smith, Dionne Flowers, Freeman M. Bosley, Sr., Peggy Ryan, April Ford-Griffin, Lewis E. Reed, Phyllis Young, Stephen Conway, Kenneth Ortmann, Craig Schmid, Matt Villa, Fred Heitert, Alfred Wessels, Jr., Stephen Gregali, Jennifer Florida, Joseph D. Roddy, Terry Kennedy, Michael McMillan, Sharon Tyus, Melinda Long, James Ozier, Colleen M. Sondermann, Tom Bauer, Dan E. Kirner, Irving Clay, Jr., Gregory Carter, Lyda Krewson

Public Safety Director: Samuel Simon, City Hall, Room 401, St. Louis, MO 63103; (314) 622-3391; Fax (314) 622-4392

Comptroller: Darlene Green, City Hall, Room 212, St. Louis, MO 63103-2875; (314) 622-3588

Health and Hospitals Director: Dr. Hugh Stallworth, Director/Health Commissioner, 634 North Grand Boulevard, St. Louis, MO 63178; (314) 612-5100; Fax: (314) 612-5105

Airports Director: Col. Leonard Griggs, Lambert-St. Louis International Airport, P.O. Box 10212, St. Louis, MO 63145; (314) 426-8020

City of Hazelwood

City Hall, 415 Elm Grove Lane, Hazelwood, MO 63042; (314) 839-3700; Fax: (314) 839-0249

The city of Hazelwood is governed by a council/city manager system. The nine-member council consists of eight members elected from wards and a mayor elected at large.

Mayor: T.R. Carr

City Council: Matthew G. Robinson, Robert M. Aubuchon, Norma Caldwell, Mary C. O'Reilly, Peg C. Lampert, Jeanette M. Eberlin-Rizzello, Patricia L. Jackson, Patricia A. Piotrowicz

City Manager: Edwin Carlstrom

City Clerk: Colleen Klos

City of Berkeley

6140 North Hanley Road, Berkeley, MO 63134; (314) 524-3313; Fax: (314) 524-3323

The city of Berkeley is a constitutional charter city-council/manager form of government. The seven-member city council consists of five members elected from wards, one member elected at large, and a mayor elected at large.

Mayor: Babatunde Deinbo

City Council: Gwen Verges, Kyra Watson, Jean Montgomery, Nina S. Schaefer, Louvenia Mathison, Lee Etta Hoskins

City Manager: Joseph King

City Clerk: Caroline Calendar

County of St. Louis

County Government Center, 41 South Central, Clayton, MO 63105; (314) 615-5000
Internet: <http://www.stlouisco.com>

The county of St. Louis is governed by an elected county executive and a county council. The council consists of seven members elected from districts.

County Executive: George “Buzz” Westfall (D); (314) 615-7016; Fax: (314) 615-3727;
E-mail: county_executive@co.st-louis.mo.us

County Council Chairperson: Gregory Quinn (314) 615-5443

County Council:

Charlie A. Dooley (314) 615-5436; Kurt S. Odenwald (314) 615-5441; Gregory F. Quinn (314) 615-5442; Skip Mange (314) 615-5438; Michael O’Mara (314) 615-5439; Kathleen Kelly Burkett (314) 615-5437; John Campisi (314) 615-5442

County Circuit Clerk: Joan M. Gilmer (314) 615-8006

Health Department 111 South Meramec Ave., Clayton, MO 63105

Director: Dr. Jacquelynn A. Meeks (314) 615-1660

Division of Environmental Protection Director: Janet Williams (314) 615-1698

Air, Land, and Water Branch Manager: Mike Zlatic (314) 615-8910

News Media for St. Louis Area Sites

Newspapers

St. Louis Post-Dispatch, Attn: Adam Goodman
900 North Tucker Blvd., St. Louis, MO 63101-1099
(314) 340-8000; Fax: (314) 340-3050

Suburban Journals, Attn: Carolyn Marty (North County)
7751 North Lindberg Blvd., Hazelwood, MO 63042
(314) 972-1111; Fax: (314) 831-7643

Riverfront Times, Attn: Tom Finkel, Editor
6358 Delmar, Suite 200, St. Louis, MO 63103
(314) 615-6666; Fax: (314) 615-6716

Florissant Valley Reporter, Attn: Jeanette Eberlin
100 Rue St. Francois, Suite 114, P.O. Box 69 (63032), Florissant, MO 63032
(314) 839-1111

St. Louis American, Attn: Alvin Reid, Editor
4242 Lindell Blvd., St. Louis, MO 63108
(314) 533-8000; Fax: (314) 533-0038

Independent News, Attn: Bob Lindsay
25 St. Anthony Lane, Florissant, MO 63031
(314) 831-4645; Fax: (314) 831-4566

St. Louis Business Journal, Attn: Patricia Miller
1 Metropolitan Square, St. Louis, MO 63102
(314) 421- 6200; Fax: (314) 621-5031

Television

KMOV-TV (CBS, Channel 4)
One Memorial Dr., St. Louis, MO 63102
(314) 444-6333 (Newsroom); Fax: (314) 621-4775

KPLR-TV (Independent, Channel 11)
2250 Ball Drive, St. Louis, MO 63146
(314) 367-7211; Fax: (314) 454-6431

KSDK-TV (NBC, Channel 5)
1000 Market St., St. Louis, MO 63101
(314) 421-5055; Fax: (314) 444-5164

KTVI-TV (FOX Channel 2)
5915 Berthold Ave., St. Louis, MO 63110
(314) 647-2222; Fax: (314) 644-7419

Radio

KMOX-AM 1120
One Memorial Dr., St. Louis, MO 63102
(314) 444-3234; Fax: (314) 588-1234

KWMU Radio 8001
Natural Bridge Rd., St. Louis, MO 63121
(314) 516-5968; Fax: (314) 516-5993

APPENDIX F
LIST OF ACRONYMS

APPENDIX F
List of Acronyms

AEC	Atomic Energy Commission
ARAR	applicable or relevant and appropriate requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CRP	Community Relations Plan
COC	contaminant of concern
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
EE/CA	engineering evaluation/cost analysis
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
FFA	Federal Facilities Agreement
FS	feasibility study
FUSRAP	Formerly Utilized Sites Remedial Action Program
HISS	Hazelwood Interim Storage Site
IDNS	Illinois Department of Nuclear Safety
LTS	long-term stewardship
MDNR	Missouri Department of Natural Resources
MED	Manhattan Engineer District
NCP	National Oil and Hazardous Substances Contingency Plan
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
ORNL	Oak Ridge National Laboratory
PA	preliminary assessment
RI	remedial investigation
ROD	record of decision
SARA	Superfund Amendments and Reauthorization Act
SI	site investigation
SLAPS	St. Louis Airport Site
SLDS	St. Louis Downtown Site
USACE	U.S. Army Corps of Engineers
SLSRTF	St. Louis Sites Remediation Task Force
VP	Vicinity Property

APPENDIX G
GLOSSARY OF TERMS

APPENDIX G

Glossary of Terms

A

Administrative Record - A statutorily required file of documents that forms the basis of critical decisions made regarding cleanup. It is available for public review and comment.

alpha radiation - The most energetic but least penetrating form of radiation. It can be stopped by a sheet of paper and cannot penetrate human skin. However, if an alpha-emitting isotope is inhaled or ingested, it will cause highly concentrated local damage.

ARARs - Applicable or relevant and appropriate requirements (federal and state environmental standards).

B

baseline risk assessment - The study and estimation of risk from taking no action. Involves estimates of probability and consequence.

beta radiation - High-energy electrons (beta particles) emitted from certain radioactive material. Can pass through 1 to 2 centimeters of water or human flesh and can be shielded against by a thin sheet of aluminum. Beta particles are more deeply penetrating than alpha particles but, because of their smaller size, cause less localized damage.

C

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act (also known as Superfund), the federal law that guides cleanup of hazardous waste sites. A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act. The act created a special tax that goes into a trust fund, commonly known as Superfund, to investigate and clean up abandoned or uncontrolled hazardous waste sites.

characterization - Facility or site sampling, monitoring, and analysis activities to determine the nature and extent of a release. Characterization provides the basis for acquiring the necessary technical information to develop, screen, analyze, and select appropriate cleanup techniques.

cleanup - The general term for environmental restoration, the process designed to ensure that risks to the environment and to human health and safety from waste sites either are eliminated or reduced to prescribed, safe levels.

community relations - Activities required by CERCLA to strengthen communications with interested parties at cleanup sites.

D

decay - The process whereby radioactive particles undergo a change from one form, or isotope, to another, releasing radioactive particles and/or energy.

decay product - An element formed by the radioactive decay of another element; decay products are often radioactive themselves.

decontamination - The removal of unwanted material (typically, radioactive material) from facilities, soil, or equipment by washing, chemical action, mechanical cleansing, or other techniques.

E

EE/CA - An engineering evaluation/cost analysis is an activity performed as part of the CERCLA process that evaluates technically and administratively feasible alternatives to clean up a site.

environmental restoration - The process of environmental cleanup designed to ensure that risks to the environment and to human health and safety from waste sites either are eliminated or reduced to prescribed, safe levels.

erosion control - Methods to control land surface features to prevent erosion by surface water or precipitation runoff.

exposure - A measurement of the displacement of electrons from atoms caused by x-rays or by gamma radiation. Acute exposure generally refers to a high level of exposure of short duration; chronic exposure is lower-level exposure of long duration.

F

FFA - Federal Facility Agreement, an agreement signed in 1990 between the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA) outlining cleanup measures to be undertaken for the St. Louis Sites.

FS - Feasibility study, the Superfund study following a remedial investigation that identifies, develops, evaluates, and selects remedial action alternatives.

G

gabion wall - Antierosion construction of rock-filled, wire baskets.

gamma rays - Penetrating electromagnetic waves or rays emitted from nuclei during radioactive decay, similar to x-rays. Dense materials such as concrete and lead are used to provide shielding against gamma radiation.

groundwater - Water beneath the earth's surface that fills pores between materials such as sand, soil, or gravel. Groundwater is a major source of water for agricultural and industrial purposes and is an important source of drinking water for about half of all Americans.

H

haul road - A road once used to haul materials from one of the St. Louis Sites to another.

I

interim removal action - A cleanup measure performed to protect human health and the environment. Performed before final, comprehensive cleanup actions.

L

low-level waste - Discarded radioactive material such as rags, construction rubble, glass, etc., that is only slightly or moderately contaminated. This waste is usually disposed of by land burial.

N

NCP - National Oil and Hazardous Substances Contingency Plan, the blueprint for implementing CERCLA, which specifies that cleanup remedies must protect human health and the environment. Remedies must also comply with all federal and state environmental standards.

NPL - National Priorities List, the list of the nation's worst Superfund sites. The St. Louis Airport Site (SLAPS) and the Latty Avenue properties were added to the NPL in October 1989.

P

pitchblende - A mineral that contains small quantities of uranium.

PP - Proposed plan, a CERCLA document on which the public comments that summarizes what cleanup remedy has been selected and why.

preliminary assessments - There are historical record reviews of activities at the site that are used to determine the probability of likely locations of hazardous waste disposal areas and that initially establishes the extent of contamination.

R

risk assessment - The study and estimation of risk from a current or proposed activity. Involves estimates of the probability and consequence of an action.

radiation - The emission and propagation of energy, examples of which include sound, heat, or radioactive energy.

radioactive - Giving off, or capable of giving off, radiant energy in the form of particles (alpha or beta radiation) or rays (gamma radiation) by the spontaneous disintegration of the nuclei of atoms. Radioisotopes of elements lose particles and energy through the process of radioactive decay. Elements can decay into different atoms or a different state of the same atom.

radium - Radioactive element with half-life of 1,620 years; highly toxic water-soluble metal; used in medicine, industrial radiography, and as a source of neutrons and radon.

raffinite - The portion of a liquid mixture that remains undissolved.

remedial action - Long-term cleanup activities.

remedial design - A phase of remedial action that follows the remedial investigation/feasibility study and includes development of engineering drawings and specifications for a site cleanup.

remediation - Those activities performed to remove or treat hazardous waste sites or to relieve their effects.

removal action - Interim cleanup activities that are identified, as needed, to protect public health and the environment.

resident - A member of a site's community (residents, property owners, businesses, and employees).

RI - Remedial investigation, the CERCLA process of determining the extent of hazardous substance contamination and, as appropriate, conducting treatability investigations.

RI/FS - Two distinct, but related studies, the remedial investigation and feasibility study. Together, they characterize environmental problems and outline remedial actions to solve those problems.

ROD - Record of decision, a written decision that identifies the selected method for long-term cleanup of contamination at a site.

S

site closeout - Stage at which the site is inspected by the U.S. Environmental Protection Agency (EPA) to confirm the complete remediation of the contamination.

site evaluation - A physical inspection of the site to verify information obtained during the preliminary assessments.

Superfund - The program operated under the legislative authority of CERCLA and the Superfund Reauthorization Act that funds and carries out the EPA solid waste emergency and long-term removal remedial activities. These activities include establishing the NPL, investigating sites for inclusion on the list, determining their priority level on the list, and conducting and/or supervising the ultimately determined cleanup and other remedial actions.

T

thorium - Radioactive element; soft, heavy metal, insoluble in water or alkalides but soluble in acids; progeny of uranium decay; used in the manufacturing of sunlamps and as a potential source of nuclear energy.

treatment - Any activity that alters the chemical or physical nature of a waste to reduce its toxicity or prepare it for disposal.

U

uranium - The heaviest element found in nature. Approximately 997 out of every 1,000 uranium atoms are uranium-238. The remaining 3 atoms are the fissile uranium-235. The uranium-235 atom splits, or fissions, into lighter elements when its nucleus is struck by a neutron.

W

watershed - The drainage area of a stream.

APPENDIX H
FACT SHEETS ISSUED TO DATE



U.S. Army Corps of Engineers
St. Louis District

Summary of Activities at the

ST LOUIS NORTH COUNTY SITE PROPOSED PLAN



"Gateway to Excellence"

The U.S. Army Corps of Engineers (USACE), St. Louis District, is conducting a cleanup program for the St. Louis North County Site. The Site contains soils primarily contaminated with radium, thorium, and uranium as a result of federal defense activities performed under contract with the Manhattan Engineering District and the Atomic Energy Commission during the nation's early atomic energy program in the 1940s and 50s.

The USACE issued a Proposed Plan detailing its preferred cleanup alternative for cleaning up the North County Site on May 1, 2003. The Plan identifies Alternative 5, **Excavation with Institutional Controls Under Roads, Bridges, Railroads, and Other Permanent Structures**, as the USACE's preferred remedy for the North County Site. Public comment and regulatory review will help determine the final remedy selected for the site. The USACE will respond to all significant comments in the North County Record of Decision, which will identify the final remedy for the site based in part upon public comments received during the 30-day review period.

The USACE encourages private citizens to participate fully in the cleanup program.

To learn more about the St. Louis North County Site or to inquire about public involvement opportunities, contact

Jacqueline Mattingly at (314) 260-3924

Or write

St. Louis District, Corps of Engineers

FUSRAP Project Office

8945 Latty Avenue, Berkeley, MO 63134

BACKGROUND

Under contracts with the Manhattan Engineer District and Atomic Energy Commission (MED/AEC), the Mallinckrodt Chemical Plant extracted uranium from ore at the St. Louis Downtown Site (SLDS) in St. Louis, Missouri from 1942 to 1957. During this time and until 1967, radioactive process byproducts were stored at a property adjacent to the Lambert-St. Louis International Airport, which is now referred to as the St. Louis Airport Site (SLAPS). In 1966, the SLAPS wastes were purchased, moved, and stored at a property on Latty Avenue. Part of this property became known as the Hazelwood Interim Storage Site (HISS), while the other part became known as the Futura property. During this move, improper handling, transport and storage of the contamination spread the materials along haul routes and to adjacent properties forming the SLAPS and Latty Avenue Vicinity Properties (VPs). Today these sites, including impacted areas along Coldwater Creek, make up the North County Site.

On October 4, 1989, SLAPS, HISS and Futura were added to the U.S. Environmental Protection Agency's (EPA) National Priorities List (NPL). In 1997, Congress directed the U.S. Army Corps of Engineers (USACE) to oversee the cleanup of all areas within the North County Site under the Formerly Utilized Sites Remedial Action Program.

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act, the USACE issued a Proposed Plan (PP) describing the preferred remedy for the North County Site. The PP provides background information on the North County Site, summarizes the six alternatives under consideration, and presents the USACE's rationale for its preferred remedy. The Plan also outlines the public's role in final decision-making.

THE PREFERRED ALTERNATIVE

The six site-wide alternatives are discussed at length in the Feasibility Study (FS) for the North County Site. The Proposed Plan provides a summary of each alternative, identifies the preferred alternative, and provides the rationale for the selection of this alternative. Based on currently available information, the USACE prefers **Alternative 5, Excavation with Institutional Controls Under Roads, Bridges, Railroads, and Other**

Alternative 1

No Action

Leave site as is with periodic environmental monitoring.

Cost: \$1.5 million

Alternative 2

Partial Excavation and Capping at SLAPS and HISS

Excavate soil from the VPs and dispose out-of-state. Cap SLAPS and HISS and use institutional controls to limit access to contaminated areas.

Cost: \$205 million

Alternative 3

Partial Excavation and Treatment

Excavate impacted soils from VPs and HISS, then consolidate and treat at SLAPS. Use institutional controls to limit access to contaminated areas.

Cost: \$284 million

Alternative 4

Institutional Controls

Use institutional controls such as deed notices, land use restrictions, and zoning restrictions to limit future land use at SLAPS, HISS, and the VPs.

Cost: \$129 million

Alternative 5

Excavation with Institutional Controls Under Roads, Bridges, Railroads, and Other Permanent Structures

Remove contamination to allow unrestricted use at all sites. Control access under roads, bridges, railroads, and other permanent structures.

Cost: \$223 million

Alternative 6

Excavation at all Properties

Excavate impacted soils from all locations, regardless of accessibility, for out-of-state disposal.

Cost: \$286 million

Permanent Structures. This alternative protects human health and the environment and provides the best balance of effectiveness, cost, and implementability.

Alternative 5 uses a combination of excavation and off site disposal of accessible soils and sediments along with institutional controls (e.g. zoning restrictions) to manage soils under roads, bridges, railroads and other permanent structures. More specifically, Alternative 5 includes the following activities:

- Excavate surface soil (0-6 inches) with radionuclide concentrations above background of 5 pCi/g of Ra-226, 14 pCi/g of Th-230, and 50 pCi/g of U-238 by the sum of the ratios (SOR). Excavate subsurface soil (in subsequent layers) with radionuclide concentrations above background of 15 pCi/g of Ra-226, 15 pCi/g of Th-230, and 50 pCi/g of U-238 by SOR.
- Remove sediment below the mean water gradient of Coldwater Creek with radionuclide concentrations above background of 15 pCi of Ra-226, 43 pCi/g of Th-230, or 150 pCi/g of U-238; sediment above the mean water gradient would be addressed to surface and subsurface soil standard listed above.
- Excavation to these criteria allow unrestricted use at all properties except for inaccessible areas under roads, bridges, railroads, and other permanent structures. Institutional Controls (e.g. land use or zoning restrictions) would be placed on soils under roads, bridges, railroads and other permanent structures to ensure these areas are not excavated without appropriate oversight and safety procedures. A Long Term Stewardship Plan would be developed by USACE, in cooperation with site stakeholders, to address the specifics of the institutional controls.
- Dispose excavated soil and sediment at properly permitted disposal sites out-of-state.

In general, the long-term protectiveness of this alternative is high. The total cost is \$223 million.

PUBLIC PARTICIPATION

The USACE encourages public input to ensure the remedy selected for the St. Louis North County Site meets the needs of the local community and is an effective solution to the problem. Based on available information, the Corps of Engineers' preferred alternative is Alternative 5, Excavation with Institutional Controls Under Roads, Bridges, Railroads and Other Permanent Structures. Although Alternative 5 is preferred at the present time, public comments are welcome on all alternatives.

Written comments may be submitted to the USACE, at any time during the 30-day period. Oral comments will be recorded during the May 29, 2003 public meeting. The USACE will respond to all significant comments and will consider these comments when working with the U.S. Environmental Protection Agency (EPA) to select a final remedy. The final remedy will be outlined in the Record of Decision, which will be submitted to EPA later in 2003.



U.S. Army Corps of Engineers
St. Louis District

Summary of Activities at the **ST LOUIS NORTH COUNTY SITE OVERVIEW**



"Gateway to Excellence"

The U.S. Army Corps of Engineers (USACE), St. Louis District, is conducting a cleanup program for the St. Louis North County Site. The Site contains soils primarily contaminated with radium, thorium, and uranium as a result of federal defense activities performed under contract with the Manhattan Engineering District and the Atomic Energy Commission during the nation's early atomic energy program in the 1940s and 50s.

The USACE issued a Feasibility Study identifying and evaluating alternatives for cleaning up the North County Site as well as a Proposed Plan detailing the preferred cleanup alternative on May 1, 2003. The Plan identifies **Alternative 5, Excavation with Institutional Controls Under Roads, Bridges, Railroads, and Other Permanent Structures**, as the USACE's preferred remedy for the North County Site. Public comment and regulatory review will help determine the remedy selected for the site. The USACE will respond to all significant comments in the North County Record of Decision, which will identify the final remedy for the site based in part upon public comments received during the 30-day review period.

The USACE encourages private citizens to participate fully in the cleanup program.

To learn more about the St. Louis North County Site or to inquire about public involvement opportunities, contact

Jacqueline Mattingly at (314) 260-3924

Or write

St. Louis District, Corps of Engineers
FUSRAP Project Office
8945 Latty Avenue, Berkeley, MO 63134

BACKGROUND

Under contracts with the Manhattan Engineer District and Atomic Energy Commission (MED/AEC), the Mallinckrodt Chemical Plant extracted uranium from ore at the St. Louis Downtown Site (SLDS) in St. Louis, Missouri from 1942 to 1957. The processing of uranium left radioactive contamination at the site. A Record of Decision (ROD), which was developed to address the contamination in accessible soils and groundwater at SLDS based upon public input, was signed in 1998.

From 1946 until 1967, radioactive process byproducts were stored on 21.7-acres of property adjacent to the Lambert-St. Louis International Airport, which is now referred to as the St. Louis Airport Site (SLAPS). In 1966, the SLAPS wastes were purchased, moved, and stored at a property on Latty Avenue. The eastern part of this property later became known as the Hazelwood Interim Storage Site (HISS), while the western part became known as Futura. During this move, improper handling, transport and storage of the contamination spread the materials along haul routes and to adjacent properties forming the SLAPS and Latty Avenue Vicinity Properties (VPs). Today these sites, including impacted areas along Coldwater Creek, make up the North County Site.

The North County Site is part of the Formerly Utilized Sites Remedial Action Program (FUSRAP), a program managed by the U.S. Department of Energy (DOE) until 1997. On October 4, 1989, Congress added SLAPS, HISS and Futura to the U.S. Environmental Protection Agency's (EPA) National Priorities List (NPL). In 1990, the EPA and DOE negotiated a Federal Facilities Agreement, which described the process that would be used to cleanup MED/AEC contamination in St. Louis. At the direction of Congress, the U.S. Army Corps of Engineers (USACE) became responsible for the cleanup of FUSRAP sites in 1997.

In accordance with the Comprehensive Environmental Response, Compensation and Liability Act, the USACE has based their approach to cleaning up the North County Site on data and findings contained within six key documents: the Remedial Investigation, the Baseline Risk Assessment, the Ecological Risk Assessment, SLAPS & HISS Engineering Evaluation/ Cost Analyses (EE/CAs), and the Feasibility Study. These documents are available to the public through the North County Administrative Record File, which is maintained at both the FUSRAP Project Office and the City of St. Louis Public Library. A Proposed Plan identifying the USACE's preferred

Alternative 1

No Action

Leave site as is with periodic environmental monitoring.

Cost: \$1.5 million

Alternative 2

Partial Excavation and Capping at SLAPS and HISS

Excavate soil from the VPs and dispose out-of-state. Cap SLAPS and HISS and use institutional controls to limit access to contaminated areas.

Cost: \$205 million

Alternative 3

Partial Excavation and Treatment

Excavate impacted soils from VPs and HISS, then consolidate and treat at SLAPS. Use institutional controls to limit access to contaminated areas.

Cost: \$284 million

Alternative 4

Institutional Controls

Use institutional controls such as deed notices, land use restrictions, and zoning restrictions to limit future land use at SLAPS, HISS, and the VPs.

Cost: \$129 million

Alternative 5

Excavation with Institutional Controls Under Roads, Bridges, Railroads, and Other Permanent Structures

Remove contamination to allow unrestricted use at all sites. Control access under roads, bridges, railroads, and other permanent structures.

Cost: \$223 million

Alternative 6

Excavation at all Properties

Excavate impacted soils from all locations, regardless of accessibility, for out-of-state disposal.

Cost: \$286 million

remedy for site cleanup is also available for review at both locations. The final cleanup remedy will be outlined in the Record of Decision, which will be submitted to the EPA and Missouri Department of Natural Resources later this year.

EARLY REMOVAL ACTIVITIES

While developing a comprehensive cleanup strategy for the North County Site, DOE developed interim actions to minimize exposure to contaminated materials. The first of these actions took place in 1985 when DOE built a retaining wall at SLAPS along the bank of Coldwater Creek to combat erosion. In 1997, the DOE removed approximately 5,100 cubic yards of contaminated material from the west end of SLAPS next to the retaining wall and shipped it to an out-of-state disposal facility.

Under the 1998 SLAPS EE/CA, the USACE began efforts to stabilize SLAPS and constructed a sedimentation basin to limit the migration of contamination from SLAPS via stormwater runoff. A rail spur was also installed on SLAPS in 1998 to provide for shipment of contaminated materials removed. Since 1998, an estimated 280,000 cubic yards of contaminated soils from the northern and eastern portions of SLAPS have been removed. Additional removals are ongoing. To date, all material has been shipped to out-of-state disposal facilities.

At HISS, the USACE removed storage piles under the 1998 HISS EE/CA. Before the pile removal began, a rail spur was built along the eastern boundary of HISS to allow shipment directly from the site. Removal of the storage piles began in March 2000 and was completed about 18 months later. Nearly 58,000 cubic yards were removed.

Removal actions have also been conducted at SLAPS and Latty Avenue VPs. Between 1995 and 1997, DOE excavated contaminated soils from the frontages of 30 properties along Hazelwood Boulevard, Latty Avenue and Frost Avenue.

PUBLIC PARTICIPATION

The USACE encourages public input to ensure the remedy selected for the North County Site meets the needs of the local community and is an effective solution to the problem.

Comments on the proposed alternatives will be accepted by the USACE for 30 days after the Feasibility Study and Proposed Plan are issued, unless a request for an extension is received. Verbal comments will be recorded during the May 29, 2003 public meeting at the Hazelwood Civic Center – East. Written comments may be submitted at anytime during the 30-day comment period, which currently ends May 30, 2003. The USACE will respond to all significant comments in the North County Record of Decision and will consider these comments when working with EPA to make a final decision. Interested parties should regularly check the FUSRAP website for current information at www.mvs.usace.army.mil/engr/fusrap/home2.htm.



U.S. Army Corps of Engineers
St. Louis District

Summary of Activities at the **ST LOUIS NORTH COUNTY SITE FEASIBILITY STUDY**



"Gateway to Excellence"

The U.S. Army Corps of Engineers (USACE), St. Louis District, is conducting a cleanup program for the St. Louis North County Site. The Site contains soils primarily contaminated with radium, thorium, and uranium as a result of federal defense activities performed under contract with the Manhattan Engineering District and the Atomic Energy Commission during the nation's early atomic energy program in the 1940s and 50s.

On May 1, 2003, The USACE issued a Feasibility Study identifying and evaluating six alternatives for the North County Site. Public comment and regulatory review will help determine the remedy selected for the site. The USACE will respond to all significant comments in the North County Record of Decision, which will identify the final remedy for the site based in part upon public comments received during the 30-day review period.

The USACE encourages private citizens to participate fully in the cleanup program.

To learn more about the St. Louis North County Site or to inquire about public involvement opportunities, contact

Jacqueline Mattingly at (314) 260-3924

Or write

St. Louis District, Corps of Engineers
FUSRAP Project Office
8945 Latty Avenue, Berkeley, MO 63134

BACKGROUND

Under contracts with the Manhattan Engineer District and Atomic Energy Commission (MED/AEC), the Mallinckrodt Chemical Plant extracted uranium from ore at the St. Louis Downtown Site (SLDS) in St. Louis, Missouri from 1942 to 1957. During this time and until 1967, radioactive process byproducts were stored at a property adjacent to the Lambert-St. Louis International Airport, which is now referred to as the St. Louis Airport Site (SLAPS). In 1966, the SLAPS wastes were purchased, moved, and stored at a property on Latty Avenue, which became known as the Hazelwood Interim Storage Site (HISS) and Futura property. During this move, improper handling, transport and storage of the contamination spread the materials along haul routes and to adjacent properties forming the SLAPS and Latty Avenue Vicinity Properties (VPs). Today these sites, including impacted areas along Coldwater Creek, make up the North County Site.

On October 4, 1989, SLAPS, HISS and Futura were added to the U.S. Environmental Protection Agency's (EPA) National Priorities List (NPL). In 1997, Congress directed the U.S. Army Corps of Engineers (USACE) to oversee the cleanup of all areas within the North County Site under the Formerly Utilized Sites Remedial Action Program (FUSRAP).

CONTAMINANTS OF CONCERN

The radioactive contaminants of concern at the North County Site consist primarily of radium, thorium, and uranium. Investigations conducted to date indicate that these contaminants exist at levels requiring action for soils and sediments at the North County Site. Usable groundwater does not appear to be impacted.

SUMMARY OF ALTERNATIVES

Alternative 1 – No Action

This alternative includes no further excavation for the North County Site. It is required by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to act as a baseline alternative for comparison with other alternatives. The cost of Alternative 1 is \$1.5 million over a 30-year period because of the cost to conduct recurrent 5-year reviews.

Alternative 2 – Partial Excavation and Capping at SLAPS and HISS/Futura
Alternative 2 includes excavation of impacted soils from the VPs for out-of-state disposal. SLAPS and HISS/Futura would be capped with stone and clean

Alternative 1

No Action

Leave site as is with periodic environmental monitoring.

Cost: \$1.5 million

Alternative 2

Partial Excavation and Capping at SLAPS and HISS

Excavate soil from the VPs and dispose out-of-state. Cap SLAPS and HISS and use institutional controls to limit access to contaminated areas.

Cost: \$205 million

Alternative 3

Partial Excavation and Treatment

Excavate impacted soils from VPs and HISS, then consolidate and treat at SLAPS. Use institutional controls to limit access to contaminated areas.

Cost: \$284 million

Alternative 4

Institutional Controls

Use institutional controls such as deed notices, land use restrictions, and zoning restrictions to limit future land use at SLAPS, HISS, and the VPs.

Cost: \$129 million

Alternative 5

Excavation with Institutional Controls Under Roads, Bridges, Railroads, and Other Permanent Structures

Remove contamination to allow unrestricted use at all sites. Control access under roads, bridges, railroads, and other permanent structures.

Cost: \$223 million

Alternative 6

Excavation at all Properties

Excavate impacted soils from all locations, regardless of accessibility, for out-of-state disposal.

Cost: \$286 million

soil. Institutional controls (e.g. zoning restrictions, etc.) would be used to restrict future land use at SLAPS, HISS/Futura and Coldwater Creek and to control soils beneath roads, bridges, railroads, and other permanent structures. The total cost is \$205 million.

Alternative 3 – Partial Excavation and Treatment at SLAPS

This alternative includes excavation of impacted soils and sediments from HISS/Futura, the VPs and Coldwater Creek. The excavated soils would be consolidated at SLAPS for treatment (soil sorting and washing). Soils that meet supplemental standards would be used as backfill at SLAPS then covered with clean soils. Soils not meeting supplemental standards would be disposed of out-of-state. Institutional controls (e.g. zoning restrictions, etc.) would be used to restrict future land use at SLAPS and to control soils beneath roads, bridges, railroads, and other permanent structures. The total cost is \$284 million.

Alternative 4 – Institutional Controls (No Further Excavation)

Alternative 4 consists of limiting the future land use at SLAPS, HISS/Futura, VPs, Coldwater Creek and controlling soils beneath roads, bridges, railroads, and other permanent structures using institutional controls (e.g. deed notices, land use restrictions, and zoning restrictions). Institutional controls and site maintenance would be implemented to prevent unacceptable exposures to site contamination. The total cost is \$129 million.

Alternative 5 – Excavation with Institutional Controls Under Roads, Bridges, Railroads, and Other Permanent Structures

This alternative uses a combination of excavation with out-of-state disposal for accessible soils. Institutional controls (e.g. zoning restrictions, etc.) would be implemented to control soils under roads, bridges, railroads, and other permanent structures. The total cost is \$223 million.

Alternative 6 – Excavation at all Properties

Alternative 6 includes excavation of impacted soils from all locations, regardless of accessibility, for out-of-state disposal so that no institutional controls are required. All difficult-to-access soils under roads, bridges, railroads, and other permanent structures would be excavated under this alternative. The total cost is \$286 million.

PUBLIC PARTICIPATION

The USACE encourages public input to ensure the remedy selected for the St. Louis North County Site meets the needs of the local community and is an effective solution to the problem. Based on available information, the Corps of Engineers' preferred alternative is Alternative 5, Excavation with Institutional Controls Under Roads, Bridges, Railroads and Other Permanent Structures. Although Alternative 5 is preferred at the present time, public comments are welcome on all alternatives.

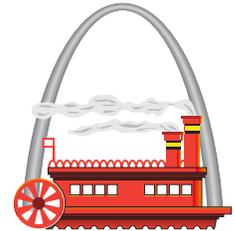
Written comments may be submitted to the USACE, at any time during the 30-day period. Oral comments will be recorded during the May 29, 2003 public meeting. The USACE will respond to all significant comments and will consider these comments when working with the U.S. Environmental Protection Agency (EPA) to select a final remedy. The final remedy will be outlined in the Record of Decision, which will be submitted to EPA later in 2003.



U.S. Army Corps of Engineers
St. Louis District

St. Louis Sites Fact Sheet

LONG-TERM STEWARDSHIP



"Gateway to Excellence"

The United States Army Corps of Engineers (USACE), St. Louis District, is conducting a radiological cleanup program for four Missouri sites (SLDS, SLAPS, SLAPS VPs, HISS). These sites contain soils contaminated with radium, thorium, and uranium as a result of activities associated with the Manhattan Engineer District/Atomic Energy Commission during the nation's early atomic program in the 1940s and 50s.

"Long-term Stewardship" includes all activities necessary to protect human health and the environment at sites that have residual contamination present after "cleanup" is complete. Long-term stewardship includes all engineered and institutional controls designed to contain or prevent exposure to residual contamination, such as surveillance activities, record-keeping activities, inspections, site monitoring, maintenance of barriers and contaminant structures, access control and posting signs.

The Long-term Stewardship Plan is being developed for the FUSRAP St. Louis Sites now to allow plenty of time for technical, managerial and financial planning.

The Corps of Engineers encourages private citizens to participate fully in the cleanup program.

To learn more about FUSRAP or to inquire about public involvement opportunities, contact the FUSRAP Project Office at (314) 260-3924 or write to the St. Louis District, Corps of Engineers, FUSRAP Project Office, 8945 Latty Avenue, Berkeley, Missouri 63134

WHAT IS LONG-TERM STEWARDSHIP?

"Long-term Stewardship" includes all activities necessary to protect human health and the environment at sites that have residual contamination present after "cleanup" is complete. Long-term stewardship includes all engineered and institutional controls designed to contain or prevent exposure to residual contamination, such as surveillance activities, record-keeping activities, inspections, site monitoring, maintenance of barriers and contaminant structures, access control and posting signs.

WHY IS A LONG-TERM STEWARDSHIP PROGRAM NEEDED?

The U.S. Army Corps of Engineers has made significant progress in cleaning up contamination left behind in St. Louis from the nation's early atomic program. However, some areas cannot be remediated to levels that allow for unrestricted use because of prohibitive costs, and worker safety issues. Long-term stewardship will be required to ensure that remedies remain effective because of the nature of the contaminants involved. Long-term stewardship is being addressed as a discrete program to maximize the effectiveness of its implementation and to enable the measurement of performance.

HOW WILL THE LONG-TERM STEWARDSHIP PROGRAM BE IMPLEMENTED?

Long-term stewardship will be implemented as described in the Long-term Stewardship Plan. This plan is currently being developed and coordinated by representatives of the Corps, U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), Missouri Department of Natural Resources (MDNR), local municipalities, utility companies, and the Oversight Committee. The community is also strongly encouraged to participate in the development of the long-term stewardship plan. In order to be effective, the Long-term Stewardship Plan will require community awareness of the exposure threat and assistance in establishing and maintaining the necessary controls. The long-term stewardship plan will identify activities necessary to ensure the continued protection of human health and the environment where residual hazards remain.

WHAT WILL THE LONG-TERM STEWARDSHIP PROGRAM ENTAIL?

Fundamentally, long-term stewardship programs require three attributes to be successful: responsibility, adaptability, and long-term effectiveness. Stewardship of contaminated sites requires that society (federal, state, local government agencies, and individuals) be willing to accept responsibility for ensuring a safe environment for current and future generations for the lifespan of the contaminants. Long-term stewardship programs must be adaptable to ensure the continued protectiveness of a remedy despite potentially changing physical and sociological demands. To maximize its long-term effectiveness, a layered and flexible system of controls must be employed and appropriate contingency plans developed to address unanticipated adverse events.

The primary function of long-term stewardship is to ensure protection of human health and the environment until the managed waste materials are no longer hazardous. The following four tools of stewardship will be used to accomplish this at the St. Louis FUSRAP Sites.

- **Site Monitoring, Maintenance, and Reporting** – Site monitoring includes periodic inspections to verify that engineered structures and barriers constructed to isolate hazards from the environment are intact. Maintenance activities could consist of repair of structures, replacement of signs and markers, and routine maintenance of security features such as fencing. All site activities must be documented for the archives.
- **Institutional Controls** – Institutional controls are administrative and/or legal controls that minimize the potential for human exposure to contamination by limiting land or resource use. Institutional controls include zoning restrictions, use permits, well-drilling restrictions, and other restrictions administered under local government authority (such as deed restrictions, and easements to control land use).
- **Information and Records Management** – Information and records management consists of storing, preserving, and providing access to background and design information and to activity reports for long-term stewardship sites. This information is available for use by the general public, and other stakeholders. It must be maintained for the use of future generations long after the initial custodians are gone.
- **Environmental Monitoring** – Environmental monitoring is conducted for any area in which hazardous material remains on site in excess of the cleanup criteria after completion of the remedial action as part of the 5-year review process required by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Environmental monitoring is performed to verify continued remedy performance and to provide an early indication of any problems that develop. Environmental monitoring can include air monitoring, surface water and groundwater monitoring, vegetation monitoring, soil and sediment sampling and monitoring, and wildlife assessments. It should be noted, however, that if a property meets the “unrestricted use and unlimited exposure” requirement (that is property can be used for any purpose), no further action is necessary.

Ultimately, all of these elements must work together to maintain the protectiveness of the site.

WHO WILL IMPLEMENT THE LONG-TERM STEWARDSHIP PROGRAM?

The process of establishing a reliable Long-term Stewardship program requires a collaborative team effort between property owners, local municipalities, state and federal agencies. At the federal level, responsibility for the long-term stewardship program is split between the USACE and the DOE. Under the Memorandum of Understanding between these two federal agencies, the DOE will become responsible for implementing the program two years after the USACE completes the site remedy. Until the 2-year period is up, the Corps will be responsible for long-term stewardship responsibilities.



Implementation of the Long Term Stewardship Program will be a team effort involving property owners, local municipalities, and state and federal agencies.



U.S. Army Corps of Engineers
St. Louis District

St. Louis Sites Fact Sheet

CLEANUP



The United States Army Corps of Engineers (USACE), St. Louis District, is conducting a radiological cleanup program for four Missouri sites (SLDS, SLAPS, SLAPS VPs, HISS). These sites contain soils contaminated with radium, thorium, and uranium as a result of activities associated with the Manhattan Engineer District/Atomic Energy Commission during the nation's early atomic program in the 1940s and 50s.

There are basic actions required to carry out a cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): sampling, remedy design, implementation, release, and ultimately final closeout. This fact sheet explains each of these actions and its purpose in the process.

The Corps of Engineers encourages private citizens to participate fully in the cleanup program.

To learn more about FUSRAP or to inquire about public involvement opportunities, contact the FUSRAP Project Office at (314) 260-3924 or write to the St. Louis District, Corps of Engineers, FUSRAP Project Office, 8945 Latty Avenue, Berkeley, Missouri 63134

While specific cleanup activities vary depending upon the final remedy selected, the basic process required to carry out a cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is similar. Unless the "no further action" remedy is selected for a site, the cleanup process typically includes sampling (or Pre-Design Investigation), design (or Remedial Design), implementation (or Remedial Action), release (or Post Remedial Action Report), and ultimately final closeout/five year reviews. Many of the actions described herein are typical of cleanup activities for the cleanup of the St. Louis FUSRAP Sites under CERCLA. Let's look at each of these in turn.

SAMPLING (PRE-DESIGN INVESTIGATION)

The cleanup process begins with sampling (referred to as the Pre-Design Investigation) to identify the potential problem areas. The Corps collects data, conducts interviews and researches the historical use of the site to identify these areas. Potentially impacted areas could be the result of material storage, waste processing activities, or migration via wind or storm-water runoff.

A radiological walkover, using an instrument that detects radioactivity, is then conducted. A technician scans the site to determine whether areas of elevated radiological activity exist. Based on the results from the walkover, soil samples are collected to define the concentration and limits of contamination within any elevated areas located during the walkover. Systematic samples are collected to document concentrations within portions of the area that do not have elevated levels of contamination. The results of these activities are documented in the Preliminary Design Investigation Report.

DESIGN (REMEDIAL DESIGN)

Based on the Pre-Design Investigation Report, the remedial design develops the engineering approach and procedures required to safely carry out the selected remedy presented in the Record of Decision. Draft copies of the remedial design are provided to the Environmental Protection Agency (EPA) and Missouri Department of Natural Resources (MDNR) for review and comment. Once their comments have been addressed, the document is finalized and cleanup work can begin.

IMPLEMENTATION (REMEDIAL ACTION)

The remedial action implements the remedial design. The final remedy carried out at the site (for example capping, on-site disposal cell, treatment, or partial/complete excavation) is the one identified in the Record of Decision. Because each of these remedies may include excavation either as the remedy or a component of the remedy, this section will discuss the requirements of excavation as an example of how a remedial action is carried out.

The actual removal or excavation is composed of two parts: gross excavation and guided or “precision” excavation. Gross excavation uses a bulldozer or excavator to remove large volumes of contaminated soil to a predetermined depth. A radiation technician then walks over the hole with radiological detection equipment to identify hot spots (or isolated areas where contaminated soils remain).

Any hotspots are marked and excavated. This is referred to as “guided excavation” since limited portions of the work area require excavation to a deeper elevation to achieve the selected remedy. Precision excavation minimizes the potential for cross-contamination of clean areas.



RELEASE (POST REMEDIAL ACTION REPORT)

To ensure the site meets remediation goals established in the Record of Decision, a final status survey is performed. Continuing the example provided in the previous section, let’s look at how an excavated site is released. (Note, however, that other activities might be required to evaluate the success of other remedies.) After the site contractor believes the remedial goals have been achieved, the Corps sends an independent contractor to the site to conduct a radiological walkover and collect samples to verify that the remediation goals have been achieved. The Corps reviews the sample data to determine whether the area meets the Record of Decision goals and can be backfilled with clean material, or additional soil removal is necessary.

The effectiveness of the cleanup, and compliance with the Record of Decision are documented in the Post Remedial Action Report (or PRAR). Further, the PRAR also documents the condition of the site after the cleanup, and whether any restrictions for future land use (such as deed restrictions, or restrictions on the installation of wells) are necessary. Copies of the draft report are given to the property owner, the EPA, and the MDNR for review and comment prior to being issued in final form. The PRAR should be maintained with property information in a secure location since this information is useful should the landowner decide to sell the property, make property improvements or undertake actions that disturb the ground surface, such as grading.

CLOSE OUT / 5-YEAR REVIEWS

It should be noted that while these activities (that is sampling, remedy design, and implementation) occur in a step-by-step process in each area, they may occur simultaneously in various portions of the site. The close out process is the only activity that must wait until all the areas comprising a site have been cleaned up. Due to the size and complexity of some sites, along with budget constraints, it becomes necessary to split the site into manageable areas. The cleanup status of each area will be defined in a PRAR. Once all of the areas comprising the site meet the remedial goals set in the Record of Decision, the site can be closed out. The PRARs are then compiled into a single document called a Final Closeout Report. If a property meets the “unrestricted use and unlimited exposure” requirement, no further action is necessary. If a property does not meet this scenario (that is, contaminants remain above levels that allow for unlimited use and unrestricted exposure), 5-year reviews are required to determine whether the remedy identified in the Record of Decision is still protective of human health and the environment.



U.S. Army Corps of Engineers
St. Louis District

St. Louis Sites Fact Sheet

RELEASE



"Gateway to Excellence"

The United States Army Corps of Engineers (USACE), St. Louis District, is conducting a radiological cleanup program for four Missouri sites (SLDS, SLAPS, SLAPS VPs, HISS). These sites contain soils contaminated with radium, thorium, and uranium as a result of activities associated with the Manhattan Engineer District/Atomic Energy Commission during the nation's early atomic program in the 1940s and 50s.

When a property is "released", it means that the cleanup of the property has met the goals identified in the Record of Decision. Two key terms are important when the USACE makes a determination of release for a property in the Post Remedial Action Report. These terms are restricted use and unrestricted use. This fact sheet explains these terms and the circumstances under which each is assigned.

The Corps of Engineers encourages private citizens to participate fully in the cleanup program.

To learn more about FUSRAP or to inquire about public involvement opportunities, contact the FUSRAP Project Office at (314) 260-3924 or write to the St. Louis District, Corps of Engineers, FUSRAP Project Office, 8945 Latty Avenue, Berkeley, Missouri 63134

When a property is "released", it means that the cleanup of the property has met the goals identified in the Record of Decision. The property's release status is documented in a Post Remedial Action Report (PRAR) prepared by the U.S. Army Corps of Engineers. This report documents the effectiveness of the cleanup, demonstrates compliance with the Record of Decision, and any restrictions placed on the future use of the property.

Before finalizing the PRAR, the U.S. Environmental Protection Agency (EPA), the Missouri Department of Natural Resources (MDNR) and the property owner receive copies of the document for review and comment. The Corps then addresses those comments, incorporates changes as required, and distributes the final document.

Two key phrases are important when the Corps makes a determination of release at a property in the PRAR. These phrases are "restricted use," and "unrestricted use and unlimited exposure".

RESTRICTED USE

"Restricted use" refers to any remedial action that does not allow for unlimited use and an unrestricted exposure. Institutional controls (such as deed restrictions) or engineering controls (such as fences) are necessary to prevent an unanticipated land use change that could result in



unacceptable exposure to human health and the environment from the remaining contamination. Simplified, the controls ensure that the cleanup remains effective.

Institutional controls or engineering controls are relied upon for the period during which the radioactivity could present a threat to human health and the environment. These controls would be maintained until the material was removed or an assessment showed that the residual contamination met unrestricted use standards.

After the completion of the cleanup, a review of the site is conducted once every 5 years to evaluate the performance of the remedy and determine whether the remedy is/will continue to be protective of human health and the environment. The 5-year review typically includes document review, site inspection, monitoring results and documentation of the effectiveness of the institutional or engineered controls. The 5-year reviews continue until the area meets the unrestricted use and unlimited exposure standard.

UNRESTRICTED USE AND UNLIMITED EXPOSURE

“Unrestricted use and unlimited exposure” means that the property owner can use the land for any purpose with no institutional or engineering controls. Cleanup to “unrestricted use” is not always practical. Areas where contamination is present under permanent structures (such as roads, buildings, railroads or bridges) and poses little to no risk to human health or the environment in its current state. Areas where efforts to cleanup to “unrestricted use” would present a significant safety risk or where such cleanup would be prohibitively costly are best addressed by using institutional and/or engineering controls until access can be granted to the government.

The next step is the site closeout and deletion from the National Priorities List (NPL), if applicable. The site closeout is a stand-alone document that provides a consolidated record of all removal activities for the site. The document made available for public review before it is finalized.



U.S. Army Corps of Engineers
St. Louis District

St. Louis Sites Fact Sheet

RISK RANGE



The United States Army Corps of Engineers (USACE), St. Louis District, is conducting a radiological cleanup program for four Missouri sites (SLDS, SLAPS, SLAPS VPs, HISS). These sites contain soils contaminated with radium, thorium, and uranium as a result of activities associated with the Manhattan Engineer District/Atomic Energy Commission during the nation's early atomic program in the 1940s and 50s.

The CERCLA acceptable risk range is defined as the risk of one additional cancer in 10,000 to one additional cancer in 1,000,000 (or in scientific notation 10^{-4} to 10^{-6}). The risk range is used in the CERCLA process in three instances: the baseline risk assessment during the Remedial Investigation, development of remedial goals in the Feasibility Study, and in the documentation of protectiveness of the final site conditions during the Site Closeout.

The Corps of Engineers encourages private citizens to participate fully in the cleanup program.

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WHAT IS THE "ACCEPTABLE RISK RANGE" AND WHY IS IT USED?

Under the Comprehensive Environmental Restoration, Compensation, and Liability Act (CERCLA), the acceptable risk range is defined as risk falling somewhere between 1 additional cancer in 10,000 and 1 additional cancer in 1,000,000. It is used in three instances: the baseline risk assessment during the Remedial Investigation, development of remedial goals in the Feasibility Study, and in the documentation of protectiveness of the final site conditions during the Site Closeout. The risk assessment is used to quantify threats posed by a hazardous substance to human health and the environment. The results of the risk assessment are used to establish the basis for taking a remedial action and aid in the development of cleanup alternatives during the Feasibility Study. The condition of the site after cleanup is documented in the Post Remedial Action Report (PRAR), which ultimately becomes part of the final Site Closeout Report.

RISK RANGE IN THE RISK ASSESSMENT

Whether or not a risk is unacceptable is based on a comparison of the total current (and/or future) risks to the acceptable risk range. The acceptable risk range is defined as risk falling somewhere between 1 additional cancer in 10,000 and one additional cancer in 1,000,000. This range is commonly expressed as 10^{-4} to 10^{-6} . When the risk assessment indicates the total risk to an individual exceeds the 10^{-4} end of the risk range, action is generally warranted at the site. For sites where the total site risk to an individual, based on the reasonable maximum exposure or RME for both current and future land use, is less than 10^{-4} (the upper bound of the CERCLA risk range) action generally is not warranted unless there are non-cancer health effects or negative ecological effects that warrant action.

RISK RANGE IN THE FEASIBILITY STUDY

Once a decision has been made to take action, a Feasibility Study is conducted. As part of the Feasibility Study, cleanup levels (or remediation goals) are developed for the site. The first step in developing cleanup levels is to determine whether acceptable or reasonable and appropriate requirements (or ARARs) exist for the site. As a side note, ARARs at their simplest level refer to legal requirements for the cleanup of the site.

If an ARAR for a specific hazardous substance defines an acceptable level of exposure, compliance with the level in the ARAR will generally be considered protective even if it is outside the risk range. However, if there is the potential for exposure to multiple hazardous substances or pathways of exposure, **and** the individual ARAR levels for the substances or pathways add up to more than 10^{-4} , then compliance with the levels in the ARARs may not be protective.

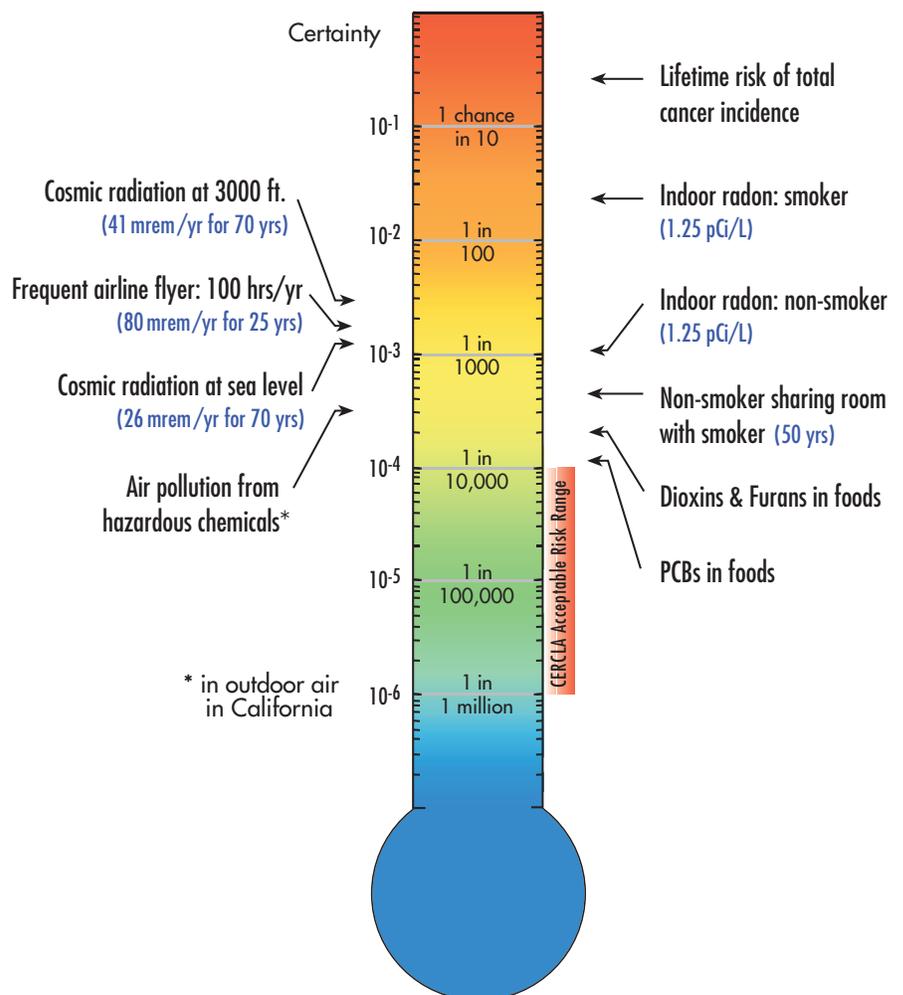
The risk range is used to determine the cleanup level when an ARAR level is determined not to be protective. A risk of 10^{-6} is used as the starting point for determining the most appropriate cleanup level for the hazardous substance and is referred to as the “Preliminary Remediation Goal” or PRG. The final cleanup level (or remedial goal) could ultimately be anywhere within the acceptable risk range of 10^{-4} to 10^{-6} , but must have a CERCLA basis to move off the PRG. The final remedial goal is based on the consideration of site-specific exposure factors (which include pathways of exposure, exposure to sensitive persons such as pregnant women), technical factors (such as detection limits, background levels), and uncertainty factors (for example reliability of data, weight of scientific evidence regarding health effects).

The risk range is also used to determine cleanup levels when there are no ARARs to use as cleanup levels. As is done for ARAR levels that are not protective, a risk level of 10^{-6} is used as the starting point for determining the most appropriate cleanup level for a hazardous substance(s) at a site for which ARARs are not available. The final cleanup level without an available ARAR could be anywhere within the acceptable risk range of 10^{-4} to 10^{-6} . The final cleanup level is based on the consideration of the same site-specific exposure factors, technical factors, and uncertainty factors identified above.

RISK RANGE IN THE SITE CLOSEOUT

A residual site risk assessment is performed upon completion of remediation for each portion of the site. The risk of contaminants remaining on site is determined through this assessment and is documented in the Post Remedial Action Report and the Site Closeout Report. (These reports document the protectiveness of the overall site and of specific portions of the site.)

Lifetime Risk of Cancer Incidence





U.S. Army Corps of Engineers
St. Louis District

St. Louis Sites Fact Sheet

ARARs



"Gateway to Excellence"

The United States Army Corps of Engineers (USACE), St. Louis District, is conducting a radiological cleanup program for four Missouri sites (SLDS, SLAPS, SLAPS VPs, HISS). These sites contain soils contaminated with radium, thorium, and uranium as a result of activities associated with the Manhattan Engineer District/Atomic Energy Commission during the nation's early atomic program in the 1940s and 50s.

Applicable or relevant and appropriate requirements, or ARARs, refer to a federal or more stringent state standard, which is aimed at protecting human health and the environment during the cleanup, that has been found to be legally applicable or relevant and appropriate for the site. ARARs are identified on a site-by-site basis. Factors such as the hazardous substance present, the location, the physical features, and the remedies being considered determine which standards must be met.

The Corps of Engineers encourages private citizens to participate fully in the cleanup program.

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ARARS AND REMEDIATION GOALS

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires the selection of a remedial action that is protective of human health and the environment and complies with "applicable or relevant and appropriate requirements" (ARARs). The approach to determining protectiveness involves a risk assessment and consideration of both ARARs and "to-be-considered" materials (TBCs). While the subject of risk assessment is addressed in a separate fact sheet, the following information is furnished to provide a better understanding of the concept of an ARAR and how it influences remediation goals.

WHAT IS AN "ARAR"?

The term "ARAR" comes from the phrase "**applicable or relevant and appropriate requirement**" which appears in CERCLA. In addition to being protective of human health and the environment, CERCLA specifically requires remedial actions (or cleanups) to attain federal or more stringent state standards determined to be legally applicable or relevant and appropriate under the circumstances presented by the contaminants at the site, unless a waiver is granted. Put another way, an ARAR is:

- a promulgated federal or more stringent state law or regulation;
- aimed at protecting human health and the environment during the cleanup at a site; and that
- has been evaluated and found to be legally applicable or relevant and appropriate for the site.

The National Oil and Hazardous Substances Contingency Plan (NCP), which explains how CERCLA is to be implemented, provides further guidance by defining the concepts of "applicable" and "relevant and appropriate". A requirement is applicable if the specific terms (or "jurisdictional prerequisites") of the law or regulation directly address the circumstances at a site. If not applicable, a requirement may nevertheless be relevant and appropriate if circumstances at the site are, based on best professional judgment, sufficiently similar to the problems or situations regulated by the requirement.

HOW ARE ARARS IDENTIFIED?

ARARs are identified on a site-by-site basis. It involves a two-part analysis: first, a determination of whether a given requirement is applicable; then, if it is not applicable, a determination of whether it is both relevant and appropriate. Factors such as the contaminants present,

the location, the physical features, and the technologies being considered determine which requirements must be met. The lead agency and support agencies shall identify their specific requirements that are applicable or relevant and appropriate for a particular site.

WHAT ARE THE TYPES OF ARARs?

There are several different types of requirements that clean-up actions may have to satisfy. Generally, there are three types of ARARs:

- (1) Ambient or chemical-specific requirements
- (2) Action-specific requirements
- (3) Location-specific requirements

WHEN ARE ARARs IDENTIFIED?

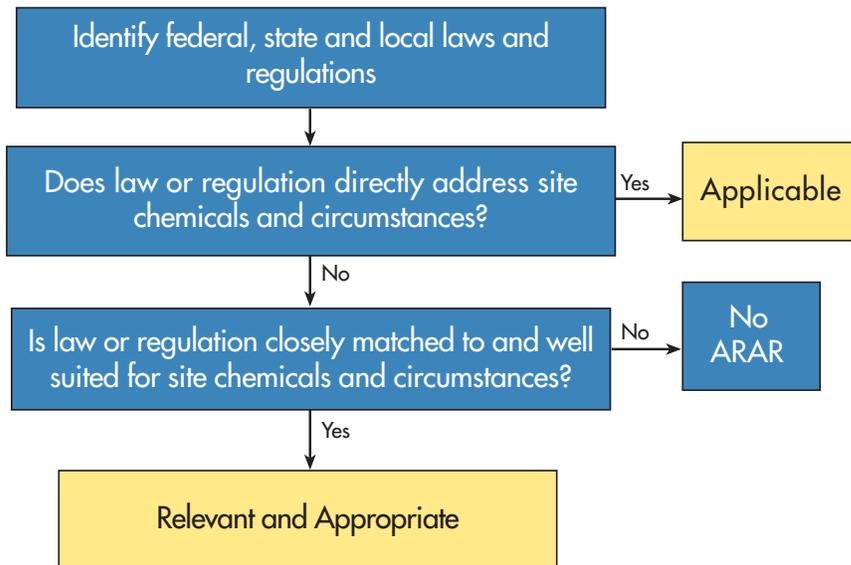
Different ARARs that may apply to a site and its remedial action are identified at multiple points in the remedy selection process. Generally, during the early stages of the Remedial Investigation and Feasibility Study and the site characterization phase, a list of potential ARARs is initially developed. These focus on chemical- and location-specific ARARs. Later during the development of remedial alternatives in the Feasibility Study, the list is modified and refined to ensure that it addresses action-specific ARARs for each proposed alternative.

Final ARARs and cleanup levels are presented in Feasibility Study (FS). The purpose of the FS is to ensure appropriate remedial alternatives are developed and evaluated. The FS presents relevant information concerning the remedial action alternatives so that decision-makers can select an appropriate remedy in the Record of Decision (ROD). During the development and screening of alternatives in the FS, remedial action objectives specifying contaminants and media of concern, potential exposure pathways, and remediation goals (or cleanup levels), are identified. (Note: preliminary remediation goals are developed in the FS; the final remediation goals are identified in the ROD.)

The signing of the Record of Decision “freezes” ARARs and clean-up standards through construction and five years thereafter. At the five-year review (which is mandated by CERCLA for sites where residual contamination exists), ARARs are re-examined.

HOW ARE ARARs USED?

During the planning process, ARARs are used in conjunction with risk assessments/evaluations to determine the remediation goals for a particular site. They are also used in the evaluation of the proposed alternatives. The proposed or recommended plan must attain ARARs (unless a waiver of an ARAR is justified.) In addition, implementation of the remedial action should also comply with ARARs to protect public health and the environment. Finally, ARARs are examined at the five-year review to ensure that the remedy is still protective of human health and the environment.





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St. Louis District

St. Louis Sites Fact Sheet

RISK ASSESSMENT



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The risk assessment is a method used to quantify threats to human health and the environment. By examining the potential adverse effects caused by a hazardous substance, the risk assessment can help decide what needs to be cleaned up, where, and to what level. Risk assessments are comprised of two elements: the human health risk assessment and the ecological risk assessment. Together, they help determine the most effective way to clean up a site while reducing the overall risk to human health and the environment.

The Corps of Engineers encourages private citizens to participate fully in the cleanup program.

To learn more about FUSRAP or to inquire about public involvement opportunities, contact the FUSRAP Project Office at (314) 260-3924 or write to the St. Louis District, Corps of Engineers, FUSRAP Project Office, 8945 Latty Avenue, Berkeley, Missouri 63134

WHAT IS A RISK ASSESSMENT?

The risk assessment is a method used to quantify threats to human health and the environment. It is performed during the Remedial Investigation / Feasibility Study process required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). By examining the potential adverse effects caused by a hazardous substance, the risk assessment can help decide what needs to be cleaned up, where, and to what level.

HOW ARE RISK ASSESSMENTS PERFORMED?

Risk assessments are comprised of two elements: the human health risk assessment and the ecological risk assessment. Together, they help determine the most effective way to clean up a site while reducing the overall risk to human health and the environment. The following sections describe these two parts of the risk assessment in detail.

HUMAN HEALTH RISK ASSESSMENT

The human health risk assessment determines the risk posed by the contaminants to people who live, work or play at or near the site. Below is a basic explanation of the four main parts of a human health risk assessment.

- **Data collection/evaluation** - determines what chemicals are present at a site, where they are present, what levels they are present in, and whether or not the chemicals are moving off the site.
- **Exposure assessment** - calculates ways people might be exposed to the chemicals identified at the site. People may be exposed to chemicals by breathing, touching, or consuming contaminated air, water, soil, or food. For each "pathway", the quantity of a chemical that someone could take into their lungs, digestive system, or absorb through their skin is estimated for the time the individual is effected by the site given its current and likely future uses. The estimates take into account how long, how often, and how many ways people could be exposed to site chemicals.
- **Toxicity assessment** - evaluates the health effects that exposure to site chemicals could cause. It includes an assessment of the increased risk of *cancerous effects*, and an assessment of toxicological thresholds for *non-cancerous effects* (such as rashes, eye irritation, breathing difficulties, or organ damage).
- **Risk characterization** - combines the results of the three steps above to identify the critical risks posed by the site and determine whether they are great enough to cause health problems for people at or near a site.

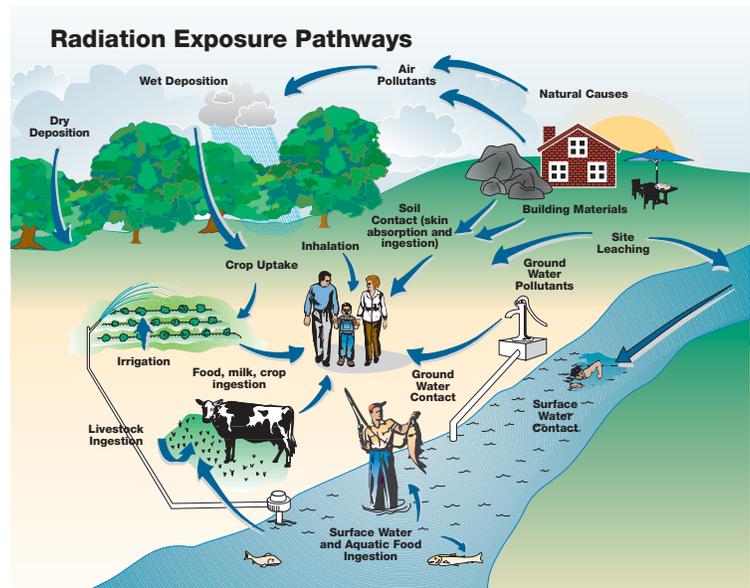
ECOLOGICAL RISK ASSESSMENT

The process for developing the ecological risk assessment is very similar to the human health risk assessment. The ecological risk assessment, however, focuses on the effects that site contamination has or could have on plants and wildlife. A basic explanation of the five major parts of this assessment follows.

- **Problem Formulation** - evaluates what chemicals, animal and plant species are present at a site, what levels the chemicals are present in, and whether or not the chemicals are moving off the site.
- **Analyses (Characterization of Exposure)** - calculates how animals and plants might be exposed to the chemicals, at what levels, and over how many years this exposure might reasonably be expected to occur. Animals may be exposed to chemicals the same ways that people could be exposed, by breathing, touching, or consuming contaminated air, water, soil, or food. Exposures are calculated for groups of animals like birds, mammals, and fish and plants like grasses, trees, and aquatic plants. Sometimes these groups are broken down into sub-groups such as birds of prey (eagles, hawks, etc.) and aquatic birds (ducks, geese, etc.).
- **Toxicity Assessment (Characterization of Ecological Effects)** - requires literature reviews, field studies, and toxicity tests to identify what the health effects of the various chemicals would be on each animal and plant group (or sub-group) identified.
- **Risk Characterization** - determines the most critical ecological site risks and whether they are great enough to cause health problems for animals or plants at/near a site. The amount of uncertainty in the risk estimates is also considered. If this step identifies potential unacceptable risks to plants and/or animals, then remedial action is necessary and a Feasibility Study is performed to identify and evaluate remedial alternatives to reduce these risks.
- **Data Acquisition** - includes a number of activities performed throughout the ecological risk assessment process. Activities may include identification of threatened or endangered species/habitats, analyses of wildlife impacts, monitoring abundance of species within the area, and others.

HOW IS A RADIOLOGICAL RISK ASSESSMENT COMPLETED?

Overall, the process for assessing radionuclide exposures and radiation risks parallels the process for assessing increased risks from carcinogenic chemical exposures. Both radiological and chemical risk assessments follow the same processes, consider similar exposure scenarios and pathways, determine exposure point concentrations, and provide estimates of risks to humans and the environment. The primary difference is that the radiological risk assessment includes the external “direct exposure” pathway. The “direct exposure” pathway is unique to the radiological risk assessment.



We are exposed to ionizing radiation by many pathways. The main ones for most people are exposure to cosmic radiation, exposure to and breathing indoor and outdoor air, exposure to radiation from rocks and soils, and drinking and eating foods with naturally occurring radioactive elements.



U.S. Army Corps of Engineers
St. Louis District

St. Louis Sites Fact Sheet

RADIATION BASICS



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Radiation is energy that travels in the form of waves or particles. Radioactivity is the property of some atoms to spontaneously give off energy. The atoms that make up the radioactive materials are the source of radiation. Ionizing radiation can be found in everything in nature in trace amounts—including people—but in high enough concentrations, it can cause chemical and/or physical changes in human tissue. While it is true that radiation can cause biological damage, it is important to keep the risks in perspective. We cannot eliminate radiation from our environment, but we can reduce our risks by controlling exposure.

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WHAT IS RADIATION?

Radiation is energy that travels in the form of waves or particles. Radiation is everywhere - in, around, and above the world we live in. Depending on how much energy it has, radiation is described as either non-ionizing (low energy) or ionizing (high energy). Non-ionizing radiation includes the sun and various electronic devices. Ionizing radiation can be found in everything in nature in trace amounts — including people. Every element such as carbon and potassium, as well as uranium and thorium has a radioactive form. Although ionizing radiation is all around us, in high enough concentrations it can present a health hazard if it is not properly controlled.

WHAT EFFECTS CAN RADIATION HAVE?

Because it can knock electrons from the atoms and molecules in its path, ionizing radiation can cause chemical and/or physical changes in human tissue. The effect of radiation on the body depends on how long the exposure was, how much energy was absorbed, and the type and number of cells that were affected. Most of the time, the cells can repair any damage themselves; however, sometimes they cannot. While there are billions of cells in the body, if enough are damaged, there is a risk of adverse health effects.

IS ALL IONIZING RADIATION THE SAME?

Ionizing radiation may be one of three types (alpha, beta, or gamma). Alpha particles can travel approximately one to two inches in air and can be blocked by a sheet of paper. Beta particles can travel 6-10 feet in air but can be blocked by a few millimeters of substance (i.e. clothing, glass, plastic, aluminum). Gamma particles can travel the farthest but may be stopped with lead or concrete.

WHAT IS DOSE? HOW IS RADIATION MEASURED?

The dose is the quantity of radiation or energy received. A basic unit for measuring the amount of energy absorbed from radiation received is the *rad*. To show biological risk and the probability of harmful effect, rads are converted to *rems*. The rem reflects tissue dose and takes into account the type of radiation absorbed into the body and the likelihood of damage. Because exposure to radiation normally occurs in fractions of a rem, the commonly used unit of exposure is the *millirem (mrem)*. One rem equals one thousand millirem.

It is important to understand doses are averages that span a rather large range of values. For example, individual doses due to radon average about 200 millirem per year per person in the U.S. The actual dose can vary widely, depending on where you live/work.

WHAT ARE THE SOURCES OF EXPOSURE TO RADIATION?

While it is true that radiation can cause biological damage, it is important to keep risks in perspective. Each year, we receive about a 300 millirem dose of radiation from natural sources. Natural sources include rocks and soil, which contain naturally occurring radioactive isotopes such as radon, thorium, uranium and radium, or from cosmic sources such as the sun and other sources in space. The average American receives an additional 60 millirem per year from human activities, mostly medical sources (such as x-rays). Thus, in the United States, the average person receives a dose of about 360 millirem per year from all sources.

WHAT IS THE DIFFERENCE BETWEEN RADIATION AND RADIOACTIVITY?

Radiation is the energy or particles that are released during radioactive decay. The radioactivity of a material refers to the rate at which it emits radiation.

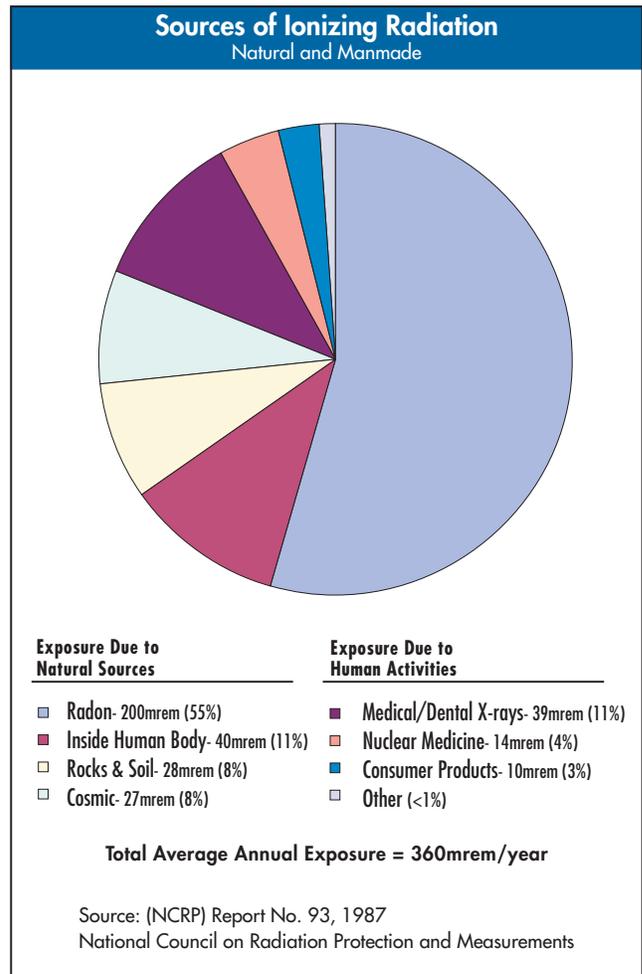
Each decay throws off particles and energy and is referred to as a “disintegration”. The number of disintegrations per second, or per minute is the *activity* of a sample. Activity is expressed in Curies. *One Curie equals 2.2 trillion disintegrations per minute.* At the FUSRAP St. Louis Sites, activity is commonly expressed in picocuries (pCi), which is one 1 trillionth of a Curie. In comparison, one picocurie is 22 disintegrations per minute.

HOW ARE PEOPLE EXPOSED TO RADIATION AND HOW CAN THEY PROTECT THEMSELVES?

We can be exposed to ionizing radiation through a number of pathways. We can be exposed through inhalation, ingestion, and direct exposure. The main pathways for most people are exposure to cosmic radiation, exposure to and breathing indoor and outdoor air, exposure to radiation from rocks and soils, and through all of the foods and liquids that we eat and drink.

We can protect ourselves from direct exposure by using time, distance and shielding to limit our cumulative levels of exposure. A person is safer the farther from the source of radiation, the shorter the time of exposure, and the thicker the shielding. We cannot eliminate radiation from our environment; we can however, reduce our risks by controlling our exposure.

It may also be interesting to note, that the radiation dosage varies depending on where we live. For instance, the dose in Colorado is about 100 millirem/year more than would be present at sea level. This is due mainly to the increased altitude, which brings the person in closer proximity to the sun in a thinner atmosphere, but also due to the geology of the area.





U.S. Army Corps of Engineers
St. Louis District

Summary of the

MADISON SITE PROPOSED PLAN



The U. S. Army Corps of Engineers (USACE), St. Louis District, is conducting a cleanup program for the Madison Site. Contamination at the site is the result of federal defense activities performed under contracts with the U. S. Atomic Energy Commission during the late 1950s and early 1960s.

The USACE has issued a Proposed Plan describing the preferred remedy for remediating the Madison Site. Public comment and regulatory review will help determine the remedy selected for the site. Engineering plans, work instructions, and health and safety plans will be prepared before cleanup begins.

The USACE encourages private citizens to fully participate in the cleanup program.

To learn more about the Madison Site or to inquire about public involvement opportunities, contact Lou Dell'Orco at (314) 524-4083 or write St. Louis District, Corps of Engineers, FUSRAP Project Office, 9170 Latty Avenue, Berkeley, Missouri 63134

Background

During the late 1950s and early 1960s, the Mallinckrodt Chemical Company contracted with Dow Chemical Company to perform extrusions of uranium metal and straightening of extruded uranium rods for the U. S. Atomic Energy Commission (AEC). The work was conducted on an extrusion press and straightening table located in Building 6 at the Madison Site.

In 1989, the U. S. Department of Energy (DOE) conducted a preliminary radiological survey to evaluate and establish the radiological status of the Madison Site as part of the Formerly Utilized Sites Remedial Action Program (FUSRAP). The survey identified low concentrations of uranium in dust on overhead surfaces in a portion of Buildings 4 and 6. It concluded that this residual radioactive material did not pose a potential for significant radiation exposure to current building occupants, but did recommend further investigation to better define the extent of uranium contamination on overhead surfaces. On October 13, 1997, Congress transferred responsibility for FUSRAP from the DOE to the U. S. Army Corps of Engineers (USACE) as part of the 1998 Energy and Water Appropriations Bill.

Continuing in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, the USACE issued a Proposed Plan describing the preferred remedy for addressing the presence of uranium-contaminated dust on overhead surfaces in Buildings 4 and 6. This Plan provides background information on the Madison Site, describes the alternatives being considered to clean up the site, presents the rationale for selecting the preferred remedy and outlines the public's role in helping USACE make a final decision on a cleanup approach.

The Preferred Alternative

Four site-wide alternatives are discussed at length in the Feasibility Study (FS) for the Madison Site. The Proposed Plan provides a summary of each alternative, identifies the preferred alternative, and provides a rationale for the selection of this alternative.

The USACE prefers Alternative 4, Decontamination of Accessible Surfaces and Release of Building. This alternative protects human health and the environment and is believed to provide the best balance of effectiveness, cost and implementability. Under Alternative 4, uranium-contaminated dust on accessible surfaces (horizontal ledges such as window sills, electrical conduits, water conduits, and beams at the 25- and 36-foot levels) will be removed. Inaccessible areas are defined as those surfaces that can not be accessed either from the high-bay crane or through windows and may include select other areas, such as those around live power lines. Aggressive or non-aggressive removal techniques would be utilized as necessary to remove contamination.

Public Participation

The USACE encourages public input to ensure the remedy selected for the Madison Site meets the needs of the local community and is an effective solution to the problem.

Comments on the proposed remedial action will be accepted for 30 days after the FS and Proposed Plan are issued. Verbal comments will be recorded during a public meeting scheduled to be held on February 17, 2000. Written comments may be submitted at any time during the 30-day comment period.

The USACE will respond to all significant comments and will consider these comments when working in cooperation with the regulators to make a final decision. The final remedy for the Madison Site will be selected after review and full consideration of all comments received during the public review period.





U.S. Army Corps of Engineers
St. Louis District

Summary of the

MADISON SITE FEASIBILITY STUDY



The U. S. Army Corps of Engineers (USACE), St. Louis District, is conducting a cleanup program for the Madison Site. Contamination at the site is the result of federal defense activities performed under contracts with the U. S. Atomic Energy Commission during the late 1950s and early 1960s.

The USACE has issued a Feasibility Study identifying and evaluating alternatives for remediating the Madison Site. Public comment and regulatory review will help determine the remedy selected for the site. Engineering plans, work instructions, and health and safety plans will be prepared before cleanup begins.

The USACE encourages private citizens to fully participate in the cleanup program.

To learn more about the Madison Site or to inquire about public involvement opportunities, contact Lou Dell'Orco at (314) 524-4083 or write St. Louis District, Corps of Engineers, FUSRAP Project Office, 9170 Latty Avenue, Berkeley, Missouri 63134

Background

During the late 1950s and early 1960s, the Mallinckrodt Chemical Company contracted with Dow Chemical Company to perform extrusions of uranium metal and straightening of extruded uranium rods for the U. S. Atomic Energy Commission (AEC). The work was conducted on an extrusion press and straightening table located in Building 6 at the Madison Site.

In 1989, the U. S. Department of Energy (DOE) conducted a preliminary radiological survey to evaluate and establish the radiological status of the Madison Site as part of the Formerly Utilized Sites Remedial Action Program (FUSRAP). The survey identified low concentrations of uranium in dust on overhead surfaces in a portion of Buildings 4 and 6 in the vicinity of the extrusion press. It concluded that the uranium-contaminated dust did not pose a potential for significant radiation exposure to plant employees but did recommend further investigation to better define the extent of contamination on overhead surfaces.

On October 13, 1997, Congress transferred responsibility for FUSRAP from the DOE to the U. S. Army Corps of Engineers (USACE) as part of the 1998 Energy and Water Appropriations Bill. Alternatives for addressing the uranium contamination at the Madison Site are identified and evaluated in the Feasibility Study (FS).

Contaminants of Concern

The only contaminant of concern (COC) found during the investigation was processed natural uranium (i.e. uranium that has been separated from the other naturally occurring members of the uranium and actinium decay series). In general, the highest levels of uranium were found in dust on overhead surfaces above the extrusion press in Building 6 with decreasing levels progressing outward from this point. Utility workers working on or near overhead surfaces could experience unacceptable exposure from the contaminated surfaces.

Summary of Alternatives

Alternative 1 - No Action

This alternative leaves the dust in place and makes no changes from the current status. Mandated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), this alternative is provided as a baseline for comparison with other alternatives. The cost of Alternative 1 is \$0.

Alternative 2 - Institutional Controls

Institutional controls would be implemented to prevent unacceptable exposures to uranium-contaminated surfaces. Institutional controls include use-limitations through deed restriction, land-use restrictions, and work instructions and permits identifying contamination and measures to reduce employee exposure. Periodic government inspections and airborne dust particle sampling/analysis would be performed. If uranium is detected in the airborne dust particles, breathing zone monitors would be required. The cost of Alternative 2 is \$60,000.

Alternative 3 - Containment

Alternative 3 incorporates containment, institutional controls, and environmental monitoring to reduce both the potential for direct exposure and reduce any further spread of the contaminant. A coating would be sprayed onto accessible, uranium-contaminated surfaces at the 25-foot and 36-foot levels to immobilize the dust by trapping it beneath the coating. Dust on beams in the high-bay, which are accessible from the windows, would also be sprayed. Once the use of the building is discontinued, radiological support for decontamination would be provided prior to building demolition and rubble disposal following building demolition. The cost of Alternative 3 is \$450,000.

Alternative 4 - Decontamination of Accessible Surfaces and Release of Building

Alternative 4 includes decontamination of accessible uranium-contaminated surfaces at the 25-foot and 36-foot levels and the beams in the high-bay that are accessible from the windows. Inaccessible areas are defined as those surfaces that can not be accessed either from the high-bay crane or through windows. Inaccessible areas include the high-bay areas above the 36-foot level and select other areas around live power lines. Aggressive or non-aggressive removal techniques would be utilized, as necessary, to remove the uranium contamination. Decontamination work would take place when the building could be made available by the current owner. The cost of Alternative 4 is \$250,000.

Public Participation

The USACE encourages public input to ensure the remedy selected for the Madison Site meets the needs of the local community and is an effective solution to the problem.

Comments on the proposed remedial action will be accepted for 30 days after the FS and Proposed Plan are issued. Verbal comments will be recorded during the February 17, 2000 public meeting and written comments may be submitted at any time during the 30-day comment period.

The USACE will respond to all significant comments and will consider these comments when working in cooperation with the regulators to make a final decision. The final remedy for the Madison Site will be selected after review and full consideration of all comments received during the public review period.

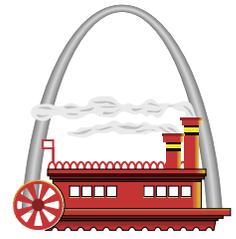




U.S. Army Corps of Engineers
St. Louis District

Summary of the

MADISON SITE REMEDIAL INVESTIGATION REPORT



"Gateway to Excellence"

The U. S. Army Corps of Engineers (USACE), St. Louis District, is conducting a cleanup program for the Madison Site. Contamination at the site is the result of federal defense activities performed under contracts with the Atomic Energy Commission during the late 1950s and early 1960s.

The USACE has issued a Remedial Investigation to further evaluate the site's current radiological conditions in order to develop recommendations for further action at the Madison Site. Public comment and regulatory review will help determine the remedy selected for the site. Engineering plans, work instructions, and health and safety plans will be prepared before cleanup begins.

The USACE encourages private citizens to fully participate in the cleanup program.

To learn more about the Madison Site or to inquire about public involvement opportunities, contact Lou Dell'Orco at (314) 524-4083 or write St. Louis District, Corps of Engineers, FUSRAP Project Office, 9170 Latty Avenue, Berkeley, Missouri 63134

Background

During the late 1950s and early 1960s, the Mallinckrodt Chemical Company contracted with Dow Chemical Company to perform extrusions of uranium metal and straightening of extruded uranium rods for the U. S. Atomic Energy Commission (AEC). The work was conducted on an extrusion press and straightening table located in Building 6 at the Madison Site.

In 1989, the U. S. Department of Energy (DOE) conducted a preliminary radiological survey to evaluate and establish the radiological status of the Madison Site as part of the Formerly Utilized Sites Remedial Action Program (FUSRAP). The survey identified low concentrations of uranium in dust on overhead surfaces in a portion of Buildings 4 and 6 in the vicinity of the extrusion press. It concluded that uranium-contaminated dust did not pose a potential for significant radiation exposure to plant employees but did recommend further investigation to better define the extent of contamination present.

On October 13, 1997, Congress transferred responsibility for FUSRAP from the DOE to the U. S. Army Corps of Engineers (USACE) as part of the 1998 Energy and Water Appropriations Bill. In 1998, the USACE conducted a Remedial Investigation to further evaluate the current conditions of the uranium contamination and in order to develop recommendations for further action.

Survey Objectives

The objectives of the Remedial Investigation were as follows.

- Evaluate the current radiation levels of the site
- Identify the types of contaminants present at the site
- Assess the degree and extent of contamination
- Characterize potential risks to workers

A survey was conducted that consisted of taking samples near the extrusion press and straightening table to determine activity levels on floors and walls; on equipment surfaces; and in dust accumulated on overhead building surfaces. In addition, direct radiation levels and

uranium contamination were measured at the exit and entrance locations of Buildings 4 and 6, on the roof above the extrusion press, and on other surfaces in Buildings 4 and 6.

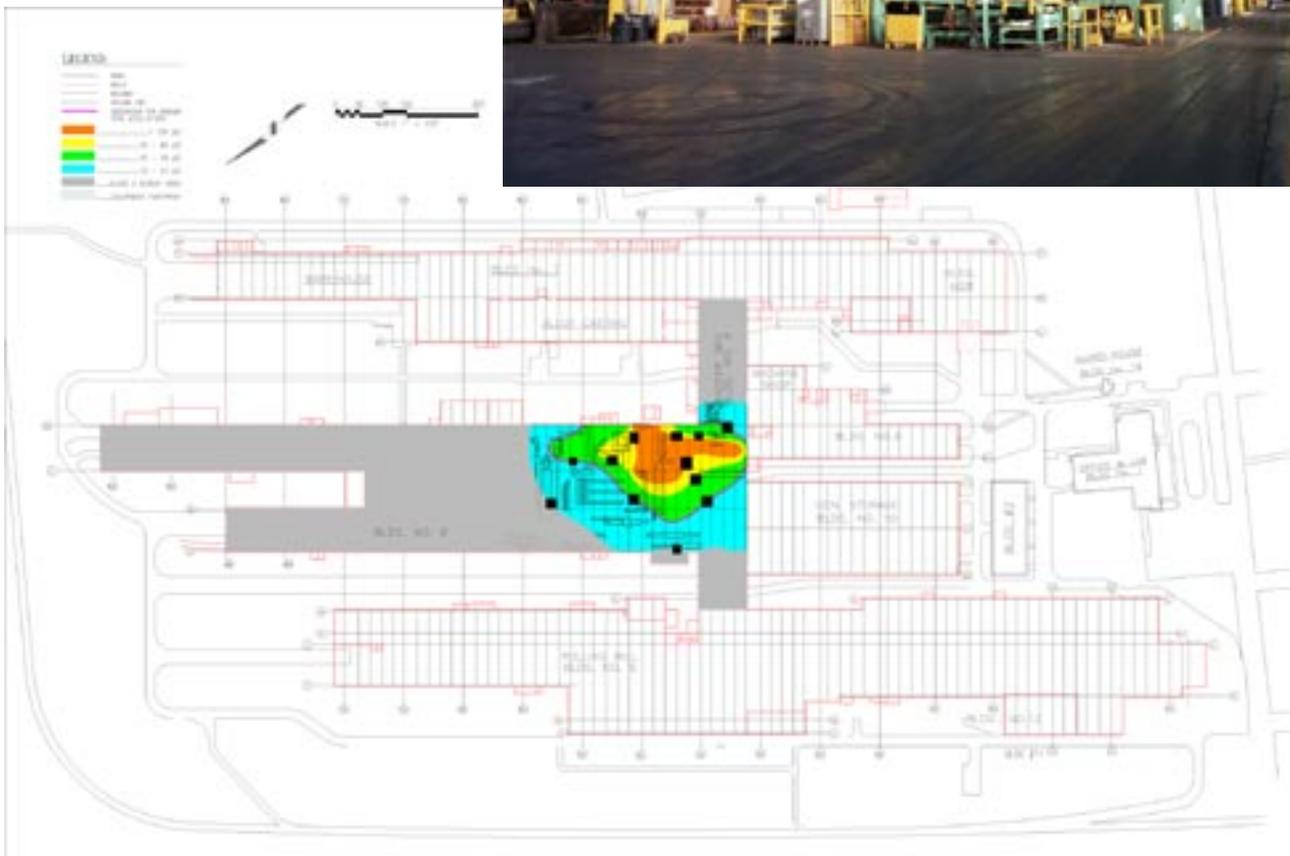
Survey Results

The only contaminant of concern (COC) found during the investigation was processed natural uranium (i.e. uranium that has been separated from the other naturally occurring members of the uranium and actinium decay series).

The survey identified detectable uranium in dust on overhead surfaces in a portion of Buildings 4 and 6, with the highest concentrations occurring directly above the extrusion press. The survey results for the remainder of Buildings 4 and 6 indicated that radioactivity levels are comparable to background.

The evaluation of the detected uranium concentrations demonstrated that the potential risk posed by the residual uranium-contaminated dust to current production workers is within the acceptable CERCLA risk range. However, the evaluation found that utility workers working on or near overhead surfaces could experience unacceptable exposure from the contaminated surfaces.

Based on the conclusions of this investigation, the USACE is proceeding with the appropriate environmental documentation to conduct remedial action consistent with the CERCLA process.





U.S. Army Corps of Engineers
St. Louis District

St. Louis Sites Fact Sheet

WHAT IS FUSRAP?



"Gateway to Excellence"

The United States Army Corps of Engineers (USACE), St. Louis District, is conducting a radiological cleanup program for four Missouri sites (SLDS, SLAPS, SLAPS VPs, HISS). These sites contain soils contaminated with radium, thorium, and uranium as a result of activities associated with the Manhattan Engineer District/Atomic Energy Commission during the nation's early atomic program in the 1940s and 50s.

The FY 1998 Energy and Water Appropriations Bill, in which Congress transferred management of the Formerly Utilized Sites Remedial Action Program (FUSRAP) to the U.S. Army Corps of Engineers (USACE), was signed into law on October 13, 1997. Prior to the signing of this bill, FUSRAP had been managed by the U.S. Department of Energy.

The Corps of Engineers encourages private citizens to participate fully in the cleanup program.

To learn more about FUSRAP or to inquire about public involvement opportunities, contact the FUSRAP Project Office at (314) 260-3924 or write to the St. Louis District, Corps of Engineers, FUSRAP Project Office, 8945 Latty Avenue, Berkeley, Missouri 63134

The Formerly Utilized Sites Remedial Action Program (FUSRAP) is an environmental remediation program. It addresses radiological contamination generated by activities of the Manhattan Engineer District and the Atomic Energy Commission (MED/AEC) during development of the atomic weapons in the 1940s and 50s.

BACKGROUND

From 1942 to 1957, the Mallinckrodt Chemical Plant extracted uranium and radium from ore at the St. Louis Downtown Site (SLDS) in downtown St. Louis, Missouri. During this time and until 1967, radioactive process byproducts were stored at an area adjacent to the Lambert-St. Louis Airport, which is now referred to as the St. Louis Airport Site (SLAPS).

In 1966, the SLAPS wastes were purchased, moved, and stored at Latty Avenue. Part of this property later became known as the Hazelwood Interim Storage Site (HISS). During this move, handling and transportation of the contamination spread the materials along haul routes and to adjacent vicinity properties forming the St. Louis Airport Site Vicinity Properties (SLAPS VPs).

During the late 1950s and early 1960s, Dow Chemical Company in Madison, Illinois operated as a uranium extrusion and rod-straightening facility. Contamination is now in dust located on roof beams at the Madison Site.

HOW HAZARDOUS ARE FUSRAP SITES?

Even though FUSRAP sites contain levels of radioactivity above current guidelines, none of the sites pose an immediate health risk to the public or environment given current land uses. The contaminated materials have very low concentrations and people are not exposed to them for long periods of time.

Although these materials do not pose an immediate hazard, they will remain radioactive for thousands of years, and health risks could increase if the use of the land were to change. Under FUSRAP, each site is cleaned to levels acceptable for the projected future use of the land such as residential development, industrial operations, or recreational use.

What Are FUSRAP's Objectives?

The objectives of FUSRAP are to:

- Protect human health and the environment.
- Execute the approved alternative for cleaning up radioactive contamination above health-based cleanup guidelines.
- Minimize adverse effects on area business operations.

HOW DOES FUSRAP WORK?

FUSRAP sites undergo several steps that lead to cleanup. Information about the site is collected and reviewed. A Remedial Investigation/Feasibility Study (RI/FS) is conducted to develop cleanup alternatives. The Remedial Investigation identifies the type and location of the contamination. The Feasibility Study develops and evaluates cleanup alternatives.

The public is informed about the development of the RI/FS cleanup alternatives through public meetings and the media. Public participation is especially encouraged during the selection of the final remediation, or cleanup, method.

When a cleanup alternative is chosen, a Proposed Plan (PP) is written to explain why it was chosen. Members of the public are asked to comment on all the cleanup options, including the selected alternative. After public comments have been considered, a final decision is made and documented in a Record of Decision (ROD). The Remedial Design follows the ROD and includes technical drawings and specifications that show how the cleanup will be conducted.

Cleanup, or Remedial Action, begins after the Remedial Design is complete. This phase involves site preparation and construction activities. When these remediation activities are completed, verification surveys are conducted to ensure that cleanup objectives for the site have been met and are documented in a Post Remedial Action Report (PRAR).

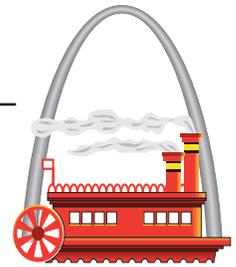




U.S. Army Corps of Engineers
St. Louis District

St. Louis Downtown Site Fact Sheet

REMEDIAL DESIGN/ REMEDIAL ACTION



"Gateway to Excellence"

The United States Army Corps of Engineers (USACE), St. Louis District is conducting a radiological cleanup program for the St. Louis Downtown Site (SLDS). The site contains soils contaminated with radium, thorium, uranium, cadmium and arsenic as a result of federal defense activities performed under contracts with the Manhattan Engineer District and the Atomic Energy Commission (MED/AEC) in the 1940s and 50s.

The U. S. Environmental Protection Agency (EPA) and USACE have signed the Record of Decision (ROD) that outlines the final cleanup remedy for SLDS.

The Corps of Engineers encourages private citizens to participate fully in the cleanup program.

To learn more about the SLDS or to inquire about public involvement opportunities, contact the FUSRAP Project Office at (314) 524-4083 or write to the

St. Louis District, Corps of Engineers
FUSRAP Project Office
9170 Latty Avenue
Berkeley, MO 63134.

Background

From 1942 to 1957, the Mallinckrodt Chemical Plant extracted uranium from ore at the St. Louis Downtown Site (SLDS) in St. Louis, Missouri. This processing of ore, conducted under contracts with the Manhattan Engineer District and the Atomic Energy Commission, resulted in releases of spent ore, process chemicals, radium, thorium, and uranium to the environment. Later disposal and relocation of processing wastes resulted in radioactive contamination at other locations near the St. Louis Airport.

SLDS was part of the U. S. Department of Energy (DOE) Formerly Utilized Sites Remedial Action Program (FUSRAP). In 1997, the U. S. Army Corps of Engineers (USACE) became responsible for this FUSRAP site under the Energy and Water Appropriations Bill.

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the USACE, St. Louis District, developed a Feasibility Study outlining six alternatives for the final cleanup of SLDS. Based on this study, a Proposed Plan, which identified the USACE's preferred alternative, was also developed. These documents were released for public review and comment.

In April 1998, the USACE held a public meeting to present the Proposed Plan. A 30-day comment period followed the release of the SLDS Feasibility Study and Proposed Plan to gain the opinions of citizens, public officials, and agencies. The USACE addressed and incorporated their comments into the Record of Decision (ROD), the document that describes the final course of action at SLDS, which was approved by the EPA in October 1998.

Plant 2 Remedial Action Underway

The U. S. Army Corps of Engineers (USACE) has completed the remedial design plan for final cleanup activities within the Mallinckrodt Plant 2 area. The plan was developed according to the criteria established in the approved SLDS ROD.

Plant 2 is located in the middle of Mallinckrodt. This area was selected for remediation to minimize disruption to current business operations and permit Mallinckrodt to utilize the site in accordance with their strategic development plan.



The remediation of Plant 2 began with the removal of the concrete slab in January. In preparation for this action, the area was surveyed and staked to mark the limits of excavation. The asphalt was then removed and sheet piling placed to support the foundations of structures close to the excavation area and to prevent cave-ins. A backhoe and excavator will be used to remove contaminated material from under the slab and load it into the onsite railcars for disposal.

The USACE contractor is currently excavating the subsurface of Plant 2. Once crews complete the excavation, the sides and bottom of the excavation will be surveyed and sampled to confirm that the

radiological contamination, as defined in the SLDS ROD, has been removed to the approved criteria. Upon receiving confirmation from a final site survey that the site has been remediated, the site will be restored to grade.

The USACE currently anticipates Plant 2 remediation will be finished in July 1999. Approximately 8,500 cubic yards of contamination will be removed from this area.

Where to Next?

While the Plant 2 remediation is underway, the USACE will begin remedial design work on Plant 1. The remediation of Plant 1 will follow the criteria set forth in the approved SLDS ROD as Plant 2 work. The issuance of the Plant 1 design is expected in June 1999. The USACE and Mallinckrodt will also begin developing the remedial strategy and design plans for Plants 6 and 7.

What did you just say?

Q: *Why do environmental cleanup projects describe some excavation efforts as a remedial action and others as a removal action?*

A: A Removal Action is intended to be a relatively quick action designed to address imminent threats to human health and the environment. The resulting cleanup may or may not be the final solution for the site involved. Removal Actions can be of three types: Emergency, Time-Critical, and Non-Time Critical. Engineering Evaluations/Cost Analyses (EE/CAs) are performed for Non-Time Critical removal actions, actions that could be taken more than six months after a determination that a response is needed.

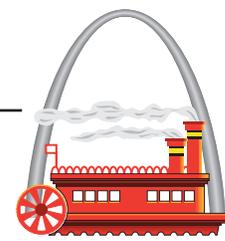
Remedial Actions are longer-term activities that complete the site cleanup. A Remedial Action may be performed at a site after a removal action if the removal action does not or cannot present a complete solution. Remedial Actions implement the final cleanup method(s) selected in the Record of Decision.



U.S. Army Corps of Engineers
St. Louis District

St. Louis Downtown Site Fact Sheet

RECORD OF DECISION (ROD)



"Gateway to Excellence"

Background

The United States Army Corps of Engineers (USACE), St. Louis District is conducting a radiological cleanup program for the St. Louis Downtown Site (SLDS). The site contains soils contaminated with radium, thorium, uranium, cadmium and arsenic as a result of federal defense activities performed under contracts with the Manhattan Engineer District and the Atomic Energy Commission (MED/AEC) in the 1940s and 50s.

The U. S. Environmental Protection Agency (EPA) and USACE have signed the Record of Decision (ROD) that outlines the final cleanup remedy for SLDS.

The Corps of Engineers encourages private citizens to participate fully in the cleanup program.

To learn more about the SLDS or to inquire about public involvement opportunities, contact the FUSRAP Project Office at (314) 524-4083 or write to the

**St. Louis District, Corps of Engineers
FUSRAP Project Office
9170 Latty Avenue
Berkeley, MO 63134.**

From 1942 to 1957, the Mallinckrodt Chemical Plant extracted uranium from ore at the St. Louis Downtown Site (SLDS) in St. Louis, Missouri. Radioactive byproducts from processing resulted in contamination at SLDS. Wastes from this processing also contaminated other locations including the St. Louis Airport Site (SLAPS) and the Hazelwood Interim Storage Site (HISS).

SLDS was part of the U. S. Department of Energy (DOE) Formerly Utilized Sites Remedial Action Program (FUSRAP). In 1990, the U. S. Environmental Protection Agency (EPA) and DOE negotiated a Federal Facilities Agreement (FFA), which described the process that would be used to clean up contaminated soils in St. Louis, Missouri. The U. S. Army Corps of Engineers (USACE) became responsible for FUSRAP in 1997 under the Energy and Water Appropriations Bill.

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the USACE, St. Louis District, has based their approach to cleaning up SLDS on data and findings contained within four key documents: the Remedial Investigation, the Baseline Risk Assessment, the Initial Screening of Alternatives, and the Feasibility Study. These documents are available for review in the Administrative Record, which is maintained at both 9170 Latty Avenue in Berkeley, Missouri and the St. Louis Public Library, Government Information Section, at 1306 Olive Street in St. Louis, Missouri. A Proposed Plan detailing USACE's preferred alternative was also issued and is available for review at both locations.

In April 1998, the USACE held a public meeting to present the Proposed Plan. A 30-day comment period followed the release of the Feasibility Study and Proposed Plan for SLDS to gain the opinions of citizens, public officials, and agencies. Their comments were addressed and incorporated into the approved Record of Decision, the document that describes the final course of action at SLDS.

A More Protective Action

The USACE held a public meeting on April 21, 1998 and reviewed the six remediation alternatives under consideration. Alternative 4 was presented as the preferred cleanup alternative taking into account its ability to protect human health and the environment, as well as its cost.

A review of State and Community Comments indicated that all respondents preferred Alternative 6 rather than Alternative 4 as stated in the Proposed Plan.

Alternative 4

Partial Excavation with Off-Site Disposal

Excavate accessible soils to composite criteria* in the top 2 feet and clean to depth 50/100/150. Excavate Plant 7 area to composite criteria* to depth.

Cost: \$92 million

Alternative 6

Selective Excavation and Disposal

Excavate accessible soils to composite criteria* to 4-6 feet. Below 4-6 feet, clean to 50/100/150. Excavate Plant 7 area to composite criteria* to depth.

Cost: \$114 million

* Composite criteria is 5/5/50 pCi for the top 6 inches and 15/15/50 pCi below 6 inches for radium, thorium, and uranium respectively.

Under Alternative 4:

- Contaminated soil above the composite criteria would be excavated to a depth of 2 feet and the soil disposed of at an off-site location. The remaining soil below 2 feet would be cleaned to a composite criterion of 50/100/150 pCi (no more than 50 pCi of radium, 100 pCi of thorium, or 150 pCi of uranium per gram of soil).
- Excavate the Plant 7 area and clean to a composite criterion of 5/5/50 pCi for the surface and 15/15/50 pCi for depths below 6 inches.

A 30-day comment period followed the meeting. Public and stakeholder response showed that many were concerned that the planned excavation was not deep enough, given the likelihood that future construction could go below the two feet of clean soil. Others raised the question of liability for unremediated soil that might be excavated and moved in the future. Review of State and community comments indicated that all respondents preferred Alternative 6 rather than Alternative 4 as stated in the Proposed Plan. Stakeholders included the State of Missouri, City of St. Louis, County of St. Louis, the St. Louis Oversight Committee, Mallinckrodt, Inc., and others.

USACE reviewed the public comments and agreed to proceed with Alternative 6. Upon further examination, it was determined that Alternative 6 not only assures greater human and environmental safety; it should also prove more cost-efficient because of the decreased need for government monitoring of the site after remediation. In addition, Alternative 6 lessens the chance of disrupting the landowner's future construction efforts.

Under Alternative 6:

- Accessible soils will be excavated to a composite criteria* to a depth of 4-6 feet. Below 4-6 feet, soils will be cleaned to 50/100/150 pCi.
- Plant 7-area soil will be excavated and cleaned to a composite criterion of 5/5/50 pCi for the surface and 15/15/50 pCi for depths below 6 inches.
- Inaccessible soils and remaining soils in excess of the composite criteria are to be managed as a separate operable unit.

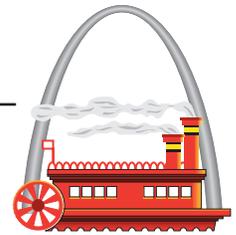
Public participation was an important component in determining the final remedy for SLDS. Public concern and a review of assumptions for the Proposed Plan led to the realization that a more protective and effective remedy was available.

Alternative 6 was approved in the SLDS Record of Decision by the U. S. Environmental Protection Agency, Region VII.



U.S. Army Corps of Engineers
St. Louis District

Summary of Activities at the **ST. LOUIS DOWNTOWN SITE PROPOSED PLAN**



"Gateway to Excellence"

The U.S. Army Corps of Engineers (USACE), St. Louis District, is conducting a cleanup program for the St. Louis Downtown Site (SLDS). The Site contains soils contaminated with radium, thorium, and uranium from federal defense activities performed under contracts with the Manhattan Engineer District and the Atomic Energy Commission in the 1940s and 50s.

The USACE has issued a Proposed Plan detailing the preferred alternative, **Partial Excavation with Off-Site Disposal**, for cleaning up SLDS. Public comment and regulatory review will help determine the remedy selected for the site. Engineering plans, work instructions, health and safety plans, and an environmental compliance plan will be prepared before cleanup begins.

The USACE encourages private citizens to participate fully in the cleanup program.

To learn more about the St. Louis Downtown Site or to inquire about public involvement opportunities, contact
Chris W. Haskell
at (314) 524-3334
or write
St. Louis District, Corps of Engineers
FUSRAP Project Office
9170 Latty Avenue
Berkeley, MO 63134

Background

From 1942 to 1957, the Mallinckrodt Chemical Plant extracted uranium from ore at the St. Louis Downtown Site (SLDS) in St. Louis, Missouri. These processes, conducted under contracts with the Manhattan Engineer District and the Atomic Energy Commission, resulted in radioactive contamination.

The Formerly Utilized Sites Remedial Action Program, administered by the U.S. Army Corps of Engineers (USACE), St. Louis District, conducted site characterization activities at SLDS. Samples of the site's soil, groundwater, surface water, sediment, air, and structures have confirmed the presence of radium, thorium, and uranium contamination.

Continuing in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, the USACE issued a Proposed Plan describing the preferred remedy for cleaning up these contaminants at SLDS. This Plan provides background information on the SLDS, describes the alternatives being considered to clean up the site, presents the rationale for selecting the preferred remedy, and outlines the public's role in helping USACE make a final decision on a cleanup approach.

The Preferred Alternative

Six site-wide alternatives are discussed at length in the Feasibility Study (FS) for SLDS. The Proposed Plan provides a summary of each alternative, identifies the preferred alternative, and provides a rationale for the selection of this alternative.

The USACE prefers **Alternative 4, Partial Excavation with Off-Site Disposal**. This alternative protects human health and the environment and is believed to provide the best balance of effectiveness, cost, and implementability. Alternative 4 includes the following activities:

- Excavate acceptable soils to composite criteria in the top 2 feet and clean to 50/100/150.
- Excavate Plant 7 area to composite criteria to depth.
- Decontaminate and dismantle buildings, if necessary, as they are made available by the owner.

Six alternatives were evaluated to address contaminated soils at SLDS. The USACE prefers Alternative 4 with a cleanup level of 5/15/50.

Alternative 1
No Action
 Leave SLDS in its current state.
 (Required for comparison under CERCLA.)
 Cost: \$22 million

Alternative 2
Institutional Control and Site Maintenance
 Prevent access to contaminated areas. Perform site maintenance to restrict use and monitor area.
 Cost: \$29 million

Alternative 3
Consolidation and Capping
 Consolidate and cap contaminated soils and waste. Decontaminate or dismantle buildings.
 Cost: \$100 million

Alternative 4
Partial Excavation with Off-Site Disposal
 Excavate accessible soils to composite criteria* in the top 2 feet and clean to depth 50/100/150. Excavate Plant 7 area to composite criteria* to depth.
 Cost: \$92 million

Alternative 5
Complete Excavation with Off-Site Disposal
 Excavate accessible soils to composite criteria* depth.
 Cost: \$140 million

Alternative 6
Selective Excavation and Disposal
 Excavate accessible soils to composite criteria* to 4-6 feet. Below 4-6 feet, clean to 50/100/150. Excavate Plant 7 area to composite criteria* to depth.
 Cost: \$114 million

* Composite criteria is 5/5/50 for the top 6 inches and 15/15/50 below 6 inches for radium, thorium, and uranium respectively.

- Ship contaminated soils off site to an authorized disposal facility.
- Implement institutional controls (such as fences and signs, site monitoring and surveillance, deed restrictions, and 5-year reviews) for areas where inaccessible soils beneath rail lines and buildings are left in place.

Public Participation

The USACE encourages public input to ensure the remedy selected for SLDS meets the needs of the local community and is an effective solution to the problem.

Comments on the proposed remedial action will be accepted for 30 days after the draft FS and Proposed Plan are issued. Verbal comments will be recorded during a public meeting scheduled to be held on April 21, 1998. Written comments may be submitted at any time during the 30-day comment period.

The USACE will respond to all significant comments and will consider these comments when working with the U.S. Environmental Protection Agency (EPA) to make a final decision. The final cleanup remedy will be outlined in the Record of Decision, which will be submitted to the EPA by July 3, 1998.

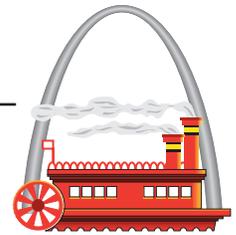


Loading material removed during preparation of buildings for demolition



U.S. Army Corps of Engineers
St. Louis District

Summary of Activities at the **ST. LOUIS DOWNTOWN SITE FEASIBILITY STUDY**



"Gateway to Excellence"

The U.S. Army Corps of Engineers (USACE), St. Louis District, is conducting a cleanup program for the St. Louis Downtown Site (SLDS). The Site contains soils contaminated with radium, thorium, and uranium from federal defense activities performed under contracts with the Manhattan Engineer District and the Atomic Energy Commission in the 1940s and 50s.

The USACE has issued a Feasibility Study identifying and evaluating alternatives for cleaning up SLDS. Public comment and regulatory review will help determine the remedy selected for the site. Engineering plans, work instructions, health and safety plans, and an environmental compliance plan will be prepared before cleanup begins.

The USACE encourages private citizens to participate fully in the cleanup program.

To learn more about the St. Louis Downtown Site or to inquire about public involvement opportunities, contact
Chris W. Haskell
at (314) 524-3334
or write
St. Louis District, Corps of Engineers
FUSRAP Project Office
9170 Laffey Avenue
Berkeley, MO 63134

Background

From 1942 to 1957, the Mallinckrodt Chemical Plant extracted uranium from ore at the St. Louis Downtown Site (SLDS) in St. Louis, Missouri. This processing of ore, conducted under contracts with the Manhattan Engineer District and the Atomic Energy Commission, resulted in radioactive contamination at SLDS. Processing these wastes also resulted in radioactive contamination at other locations near the St. Louis Airport Site (SLAPS), including the Hazelwood Interim Storage Site (HISS).

The U.S. Army Corps of Engineers (USACE), St. Louis District, has issued a Feasibility Study (FS) identifying and evaluating alternatives for cleaning SLDS. This FS is limited to the downtown site and is intended to accelerate the cleanup process by addressing it separately from SLAPS/HISS. The USACE believes that by focusing on SLDS, the cleanup project can be finished more rapidly.

Contaminants of Concern

The primary radioactive contaminants of concern (COCs) are radium, thorium, uranium, and their decay products. In general, the highest levels of contamination are on the Mallinckrodt property where access is currently restricted. Vicinity properties exhibit less contamination.

Summary of Alternatives

Alternative 1 – No Action

This alternative makes no changes from the current status. Required by the Comprehensive Environmental Response, Compensation, and Liability Act, this alternative is provided as a baseline for comparison with other alternatives. The cost of Alternative 1 is \$22 million.

Alternative 2 – Institutional Control and Site Maintenance

Institutional controls and site maintenance would be used to prevent access to contaminated areas. Institutional controls include use limitations through deed restrictions, land use restrictions through zoning, and groundwater use restrictions through groundwater use advisories or well-drilling permits. Site maintenance includes land surveillance, restricted groundwater use, environmental monitoring of affected media, and minimal engineering controls. Site security, including fences and signs, is already maintained at most of the downtown areas. The cost of implementing this alternative is \$29 million.

Alternative 3 – Consolidation and Capping

Six alternatives were evaluated to address contaminated soils at SLDS. The USACE prefers Alternative 4 with a cleanup level of 5/15/50.

Alternative 1

No Action

Leave SLDS in its current state.
(Required for comparison under CERCLA.)
Cost: \$22 million

Alternative 2

Institutional Control and Site Maintenance

Prevent access to contaminated areas. Perform site maintenance to restrict use and monitor area.
Cost: \$29 million

Alternative 3

Consolidation and Capping

Consolidate and cap contaminated soils and waste. Decontaminate or dismantle buildings.
Cost: \$100 million

Alternative 4

Partial Excavation with Off-Site Disposal

Excavate accessible soils to composite criteria* in the top 2 feet and clean to depth 50/100/150. Excavate Plant 7 area to composite criteria* to depth.
Cost: \$92 million

Alternative 5

Complete Excavation with Off-Site Disposal

Excavate accessible soils to composite criteria* depth.
Cost: \$140 million

Alternative 6

Selective Excavation and Disposal

Excavate accessible soils to composite criteria* to 4-6 feet. Below 4-6 feet, clean to 50/100/150. Excavate Plant 7 area to composite criteria* to depth.
Cost: \$114 million

* Composite criteria is 5/5/50 for the top 6 inches and 15/15/50 below 6 inches for radium, thorium, and uranium respectively.

Implementation of this alternative would involve excavation of contaminated soils exceeding the 5/15 pCi/g Ra-226 and 50 pCi/g U-238 criteria. The soils and waste would be consolidated and covered with a protective cap at a suitable downtown location. Contaminated soil beneath the cap site would remain in place. Contaminated buildings would be decontaminated and/or dismantled. To reduce the potential for exposure and human intrusion, institutional controls would be used to control access to the capped area. The cost of Alternative 3 is \$100 million.

Alternative 4 – Partial Excavation with Off-Site Disposal

Excavate accessible soils exceeding 5/5/50 pCi/g in the top 6 inches and 15/15/50 pCi/g at 6-24 inch depths for radium, thorium, and uranium respectively, i.e. composite criteria. Excavate the Plant 7 area to composite criteria to depth. Excavate soil exceeding 50/100/150 pCi/g for radium, thorium, and uranium respectively, i.e. ALARA (as low as reasonably attainable) criteria, to depth and ship contaminated soils off site to an authorized disposal facility. The cost of this alternative is \$92 million.

Alternative 5 – Complete Excavation with Off-Site Disposal

Contaminated soils would be removed and excavated soil would be shipped off site for disposal. Soils under buildings and railroads would be excavated as they became accessible. Contaminated buildings would be decontaminated or dismantled. Annual monitoring would continue until all soils are remediated. The cost of Alternative 5 is \$140 million.

Alternative 6 – Selective Excavation and Disposal

Contaminated soils would be excavated as in Alternative 4, however, the depth would be extended to 6 feet in most areas of the plant and 4 feet at the vicinity properties and under the roads. The excavations would be filled with off-site borrow. Inaccessible soils would not be excavated. The cost of this alternative is \$114 million.

Public Participation

The USACE encourages public input to ensure the remedy selected for SLDS meets the needs of the local community, and is an effective solution to the problem.

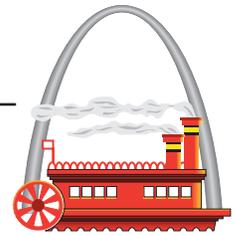
Comments on the proposed remedial action will be accepted for 30 days after the FS and Proposed Plan are issued. Verbal comments will be recorded during the April 21, 1998 public meeting and written comments may be submitted at any time during the 30-day comment period.

The USACE will respond to all significant comments and will consider these comments when working with the U.S. Environmental Protection Agency (EPA) to make a final decision. The final cleanup remedy will be outlined in the Record of Decision, which will be submitted to EPA on July 3, 1998.



U.S. Army Corps of Engineers
St. Louis District

Summary of Activities at the **ST. LOUIS DOWNTOWN SITE OVERVIEW**



"Gateway to Excellence"

The U.S. Army Corps of Engineers (USACE), St. Louis District, is conducting a cleanup program for the St. Louis Downtown Site (SLDS). The Site contains soils contaminated with radium, thorium, and uranium as a result of federal defense activities performed under contracts with the Manhattan Engineer District and the Atomic Energy Commission in the 1940s and 50s.

The USACE has issued a Feasibility Study identifying and evaluating alternatives for cleaning up SLDS as well as a Proposed Plan detailing the preferred cleanup alternative, **Partial Excavation with Off-site Disposal**. Public comment and regulatory review will help determine the remedy selected for the site. Engineering plans, work instructions, health and safety plans, and an environmental compliance plan will be prepared before cleanup begins.

The USACE encourages private citizens to participate fully in the cleanup program.

To learn more about the St. Louis Downtown Site or to inquire about public involvement opportunities, contact
Chris W. Haskell
at (314) 524-3334
or write

St. Louis District, Corps of Engineers
FUSRAP Project Office
9170 Latty Avenue
Berkeley, MO 63134

Background

From 1942 to 1957, the Mallinckrodt Chemical Plant extracted uranium from ore at the St. Louis Downtown Site (SLDS) in St. Louis, Missouri. This processing of ore, conducted under contracts with the Manhattan Engineer District and the Atomic Energy Commission, resulted in releases of spent ore, process chemicals, radium, thorium, and uranium to the environment. Later disposal and relocation of processing wastes resulted in radioactive contamination at other locations near the St. Louis Airport.

SLDS was formerly part of the U.S. Department of Energy (DOE) Formerly Utilized Sites Remedial Action Program (FUSRAP). In 1990, the U.S. Environmental Protection Agency (EPA) and DOE negotiated a Federal Facilities Agreement (FFA), which described the process that would be used to clean up contaminated soils in St. Louis. The U.S. Army Corps of Engineers (USACE) became responsible for FUSRAP in 1997.

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the USACE, St. Louis District, has based their approach to cleaning up SLDS on data and findings contained within four key documents: the Remedial Investigation, the Baseline Risk Assessment, the Initial Screening of Alternatives, and the Feasibility Study. These documents are available for review in the Administrative Record, which is maintained at both 9170 Latty Avenue in Berkeley, Missouri and the St. Louis Public Library, Government Information Section, at 1306 Olive Street in St. Louis, Missouri. A Proposed Plan detailing USACE's preferred alternative has also been issued and is available for review at both locations. The final cleanup remedy will be outlined in the Record of Decision, which will be submitted to the EPA on July 3, 1998.

Early Removal Activities

While developing a comprehensive cleanup strategy, the U.S. Department of Energy identified early removal actions that would minimize exposure to contaminated materials and allow for consolidating the impacted materials at temporary on-site storage areas. Four interim actions were performed between 1995 and 1997:

In 1995, 15,043 cubic yards of contaminated soil was excavated from the Mallinckrodt Plant 10 area and shipped off site for disposal at the Enviro-

Six alternatives were evaluated to address contaminated soils at SLDS. The USACE prefers Alternative 4 with a cleanup level of 5/15/50.

Alternative 1

No Action

Leave SLDS in its current state.
(Required for comparison under CERCLA.)
Cost: \$22 million

Alternative 2

Institutional Control and Site Maintenance

Prevent access to contaminated areas. Perform site maintenance to restrict use and monitor area.
Cost: \$29 million

Alternative 3

Consolidation and Capping

Consolidate and cap contaminated soils and waste. Decontaminate or dismantle buildings.
Cost: \$100 million

Alternative 4

Partial Excavation with Off-Site Disposal

Excavate accessible soils to composite criteria* in the top 2 feet and clean to depth 50/100/150. Excavate Plant 7 area to composite criteria* to depth.
Cost: \$92 million

Alternative 5

Complete Excavation with Off-Site Disposal

Excavate accessible soils to composite criteria* depth.
Cost: \$140 million

Alternative 6

Selective Excavation and Disposal

Excavate accessible soils to composite criteria* to 4-6 feet. Below 4-6 feet, clean to 50/100/150. Excavate Plant 7 area to composite criteria* to depth.
Cost: \$114 million

* Composite criteria is 5/5/50 for the top 6 inches and 15/15/50 below 6 inches for radium, thorium, and uranium respectively.

care facility in Utah.

In 1996, 750 cubic yards of contaminated soil was excavated from the City Property, Riverfront Trail area, and shipped off site for disposal at the Envirocare facility in Utah.

In 1996, the 50-series buildings on the Mallinckrodt property were decontaminated and demolished.

In 1997, Plant 6 and 7 Buildings were decontaminated and demolished.

Public Participation

The USACE encourages public input to ensure the remedy selected for SLDS meets the needs of the local community and is an effective solution to the problem.

Comments on the proposed remedial action will be accepted for 30 days after the Feasibility Study and the Proposed Plan are issued. Verbal comments will be recorded during the April 21, 1998 public meeting and written comments may be submitted at any time during the 30-day comment period. The USACE will respond to all significant comments and will consider these comments when working with EPA to make a final deci-

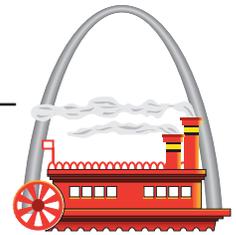


Aerial view of the St. Louis Downtown Site in St. Louis, Missouri.



U.S. Army Corps of Engineers

Summary of Activities at the **HAZELWOOD INTERIM STORAGE SITE**



"Gateway to Excellence"

The U.S. Army Corps of Engineers (USACE), St. Louis District, is conducting a cleanup program for two St. Louis Airport area sites. These sites once supported federal defense activities for the Manhattan Engineer District and the Atomic Energy Commission. The St. Louis Airport Site and the Hazelwood Interim Storage Site (HISS) today contain soils contaminated with uranium, thorium, and radium. Primary goals of cleanup are to restrict the release of contaminated materials and minimize potential impacts to human health and the environment. Secondary goals are to restore the sites for potential reuse.

The USACE has reviewed several interim cleanup measures for HISS and has identified one as a preferred alternative. Public comment and regulatory review will help determine the removal action selected for the site. Engineering plans, work instructions, health and safety plans, and an environmental compliance plan will be prepared before cleanup begins.

Background

From 1942 to 1957, the Mallinckrodt Chemical Plant extracted uranium and radium from ore at the St. Louis Downtown Site in downtown St. Louis, Missouri. During this time and until 1967, radioactive process byproducts were stored at an area adjacent to the Lambert-St. Louis Airport. This area is known today as the St. Louis Airport Site (SLAPS).

In the years from 1966 to 1973, wastes were handled a number of times. For instance, in 1966, SLAPS wastes were purchased, moved, and stored at 9200 Latty Avenue. Part of this property later became known as the Hazelwood Interim Storage Site (HISS). Although site workers processed and shipped most of the material to Canon City, Colorado, soils remaining at the HISS site still contain contaminants. Improper storage, handling, and transportation also caused the spread of materials along haul routes and to vicinity properties.

In 1984, cleanup activities resulted in the clearing and excavation of the site and surrounding vicinity properties, but added an additional 14,000 cubic yards of contaminated soil to the HISS stockpile. A subsequent cleanup in 1986 resulted in a smaller, supplemental storage pile.

In 1996, the owner of Stone Container Corporation, located near HISS, expanded its facility and stockpiled about 8,000 cubic yards of contaminated soil. The stockpile is known as the Stone Container Pile.

Cleanup Activities

In 1990, the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy negotiated a Federal Facilities Agreement. The agreement described the process that would be used to clean up, or remediate, contaminated soils in St. Louis. The EPA placed HISS/Futura Coatings and the Latty Avenue vicinity properties on the National Priorities List to expedite their cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Values of the National Environmental Policy Act were also integrated into the process.

The Formerly Utilized Sites Remedial Action Program is conducting cleanup activities at HISS. Surveys and field investigations were conducted at HISS and SLAPS from 1977 through 1997. These studies

Three alternatives have been evaluated to address contaminated soils at HISS and vicinity properties. The USACE prefers Alternative 2.

Alternative 1

NO ACTION

Leave the HISS and Latty Avenue vicinity properties in their current condition; continue to monitor and maintain for both surface and air releases of radionuclides, perform monitoring of groundwater.

This alternative is a CERCLA requirement.

Cost: \$7.5 million

Alternative 2

EXCAVATION AND DISPOSAL WITH REUSE OF BELOW-CRITERIA SOILS

Remove contaminated soil; store below-criteria soils on HISS for potential reuse as backfill in HISS subsurface, and ship contaminated soils off site for commercial disposal. This alternative assumes a significant amount of soil will be below the selected criteria.

Cost: \$69.7 million

Alternative 3

EXCAVATION AND DISPOSAL

Remove contaminated soil; store below criteria soils on HISS for reuse as backfill, and ship contaminated soils off site for commercial disposal. This alternative assumes minimal quantities of soil will be below selected criteria.

Cost: \$74.4 million

determined the nature and distribution of chemical and radioactive contaminants and reviewed the geology and hydrology of the sites.

The USACE has prepared draft engineering evaluations/cost analyses that identify potential cleanup measures to be used until a comprehensive cleanup can be achieved. These analyses evaluate several possible interim cleanup measures and include the Stone Container property and soils on three Latty Avenue properties as part of the HISS cleanup.

The interim cleanup measure that is selected will be just one part of a comprehensive cleanup program for HISS. Comprehensive cleanup measures will be selected after completing the remedial investigation/feasibility study process. This process is required by CERCLA and will result in a Record of Decision that identifies how HISS will be cleaned.

An interim removal action for HISS is planned to begin in 1998 and will continue until the action is completed.



Soils remaining at the HISS site are contaminated with uranium, thorium, and radium.

The USACE encourages private citizens to participate fully in the cleanup program.

To learn more about the St. Louis Airport area sites or to inquire about public involvement opportunities, contact

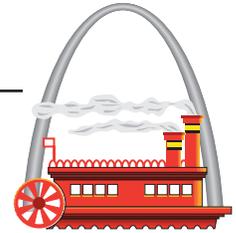
Chris W. Haskell
at (314) 524-3364,
or write

St. Louis District, Corps of Engineers
FUSRAP Project Office
9170 Latty Avenue
Berkeley, MO 63134



U.S. Army Corps of Engineers

Summary of Activities at the **ST. LOUIS AIRPORT SITE**



"Gateway to Excellence"

The U.S. Army Corps of Engineers (USACE), St. Louis District, is conducting a cleanup program for two St. Louis Airport area sites. These sites once supported federal defense activities for the Manhattan Engineer District and the Atomic Energy Commission. The St. Louis Airport Site (SLAPS) and the Hazelwood Interim Storage Site today contain soils contaminated with uranium, thorium, and radium. Primary goals of cleanup are to restrict the release of contaminated materials and minimize potential impacts to human health and the environment. Secondary goals are to restore the sites for potential reuse.

The USACE has reviewed several interim cleanup measures for SLAPS and has identified one as a preferred alternative. Public comment and regulatory review will help determine the removal action selected for the site. Engineering plans, work instructions, health and safety plans, and an environmental compliance plan will be prepared before

Background

From 1942 to 1957, the Mallinckrodt Chemical Plant extracted uranium and radium from ore at the St. Louis Downtown Site in downtown St. Louis, Missouri. During this time and until 1967, radioactive process byproducts were stored at an area adjacent to the Lambert-St. Louis Airport in north St. Louis County. This area is known today as the St. Louis Airport Site (SLAPS).

In the years from 1966 to 1973, wastes were moved from the site. In 1966, residuals from SLAPS were purchased, moved, then stored at 9200 Latty Avenue. The Atomic Energy Commission (AEC) licensed the movement and storage. Site structures at SLAPS were demolished and buried on the property along with roughly 60 truckloads of scrap metal. Clean soil was then spread at a thickness of one to three feet to reduce radioactivity at the surface and to meet the standards then in place. In 1973, the U.S. Government and the City of St. Louis transferred ownership of SLAPS from AEC to the St. Louis Airport Authority.

Cleanup Activities

In 1990, the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy negotiated a Federal Facilities Agreement. The agreement described the process that would be used to clean up, or remediate, contaminated soils in St. Louis. The EPA placed SLAPS on the National Priorities List to expedite its cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Values of the National Environmental Policy Act were also integrated into the process.

The Formerly Utilized Sites Remedial Action Program is conducting cleanup activities at SLAPS. Surveys and field investigations were conducted at SLAPS and the Hazelwood Interim Storage Site from 1977 through 1997. These studies determined the nature and distribution of chemical and radioactive contaminants and reviewed the geology and hydrology of the sites.

The USACE has prepared a draft engineering evaluations/cost analyses for SLAPS that identifies potential cleanup measures to be used until the comprehensive cleanup plan is in place. These analyses evaluate several

Three alternatives have been evaluated to address contaminated soils at SLAPS and the ballfields. The USACE prefers Alternative 3 with a cleanup level of 5/15/50.

Alternative 1

NO ACTION

Leave the SLAPS and the Ballfields in their current condition; continue to monitor and maintain for both surface and air releases of radionuclides, perform monitoring of groundwater.

This alternative is a CERCLA requirement.

Cost: \$11.4 million

Alternative 2

EXCAVATION AND DISPOSAL OF SLAPS AND THE BALLFIELDS

Excavate and remove contaminated materials; backfill excavated areas with clean soil. Dispose of contaminated materials at a licensed disposal facility.

Cost: \$106.3 - 218.6 million

Alternative 3

EXCAVATION AND DISPOSAL OF SLAPS AND THE BALLFIELDS WITH USE OF BELOW-CRITERIA SOILS AS BACKFILL

Excavate and remove contaminated materials; backfill excavated areas with clean soil. Dispose of contaminated materials at a licensed disposal facility. Excavated materials that are below the selected cleanup criteria and that meet guidelines for chemicals and metals would be used at the SLAPS as backfill.

Cost: \$103 - 210 million

The USACE encourages private citizens to participate fully in the cleanup program.

To learn more about the St. Louis Airport area sites or to inquire about public involvement opportunities, contact

Chris W. Haskell
at (314) 524-3364,
or write

St. Louis District, Corps of Engineers
FUSRAP Project Office
9170 Latty Avenue

possible interim cleanup measures and include the nearby Ballfields property as part of the SLAPS cleanup.

The interim cleanup measure that is selected will be just one part of a comprehensive cleanup program for SLAPS. Comprehensive cleanup measures will be selected after completing the remedial investigation/feasibility study process. This process is required by CERCLA and results in a Record of Decision (ROD) that identifies how SLAPS will be cleaned.

An interim removal action for SLAPS is planned to begin in 1998 and will continue until the action is completed or a ROD is issued for the site.



The St. Louis Airport Site and the Ballfields contain soil contaminated with uranium, thorium, and radium.



FUSRAP *Fact Sheet*

St. Louis Site

St. Louis, Missouri

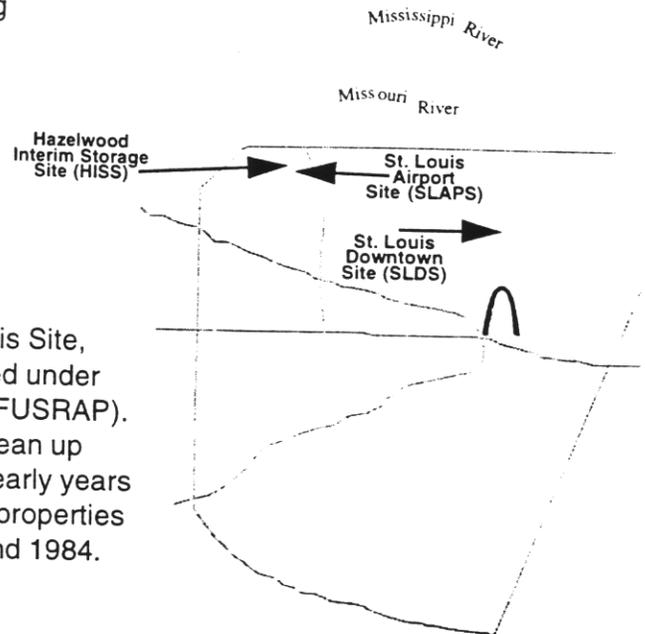
U.S. Department of Energy • Formerly Utilized Sites Remedial Action Program • March 1997

This fact sheet has been prepared to address community outreach needs and is consistent with provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Environmental Policy Act (NEPA). Fact sheets are one part of an effort to provide public information on environmental restoration and waste management.

The U.S. Department of Energy (DOE) is implementing a cleanup program for four groups of properties in the St. Louis area that are contaminated with low levels of radioactivity. The properties are:

- the St. Louis Downtown Site (SLDS);
- the St. Louis Airport Site (SLAPS);
- the Latty Avenue properties, which include the Hazelwood Interim Storage Site (HISS); and
- several nearby vicinity properties.

These properties, collectively referred to as the St. Louis Site, are among the 46 sites across the country being addressed under DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP). FUSRAP was founded in 1974 to identify, manage, and clean up sites where radioactive contamination remained from the early years of our nation's atomic energy program. The four St. Louis properties were added to FUSRAP at various times between 1982 and 1984.



Site history

From 1942 to 1957, the Manhattan Engineer District (MED) and Atomic Energy Commission (AEC) contracted with the Mallinckrodt Chemical Works to process uranium compounds at a plant in St. Louis. As a result of these activities, parts of the property became contaminated. When MED/AEC operations ceased, the facilities were decontaminated in accordance with the standards of the day. Later investigations showed that portions of the facility retained levels of radioactivity exceeding today's stricter guidelines. Four vicinity properties also contain areas of residual contamination.

In 1946, MED acquired SLAPS, a 21-acre site just north of the St. Louis airport, for storage of residues and other materials from SLDS. (SLAPS is now owned by the city of St. Louis.) In subsequent years, adjacent areas became contaminated as a result of erosion from SLAPS.

In 1966, a private company purchased SLAPS residues, which contained valuable metals, and began hauling them to a site on Latty Avenue, about one-half mile north in Hazelwood. Later, the material was sold again and much of it shipped to Colorado. Surveys in 1977 showed that the former owners had left contamination on the Latty property.

In addition, transport of the material had spread contamination along the haul routes. Although DOE was not responsible for this contamination, Congress directed that DOE add these areas to FUSRAP because of their similarity to other FUSRAP sites.

Cleanup Successes to Date

DOE's first major cleanups at the St. Louis Site took place in 1984 and 1986, when areas along Latty Avenue in Berkeley and Hazelwood were excavated to allow construction of city stormwater and sewer

lines. The contaminated soils were moved to the HISS onsite storage pile at the end of Latty Avenue.

DOE accelerated its interim cleanup work in 1994. Haul routes that fronted residential properties in Hazelwood and Berkeley were cleaned up in late 1994. In 1995 and 1996, more than a dozen haul route commercial properties were cleaned up, as were two large sections of SLDS. A SLDS vicinity property, the city-owned riverfront area, was also cleaned and restored in 1996. This cleanup allowed for the completion of a significant portion of the Riverfront Trail. Continued cleanups of haul route properties and portions of SLDS are planned for 1997.

Action on much of the remainder of the St. Louis Site awaits a formal remedy determination, or Record of Decision. The process of reaching remedy decisions is mandated by federal law and follows steps outlined in an agreement between DOE and the U.S. Environmental Protection Agency.

Cleanup impacts

In addition to the environment, the local economy also benefits from the FUSRAP cleanup. Cleaned and restored residential and commercial properties are free to be bought, sold, or improved without concern for radiological restrictions.

The cleanup work itself provides a significant economic benefit. FUSRAP relies heavily on local subcontracts and purchasing to carry out cleanup activities. Cleanup-related subcontracting and purchasing amounted to more than \$1.2 million in fiscal year 1995, and to more than \$2.3 million in FY '96. Waste transportation and disposal accounted for an additional \$8.9 million over both fiscal years. Projected subcontract expenditures for FY 1997 are significantly higher. (As a matter of policy, FUSRAP uses small, disadvantaged businesses to the maximum extent possible.)

Public involvement

Through public involvement opportunities, local residents have a significant voice in St. Louis Site decision-making. Community concerns over DOE cleanup plans in 1994 led to the creation of the St. Louis Site Remediation Task Force. Task Force membership represented a broad cross-section of interested and affected parties or "stakeholders." Its stated mission was to identify and evaluate feasible remedial action alternatives for the cleanup and disposal of radioactive wastes at the St. Louis Site and to petition the DOE to pursue a cleanup strategy that is environmentally acceptable and responsive to public health and safety concerns.

The Task Force submitted its final report to DOE in September 1996, and DOE agreed to accept many of the group's recommendations. DOE determined that some of the recommendations, including those related to SLAPS, would require further review. Resolution of these remaining issues is projected for late 1997.

DOE has offered to create a Site Specific Advisory Board as a successor to the Task Force to provide stakeholders a forum for assisting the department with environmental management issues at the site.

For more information...

DOE maintains a Public Information Center where visitors and callers may obtain site information, view project documents, and participate in public involvement activities. The center's reading room includes a complete copy of the site Administrative Record, a collection of studies and documents deemed to have an impact on the selection of a final remedy for the site. The St. Louis Public Library, 1301 Olive Street in St. Louis also has a site Information Repository, which also includes a copy of the Administrative Record.

For more information, or to be added to the site mailing list, contact:

DOE Public Information Center
9170 Latty Avenue
Berkeley, Missouri 63134
(314) 524-4083

DOE also maintains a 24-hour, toll-free telephone number. An answering machine will record your comments or questions, and your call will be returned promptly. The number is **1-800-253-9759**. Visit FUSRAP on the World Wide Web at www.fusrap.doe.gov.

EPA Superfund Technical Assistance Grants

Office of Emergency and Remedial Response
Hazardous Site Control Division (OS-220)

Quick Reference Fact Sheet

WHAT ARE TECHNICAL ASSISTANCE GRANTS

Background of Program – In 1980, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) – otherwise known as "Superfund" – established a trust fund for the cleanup of hazardous waste sites in the United States. CERCLA was amended and reauthorized when Congress passed the Superfund Amendments and Reauthorization Act (SARA) of 1986. The U.S. Environmental Protection Agency (EPA), working in concert with the States, is responsible for administering the Superfund program.

An important aspect of the Superfund program is citizen involvement at the local level in decision-making that relates to site-specific cleanup actions. For this reason, community outreach activities are underway at each of the 1,200 sites that are presently on, or proposed for listing on, the National Priorities List (NPL). The NPL is EPA's published list of the most serious abandoned or otherwise uncontrolled hazardous waste sites nationwide, which have been identified for possible remedial cleanup under Superfund.

Recognizing the importance of community involvement and the need for citizens living near NPL sites to be well-informed, Congress included provisions in SARA to establish a Technical Assistance Grant (TAG) Program intended to foster informed public involvement in decisions relating to site-specific cleanup strategies under Superfund.

In addition to regulatory and legal requirements, decisions concerning cleanup initiatives at NPL sites must take into account a range of technical considerations. These might include:

- Analytical profiles of conditions at the site;
- The nature of the wastes involved; and
- The kinds of technology available for performing the necessary cleanup actions.

The TAG Program provides funds for qualified citizens' groups to hire independent technical advisors to help them understand and comment on such technical factors in cleanup decisions affecting them.

Basic Provisions of the Technical Assistance Grants Program

- Grants of up to \$50,000 are available to community groups for the purpose of hiring technical advisors to help citizens understand and interpret site-related technical information.
- The group must cover 20 percent of the total costs of the project to be supported by TAG funds.
- The group must budget the expenditure of grant funds to cover the entire cleanup period (which averages six years).
- There may be only one TAG award per NPL site; however, the grant may be renewed.

USES OF TECHNICAL ASSISTANCE GRANTS

Citizen groups may use grant funds to hire technical advisors to help them understand information that already exists about the site or information developed during the Superfund cleanup process. Acceptable uses of these grant funds include payments to technical advisors for services such as:

- Reviewing site-related documents, whether produced by EPA or others;
- Meeting with the recipient group to explain technical information;
- Providing assistance to the grant recipient in communicating the group's site-related concerns;
- Disseminating interpretations of technical information to the community;
- Participating in site visits, when possible, to gain a better understanding of cleanup activities; and
- Traveling to meetings and hearings directly related to the situation at the site.

TAG funds may not be used to develop new information (for example, additional sampling) or to underwrite legal actions in any way, including the preparation of testimony or the hiring of expert witnesses.

You can obtain a complete list of eligible and ineligible uses of grant funds by contacting your EPA Regional Office or the Headquarters information number listed at the end of this pamphlet. In addition, this information is included in the EPA publication entitled *The Citizens' Guidance Manual for the Technical Assistance Grant Program* (OSWER Directive 9230.1-03), also available from your Regional EPA Office.

WHO MAY APPLY

As stated in the 1986 Superfund amendments, groups eligible to receive grants under the TAG program are those whose membership may be affected by a release or threatened release of toxic wastes at any facility listed on the NPL or proposed for listing, and where preliminary site work has begun. In general, eligible groups are groups of individuals who live near the site and whose health, economic well-being, or enjoyment of the environment are directly threatened. Any group applying for a TAG must be nonprofit and incorporated or working towards incorporation under applicable State laws. Applications are encouraged from:

- Groups that have a genuine interest in learning more about the technical aspects of a nearby hazardous waste site; and
- Groups that have, or intend to establish, an organization to manage a grant efficiently and effectively.

For example, such groups could be:

- Existing citizens' associations;
- Environmental or health advocacy groups; or
- Coalitions of such groups formed to deal with community concerns about the hazardous waste site and its impact on the surrounding area.

Groups that are not eligible for grant funds are:

- Potentially responsible parties: any individuals or companies (such as facility owners or operators, or transporters or generators of hazardous waste) potentially responsible for, or contributing to, the contamination problems at a Superfund site;
- Academic institutions;
- Political subdivisions; and
- Groups established and/or sustained by governmental entities (including emergency planning committees and some citizen advisory groups).

HOW TO APPLY FOR A GRANT

Requirements – When applying for a TAG, a group must provide information to EPA (or to the State, if the State is administering the TAG program) to determine if the group meets specific administrative and management requirements. The application also must include a description of the group's history, goals, and plans for using the technical assistance funds. Factors that are particularly important in this evaluation process include:

- The group's ability to manage the grant in compliance with EPA grant and procurement regulations;
- The degree to which the group members' health, economic well-being, and enjoyment of the environment are adversely affected by a hazardous waste site;
- The group's commitment and ability to share the information provided by the technical advisor with others in the community;
- Broad representation of affected groups and individuals in the community; and;
- Whether the applicant group is nonprofit and incorporated for TAG purposes. (Only incorporated groups may receive grants. Groups must either be incorporated specifically for the purpose of addressing site-related problems or incorporated for broader purposes if the group has a substantial history of involvement at the site.)

In general, a group must demonstrate that it is aware of the time commitment, resources, and dedication needed to successfully manage a TAG. Applicant groups should consult *The Citizens' Guidance Manual For The Technical Assistance Grant Program* for detailed instructions on how to present such information.

Notification Procedures and Evaluation Criteria – The 1986 Superfund amendments state that only one TAG may be awarded per site. To ensure that all eligible groups have equal access to technical assistance and an equal opportunity to compete for a single available grant (if a coalition of groups proves to be impossible), EPA has established a formal notification process, which includes the following steps:

- Groups wishing to apply for a technical assistance grant must first submit to EPA a short letter stating their group's desire to apply and naming the site(s) involved. If site project work is already underway or scheduled to begin, EPA will provide formal notice through mailings, meetings, or other public notices to other interested parties that a grant for the site soon may be awarded.
- Other potential applicants would then have 30 days to contact the original applicant to form a coalition.
- If potential applicants are unable to form a coalition, they will notify EPA within this time period and EPA will accept separate applications from all interested groups for an additional 30-day period.
- EPA would then award a grant to the application that best meets the requirements described above.

The maximum grant that can be awarded to any group is \$50,000. The actual amount depends on what the group intends to accomplish. A group's minimum contribution of 20 percent of the total costs of the technical assistance project can be covered with cash and/or "in-kind" contributions, such as office supplies or services provided by the group. These services might include, for example, publication of a newsletter or the time an accountant donates to managing the group's finances. The value of donated professional services is determined based on rates charged for similar work in the area.

In special cases where an applicant group intends to apply for a single grant covering multiple sites in close proximity to each other, EPA can allow a waiver of the \$50,000 grant limit. In such cases, however, the recipient cannot receive more than \$50,000 for each site to which it intends to apply funds (example: 3 sites x \$50,000 = maximum grant amount of \$150,000).

CHOOSING A TECHNICAL ADVISOR

When choosing a technical advisor, a group should consider the kind of technical advice the group needs most and whether a prospective advisor has the variety of skills necessary to provide all of the advice needed. Each technical advisor must have:

- Knowledge of hazardous or toxic waste issues;
- Academic training in relevant fields such as those listed above; and
- The ability to translate technical information into terms understandable to lay persons.

In addition, a technical advisor should have:

- Experience working on hazardous waste or toxic waste problems;
- Experience in making technical presentations and working with community groups; and
- Good writing skills.

Technical advisors will need specific knowledge of one or more of these subjects:

Chemistry: Analysis of the chemical constituents and properties of wastes at the site;

Toxicology: Evaluation of the potential effects of site contaminants upon human health and the environment;

Epidemiology: Evaluation of the pattern of human health effects potentially associated with site contaminants;

Hydrology and Hydrogeology: Evaluation of potential contamination of area surface water and ground-water wells from wastes at the site;

Soil Science: Evaluation of potential and existing soil contamination;

Limnology: Evaluation of the impact of site runoff upon the plant and animal life of nearby streams, lakes, and other bodies of water;

Meteorology: Assessment of background atmospheric conditions and the potential spread of contaminants released into the air by the site; and/or

Engineering: Analysis of the development and evaluation of remedial alternatives and the design and construction of proposed cleanup actions.

A grant recipient may choose to hire more than one technical advisor to obtain the combination of skills required at a particular site. For example, a group may be unable to find a single advisor experienced in both hydrology and epidemiology, two of the skills most needed at its site. Another approach would be to hire a consulting firm that has experience in all the needed areas. *The Citizens' Guidance Manual for the Technical Assistance Grant Program* identifies other issues that citizens' groups may wish to consider in hiring a technical advisor.

ADDITIONAL INFORMATION

For further information on the application process or any other aspect of the TAG program, please contact your EPA Regional Office or call the national information number, both of which are listed below. An application package is available free by calling the EPA Regional Office for your State (see map on back cover). Each application package includes all the necessary application and certification forms as well as a copy of *The Citizen's Guidance Manual For The Technical Assistance Grant Program*. This manual contains sample forms with detailed instructions to assist you in preparing a TAG application.

EPA Superfund Offices

EPA Headquarters
Office of Emergency & Remedial
Response
401 M Street, SW
Washington, DC 20460
(202) 382-2449

EPA Region 1
Emergency and Remedial
Response Division
John F. Kennedy Building
Boston, MA 02203
(617) 573-5701
*Connecticut, Maine, Massachusetts, New Hampshire,
Rhode Island, Vermont*

EPA Region 2
Superfund Branch
26 Federal Plaza
New York, NY 10278
(212) 264-4534
New Jersey, New York, Puerto Rico, Virgin Islands

EPA Region 3
Superfund Branch
841 Chestnut Building
Philadelphia, PA 19106
(215) 597-4081
*Delaware, District of Columbia, Maryland,
Pennsylvania, Virginia, West Virginia*

EPA Region 4
Emergency and Remedial
Response Branch
345 Courtland Street, NE
Atlanta, GA 30365
(404) 347-2234
*Alabama, Florida, Georgia, Kentucky, Mississippi,
North Carolina, South Carolina, Tennessee*

EPA Region 5
Emergency and Remedial
Response Branch
230 S. Dearborn Street
Chicago, IL 60604
(312) 886-1660
*Illinois, Indiana, Michigan, Minnesota, Ohio,
Wisconsin*

EPA Region 6
Superfund Program Branch
Allied Bank Tower
1445 Ross Avenue
Dallas, TX 75202-2733
(214) 655-2200
Arkansas, Louisiana, New Mexico, Oklahoma, Texas

EPA Region 7
Superfund Branch
726 Minnesota Avenue
Kansas City, KS 66101
(913) 236-2803
Iowa, Kansas, Missouri, Nebraska

EPA Region 8
Waste Management Division
1 Denver Place
999 18th Street
Denver, CO 80202-2413
(303) 564-7040
*Colorado, Montana, North Dakota, South Dakota,
Utah, Wyoming*

EPA Region 9

Superfund Programs Branch

215 Fremont Street

San Francisco, CA 94105

(415) 454-744-1766

*Arizona, California, Guam, Hawaii, Nevada,
American Samoa*

EPA Region 10

Superfund Branch

1200 6th Avenue

Seattle, WA 98101

(206) 442-0603

Idaho, Oregon, Washington, Alaska

Superfund/RCRA Hotline

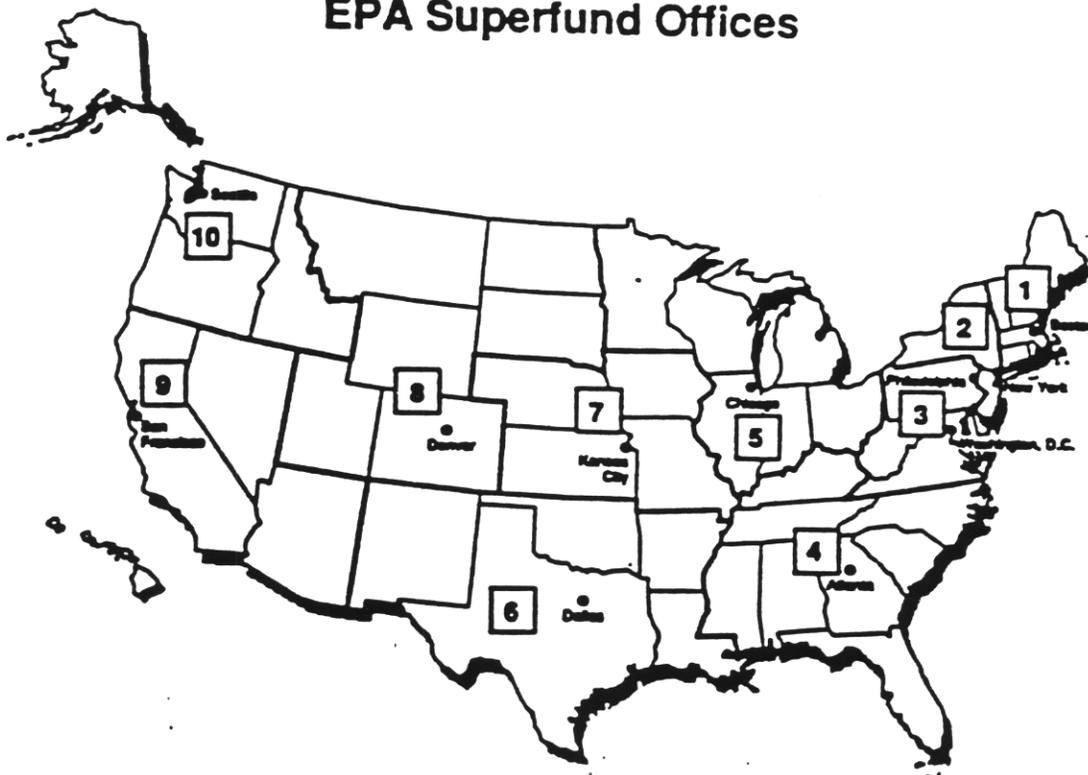
(800) 424-9346 or 382-3000

in the Washington, DC, metropolitan area (for information on programs)

National Response Center (800) 424-8802

(to report releases of oil and hazardous substances)

EPA Superfund Offices





FUSRAP
FactSheet
**FORMERLY UTILIZED SITES
REMEDIAL ACTION PROGRAM**

U.S. DEPARTMENT OF ENERGY • FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM • OCTOBER 1995

This fact sheet has been prepared to address community outreach requirements set by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Environmental Policy Act (NEPA). Fact sheets are one part of an effort to provide public information on environmental restoration and waste management.

WHAT IS FUSRAP?

During the 1940s, 1950s, and 1960s, work was performed at sites throughout the United States as part of the nation's early atomic energy program. Some sites' activities can be traced back as far as World War II and the Manhattan Engineer District (MED); other sites were involved in peacetime activities under the Atomic Energy Commission (AEC). Both MED and AEC were predecessors of DOE.

Generally, sites that became contaminated during the early atomic energy program were cleaned up under the guidelines in effect at the time. Because those cleanup guidelines were not as strict as today's, trace amounts of radioactive materials remained at some of the sites. Over the years, contamination was spread to other locations, either by demolition of buildings and movement of materials, or by natural processes.

DOE began FUSRAP in 1974 to study these sites and take appropriate cleanup action. When a site is thought to be contaminated, old records are reviewed and the site is surveyed. If contamination is found that is connected to MED or AEC activities, cleanup is authorized under FUSRAP. Some sites with industrial contamination similar to that produced by MED or AEC activities have also been added to FUSRAP by Congress.

Since starting FUSRAP, DOE has examined records or performed surveys on more than 400 sites. Most were not contaminated, but 46 sites in 14 states have been found to be contaminated with radioactivity that exceeds current cleanup guidelines.

Limited cleanup began at some sites in 1979, and major remedial action has been under way since 1981. Cleanup has been completed at 22 of the sites; 12 others have been partially cleaned up. And more than 175 vicinity properties, including homes, parks, and streams, have been cleaned.

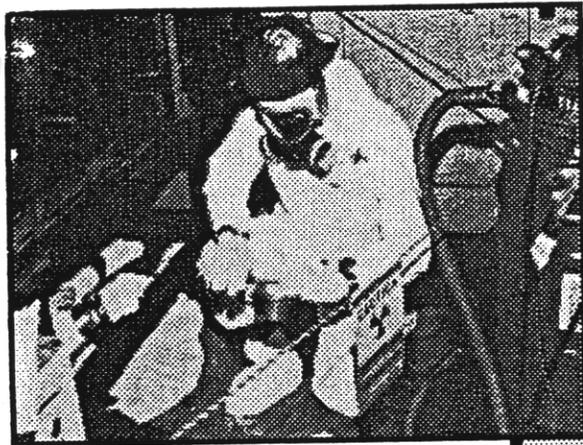
HOW HAZARDOUS ARE FUSRAP SITES?

Even though FUSRAP sites contain levels of radioactivity above current DOE guidelines, none of the sites poses an immediate health risk to the public or environment given current land uses. The contaminated materials have very low concentrations, and people are not exposed to them for long periods of time. Although these materials are not a hazard, they will remain radioactive for thousands of years, and health risks could increase if the use of the land were to change. Under FUSRAP, each site is cleaned to levels acceptable for most, if not all, future uses for the land, such as residential development, crop production, and the installation of drinking water wells.

WHAT ARE FUSRAP'S OBJECTIVES?

The objectives of FUSRAP are to:

- Find and evaluate sites that supported MED/AEC nuclear work and determine whether they need cleanup and/or control.

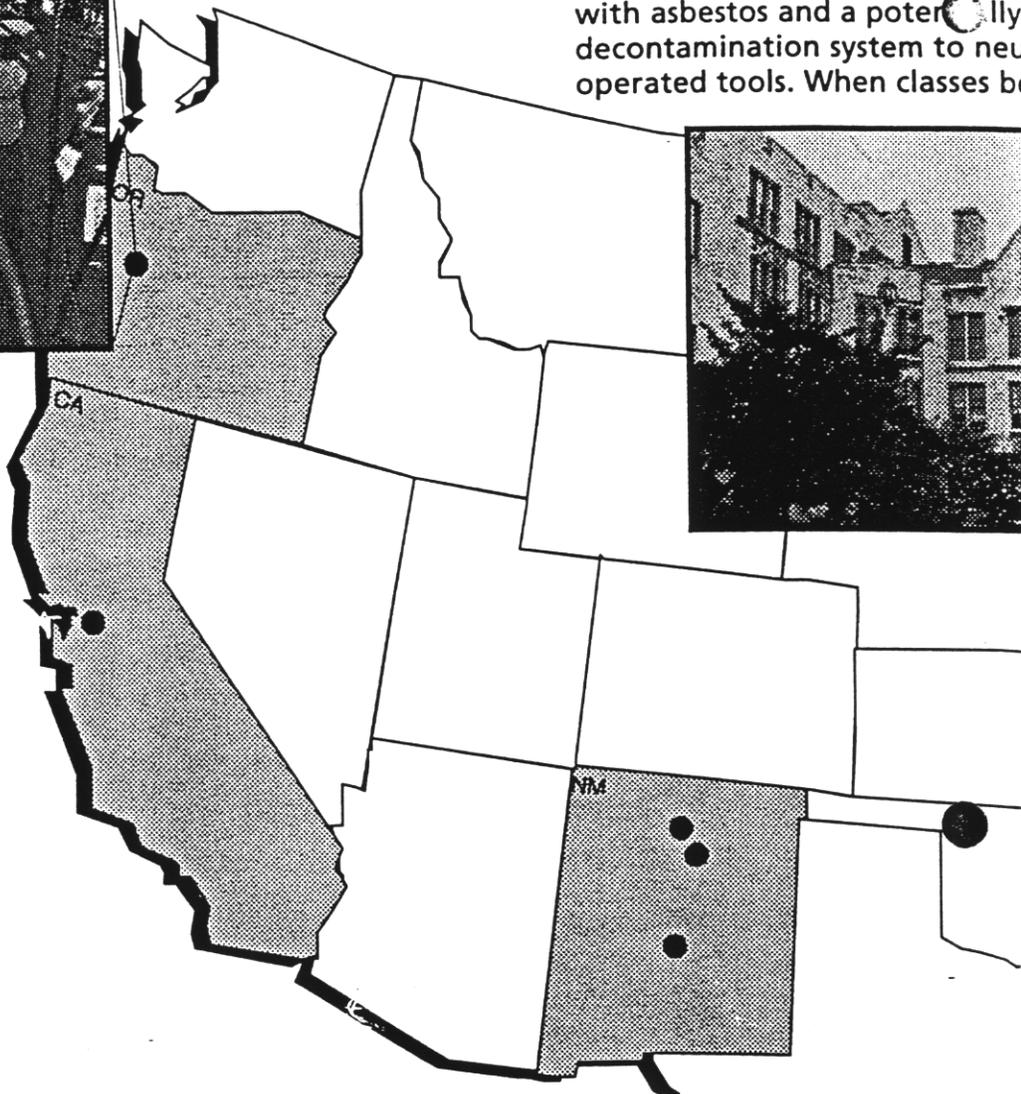


Albany Research Center

This facility in Albany, Oregon, opened in 1943 to conduct metallurgical research. DOE contractors performed several investigations and cleanups to find and remove the contamination, which was in soil, inside the building, and in drainage pipes. The contaminated material was transported to a disposal facility out of state.

University of Chicago

A laboratory at the university featured a contaminated exhaust system. Radioactive dust was collected by a high-efficiency particulate air (HEPA) filter. DOE installed a new decontamination system to neutralize the dust. When classes began, the system was tested and found to be effective.



Elza Gate

This site was once a staging area for uranium shipped to Oak Ridge, Tennessee, a town built by the government in the 1940s to produce parts for the atomic bomb. Three warehouses at Elza Gate stored radioactive materials. After the buildings were torn down, contamination remained in dirt and on debris. DOE removed the contaminated material and sent it to a disposal facility. The site is now home to an industrial park.

MISSOURI SITES

- Latty Avenue Properties, Hazelwood
- St. Louis Airport Site, St. Louis
- St. Louis Airport Site Vicinity Prop., St. Louis
- St. Louis Downtown Site, St. Louis

OHIO SITES

- B & T Metals, Columbus
- Luckey Site, Luckey
- Painesville Site, Painesville

NEW JERSEY SITES

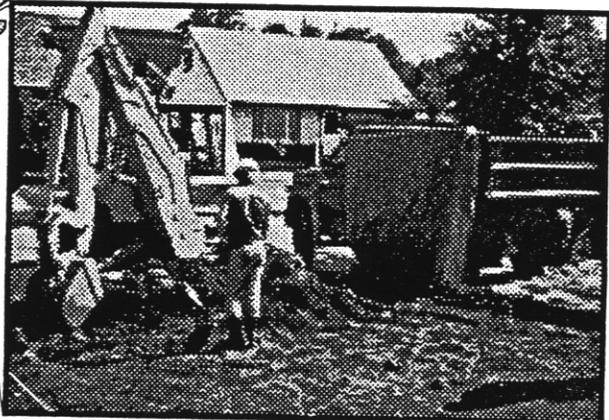
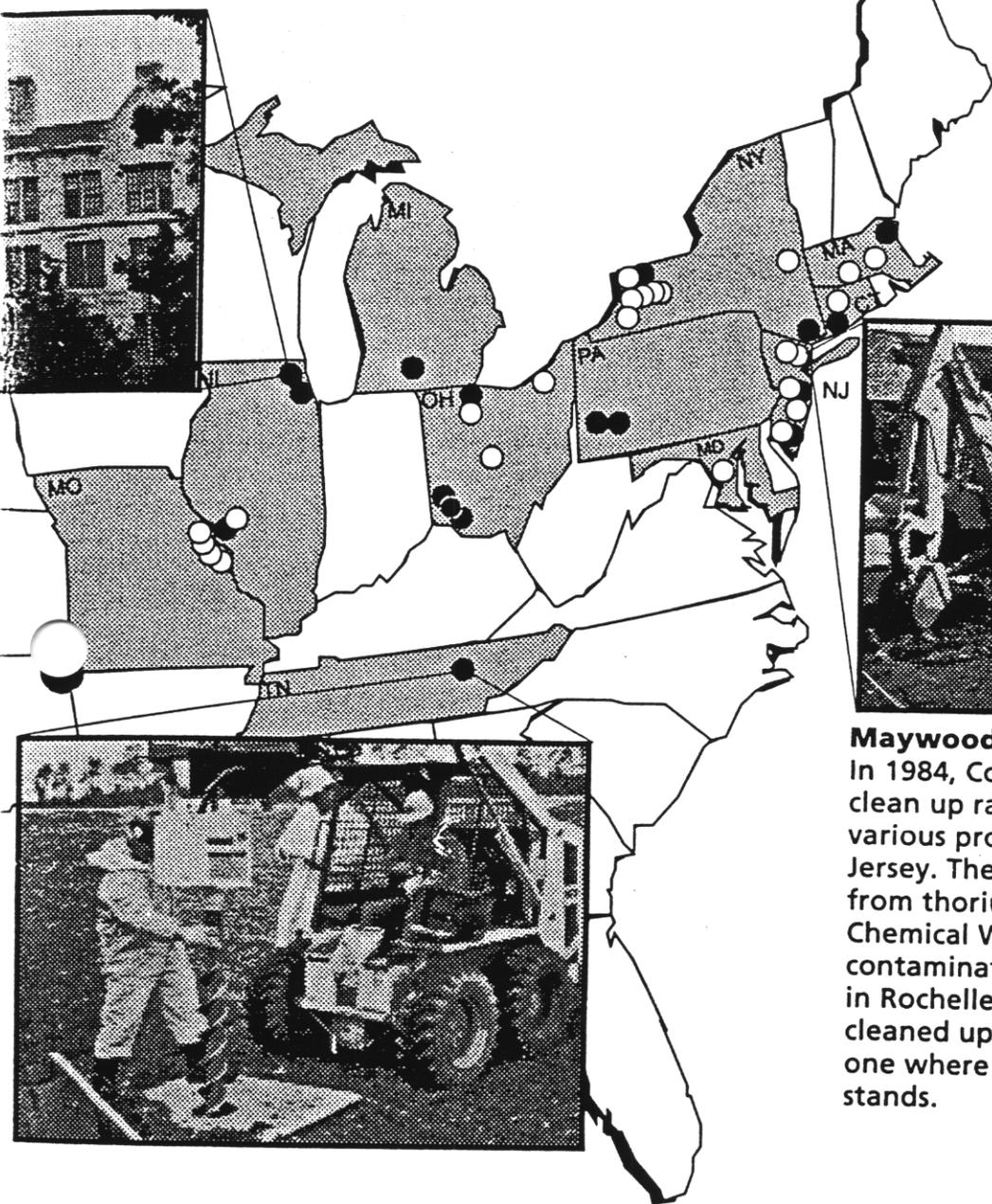
- Maywood Site, Maywood
- Wayne Site, Wayne/Pequannock
- Middlesex Sampling Plant, Middlesex
- New Brunswick Site, New Brunswick
- Du Pont & Company, Deepwater

NEW YORK SITES

- Niagara Falls Storage Site, Lewiston
- Colonie Site, Colonie
- Ashland 1, Tonawanda
- Ashland 2, Tonawanda
- Praxair, Tonawanda
- Seaway Industrial Park, Tonawanda
- Bliss & Laughlin Steel, Buffalo

- Remedial Action Ongoing or Planned
- Remedial Action Completed

... was used in early atomic energy work contained a contaminant that had built up inside the duct work and was mixed with a chemical. DOE's contractor designed an innovative process to neutralize the chemicals and remove the radiation with remotely operated equipment. In the next term, the laboratory was ready for students to use.



Maywood
 In 1984, Congress authorized DOE to clean up radioactive contamination on various properties in Maywood, New Jersey. The contamination had resulted from thorium processing at Maywood Chemical Works from 1916 to 1959. The contamination spread to residential areas in Rochelle Park and Lodi. DOE has cleaned up several properties, including one where a retirement home now stands.

- ADDITIONAL SITES**
- Madison Site, Madison, IL
 - CE Site, Windsor, CT
 - Shpack Landfill, Norton, MA
 - Ventron Corporation, Beverly, MA
 - W.R. Grace & Company, Curtis Bay, MD

- COMPLETED SITES (22)**
- Kellex/Pierpont, Jersey City, NJ (1981)
 - Acid/Pueblo Canyon, Los Alamos, NM (1982)
 - Bayo Canyon, Los Alamos, NM (1982)
 - University of California, Berkeley, CA (1982)
 - Chupadera Mesa, White Sands Missile Range, NM (1984)
 - Middlesex Municipal Landfill, Middlesex, NJ (1986)
 - Niagara Falls Storage Site Vicinity Prop., Lewiston, NY (1986)
 - University of Chicago, Chicago, IL (1987)
 - National Guard Armory, Chicago, IL (1988)
 - Albany Research Center, Albany, OR (1991)
 - Elza Gate Site, Oak Ridge, TN (1992)

- Seymour Specialty Wire, Seymour, CT (1993)
- Baker and Williams Warehouses, New York, NY (1993)
- Granite City Steel, Granite City, IL (1993)
- Aliquippa Forge, Aliquippa, PA (1994)
- C.H. Schnoor, Springdale, PA (1994)
- Alba Craft, Oxford, OH (1995)
- HMM Safe Co., Hamilton, OH (1995)
- Associate Aircraft, Fairfield, OH (1995)
- General Motors, Adrian, MI (1995)
- Chapman Valve, Indian Orchard, MA (1995)
- Baker Brothers, Toledo, OH (1995)

- Clean up or maintain these sites so that they meet current DOE guidelines.
- Dispose of or stabilize contamination in a way that is safe for the public and the environment.
- Perform all work in compliance with appropriate federal laws and regulations, and comply with state and local environmental laws and land-use requirements.
- Certify the sites for appropriate future use.

HOW DOES FUSRAP WORK?

Under most circumstances, FUSRAP sites undergo several steps that lead to cleanup. First, information about the site is collected and reviewed. Then, a remedial investigation/feasibility study is conducted. The remedial investigation is made to identify the type and location of the contamination. The feasibility study develops and evaluates cleanup alternatives. Throughout the remedial investigation/feasibility study process, the public is informed about the progress toward a decision on the cleanup alternative.

When a cleanup alternative is chosen, a proposed plan is written to explain why it was chosen. Members of the public are asked to comment on all the cleanup options, including the selected alternative. After public comments are considered, a final decision is made and documented in a record of decision. The remedial design follows the record of decision and includes technical drawings and specifications that show how the cleanup will be conducted.

Cleanup begins after the remedial design is complete. This phase involves site preparation and construction activities. When these activities are completed, verification surveys are conducted to ensure that cleanup objectives for the site have been met.

LAWS THAT GOVERN FUSRAP

Every step of the FUSRAP cleanup process is regulated by a number of federal laws. Chief among these is the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the National Environmental Policy Act (NEPA).

CERCLA provides the framework for a systematic investigation, remedial design, and cleanup of contaminated sites. NEPA requires federal agencies to consider the effect on the environment when making cleanup decisions. Both CERCLA and NEPA generally require that the public be informed and involved in the decision-making process.

It is typical for many FUSRAP sites to be subject to multiple regulations, depending upon the type and extent of contamination at the site. Other laws include the Resource Conservation and Recovery Act, the Toxic Substances Control Act, the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act, the National Emission Standards for Hazardous Air Pollutants, and state and local regulations.

HOW IS FUSRAP ORGANIZED?

Technical, administrative, and financial management of FUSRAP activities are the responsibility of the Former Sites Restoration Division of the DOE Operations Office in Oak Ridge, Tennessee. DOE hires companies to manage and perform FUSRAP activities. A project management contractor conducts site investigations and cleanups. An environmental services contractor plans site investigations, evaluates cleanup alternatives, and ensures that all FUSRAP activities comply with environmental requirements.

HOW CAN I GET MORE INFORMATION?

In performing FUSRAP work, DOE implements community outreach programs to keep the public informed. DOE's public information efforts include fact sheets, public meetings, and contacts with media, citizens groups, and public officials.

Additional information can be obtained by contacting:

Formerly Utilized Sites Remedial Action Program
U.S. Department of Energy
Former Sites Restoration Division
P.O. Box 2001
Oak Ridge, Tennessee 37831-8723

DOE also maintains a 24-hour, toll-free telephone number

1-800-253-9759.





FUSRAP Laws and Regulations That Affect FUSRAP



U.S. DEPARTMENT OF ENERGY
Formerly Utilized Sites Remedial Action Program

December 1993

This fact sheet has been prepared to address community outreach requirements set by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Environmental Policy Act (NEPA). Fact sheets are one part of an effort to provide public information on environmental restoration and waste management.

The Formerly Utilized Sites Remedial Action Program (FUSRAP) is an important Department of Energy (DOE) environmental cleanup program. This fact sheet describes FUSRAP and explains the laws and regulations that guide program activities and protect human health and the environment.

WHAT IS FUSRAP?

DOE created FUSRAP in 1974 to identify, investigate, and clean up or control sites where contamination above today's guide-lines remains from the early years of the nation's atomic energy program.

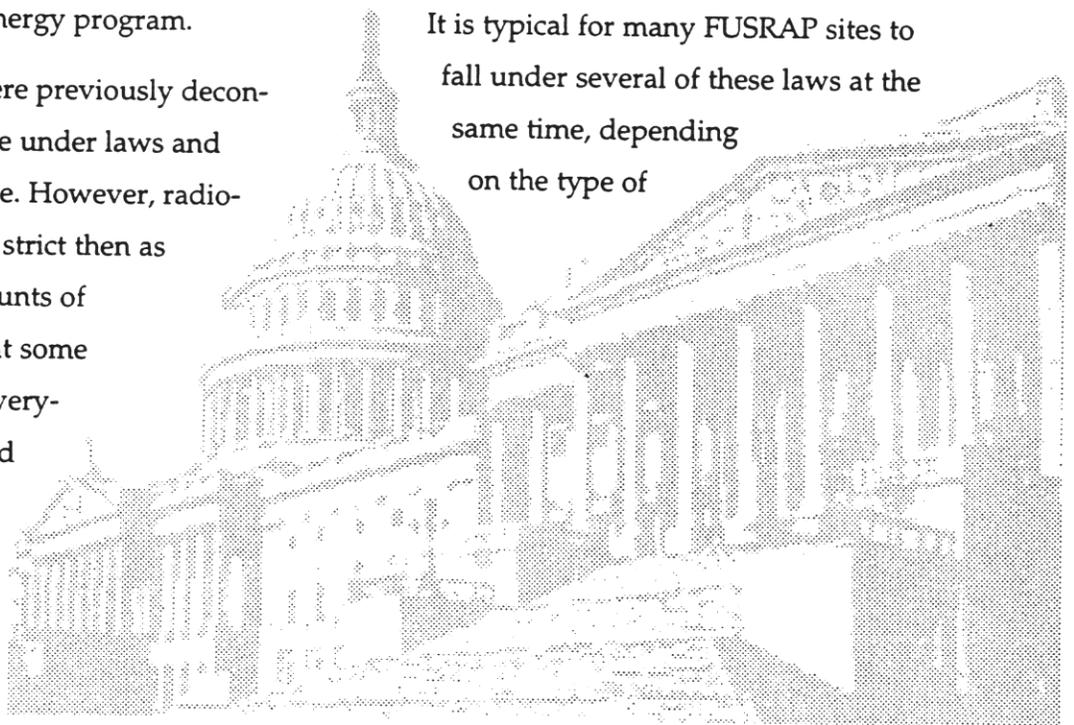
Many of the FUSRAP sites were previously decontaminated and released for use under laws and regulations in effect at the time. However, radiological guidelines were not as strict then as they are today, and trace amounts of radioactive materials remain at some sites. Also through normal, everyday use of these properties and movement of materials over the years, some contamination has spread onto nearby properties. These areas also require cleanup.

Since 1974, FUSRAP has examined old records, interviewed previous employees, and performed radiological surveys on more than 400 suspected sites across the nation. Most have been found to be clean, but more than 40 sites in 14 states have been identified as needing cleanup under FUSRAP.

WHICH LAWS GUIDE FUSRAP?

A number of federal laws guide every step of the FUSRAP cleanup process—from initial site identification right through to final certification.

It is typical for many FUSRAP sites to fall under several of these laws at the same time, depending on the type of



contamination and the actions required to clean it up. Because so many different federal laws apply to environmental cleanup,

compliance with these laws becomes very complex. Under certain circumstances, for example, the act of excavating contaminated soil could be affected by all of the laws discussed in this fact sheet. A general description of the main federal laws that apply to FUSRAP follows. While the focus of each law is different, their goals are the same: to protect human health and the environment.

CERCLA

The *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* of 1980 is the main law governing cleanup of many FUSRAP sites. Major changes were made to this federal law in 1986—the Superfund Amendments and Reauthorization Act was enacted to study and to clean up uncontrolled hazardous waste sites.

The CERCLA (or *Superfund*) process consists of three phases:

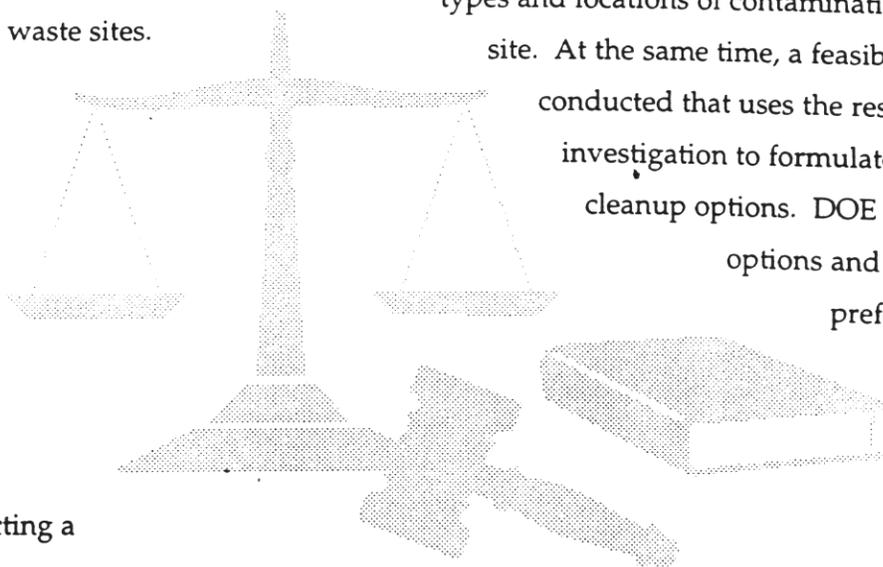
1. Preliminary assessment
2. Studying the site, evaluating cleanup alternatives, and selecting a cleanup plan
3. Designing and implementing the chosen plan

“While the focus of each law is different, their goals are the same: to protect human health and the environment.”

The preliminary assessment is used to decide which sites should be added to the *National Priorities List (NPL)*, which identifies the most serious uncontrolled hazardous waste sites. Sites are scored based on their impact on public health and the environment, and those sites that exceed a certain score are added to the NPL.

The Environmental Protection Agency (EPA) oversees CERCLA activities at most NPL sites. Cleanup at FUSRAP NPL sites is guided by *federal facilities agreements (FFAs)* between DOE, and EPA, with input from states where the sites are located. DOE policy is to integrate CERCLA with other laws that apply to the site. The FFA also sets cleanup priorities; defines agency responsibilities, document review, and interaction among agency officials; and establishes a schedule for work at a site.

CERCLA mandates specific steps for investigating contaminated sites. After an initial planning period, workers begin a remedial investigation to identify the types and locations of contamination present at the site. At the same time, a feasibility study is conducted that uses the results of the remedial investigation to formulate a range of cleanup options. DOE evaluates these options and recommends a preferred alternative for cleaning up the site. CERCLA allows and encourages public involvement at all stages in the process that leads to a decision for



cleaning up a site. The public has an opportunity to comment on the results of the remedial investigation and the analysis of alternatives. To keep the public informed, DOE also uses various community outreach programs, including public information centers, public meetings, and periodic fact sheets. Key documents used in making a cleanup decision at a site make up an *administrative record*, which is available to the public at a location near the site.

After the comment period on the proposed plan is closed, DOE prepares a draft *Record of Decision* and submits it to EPA. For NPL sites, EPA concurs or makes the final decision on site cleanup after considering input from the state and from the public and the decision is final when the regulators and DOE sign a legally binding *Record of Decision*. For non-NPL sites, DOE makes the final cleanup decision, also with input from the public. A remedial design/remedial action is then conducted to carry out the decision and monitor the performance of the environmental cleanup.

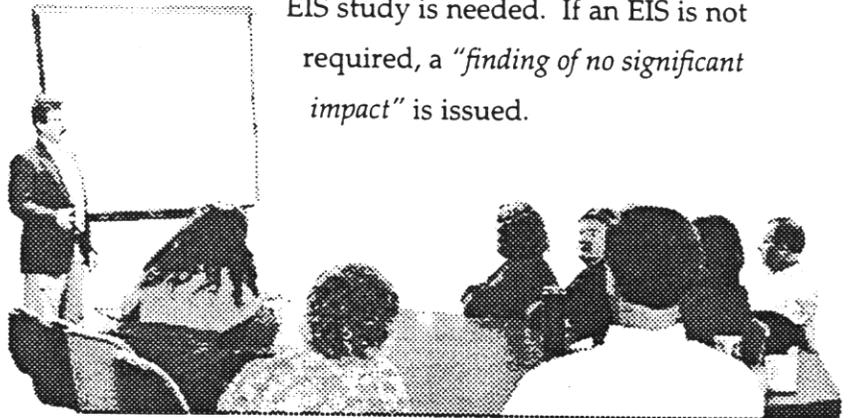
NEPA

The *National Environmental Policy Act (NEPA)* sets basic national policy on environmental protection. This 1969 federal law established a process for determining if a proposed federal action will have significant environmental effects. NEPA requires that federal agencies consider environmental effects before proceeding with proposed actions.

On FUSRAP, actions proposed for a site are evaluated in light of NEPA guidelines to determine potential environmental effects and the level of

NEPA documentation required. Depending on the results of initial findings, NEPA specifies several options: if an action will clearly have no significant impact, no further studies are required. If an action may have an impact on the environment, an *environmental assessment* or an *environmental impact statement (EIS)* may be required.

In preparing an environmental assessment, information is gathered and studied to decide whether impacts are great enough to mean a more complete EIS study is needed. If an EIS is not required, a "*finding of no significant impact*" is issued.



To keep the public involved and informed, FUSRAP conducts numerous meetings, workshops, and availability sessions in the affected communities.

When an EIS is required for an action at a site, NEPA requires public input early in the process of studying site conditions and cleanup options. Public involvement at all stages of the process helps ensure that problems are identified, focuses energies and efforts on those areas that must be resolved, and makes for a balanced and complete EIS.

THE CERCLA/NEPA PROCESS

Because many requirements of CERCLA and NEPA are similar or overlapping, most FUSRAP sites are cleaned up under an integrated CERCLA/NEPA process. Community relations activities are combined under the more comprehensive provisions of

CERCLA and incorporate the special requirements of NEPA where necessary. Coordination of CERCLA and NEPA requirements results in a means for open decision-making that involves the public, as well as local, state, and federal agencies. Site investigations, analyses, and documentation requirements of these two laws are integrated to simplify regulatory review, reduce paperwork, and increase cost-effectiveness.

RCRA

In addition to CERCLA and NEPA, a number of other federal regulations apply to some FUSRAP sites, such as the *Resource Conservation and Recovery Act (RCRA)*. Passed in 1976 as an amendment to the Solid Waste Disposal Act, RCRA establishes a "cradle to grave" system for controlling hazardous waste from the time it is generated until its ultimate disposal. Contaminated materials at some FUSRAP sites contain both hazardous and radioactive waste; this *mixed waste* presents special challenges to the FUSRAP program. RCRA provides very specific requirements of how mixed waste can be managed, treated, and disposed of. RCRA also requires appropriate systems for

permits and waste management at all FUSRAP sites that involve hazardous waste.

OTHER REGULATIONS

Each FUSRAP site is unique and must meet the requirements of many other specific laws designed to apply to certain types of contaminants or to particular types of cleanup circumstances. For example, if performing an excavation that may release contaminated dust particles into the air, FUSRAP must comply with the requirements of the *Clean Air Act*. Other laws that must be complied with under some situations include the *Toxic Substances Control Act*, the *Clean Water Act*, and the *Safe Drinking Water Act*. In addition, there are many other federal, state, and local standards that may apply.

FOR MORE INFORMATION

If you need additional information about FUSRAP or the laws that regulate it, DOE has a toll-free public access number. An answering machine will take your messages and all calls will be returned. Call 1-800-253-9759.





FUSRAP The St. Louis Site St. Louis, Missouri



U.S. DEPARTMENT OF ENERGY
Formerly Utilized Sites Remedial Action Program

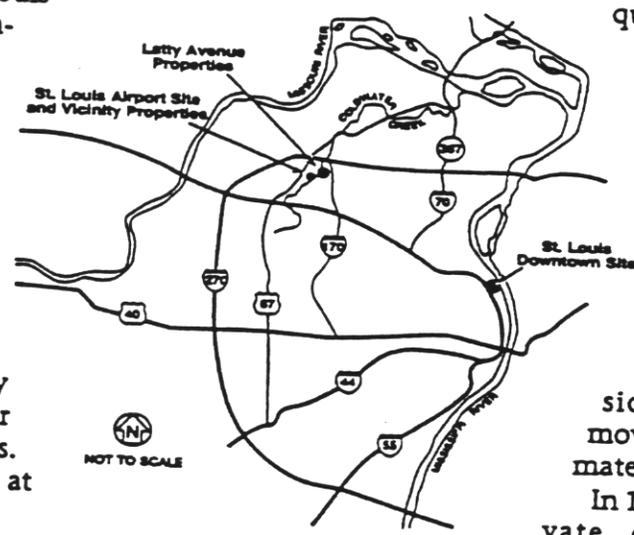
May 1993

The U.S. Department of Energy (DOE) is implementing a cleanup program for four groups of properties in the St. Louis area that are contaminated with low levels of radioactivity. The properties are 1) the St. Louis Downtown Site (SLDS), 2) the St. Louis Airport Site (SLAPS), 3), several nearby or "vicinity" properties associated with SLAPS, and 4) the Latty Avenue Properties, which include the Hazelwood Interim Storage Site (HISS).

The properties, collectively referred to as the St. Louis Site, are among more than 40 sites throughout the U.S. that are being addressed under DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP). DOE began FUSRAP in 1974 to find, control, and clean up sites where radioactive contamination that exceeds current guidelines remains from the early years of our nation's atomic energy program. Other sites have been added to the program by Congress. The St. Louis properties were added to FUSRAP at various times between 1981 and 1984.

In 1946, MED acquired the St. Louis Airport Site (SLAPS), just north of the St. Louis airport, as a storage area for residues and other materials from SLDS. In subsequent years,

the SLAPS Vicinity Properties became contaminated as the result of erosion and movements of materials.



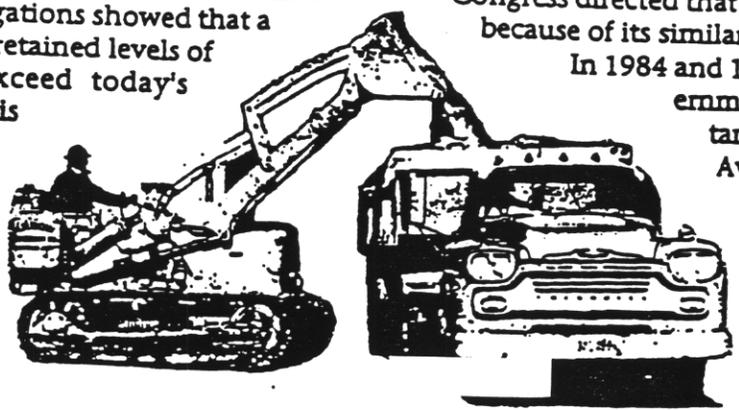
In 1966, a private company purchased the residues

and hauled them from SLAPS to a site about one-half mile north on Latty Avenue in Hazelwood. The residues were stored for several months, then were sold and shipped to another private company in Colorado. However, in 1977, surveys showed that the owner had left contamination on the property and that it had begun to spread offsite. Even though DOE was not responsible for this contamination, Congress directed that DOE add this site to FUSRAP because of its similarity to other FUSRAP sites.

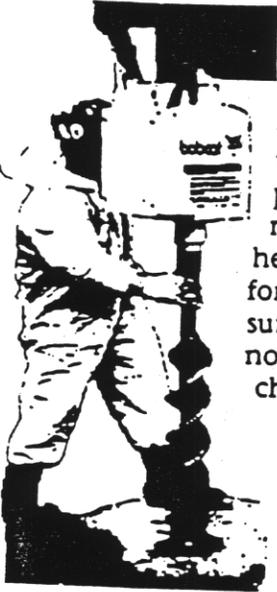
In 1984 and 1986, DOE assisted local governments in the excavation of contaminated soil from along Latty Avenue to allow construction of stormwater and sewer lines. The contaminated soil was moved to an onsite storage pile. The site is now known as the Hazelwood Interim Storage Site (HISS).

How did the sites become contaminated?

From 1942 to 1957, the Manhattan Engineer District (MED) and Atomic Energy Commission (AEC) contracted with the Mallinckrodt Chemical Works to process uranium compounds at a plant in St. Louis. As a result of these activities, parts of the property became contaminated. When MED/AEC operations stopped, the facilities were decontaminated according to the standards at the time. However, later investigations showed that a portion of the facility retained levels of radioactivity that exceed today's stricter guidelines. This portion of the Mallinckrodt property, called the St. Louis Downtown Site (SLDS). Six vicinity properties also contain areas of residual contamination.



Together, HISS and the remaining offsite contaminated properties are called the Latty Avenue Properties.



How hazardous are the sites?

The sites are contaminated with very low levels of thorium, uranium, and radium. Given present land uses, the sites pose no significant threat to public health or the environment. Performing remedial action will ensure that the properties will pose no significant risk should land uses change in the future.

At HISS, DOE carries out an environmental monitoring program to ensure that the contaminated material stored there is not a threat to the public or the environment. DOE publishes the monitor-

ing results yearly in a report that is available to the public.

What is DOE doing to clean up the sites?

DOE is moving forward in a process that will lead to a decision for remediating the sites. The process complies with federal laws and follows steps outlined in an agreement with the Environmental Protection Agency (EPA).

In October 1989, EPA placed SLAPS and the Latty Avenue Properties on its National Priorities List, which means that EPA has authority over cleanups. In 1990, DOE and EPA signed a Federal Facilities Agreement that laid out the specific requirements and a schedule for the cleanup evaluation.

All work in connection with the sites will conform with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Environmental Policy Act (NEPA). The CERCLA/NEPA process is lengthy, but it ensures that when a decision is made on cleanup for the St. Louis sites, that decision will reflect due consideration for environmental, public health, and safety concerns.

The process requires a remedial investigation/feasibility study and environmental impact statement. DOE has completed the remedial investiga-

tion phase. Each site has been investigated to determine the amounts and locations of contamination and the possible ways it could spread or pose a risk to the public. The feasibility study-environmental impact statement will present and assess various alternatives for remediating the properties. Data from the investigations will be used in evaluating the alternatives.

DOE expects to issue a draft of the feasibility study-environmental impact statement and a proposed plan in 1994. DOE will solicit public review and comment on this document before making a remediation decision.

The decision, which must be approved by EPA, will be published in a document called the Record of Decision, which DOE expects to issue in May 1995. After the Record of Decision, DOE will proceed with designing and implementing the selected remedy.

How can I obtain more information?

DOE maintains a Public Information Center to provide site information and offer opportunities for the public to partici-

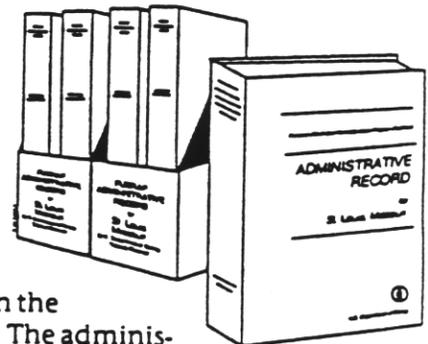
pate in the review process. At the office, DOE maintains a publicly available administrative record of the documents that contain information that

will be considered in the Record of Decision. The administrative record also is available at the St. Louis Public Library, 1301 Olive Street in St. Louis, and at the St. Louis County Library, 915 Utz Lane in Hazelwood.

For information, or to be added to the site mailing list, contact:

DOE Public Information Center
9200 Latty Avenue
Hazelwood, Missouri 63042
(314) 524-4083

DOE also maintains a 24-hour, toll-free telephone number. An answering machine records comments or questions, and all calls are returned. The number is 1-800-253-9759.



St. Louis Contamination Linked with Atomic Age



Uranium processing for government nuclear projects began during World War II at this site in downtown St. Louis.

The four sites in St. Louis that are slated for cleanup under the Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP) were contaminated as a result of activities conducted in the 1940s and 50s as part of the nation's defense program.

In those early years, most uranium, the principal source of nuclear fuel, was extracted from foreign ores. Uranium is an element that occurs naturally, usually in combination with other elements. In its raw form, uranium ore cannot be used as a fuel. The uranium must be separated from all other elements, and the part that is used as fuel, called fissionable uranium, must be concentrated.

Much of the government-sponsored research and development in the 1940s was conducted at national laboratories and universities, with commercial firms producing

the needed raw and finished material.

One of these commercial firms was the Mallinckrodt Chemical Works that had already been operating in downtown St. Louis for more than 50 years.

MCW processes uranium

From 1942 to 1957, the Manhattan Engineer District/Atomic Energy Commission contracted with Mallinckrodt to perform several operations, including processing and producing various forms of uranium compounds and pure uranium metal. As a result of these activities, materials, equipment, buildings, and parts of the property became contaminated with naturally occurring radioactive materials.

At completion of the MED/AEC operations, the facilities were cleaned up and decontaminated according to the standards and survey methods in effect at the time. However, later radiological surveys showed that portions of the facility retain levels of radioactivity in excess of current, more stringent, federal guidelines.

DOE to clean up

The Department of Energy, which is the successor agency of the AEC, has taken the lead for cleanup of contamination that occurred as a result of government operations on that site and on the other sites that became contaminated as a result of transporting and storing the contaminated materials from the downtown site.

The portion of the Mallinckrodt property included in DOE's cleanup operation is referred to as the St. Louis Downtown Site. Six vicinity

properties also exhibit residual areas of contamination.

Residues taken to North County

In 1946, the MED acquired a 21-acre site just north of the St. Louis Airport for storage of residues from uranium processing conducted at SLDS. Residue from uranium processing and from cleanup of buildings at the plant was taken to the St. Louis Airport Site for storage. The property was fenced to prevent public access.

No permanent buildings or facilities remain at SLAPS. They were demolished and buried on site under 1-3 feet of clean material in 1969.

SLAPS is sometimes mentioned as a possible permanent disposal cell location for the St. Louis sites. This is because Congress directed DOE to acquire SLAPS for this purpose in the 1985 Energy and Water Development Appropriations Act. However, under the comprehensive process required by federal law prior to cleanup and disposal, DOE is directed to consider other options in addition to the directions of Congress.

Residues reach Latty Ave.

In 1966, Continental Mining and Milling of Chicago, Illinois, purchased process residues at SLAPS for its commercial value and hauled it in trucks about one-half mile to a site on Latty Avenue, just north of the airport site. These residues contained valuable metals in addition to the uranium.

As a result of hauling practices that would not be allowed today, some of these residues blew off the trucks and randomly contaminated vicinity properties such as highway rights-of-way and portions of private properties along the haul routes. Continental stored the residues at the Latty Avenue properties during 1966-67. A successor firm, Commercial Discount Corporation, dried and shipped the material to a new owner, the Cotter Corporation in Colorado.

Later, Cotter purchased the remaining materials at Latty Avenue and continued shipments to their property in Colorado.

Surveys and a renovation were

conducted at the Latty Avenue properties in the late 1970s. The contaminated soil and debris from these decontamination efforts are currently stored at the portion of the Latty Avenue properties called the Hazelwood Interim Storage Site (HISS). The piles at HISS also contain material from a cleanup along Latty Avenue, some of which was in support of a storm sewer installation.

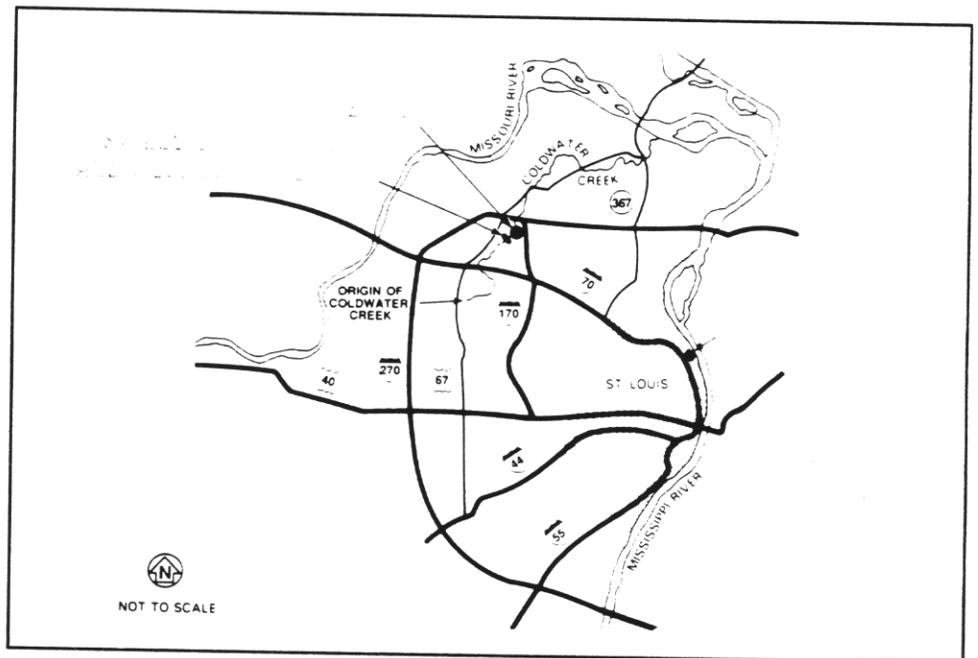
The primary radioactive contaminant on the St. Louis sites is thorium-230. Analyses have also identified the presence of uranium-238 and radium-226. Given present land use, the low-level radioactivity found on these properties poses no immediate threat to public health or the environment. However, performing remedial action and

measures will be preceded by a complete environmental review process as required by CERCLA and the National Environmental Policy Act (NEPA).

In 1990, DOE and EPA signed an agreement that outlines the environmental review process, referred to as the remedial investigation/feasibility study (RI/FS), that leads to a decision on cleanup alternatives on the St. Louis sites.

DOE is well into the RI/FS process and anticipates release of the draft Feasibility Study-Environmental Impact Statement and the Proposed Plan in early 1994.

Selection of a final cleanup strategy will not be made until after public review of the RI/FS and the record of decision, which is cur-



Locations of FUSRAP properties in the St. Louis, Missouri, area.

achieving cleanup standards will ensure that the contamination poses no significant risk if land use changes in the future.

Cleanup process underway

In October 1989, the Environmental Protection Agency placed SLAPS and the Latty Avenue properties on the National Priorities List. This action requires cleanup to proceed under the authority of EPA and the guidelines of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Comprehensive cleanup

is currently scheduled for mid-1995. DOE will design and begin the cleanup after a record of decision has been reached.

The RI/FS process is lengthy, but it assures that when a decision is made on cleanup for the St. Louis sites that it will have been reached after consideration of all aspects of environmental, public health, and safety concerns.



Principal Laws and Regulations Affecting the FUSRAP Cleanup Program



U.S. DEPARTMENT OF ENERGY
Formerly Utilized Sites Remedial Action Program

This fact sheet has been prepared to address community outreach requirements set by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Environmental Policy Act (NEPA). Fact sheets are one part of an effort to provide public information on environmental restoration and waste management on the FUSRAP project.

Several federal laws guide environmental restoration in the United States. Each has a different emphasis, but together, they target the most pressing hazardous waste sites in the nation. The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980—also known as Superfund—provides for the funding, study, and implementation of cleanup efforts. Another applicable law is the National Environmental Policy Act (NEPA) of 1969, which requires federal agencies to consider possible environmental effects when making decisions. Both laws require public involvement under a well-defined set of activities and schedules. It is the policy of the Department of Energy (DOE) that community relations requirements be combined under the more comprehensive CERCLA umbrella. Investigations, analyses, and documentation for these two laws will also be combined and integrated to streamline regulatory review and reduce paperwork.

The Environmental Protection Agency (EPA) emphasizes that the cleanup process is dynamic and flexible, and is tailored to the specific circumstances of each site. A phased approach of study is used to help maximize efforts. Researchers first collect available data to learn about the general conditions at a site. As a basic understanding is reached, they begin to identify possible cleanup alternatives. To fill in gaps of information and to test potential cleanup methods, they collect additional data, which is used to focus researchers' understanding and to refine alternatives. This interactive progression of study goes back and forth between data collection and testing, and the development and refinement of alternatives, until enough information has been collected to identify sound alternatives. The goal of gathering this information is not to remove all uncertainty (an impossible task), but to gather enough information to make and support an informed decision on which remedy appears to be the most appropriate for a given site.

Descriptions of the principal federal laws under which FUSRAP operates are provided in this fact sheet. While provisions vary in detail, the end goal remains constant—to protect the safety of human health and the environment.

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986

CERCLA is a 1980 federal law that was extensively amended in 1986. The act created a special tax that goes into a trust

fund, commonly known as Superfund, to investigate and to perform remediation of abandoned or uncontrolled hazardous waste sites. CERCLA consists of three phases: (1) a preliminary assessment, (2) a thorough study of the site, exploration of alternatives, and selection of a remedial action plan, and (3) design and implementation of the chosen plan.

- 1) The CERCLA preliminary assessment/site inspection (PA/SI) is used to determine which sites should be placed on the National Priorities List (NPL). The NPL identifies the most serious uncontrolled or abandoned hazardous waste sites. The assessment focuses on the potential for contamination. If the assessment determines that further action is needed, a site inspection is performed to assess the threat to the public and the environment. The site is scored using a brief, on-site investigation. Sites that exceed a certain score are added to the NPL.

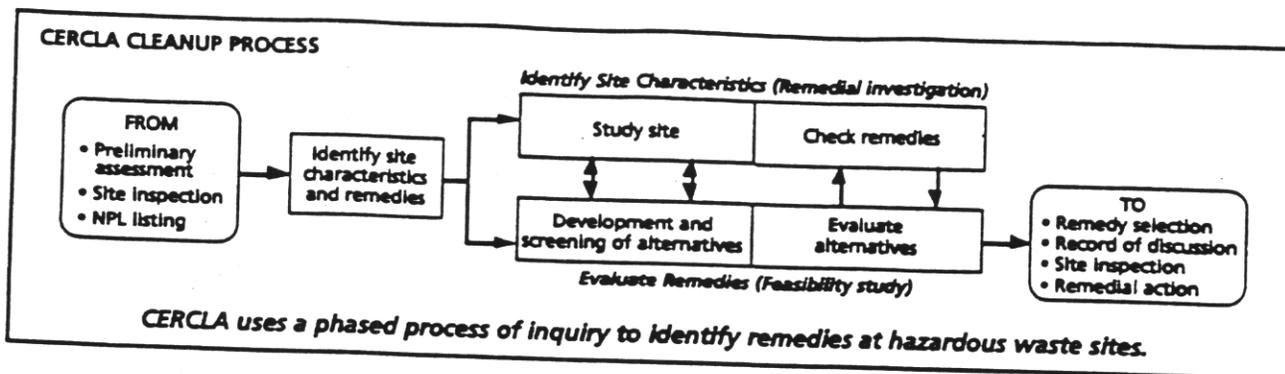
The NPL may also list hazardous sites named by states as their top priority sites and sites determined to pose a significant threat to public health, welfare, or the environment.

- 2) A remedial investigation/feasibility study (RI/FS) is conducted for sites placed on the NPL. The RI/FS has several components.

The first stage involves planning. All work performed during the RI/FS follows general principles developed during a scoping, or planning, phase. Existing data on a hazardous waste site is evaluated to develop a cleanup strategy, identify likely objectives, and prepare a work plan. A sampling analysis plan is developed so that any decisions made are developed using the most accurate and best documented data possible.

The next step is the remedial investigation portion of the cleanup, during which extensive sampling and analysis activities are performed. The feasibility study, which is performed simultaneously, uses the data to develop a range of alternatives for remediation. One alternative is selected, and entered into the record of decision (ROD), which records the preferred method and manner of remediation. The record also considers public comments and community concerns.

- 3) A remedial design/remedial action (RD/RA) is conducted to implement the decision, and to monitor the performance of the environmental restoration.



NEPA: National Environmental Policy Act (NEPA) of 1969

NEPA is the federal law that sets basic policy on protection of the environment. The principal purpose of NEPA is to determine if a major federal action has significant environmental effects. NEPA requires federal agencies to evaluate all environmental impacts before implementing actions.

If an action clearly has no significant impact, a categorical exclusion fulfills the obligation. If an action may have environmental consequences, an environmental assessment (EA) or an environmental impact statement (EIS) may be necessary. In preparing an EA, data are collected and analyzed to determine whether impacts are sufficient to justify the preparation of the more complete EIS study, or whether a "finding of no significant impact" is found.

If an EIS is required, NEPA requires public participation early in the process of identifying conditions at the site and in the assessment of alternatives. Public involvement, or "scoping," ensures that real problems are identified early, concentrates energies and effort on those areas requiring resolution, and provides for a balanced and thorough EIS. The NEPA scoping process is different from that of CERCLA. NEPA scoping focuses on public participation, while CERCLA scoping concentrates on planning.

As part of the CERCLA/NEPA process, DOE establishes an administrative record containing all documents that form the basis for the selection of a response action. A copy of the administrative record is made available to the public at a location near the site, usually a library. Availability and location of the administrative record are announced in newspaper advertisements and fact sheets.

Other Laws and Standards

A variety of other laws or standards may also apply to specific sites. Brief summaries follow:

- The Toxic Substances Control Act regulates certain classes of chemicals, including polychlorinated biphenyls (PCBs).
- The Resource Conservation and Recovery Act created a management system for hazardous wastes, requiring that safe and secure procedures be used in treating, transporting, storing, and disposing of hazardous wastes. Facilities must hold permits to handle these wastes and are required to operate within specific guidelines.
- Clean Air Act is a federal law that controls emissions of waste into the air. Special protective equipment and permits are required.
- The Clean Water Act is a similar federal law that controls the amount of waste that can be released into surface water bodies or publicly owned treatment systems.

- The Safe Drinking Water Act is designed to protect drinking water resources. This law is incorporated into CERCLA provisions dealing with groundwater protection.
- National Emission Standards for Hazardous Air Pollutants limit air emissions of pollutants.

Cleanup activities are regulated by a federal facilities agreement (FFA) between DOE, EPA, and the state. The agreement prioritizes cleanup activities, assigns agency roles and responsibilities, and establishes procedures for document review and interaction among the agency officials.

Combined Investigations

Many laws and regulations have been enacted to ensure the protection of human health and the environment. Often, they are written to regulate particular discharges under particular circumstances, such as chemical releases into groundwater. At any one waste site, one or more laws may apply, or none, depending on the extent of contamination and the types of contaminants. The regulations and standards that pertain to a particular site are determined early to ensure that all applicable and/or appropriate requirements are met.

On FUSRAP, it is not unusual for a site to require environmental restoration under multiple regulations. DOE plans to integrate technical and community relations activities under provisions of CERCLA, making adjustments to incorporate special requirements of NEPA where necessary.

Acronyms Used

- CERCLA Comprehensive Environmental Response, Compensation, and Liabilities Act
- DOE Department of Energy
- EA environmental assessment
- EIS environmental impact statement
- EPA Environmental Protection Agency
- FFA federal facilities agreement
- NEPA National Environmental Policy Act
- NPL National Priorities List
- PA/SI preliminary assessment/site investigation
- PCBs polychlorinated biphenyls
- RD/RA remedial design/remedial action
- R/I/FS remedial investigation/feasibility study
- ROD record of decision



FUSRAP Formerly Utilized Sites Remedial Action Program



U.S. DEPARTMENT OF ENERGY
Formerly Utilized Sites Remedial Action Program

This fact sheet has been prepared to address community outreach requirements set by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Environmental Policy Act (NEPA). Fact sheets are one part of an effort to provide public information on environmental restoration and waste management.

The Formerly Utilized Sites Remedial Action Program (FUSRAP) is one of several U.S. Department of Energy (DOE) programs created to address radiological contamination in excess of guidelines at a number of sites throughout the United States. DOE and its predecessor agencies, the Manhattan Engineer District (MED) and the Atomic Energy Commission (AEC), used many of these sites for processing and storing uranium and thorium ores during the 1940s, 1950s, and 1960s. Some of these sites were owned by the federal government; others were owned by universities or other institutions; and still others were privately owned.

Generally, sites that became contaminated through the uranium and thorium operations during the early period of the nation's nuclear program were decontaminated and released for use under the regulations in effect at the time. Since radiological guidelines were not as strict then as today, trace amounts of radioactive materials remained at some of the sites. Erosion and building demolition and construction resulted in some of the radioactive residues mixing with large volumes of soil and rubble, thereby spreading the contamination.

To further assess these sites and take appropriate remedial action, the federal government initiated FUSRAP in 1974. Initial site activities focus on reviewing old records and surveying sites to determine if contamination exists and if remedial action is required. If this survey determines that the site requires remedial action, it is authorized under FUSRAP. Limited remedial action began at some sites in 1979, and major remedial action has been under way since 1981. Currently, FUSRAP includes 33 sites in 13 states (see map). Remedial action has been completed at nine of the sites, and partial remedial action has been completed at nine others.

Objectives

The objectives of FUSRAP are to:

- Identify and evaluate all sites formerly used to support early MED/AEC nuclear work and determine whether the sites need decontamination and/or control.
- Decontaminate and/or apply controls to these sites so that they conform to current applicable guidelines.
- Dispose of and/or stabilize all generated residues in a radiologically and environmentally acceptable manner.

- Accomplish all work according to appropriate federal laws and regulations, local and state environmental and land-use requirements to the extent permitted by federal law, and applicable DOE orders, regulations, standards, policies, and procedures.
- Certify the sites for appropriate future use.

Organization

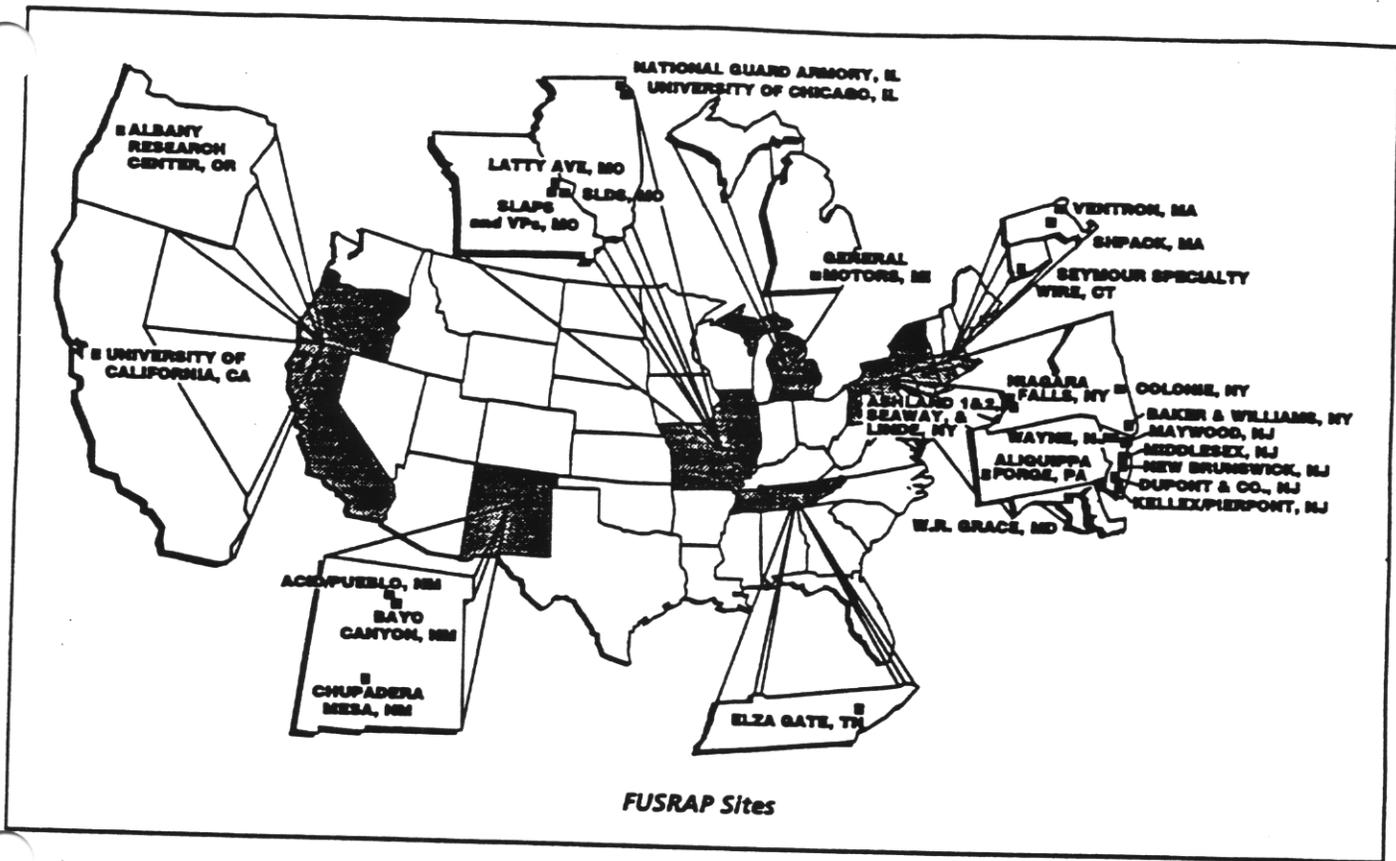
At DOE Headquarters, FUSRAP falls under the responsibility of the Director, Office of Environmental Restoration and Waste Management.

Technical, administrative, and financial management of FUSRAP field activities are the responsibility of the Former Sites Restoration Division (FSRD) of the DOE Oak Ridge Operations Office (ORO). Bechtel National, Inc., (BNI) the FUSRAP project management contractor, is responsible to FSRD for planning and implementing FUSRAP activities. BNI analyzes site conditions and evaluates and implements appropriate remedial actions; it also conducts environmental monitoring before, during, and after remedial action. BNI also administers subcontracts, coordinates the sequence of operations, controls the relationships among subcontractors, and ensures execution and documentation of project work in accordance with DOE guidance.

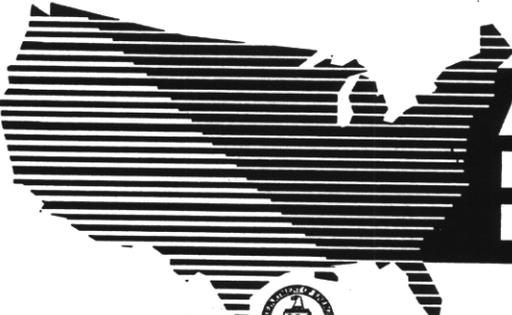
Argonne National Laboratory participates in preparing environmental compliance documentation required by NEPA and CERCLA to ensure that all feasible remedial action alternatives for a site have been evaluated and that the approach chosen is environmentally acceptable.

The radioactivity at FUSRAP sites does not present an immediate health hazard under current land use because the materials have very low concentrations and people are not exposed to them for prolonged periods of time. Although these materials are not a hazard, they will remain radioactive for thousands of years, and could cause a potential for increased health risks if the use of the land were to change.

Under the guidelines established for FUSRAP, the sites will be remediated to a very conservative standard that takes into consideration possible future land uses, such as residential development, crop production, and the installation of drinking water wells.



<i>Acronyms Used</i>	
AEC	Atomic Energy Commission
BNI	Bechtel National, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	Department of Energy
FSRD	Former Sites Restoration Division
FUSRAP	Formerly Utilized Sites Remedial Action Program
MED	Manhattan Engineer District
NEPA	National Environmental Policy Act
ORO	Oak Ridge Operations Office



Administrative Record Requirements for FUSRAP



U.S. DEPARTMENT OF ENERGY
Formerly Utilized Sites Remedial Action Program

The Formerly Utilized Sites Remedial Action Program (FUSRAP) is one of several U.S. Department of Energy (DOE) programs created to address radioactive contamination exceeding guidelines at sites throughout the U.S. FUSRAP is responsible for 33 sites in 13 states — some of the FUSRAP sites are Superfund sites. This fact sheet has been prepared to address community outreach requirements set by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Environmental Policy Act (NEPA). Fact sheets are one part of an effort to provide public information on environmental restoration and waste management.

An administrative record is a collection of documents that forms the basis for selecting a response action at a Superfund site. Under Section 113(k) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), the Environmental Protection Agency (EPA) requires the establishment of an administrative record for every Superfund response action and that a copy of the record be made available for public review at or near the site. DOE is committed to performing response actions at all FUSRAP sites in compliance with CERCLA, whether they are Superfund sites.

CERCLA requires that the administrative record be reasonably available for public review during normal business hours. The record should be treated as a noncirculated reference document (i.e., it may not be removed from the repository), thus allowing the public greater access to the record and minimizing the risk of loss or damage. Documents will be added to the record as the site work progresses. People may photocopy documents contained in the record according to the photocopying procedures at the local repository.

If the documents in the administrative record become damaged or lost, the local repository manager may request replacement documents from the DOE site manager. Periodically DOE may send relevant supplemental documents and indexes directly to the local repository to be placed with the initial record.

The administrative record will be maintained at the local repository until further notice. Questions about maintenance of the record should be directed to the DOE site manager. DOE welcomes comments on documents in the administrative record.

DOE may hold formal public comment periods at certain planning stages of response actions. The public is encouraged to use these formal review periods to submit comments. Send any such comments or site-related questions (please indicate the site location) to the following address:

Formerly Utilized Sites Remedial Action Program
U.S. Department of Energy
Former Sites Restoration Division
P.O. Box 2001
Oak Ridge, Tennessee 37831-0201

A toll-free long distance public access number is available for use in areas where there are FUSRAP sites. The public access number is answered in Oak Ridge, Tennessee, by an answering machine, which records calls and takes messages. The answering machine is checked frequently and calls are returned. The public access number is one of the ways DOE provides opportunities for the public to receive site information. To make comments or ask questions, leave a message on the answering machine by calling 1-800-253-9759.





FUSRAP The St. Louis Site St. Louis, Missouri



U.S. DEPARTMENT OF ENERGY
Formerly Utilized Sites Remedial Action Program

This fact sheet has been prepared to address community outreach requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Environmental Policy Act (NEPA). Fact sheets are one part of an effort to provide public information on environmental restoration and waste management.

The Department of Energy (DOE) is implementing a comprehensive cleanup program for three groups of properties in the St. Louis area under the DOE Formerly Utilized Sites Remedial Action Program (FUSRAP). The properties are (1) the St. Louis Downtown Site (SLDS), (2) the St. Louis Airport Site (SLAPS) and its vicinity properties, and (3) the Latty Avenue Properties, which includes the Hazelwood Interim Storage Site (HISS). The three groups of properties, collectively referred to as the St. Louis site, were cleaned under FUSRAP at various times from 1981 to 1984. DOE established FUSRAP in 1974 to cleanup or control sites where radioactive contamination exceeding DOE guidelines remains from early years of the nation's atomic energy program.

During World War II, a chemical plant operated by Mallinckrodt in downtown St. Louis (near the McKinley Bridge) processed and produced various forms of uranium compounds and recovered uranium metals for the Manhattan Engineer District (MED) and the Atomic Energy Commission (AEC). Residue from that processing and from the cleanup of buildings at the plant was stored at an AEC-owned, 21-acre parcel of land on McDonald Boulevard, just north of the Lambert-St. Louis International Airport.

In 1966, a private firm purchased some of the residue for its commercial value and hauled it in trucks about one-half mile to a site on Latty Avenue, just north of SLAPS. As a result of transporting this residue, the three properties referred to as the St. Louis site became radioactively contaminated at levels exceeding DOE guidelines and require some type of remedial action. These properties are now under FUSRAP. DOE has identified additional residential and commercial properties, as well as more than 70 properties along roads in the airport area that may be contaminated as a result of hauling the residue.

The primary radioactive contaminant at the site is thorium-230. Analyses have also identified the pres-

ence of uranium-238 and radium-226. Given present land use at the site, the low-level radioactivity found at these properties pose no threat to public health or the environment. Performing remedial action and achieving cleanup standards will ensure that the properties pose no significant risk if land use changes in the future.

Under FUSRAP, DOE has analyzed core samples from the properties to determine the nature of the contamination, a process called **characterization**. Characterization has been completed at SLDS, HISS, and SLAPS and its vicinity properties.

Much of the characterization work was performed on soil and sediment samples taken along the haul roads and from a section of Coldwater Creek between Banshee Road and Old Halls Ferry Road. Work along the haul roads indicated some contamination on road shoulders and adjacent properties. In general, any contamination found along the haul roads has been low-level and at depths of less than one foot. Although the characterization is essentially complete, some additional investigation will be needed in these two areas.

DOE recently completed a radiological characterization report for properties located in Berkeley, Hazelwood, and St. Louis. DOE sent notification to owners of those properties detailing results of the surveys. DOE has also called and met with some owners whose properties have contamination exceeding DOE guidelines to discuss the nature of the contamination and the cleanup process. Data from this characterization and other surveys will be used to design a cleanup program for long-term management of these wastes.

In October 1989, the Environmental Protection Agency (EPA) placed SLAPS and the Latty Avenue Properties on the National Priorities List (NPL). Placement on the NPL requires cleanup to proceed under

the authority of EPA and the guidelines of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Comprehensive cleanup measures will be preceded by a complete environmental review process as required by CERCLA and the National Environmental Policy Act (NEPA).

In 1990, DOE and EPA signed an agreement that outlines the environmental review process, referred to as the remedial investigation/feasibility study (RI/FS) process. The RI/FS process is used to determine the ultimate disposition of radioactive materials from the St. Louis site. The goal of the RI/FS process is to reach a formal record of decision (ROD), which describes the selected cleanup alternative. A range of alternatives, including off-site and on-site disposal, will be evaluated. Opportunities will be provided for the public to comment on and participate in the environmental review process. Selection of a disposal site will not be made until completion of a full environmental review, currently scheduled for 1994. DOE will design and begin the cleanup after a ROD has been reached.

If funding is available, DOE may perform an interim cleanup of some of the residential and commercial properties while this review process is being conducted to prevent further spread of contamination.

In response to requests by St. Louis residents to make site information more readily available, DOE opened its Public Information Office at 9200 Latty Avenue in Hazelwood, Missouri. In addition to offering site information, the office provides opportunities for the public to comment on and participate in the environmental review process. The public will be

asked to review and comment on any remedial action plan proposed by DOE.

DOE has also opened for public review an administrative record containing documents related to the St. Louis site. Decisions about the cleanup of the site will be based on these documents. This record and general information repositories are available for review during normal business hours at:

St. Louis Public Library —
Government Information Section
1301 Olive Street
St. Louis, Missouri, 63103

St. Louis County Library —
Prairie Commons Branch
915 Utz Lane
Hazelwood, Missouri, 63042

and

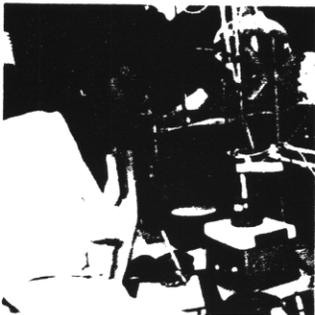
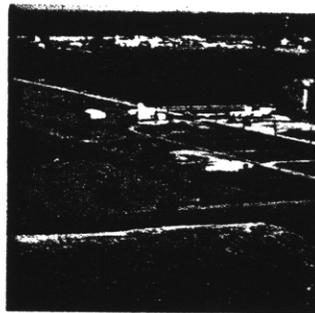
DOE Public Information Office
9200 Latty Avenue
Hazelwood, Missouri, 63042
(314) 524-4083

For more information or to be included on the site mailing list, write or call the DOE Public Information Office or:

David G. Adler, St. Louis Site Manager
U.S. Department of Energy
Former Sites Restoration Division
P.O. Box 2001
Oak Ridge, Tennessee 37831-8723
(615) 576-0948

ACRONYMS USED

AEC	Atomic Energy Commission
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	Department of Energy
EPA	Environmental Protection Agency
FUSRAP	Formerly Utilized Sites Remedial Action Program
HISS	Hazelwood Interim Storage Site
MED	Manhattan Engineer District
NPL	National Priorities List
NEPA	National Environmental Policy Act
RI/FS	remedial investigation/feasibility study
ROD	record of decision
SLAPS	St. Louis Airport Site
SLDS	St. Louis Downtown Site

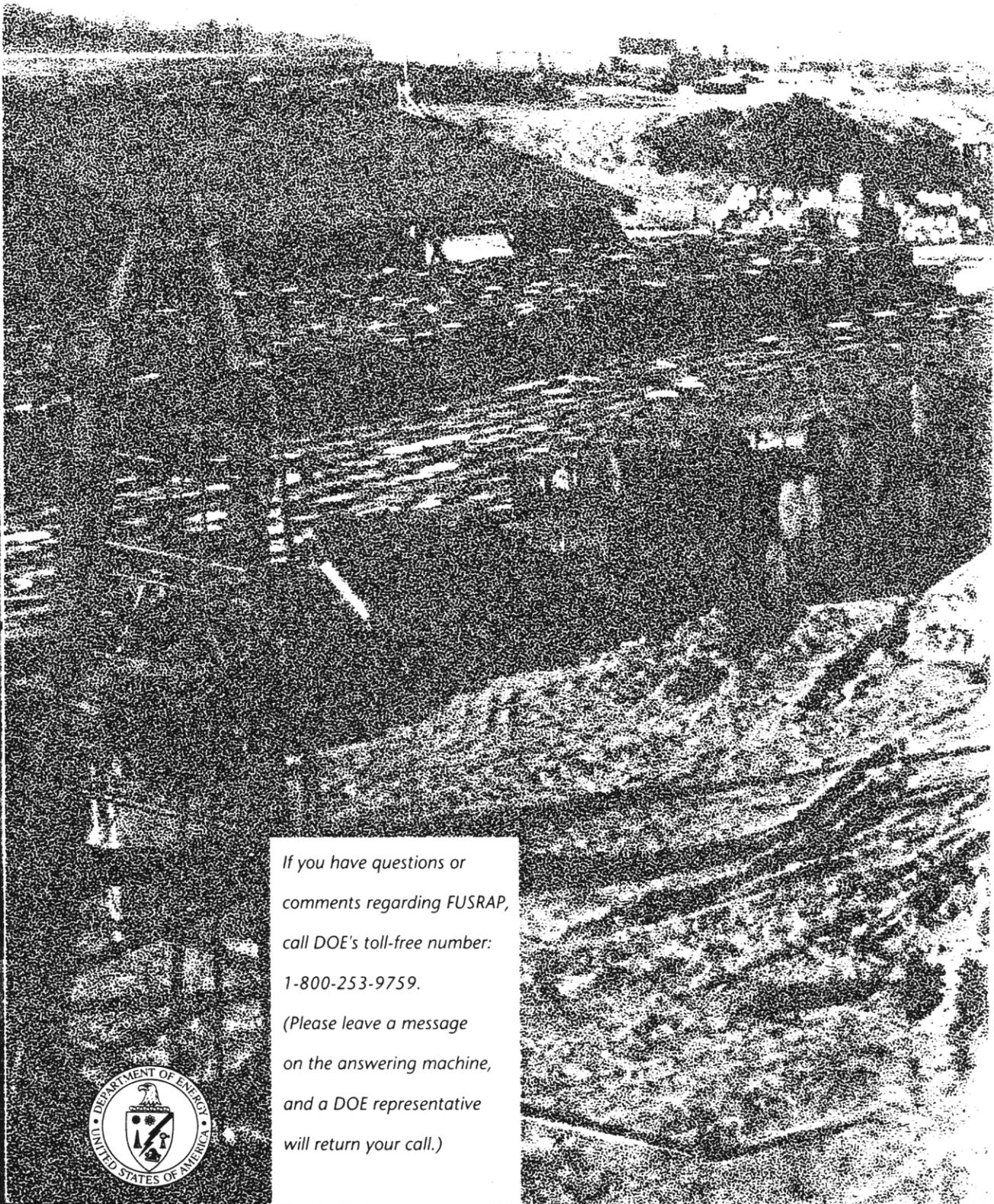


FUSRAP

Formerly Utilized

Sites Remedial

Action Program



*If you have questions or
comments regarding FUSRAP,
call DOE's toll-free number:
1-800-253-9759.
(Please leave a message
on the answering machine,
and a DOE representative
will return your call.)*

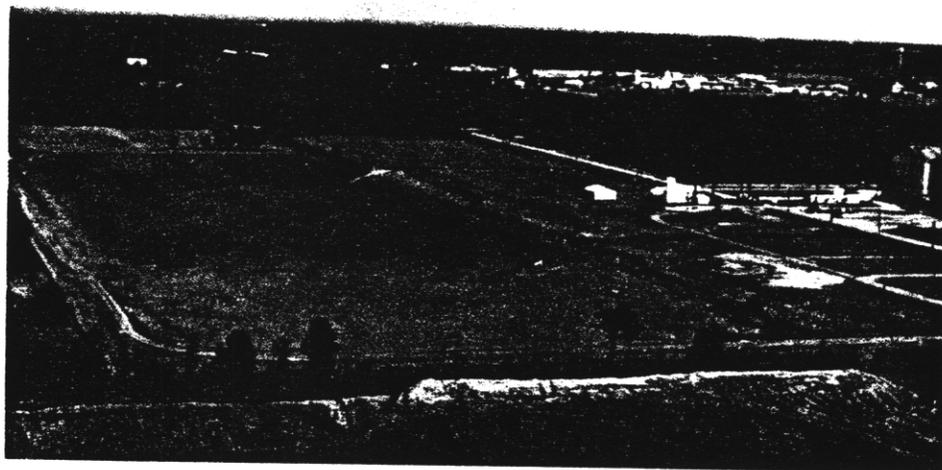


While FUSRAP has been successful in cleaning many sites and vicinity properties, much work remains. Many residential and commercial properties still require cleanup. Also the interim storage piles that have received the wastes removed from properties already cleaned are a source of local concern. Permanent disposal sites and methodologies are needed to permanently isolate the contamination from the environment.



WHAT REMAINS TO BE DONE?

Almost 2 million cubic yards of contaminated material eventually will need to be addressed. The majority of this material is in the states of Missouri, New Jersey, and New York. Selecting and developing appropriate permanent disposal sites and methodologies is the biggest challenge facing DOE, the states, and the people living in the affected communities.



WHAT HAS FUSRAP DONE SO FAR?



Since it began in 1974, FUSRAP has made significant progress. Of the 44 sites identified as requiring remedial action, 14 have been completely cleaned up and partial remedial action has taken place at 16 others. Information about the nature and extent of contamination at the other 14 sites is being gathered as part of the environmental review process that will lead to remedial action. (This status is current as of early 1994.)

In addition, more than 173 other properties — residences, businesses, or public lands also contaminated

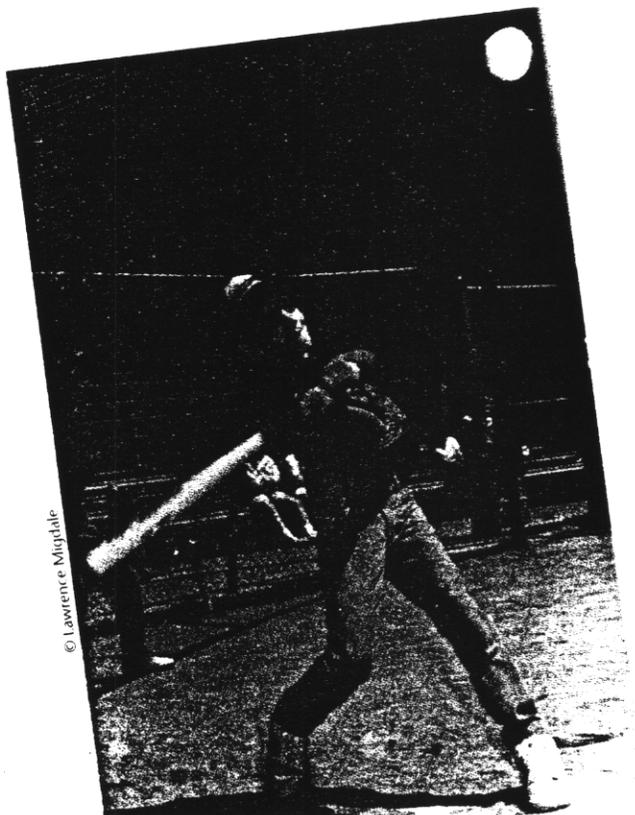
over the years — have been cleaned up. Houses in Maywood, New Jersey; Colonie, New York; and elsewhere are now free of contamination.

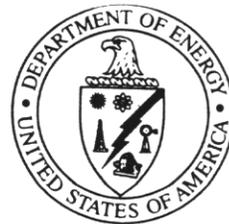
A commercial property in Rochelle Park, New Jersey, that couldn't be developed because of contamination is now the site of a nursing home that provides jobs and tax revenues to the community.

And a recreation field in Wayne, New Jersey, that sat idle for years is now back in use.

At the Niagara Falls Storage Site in Lewiston, New York, contamination has been consolidated from a 191-acre DOE-owned site and about 25 adjacent private properties. The wastes are now contained in a disposal cell designed to preclude any exposure to humans and prevent migration into groundwater.

More than 150,000 cubic yards of contaminated materials have been removed from residential and commercial properties and stored at DOE-controlled and monitored interim storage sites. These interim storage sites are in Maywood, Middlesex, and Wayne, New Jersey; Colonie, New York; and Hazelwood, Missouri.





In 1942, the University of Chicago was involved in the Manhattan Project. Needing more room, researchers used the nearby National Guard Armory for storage and processing of uranium metals. Later, the building reverted to the Illinois National Guard, but the site remained contaminated with wastes resulting from the uranium processing.

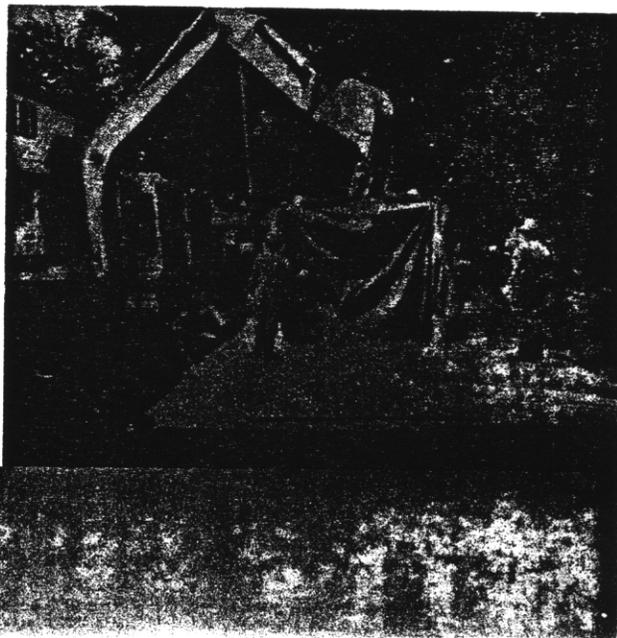
When remedial action began in 1988, the FUSRAP team cleaned up the armory, filling 32 drums with radioactive sludge. This waste was shipped to DOE's Hanford Reservation for disposal. However, another 16 drums of material contained both radioactive waste and volatile organic compounds (VOCs), which are highly flammable materials. Regulations required that as long as the drums were onsite, the property could not be released for unrestricted use. However, there were no federal or commercial disposal facilities licensed to receive such wastes.

FUSRAP solved the problem by "processing" the wastes at the armory. The project team developed an idea for heat-treating the waste to boil off the volatile chemicals. After pilot tests, the technique was implemented at the armory, and the treatment was completed in under 6 weeks. The resultant radioactive waste, minus VOCs, was disposed at the Hanford Reservation, and the site is now "clean" for use without radiological restrictions.

ment, the plan is issued for public comment. DOE then reaches a decision as to what remedial action will be taken. Only after this process is complete can the site be cleaned up.

Throughout the entire remedial action process there are opportunities for public participation. A community relations plan is usually developed at the beginning of the process, and the public is asked to provide information about the site, identify options, and comment on DOE's evaluation of the options. State and local governments and property owners also are key participants in this process. State governments help suggest appropriate and acceptable disposal sites that DOE should consider for the wastes and ensure compliance with applicable state regulations. Local governments help inform the public about remedial activities.

Program guidance for FUSRAP is provided by DOE Headquarters, and day-to-day FUSRAP activities are managed by the DOE operations office in Oak Ridge, Tennessee. A project management contractor engineers and manages the field activities and construction necessary for remedial action. An environmental studies contractor is responsible for analysis of the environmental issues and options for cleanup. Other contractors independently verify that each remedial action has, in fact, cleaned up the site or property.



Although each site is different, there is a general sequence of events through which FUSRAP operates to clean up contaminated sites.

The first step, already mentioned, is to research historical records and review information submitted by the public or industry to identify sites used in the Manhattan Project and Atomic Energy Commission programs. This historical review process has almost been completed.

DOE must determine if it is responsible for the site. In some cases, for example, sites might be the responsibility of the Nuclear Regulatory Commission (NRC) or the Environmental Protection Agency (EPA). Once a site is identified as a formerly utilized site, DOE assesses whether it is contaminated and what priority it should receive.

DOE then starts on the remedial action process. The general goals are to decontaminate or apply controls to the sites to bring them into compliance with today's standards. This usually requires stabilizing and/or disposing of all contaminated material. All work must be performed in accordance with applicable federal, state, and local environmental laws. When remedial action is complete, DOE

obtains independent certification that the sites comply with accepted guidelines.

How

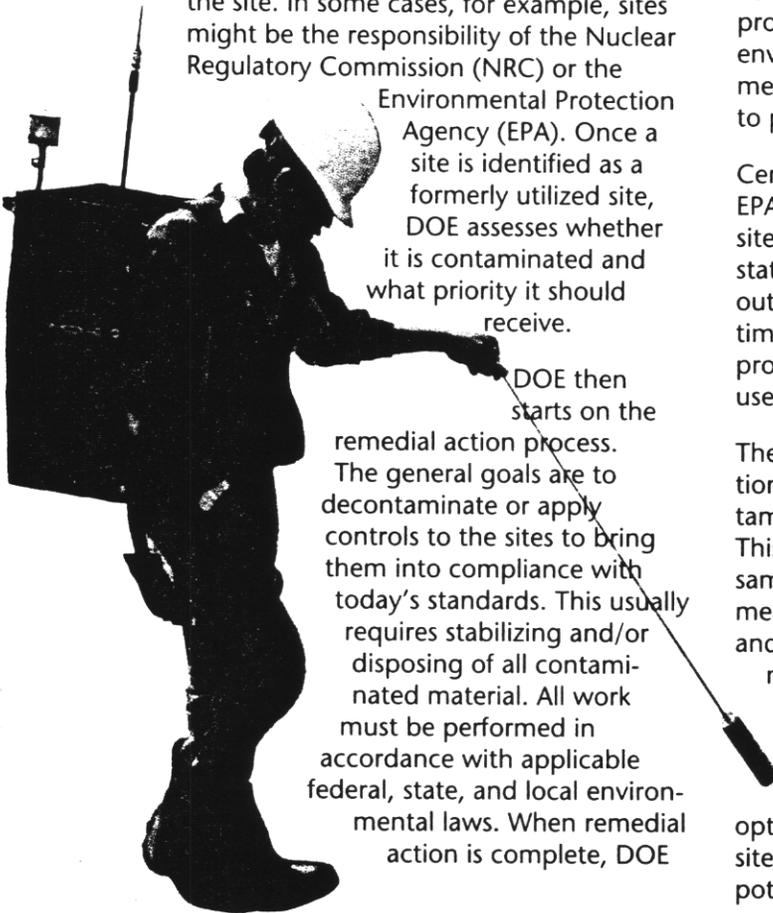
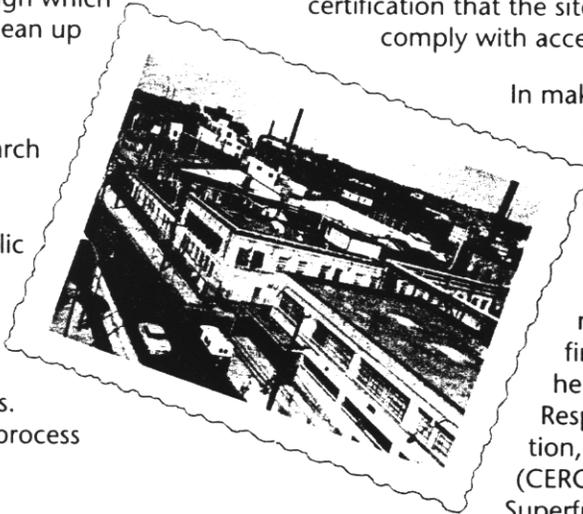
In making decisions about remedial action at FUSRAP sites, DOE's processes comply with two major environmental laws. The first is the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund. The second is the National Environmental

Policy Act, or NEPA. These laws ensure that projects like FUSRAP are conducted in an environmentally sound manner and that members of the public have opportunities to participate.

Certain FUSRAP sites have been placed on EPA's National Priorities List (NPL). For those sites, DOE and EPA consult with affected states and enter into an agreement to spell out roles and responsibilities and establish timetables. The environmental cleanup process for FUSRAP is the same process used by EPA for all sites on the NPL.

The first part of the process is an investigation to obtain a clear picture of the contamination problems that exist at a site. This usually involves taking surface soil samples and/or drilling sampling holes to measure levels of contamination at a site and determine exactly where the contamination is located.

After data are collected and analyzed, options for cleaning up the site are evaluated. This evaluation of options leads to a plan for cleaning up the site. If the planned cleanup option has the potential to affect the public or the environ-



For the most part, the radioactively contaminated materials at FUSRAP sites do not pose a threat to public health or the environment. In fact, under present conditions at most FUSRAP sites,

WHY IS FUSRAP IMPORTANT?

concentrations of radioactivity are so low that the greatest annual exposure to a member of the public is about 1 or 2 millirems per year. This is less than 1 percent of the exposure we receive

from other sources of radiation in our daily lives.

However, there are circumstances under which unacceptable radiation exposures could occur—particularly if land use were to change. For example, if a residence were built on a contaminated area, radon gas could accumulate in the house.

Persons breathing contaminated dust particles or eating food grown in contaminated soil could also receive unacceptable exposure.

Therefore, though not immediately hazardous, the contaminated FUSRAP



© Lawrence Maguire

On a pleasant, sprawling piece of land in Rochelle Park, New Jersey, several dozen retirees make their home. However, not too many years ago, this property was contaminated with thorium, and the land was not useable.

In 1983, Congress directed DOE to clean up the contamination resulting from commercial operations at the Maywood Chemical Works, which processed thorium ores from 1915 to the 1950s. Wastes from the operations were pumped to the nearby area, and over the years, the land became overgrown, and the wastes were largely forgotten. Private developers later purchased the property only to find they could not develop it after the thorium contamination was discovered by the DOE.

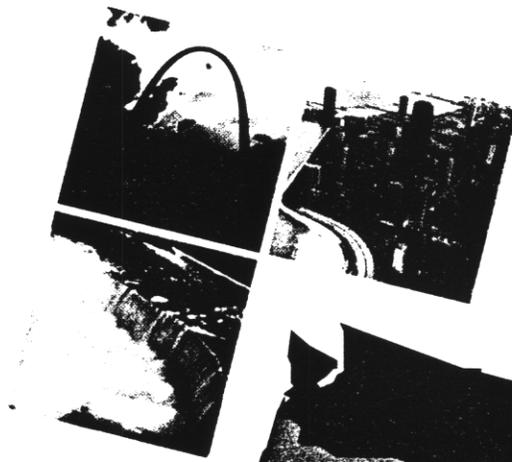
As part of its work to clean up sites, DOE has cleaned the land to DOE standards, allowing former owners to return to the property and live on the land.

sites must be cleaned up. Highest priority is given to actions that reduce radiation exposure to the public. Cleaning up these areas not only eliminates potential health hazards, but often also allows previously unusable or restricted property to be returned to uses that benefit the community. When a site has been cleaned to DOE standards, people can live on the property, drink water from onsite wells, grow crops or livestock for food, and still not receive radiation exposures that exceed the health guidelines established by the International Commission on Radiological Protection.

Early FUSRAP activities focused on combing through historical records just to identify sites involved in the

Manhattan Project or early Atomic Energy Commission work. DOE has examined almost 400 such sites, reviewing old records and then performing radiological surveys. Most of these sites have been found to be clean, but by early 1994, 44 sites in 14 states had been identified as needing cleanup. Additional sites are added from time to time as DOE review continues.

Cleanup work (remedial action) has been under way since 1979, and 14 sites have been completely remediated.



As early as 1943, the Middlesex Sampling Plant (MSP) in Middlesex, New Jersey, was a busy hub for Manhattan Project activities. The plant received shipments of uranium and other radioactive ores, which were sampled and assayed, then packaged and shipped to other facilities across the country for processing.

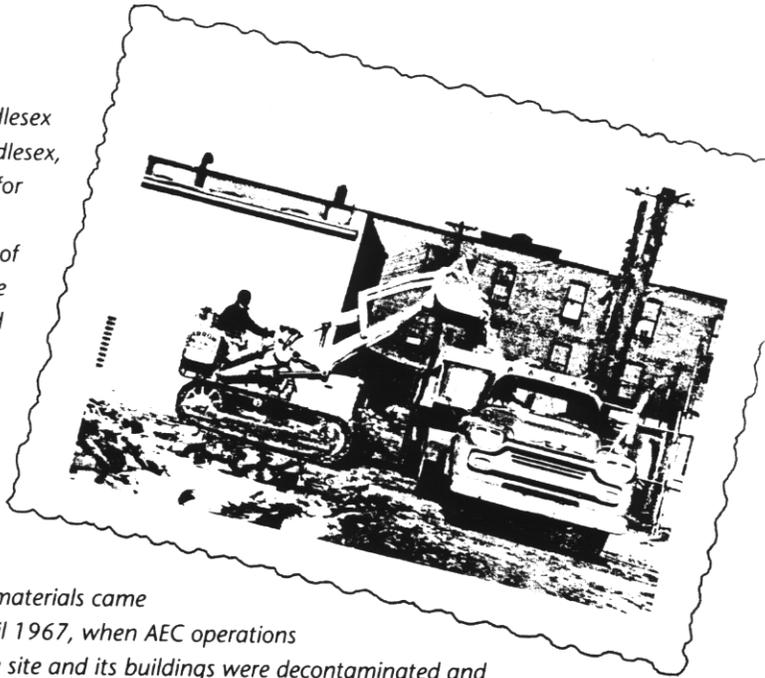
After the war, MSP continued similar activities as part of the nation's atomic energy program. Radioactive materials came and went from the facility until 1967, when AEC operations there ceased. At that time, the site and its buildings were decontaminated and certified for use with no radiological restrictions under the criteria in effect at that time.

Overlooked during the decontamination, however, was the fact that, over the years, traces of contaminated materials gradually had been carried offsite by wind and rain. The radioactive materials accumulated in the yards of neighboring homes. A close look at MSP records later revealed that some radioactive materials apparently were trucked from MSP to the Middlesex Municipal Landfill a half-mile down the road.

From 1969 to 1979, MSP was used as a training center by the Marine Corps. When it was returned to DOE in 1980, immediate action started under FUSRAP to clean up the residential properties. Radioactive materials were removed from yards and brought back to MSP, where they were stored on a specially constructed pad. By the end of 1981, the 31 contaminated properties had been cleaned, and 35,000 cubic yards of contaminated materials had been placed in storage at MSP.

Meanwhile, at the Middlesex Municipal Landfill, radiological surveys had concluded that while there was no immediate danger, the level of contamination exceeds current guidelines. Therefore, in 1984 DOE began remedial action at the landfill. The contaminated material was excavated and returned to MSP from where it came. By 1986 the landfill was clean, and an additional 31,000 cubic yards of material had been stored at MSP.

Presently, MSP awaits final remedial action. The approximately 65,000 cubic yards of contaminated material removed from the residences and the landfill remain at the site in two carefully monitored storage piles. DOE publishes an annual environmental surveillance report on MSP (and similar sites around the country) to assure the public that the stored materials and the site itself pose no environmental threat. When a final remedy is selected for the low-level radioactive material, MSP will be cleaned up, and its story—after almost 50 years—will end. (See "What Remains to be Done.")



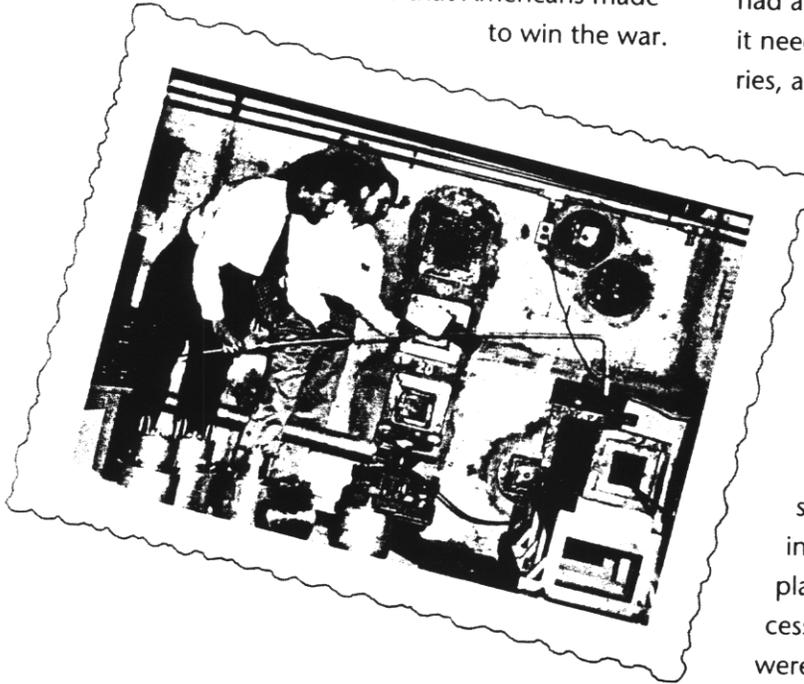
Because of the disposal methods and the subsequent demolition of buildings and earthmoving activities over the years, most of the radioactive wastes became dispersed throughout large volumes of soil and rubble. At some sites, wastes were spread by erosion or wind, and many offsite areas became contaminated. In addition, contamination remained on walls and building surfaces.

In the years since the war, as scientists have learned more about radiation, the waste disposal practices of the 1940s and 1950s are no longer

acceptable. Consequently, those older sites—formerly used sites—must be cleaned up, and the cleanup is the responsibility of the Department of Energy, the agency that evolved from the Manhattan Project and the Atomic Energy Commission (AEC). To clean up the sites, the Formerly Utilized Sites Remedial Action Program, FUSRAP, was started in 1974.



For most Americans, World War II is a distant memory or a lesson in a history book. But those who lived during that period remember the extraordinary efforts that Americans made to win the war.

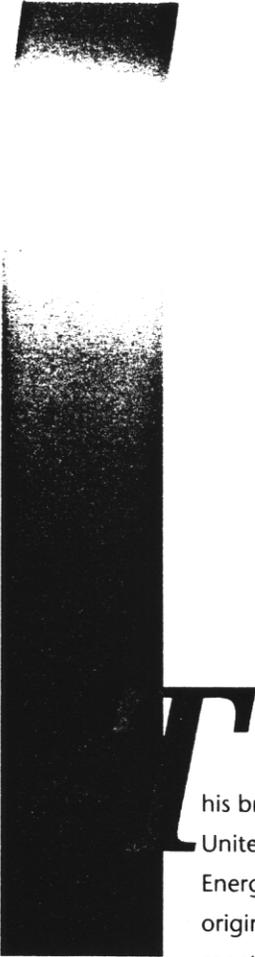


A major part of the war effort was the Manhattan Project, a secret program to develop an atomic weapon that would end the conflict. The Manhattan Project had access to virtually all the resources it needed. Chemical plants, laboratories, and production facilities throughout the country processed uranium ore and other radioactive materials as part of the urgent research and development efforts.

During those wartime years and the Cold War era that followed, wastes from uranium processing were handled in ways similar to wastes from other industrial processes. At the various plants or laboratories that processed uranium ore, waste materials were then disposed of in ways that were thought at the time to be safe—often on or near the site.

WHAT IS FUSRAP?





his brochure is published by the United States Department of Energy (DOE). It explains the origins, goals, and accomplishments of the Department's Formerly Utilized Sites Remedial Action Program (FUSRAP), a major environmental effort to clean up sites contaminated from past activities involving radioactive materials. FUSRAP has made significant progress in cleaning up these sites and ensuring that they meet today's environmental standards. This brochure is intended to provide members of the public, government officials, and affected property owners with basic information about FUSRAP and to improve understanding of the program's goals and activities.

DOE FUSRAP Fact Sheet

St. Louis Sites

July 1990

DOE, EPA sign agreement to coordinate St. Louis cleanup activities

The Department of Energy (DOE) and the U. S. Environmental Protection Agency (EPA) signed an agreement in July that outlines the environmental review process to be used in making a decision on the ultimate disposition of radioactive materials from the St. Louis Airport Superfund Site, and associated contaminated properties. The goal of this process is to reach a Record of Decision which describes the selected cleanup alternative. As a key element of the process, the public is provided opportunities to comment on and participate in the decision-making process.

A range of alternatives, including offsite disposal and onsite disposal will be evaluated. Selection of a disposal site will not be made until completion of a full environmental review, currently scheduled for 1994. DOE will design and

implement the cleanup after a Record of Decision has been reached.

Summary

- DOE has established a program to cleanup residual radioactivity at the St. Louis Downtown Site, the St. Louis Airport Site and the Latty Avenue Properties
- Results of extensive sampling studies conducted at the St. Louis Sites demonstrate that existing contamination poses no health hazard under current land use conditions
- DOE has signed an agreement with EPA outlining the environmental review process, setting roles and responsibilities, and establishing a schedule
- In August, St. Louis site information will be available at the FUSRAP Information Trailer located at 9200 Latty Avenue

For more information or to be included on the mailing list for updates about the site call or write : **David Adler, St. Louis Site Manager**

In St. Louis, MO
FUSRAP Information Trailer
9200 Latty Avenue
Hazelwood, Mo 63033
(314) 524-4083

In Oak Ridge, TN
Department of Energy
Technical Services Division P.O. Box 2001
Oak Ridge, TN 37831-8723
(615) 576-0948

The St. Louis Airport Site **FUSRAP** (SLAPS) and the Latty Avenue Properties, as well as the St. Louis Downtown Site (SLDS) are all part of the DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP). The objectives of FUSRAP are to identify sites that were used by the government or its contractors in the early years of the nation's atomic energy program and ensure that those sites meet current environmental standards. FUSRAP presently includes 31 sites in 13 states.

History

During World War II, uranium was processed at a chemical plant operated by Mallinckrodt in downtown St. Louis. Residues from that processing and from the cleanup of buildings at the plant were stored at a 21-acre parcel of land that was owned by the Atomic Energy Commission on McDonnell Boulevard just north of the Lambert-St. Louis International Airport. In 1966, some of the residues were purchased by a private firm for commercial value and trucked to a site on Latty Avenue, about a half-mile north of the airport site.

As a result of these activities, three FUSRAP sites in the Greater St. Louis area contain levels of radioactivity above current standards and require some type of remedial action. DOE has also identified more than 70 "haul route" properties in the general airport area that may be contaminated as a result of hauling materials from the airport site to Latty Avenue. The low-level radioactivity found at these sites poses no threat to public health or the environment, given current land use.

Work to Date

In the past several years DOE has accomplished a great deal of work at the St. Louis sites. This work consisted primarily of characterization (sampling and analysis to determine the nature and extent of contamination). Characterization has been completed at SLAPS, the Hazelwood Interim Storage Site (HISS) and at the St. Louis Downtown Site. Recently completed work focused on Coldwater Creek and about 70 "haul route" properties. Work on Coldwater Creek involved collection and analysis of soil samples from the creek between Pershall Road and Old Halls Ferry Road. Contamination, at low levels, was found at some sampling locations. Work along the haul routes indicated some contamination on road shoulders and adjacent properties. In general, where contamination was found the levels were low and at shallow depths (less than one foot). While the characterization is essentially complete, some additional investigation in the creek and along the haul routes will be needed.

Site Information

In August, DOE will establish a FUSRAP Information Trailer at 9200 Latty Avenue in St. Louis. Additionally, DOE has established an Administrative Record containing the body of information upon which decisions about the cleanup will be based. This record and a general information repository are available for review, during normal business hours, in the Government Information Section at the St. Louis Public Library, 1301 Olive Street, St. Louis, MO 63103, and at the St. Louis County Library, Prairie Commons Branch, 915 Utz Lane, Hazelwood, MO 63042.

DOE FUSRAP Fact Sheet

St. Louis Sites

October 1990

DOE responds to resident requests for site information

Residents of St. Louis now have a convenient location where they can gain information about the sites in St. Louis that are subject to environmental clean up.

In response to resident requests to make St. Louis site information more readily available, the Department of Energy (DOE) has opened a Public Information Office at 9200 Latty Avenue, Hazelwood, Missouri. Site information will be available on the St. Louis Downtown site (SLDS), the St. Louis Airport site (SLAPS), and the Latty Avenue properties. The office has been established to provide opportunities for the public to comment on, and participate in, the environmental review process that will eventually lead to a decision on site clean up.

DOE has also recently completed radiological characterization report summarizing sampling and analysis results for properties located in Berkeley, Hazelwood, and St. Louis. Some of the properties are believed to have residue waste from uranium processing activities conducted in downtown St. Louis several decades ago. Notification has been sent to property owners detailing the results of the survey conducted on their property. Data from these and other surveys will be used to design a cleanup program for long-term management of these wastes.

Summary

- DOE has established a program to clean up residual radioactivity at the St. Louis Downtown Site, the St. Louis Airport Site, and the Latty Avenue Properties.
- Radiological characterization surveys have been conducted along Latty Avenue, McDonnell Boulevard, Hazelwood Avenue, Pershall Road, Coldwater Creek, and the St. Louis Airport Site areas.
- Results of characterization surveys and other extensive sampling studies conducted at the St. Louis sites demonstrate that existing contamination poses no health hazard under current land use conditions.
- When appropriate environmental reviews are completed, affected areas will be cleaned up as necessary to ensure long-term protection of human health and the environment.
- St. Louis site information is available at the Public Information Office located at 9200 Latty Avenue.

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Review Process

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A range of alternatives, including off-site and on-site disposal will be evaluated. Selection of a disposal site will not be made until completion of a full environmental review, currently scheduled for 1994. DOE will design and implement the cleanup after a Record of Decision has been reached.

FUSRAP Program

SLAPS, SLDS, and the Latty Avenue Properties are all part of the DOE's Formerly Utilized Sites Remedial Action Program

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nated as a result of hauling materials from the airport site to Latty Avenue. The low-level radioactivity found at these sites poses no threat to public health or the environment, given current land use. Achieving cleanup standards will ensure that the sites pose no significant risk, even if land use changes.

Work to Date

In the past several years, DOE has accomplished a great deal of work at the St. Louis sites. This work consisted primarily of characterization (sampling and analysis to determine the nature and extent of contamination). Characterization has been completed at SLAPS, the Hazelwood Interim Storage Site (HISS), and SLDS. Much of the work completed has focused on Coldwater Creek and about 70 haul route properties. Work on Coldwater Creek involved collection and analysis of soil samples from the creek between Pershall Road and Old Halls Ferry Road. Contamination, at low levels, was found at some sampling locations. Work along the haul routes indicated some contamination on road shoulders and adjacent properties. In general, where contamination was found, the levels were low and at shallow depths (less than one foot). Although the characterization is essentially complete, some additional investigation will be needed in the creek and along the haul routes.

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The U.S. Department of Energy Formerly Utilized Sites Remedial Action Program

DOE FUSRAP Fact Sheet St. Louis Sites

September 1990

DOE, EPA sign agreement to coordinate St. Louis cleanup activities

The Department of Energy (DOE) and the U. S. Environmental Protection Agency (EPA) signed an agreement in July that outlines the environmental review process to be used in making a decision on the ultimate disposition of radioactive materials from the St. Louis Airport Superfund Site, and associated contamination properties. The goal of the process is to reach a Record of Decision which describes the selected cleanup alternative. As a key element of the process, the public is provided opportunities to comment on and participate in the decision-making process.

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DOE FUSRAP Fact Sheet

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History

During World War II, uranium was processed at a chemical plant operated by Mallinckrodt in downtown St. Louis. Residues from that processing and from the cleanup of buildings at the plant were stored at a .21-acre parcel of land that was owned by the Atomic Energy Commission on McDonnell Boulevard just north of the Lambert-St. Louis International Airport. In 1966, some of the residues were purchased by a private firm for their commercial value and trucked to a site on Latty Avenue, about a half-mile north of the airport site.

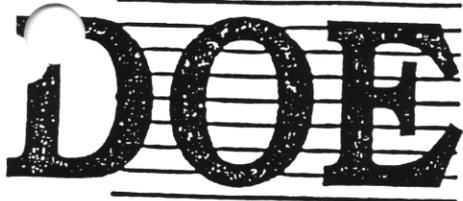
As a result of these activities, three FUSRAP sites in the Greater St. Louis area contain levels of radioactivity above current standards and require some type of remedial action. DOE has also identified more than 70 "haul route" properties in the general airport area that may be contaminated as a result of hauling materials from the airport site to Latty Avenue. The low-level radioactivity found at these sites poses no threat to public health or the environment, given current land use. Achieving cleanup standards will ensure that the sites pose no significant risk, even if land use changes significantly.

Work to Date

In the past several years DOE has accomplished a great deal of work at the St. Louis sites. This work consisted primarily of characterization (sampling and analysis to determine the nature and extent of contamination). Characterization has been completed at SLAPS, the Hazelwood Interim Storage Site (HISS) and at the St. Louis Downtown Site. Recently completed work focused on Coldwater Creek and about 70 "haul route" properties. Work on Coldwater Creek involved collection and analysis of soil samples from the creek between Pershall Road and Old Halls Ferry Road. Contamination, at low levels, was found at some sampling locations. Work along the haul routes indicated some contamination on road shoulders and adjacent properties. In general, where contamination was found the levels were low and at shallow depths (less than one foot). While the characterization is essentially complete, some additional investigation in the creek and along the haul routes will be needed.

Site Information

In September, DOE will establish a FUSRAP Information Office at 9200 Latty Avenue in St. Louis. Additionally, DOE has established an Administrative Record containing the body of information upon which decisions about the cleanup will be based. This record and a general information repository are available for review, during normal business hours, in the Government Information Section at the St. Louis Public Library, 1301 Olive Street, St. Louis, MO 63103, and at the St. Louis County Library, Prairie Commons Branch, 915 Utz Lane, Hazelwood, MO 63042.



FUSRAP Fact Sheet

St. Louis Sites

January 1990

DOE evaluating three sites in St. Louis area

The U. S. Department of Energy (DOE) is responsible for cleaning up residual radioactive contamination at several locations in the St. Louis area as part of DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP). The objectives of FUSRAP are to identify sites that were used by the government or its contractors in the early years of the nation's atomic energy programs and ensure that those sites meet current environmental standards. FUSRAP presently includes 31 sites in 13 states.

This fact sheet gives a brief history of the St. Louis sites and describes the process that will be used by DOE, in conjunction with the Environmental Protection Agency and the State of Missouri, to identify and carry out the appropriate cleanup measures.

BACKGROUND

During World War II, uranium was processed at a chemical plant operated by Mallinckrodt in downtown St. Louis. Residues from that processing and from the cleanup of buildings at the plant were stored at a 21-acre parcel of land that was owned by the Atomic Energy Commission on McDonnell Boulevard just north of the Lambert-St. Louis International Airport.

In 1966, some of the residues were purchased by a private firm for their commercial value and trucked to a site on Latty Avenue, about a half-mile north of the airport site. The residues were then sent by rail to a plant in Colorado for processing. The City of St. Louis acquired the property from the Atomic Energy Commission, a predecessor agency to DOE, in 1973.

DOE has also identified more than 60 "haul route" properties in the general area

Summary

- DOE is responsible for cleanup of residual radioactivity at the St. Louis Downtown Site, the St. Louis Airport Site and the Latty Avenue properties
- Given the type of radioactive contamination and the current use of the site there is no foreseeable hazard.
- DOE is developing an agreement with EPA, in conjunction with the State of Missouri, to outline the environmental review process, set roles and responsibilities, and establish a schedule
- While the environmental review is in process, DOE plans to conduct interim action on selected properties to prevent further spread of contamination

north of the airport that may be contaminated as a result of hauling materials from the airport site to Latty Avenue.

As a result of these activities, there are three FUSRAP sites in the Greater St. Louis area which contain levels of radioactivity above current standards and, therefore, require some type of remedial action. They are (1) the St. Louis Downtown Site (SLDS); (2) the St. Louis Airport Site (SLAPS) and its contaminated vicinity properties, and (3) the Latty Avenue Properties.

There are two other similar sites in the St. Louis area that are not part of FUSRAP. One is the Weldon Spring site in St. Charles County, which is being managed by a separate DOE program. The other is the West Lake Landfill in St. Louis County, where residues from the Latty Avenue facility were disposed of by a commercial firm. The West Lake Landfill has been proposed by EPA for inclusion on the National Priorities List (Superfund). The Nuclear Regulatory Commission is presently responsible for regulating the contamination at the landfill.

AUTHORIZING LEGISLATION

Several different laws provide DOE with authority and responsibility for remedial action at these sites. The basic authority for the Downtown and SLAPS properties comes from the Atomic Energy Act of 1954, as amended. The conference report accompanying the Energy and Water Development Appropriations Act of 1984 provided DOE authority for the Latty Avenue Properties. Public Law 98-360, passed in 1985, directed DOE to reacquire the airport property from the City of St. Louis and develop it as a disposal site, in a manner acceptable to the City. This legislation does not mean that the site will automatically become a disposal cell upon transfer of the land to DOE. Selection of a disposal site will not be made until completion of a full environmental review, including review of alternative disposal sites. Selection of a preferred site will be based upon site suitability and all applicable laws.

In October of 1989, EPA placed the airport site and the Latty Avenue Properties on the National Priorities List (Superfund). This Superfund listing will mean that cleanup can proceed under Superfund authority, that certain time schedules must be met, and that EPA and the State of Missouri will have a greater role in oversight of DOE activities.

WORK TO DATE

In the past several years DOE has accomplished a great deal of work at the St. Louis sites. This has consisted primarily of characterization (sampling and analysis to determine the nature and extent of contamination). Characterization has been completed at SLAPS, the Hazelwood Interim Storage Site (HISS) and at the St. Louis Downtown Site. Recently completed work focused on Coldwater Creek and about 70 "haul route" properties. Work on Coldwater Creek, a portion of which was funded by the Corps of Engineers, involved collection and analysis of soil samples from the creek between Pershall Road and Old Halls Ferry Road, a distance of almost 7 miles. Contamination, at low levels, was found at some sampling locations. Work along the haul routes indicated some contamination on road shoulders and adjacent properties. In general, where contamination was found the levels were low and at shallow depths (less than 1 foot). While the characterization is essentially complete, some additional investigation in the creek and along the haul routes will be needed.

In addition to characterization, DOE has performed some interim cleanup activity to prevent the spread of contamination or remove contamination from the route of utility construction. Contamination from the Latty Avenue Properties and from the Latty Avenue right-of-way has been cleaned. This material is in interim storage at the HISS on Latty Avenue. DOE also repaired erosion along the west end of the airport site and installed a gabion wall to prevent further erosion of soil into Coldwater Creek. (Gabions are rock-filled wire baskets used to control erosion.)

DOE conducts environmental monitoring around the airport site and HISS, testing the air, groundwater, surface water, and direct radiation on a quarterly basis. Annual site environmental monitoring reports are published and made available to the public.

FUTURE ACTIVITIES

With the placement of sites on Superfund DOE began discussions that will lead to an agreement with EPA, with input from the

of Missouri. This agreement will outline the environmental review process to be used in making a decision on the ultimate disposition of radioactive materials from the St. Louis sites. The agreement will list responsibilities of the various parties and set out a schedule for accomplishing the work.

The environmental review process will comply with all applicable laws and regulations. The two primary laws involved are the National Environmental Policy Act (NEPA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA). The environmental documentation accomplished under NEPA is called an Environmental Impact Statement (EIS). Documentation done under CERCLA/SARA is called a Remedial Investigation/Feasibility Study (RI/FS). DOE will combine these two processes and produce a joint RI/FS-EIS.

The goal of this process is to reach a "Record of Decision" describing the cleanup to be done. The process starts with scoping and planning, which includes an opportunity for the public to comment on alternatives that should be considered in the study. A range of alternatives including offsite disposal and onsite disposal will be evaluated.

After scoping and planning have been completed, a remedial investigation will be conducted, followed by a remedial investigation report. A feasibility study will be conducted to evaluate various alternatives, and a proposed plan will be issued for public review and comment. DOE will then issue a Record of Decision, which will include responses to comments received from the public. After a Record of Decision has been reached, DOE will design and implement the cleanup.

In the interim, while this review process is being conducted, DOE is planning to clean up some of the residential and commercial properties in order to prevent further spread of the contamination. The contaminated material from this cleanup would be placed with other material already in storage at HISS.

SUMMARY

The low levels of residual radioactivity identified by FUSRAP pose no significant health hazards given current land use activities. This conclusion is supported by results from extensive characterization activity and an ongoing environmental monitoring program at the SLAPS and HISS sites.

A great deal of work has been accomplished by DOE to identify the extent of residual radioactive contamination in the Greater St. Louis area. DOE is committed to fully evaluating alternatives for cleaning up these sites, in cooperation with EPA, the State of Missouri, and local officials. During this process, there will be numerous opportunities for public participation. While this environmental review process is being conducted, DOE is planning interim action to prevent further spread of contamination.

In the meantime, DOE has established an Administrative Record containing the body of information upon which decisions about the cleanup will be based. The record is available for review, during normal business hours, in the Government Information Section at the St. Louis Public Library, 1301 Olive Street, St. Louis, MO 63103, and at the St. Louis County Library, Prairie Commons Branch, 915 Utz Lane, Hazelwood, MO 63042.

For more information or to be included on the mailing list for updates about this site; call or write:

David Adler
Technical Services Division
Department of Energy
P.O. Box 2001
Oak Ridge, TN 37831-8723
(615) 576-0948

APPENDIX I
NEWSLETTERS ISSUED TO DATE

The St. Louis Sites

Formerly Utilized Sites Remedial Action Program • Summer 2003

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North County

On May 29th the U.S. Army Corps of Engineers, St. Louis District (USACE) held a public meeting on the North County Feasibility Study and Proposed Plan (FS/PP). Seventy-four members of the public were in attendance. Twelve individuals gave comments. Comments centered around the cleanup of areas under roads, bridges, railroads and buildings as well as Coldwater Creek.

The comment period for the North County FS/PP closed on July 14th. USACE is currently in the process of addressing the public comments received on the documents and using those responses to assist in the preparation of the Record of Decision (ROD) for the North County Site. The responses to the public and stakeholder questions submitted on the North County Site FS/PP will be published in the Responsiveness Summary. The Responsiveness Summary will be an appendix to the ROD and is currently scheduled to be completed (signed by the United States Environmental Protection Agency and USACE) in early 2004. ■

St. Louis Airport Site (SLAPS)

Since the beginning of Fiscal Year 03 more than 85,843 cubic yards of contaminated soil have been removed



More than 80,000 cubic feet of soil was excavated to complete Phase 1.

and shipped from the St. Louis Airport Site to an out-of-state permitted and licensed disposal facility. The shipments have been made in 1,153 lined gondola rail cars. Most of this material came from phase I, located in the center of the site, which is now complete. Phases 2 and 3, which are located west of Phase 1, began in December 2002. USACE expects to remove more than 60,000 cubic yards and ship it out-of-state during this stage of the remediation. Phases 2 and 3 are expected to be about 75% complete by the end of the fiscal year.

After completion of Phases 2 and 3, the next step in the remediation of SLAPS is the remaining western portion of the site, Phases 4 and 5, which are adjacent to Coldwater Creek. This work is currently scheduled to begin in mid 2004.

Most notable to the public is the roadway progress. More than 50% of the contamination along the south shoulder of McDonnell Boulevard has been removed and the roadway surface replaced.

Upcoming Events

Information Releases:

Fall Newsletter - October 2003

Draft Five-Year Review Report - Sept. 2003

Upcoming Meetings (Please come if you are available!):

St. Louis Oversight Committee Meetings at the FUSRAP Project Office at 11:30 a.m. on Sept. 12, Oct. 10, Nov. 14, and Dec. 12.



US Army Corps
of Engineers®
St. Louis District

Water Treatment

You may have noticed the large corrugated steel tanks on the south side of McDonnell Blvd. These tanks help facilitate the de-nitrification process, which allows USACE to more efficiently remove selenium from the water. With the tremendous amount of rain experienced this past June, there was significant water at SLAPS. Any water that comes into contact with our remediation efforts must be treated prior to release to the Metropolitan Sewer District (MSD). So far this year we have treated and released more than 1.8 million gallons to MSD. ■

Five-Year Review Progresses

USACE plans to release the Five-Year Review in November 2003, evaluating whether the response actions implemented on the FUSRAP St. Louis Sites continue to be protective of human health and the environment. The St. Louis Sites consist of the North County Site and the St. Louis Downtown Site (SLDS).

FUSRAP activities at the St. Louis Sites follow the guidelines established by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) more commonly known as Superfund. Under CERCLA, a review of the response actions must be conducted at least every five years following the start of cleanup.

This five-year review was triggered by the commencement of field operations at SLDS on September 8, 1998. The five-year review began in spring 2003 and will take nine to 12 months to complete.

As part of the five-year review process, the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency and the Missouri Department of Natural Resources inspected each site and documented the conditions observed. Members of the community also gave their views about the cleanup to help the team better understand the impacts of the work on the local community.

The results of the review will be published in the “Five-Year Review Report for the St. Louis FUSRAP Sites.” The report will also document any problems found and include recommendations to address them. Copies of this report will be available, after comments from the regulators are addressed, on-line at: <http://www.mvs.usace.army.mil/engr/fusrap/Home2.htm>.

Hard copies will be placed with the Administrative Record located at the St. Louis Public Library, 1301 Olive St., and at the FUSRAP Project Office at 8945 Latty Avenue in Berkeley. ■

St. Louis Downtown Site (SLDS)

Heintz Cleanup Underway

USACE is working on the cleanup of the second SLDS vicinity property this year. The property is identified as DT-6 and is currently owned by Heintz Steel and Manufacturing.

Phase one of the remediation resulted in excavation and disposal of 65 cubic yards of material.

Applying the lessons learned from the cleanup of the adjacent Midwest Waste property USACE chose to further investigate the remainder of the property. The investigation better defined the area of contamination and helped to minimize the impact of the cleanup to on-going business operations.



Excavation begins at Heintz Steel and Manufacturing.

Crews are now working on phase two of the cleanup, which required more extensive excavation on the property.

Contaminated materials will be shipped via rail to a certified out-of-state disposal facility.

USACE estimates that contractors will remove 1,800 cubic yards of material to complete the remediation under this phase of the plan. Remedial activities for this property are scheduled to be complete in September. Restoration of the property will be complete in October.

USACE works on the SLDS vicinity properties in accordance with the 1998 Record Of Decision for the St. Louis Downtown Sites.

Plant 6 East Half (6EH) Complete

In accordance with the 1998 St. Louis Downtown Site Record of Decision, the USACE completed the remediation of Mallinckrodt’s Plant 6 East Half in July 2003. A total of 23,937 cubic yards of material were excavated from the site and shipped to an out-of-state disposal facility. The Atomic Energy Commission (AEC) contracted with Mallinckrodt to use Plant 6 for uranium processing from 1946 through 1957. By 1962, the AEC had cleaned the area to criteria then in effect and returned the area to Mallinckrodt. However, since that time buildings have been demolished to facilitate ongoing business operations at Mallinckrodt.



Crews are removing material from Plant 7 East.

Keeping in Touch

Mailing Lists - To receive newsletters and other printed communications, sign up for our mailing list anytime.

Phone: (314) 260-3905

Mail: 8945 Latty Avenue
Berkeley, MO 63134

Fax: (314) 260-3941

Public Speaking - If your group, school, or association would like to hear from one of our experts, give us a call. We can speak on a variety of fields, including engineering, the environment, and geology.

Homepage - To reach our site, set your browser to www.mvs.usace.army.mil and select District Projects.

If you have any suggestions, questions, or comments, contact our office anytime.

Prior to backfill and restoration the site was verified with a final site survey, which confirmed that the area was free of radiological contamination. Following the completion of restoration activities Plant 6EH was returned to Mallinckrodt for beneficial use.

Plant 7 East Under Construction

Concurrently with Vicinity Property DT-6 cleanup, Mallinckrodt Plant 7E is also being addressed. Plant 7E is located in the eastern portion of SLDS, south of Destrehan Street and east of the Burlington Northern Railroad tracks. Historically Plant 7E was used as a parking lot and coal storage area. Remedial activities began in July. Because there are no buildings or underground utilities USACE expects this area to progress relatively quickly.

With approximately 1500 cubic yards of material slated for removal, the projected end date is in September.

What’s Next?

In the coming months USACE will complete the cleanup of DT-6 (Heintz Steel) and Plant 7E. USACE will also address contamination around the McKinley Bridge as the Illinois Department of Transportation prepares to work on bridge restoration. 

Where does all of that material go?

There are an awful lot of cubic yards of material being removed from the FUSRAP locations here in the St Louis area, but where does it all end up?

Because Missouri does not have any facilities available to accept radiological waste, all of the material generated in the remediation must be shipped to properly licensed facilities out-of-state. At this point, USACE has contracts with hazardous waste facilities in Utah and Idaho. The facilities were selected based upon an evaluation of their safety record, ability to accept FUSRAP materials, and cost effectiveness. The shipments are generally completed by rail. ■



Crews prepare material for shipment from SLAPS.

U.S. Army Corps of Engineers - St. Louis District
 FUSRAP Project Office
 8945 Latty Avenue
 Berkeley, Missouri 63134



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The St. Louis Sites

Formerly Utilized Sites Remedial Action Program • Spring 2003

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ST. LOUIS SITES

5-Year Review Initiated

A 5-year review of radiological cleanup actions is underway for local sites that are being addressed by the Formerly Utilized Sites Remedial Action Program (FUSRAP).

FUSRAP activities follow the guidelines established by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), more commonly known as Superfund.

Superfund establishes the process to identify, investigate, and clean up hazardous waste sites. It requires a review at least every five years following the selection of a final site remedy. The purpose of the review is to determine whether the cleanup continues to be protective of human health and the environment.

The five-year review will assess cleanups underway at the St. Louis Downtown Site in northern St. Louis City, and the North County Site in St. Louis County. The North County Site includes: the St. Louis Airport Site (SLAPS), the SLAPS Vicinity Properties, the Hazelwood Interim Storage Site/Latty Avenue Vicinity Properties, and the Futura Coatings Property.

The cleanups at these sites consist of excavating radioactively contaminated soils. The soils are then



A five-year review will assess cleanup underway at the St. Louis Sites. Workers here take soil samples to monitor conditions as cleanup progresses.

loaded into rail cars, covered and shipped to an out-of-state licensed facility for disposal.

A team will inspect each site. The team will be led by the U.S. Army Corps of Engineers (USACE) and will include representatives from the U.S. Environmental Protection Agency and the Missouri Department of Natural Resources. The team will document the conditions of the sites and the surrounding area.

As part of the review process, members of the community will be contacted for their views about the cleanup. Their responses will help the team to better understand the impacts of the work on the local community.

The results of the five-year review will be made available to the public in the *Five-Year Review Report for the St. Louis FUSRAP Sites*. Any problems found at the sites and recommendations to address them will also be documented in the report.

For more information or to participate in the review, please visit our web site at www.mvs.usace.army.mil/engr/fusrap/home2.htm or call (314) 260-3905.

What's Next?

Site inspections and interviews will continue until the end of May. In August, the community will be notified of the availability of the Five-Year Review Report and comments on the review will be accepted for 30 days following the release of the document. 

Upcoming Events

Information Releases:

Summer Newsletter - July 2003

Draft Five Year Review Report - August 2003

Upcoming Meetings (Please come if you are available!):

**St. Louis North County Site Feasibility Study/
Proposed Plan Public Meeting at the Hazelwood
Civic Center - East at 6:00 p.m. on May 29, 2003.**

**St. Louis Oversight Committee Meetings at the
FUSRAP Project Office at 11:30 a.m. on May 9,
June 13, and July 11.**



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St. Louis District

ST. LOUIS DOWNTOWN SITE

VP Cleanup Complete

The cleanup and restoration of the first privately-owned vicinity property owned by Midwest Waste and identified as DT-7, was completed in February 2003. Cleanup efforts began under the 1998 St. Louis Downtown Site Record of Decision in Fall 2001. Work progressed slowly as small crews diligently identified and removed numerous small pockets of contamination scattered throughout the property.

In 1942, when work under the Manhattan Project began, the elevation of the property was much lower than its present day level. Efforts to raise the property above the floodplain altered the elevation of the property 4 to 5 feet above its 1942 surface elevation. Subsequent rainfall pooled surface contamination in low-lying areas on the property creating the small pockets of contamination that were subsequently covered during the intervening years.

Sampling has verified that above-criteria radiological contamination was successfully removed from the property. Approximately 4,800 cubic yards of contaminated soils were excavated from the property, which is located at the foot of Angelrodt Street.

Plant 6EH Approaches Completion

The remediation of Plant 6 East and East Half is almost complete. Nearly 23,000 cubic yards of contaminated soil and debris have been removed from the 4.5-acre area since December 2000.

Cleanup of the area was complicated by the discovery of unmapped sewer lines, the difficulty in accessing contamination located near active utility lines, and “capped” contamination covered by the former building foundations. During the Manhattan Project, Plant 6 East Half was the home of former Buildings 102, 112, 115, 116, and 117. Over the years, these buildings were demolished to accommodate ongoing business operations at Mallinckrodt, but their foundations remained.

Crews removed the foundations. The cleanup of impacted soils from beneath these foundations will signal the completed remediation of accessible soils in the Plant 6 East and East Half area. Once remediation is complete, restoration activities can begin.



Nearly 23,000 cubic yards of contaminated soil and debris have been removed from the 4.5-acre Plant 6 East Half since December 2000.

What's Next?

Crews will restore Plant 6 East and East Half to its original condition and prepare to begin remedial activities in Plant 7 East, the next area requiring cleanup. ■

NORTH COUNTY

FS and PP Available for Public Review

The St. Louis North County Feasibility Study (FS) and the Proposed Plan (PP) are available for public review from May 1, 2003 through May 30, 2003. The FS and PP address the remediation of contamination related to the storage of wastes at the North County Site. The site includes the St. Louis Airport Site (SLAPS), the Latty Avenue Properties including the Hazelwood Interim Storage Site (HISS), the Futura Coatings Property, the SLAPS Vicinity Properties, and Coldwater Creek.

The FS describes six remediation alternatives under consideration to reduce the impact of contaminants resulting from previous uranium manufacturing and processing activities. The PP summarizes the alternatives and provides the rationale for the USACE's preferred alternative.

The alternatives, which identify a range of potential final site remedies from no action to complete excavation, are all under consideration. However, the USACE has identified Alternative 5, Excavation with Institutional Controls Under Roads, Bridges, Railroads and Other Permanent Structures, as the preferred alternative based on the information available at this time. Under this alternative, USACE would excavate all accessible soils

from all locations and place institutional controls, such as land use and zoning restrictions, to control soils beneath roads, bridges, railroads, and other permanent structures.

The public is encouraged to review and comment on all alternatives described in the FS and PP. The preferred alternative can change in response to public comment or to new information. Comments on the proposed remedial action at the North County Site will be accepted for 30 days following the release of the documents. Unless a request to extend the comment period is received, all comments must be received before June 1st. Interested participants should call the main office or check the website.

On May 29, 2003, a public meeting will be held at the Hazelwood Civic Center East, beginning at 6 p.m. with a poster session and technical staff available to answer questions. At 7 p.m., the USACE will briefly identify the alternatives then request verbal comments from the public. Speaker's comments about the alternatives will be recorded, and written comments may be submitted at that time or mailed to the address given in the "Keeping in Touch" box on this page. ■

ST. LOUIS AIRPORT SITE (SLAPS)

Removal Actions Still Going

Crews have also been very busy cleaning up the St. Louis Airport Site (SLAPS) over the past several months. Under the 1998 Engineering Evaluation/Cost Analysis (EE/CA), two more areas have been completed, one more is approaching completion, and yet another has begun.

The final section of the Radium Pits, identified as Survey Unit 21, was cleaned up in November 2002. Survey Unit 21 served as a temporary sump during the removal of contamination from adjacent areas. The removal of approximately 10,000 cubic yards resulted in the cleanup completion of the Radium Pits.

The USACE was also able to complete the cleanup of contaminated material from the remainder of the East End Extension in April 2003. Successful coordination with St. Louis County's Department of Highways and Traffic allowed the USACE to remove contaminated soil from the southern shoulder of McDonnell Boulevard and drainage ditch. Approximately 11,731 cubic yards of contaminated materials were excavated from the shoulder and shipped to an out-of-state disposal facility.

Keeping in Touch

Mailing Lists - To receive newsletters and other printed communications, sign up for our mailing list anytime.

Phone: (314) 260-3905

Mail: 8945 Latty Avenue
Berkeley, MO 63134

Fax: (314) 260-3941

Public Speaking - If your group, school, or association would like to hear from one of our experts, give us a call. We can speak on a variety of fields, including engineering, the environment, and geology.

Homepage - To reach our site, set your browser to www.mvs.usace.army.mil and select District Projects.

If you have any suggestions, questions, or comments, contact our office anytime.

Crews are nearly finished with the cleanup of the central portion of SLAPS, referred to as the Phase 1 region. Completion of the area was delayed to allow crews to complete the cleanup of the McDonnell Boulevard shoulder and drainage ditch adjacent to the Radium Pits before spring rains seriously impacted the work. Removal efforts are back underway with an anticipated completion date of May 2003. Approximately 97,000 cubic yards of contaminated soils have been removed since December 2001.

The USACE began the remediation of Phases 2 and 3, located in the northwest and north central portion of the site in early December 2002. Over 10,000 cubic yards of material of an expected 75,000 cubic yards, has been remediated to date.

What's Next?

USACE will continue the cleanup of Phases 2 and 3. ■



Workers finished the McDonnell Boulevard drainage ditch before spring rains impacted work.

North County Public Review Period

The North County Feasibility Study (FS) and Proposed Plan (PP) are available for public review and comment now through May 30th! Public comments on cleanup alternatives presented in these documents will aid in the selection of the final remedy for the North County Site. Copies of the FS and PP have been placed with the site Administrative Record File and may be reviewed during normal business hours at the following locations:

St. Louis District, Corps of Engineers
FUSRAP Project Office
8945 Latty Avenue, Berkeley, MO

St. Louis Public Library
Government Information Section
1302 Olive Street, St. Louis, MO

Additional copies of the FS and PP only are also available for review at select St. Louis City and County Libraries during normal business hours. These libraries include:

- Julia Davis Branch at 4415 Natural Bridge Road in St. Louis, MO
- Prairie Commons Branch at 915 Utz Lane in Hazelwood, MO
- St. Louis County Library Headquarters at 1640 S. Lindbergh Boulevard in St. Louis, MO
- Washington University - Earth & Planetary Sciences Library at One Brookings Drive in St. Louis, MO

Electronic copies of these documents are also available at: www.mvs.usace.army.mil/engr/fusrap/home2.htm. All comments are due to the U.S. Army Corps of Engineers, St. Louis District, FUSRAP Project Office at 8945 Latty Avenue in Berkeley, Missouri by June 1st. 

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FUSRAP Project Office
8945 Latty Avenue
Berkeley, Missouri 63134



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A Year In Review

The federal government began a new fiscal year on October 1st, 2002. At this time each year the U.S. Army Corps of Engineers (USACE) team pauses to reflect on what was accomplished and what remains. The highlights of our observations follow.

Last October, the team set a goal to remove 70,700 cubic yards of contaminated soils from the St. Louis FUSRAP Sites. Instead, we excavated and disposed of 92,958 cubic yards of contaminated materials —more than any previous year!

We prepared for future cleanup actions by working to define the extent of radiological contamination on 36 properties (7 at the Downtown Site and 29 in North County). This information led to the development of designs and reports that will direct future cleanup activities. In addition to these planned activities, the team also responded to 20 requests from private interests for radiological support during subsurface work on impacted properties.

Our achievements were not limited to fieldwork. We transferred long-term stewardship responsibilities (consisting of records management) for the Madison Site in Madison, Illinois to the Department of Energy. We held a public workshop on a series of environmental



Soil removal is just one of the team's many achievements pushing the project to its ultimate goal, complete cleanup of the FUSRAP St. Louis Sites.

and legal topics affecting site work to facilitate the review of the North County Feasibility Study and Proposed Plan. Moreover, the team made technological advances to better treat selenium found in contaminated water encountered during the excavation at the St. Louis Airport Site (SLAPS).

So where will we go from here?

Our ultimate purpose in working on these sites is to complete the cleanup of radioactive contamination left behind by the Manhattan Project. To do that, we've set two goals for fiscal year 2003: 1) to remove 88,000 cubic yards from the St. Louis Sites; and 2) to issue the North County Feasibility Study and Proposed Plan.

At the St. Louis Downtown Site (SLDS), the team plans to remove 13,000 cubic yards of contaminated material. This will include the completion of remedial activities at the Mallinckrodt Plant 6 East Half and two vicinity properties, as well as initiate the cleanup of Plant 7E at Mallinckrodt.

Upcoming Events

Information Releases:

Winter Newsletter - February 2003

Upcoming Meetings:

St. Louis Oversight Committee Meetings at the FUSRAP Project Office at 11:30 a.m. on December 13th, January 10th, and February 14th. Please come if you are available!



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In North County, we expect to remove 75,000 cubic yards of material under the 1998 SLAPS Engineering Evaluation/Cost Analysis document. Work will consist of completing cleanup of the central portion of SLAPS identified as Phase 1 and the ditch to the north, and begin work in the northwestern portion of the site (identified as Phase 2).

The Vicinity Properties and the Hazelwood Interim Storage Site have not been left out. Efforts to characterize the extent of contamination at these sites will continue. Removal of contamination on these properties will occur after a final cleanup remedy is selected. 

St. Louis Downtown Site (SLDS)

Mallinckrodt Cleanup Progresses

Cleanup activities are progressing in the Mallinckrodt portion of the St. Louis Downtown Site (SLDS). Under the approved 1998 SLDS Record of Decision (ROD) for accessible soils, remedial activities at the Mallinckrodt facility have addressed 33,800 cubic yards of contaminated material.

The USACE is investigating newly accessible areas within Plant 1 in support of Mallinckrodt's recent plans to demolish several structures in Plant 1. Since the foundations of these buildings are not believed to cover contamination, the USACE has arranged to assess the underlying soils once the buildings are demolished and the debris is removed. This confirmation effort is scheduled for completion in December 2002.

Within the Plant 6 East Half work area, cleanup activities are continuing. Approximately 20,000 cubic yards of contaminated material has been shipped to out-of-state disposal facilities from the work area. The USACE anticipates removing a total 27,000 cubic yards of contaminated material from Plant 6 East Half before completing cleanup of this work area in early 2003.

Vicinity Property Cleanup Underway

Although the work may not be as visible as within the Mallinckrodt facility, remedial efforts are also continuing on the surrounding properties. Under the 1998 SLDS ROD, the vicinity properties are being studied to assure that any FUSRAP-related contamination is addressed.

Soil borings, which assist in defining the extent of contamination on a property, are being collected. Borings have been collected from most of the known impacted properties south of the Mallinckrodt facility.



Accurately placed soil borings assist with ensuring the cleanup criteria specified in the approved environmental documents are met.

More recently, crews have begun collecting borings from properties north of the facility.

Meanwhile, excavation activities are winding down at DT-7, the first privately owned vicinity property to be remediated under the SLDS Record of Decision. An estimated 4,500 cubic yards of contaminated soils have been removed from the property, located south of Mallinckrodt along Angelrodt Street. The remediation of this property is expected to be complete in December 2002.

What's Next?

The remediation of DT-7 is expected to be complete in December 2002 while remedial activities in the Plant 6 East Half will continue through 2003. 

St. Louis Airport Site (SLAPS)

Phase 1 Removal Continues

Cleanup activities at the St. Louis Airport Site (SLAPS) Phase 1 work area are continuing. The Phase 1 work area consists of a 2.3-acre block of contaminated soils in the central portion of SLAPS.

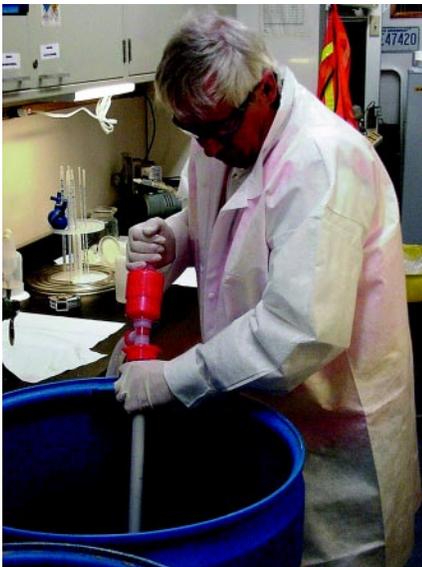
The USACE subdivided the work area into five smaller units, each of which encompasses roughly one-half acre. Breaking the work area into smaller pieces makes water management during excavation easier. It also helps prevent storm-water runoff from transporting contaminated sediments to clean areas. As of November, crews have finished three of the five units and are working on the remaining two as they work their way to the west across the site.

Under the approved 1998 SLAPS Engineering Evaluation/Cost Analysis, 63,000 cubic yards of contaminated soil have been shipped to an out-of-state disposal facility from the Phase 1 work area. The USACE anticipates finishing the 75,000 cubic yard Phase 1 excavation in December 2002.

Water Treatment Advances

Efforts by the FUSRAP team to improve its onsite water treatment facility have paid off. Since runoff from open construction sites can have a significant impact on water quality, crews carefully check excavation water before releasing it from the site to ensure it will meet discharge criteria and not adversely affect local water bodies.

During construction activities, water periodically collects on the excavation floor. This water is pumped to onsite holding tanks and tested for a number of pollutants. These pollutants include radionuclides (such as uranium) and inorganics (such as selenium).



Crews carefully check excavation water before releasing it from the site to ensure it will not adversely affect local water bodies.

Selenium, which is a type of metal pollutant, was present in excavation water above allowable discharge limits.

For the past year, the team has been working to improve the treatment facility to enable it to address the selenium-contaminated water held

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onsite. They developed a bioremediation process that uses bacteria to successfully reduce selenium, reduce interfering nitrates, and separate uranium from the water. As of mid-November, the USACE has been able to safely dispose of 132,000 gallons of accumulated excavation water using the new treatment process.

SLAPS Ditches Planned

Last winter, crews removed contaminated soils from the eastern portion of the drainage ditch between McDonnell Boulevard and SLAPS. The work was performed as part of the effort to cleanup the East End Extension under the approved 1998 SLAPS Engineering Evaluation/ Cost Analysis document.

Approximately 1,000 cubic yards of contaminated soil have been shipped to out-of-state disposal facilities from the drainage ditch. The USACE chose to delay work on the remainder of the ditch last spring to minimize potential sediment migration issues during the wet season, which runs from late-March to early-June.

An estimated 9,000 cubic yards of contaminated soil await removal from the western half of the drainage ditch, which extends from the former Radium Pits to Coldwater Creek. Excavation work will begin upon completion of Phase 1.

What's Next?

Crews will work to finish the cleanup of the Phase 1 work area so that work may begin on the drainage ditch between McDonnell Boulevard and SLAPS in early 2003. ■

Reaching Out**Environmental Training Sessions Offered**

FUSRAP... ionizing versus non-ionizing radiation... rem and Curie... ARAR... such is the mysterious vocabulary of the people cleaning up radioactive contamination from the Manhattan Project. These and other words, phrases and concepts were the focus of the training sessions offered by the team August 13th and 20th in North County.

The USACE offered the public a two-day training session to familiarize people with technical processes and terms used to accomplish FUSRAP work. Graphics and handouts presented the fundamentals of various topics including radiation, risk assessments, risk range, cleanup, and long-term stewardship. Hands-on demonstrations reinforced the concepts of soil sampling, and surveys, while handling radiological detection equipment and instruments illustrated how fieldwork is achieved. Participants received copies of the presentations, fact sheets, and contact information for future reference.

About 50 people from widely varied backgrounds attended the two sessions. The training was limited to general information and did not identify or discuss final cleanup alternatives, which are still under development. 



The USACE offered a two-day training session to familiarize people with technical processes and terms used to accomplish FUSRAP work.

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Gravel now covers the ground where the 58,000 cubic yard HISS piles once stood, over twenty years after the first stockpile was created on the site.



Hazelwood Interim Storage Site (HISS)

Pile Removals Successfully Completed

The USACE has successfully completed the removal of the stockpiles from the Hazelwood Interim Storage Site (HISS). Gravel now covers ground where the interim storage piles once stood, over twenty years after the first stockpile was created on the site.

Removal of the stockpiles began in March 2000, when crews began loading spoil piles generated by the construction of the HISS railspur into railcars for disposal. Cleanup activities continued over the next eighteen months as crews removed two stockpiles from an adjacent vicinity property and two stockpiles from HISS.

Environmental control measures were instituted to protect the public from the potential off-site migration of

contamination during the removal of these piles. Crews sprayed work areas with water regularly to prevent soils from drying and becoming airborne during the removal. Permanent air sampling stations monitored the perimeter of the site to assure that contaminants did not become airborne and leave the site.

Nearly 58,000 cubic yards of material were removed from the site using a woman-owned, small business contractor. Crews loaded the stockpiles of soil and debris onto railcars and sent them to an out-of-state disposal facility. The removal of the stockpiles achieved one of the objectives of the approved 1998 HISS Engineering Evaluation/Cost Analysis.

Now that the stockpiles have been removed, the next step for USACE is to characterize subsurface soil contamination on the portion of the site that was previously concealed by the large stockpiles. Completing the characterization of contamination at HISS will enable the USACE to design its cleanup once the final remedy is selected for the site.

What's Next?

Crews will begin pulling soil samples to characterize contamination in the newly accessible areas of HISS this spring. 

Upcoming Events

Information Releases:

Spring Newsletter - May 2002

Upcoming Meetings:

St. Louis Oversight Committee Meetings at the FUSRAP Project Office at 11:30 a.m. on March 8th, April 12th, and May 10th. Please come if you are available!



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St. Louis Airport Site (SLAPS)

East End Extension Winding Up

Cleanup activities in the main body of the East End Extension are complete. Of the five-acre wedge that comprises the East End Extension work area at the St. Louis Airport Site (SLAPS), only a portion of the drainage ditch next to McDonnell Boulevard remains to be addressed.

Removal of contaminated soils from the drainage ditch was delayed to avoid potential water and traffic management problems on McDonnell Boulevard during the wetter winter months. Under the approved SLAPS Engineering Evaluation/Cost Analysis (EE/CA), approximately 60,000 cubic yards of material have been removed from the main body of the East End Extension. The USACE anticipates removing an additional 2,000 cubic yards from the shoulder and ditch next to McDonnell Boulevard along the northern border of SLAPS.

Crews will begin removing material from the shoulder of McDonnell Boulevard in February. Efforts to remove this material have been coordinated with the St. Louis County Highway Department to ensure the safety of McDonnell Boulevard travelers and construction crews.

Phase 1 Removal Begins

Now that the removal of contamination from the main body of the East End Extension is finished, crews are focusing on the central portion of the St. Louis Airport Site (SLAPS), referred to as Phase 1.

The 2.3-acre SLAPS Phase 1 work area has been divided into five smaller work areas to ease the management of drainage water during the excavation. Removal activities will progress westward across the site from areas of higher to lower elevations in order to stabilize the site and berms will be constructed to prevent storm-water runoff from transporting contaminated sediments into clean areas. Although the majority of contaminated soils are within twelve feet of the surface, some areas will require excavation to depths of 20 feet.

Since December 2001, over 14,000 cubic yards have been removed and shipped to an out-of-state disposal facility from the Phase 1 work area. The USACE anticipates completing the 42,000 cubic yard excavation of the SLAPS Phase 1 work area by the end of this summer.

What's Next?

Removal activities will continue in the SLAPS Phase 1 work area through the end of this summer. In the meantime, the USACE is completing the Phase 4 and 5 designs for future work at SLAPS. ■



Crews lay sod as part of the site backfill and restoration process upon completing the cleanup of the East End Extension.

North County

Environmental Documentation Update

An extensive internal review of the draft North County Feasibility Study and Proposed Plan (FS/PP) is nearing completion. The FS/PP will address the presence of contamination related to the activities of the Manhattan Engineer District / Atomic Energy Commission in North St. Louis County which includes the Latty Avenue/Hazelwood Interim Storage Site (HISS), the St. Louis Airport Site (SLAPS), the SLAPS Vicinity Properties (VPs), and Coldwater Creek.

Comments on draft versions of the North County FS/PP were received from the U. S. Environmental Protection Agency (EPA) and Missouri Department of Natural Resources (MDNR). As the USACE began incorporating modifications into the documents based on the agencies' comments, the basis for the cost of each alternative changed. A comprehensive review of each alternative's cost was performed to ensure the information, when presented to the public, is accurate.

The revised draft FS/PP, which incorporates the first group of regulatory comments and the new cost data, is under internal USACE review to ensure comments are adequately addressed. Once the internal review is complete, the USACE will submit the revised draft document to the EPA and MDNR for review over a 30-day period.

What's Next?

The North County FS/PP will be presented to the public for a 30-day review and comment period after comments from the regulatory review cycle are addressed. ■

St. Louis Downtown Site (SLDS)

Mallinckrodt Remediation Progressing

Under the approved 1998 St. Louis Downtown Site (SLDS) Record of Decision for accessible soils, cleanup work is progressing steadily. Over 35,900 cubic yards of contaminated soil and debris have been excavated from the site to date. Remedial activities at the Mallinckrodt facility alone produced nearly 27,700 cubic yards of this material.

The USACE completed the remediation of 10,800 cubic yards of contaminated soil from Plant 2 in April 2000. Plant 1 will be added to the list of completed work areas within the facility by the end February.

An estimated 3,700 cubic yards of contaminated soils were removed from Plant 1. Although activities within the main body of the Plant 1 work area were completed by June 2001, work in small isolated areas continued through 2002. Progress in these areas slowed as the USACE worked with the property owner to accommodate their need for access to the same isolated areas. Since these areas were only large enough to accommodate one construction crew at a time, cleanup activities in Plant 1 had to be carefully coordinated.

Remedial activities are continuing within the Plant 6 East/East Half work areas. The USACE has excavated approximately 13,200 cubic yards of contaminated soil and debris from the Plant 6 East/East Half to date. While most of the contamination in this work area has required the excavation of soils within eight feet of the surface, one area of remediation reached a depth of 20 feet.



Remedial activities are well underway at the DT-7 vicinity property (located south of Mallinckrodt along Angelrodt Street).

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If you have any suggestions, questions, or comments, contact our office anytime.

Approximately 27,000 cubic yards of soil, concrete and debris are anticipated for disposal from the Plant 6 East/East Half work area.

Vicinity Property Cleanup Underway

The USACE is also working to cleanup properties around the Mallinckrodt facility that were contaminated by Manhattan Engineer District/Atomic Energy Commission (MED/AEC) activities. Under the 1998 SLDS Record of Decision, the vicinity properties are being studied to assure that any MED/AEC contamination present is addressed.

Crews are collecting soil samples to characterize the full extent of contamination at the vicinity properties. Data from these samples will confirm the absence of contamination or will be used to design the remediation of the property.

Remedial activities are well underway at DT-7 (located south of Mallinckrodt along Angelrodt Street). DT-7 is the first privately owned vicinity property to be remediated under the SLDS Record of Decision. Approximately 3,700 cubic yards of contaminated soils and debris have been removed to date. The completion of the 4,000 cubic yard excavation and restoration is expected this summer.

What's Next?

Efforts to remediate Plant 6 East/East Half will continue through the remainder of this fiscal year. DT-7 is scheduled to be complete this summer. ■

What is Radiation?

Q: If you were to trying to explain radiation to someone, what would you say? **Radioactivity is not detectable with the five senses. You cannot see, hear, smell, taste, or feel it. How would you describe it?**

A: The simplest explanation is that radiation is a type of energy. Nuclear radiation is a specific type of energy produced when an unstable atom tries to become more stable by “decaying” or releasing particles. These particles, called photons, are pure energy. Radiation may take one of two forms: ionizing or nonionizing. Ionizing radiation consists of high-energy particles capable of creating electrical charges (ion pairs) in substances they pass through. Nonionizing radiation cannot create ion pairs as it passes through material.

Nonionizing radiation consists of radiowaves and may be found in common household products such as light, microwaves, or televisions. Ionizing radiation can be found in everything in nature in trace amounts – including people. It can be found in carbon and potassium, as well as elements such as uranium and thorium. If radiation is natural, why are we spending so much to clean it up? Just like sunlight (another radiation source), radiation poses little harm until you’ve been exposed to too much of it. The Corps is working on the FUSRAP sites to limit the amount of radiation to which we are exposed.

Naturally occurring ionizing radiation may be one of three types (alpha, beta, or gamma). Alpha particles can only travel approximately one to two inches in air and can be blocked by a sheet of paper. Beta particles can travel 6-10 feet in air and can be blocked with Plexiglas® or glass. Gamma particles can travel the farthest but may be stopped with lead.

Some people believe radioactive materials can be treated by finding the right chemical mixture to neutralize it or “make it go away”. Unfortunately, since radioactivity is a type of energy released by elements, which are already in their simplest form, it cannot be neutralized. We can only control the locations of radioactive material and wait until nature takes its course. 

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Crews have removed over 10,100 cubic yards of soil and debris as work progresses across the 4.5-acre Plant 6 East Half site.

St. Louis Downtown Site (SLDS)

Plant 6 East Half Continues

The U.S. Army Corps of Engineers (USACE) is continuing to remove radiological contamination from the east half of Plant 6. Under the approved St. Louis Downtown Site (SLDS) Record of Decision, the USACE expects to remove 15,000 cubic yards of material from the Plant 6 East Half.

Remedial activities in the Plant 6 East Half began in January 2001 with the removal of the concrete pad, which covered the foundations of the former Mallinckrodt Buildings 116 and 117. Since the removal of this concrete pad, crews have been systematically removing soils from the 4.5-acre site. Additional soil borings were collected from the floor of the excavation and from beneath a concrete ring-wall encompassing the work area to ensure the cleanup requirements outlined in the 1998 SLDS Record of Decision are met.

Approximately 10,100 cubic yards of soil, concrete and debris have been removed from Plant 6 East Half to

date. Cleanup activities are expected to continue in the plant through February 2002.

Vicinity Property Cleanup Begins

Efforts to remove residual radioactively contaminated soils at the SLDS Vicinity Properties are underway. Remediation activities have begun on the first vicinity property scheduled for cleanup, DT-7 (located south of Mallinckrodt along Angelrod Street).

Preparatory work for the DT-7 remediation began last May with the installation of temporary fencing to prevent inadvertent entry into the work area. Although no buildings or other facilities are currently located on the property, the USACE put environmental controls in place to prevent the offsite migration of sediments. Air and water resources are being monitored during the removal. Over 1,700 cubic yards of material have been excavated to date. A total of 2,000 cubic yards is anticipated for removal.

The USACE is working to identify the full depth and extent of contamination on other surrounding properties resulting from the activities of the resulting from the activities of the Manhattan Engineer District/Atomic Energy Commission (MED/AEC). Samples are being collected from properties surrounding the Mallinckrodt facility. Data from these samples allow the USACE to identify areas of concern or to certify the property free of MED/AEC contamination.

What's Next?

Upon completing the cleanup of DT-7, the USACE will begin remediating DT-8 located north of the Mallinckrodt facility. Efforts to cleanup Plant 6 East Half are expected to continue through the winter. ■

Upcoming Events

Information Releases:

Winter Newsletter – December 2001

St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on October 12th, November 9th, and December 14th. Please come if you are available!



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North County

Feasibility Study/Proposed Plan Update

The North County Feasibility Study/Proposed Plan (FS/PP) is getting closer to release for public review. The North County FS/PP will present six remedial alternatives to address contamination resulting from the activities of the Manhattan Engineer District/Atomic Energy Commission (MED/AEC) during the development of the atomic bomb in the 1940s and 50s.

The USACE provided draft copies of the North County FS/PP to the U. S. Environmental Protection Agency and the Missouri Department of Natural Resources for review last fall. As the USACE began incorporating changes based on formal comments from these agencies, the basis for the cost of each alternative was altered. To ensure the accuracy of information presented to the public, the USACE elected to perform a comprehensive review of the reported cost for each alternative.

An extensive internal USACE review of the draft documents incorporating the first round of regulatory comments and the new cost data was recently completed. Copies of the revised draft FS/PP are currently under internal USACE review. Once comments are addressed, the USACE will present the North County FS/PP to the regulators for a 30-day review and comment period. Following a USACE response to the regulators' comments, the North County FS/PP will be presented to the public for a 30-day review and comment period.

The final remedy selected to address contamination at the North County sites will be selected based on written comments received during the public comment period. The final cleanup remedy may be different from the



The long, thin finger of the East End Extension in the drainage ditch along McDonnell Boulevard will be removed next summer to avoid potential water management problems during wet winter months.



Removal activities are nearly finished in seven of the ten areas that make up the SLAPS East End Extension.

alternative USACE identifies in the Proposed Plan as the one preferred.

What's Next?

After State and Federal agency comments on the documents are addressed, the North County FS/PP will be released to the public for review and comment. ■

St. Louis Airport Site (SLAPS)

East End Extension Progresses

Since November 2000, the USACE has made significant progress in removing contaminated soils from the five-acre wedge of the St. Louis Airport Site (SLAPS), known as the East End Extension.

The work area was divided into ten half-acre units to minimize potential contaminant migration issues during the cleanup. Under the approved 1998 SLAPS Engineering Evaluation/Cost Analysis (EE/CA), the USACE has removed almost 60,000 cubic yards of contaminated soil from seven units located in the main body of the East End Extension. Most of the contaminated soils were contained within the first five to nine feet of the surface, although some areas required excavation to depths of 21 feet.

Contamination in a portion of the East End Extension, comprised of the drainage ditch along McDonnell Boulevard, will be removed next summer. Work in this area is being delayed to avoid potential water management problems during the wet winter months. In the meantime, the USACE is working with the County Highway Department to ensure that the integrity of McDonnell Boulevard is maintained during the removal of a few small areas of contamination extending under its shoulder.

Currently, a temporary 21,000 cubic yard stockpile of soil from the East End Extension is being shipped to an out-of-state disposal facility. These soils were temporarily stockpiled at the SLAPS rail load out facility due to funding constraints in the 2001 fiscal year, which ended in September.

Excavation activities will resume after the stockpile has been loaded into railcars for transport. The USACE anticipates that the remaining 3,000 cubic yards of soil will be removed from the main body of the East End Extension by early November.

What's Next?

Once cleanup work in the main body of the East End Extension is finished, crews will begin removing contaminated material from the central portion of SLAPS, referred to as Phase 1. 

Hazelwood Interim Storage Site (HISS)

Pile Removal Nears Completion

The appearance of the Hazelwood Interim Storage Site (HISS) has undergone a dramatic change over the past year. The large stockpiles of material covered with green tarps and rock will soon be completely gone. Under the 1998 Engineering Evaluation/Cost Analysis (EE/CA) for Latty Avenue/HISS, the removal of the final stockpile (the Main Pile) is nearly complete.

USACE began removing the HISS Main Pile last fall. Using a small business contractor, over 20,000 cubic yards of contaminated soils and debris from the Main



The USACE anticipates loading the final material from the HISS stockpiles into a railcar for transportation and disposal by the end of October.

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Pile have been loaded onto railcars for transport to an out-of-state disposal facility. Removal of the remaining 9,500 cubic yards of material began in September. The USACE anticipates pile removal activities will be completed in October, with the loading and shipping of the final railcar of material.

Until a final cleanup remedy for the North County site is selected, the USACE will cover soils in the footprint of the piles to stabilize the site and ensure sediments cannot readily move offsite. Nearly 50,000 cubic yards of material have been removed from HISS to date.

What's next?

Crews will characterize the HISS Site to determine the extent of contamination remaining. 

Want to really keep up with what's happening at FUSRAP?

Visit the St. Louis Oversight Committee web page! Each month, members of the St. Louis District, Corps of Engineers team meet with the Oversight Committee to present the current status of work around the project. A copy of the Corps's presentation and the Committee Chairman's notes from the previous month are posted on the site for others to view. Visit www.mvs.usace.army.mil/engr/fusrap/SLOC.htm, to keep up with the latest information available about progress at the St. Louis Sites!

What kinds of people does it take to cleanup FUSRAP?

Q: Have you ever wondered what all those people on a FUSRAP site do?

A: *The FUSRAP team is comprised of people from a variety of occupational backgrounds. We use the technical expertise of environmental and design engineers, geologists, physicists, chemists, and biologists to design effective environmental cleanup strategies. The practical skills of field engineers, technicians, laborers, inspectors, health and safety personnel, and transportation and disposal officials ensure cleanup work is carried out safely and effectively. Blending and supporting the expertise of these two groups to ensure the project work is well-coordinated and operating smoothly is the function of project management, real estate, the office of counsel, community outreach, accounting, contracting and information management personnel. Effective cleanup of a FUSRAP site takes the experience, knowledge and skills of all these professionals.* 



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St. Louis Downtown Site (SLDS)

Plant 6 East Half Progressing

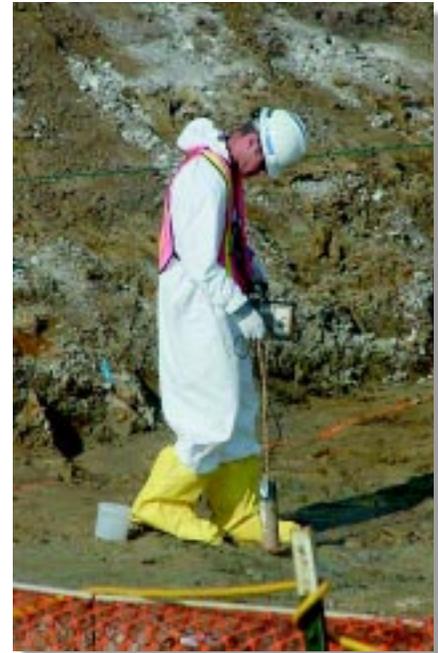
Remedial activities are progressing in the east half of Plant 6 at the St. Louis Downtown Site (SLDS). Under the 1998 SLDS Record of Decision, preparatory work within the designed excavation outline began last fall. Crews installed fencing around the cleanup area and temporarily relocated utility lines to minimize safety risks. By January, the U. S. Army Corps of Engineers (USACE) began removing contaminated soil from the area.

The bulk of the contaminated material was contained beneath the concrete pad, which once covered the footprint of the demolished Buildings 116 and 117. As the removal of this material progressed, additional soil contamination was discovered beneath a layer of clean clay during a routine walkover survey, which is performed to ensure the area meets the 1998 SLDS Record of Decision cleanup criteria.

During the 1800s, landowners in St. Louis typically filled in swampy areas with a mix of readily available waste (cinder and ash) material. A layer of clay was then dumped on top of the waste material. This allowed landowners to temporarily fill the low area and reclaim the land for productive use. As these layers settled, a bowl-like impression formed and more material was added to the area.

Such activities might have occurred at Plant 6, which is located within 1,000 feet of the Mississippi River. Clay does not readily absorb water, which can transport soluble radionuclides. However, the porous, mixed-cinder material may allow water to transport radionuclides to the cinder layer. While the cinder layer beneath may have been contaminated, the layer of clay above appeared to be clean in soil sample data.

Routine walkover surveys (shown here) assist excavation crews with ensuring the cleanup criteria specified in the approved environmental documents are met.



Additional soil borings for the remainder of the plant have been collected for further analysis to ensure the cleanup meets the requirements

outlined in the SLDS ROD. Although most of the work has reached no deeper than eight feet below the surface, a remedial activity in one area has reached depths of twenty-two feet. Approximately 7,700 of the estimated 15,500 cubic yards have been removed to date from the 4.5-acre area of Plant 6 East Half.

Plant 1 Nearly Finished

In June, the USACE successfully completed the remediation of all except 10 cubic yards of contaminated material in Plant 1 at SLDS. Over 2,500 cubic yards of material were removed from the Plant 1 area, which was the center of Manhattan Engineer District/Atomic Energy Commission activities during the 1940s and 50s.

Progress in the isolated areas slowed through the winter months when the USACE accommodated the property owner's need to meet regulatory requirements for current operations. The owner is installing temporary overhead piping to carry wastewater from on-going business operations. Since the isolated areas are only large enough to accommodate one construction crew, cleanup activities have to be carefully coordinated.

The remaining isolated area, which contains 10 cubic yards of contaminated material, is the final area in Plant 1 impacted by the property owner's project. Cleanup of this final isolated area of contamination, which is located

Upcoming Events

Information Releases:

Fall Newsletter - September 2001

Upcoming Meetings:

St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on July 13th, August 10th, and September 14th. (Please come if you are available!)



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within one of two entrances to a building essential to current business operations, will be delayed until construction activities in the other entrance are complete.

What's Next?

Once the remaining accessible contamination in Plant 1 is successfully remediated, the USACE will return the plant to Mallinckrodt. In the meantime, crews will continue cleanup activities in Plant 6 East Half and begin work at the SLDS Vicinity Properties. ■

St. Louis Airport Site (SLAPS)

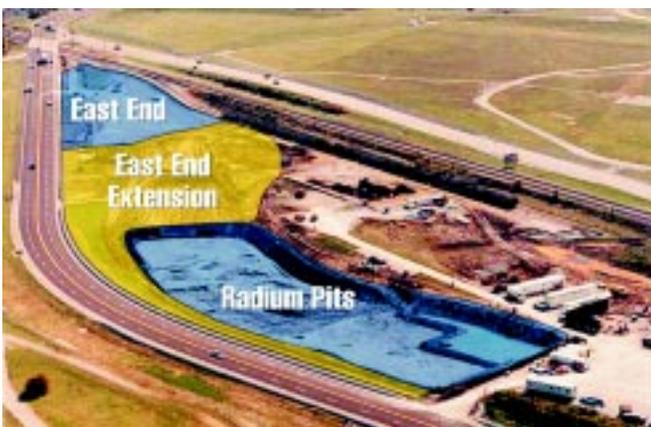
Removal Action Continues

Under the approved 1998 Engineering Evaluation/Cost Analysis for the site, removal activities in the East End Extension are well underway at the St. Louis Airport Site (SLAPS). Over 33,000 cubic yards of contaminated soil have been removed during this phase and another 18,000 cubic yards are anticipated.

The East End Extension consists of a five-acre wedge of contaminated soils nestled between the Radium Pits and East End (see photo below), which the USACE has already cleaned up. It also includes a large portion of the drainage ditch that borders the northern boundary of the site.

Although the majority of the contamination in this work area is within five to nine feet of the surface, some areas require excavation to depths of 15 feet. The USACE anticipates encountering ground-water five feet below the original surface.

Crews completed removal of the upper four feet of contaminated soil from the East End Extension this spring. The remainder of the cleanup in the East End



Removing contaminated material from the SLAPS East End Extension will help ensure contamination does not migrate to recently cleaned areas such as the East End or the Radium Pits.

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If you have any suggestions, questions, or comments, contact our office anytime.

Extension has been divided into smaller sections to enable the USACE to better manage drainage water during the excavation. Black tarps weighted with sandbags cover sections awaiting cleanup and prevent contaminated soils and water from migrating offsite. The tarps also aid in segregating clean rain water from other contaminated water in an effort to minimize water management costs.

By removing contaminated soils from the East End Extension, the USACE can continue to minimize the potential migration of contamination from the site. Excavation activities in this area are expected to continue through the end of this summer.

Modular Building Installed

Personnel at the St. Louis Airport Site (SLAPS) have new offices. The USACE recently completed the installation of a 9,600 square foot modular office building, which was transferred to the USACE when the building was listed as excess government property.

The availability of the building is a result of cleanup work at the Weldon Spring Site Remedial Action Project in St. Charles County nearing completion. The Department of Energy used the building as an office to accommodate its workforce at its site. Authorities verified the structure was free of contamination and it became available for use by another federal agency.

The USACE immediately began negotiations to provide a government-owned building for site personnel rather than leasing office space. By February, pieces of the structure began arriving on site.

Positioned in the recently cleaned Radium Pits area of SLAPS, the building is now occupied by the USACE contractor and onsite USACE oversight personnel. The

USACE will remove many, but not all, of the previously occupied on-site support trailers. By removing these trailers, other portions of the site will be more readily available for investigation, design and remediation activities.

What's Next?

The USACE will analyze soil samples from the McDonnell Boulevard right-of-way borings and calculate the extent of contamination beneath the road. 

Hazelwood Interim Storage Site (HISS)

Pile Removals Near Completion

Under the authority of the 1998 Engineering Evaluation/Cost Analysis (EE/CA) for the Latty Avenue/Hazelwood Interim Storage Site (HISS), removal of the final stockpile of soil is nearly complete.

The final stockpile is known as the HISS Main Pile due to its size. It once contained an estimated 25,000 cubic yards of soil and debris from property development and improvement projects along Latty Avenue twenty years ago.

Last fall, the USACE successfully removed 4,400 cubic yards of material from the northeastern corner of the pile using a small business contractor. As removal activities continued clockwise around the pile this spring, another 15,800 cubic yards were shipped to an out-of-state licensed disposal facility.

Approximately 4,800 cubic yards of the Main Pile's material remain to be loaded into gondola rail cars and shipped for disposal. Until funding becomes available to finish the process, activities at HISS will be postponed. Currently, the USACE anticipates the removal activities will resume next fiscal year, which begins in October.

What's Next?

The completion of the Main Pile removal action will be completed when funding becomes available. 

North County

FS/PP Costs Re-Evaluated

The public will soon be able to review and submit comments on six alternatives designed to address the presence of Manhattan Engineer District/Atomic Energy Commission-related contamination in northern St. Louis County.

The Feasibility Study and Proposed Plan (FS/PP) for the North County Sites will present remedial alternatives to



Removal of the final stockpile at HISS is nearly complete. Of the estimated 25,000 cubic yards comprising the Main Pile, roughly 20,200 cubic yards have been removed.

address contamination present at the following sites: Latty Avenue/Hazelwood Interim Storage Site (HISS); St. Louis Airport Site (SLAPS); the SLAPS Vicinity Properties (VPs); and, Coldwater Creek.

While the Feasibility Study describes each alternative in detail, the Proposed Plan will identify the alternative recommended by the USACE. The final remedy for the North County sites will be selected based on the written comments received during the 30-day public comment period. The final remedy may not be the alternative identified by the USACE as the preferred alternative in the Proposed Plan.

The USACE began incorporating the changes into the FS/PP based on the formal comments received from the U.S. Environmental Protection Agency and the Missouri Department of Natural Resources on draft copies of the documents last fall. Some of these changes altered the basis for the cost of each alternative. To ensure the accuracy of information presented to the public, the USACE elected to perform a comprehensive review of the reported cost for each alternative.

Once the cost information is reviewed internally, draft copies of the documents will be provided to the U. S. Environmental Protection Agency and the State of Missouri for final review and comment. Once these comments are addressed, the USACE will present the North County FS/PP to the public for review and comment over a 30-day period.

What's Next?

The North County FS/PP will be released to the public for review and comment. Copies of these documents will be available for public review at the FUSRAP Project Office and at select local libraries. 

Won't radiological contamination be left behind?

Q: *The St. Louis area landscape has changed dramatically since the early days of the Manhattan Project. Developments now cover what was once empty countryside. Will contamination remain after the rest of FUSRAP is finished because of these improvements? What will protect the public then?*

A: The St. Louis area has changed. Since the time when St. Louis played a major role in the nation's early nuclear weapons program, structures such as buildings, roadways, bridges and railroads cover what was once only farmland. This statement remains true at the FUSRAP sites.

When structures such as these are present on a FUSRAP site, the USACE evaluates its usage and the potential for contamination beneath the structure. If the structure's current construction is protective of the public's health and safety, residual contamination may remain undisturbed until a capital improvement project (such as a road repair or building demolition) provides the government access to the contamination. Then the contaminated material will be removed.

To develop a process to manage this type of residual contamination, the USACE is working with landowners; railroads; utility companies; and representatives from federal, state and local government agencies to develop a long-term stewardship plan. The goal of this plan is to establish controls needed to ensure the protection of the public and the environment after the cleanup of the FUSRAP contamination is considered complete. These controls will be designed to ensure assistance with obtaining information and/or managing the potential risks attributable to the contamination is readily available. By involving these potentially affected groups early in the development process, the USACE can design a collaborative plan that satisfies their needs. ■

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Foreword

It's no secret that bad weather heavily impacts the progress of outdoor work. Remedial activities at the FUSRAP project are no exception. Excavation activities at the St. Louis FUSRAP Sites slowed considerably after the sites were hit with not only the second coldest December on record but also with heavy snowfall-nearly 14 inches in two weeks. Soils at the sites were effectively frozen in place by the sudden cold snap.

With this temporary delay, we thought this was a good time to consider how far work has come on the project. The U. S. Army Corps of Engineers (USACE), St. Louis District assumed responsibility for completing the cleanup of FUSRAP sites in the St. Louis area nearly three and one-half years ago. In addition to the current activity update normally presented in this newsletter, we have added a brief description of achievements since the Corps assumed responsibility for FUSRAP. We hope you find this review as encouraging as we did. ■

North County

Project Review

When USACE took over in 1997, the DOE had just begun removing contamination from the West End of the St. Louis Airport Site (SLAPS) under a 1997 Engineering Evaluation/Cost Analysis (EE/CA). Since then, the USACE-St. Louis District has successfully accelerated work and made substantial progress toward the final cleanup of SLAPS and the Hazelwood Interim Storage Site (HISS) in North County.

Upcoming Events

Information Releases:

Spring Newsletter – May 2001

Upcoming Meetings:

St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on April 13th, May 11th, and June 11th. (Please feel free to attend if you are available!)

St. Louis Earth Day Celebration - April 22nd in Forest Park (Please stop by and see us!)



Since October 1997, the USACE has removed 112,600 cubic yards of contaminated material from SLAPS.

Under separate EE/CAs, the FUSRAP team obtained public approval to conduct specific actions at the SLAPS and HISS sites. The USACE constructed railspurs at HISS and SLAPS to safely increase shipping and disposal capacity.

Upon completing the West End removal action at SLAPS, site stabilization efforts began. A sedimentation basin was constructed to limit the migration of contamination offsite via stormwater runoff. The Radium Pits, believed to contain the most contaminated soils at the site, were safely removed. Approximately 112,600 cubic yards of material have been removed by USACE from the SLAPS East End, Radium Pits and adjacent ditches to date.

Perhaps the most dramatic change since 1997 has been the removal of the piles that stood at HISS for nearly twenty years. Roughly 28,400 cubic yards of soils from the railspur construction piles, two Eastern Piles, the HISS Supplemental (or Front) Storage Pile, and part of the HISS Main Pile have been removed. Today, only a portion of the Main Pile remains at HISS.

FS/PP Release Scheduled

The North County Feasibility Study and Proposed Plan (FS/PP) will be issued this summer for public review and comment over a 30-day period. These documents will address the presence of contamination related to the activities of the Manhattan Engineer District / Atomic Energy Commission in North St. Louis County.

Six alternatives have been developed to address contamination at the North County Site, which includes the Latty Avenue/Hazelwood Interim Storage Site (HISS), the St. Louis Airport Site (SLAPS), and the SLAPS Vicinity Properties (VPs), and Coldwater Creek.



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While the Feasibility Study (FS) describes each alternative in detail, the Proposed Plan identifies the alternative recommended by the USACE. Once these documents are ready, the public will be given 30 days to review the documents and provide comments to the USACE on the alternatives. In addition, the USACE will host a public meeting to explain the alternatives presented in the documents and accept comments from interested citizens.

The USACE will review all of the comments received and select a final remedy for the North County Sites. The final selected remedy will be based on the comments received during the 30-day comment period and may not necessarily be the alternative identified as the preferred alternative by the USACE in the Proposed Plan.

What's Next?

The North County FS/PP will be released to the public for review and comment once the USACE, EPA and State agencies put the finishing touches on it. Copies of FS/PP will be available for public review at the Project Office and at the local information repositories. ■

SLAPS Vicinity Properties (VPs)

Letters to Property Owners

SLAPS Vicinity Property owners will soon be receiving letters from the USACE regarding FUSRAP contamination on their property. Although owners are aware of the presence of the contamination on their property, the USACE is concerned that not everyone may understand how to request assistance with managing contamination on their properties.



Twenty years after its initial creation, the removal of the Main Pile from HISS has begun. The pile contains approximately 25,000 cubic yards of soil.

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If you have any suggestions, questions, or comments, contact our office anytime.

Owners may wish to make property improvements before a final remedy is selected for the North County Site. They are encouraged to contact the FUSRAP Project Office to allow the USACE to verify the presence of radiological contamination in the impacted area and advise owners of the potential impacts it may have on their work. By working with the property owners, the USACE can minimize the adverse effects of contamination.

What's Next?

Once the final cleanup alternative is selected, the USACE will begin developing plans for the design and cleanup of the site. Progress will be based on the level of funding received from Congress. ■

Hazelwood Interim Storage Site (HISS)

Main Pile Removal Underway

Twenty years after its initial creation, the removal of the Main Pile from the Hazelwood Interim Storage Site (HISS) has begun. This final pile will be removed under the approved 1998 Engineering Evaluation / Cost Analysis (EE/CA) for the Latty Avenue/Hazelwood Interim Storage Site (HISS).

The Main Pile contains an estimated 25,000 cubic yards of soil and debris from two property development / improvement projects on Latty Avenue. The USACE completed removal of a portion of the northeastern corner of the Main Pile in November using a small business contractor. Crews will continue removing the Main Pile this spring by working in a clockwise pattern. Approximately, 4,400 cubic yards have been removed to date.

What's Next?

Using a small business contractor, the USACE anticipates completing the removal of half of the Main Pile this summer if funding is available. Removal activities will continue through the end of October. ■

St. Louis Airport Site (SLAPS)

East End Extension Removal

In November, the USACE began excavating contaminated soils from areas adjacent to the recently decontaminated East End of the St. Louis Airport Site (SLAPS). The removal action, referred to as the East End Extension, is progressing in two general areas: work in the drainage ditch along McDonnell Boulevard, and work between the Radium Pits and East End.

The USACE designed the work to progress from east to west across the site to create a continuous decontaminated area and further stabilize the site. Under the approved 1998 SLAPS Engineering Evaluation/Cost Analysis, approximately 46,000 cubic yards of soil will be removed during the East End Extension removal action. The USACE anticipates completing this effort sometime late this year. Nearly 4,000 cubic yards of soil have been removed to date.

What's Next?

The USACE will continue removing contamination from the East End Extension through the end of this summer. In the meantime, the USACE is completing the design for the next phase of work at SLAPS. ■

St. Louis Downtown Site (SLDS)

Project Review

In 1997, the Department of Energy (DOE) was in the process of completing its building demolition activities in the Mallinckrodt facility at the St. Louis Downtown Site (SLDS). Contaminated soils along the Mississippi River had been removed to support the construction of the Riverfront Trail.

In October 1997, Congress transferred responsibility for FUSRAP from the DOE to the USACE. Within six months, the USACE presented cleanup alternatives for the final cleanup of SLDS to the public. By October 1998, the final SLDS Record of Decision (ROD) identifying the selected site cleanup alternative for accessible soils was issued.

Nearly 18,000 cubic yards of contaminated material have been removed under this ROD. This material has been



Once the small, isolated areas of contamination are removed, permanent supports (called pylons) and piping are being constructed by the owner to support business operation.

removed from the remainder of the property bordering the Mississippi River, the Mallinckrodt Plant 2 area, and portions of Plant 1 and Plant 6 East Half.

Plant 1 Remediation Progressing

Remedial activities in Plant 1 began late last summer when the concrete pad covering the former Building K foundation was demolished. Work continues as the USACE focuses its efforts in two separate areas of the plant - the main excavation area located beneath the Building K pad, and the small, isolated areas of radiological contamination scattered about the remainder of the plant.

Work in the isolated areas is progressing slower than originally anticipated as the USACE attempts to accommodate the owner's need to meet regulatory requirements for current operations. The owner is installing temporary overhead piping to carry wastewater from on-going business operations. After the USACE completes removal of the small, isolated areas of contamination, the owner's construction crews erect permanent supports (pylons) and piping. Since these areas are only large enough for one crew, backfill activities must be delayed as the pylon bridge is constructed.

The remediation area in Plant 1 contains 2,400 cubic yards of accessible contamination within a 6.5-acre area. Approximately 2,100 cubic yards of contaminated material have been removed from Plant 1 to date.

What's Next?

Although the remediation of the Main Area of the Plant 1 cleanup will be complete this spring, work in the isolated areas will continue through the end of this summer. As work winds down in Plant 1, the USACE will intensify efforts to cleanup Plant 6 East Half. ■

Do I Count?

Q: You often mention a “30-day public review period”. What does the public review of a document have to do with cleaning up waste? Even if I review your documents and turn in comments, will my opinions really make a difference?

A: Congress believed that most citizens want to be aware of and participate in decision-making processes that affect their communities. When it created CERCLA (Comprehensive Environmental Response and Compensation Liability Act) in 1980, Congress required agencies to encourage community involvement in the cleanup of hazardous waste sites, especially during the selection of the final remedy. Upon completion of the Feasibility Study (FS), 30 days are set aside for interested citizens to review alternatives presented in the document and provide comments to the issuing agency. However, recognizing that lengthy technical documents can be intimidating, agencies also host a public meeting during the 30-day comment period to provide an understandable explanation of the proposed alternatives and accept comments on the alternatives.

Based on the comments received during the 30-day period, a specific long-term remedy is selected and identified in the Record of Decision (ROD). As the primary decision document, the ROD will substantiate the need for a remedial action, describe the proposed action and justify the action selected. Public comments, responses to those comments and any new information provided during the public review period are detailed in the Responsiveness Summary, a section of the ROD.

If you review the FS and provide written comments to the agency, you could influence the final remedy selected for a site. Although the issuing agency will identify its preferred alternative in the Proposed Plan, the final remedy for a site may be different from the alternative preferred by the agency. So yes, your comments really do make a difference. 

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Clean soil and rock are being used to backfill the 2-acre hole left behind by the cleanup of the Radium Pits. Restoration of this area will be completed by the end of this year.

North County

FS/PP Release Scheduled

The U.S. Army Corps of Engineers (USACE) continues work with its Headquarters, Environmental Protection Agency and State agencies to finish the North County Feasibility Study/Proposed Plan (FS/PP). These documents will present remedial alternatives to address contamination present at the Latty Avenue/Hazelwood Interim Storage Site (HISS), the St. Louis Airport Site (SLAPS), the SLAPS Vicinity Properties (VPs) and Coldwater Creek. The purpose of these alternatives is to address the presence of Manhattan Engineer District/Atomic Energy Commission-related contamination at the sites.

Alternatives for remediating the North County sites will be described in detail in the Feasibility Study and presented to the public for review and comment. The Proposed Plan will identify the alternative recommended by the USACE to address contamination at the sites.

In August, draft copies of the North County FS/PP were provided to the U. S. Environmental Protection Agency and the State of Missouri for review and comment. The USACE is currently working to address the comments received from these agencies in late-October. Once these comments are addressed, the USACE will present the North County FS/PP to the public for review and comment over a 30-day period.



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The final remedy for the North County sites will be selected based on the written comments received during the 30-day public comment period. The final remedy may not necessarily be the alternative identified as the preferred alternative by the USACE in the Proposed Plan.

What's Next?

The North County FS/PP is currently scheduled to be released to the public for review and comment in January 2001, after responses to the EPA and State comments have been addressed. Copies will be made available for public review at the Project Office and at the Local Information Repository 

St. Louis Airport Site (SLAPS)

Radium Pits Excavation Complete

In November, the USACE successfully and safely completed the removal of the most contaminated material encountered to date in the St. Louis FUSRAP project. Approximately 49,800 cubic yards of radiologically contaminated soils were removed from the St. Louis Airport Site (SLAPS) Radium Pits area.

The USACE took every precaution to prevent any release of the material from the site. Air monitors operated continuously in and around the excavation area. Crews regularly sprayed the work area with water to prevent the soils from drying and becoming airborne. New fencing and barriers were installed around the perimeter of the site to prevent inadvertent access. Berms and sumps were located around and within the Radium Pits to ensure the water that fell on contaminated soils was collected, sampled and, if necessary, treated prior to release.

Upcoming Events

Information Releases:

Winter Newsletter – February 2001

Upcoming Meetings:

St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on December 8th, January 12th, and February 9th. (The public is welcome to attend.)



The excavator (shown above) is moving material from the HISS Supplemental Pile into a front end loader, which takes the material directly to the railcars.

Rock and clean soil are being used to backfill the 2-acre hole left from this removal action. The restoration of the area will be completed in December with the exception of a small section at the southwestern corner of the Radium Pits, which will serve as a sump during the next phase of cleanup at SLAPS.

East End Extension Removal Underway

With the completion of excavation activities in the Radium Pits, the USACE is shifting its focus to the removal of the SLAPS East End Extension. The East End Extension contains approximately 46,000 cubic yards of contaminated soils. It includes the region of contaminated soil between the Radium Pits and the East End, and in the drainage ditch immediately south of McDonnell Boulevard.

Removal activities have been designed to limit the total area open at any given time and to prevent cross-contamination. The East End Extension removal action is proceeding in three general phases: work in the drainage ditch from the eastern tip of SLAPS to the edge of the East End; work in the main body of the East End Extension; and work in the drainage ditch from the western edge of the Radium Pits eastward.

In November, the USACE began the first phase of the East End Extension removal action by beginning work in the drainage ditch south of McDonnell Boulevard. Removing contamination from the East End Extension and the drainage ditch will create a continuous area of clean soils in the northeast portion of SLAPS.

What's next?

Once the first phase of the East End Extension removal action is complete, work within the main body will begin. ■

Hazelwood Interim Storage Site (HISS)

Pile Removals Continue

In October, the USACE removed approximately 7,100 cubic yards of material from the Hazelwood Interim Storage Site (HISS) using a small business contractor. The removal of the Supplemental Storage Pile under the 1998 HISS Engineering Evaluation/Cost Analysis (EE/CA) was completed in four weeks.

The Supplemental Pile, which was the result of a drainage and utility improvement project performed by the Cities of Berkeley and Hazelwood in 1986, could be seen behind the project trailers from Latty Avenue. Only the footprint where that pile once stood remains.

The USACE has begun the removal of the Main Pile, the final pile left at HISS. Approximately 12,500 cubic yards of material contained in the Main Pile will be removed under the next contract. The USACE began removing approximately 5,000 cubic yards of soil from the North Half of the Main Pile in November, under an existing contract.

What's Next?

The USACE will continue removing the Main Pile through the end of the year using a small business contractor. ■

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Characterization data obtained from the soil samples will be used to develop remedial designs for the cleanup of the vicinity properties at SLDS.

St. Louis Downtown Site (SLDS)

Plant 1 Remediation Continues

The remediation of Plant 1 at the Mallinckrodt facility is continuing forward on schedule. Cleanup activities in Plant 1 are continuing as two simultaneous remediation efforts - the main excavation area and the eleven isolated areas.

Under the St. Louis Downtown Site (SLDS) Record of Decision (ROD), remediation activities in the main excavation area will result in the removal of approximately 1,500 cubic yards of contaminated soil next to building foundations and roadways. To protect these structures during excavation activities, a steel slide-rail shoring system is being used. This system allows shoring and excavation to be accomplished simultaneously, whereas the installation of traditional sheet piling would have delayed excavation activities 30 days. Removal activities are being accomplished in a series of strips using the slide-rail system.

The eleven isolated areas of elevated radiological activity require remediation to depths of three feet or less. Remedial activities in these areas are expected to produce an additional 400 cubic yards of material for disposal.

Roughly 1,600 cubic yards of material have been removed from Plant 1 to date (including material from four of the isolated areas). The USACE anticipates completing the 1,900 cubic yard excavation and backfill by the end of this year. Restoration of the remediated areas in Plant 1, however, will not be completed until early 2001.

Plant 6 East Half Begins

Preparatory work for the Plant 6 East Half remediation began in November. Since Mallinckrodt uses Plant 6 East Half for current shipping and receiving operations, the USACE plans to phase remedial work to minimize the impact of the cleanup on current business operations.

Workers prepared the site by surveying and staking the excavation area for the first phase of work. Fencing was then installed around the perimeter of the work area to prevent inadvertent access. Electric, water and sewer lines are currently being routed away from the area to minimize safety risks to personnel.

Pre-design characterization data indicates that the Plant 6 East Half contains approximately 3,800 cubic yards of material. Remedial work in this area will begin early in 2001 with the removal of the concrete pad that covers the footprint of the demolished Buildings 116 and 117.

SLDS Vicinity Properties Sampled

The USACE has been busy over the last several months systematically collecting soil samples to characterize contamination on properties surrounding the Mallinckrodt facility. These properties are known as the SLDS Vicinity Properties. They are primarily operating industrial facilities.

Areas of potential contamination were identified in a limited soil sampling event over ten years ago. The current sampling event is necessary to better define the depth and extent of contamination on these properties and to verify that Manhattan Engineer District/Atomic Energy Commission (MED/AEC) contamination is not present in other areas. Several rounds of sampling are typically necessary to fully determine the extent of contamination.

Information obtained from these sampling events will be used to develop work plans and designs for remedial activities at the vicinity properties. The USACE plans to begin remediating the SLDS Vicinity Properties in 2001.

What's Next?

The USACE will begin excavation activities in Plant 6 East Half once the remediation of Plant 1 is finished. In the meantime, data from the sampling of the SLDS vicinity properties will be compiled and analyzed to develop work plans and designs. ■

Why Don't You Just Start Digging?

C If you know where the contamination is, why don't you just start digging it up and hauling it away? Once all of the contamination is removed, the problem is resolved and everyone can go home. Why do you keep writing documents?

A Although an environmental cleanup project seems very simple, numerous documents must be written before the contamination can be removed. No one wants to go into a contaminated area without being certain they know what pollutants are present. Unless you know what contaminants are present, it is difficult to protect yourself or others against its health risks or to protect the environment from additional harm.

In 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA dictates several activities must be conducted before a final remedy can be selected for a site. (FUSRAP is conducted according to CERCLA.)

The first activity in the CERCLA process is to conduct a **Preliminary Assessment (PA)**. During the PA, historical background information is collected to determine the likely locations of hazardous materials and to determine the initial extent of site contamination. Next, a **Site Inspection (SI)** is performed to verify this information by collecting limited soil and water samples. If substantial amounts of contamination are confirmed to be present on the site, further study and analysis are needed.

The **Remedial Investigation (RI)** further identifies the types of contaminants present at or near the site, the degree and extent of contamination, and potential risks to public health and the environment. Information gathered during this phase will assist in developing cleanup alternatives to address the contamination, which will be identified in the **Feasibility Study (FS)**. Once the remedial alternatives are identified, the **Proposed Plan (PP)** is written. The PP summarizes the alternatives presented in the FS and identifies a recommended cleanup remedy for a site.

Upon completion of these documents, the FS/PP is presented to the public for review and comment over a 30-day period. While the public can submit comments at any time during this review period, a public meeting is also held to provide an opportunity to discuss the alternatives. After the 30-day comment period has ended, a specific long-term remedial action or cleanup technology can be selected. The selected cleanup alternative is identified in the **Record of Decision (ROD)**, which is the final document in the CERCLA process. The ROD will substantiate the need for a remedial action, describe the proposed action and justify the removal action selected. Public comments, the Corps's replies to public comments, and any new information are addressed in the Responsiveness Summary of the ROD.

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Uranium-contaminated dust at the Madison Site was vacuumed and scraped from overhead structures.

MADISON SITE

Madison ROD Signed

In May 2000, the St. Louis District, U. S. Army Corps of Engineers (USACE) released the signed Final Record of Decision (ROD) for the Madison Site in Madison, Illinois. In response to the potential risk of exposure to radioactive dust, the USACE selected a final remedy for the site entailing a cleanup that is protective of human health and the environment.

During the late 1950s and early 1960s, the site was used to perform extrusions of uranium metal and straightening of extruded uranium rods for the U. S. Atomic Energy Commission (AEC). In 1999, the USACE identified uranium contamination in two buildings operated by a manufacturer in Madison, Illinois. The contamination was limited to dust on overhead surfaces.

In February 2000, four remedial alternatives were identified to address the contamination at the Madison Site. These alternatives were presented to the public for review and comment in a Remedial Investigation/ Feasibility Study (RI/FS) and Proposed Plan. Based on comments received from the general public and regulatory agencies, the USACE selected Alternative 4, decontamination of accessible surfaces.

Alternative 4 is identified as the final remedy for the Madison Site in the Record of Decision (ROD). The ROD incorporates public comments received on the Feasibility

Study and outlines the final cleanup method selected to address the contamination. The Madison ROD was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The Madison Site Administrative Record, on which the final decision was based, was completed and released in May with the signing of the ROD.

Madison Decontamination Complete

Under the Final Record of Decision (ROD), decontamination activities at the Madison Site began in June. The USACE designed the cleanup activities so that the site would meet the specific cleanup levels established to protect human health and identified in the Madison Site ROD.

The small business contractor mobilized its decontamination teams to the site with protective clothing, scaffolding and equipment. Uranium-contaminated dust was vacuumed from overhead structures over a 12-day period. By mid-July, independent surveys confirmed that the USACE had successfully decontaminated Buildings 6 and 4 ahead of schedule and under budget. Forty cubic yards of contaminated dust and materials were sent to a licensed, out-of-state facility for disposal.

The current condition of the site will be documented in a Post Remedial Action Report for the Madison Site. This report will document how the current condition of the decontaminated areas meet the criteria established in the Madison Site Record of Decision.

What's Next?

After the Post Remedial Action Report is complete, the site will be removed from the list of active FUSRAP sites. 

Upcoming Events

Information Releases:

Fall Newsletter – November 2000

Upcoming Meetings:

St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on September 8, October 13, and November 10. (The public is welcome to attend.)



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A slide-rail shoring system (shown above) prevents the walls of the excavation from caving in during the Plant 1 remediation.

ST. LOUIS DOWNTOWN SITE (SLDS)

Plant 2 Remediation Complete

Asphalt now covers Plant 2, which is the first area within the Mallinckrodt facility successfully remediated under the St. Louis Downtown Site (SLDS) Record of Decision.

Remediation of the SLDS Plant 2 area began last year with the excavation and removal of contaminated material covering the area. By May, construction crews encountered 19th century utility lines predating available maps. Utility lines had to be temporarily relocated and/or shutoff before the excavation could proceed.

Remedial activities were temporarily delayed again in August 1999 when Civil War ordnance was discovered in the excavation. The USACE paused to develop a plan for the remediation of the remainder of the Plant 2 area in accordance with the SLDS Record of Decision while minimizing safety risks for plant personnel and remediation workers.

Over the next seven months, contaminated soils were removed in 10- to 15-inch thick layers after being scanned for the presence of metal objects. Law enforcement authorities received thirty pieces of ordnance for disposal recovered from the Plant 2 excavation.

The USACE removed approximately 10,600 cubic yards of contaminated material from Plant 2. A Post Remedial Action Report, which documents the condition of the site after remedial activities have taken place, is being prepared. This document will confirm how the current

condition of the site meets the criteria established in the SLDS Record of Decision and will be released in October.

Plant 1 Excavation Begins

Now that the remediation of Plant 2 is complete, the USACE has shifted its focus to Plant 1 where Mallinckrodt's Building K once stood.

Plant 1 site preparatory work began this spring within the anticipated excavation footprint. Crews installed fencing around the excavation area to prevent inadvertent entry. Electric, water and sewer lines continue to be routed around the area to minimize the safety risk to personnel. A temporary ramp was also built to provide access to the remediation area for transporting material to the loading facility.

For Plant 1, a steel, slide-rail shoring system will be used to provide additional support to the walls during remedial activities. The Plant 1 excavation will be completed in three separate strips reaching 12 feet in depth. The main area (or the area where Building K once stood) will be remediated using open excavation techniques expected to reach depths of up to 16 feet.

The USACE anticipates completing the 1,500 cubic yard excavation and backfill of Plant 1 by the end of this year. However, site restoration, which consists of restoring utility connections, grading and paving the area, will continue into next year.

What's Next?

Plant 1 will be backfilled and restored once survey data confirms that the remediation criteria established in the SLDS Record of Decision have been met. ■

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NORTH COUNTY

FS/PP Nears Release

The selection of the final remedy for the North County sites is on the horizon. The USACE has been busy developing the North County Feasibility Study and Proposed Plan (FS/PP) for presentation to the public. These documents will address the presence of Manhattan Engineer District/Atomic Energy Commission-related contamination at the Hazelwood Interim Storage Site (HISS), the St. Louis Airport Site (SLAPS), the SLAPS Vicinity Properties (SLAPS VPs) and Coldwater Creek.

Alternatives for remediating the North County Sites will be described in detail in the Feasibility Study, while the Proposed Plan will identify the USACE recommended alternative to address contamination at the sites.

Over the past several months, the USACE has been carefully reviewing draft documents to ensure they adequately address contamination in the North County area. Currently, the U. S. Environmental Protection Agency and the State of Missouri are reviewing draft copies of these documents to ensure they fully consider all applicable, relevant and appropriate requirements. Once the regulator's comments have been addressed and incorporated into the documents, the public will be given the opportunity review and comment on the North County FS/PP.

What's Next?

This winter the USACE will present the FS/PP to the public for review and comment to determine the final remedy for the site. A public meeting will be held approximately two weeks after the release of the documents to the public to gather comments. ■

ST. LOUIS AIRPORT SITE (SLAPS)

Radium Pits Excavation Continues

Excavation activities at the St. Louis Airport Site (SLAPS) have left a large, 2-acre hole where a contaminated area known as the Radium Pits was once located.

The gross excavation of contaminated soils in the Radium Pits, which began in May 2000, is complete. While the bulk of the excavation is complete, surveys are being performed to identify the locations of residual radiological contamination for removal. To date, over 525 railcars containing 37,800 cubic yards of material have been shipped from the site to a licensed, out-of-state disposal facility. Backfill of the Radium Pits with clean soils is expected to begin in October.

What's Next?

Once confirmation is received that removal criteria have been met for the Radium Pits activity, the area will be backfilled and grass seed will be placed to prevent erosion. ■

HAZELWOOD INTERIM STORAGE SITE (HISS)

Supplemental Pile Removal

Fourteen years after its creation, the HISS Supplemental Pile, which can be seen from Latty Avenue, is being removed. This material is being removed under the 1998 Engineering Evaluation/Cost Analysis (EE/CA) for the Latty Avenue/Hazelwood Interim Storage Site. The Supplemental Pile contains 5,500 cubic yards of material that resulted from drainage and improvement project performed by the Cities of Berkeley and Hazelwood in 1986.

The USACE completed negotiations with a woman-owned, small business contractor for the removal of the HISS Supplemental Pile in August. Since then, the contractor has submitted the project plans to the USACE for approval. The project plans describe how the contractor will carry out the pile removal. Once the plans are approved, the contractor will mobilize its crew to the site and begin removing the pile.

Beginning in September 2000, the Supplemental Pile soils will be loaded into railcars at the HISS railspur, which was built in 1999. The soils will then be shipped to a licensed, out-of-state facility for disposal. The USACE has implemented additional protective measures to protect human health and the environment. Crews will spray the area with water regularly to prevent soils from drying and becoming airborne. Permanent air sampling stations have been installed around the perimeter of the site that will operate continuously to help assure soil or dust particles do not migrate from the site.

What's Next?

During the removal of the Supplemental Pile, the USACE will design the removal of the first half of the HISS Main Pile. ■



While the bulk of the Radium Pits excavation is complete, walkover surveys help identify the locations of residual radiological contamination for removal

We've Moved!

If you came by the Project Office lately, you would notice some pretty big changes have taken place. Throughout the month of July, we have been busy moving the trailers from 9170 Latty Avenue to 8945 Latty Avenue (just up the street). By moving the trailers off the site, heavy construction equipment will have more room in which to operate and begin removing the piles at the Hazelwood Interim Storage Site (HISS).

Feel free to visit us at our new location - 8945 Latty Avenue! Or call us at our new number, (314) 260-3905, if you have any questions about the program!



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The selected remedy addressing uranium-contaminated dust, found on overhead eaves in Buildings 4 and 6, will be identified in the Record of Decision for the Madison Site.

Madison Site

Record of Decision (ROD) Coming Soon

Comments received from the public on the Remedial Investigation/Feasibility Study (RI/FS) are assisting the U. S. Army Corps of Engineers (USACE) in developing a final plan to address the Madison Site.

Four remedial alternatives were developed to address the presence of uranium-contaminated dust on overhead steel beams at the Madison Site. These were presented to the public for review and comment in the Feasibility Study.

The USACE developed remedial alternatives to address uranium-contaminated dust based on detailed site-specific characterization data presented in the Remedial Investigation. The alternatives presented at the public meeting included No Action (for baseline comparison), Institutional Controls, Containment, and Decontamination of Accessible Surfaces. The USACE identified its recommended alternative, Decontamination of Accessible Surfaces, in the Proposed Plan.

The Madison Site RI/FS and Proposed Plan were presented to the public at the Madison City Hall in February. Comments received during the public comment period on these documents are being carefully weighed and considered as the USACE develops the final Record of Decision (ROD), which identifies the approved selected alternative for addressing site contamination.

What's Next?

The USACE will respond to comments received during the public review of the Madison Site RI/FS and Proposed Plan. The approved Madison Site Record of Decision (ROD) is expected in May 2000. 

North County

Feasibility Study Nears Release

The USACE has been busy developing a North County Feasibility Study and Proposed Plan (FS/PP) for presentation to the public. These documents will address the presence of low-level, radioactive contamination at the Hazelwood Interim Storage Site (HISS), the St. Louis Airport Site (SLAPS), the SLAPS Vicinity Properties (SLAPS VPs) and Coldwater Creek.

Alternatives for remediating the North County Sites will be described in detail in the Feasibility Study, while the Proposed Plan will identify the recommended alternative to address contamination at the sites.

Over the past several months, the USACE has been carefully reviewing draft documents to ensure they adequately address contamination in the North County area prior to releasing the document to the public for review.

What's Next?

The FS/PP will be presented to the public for review and comment this summer. After the public review, the USACE will consider comments on the FS/PP and select the final remedial alternative, which will be identified in a North County Record of Decision. 

Upcoming Events

Information Releases:

Summer Newsletter – July 2000

Upcoming Meetings:

St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on May 12, June 9, and July 14. (The public is welcome to attend.)



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The first significant removal action at HISS began with the disposal of 5,900 cubic yards of excess soils generated by the construction of the railspur.

Hazelwood Interim Storage Site (HISS)

Pile Removal Underway

The first significant removal action at the Hazelwood Interim Storage Site (HISS) is underway. The contractor, a woman-owned small business, mobilized its crew to the site in February.

Removal work began in March with the construction of a haul road alongside the HISS railspur. In the first 20 days, 5,900 cubic yards of excess soil generated last year during the railspur construction was removed from the site. After the excess soils stored between the main and supplementary storage piles were removed, the contractor began to focus on the removal of the Eastern Piles.

The Eastern Piles contain approximately 8,000 cubic yards of material. The Corps is removing these piles under the 1998 Engineering Evaluation/Cost Analysis (EE/CA) for the Latty Avenue/Hazelwood Interim Storage Site.

What's Next?

The USACE is reviewing characterization data and developing designs for the removal of the Supplemental (or Front) Pile immediately behind the Project Offices. ■

St. Louis Airport Site (SLAPS)

Radium Pits Removal Underway

The removal of low-level, radioactive contamination from an area of the St. Louis Airport Site (SLAPS) commonly referred to as the Radium Pits is underway. In September 1999, the Corps sampled the area to better define geological, chemical and safety issues specific to the Radium Pits.

While historical records indicated that the USACE could reasonably anticipate encountering elevated levels of radium and thorium in the Radium Pits area, data collected from this sampling effort found significantly lower radium levels than expected. The decreased concentrations somewhat eased concerns over exposure to radon, which is a daughter product of the decay of radium. In contrast, sample results found higher levels of thorium than anticipated.

To maintain site safety during this removal action, air monitors are operating continuously in and around the excavated area. Crews regularly spray the area with water to prevent soils from drying and becoming airborne. New fencing and barriers were installed around the perimeter of SLAPS to prevent inadvertent access. Berms and sumps are located around and within the Radium Pits to ensure the water that falls on contaminated soil is collected, sampled and, if necessary, treated prior to release.

Approximately 29,000 cubic yards of contaminated material are scheduled for removal from the Radium Pits to a permitted, out-of-state disposal facility by July 3, 2000.

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If you have any suggestions, questions, or comments, contact our office anytime.

What's Next?

The USACE hopes to complete the Radium Pits removal action in July 2000. Once the bulk of the excavation is complete, crews can begin surveying the area to verify that it meets the cleanup criteria set forth in the 1998 SLAPS Engineering Evaluation/Cost Analysis (EE/CA).

East End Removal Complete

Site stabilization work on the SLAPS East End resulted in the removal of approximately 27,000 cubic yards of contaminated soil. Removal work, which began on the East End to create a continuous path of excavation from east to west across the site, concluded in February.

Once radiological surveys confirmed the removal of the contamination, the area was partially backfilled with clean soil. Final backfilling and grading activities will occur after the USACE develops its final site grading plan.

What's Next?

Removal work will continue to move westward across the site from areas of higher to lower elevations in order to stabilize the site and prevent storm-water runoff from transporting contaminated sediments into clean areas. ■

St. Louis Downtown Site (SLDS)

Plant 2 Excavation Complete

The excavation of the Mallinckrodt Plant 2 footprint was concluded in April 2000 with the removal of approximately 10,200 cubic yards of material. Remedial work was delayed temporarily in late August when unexploded Civil War ordnance was discovered during excavation activities.

Ordnance experts developed a plan to address the possibility of encountering more ordnance in Plant 2. The plan enabled the USACE to continue remediation of the site in accordance with the approved St. Louis Downtown Site (SLDS) Record of Decision while minimizing safety risks for plant personnel and remedial workers.

Magnetometers, which can detect buried metal objects four feet below the surface of the soil, were used to verify the work area was clear of all metal objects. Once a work area was cleared, excavators removed the top 10- to 15-inches of soil for disposal. Roughly 5,000 cubic yards of contaminated soils were removed this way and resulted in the discovery of additional Civil War ordnance in December and March.



Excavation of Plant 2 concluded in April with the removal of approximately 10,200 cubic yards of material.

What's Next?

The USACE anticipates completing backfill activities in the Plant 2 area in May.

Plant 1 Work Underway

SLDS Plant 1 site preparatory work began in March with the staking of the excavation footprint. Electric, water and sewer lines will be routed away from the area to minimize safety risks to personnel.

Since the Plant 1 remediation area is adjacent to currently operated buildings without the cushioning barrier of a street or walkway, a great deal of care and coordination will be required to protect plant workers. The USACE is working closely with Mallinckrodt personnel to coordinate remedial activities and minimize the impact on daily business operations as much as possible.

Pre-design characterization data indicates that Plant 1 contains approximately 1,500 cubic yards of contaminated material in the main area of excavation. Another 500 cubic yards, divided between an additional eleven nearby areas of elevated radiological activity, will also be remediated.

What's Next?

Sheet piling, which are steel sheets used to reinforce and protect the foundations of nearby buildings during remediation of the Plant 1 area, will be driven into the ground. Once this is complete, the excavation of radiological contamination in Plant 1 will begin. ■

Am I Protected?

Q. As I pass by your sites, I see workers dressed in moon suits and white garments? Am I protected from the radiation at your site?

A. Radiation presents a hazard if taken into the body. Radioactive particles can be taken into the body through inhalation or ingestion (eating or drinking). Three factors can be used to protect the body from external radiation—distance, time and shielding. Individuals are better protected the farther from the source of radiation, the shorter the time of exposure, or the thicker the shielding.

As you pass by one of the St. Louis Sites, you are protected from its radioactive materials by a variety of protective measures taken by the Corps. First, a fence around contaminated areas reduces the potential for inadvertent entry and distances you from the radiation. Second, water sprayed on the site prevents dust from becoming airborne (or inhaled) as crews excavate contaminated soils. Third, continuously operating air monitors positioned around the excavated area, assess the effectiveness of these protective measures by monitoring the levels of airborne particles present.

Because they may work directly with materials for long periods of time, workers are exposed to the greatest risks posed by FUSRAP contamination. Depending on the levels of radiation and their proximity to the material, workers are dressed in varying degrees of protective clothing. As you pass by one of the FUSRAP sites, you will see workers dressed in varying levels of protective gear.

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Workers, dressed in the appropriate level of personal protective clothing and respiratory equipment, collected samples from the Radium Pits to verify contaminant information.

North County

Feasibility Study Being Developed

The USACE is currently developing the North County Feasibility Study/Proposed Plan (FS/PP), which will describe remedial alternatives to address contamination on the sites. The North County FS/PP will address contamination at the Latty Avenue/Hazelwood Interim Storage Site (HISS), the St. Louis Airport Site (SLAPS), the SLAPS Vicinity Properties (VPs) and Coldwater Creek.

By working with the Missouri Department of Natural Resources and the U. S. Environmental Protection Agency, the USACE hopes to resolve outstanding issues prior to releasing the document to the public for review. The agencies are working together to determine which federal and state regulations apply to these sites and to resolve issues regarding potential contaminants of concern.

In the coming months, the FS/PP will be presented to the public for review and comment. After the review period is over, the final remedial alternative will be selected and identified in the Record of Decision.

One more way to keep in touch:

MDNR FUSRAP Field Oversight Office
917 N. Highway 67, Suite 104
Florissant, MO 63031
phone (314) 877-3250

St. Louis Airport Site (SLAPS)

Radium Pits Tested

In September, the USACE dug test pits in an area of the St. Louis Airport Site (SLAPS), commonly referred to as the Radium Pits, which are located in the curve of the site next to McDonnell Boulevard. The test pits were dug to better characterize the extent of contamination and to develop a geological profile for this portion of the site.

The Atomic Energy Commission/Manhattan Engineer District (AEC/MED) previously used the Radium Pits to store residues from manufacturing operations at the St. Louis Downtown Site (SLDS).

By investigating the Radium Pits, the USACE gathered valuable radiological and geotechnical data for developing plans, which accurately address the Radium Pit's conditions. While significantly less radium than expected was found, the results of this activity showed that higher levels of thorium exist in this location.

The USACE was concerned that radon, which is a byproduct produced by the decay of radium, would be a problem given the original data that calculations were based on. However, since the actual radium levels were low, radon levels were not an issue.

The USACE, in conjunction with state and federal agencies, is currently developing the Plans and Specifications for this removal action. It is anticipated work will begin this spring in the Radium Pits. An estimated 26,000-28,000 cubic yards of contaminated soils are scheduled for removal. ■

Upcoming Events

Information Releases:

Winter Newsletter – February 2000

Upcoming Meetings:

St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on December 10, January 14, and February 11.



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The workers shown here are in the process of surveying an area to determine if further excavation is required. Once surveys confirm the contamination has been removed, the Corps can direct its contractors to begin backfilling the excavated area with clean material.

East End Excavation Continues

Site stabilization work is continuing at the East End of SLAPS in the wedge between McDonnell Boulevard and Banshee Road. Confirmation surveys have verified that the contamination has been removed from the eastern most survey unit. Under the USACE's direction, contractors have begun backfilling the cleaned areas.

Removal work on SLAPS will progress in a continuous path of excavation from east to west across the site. This progression will stabilize the site and prevent storm-water run-off from re-contaminating cleaned areas as work moves from higher to lower elevations. To date, the contractor has excavated 16,500 cubic yards of contamination from the East End.

What's Next?

Once the confirmation surveys and the backfill of the remainder of the East End are completed, the SLAPS Construction Support Area will be moved to the East End and thus allow excavation activities to continue across the site. ■

Hazelwood Interim Storage Site (HISS)

Lab Relocation Nearly Completed

The USACE has procured a new site lab to replace the current facility. Production requirements and the HISS Railspur construction this spring brought attention to potential production problems with analyzing samples at the lab's original location.

The analysis of radiological samples requires a stable environment. Once heavy equipment begins removing the nearby piles, the lab's original location at the end of a railspur will no longer suffice.

The relocated facility will better support the number of samples that need to be analyzed. As the USACE removes more contaminated material from the St. Louis sites, the increased capability will enable the lab to process these samples without impacting the schedule of work on the rest of the project. The new lab should be fully operational by mid-December 1999.

Pile Removal Design Continues

In September, the USACE completed technical negotiations regarding the removal of the HISS Eastern Pile and the Spoil Piles from the railspur construction with a selected small, woman-owned business. Together these piles contain approximately 12,000 cubic yards of material. The Corps will remove these piles to minimize disruption to business operations and facilitate the current owner's use of the property.

The contractor has submitted the project plans to the USACE for approval. These plans describe how the contractor will implement the design plans during the actual pile removal. Once the plans are approved, the contractor will mobilize its personnel and equipment on-site, receive site-specific training to ensure personnel are familiar with the site, and begin removing the piles using the new railspur.

What's Next?

Once these preparatory activities have been completed, the piles will be removed under the approved 1998 HISS Engineering Evaluation /Cost Analysis (EE/CA). Until a Record of Decision (ROD) describing the final cleanup method is approved, no subsurface contamination at HISS can be removed. ■

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Excavation in Plant 2's main remediation area will continue once unexploded ordnance plans, which address the presence of the Civil War Ordnance, are approved.

St. Louis Downtown Site (SLDS)

Plant 2 Progress on Hold

Remediation work in Plant 2 stopped when unexploded Civil War ordnance was found during site excavation in late August.

Historians suspect the ordnance originated from a prior land owner (Buck's Stove & Range Company), which manufactured cast iron stoves. After the Civil War, many weapons were decommissioned and sold as scrap iron. Authorities speculate that Buck's Stove & Range Company, which was using the iron from the rounds for manufacturing stoves, discovered the live rounds and buried the rounds rather than disarming them.

Years later, in 1935, Mallinckrodt purchased and demolished the foundry. They discovered and disposed of hundreds of cannonballs left over from the Civil War, unaware of the buried rounds. By 1941 Mallinckrodt erected buildings on that same site to support Manhattan Engineer District / Atomic Energy Commission (MED/AEC) activities during World War II. Now more than sixty years after the demolition of the foundry, the buried rounds have been discovered.

While the USACE will not continue remediation in the main area of excavation until an Unexploded Ordnance (UXO) plan is approved, four small adjacent areas of elevated radiological activity are being remediated. These four areas total approximately 120 cubic yards.



This twelve pound cannon ball made of iron was one of the pieces of ordnance found during the Plant 2 remediation. Originally, the hole in the cannon ball would have been plugged. The ball was filled with black powder.

UXO Plan Under Review

Ordnance experts are working with physicists to finalize a plan that addresses the possibility of encountering more ordnance in the radiologically contaminated soils of the main excavation area in Plant 2. The plan will enable the USACE to backfill the open excavation.

Magnetometers, which can detect buried metal objects four feet below the surface of the soil, will be used to verify the work area is clear of all metal objects. If the magnetometer detects a metal object beneath the surface, a team of UXO specialists will dig up the object by hand. If it is identified as ordnance, it will be turned over to the St. Louis Bomb Squad for disposal. Once the work area is cleared using the magnetometer, an excavator will remove the top 10- to 15-inches of soil for disposal.

This process would be repeated for each layer of soil until the remaining 5,000 cubic yards of contamination in Plant 2 has been removed as described in the SLDS Record of Decision. The USACE hopes that the remedial work in Plant 2 can be completed by February assuming inclement weather does not further hamper remediation efforts.

Plant 1 Remediation Starting

Concurrent with the Plant 2 work, contractors are focusing their efforts on Plant 1. Remediation activities in Plant 1 will begin with the removal of the asphalt and concrete, which presently cover the contaminated soils around the footprint of the demolished Building K.

To prepare the site, crews will survey and stake the excavation area so that it may be fenced off to prevent inadvertent access. Electric, water and sewer lines will be routed away from the area. Due to an elevation difference between the Building K pad and the street, a temporary ramp will be constructed to assist the trucks in transporting material from Plant 1 to the loading facility.

Pre-design characterization data indicate Plant 1 contains approximately 1,500 cubic yards of contaminated material in the main excavation area. Another 500 cubic yards divided between an additional eight areas of elevated radiological activity in Plant 1 will also be remediated.

What's Next?

Once the UXO plan is finalized, remedial work in the main excavation area of Plant 2 will resume while regular construction crews remediate Plant 1. ■

Why Don't You Just Start Digging?

Q: If you know the contamination is there, why don't you just start digging it up and hauling it away? Once all of the contamination is removed, the problem is resolved and everyone goes home. Why do you keep writing documents?

A: Although an environmental cleanup project seems very simple, numerous activities must take place before contaminants can be removed. No one wants to go into a contaminated area without knowing what pollutants are there. Unless you know what contaminants are present, it is difficult to protect yourself against its health risks.

In 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). FUSRAP is conducted according to the processes described in CERCLA.

The first step in the CERCLA process is to conduct a **Preliminary Assessment (PA)**. Historical background information is collected to determine the likely locations of hazardous materials and to determine the initial extent of site contamination. Next, a **Site Inspection (SI)** is performed to verify historical information through limited soil and water sampling. If substantial amounts of contamination are confirmed present on the site, further study and analysis are needed. The **Remedial Investigation (RI)** further identifies the types of contaminants present at or near the site, the degree and extent of contamination, and potential risks to the public health and environment. Information gathered during the RI will assist in developing cleanup alternatives, which will be identified in the **Feasibility Study (FS)**. Once the remedial alternatives are identified, the **Proposed Plan (PP)** is written. The PP compares the alternatives presented in the FS and identifies a recommended cleanup remedy for a site. When the draft FS/PP is completed, the documents are presented to the public for review and a 30-day public comment period begins. While the public can submit comments at any time during this review period, a public meeting is also held to provide an opportunity to discuss the alternatives. After the 30-day comment period has ended, a specific long-term remedial action or cleanup technology is selected.

The selected cleanup alternative is identified in the **Record of Decision (ROD)**, which is the final document in the CERCLA process. The ROD will substantiate the need for a remedial action, describe the proposed action and justify the removal action selected. Public comments, the Corps' replies, and any new information are detailed in a section of the ROD known as the Responsiveness Summary.

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The East End removal action continued through the contractor turnover with the excavation of 5,200 cubic yards.

St. Louis Airport Site (SLAPS)

East End Excavation Resumed

In October 1998, the U. S. Army Corps of Engineers (USACE) began a two-phase removal action on the East End of the St. Louis Airport Site (SLAPS). Work began in the wedge between McDonnell Boulevard and Banshee Road as part of the site stabilization effort to prevent surface water runoff from carrying radioactive contaminants from the site.

The East End removal action was originally designed as a single activity; however, above normal winter rainfall hampered the progress of removal efforts. As a result of the moisture delay, the removal activity was split into two sections –the Northern and Southern Sections.

Under the initial contract, 9,000 cubic yards of contaminated material were excavated from the Northern Section. The new contractor will remove an additional 10,000 to 15,000 cubic yards of soil from the Southern Section and backfill the area as confirmation activities verify the removal of contaminants to established criteria has been accomplished.

Radium Pits Design Continues

The USACE is finalizing the design to remove contamination from the Radium Pits, which are located in the hump of SLAPS next to McDonnell Boulevard. Work in this section of SLAPS is proceeding under the authority of

the Final SLAPS Engineering Evaluation/Cost Analysis (EE/CA) reviewed by the public in March 1998.

The Atomic Energy Commission/Manhattan Engineer District (AEC/MED) previously used the Radium Pits to store residues from manufacturing operations at the St. Louis Downtown Site (SLDS). Presently, it represents one of the most contaminated areas on the site.

Although work was originally scheduled to begin in June, the excavation has been delayed until October because of weather delays (rain and heat). An estimated 40,000 cubic yards of contamination will be removed from the Radium Pits as the USACE works its way from east to west across the site stabilizing it to limit further offsite migration of material.

Contractor Transition Complete

Work at SLAPS and its contiguous properties has been successfully transitioned to a Total Environmental Restoration Contractor (TERC). Picking up where the previous contractor left off, the TERC is drafting designs and conducting removal actions under the direction of the USACE. Using one contractor to design and excavate is expected to result in a more cost effective and efficient flow of work.

Efforts to stabilize the site and prevent the migration of radioactive contamination (such as the East End removal action work) continued through the transition. By the end of July, sixty-eight railroad gondola cars carrying approximately 5,200 cubic yards of material had been shipped to a licensed out-of-state disposal facility since the contractor transition in June.

What's Next?

Once confirmation is received that removal criteria have been met for the East End activity and the area has been backfilled, contractors will move westward toward the Radium Pits. ■

Upcoming Events

Information Releases:

Fall Newsletter – November 1999

Upcoming Meetings:

St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on September 10, October 8, and November 12, 1999.



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Hazelwood Interim Storage Site (HISS)

Spoil Piles Stabilized

The USACE recently stabilized the HISS Railspur spoil piles by spraying on ConCover®, which encapsulated them with a polymer-type coating.

In April, site inspections revealed that these temporary piles, which were stored in the available space between the main and supplementary storage piles, became geologically unstable creating a potential health and safety risk. In addition, high winds occasionally dislodged the heavy liner weighted with cinder blocks making it difficult for workers to maintain coverage.

To eliminate these concerns, a temporary polymer-type coating that would last six months was applied to stabilize the piles until their scheduled removal in two months. The coating has stabilized the piles, ensuring material won't continue to slide down the slope face or risk dispersal by the wind.

Lab Relocation Started

The USACE is negotiating a lease to relocate the HISS on-site lab. Railspur construction near the lab this spring brought attention to potential production problems with analyzing samples.

Analysis of radiological samples requires a stable environment. The current location at the end of the new rail spur would not be adequate once heavy equipment began removing the nearby piles this fall.

In addition, the current facilities do not support the number of samples that need to be analyzed. As the USACE removes more contaminated material from these sites, the lab will be required to process more samples. Moving the



The spoil piles were recently sprayed with a gray polymer-type coating, which has stabilized them until their scheduled removal this fall.

lab to a more stable location will permit work on the rest of the project to continue as scheduled.

What's Next?

Once the negotiations are finished, the woman-owned, small and disadvantaged business contractor will mobilize on-site to begin removing the spoil piles and Eastern Piles. ■

North County

Ecological Risk Under Review

In mid-July, the USACE released its Ecological Risk Assessment for the North County Sites to the Environmental Protection Agency and the Missouri Department of Natural Resources for review. These regulatory agencies are reviewing the screening evaluation presented by the USACE specifically for Coldwater Creek on FUSRAP's ecological risk (i.e. the impact of contamination on the environment).

In the document, comparisons were made to determine if additional data is necessary to more fully assess ecological risk. Based on the review of this evaluation, these agencies will determine if further sampling is required to establish ecological risk in late August.

What's Next?

While the agencies review and provide input to the assessment of ecological risk, the USACE will continue developing remedial alternatives for the final cleanup of North County Sites. These alternatives will be presented to the public in a Feasibility Study in upcoming months. ■

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St. Louis Downtown Site (SLDS)

Plant 2 Progress Slows

Final cleanup activities within the Mallinckrodt Plant 2 area are proceeding slowly as workers negotiate their way around utility lines. Remedial activities are being conducted using criteria in the approved St. Louis Downtown Site (SLDS) Record of Decision (ROD). Remediation of Plant 2 began in January with the removal of a concrete slab, which had covered the footprint of a demolished building.

Subterranean utilities from demolished buildings dating back to 1846 are still present in the Plant 2 area and slowing progress. While crews reviewed historical maps before excavating, they have discovered utility lines predating available maps.

Since construction crews continue to encounter utility lines during the remediation, they are proceeding cautiously. As these outdated lines are found, they are shutoff and/or moved before proceeding with the excavation.

To date, approximately 5,000 out of an anticipated 8,500 cubic yards have been excavated from Plant 2 for disposal in a licensed out-of-state facility. The USACE anticipates Plant 2 remediation will be completed in November pending confirmation that contractors have successfully removed contamination to the criteria established in the SLDS ROD.

Plant 1 and 6 Sampled

The USACE is systematically surveying Plants 1 and 6 to further define the excavation limits to ensure above criteria contaminants are removed as outlined in the SLDS ROD. The data from this sampling effort will establish excavation volumes for the final remedial design for Plants 1 and 6.



Workers cautiously excavate Plant 2 as they continue to encounter outdated utility lines.



Systematically sampling Plants 1 and 6 will establish the excavation area and remediation volumes. The laborer shown here is working with a recently drilled soil sample.

Crews will excavate Plant 1 before starting Plant 6 work. Although a relatively small volume of contamination is anticipated from Plant 1 remediation efforts, it will require very careful planning. Work will be performed in close proximity to ongoing Mallinckrodt operational facilities beginning in October 1999.

What's Next?

Using the final remedial design, crews will begin remediating Plant 1 once Plant 2 has been finished. Engineers will also finalize the Plant 6 Remedial Design plans. ■

Madison

RI/FS/PP Under Development

With the Final Characterization Report for the Madison Site finished, the USACE is now developing a Remedial Investigation/Feasibility Study/Proposed Plan (RI/FS/PP). The Characterization Report identified uranium contamination in two buildings owned by a manufacturer in Madison, Illinois. The Characterization Report confirmed the presence of contamination in dust on overhead surfaces, while the floors and equipment were below criteria.

Now that the extent of contamination has been determined, the USACE is developing a plan to address the site. This strategy will be presented to the public for review and comment in the RI/FS/PP scheduled for release late this year.

What's Next?

The USACE will present the RI/FS/PP to the public for review and comment this fall to determine the final disposition of the site. ■

What is Radioactivity?

Q: Admittedly this question seems pretty elementary until you stop and think about it. If you were trying to explain what radioactivity was to a ten-year-old child, what would you say? Radioactivity is not detectable with five senses. You cannot see, hear, smell, taste, or feel it. Seems a bit harder to answer the question now doesn't it?

A: *In its simplest explanation, radioactivity is a type of energy. Furthermore, radioactivity refers to a specific type of energy produced when an unstable atom tries to stabilize itself by "decaying" or releasing particles. As these particles are released, energy is created.*

Radiation may take one of two forms: ionizing or nonionizing. Ionizing radiation consists of high-energy particles capable of creating an electrical charge in substances they pass through. Nonionizing radiation cannot create a charge as it passes through material.

Nonionizing radiation may be found in common household products such as lights, microwaves or televisions. Ionizing radiation can be found in everything in nature in trace amounts – including people. It can be found in carbon and potassium, as well as elements such as uranium and thorium. But if radiation is so natural, why are we spending so much to clean it up? Just like sunlight (another radiation source), radiation poses little harm until you've been exposed to too much of it. The Corps is working on the FUSRAP Sites in order to limit the amount of radiation to which we are exposed.

Naturally occurring ionizing radiation may be one of three types (alpha, beta, or gamma). Alpha particles can only travel approximately one to two inches in air and can be blocked by a sheet of paper. Beta particles can travel 6 – 10 feet in air but can be blocked with Plexiglas® or glass. Gamma particles can travel the farthest but may be stopped with lead.

Many people believe radioactivity is a compound that can be treated by finding the right chemical mixture to neutralize it or "make it go away". Unfortunately, since radioactivity is energy produced by elements, which are already in their simplest form, it cannot be neutralized. We can only control the locations of radioactive material and wait until nature takes its course.

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The new HISS railspur has the capability of holding nine railroad gondola cars. Workers here are inspecting the new facility to ensure it meets specifications.

Hazelwood Interim Storage Site (HISS)

Railspur Construction Complete

After six months of work, the U.S. Army Corps of Engineers (USACE) has completed construction of the Hazelwood Interim Storage Site (HISS) railspur. Nine railroad gondola cars easily fit on the new structure. The increased capacity will safely accelerate the removal of radioactive material from HISS; thus eliminating the need to ship contaminated soils by truck over local roads and public highways.

Railspur construction at HISS began in October 1998 under the authority of an Engineering Evaluation/Cost Analysis (EE/CA). As a result of the construction, approximately 5,000 cubic yards of excess soil was generated and is being temporarily stockpiled between the main and supplementary storage piles. The temporary piles are covered with a heavy liner to ensure that soil and dust particles do not move from the site. Air and water resources near the construction area continue to be monitored for release of contamination from the site.

Pile Removal Being Designed

This summer, the USACE anticipates removing the two small piles, referred to as the HISS Eastern piles,

located adjacent to HISS. These piles contain approximately 8,000 cubic yards of material. The Corps will remove these piles to minimize disruption to business operations and facilitate the use of the property for the current property owner.

The USACE has completed designs for the removal of the Eastern Piles. Presently, the St. Louis District is preparing to negotiate in June with the selected small woman-owned business pursuant to Section 8(a) of the Small Business Administration Act.

What's Next?

Technical issues regarding the pile removals are being addressed through the contracting process. The small business contractor will mobilize on-site and begin removing the Eastern Piles this summer. 

St. Louis Airport Site (SLAPS)

Sedimentation Basin Complete

The USACE recently completed construction of a Sedimentation Basin on the West End of the St. Louis Airport Site (SLAPS). Completion of the basin's construction marks a significant step forward in site stabilization efforts, part of the Corps's commitment to the community and stakeholders to protect human health and the environment.

The Sedimentation Basin was built to significantly reduce the migration of radioactive sediments into Coldwater Creek. It works by collecting the site's stormwater run-off. As the run-off collects in the basin, it is slowly released through pipes beneath the basin.

Upcoming Events

Information Releases:

Summer Newsletter – August 1999

Upcoming Meetings:

St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on June 11, July 9, and August 13, 1999.



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The water's speed is significantly reduced as it travels toward the creek. As a result, most sediment suspended in the water will settle and accumulate in the basin rather than entering the creek.

To prevent sediment transport, the basin is lined with a geomembrane fabric and crushed stone. The fabric creates a barrier between the contaminated sediments that settle out of the stormwater run-off and the soils below the basin. The accumulated sediment, which will likely be contaminated, can be removed from the basin periodically and disposed of off-site.

For high infrequent flows such as in the case of a heavy 25-year storm, an emergency overflow channel prevents the west section of SLAPS from being damaged. If the sedimentation basin fills with water too quickly to be released through the pipe, water will be released into the creek via the emergency overflow channel. For any extreme rainfall event, a weir has been placed in the outfall to track flow volumes.

Regular sampling will be performed in the sedimentation basin to assess initial accumulated water contaminants. Following verification of the basin's decreased sediment load, discharges will be made to Coldwater Creek. Discharges are analyzed to ensure acceptable limits are met. Thereafter, monthly discharges will be analyzed at the outfall.

Contract Turnover Underway

In June 1999, a new contractor will both design and conduct removal actions in North County for the USACE. The new contractor will pick up where the current contractor leaves off. The completion of the North Ditch excavation, the East End removal action, the management of the railspurs in North County, and the management of the off-site borrow source will all be handled by the new contractor.

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Previously, the USACE used one contractor to design and another to perform the activity. The contractor transition is taking place as originally scheduled in the overall project management plan. Transitioning to a single contractor for site work is expected to result in a more cost effective and efficient flow of work.

Efforts to stabilize the site and prevent the migration of radioactive contamination will continue through the transition under the Final St. Louis Airport Site (SLAPS) Engineering Evaluation/Cost Analysis (EE/CA), March 1999.

What's Next?

Once contamination is removed from the East End of SLAPS, the USACE will begin cleanup work on the radium pits. ■



To prevent sediment transport, the basin is lined with a geomembrane fabric and crushed stone. Workers are shown installing the fabric. The fabric creates a barrier between the contaminated sediments, which settle out of the storm water run-off, and the soils below the basin.

North County

Ecological Risk Being Evaluated

The USACE is evaluating the ecological risk, which is the impact of FUSRAP contamination on the environment, for the North County Sites. The scientists are reevaluating and collecting additional data to more accurately assess the ecological impact of contamination on the North County sites (particularly Coldwater Creek).

Although the ecological risk was initially addressed in the 1992 Baseline Risk Assessment, substantial changes have been made to risk assessment guidelines. Ecological risk assessment guidelines now require such evaluations be completed in tiers. The initial tier compares contaminant concentrations in soils, sediments and surface water at and near the site to protective ecological benchmarks.

Since such screening levels tend to be very conservative, additional assessments are required if concentrations exceed an ecological screening level. Comparisons are now being made for North County sites in order to determine if additional data is necessary to fully assess ecological risk. At this tier, risks to certain types of species that might be present in the area would be quantified using contaminant concentration data and anticipated exposure conditions.

What's Next?

Once the ecological risks are updated and defined, the USACE will be able to develop remedial alternatives for the final cleanup of the North County sites that are fully protective of human health and the environment. ■

St. Louis Downtown Site (SLDS)

Plant 2 Remediation Continues

In January 1999, the USACE began final cleanup activities within the Mallinckrodt Plant 2 area. Remedial activities are being conducted using the criteria described in the approved St. Louis Downtown Site (SLDS) Record of Decision (ROD).

The remediation of Plant 2 began with the removal of the concrete slab, which had covered the footprint of a demolished building. Presently, construction crews are using backhoes and excavators to remove radioactively contaminated material and load it into railcars for offsite disposal in a licensed out-of-state



Excavators load material from the Plant 2 remediation work into trucks which transport the covered material to the SLDS railspur.

facility. To date, approximately 4,000 out of an anticipated 8,500 cubic yards of contaminated material have been excavated and transported to a licensed disposal facility.

Systematic radiological surveys are also being performed in the Plant 2 area outside of the defined excavation limits to ensure that all radioactive contamination is removed as required. This action will result in the timely release of the Plant 2 area back to Mallinckrodt for its beneficial use. The USACE anticipates Plant 2 remediation will be finished this summer.

Plant 1 Design Being Developed

USACE engineers are currently developing the remedial design for Plant 1. For this design, radiological surveys are performed to better characterize the extent of contamination in the Plant 1 area. Surveys will also be performed in the area outside of the anticipated excavation limits to ensure the removal of all radioactive contamination from the area.

Although the USACE expects to remove a relatively small volume of contamination (2,800 cubic yards), the Plant 1 remediation will require very careful planning. Excavation activities will be performed in close proximity to ongoing Mallinckrodt operational facilities. The Corps anticipates issuing the design this summer.

What's Next?

Once the Plant 2 remediation is completed, construction crews will begin remediating the Plant 1 area. ■

Is that safe?

Q: Have you ever wondered how the Corps ensures that ponded water released from its sites doesn't endanger human health or the environment?

A: Occasionally, water will collect in the bottom of the excavation. This ponded water is tested for contamination and treated, as necessary, to meet the substantive requirements of the applicable regulations for each site. Technicians collect water samples in batches, label and forward them to the lab for analysis. Scientists carefully review the data collected from the water samples to determine if the water meets release standards or requires treatment. If treatment is determined to be necessary for release, the water is pumped into the water treatment plant where it undergoes a process that removes the contamination.

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Aerial layout of the St. Louis Downtown Site (SLDS).

ST. LOUIS DOWNTOWN SITE (SLDS)

Plant 2 Remedial Action Underway

The U. S. Army Corps of Engineers (USACE) has completed the remedial design plan for final cleanup activities within the Mallinckrodt Plant 2 area. The plan was developed according to the criteria established in the approved St. Louis Downtown Site (SLDS) Record of Decision (ROD).

Plant 2 is located in the middle of Mallinckrodt as indicated in the map above. This area was selected for remediation to minimize disruption to current business operations and permit Mallinckrodt to utilize the site in accordance with their strategic development plan.

The remediation of Plant 2 began with the removal of the concrete slab in January. In preparation for this action, the area was surveyed and staked to mark the limits of excavation. The asphalt was then removed and sheet piling placed to support the foundations of structures close to the excavation area and to prevent cave-ins. A backhoe and excavator will be used to remove contaminated material from under the slab and load it into the onsite railcars for disposal.

The USACE contractor is currently preparing to excavate the

subsurface of Plant 2. Once crews complete the excavation, the floor will be surveyed and sampled to confirm that the radiological contamination, as defined in the SLDS ROD, has been removed to the approved criteria. Upon receiving confirmation from a final site survey that the site has been remediated, the site will be restored to grade.

The USACE currently anticipates Plant 2 remediation will be finished in July 1999. Approximately 8,500 cubic yards of contaminated material will be removed from this area.

City Properties Completed

The St. Louis City Properties remediation is nearing completion. These properties are located between the Mississippi River, the Mallinckrodt plant, and the McKinley Bridge. Sampling has verified that above-criteria radiological contamination was successfully removed from the property. Approximately 4,390 cubic yards of contaminated material were removed. The restoration of the site is scheduled for completion in late February, assuming no further weather delays are encountered. Once the restoration is completed, the properties will be released for use to the City of St. Louis.

What's Next?

While the Plant 2 remediation is underway, remedial design work will begin on Plant 1. The USACE anticipates issuing the Plant 1 design in June 1999. The USACE and Mallinckrodt will also begin developing the remedial strategy and design plans for Plants 6 and 7. 

Upcoming Events

Information Releases:

Spring Newsletter – May 1999

Upcoming Meetings:

St. Louis Downtown Site (SLDS) Open House, Henry Clay Elementary School Gymnasium, February 25, 1999 from 4:30 p.m. to 8:30 p.m.

Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on March 12, April 9, and May 14, 1999.



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ST. LOUIS AIRPORT SITE (SLAPS)

SLAPS East End Removal Underway

In October 1998 under the authority of the St. Louis Airport Site (SLAPS) Engineering Evaluation/Cost Analysis (EE/CA), March 1998, the USACE began a two-phase removal action on the East End of SLAPS as part of the site stabilization effort.

The Phase 1-East End work is currently being performed in the wedge between McDonnell Boulevard and Banshee Road. Previously, the area sloped to the northeast sending surface runoff to the McDonnell Boulevard drainage ditches just outside the existing fence line. The surface water runoff will be collected in the Sedimentation Trap for sampling and, if necessary, treated and released. As part of the site stabilization effort, this removal action will minimize further contamination release into nearby Coldwater Creek through the removal of the source material. Before completion in late-April, approximately 40,000 cubic yards of contaminated soils will be removed from SLAPS.

Phase 2 work will begin in mid-May. Approximately 20,000 cubic yards (including a portion of the Radium Pits) will be moved this year.

Radium Pits Removal Design Underway

Under the authority of the previously mentioned EE/CA, the USACE is finalizing a design and planning to remove contamination from an area of SLAPS

Each month, the USACE presents a monthly progress report on the St. Louis Sites to the Oversight Committee. These meetings are open to the public. Exact dates and times are published each quarter in this newsletter.



St. Louis Airport Site (SLAPS) east end during excavation and construction.

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showing elevated radiological activity. The targeted area, referred to as the "Radium Pits," was used by the

Atomic Energy Commission/ Manhattan Engineer District (AEC/MED) as a storage area for residues removed from the manufacturing operations at the St. Louis Downtown Site (SLDS). An estimated 40,000 cubic yards of

contaminated soils will be removed during this cleanup action, which is scheduled to begin in June. The final design document will be completed in April 1999.

What's Next?

While contamination is being removed from the radium pits, the USACE is finalizing its strategy to stabilize the remainder of the site. ■

HAZELWOOD INTERIM STORAGE SITE (HISS)

Railspur Construction Underway

In October 1998, the USACE began construction of a rail loading facility for the Hazelwood Interim Storage Site (HISS) under the authority of the HISS EE/CA. Recently, crews began clearing and grubbing activities near the existing rail line to prepare the area for the installation of the HISS railspur. During the railspur design process, engineers became aware of a sewer line near the proposed construction site. According to railroad requirements, underground utility lines within



Crews begin clearing activities for the HISS railspur construction and sewerline encasement.

twenty-five feet of a proposed rail line must be moved or encased to prevent damage and provide access for utility workers. The USACE has finished encasing the sewerline and is progressing with railspur construction.

As construction crews grade the soil for the rail spur, excess soil is temporarily being stockpiled between the main and supplementary storage piles. This temporary pile, which will contain approximately 2,000 cubic yards, is covered with a heavy liner to ensure that soil or dust particles do not move from the site. Air and water resources near the construction area are constantly monitored for the release of contamination from the site.

What's Next?

Upon completion of the railspur construction, a small, woman-owned business will begin removing the Eastern Pile (approximately 5,000 cubic yards) this summer. The removal will be completed in late 1999. ■

MADISON SITE

Characterization Report Released

In February 1999, the USACE presented the Draft Final Characterization Report for the Madison Site to the property owner and regulators. Last summer and fall, the USACE took samples to validate existing site data. The report defines the site contamination and updates the risk associated with it. Using this document, the USACE will develop a Feasibility Study/Proposed Plan (FS/PP) presenting a range of alternatives for the final action to be taken at the site.

You're Invited!

You are invited to attend the St. Louis Downtown Site (SLDS) Open House on Thursday, February 25, 1999 from 4:30 pm to 8:30 pm at the Henry Clay Elementary School Gymnasium. The USACE will provide information explaining the Remedial Design for the Mallinckrodt Plant 2 area. The Remedial Design is the actual plan that implements the approved cleanup method established in the SLDS Record of Decision.

What's Next?

The USACE will meet with regulators to determine the next step in developing a ROD for the site. ■

NORTH COUNTY

Document Development Underway for ROD

The St. Louis District recently briefed the regulators and Oversight Committee on the Potential Contaminants of Concern Assessment Memorandum (PAM), which updates the Baseline Risk Assessment. As defined by FUSRAP, the USACE is authorized to remove site contaminants associated with MED/AEC activities of the '40s and '50s. The PAM defines the contaminant levels and associated risks. This information will be used to assist in developing a ROD for the final cleanup of North County sites.

What's Next?

A list of the preliminary applicable, relevant and appropriate requirements (ARARs), which are laws and regulations to be enforced during the remedial action, will be coordinated with the regulators. The ARARs enforced during the final cleanup will be directly related to the site's primary contaminants of concern. ■



Construction crews grade soil for rail spur at the HISS site. Excess soil is temporarily stockpiled between the main and supplementary storage piles.

Are you sure you're ready?

Q Have you ever wondered how the USACE makes sure crews are ready to perform environmental cleanup work or how the Corps ensures the work is done correctly?

A Before entering the site, crews are given site-specific and refresher training for working on a radioactively contaminated site. A key component of this review is how they will comply with the USACE-approved Site Safety and Health Plan. Surrounding the site, fencing and signs are in place to prevent inadvertent and unauthorized access. If necessary, additional barriers will be temporarily installed to further restrict site access. Prior to entering the site, equipment and workers are inspected to certify operability of equipment, verify appropriate wear of Personal Protective Equipment (PPE) by workers, and assure compliance with published safety standards and plans. While work is being performed, environmental monitoring devices monitor the surrounding area to ensure no contaminants are released from the site.

The USACE construction management team is physically located on-site to monitor contractor activities and ensure they are in compliance with the contractual requirements. Contractor activities are reported in both weekly and monthly progress meetings between the resident engineer and the construction crew. Additionally, daily inspections are conducted by the Corps to ensure the correctness of work being performed. Data gathered from the environmental monitoring devices is carefully reviewed to ensure the public remains unaffected by operations. Engineering representatives of USACE also perform regular site investigations to verify that individuals' health and safety are protected and to assure contractor compliance with the published Plans and Specifications.

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St. Louis Downtown Site ROD Issued

The St. Louis District, U.S. Army Corps of Engineers (USACE) is pleased to announce the release of the signed Final Record of Decision (ROD) for the St. Louis Downtown Site (SLDS) in St. Louis, Missouri. In response to the potential risk of radioactive exposure, the USACE and U.S. Environmental Protection Agency (EPA) have selected a final remedial action which is protective of human health and the environment. The selected remedy, Alternative 6, calls for the removal of certain contaminated soils, consisting of radium, thorium, uranium, arsenic, and cadmium, from the site if they are above the criteria.

Under Alternative 6, all accessible contaminated soil that is above the composite criteria outlined in the ROD will be excavated and shipped offsite for disposal. Cleanup activities have been designed so that the site will meet specific threshold levels established to protect human health.

SLDS is located in an industrial area on the eastern border of St. Louis, 300 feet west of the Mississippi River and 11 miles southeast of the Airport area. The site is composed of a large chemical-manufacturing complex owned and operated by Mallinckrodt, Inc. The site also includes adjacent commercial and city-owned properties. Site studies have determined that radiological contamination is present in surface and subsurface soils as well as in buildings. The primary contaminants of concern are radium, thorium, and uranium. The volume of accessible soils contaminated above the cleanup criteria, under Alternative 6, is estimated to be 8,000 cubic yards.

The ROD is a legal document which outlines the selection of the final cleanup method to clean up radiological contamination. It was developed in accordance with

several environmental laws and guidance documents, including the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Superfund Amendments and Reauthorization Act (SARA), and the National Contingency Plan (NCP). The ROD was developed after incorporating comments received from the general public and regulatory agencies on the SLDS Feasibility Study and Proposed Plan (FS/PP). With the signing of the ROD, the SLDS Administrative Record was completed. As required by CERCLA, the complete SLDS Administrative Record was released for public review in late October 1998. ■

SLAPS Rail-Loading Facility Completed

In August, the St. Louis District of the U.S. Army Corps of Engineers (USACE) completed the construction and installation of a rail-loading facility at the St. Louis



As a result of the release of the SLDS ROD, remediation of the City Properties is nearing completion.

Inside the Sites

1 SLAPS Rail-Loading Facility Completed

2 Preliminary Site Characterization Activities

3 Community Relations Upcoming Events

4 HISS Railspur under Construction



US Army Corps
of Engineers®
St. Louis District



Aerial photograph of SLAPS and the North Ditch Area.

Airport Site (SLAPS). Located along the East End of SLAPS, the load-out facility consists of a 1,200-foot rail spur in addition to a major staging area where excavated materials are placed before being loaded into railcars. The USACE shipped contaminated materials to a licensed out-of-state disposal facility.

The SLAPS load-out facility was built to support the removal actions outlined in the Final SLAPS Interim Action Engineering Evaluation/Cost Analysis (EE/CA), September 1997, which also allowed the remediation of the SLAPS West End. This new infrastructure will increase the District's load-out capacity by as much as 167 percent per day over what was possible previously. The SLAPS load-out facility can easily accommodate 10 gondola rail cars at one time and includes a staging area that holds up to 5,000 cubic yards of contaminated material for shipping. The increased load-out capacity has allowed the Corps to accelerate cleanup activities in the North St. Louis County area. Another benefit is that the Corps can take advantage of favorable construction weather without delays from coordinating major shipping campaigns.

Over 3,000 cubic yards of contaminated material were removed to build this larger, more efficient facility. When the facility was completed, the materials excavated from this construction effort were the first to be loaded into gondolas and shipped to a licensed disposal facility from SLAPS. As of November 24, 1998, 302 rail cars of excavated materials had been shipped. ■

Preliminary Site Characterization Activities Begin at the Madison Site

This summer, the St. Louis District, U.S. Army Corps of Engineers (USACE) pursued characterization activities at the Madison Site in Madison, Illinois. The site consists of two buildings owned by a component manufacturer at the corner of College and Weaver Streets in Madison, Illinois.

Like the St. Louis Downtown Site (SLDS), the Madison Site hosts an active business. It consists of a series of large, interconnected buildings of similar design and shape. The Madison Site is the smallest of five that comprise the St. Louis Sites, whose cleanup is managed by the Formerly Utilized Sites Remedial Action Program (FUSRAP).

Uranium was previously processed at the Madison Site for the Manhattan Engineer District/Atomic Energy Commission (MED/AEC). Based on a 1989 survey, the site was added to FUSRAP after radiological contamination was found. The survey report concluded that above-background levels of radiation were present only in the dust located on overhead surfaces of the main building (Buildings 4 & 6). The survey also determined that the residual radioactive contamination found did not pose health risk to workers, current occupants, or nearby neighbors and residents.

(continued on page 3)



The USACE constructed a sedimentation trap to manage runoff north of McDonnell Boulevard.

(continued from page 2)

Scientists are performing current site characterization activities in order to validate previous data. These activities serve to assure the continued safety of production and maintenance personnel throughout daily operations. Characterization information also allows a strategy to be developed for future remediation, if warranted. The Preliminary Site Characterization Report summarizing the results will be issued this winter after researchers complete their analysis of sampling data. ■

SLAPS Site Stabilization Efforts Focus on Coldwater Creek

McDonnell Boulevard motorists may have noticed significant remediation activities underway at the St. Louis Airport Site (SLAPS). This progress is a result of the Corps' commitment to the community and stakeholders to protect human health, wildlife, and the environment. Under the Final SLAPS Interim Action Engineering Evaluation/Cost Analysis (EE/CA), September 1997, and the SLAPS EE/CA, March 1998, the St. Louis District of the U. S. Army Corps of Engineers (USACE) began removal efforts in September to stabilize the migration of radioactive sedimentation into Coldwater Creek.

The USACE designed and constructed a sedimentation basin (sed basin) on SLAPS (just east of last year's excavated area), which will significantly reduce the migration of contaminated material into Coldwater Creek. The purpose of the sedimentation basin is to collect stormwater run-off. While the run-off is collecting it is simultaneously released, at a slow rate, through a pipe in the bottom of the basin. The release flow significantly slows as it travels toward the creek out fall. In this process, any sediments suspended in the water have a chance to settle out. Thus, the sed basin greatly reduces the amount of SLAPS material entering the creek. Monitoring by USACE personnel ensures that water released into the creek is below the published standards.

Community Relations Upcoming Events

Information Releases:

Final Community Relations Plan - December 1998

Winter Newsletter - February 1999

Upcoming Meetings:

Oversight Committee Meeting, FUSRAP Project Offices - December 11, 1998 at 11:30 a.m.

Oversight Committee Meeting, FUSRAP Project Offices - January 08, 1999 at 11:30 a.m.

Oversight Committee Meeting, FUSRAP Project Offices - February 22, 1999 at 11:30 a.m.

An emergency overflow channel prevents the west section of SLAPS from being damaged by high, infrequent flows caused by a 25-year storm. If the sed basin fills with water too quickly to be released through the pipe, water will be released into the creek via the emergency overflow channel. In any such emergency, equipment is in place to measure the overflow. Regular sampling will be performed by USACE in the sedimentation basin and in any instances in which the water may be released via the regular outfall to the creek.

In contrast, a sedimentation trap has been constructed for the ditches north of McDonnell Boulevard while remediation efforts for this particular area are underway. The sedimentation trap is designed to function much like the sedimentation basin. Rather than releasing runoff through a pipe at the bottom of the trap, water collects until it can evaporate or infiltrate the trap's soils. If the sedimentation trap becomes too full, the system pumps water into Coldwater Creek after treatment to sedimentation standards that allow for release.

To prevent SLAPS storm water run-off from entering the ballfields, a plug has been placed in the culverts running between these two areas. Although hard to see, dikes are also around the North Ditch Area. These dikes are in place to prevent contamination from migrating

(continued on page 4)



The HISS rail-loading facility is scheduled for completion and full operation in 1999.

(continued from page 3)

westward and re-contaminating cleaned areas when workers remove contaminated material between the dike and the sedimentation trap. After the North Ditches are verified to be clean workers will excavate the sedimentation trap down to clean material and then fill in with clean backfill. These dikes will remain in place until the USACE is certain that cleaned areas no longer risk further contamination. ■

HISS Railspur under Construction

The Hazelwood community and other stakeholders will soon be able to witness implementation of the first phase of the Hazelwood Interim Storage Site (HISS) Engineering Evaluation/ Cost Analysis (EE/CA). In March 1998, a Draft HISS EE/CA, which evaluated three alternatives for site cleanup, was issued to the public for review and comment. The U.S. Army

Corps of Engineers (USACE) then selected the third alternative, which called for the on-site construction of a rail loading facility, the removal of the three storage piles, and the removal of accessible contaminated soils on two Latty Avenue properties.

This summer, the USACE signed an action memorandum describing the selected alternative for cleanup activities at the HISS and Latty Avenue Vicinity Properties. The memorandum is a legal document that outlines the Corps' path forward. It serves as the approval document for interim removal actions to be undertaken at the property while a separate ROD is developed to identify the final remedy.

Construction of the rail loading facility began in late October. It is expected to be fully operational in the second quarter of fiscal year 1999. As this first phase of the EE/CA is implemented, contractors working under the supervision of the USACE will construct the rail from the existing rail line to the HISS piles. Ultimately, this rail
(continued on page 5)



The Madison Site consists of two large, interconnected buildings of similar design and shape.

(continued from page 4)

spur will allow the USACE to ship directly from the site rather than truck material across heavily trafficked roads to the EVA spur.

SLAPS Vicinity Property 56 Cleaned

As a result of additional funding received from District Headquarters in August, the St. Louis District, U. S. Army Corps of Engineers (USACE) added another vicinity property in North County to its list of cleaned properties. Workers removed approximately 1,050 cubic yards of contaminated soils from Vicinity Property 56, which is located along Pershall Boulevard. These soils were loaded into trucks and sent to a licensed out-of-state disposal facility. Restoration activities for the site were completed in mid-November. ■

USACE Supports St. Denis Bridge Updates

Recently the St. Louis District USACE assisted the City of Florissant during their construction efforts to replace the St. Denis Bridge over Coldwater Creek. While contractors for the City of Florissant worked to demolish and then replace the existing structure, a separate contractor under USACE supervision



Erosion controls were used at VP 56 to prevent offsite flow of contaminated materials.

Keeping in Touch

Our office welcomes the opportunity to speak to the community and to hear from our neighbors. We try to provide different ways to keep you informed. Try any of our resources, as desired, including our homepage on the Web.

Mailing Lists - To receive newsletters and other printed communications, sign up for our mailing list anytime, 24 hours a day.

Phone: (314) 524-4083
Mail: 9170 Latty Avenue
 Berkeley, MO 63134
Fax: (314) 524-6044

Public Speaking - If your group, school, or association would like to hear from one of our experts, give us a call. We can speak on a variety of fields, including engineering, the environment, and geology.

Homepage - We've gone online with hundreds of pages of documents, digital photographs, maps, and other resources. Updates are posted regularly. An e-mail link is also available. To reach our site, set your browser to www.mvs.usace.army.mil and click on the FUSRAP icon.

If you have any suggestions, questions, or comments, contact our office anytime.

worked in support of the city to remove radioactive contamination along the banks of Coldwater Creek and ensure the safety of the workers.

Approximately 450 cubic yards of soil and concrete debris were removed from the creek. Restoration was completed in late November. ■

Community Safety Concerns

Protection of human health, wildlife, and the environment is the number one consideration when the USACE conducts its cleanup efforts. For example, orange safety fencing is placed around open excavation areas to restrict access by unauthorized

(continued on page 6)

The St. Louis Downtown Site ROD has been issued. To view this or any document, feel free to visit either of our Administrative Record locations.

St. Louis Public Library
Government Information Section
1301 Olive Street
St. Louis, Missouri 63103
(314) 241-2288

FUSRAP Project Office
9170 Latty Avenue
Berkeley, Missouri 63134
(314) 524-4083

individuals. The air and groundwater are continuously monitored at excavation sites and perimeters for possible remedial radiological contaminants. In areas being remediated, workers will dress in coveralls and other protective equipment for added safety, dependent on the level of contamination. The USACE also uses a variety of engineering controls and measures, such as spraying water to keep down dust generated by excavation activities. ■



U.S. Army Corps of Engineers - St. Louis District
FUSRAP Project Office
9170 Latty Avenue
Berkeley, Missouri 63134



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St. Louis District

The St. Louis Site

**U.S. Army Corps of Engineers • St. Louis District
Formerly Utilized Sites Remedial Action Program • June 1998**

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<http://144.3.144.51/engr/fusrap/index.htm>

This edition of the FUSRAP Update is part of our ongoing community outreach effort to keep the public informed of cleanup activities at the St. Louis Downtown Site. Please contact us if you have any questions or comments.

A Message from the St. Louis District Engineer

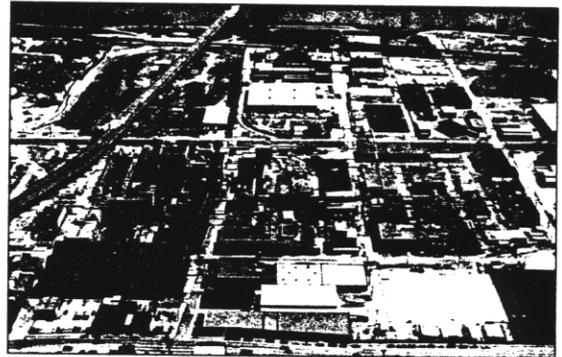
The St. Louis District of the Corps of Engineers is proud to bring to you this Special Edition of The St. Louis Site FUSRAP Update. This edition was developed to commemorate a milestone achievement at the St. Louis Downtown Site.

This past November, the Corps of Engineers completed the demolition of ten buildings at the St. Louis Downtown Site. This work originated with the Department of Energy. These buildings were located in an area of Mallinckrodt's downtown plant known as Plant 6 and 7. They were among the last of the buildings at the site that were used to process uranium during our nation's development of the first atomic bomb.

These buildings were identified through radiological characterization surveys as having fixed radioactive contamination along the walls, floors, and ceilings as well as contaminated soils beneath the buildings.

The federal government and the St. Louis community have worked together for a long time to clean up the radiological contamination that was a legacy of World War II and the Cold War. Demolition of the buildings closed one of many chapters in that effort. It moved us a step closer to developing a comprehensive cleanup strategy for the complete cleanup of the Downtown Site.

As we move forward in our mission to clean up the radioactive contaminated materials at the downtown site and other parts of the metropolitan area, your continuous involvement in the decision-making process is essential. We look forward to working with you in the community and we encourage you to become involved and participate fully in this important mission.



Aerial view of the Downtown Site, looking east.

Sincerely,

Thomas J. Hodgini
Colonel, U.S. Army
District Engineer

A New Chapter in the St. Louis Downtown Site's History

Demolition of nine of the original uranium process buildings in the past year began a new chapter in Mallinckrodt's history of association and cooperation with the U.S. government. This also successfully completed the first chapter of the Corps of Engineers' cleanup of low-level radioactive waste in the St. Louis region, which dated from the development of the atomic bomb in World War II.

What began at the St. Louis Downtown Site in 1942 as a small pilot-scale operation to produce extremely pure uranium compounds for the war effort soon developed into a sprawling industrial complex. The site produced the first significant quantities of reactor-grade uranium oxide.

All of the buildings, initially constructed to house different stages of the uranium purification process, were of similar design and arranged in clusters within the complex. Mallinckrodt's downtown facility became one of the primary suppliers of uranium products to the Atomic Energy Commission (AEC), predecessor of the Department of Energy (DOE).

After uranium operations were transferred to the Weldon Spring Plant in 1957, all buildings involved in such work were cleaned up using guidelines of the time. Ownership of the buildings was returned to Mallinckrodt without any radiological restrictions.

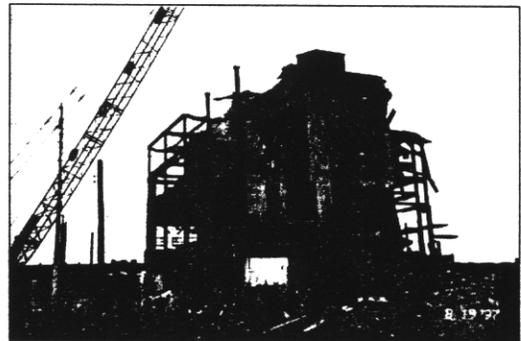
When radiation levels at the St. Louis plant were rechecked in the early 1970s, many of the buildings still contained contamination levels

higher than newer, more stringent, and more protective standards. The site was included under DOE's FUSRAP program.

In 1996 DOE and Mallinckrodt began discussing cleanup strategies for the site. Detailed radiological surveys found radioactive contamination throughout the buildings. It was decided that demolishing the buildings rather than decontaminating them

- was the most cost-effective strategy,
- would enable Mallinckrodt to move ahead with plans for future plant expansion and modernization, and
- would facilitate the next stage in the cleanup process by making contaminated soils under buildings more accessible for removal.

Remediation of the entire site is currently pending public approval.



Views of Destrehan Street Plant in the 1950s (top), demolition of Building 700 (above), and remediated area today (left).

A New Information Repository for the St. Louis Downtown Site

Working with members of the St. Louis Oversight Committee and the administration of Henry Clay Elementary School, the St. Louis District of the Army Corps of Engineers established a new information repository for the St. Louis Downtown Site in the Henry Clay Elementary School Library, 3820 North 14th Street, St. Louis, Missouri 63107. This repository is the first to be established since FUSRAP was transferred to the Corps of Engineers in October 1997.



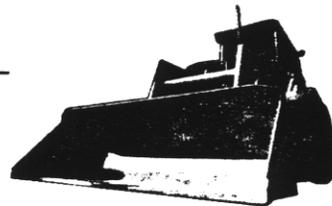
Reviewing documents in the new FUSRAP Information Repository are, (l. to r.) Community Coordinator Howard Hays; School Principal Frank Muehlheausler; Teacher Assistant Michele Anderson; Librarian Dorothy Jones, and FUSRAP Oversight Committee member Jack Fraunhoffer of Mallinckrodt.

Like the Administrative Record and Information Repository located in the Government Information Section of the St. Louis Public Library - Main Branch, this repository was created to provide residents in the St. Louis community an opportunity to participate in the decision-making process. It contains key site-related documents, fact sheets, and newsletters regarding the cleanup of the St. Louis Downtown Site, as well as other FUSRAP sites in the St. Louis area. It is updated quarterly and is available for review by the public during school hours.

For more information on the repository at Henry Clay Elementary School contact:

Christopher Haskell
Environmental Projects Information Specialist
USACE Environmental Projects
Public Information Office
9170 Latty Avenue
Berkeley, MO 63134
(314) 524-4083 or (314) 524-3334
chris.haskell@mvs01.usace.army.mil

Cleanup Activities at the Downtown Site Enter A New Phase



Cleanup activities at the St. Louis Downtown Site moved into a new phase this spring. In early April, the St. Louis District issued a draft feasibility study and proposed plan (FS/PP) identifying and evaluating six alternatives for cleanup of the site. These alternatives address removal and disposal of radioactive contaminated materials that originated at the site during the development of atomic weapons for World War II by the Manhattan Engineer District and later by the Atomic Energy Commission (MED/AEC).

The FS/PP are part of a series of four major documents required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The first document, a *remedial investigation report*, defined the nature and extent of contamination. Then, the *feasibility study* determined the practicality and cost of a range of alternatives to remediate the site. The *proposed plan* presents the Corps of Engineers' recommendation. Finally the *record of decision* (ROD) describes and analyzes the selected cleanup strategy.

The ROD for the St. Louis Downtown Site is being developed by the Corps of Engineers in cooperation with the community and in consultation with the Missouri Department of Natural Resources (MDNR) and the Environmental Protection Agency (EPA). The ROD is expected to be issued in July after receiving EPA approval.

Since our last newsletter, we've added a way to stay in touch — our homepage:

<http://144.3.144.51/engr/fusrap/index.htm>

Realizing that not everyone gets information from online sources, we will continue to use all reasonable alternative means to communicate with our neighbors.

Mailing Lists

Be sure you're on our mailing list and tell us of neighbors or other interested parties you think might want to be on it too. People can get on our mailing list 24 hours a day by:

Phone: (314) 524-3334 / 524-4083

Fax: (314) 524-6044

Mail: 9170 Latty Avenue, Berkeley, MO 63134

Email: FUSRAP@usa.net



Public Speaking

Let us know if your neighborhood association, business, community, youth, school, or other group would like to hear from one of our experts. They may not always be immediately available on short notice, but give us a call and see if we can't work out a speaking schedule. Experts are available in such fields as engineering, the environment, geology, journalism, and media relations.

Homepage

If you do join us online, you'll find hundreds of pages of documents (the full texts of all Engineering Evaluations/Analyses/Feasibility Studies, etc.), color digital photographs, maps, directions, names, addresses, resources. Many items are available online now and our webpages are being continually updated.

Be aware that if searching for "FUSRAP" on search engines (Infoseek, Alta-Vista, etc.) you'll find many pages that are NOT ours. Many of these pages were posted by others in the past. The only official FUSRAP homepage for the St. Louis District of the U.S. Army Corps of Engineers is:

<http://144.3.144.51/engr/fusrap/index.htm>

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Environmental Projects Public Information Office
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F U S R A P U P D A T E

The St. Louis Site

**U.S. Army Corps of Engineers • St. Louis District
Formerly Utilized Sites Remedial Action Program • February 1998**

■ Letter from the USACE District Commander

The U.S. Army Corps of Engineers is dedicated to removing radioactive contamination at sites formerly managed by the Department of the Energy. We will perform this work in concert with our partners in the community in an efficient, timely, safe, and cost-effective manner.

In October, Congress transferred the responsibility for the Formerly Utilized Sites Remedial Action Program (FUSRAP) from the Department of Energy to the Corps of Engineers (see additional article on page 3). St. Louis District of the Corps is now managing that cleanup process at sites within the St. Louis area. These sites include:

- St. Louis Airport Site (SLAPS), where byproducts of the uranium processing were stored;
- St. Louis Downtown Site (SLDS) and vicinity properties, where uranium was processed for the Manhattan Engineer District and other programs between 1942 and 1957;
- Vicinity Properties at the St. Louis Airport site;
- Latty Avenue Properties: Hazelwood Interim Storage Site (HISS), where ore residues were moved, and vicinity properties; and
- Madison, Illinois, site, where research and development took place in the 1950s and 1960s.



Col. Thomas Hodgini

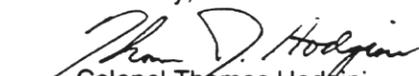
In this early phase of the Corps of Engineers' work at these sites, the St. Louis District is committed to a seamless transition from the Department of Energy to the Corps of Engineers. Through this transition, we want to continue the removal process and improve it where possible. We view this project as a commitment to the taxpayers and will complete this project in a quality manner. Let me emphasize the word "complete." That means we see an end date to this removal action, a time when we return remediated land back to the community.

The St. Louis District brings a great deal of expertise to this project. The Corps of Engineers has long been applauded for its work on environmental sites. These include active military installations, formerly used defense sites and work for the Environmental Protection Agency. This District does not stand alone; we are drawing on the expertise of our sister Districts throughout the Corps. We call this "One Door to the Corps."

Further, St. Louis District people live and work in the community; we CARE about and are committed to this community. The decision makers are here, both onsite and downtown.

The Corps of Engineers is committed to perform this work to a very high standard. We look forward to working with you in the community and with property owners, elected officials, the media and other stakeholders in this very important mission.

Sincerely,


Colonel Thomas Hodgini
USACE District Commander, St. Louis District

■ Transfer of FUSRAP to U.S. Army Corps of Engineers Complete With Signing of FY 1998 Appropriations Bill

The FY 1998 Energy and Water Appropriations Bill, which transfers management of the Formerly Utilized Sites Remedial Action Program (FUSRAP) to the U.S. Army Corps of Engineers (USACE), was signed into law on October 13, 1997. FUSRAP had been managed by the U.S. Department of Energy for the past 17 years.

In addition to transferring FUSRAP to USACE, the legislation provides \$140 million to fund the nationwide project in FY 1998, approximately twice the amount appropriated in FY 1997.

Following enactment of the bill, the contracts for FUSRAP's project management contractor, Bechtel National, Inc., and its environmental studies contractor, Science Applications International Corporation, were assigned to USACE.

■ Cleanup of Ten Vicinity Properties Continues

The road frontages of ten commercial properties along Hazelwood and Latty Avenues in North County now meet current cleanup guidelines. This cleanup, which began in June under the direction of the Department of Energy (DOE), is a continuation of remediation activities previously conducted along "haul routes" that became contaminated in the 1960s.

Approximately 5,900 cubic yards of low-level contaminated soils were excavated and shipped out-of-state to a licensed disposal facility. Post radiological sampling results, conducted by an independent verification contractor, indicate that the properties have been remediated to current cleanup guidelines.

All ten properties have been fully restored and are ready for use without radiological restrictions.



Hazelwood Avenue vicinity property during recent cleanup.

■ For more information...



If you have questions or comments about our work, please call us. You can reach us by calling our local site office in Berkeley at (314) 524-4083 or by contacting the St. Louis District office at (314) 331-8002. Leave a message with your name, phone number, and area of interest, and someone will return your call promptly. You can also visit our Internet home page; the address (or URL) for FUSRAP is:

<http://www.mrd.usace.army.mil>

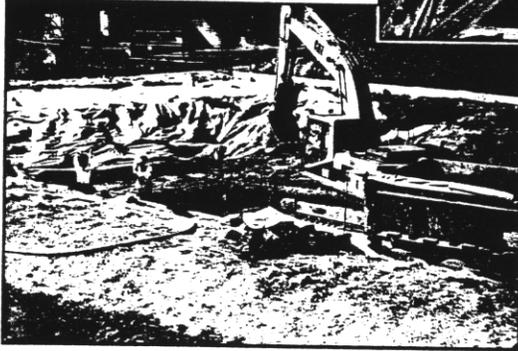
Calendar of Upcoming Activities

- | | |
|----------|--|
| March 5 | Issue SLAPS EE/CA for Public Comment |
| March 10 | Issue HISS EE/CA for Public Comment |
| March 17 | Public Meeting on SLAPS and HISS EE/CAs -- Hazelwood Civic Center - East, 7-9 pm |
| March 27 | Issue SLDS Feasibility Study (FS) and Proposed Plan (PP) |
| April 7 | Public Meeting on SLDS FS and PP -- Henry Clay Elementary School, 7-9 pm |

■ SLAPS West End Excavation Completed

The finishing touches on Phase IA cleanup activities at the St. Louis Airport Site (SLAPS) have been completed. SLAPS is a 21-acre site located north of the St. Louis airport, adjacent to McDonnell Boulevard.

The St. Louis Airport Site (SLAPS) aerial looking west (right) and the excavation work recently completed (below).



This cleanup, which began in late September under the direction of the U.S. Department of Energy, grew out of a series of discussions with area stakeholders on the acceleration of cleanup activities at the St. Louis site. Cleanup involved removing residual radioactive contaminated material from the west end of SLAPS, nearest to Coldwater Creek, and shipping this material to an out-of-state disposal facility.

According to project officials, the cleanup was no different from any other excavation. It consisted of the removal of approximately 6,000 cubic yards of low-level contaminated material and replacement with clean low-permeability clay backfill. A series of engineering controls prevented surface water run-off from entering Coldwater Creek. There was no impact to the gabion wall adjacent to the Creek and no disruption to normal traffic patterns and commercial activities along McDonnell Boulevard.

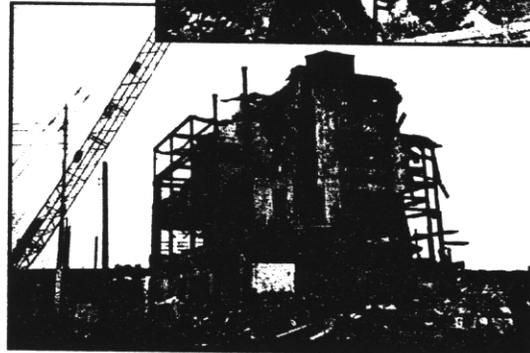
Radioactive contamination in the St. Louis area is the result of the processing of uranium and other materials associated with the early years of the nation's nuclear weapons program. The site was designated for cleanup in the late 1970s and is administered through the St. Louis District Office of the U.S. Army Corps of Engineers. 

■ Demolition Completed at the Downtown Site

In November, the St. Louis District of the Army Corps of Engineers completed the demolition of ten buildings at the St. Louis Downtown Site. These buildings are among the last of the buildings at the downtown site to be used to process uranium during the early years of the nation's nuclear weapons program. They were identified as containing residual radioactive contamination.

Work at the Downtown Site consisted of demolishing the buildings and trucking the masonry, brick, and other material to a staging area located on the east side of the site. The brick and masonry material, now clean to current guidelines, was crushed and left onsite to be used as backfill material in future excavation activities. Approximately 7,000 cubic yards of material was crushed and stockpiled at the site. The contaminated steel and other building debris was loaded onto gondola rail cars and shipped to an out-of-state licensed disposal facility.

Demolition in progress at Building 700. Contaminated structural steel and other building debris shown here was shipped offsite to an out-of-state licensed disposal facility.



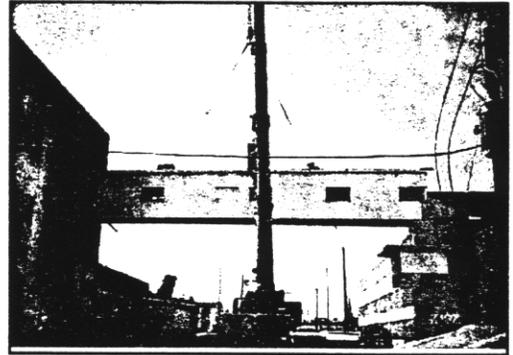
Other photos taken during this work are shown to the right on page 3.

All that remains from the structures are the slabs for each of the demolished buildings. A protective sealant was applied to each slab after demolition to prevent the movement of low-level contamination that remains on the slabs' surfaces until the slabs and soil beneath can be removed. 

St. Louis Downtown Site Photo Album



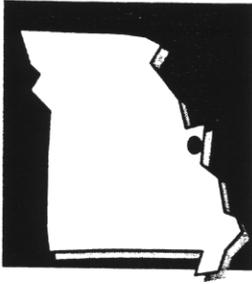
Clockwise from left: aerial view of building complex 704-707 in foreground; above: workmen remove structural steel; below: catwalk between Building 117 and 705 removed; below left: building debris being staged for removal.



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Public Information Office
9170 Latty Avenue
Berkeley, Missouri 63134**



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The St. Louis Site

U.S. Department of Energy • Formerly Utilized Sites Remedial Action Program • Summer 1997

Letter from the Site Manager

I have been here at the St. Louis Site for about two months now, and I must say that things around here have been anything but quiet. Since my arrival, I have been spending time getting to know both the issues and the people.

As an introduction, I have lived in St. Peters, Missouri, for more than ten years, and my job has been to manage the cleanup of the Weldon Spring Site, which was an old uranium ore processing plant that operated from the mid 1950s to the mid 1960s. The contaminants at that site are similar to the ones found at the St. Louis Site. There is still a lot of work to do before the project at Weldon Spring is complete, but things are going well, and the end is in sight.

In December of last year, Tom Grumbly, who at that time was Under Secretary for the Department of Energy, promised to establish a DOE site office in St. Louis for the management of the St. Louis cleanup effort. The DOE site office has now been officially established at 9170 Latty Avenue, and Ed Valdez, the Deputy Site Manager, and I are located there. It is still unclear how many DOE people will be required to fully staff the site office; this will be worked out over the next several months.

In reading this newsletter, I hope you will agree that a lot of work is under way and is contributing significantly to our cleanup mission. In meeting with the representatives from the State, local government officials, community leaders, and members of the public, it is clear that important project objectives should be to

- accelerate work at the St. Louis Site,
- improve communication and responsiveness to community concerns, and
- continue to improve the cost effectiveness of our work.

In future newsletters and through other communications, we will share with you our progress toward these objectives.

One of the things that will always be an impediment to progress is a lack of trust. I don't expect this to come easily (or quickly); however our commitment to you is to continually behave in a manner that is consistent with building trust. In closing, I would like to share with you some of the principles that will guide our behavior. As a site office (including DOE and our contractors), we will strive to

- value differences;
- engage people in problem solving, not just decision making;
- stand by our commitments;
- embrace the fact that technical solutions will not by themselves achieve understanding and acceptance; and
- never let indecision be an excuse for the lack of progress.

Your feedback and continuous involvement are important. If you feel that we have dropped the ball in any way, please call me at (314) 524-4083.

Sincerely,

Steve McCracken

DOE Site Manager, St. Louis Site Office



DOE Establishes Onsite Presence

DOE has established an onsite presence at the St. Louis site, as promised late last year by former DOE Under Secretary Tom Grumbly. Ed Valdez, of St. Charles, Missouri, was the first DOE official to be based full time at the site. He has now been joined by Steve McCracken, who will serve as Site Manager.

Valdez comes from DOE's Weldon Spring Site in St. Charles County, where he was a project engineer. He previously worked for McDonnell-Douglas in Hazelwood as a project and systems engineer. A retired Marine Corps officer and combat pilot, Valdez's many assignments included a tour of Vietnam.

McCracken also comes from the Weldon Spring Site, where he was the Project Manager. He has been with DOE since 1980, spending the past ten years at Weldon Spring.



Personnel who have recently relocated to the DOE St. Louis office include Suzanne Szojka, Wayne Johnson, and Robert Edwards.

Rounding out the team at the site are Wayne Johnson, Joe Wood, Suzanne Szojka, and Robert Edwards.

Johnson is the onsite Project Manager for the project management contractor. Before joining FUSRAP, he was a Project Manager for the Environmental Restoration Department at DOE's Savannah River Site. His primary responsibility in St. Louis will be to ensure that all work at the site is performed safely, cost effectively, and on schedule.

Wood is an Environmental Engineer, responsible for oversight of all environmental engineering activities at the site. He previously worked for EPA conducting remedial investigations and evaluating remedial alternatives for NPL Superfund sites.



Joe Wood

Szojka is a Professional Geologist with more than 8 years of experience as a hydrogeologist and technical manager in the United States, United Kingdom, and Canada.

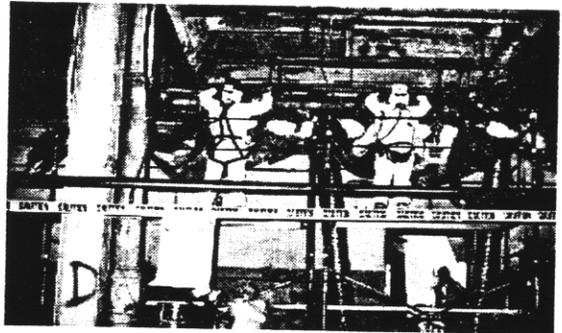
Edwards comes to St. Louis from the Arnold Engineering Air Force Base in Tennessee. He has worked with both the Department of Defense and DOE environmental management programs. Early in his career, he worked in industry as an air pollution meteorologist.

These individuals and other site personnel are available to discuss any questions you have about ongoing work and site activities. They will also be participating in community outreach and educational activities.

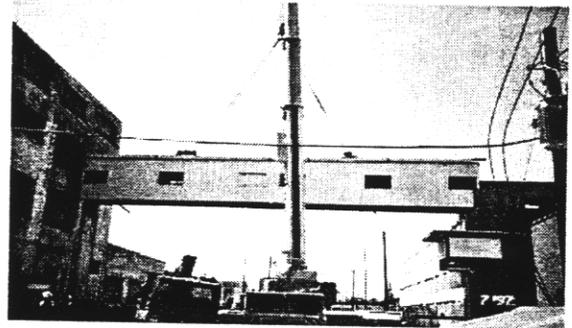
Summer Cleanup Activities

In June, DOE began the cleanup of low-level radioactive contamination along the road in front of nine commercial properties on Hazelwood and Latty avenues in North County. This cleanup is a continuation of remediation activities previously conducted along "haul routes" that became contaminated in the 1960s. Approximately 4,800 cubic yards of contaminated soil will be excavated, primarily from ditches along the sides of the road. The soil is being transported by truck to a staging area at the Norfolk-Southern Railroad siding at the intersection of Eva Avenue and McDonnell Boulevard; from there, it will be loaded onto gondola rail cars and shipped to an out-of-state licensed disposal facility. Clean soil will be brought in to fill the excavated areas.

Work going on this summer at the St. Louis Downtown Site has primarily been the removal of 365 cubic yards of asbestos from nine buildings that are to be demolished. Demolition activities have begun, and the buildings should be gone by the end of September. Approximately 1,500 cubic yards of demolition debris will be shipped offsite.



Workers prepare to remove asbestos from piping in Building 705 at the St. Louis Downtown Site.



An overhead walkway between SLDS Buildings 704 and 117 is lowered to the ground before being demolished. In addition, nine buildings at the site are being demolished.

St. Louis Site and Area Utilities Draft Response Policy

Working with area utility representatives, DOE has drafted a policy that outlines responsibilities for both St. Louis Site and utility personnel during utility work at or near the site. The policy is intended to protect the health and safety of site personnel and utility workers who may come into contact with low-level radioactivity in soils. The draft response policy is expected to be finalized by the end of September.

Under the proposed policy, site personnel will be available 24 hours a day to respond to calls from the utilities. Depending on the circumstances, site support might include the services of an onsite health physics technician, radiological surveying using field instruments, soil sampling, and providing utility workers with personal protective clothing. Upon arrival at the work site, qualified

St. Louis Site personnel will brief utility workers on radiological safety practices and make recommendations based on radiological conditions at the site.

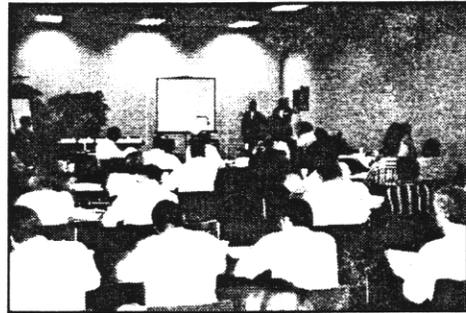
In cases where excavation is required, contaminated soils may be received by St. Louis Site personnel for controlled storage or disposal at a licensed disposal facility.

Many of these measures are being implemented as "best management practices," meaning they exceed minimum requirements established by law. The St. Louis Site vicinity properties are not considered hazardous waste sites as defined by the Occupational Safety and Health Administration (OSHA). Therefore, utility personnel working in these areas are not required to have OSHA Hazardous Waste Operations Training.

Technology Demonstration Conference

DOE hosted a pre-solicitation conference for technology vendors on July 1 at the St. Louis World Trade Center. This conference was the first step in a procurement process to identify onsite, cost-effective technologies that could be used for the remediation and treatment of soil contaminated with radium, thorium, and uranium at the St. Louis Airport Site (SLAPS).

Prospective subcontractors, representing 29 companies, attended the conference; they were given a 1-hour bus tour of SLAPS before the conference began to familiarize them with the site. Proposals to demonstrate a remediation technology that has the potential to reduce cost and risk will be due approximately September 5, 1997. Full remediation of the site will be addressed after the proposed technologies are evaluated.



Technology vendors at DOE's technology demonstration conference.



Do you have questions or topics for discussion about FUSRAP, the St. Louis Site, the environmental cleanup process, cleanup guidelines, or related issues? Send them to us, and we will reserve space to discuss them in future issues of the St. Louis FUSRAP Update. Address them to Steve McCracken at the DOE Site Office, 9170 Latty Avenue, Berkeley, MO 63134.

For more information...

If you have questions or comments about our work, please call us. You can reach us by calling our local site office in Berkeley at 524-4083, or call our toll-free information line at 1-800-253-9759. Leave a message with your name, phone number, and area of interest, and someone will return your call promptly. You can also visit our Internet home page; the address (or URL) for FUSRAP is:

<http://www.fusrap.doe.gov/>

Department of Energy
St. Louis Site Office
9170 Latty Avenue
Berkeley, Missouri 63134



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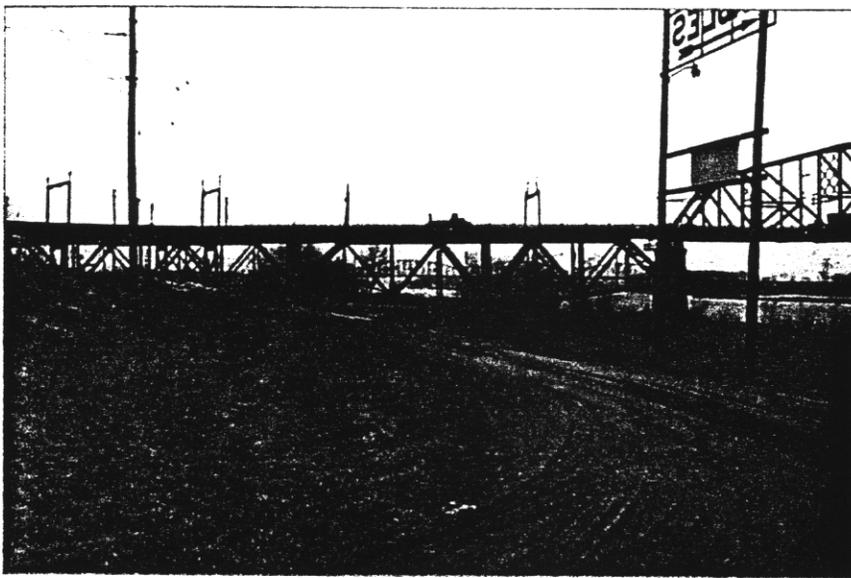
FUSRAP Update

The St. Louis Site

U.S. Department of Energy

Formerly Utilized Sites Remedial Action Program

Spring 1997



The Riverfront Trail, looking north toward McKinley Bridge.
Contaminated soils were excavated and replaced with clean fill. The area was then contoured and seeded.

Interim cleanups include North Riverfront Trail

The city of St. Louis' Riverfront Trail, part of the St. Louis Downtown Site, was the recipient of a DOE cleanup effort last fall that has allowed development of the area for recreational use. The work was recommended by the St. Louis Site Remediation Task Force as part of its

interim cleanup priorities for fiscal years 1996 and 1997.

The downtown site portion of the trail passes through areas containing radioactively contaminated soils, a legacy of the nation's early atomic energy program. The cleanup will

(continued on page 5)

From the Site Manager

As we approach the midpoint of the federal FY '97, I am happy to report on the completion of two additional cleanups, as well as other initiatives now underway at the St. Louis Site. This new work is made possible by the recently announced site budget of \$23 million for FY 97--a record funding level for the St. Louis Site.

The Riverfront Trail has exciting potential for the St. Louis community. Hikers, bicyclists, and rollerbladers are already enjoying the completed portions of the trail, which features 10-foot-wide paved lanes, turnouts for wildlife viewing, native plant restoration areas, and restroom facilities.

Over the summer, representatives of DOE, Mallinckrodt Chemical, and the St. Louis Site Remediation Task Force joined with the city and the Riverfront Trail Association to reach agreement on a cleanup plan that would allow trail construction to proceed. It was enormously satisfying to see all these groups

(continued on page 5)

1996 = great strides in N. County

The U.S. Department of Energy (DOE) made significant headway in 1996 with vicinity property cleanups in North County. After completing cleanups along the entire length of Frost Avenue in Berkeley, work crews turned the corner on Hazelwood Avenue, cleaning up several addition properties



Above: Workers excavate contaminated soil near the intersection of Frost and Hazelwood avenues. I-170 crosses in the background.

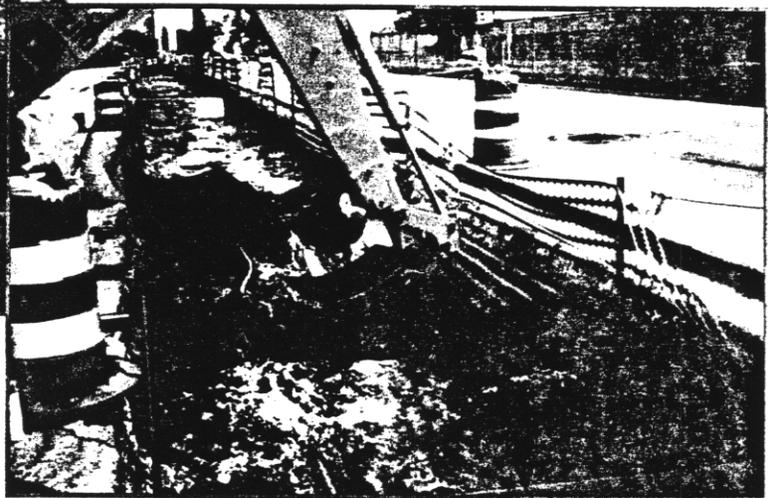
Right: Looking eastward on Frost. Across the street is McDonnell Douglas.

along the way.

The cleanup involved excavating low-level contaminated soils, mostly along drainage ditches and road frontages. The work began in early April and was completed by the fall.

Frost and Hazelwood Avenue were among the "haul routes" that became contaminated in the 1960s. Processing residues that had been stored at SLAPS were purchased and trucked by private interests to Latty Avenue for storage and additional processing. During transport, some of the radioactive material dropped from trucks.

Following release of the properties by an independent verification contractor, DOE brought



vicinity property cleanups ...

in clean fill, re-contoured and landscaped. Fences and other property improvements disturbed by the work were replaced.

The Frost and Hazelwood properties were given priority in part because of their relatively high elevation and drainage patterns, which make recontamination unlikely.

The excavated soils were staged on a Norfolk-Southern Railroad siding at Eva Avenue and McDonnell Boulevard, then loaded into gondola cars equipped with special impermeable plastic liners for the 1,450 mile trip to Utah.

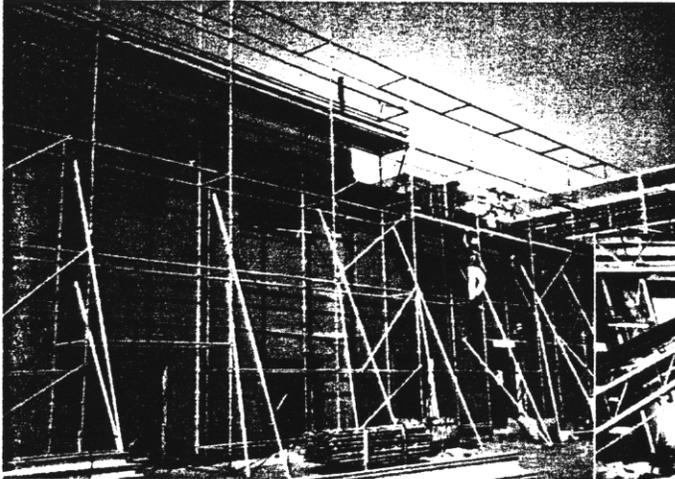
The haul route cleanup was recommended to DOE by the St. Louis Site Remediation Task Force, an advisory board established by DOE to make recommendations on the cleanup of the St. Louis Site. Total cost of the project was about \$5.5 million.

In the preceding year, DOE cleaned all contaminated residential properties along the haul routes. These, along with the Frost and Hazelwood commercial properties were cleaned to levels that are considered suitable for any future land use.

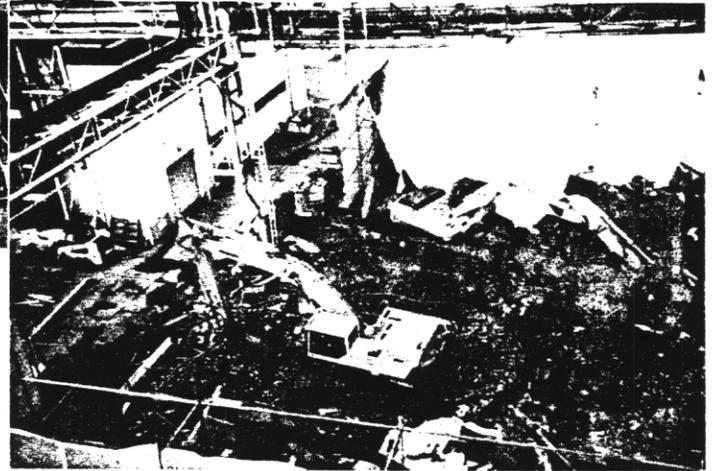


Above: Workers view a fresh cut made by an excavator. **Right** Only old-fashioned hand excavation will do near a utility conduit.

... and Downtown, too



Above -- Scaffolding system, east side of 50-Series buildings. Scaffolding was used to provide support for the enclosure system.



Below -- Demolition in progress. Machines are segregating various building components in preparation for disposal.

Cleanups paying dividends to local economy

After two years of accelerated interim cleanups at the St. Louis site, economic as well as environmental benefits are beginning to mount.

Local companies receive the lion's share of all cleanup-related hiring and purchasing, amounting to more than \$1.1 million in fiscal year 1995, and more than \$2.1 million in FY '96. (Waste transportation and disposal accounted for an additional \$8.9 million over both fiscal years.) Projected expenditures for this year are significantly higher.

St. Louis-area companies awarded cleanup-related contracts in 1996 included St. Charles Engineering and Survey, Remediation Services Incorporated, B&P Construction, Jani-King,

Zambrana Engineering, St. Louis Aerial, Schneider Electric, Collins & Herman, Garrett Trucking, and Spirtas Demolition. (As a matter of policy, FUSRAP uses small, disadvantaged businesses to the maximum extent possible.)

In addition to local contracting, purchase orders for goods and services amounted to more than \$350,000 in fiscal years 1995-1996. These local purchases range from gasoline and gravel to landscaping and traffic control.

These expenditures, along with local salaries and state and local taxes paid, represent a multimillion dollar investment impact on the St. Louis regional economy.

Grumbly responds to Task Force report

Interim cleanups

(continued from page 1)

allow the city to complete construction of the trail.

When fully completed, the Riverfront Trail will stretch from the Old Chain of Rocks Bridge in the north to the Merchant's Bridge in the south -- connecting numerous neighborhoods, commercial districts, and tourist attractions along the way.

The Task Force chose a recreational use cleanup standard for the trail area, which is somewhat less stringent than those applied to a residential area. Cleaning up to residential levels would have quadrupled the cost--putting the trail out of reach for an expedited cleanup.

Cleanup spoils from the cleanup are being shipped to a licensed, out-of-state facility for disposal.

Other recent interim cleanups at the Downtown Site included the decontamination and demolition of the 50-series of buildings. In the North County, cleanup continued along the haul route vicinity properties. (See related story and photos.)



Tom Grumbly

Tom Grumbly at a December meeting with Task Force members.

Grumbly agreed that no waste bunker was to be built in the St. Louis area, as had been proposed previously. Also in alignment with the Task Force, most of the downtown site is to be cleaned to industrial use standards, while vicinity properties and Coldwater Creek are to be cleaned to unrestricted use standards.

Grumbly noted a few areas, however, in which DOE is unable to accept the citizens group recommendations without further review, chief

The U.S. Department of Energy will heed many of the recommendations put forward by the St. Louis Site Remediation Task Force. That was the message delivered by DOE Undersecretary

among them its proposed remedy for the Airport Site. Grumbly called for a thorough review of all available data regarding groundwater issues at the site, before making a determination. Grumbly promised swift resolution of these issues.

Grumbly added that he wants to finish the St. Louis cleanup in 8 years, in time for the 100th anniversary of the World's Fair.

In addition, Grumbly:

- committed \$23 million in FY 97 for interim cleanups;
- promised a full-time, on-site DOE manager by February;
- offered to support the creation of a site-specific advisory board, should the community so desire;
- promised continued financial support for remedial studies at the non-FUSRAP West Lake Landfill.

Prior to the Task Force meeting, Grumbly met separately with state and local officials including Gov. Mel Carnahan, St. Louis County Executive Buzz Westfall, St. Louis Mayor Freeman Bosley, and EPA Region VII Administrator Dennis Gramms.

From the Site Manager

(continued from page 1)

come together in a spirit of cooperation, with a common goal and purpose.

In addition to the cleanup of radioactive residues, FUSRAP helped apply the finishing touches by redirecting a portion of the restoration funds to the Trail Association. This cooperative effort resulted in a first-class landscaping and beautification effort, that included the reintroduction of native plants.

Another downtown success story is the dismantlement and removal of the 50-Series of buildings. Later this year, we look forward to the cleanup of the 50-series' sub-slab soils.

In addition, radiological surveying and sampling of the K-series of buildings was completed in early February and decontamination is now underway.

Such cleanups, while relatively small in relation to the overall St. Louis Site, return valuable real estate to productive use -- creating jobs for local residents and tax revenues for

the city. Additionally, the cleanup work itself is providing good jobs at good wages for local contractors, craft, and labor.

So, congratulations and thanks to all who have worked diligently to make these projects a reality. And thanks especially to our stakeholder partners, whose can-do approach has moved us forward and helped set the stage for an effective, acceptable overall remedy for the St. Louis Site.


E. R. Valdez

Cyber-RAP

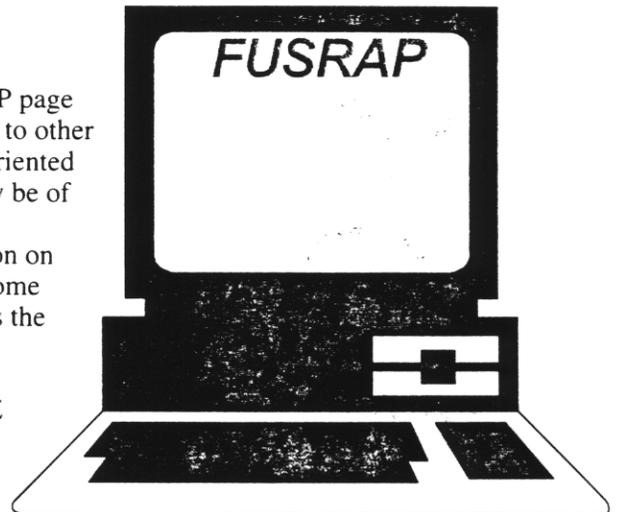
Want to learn more about FUSRAP and the St. Louis Site? Check out the FUSRAP home page on the Internet's World Wide Web. The address, or URL, is:

<http://www.fusrap.doe.gov/>

The FUSRAP home page provides an overview of the program and plenty of site-specific information that can be accessed with a click of a mouse on our USA locator map. Users can provide feedback or otherwise correspond with project officials by way of an automated E-mail fea-

ture. The FUSRAP page also includes links to other environmentally oriented Web sites that may be of interest.

For information on how to use your home computer to access the Internet and the FUSRAP home page, call the DOE Public Information Center at (314) 524-4083.



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FUSRAP Update

The St. Louis Site

U.S. Department of Energy

Formerly Utilized Sites Remedial Action Program

Spring 1996

'96 cleanups underway

Drawing from the recommendations of the St. Louis Site Remediation Task Force, DOE is planning several interim cleanup activities for fiscal year '96. These interim cleanups are part of DOE's commitment to implement focused interim cleanup measures, while continuing to work with stakeholders toward development of an overall, long-term remedy for the site.

North County

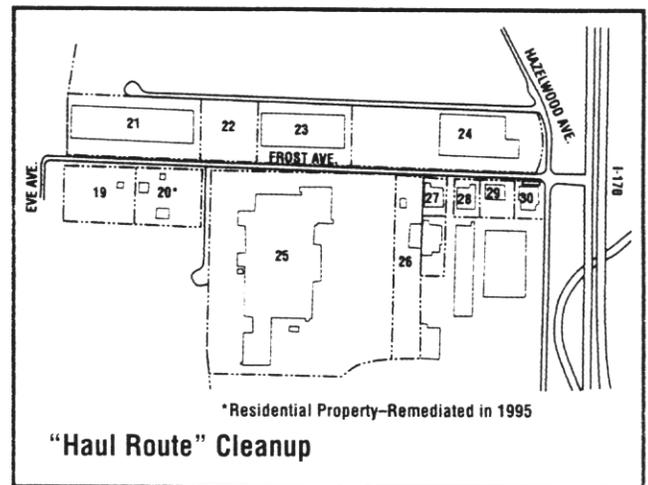
Haul Routes – Spring cleaning plans include commercial vicinity properties along Frost Avenue. There are seven commercial properties on Frost, with varying amounts of contamination, mostly along road frontages.

The Frost properties were chosen in part because of their relatively high elevation and drainage patterns, which will preclude recontamination from other areas. The cleanup will allow DOE to release an entire block of properties for use without radiological restriction.

Excavated soils from these properties will be staged at the Norfolk-Southern Railroad siding near the intersection of Eva Avenue and McDonnell Boulevard. From there, the soils will be loaded onto gondola cars for shipping to a licensed, out-of-state disposal facility.

Berkeley Ballfields – As part of its interim cleanup deliberations, the Task Force sought a way to return the Berkeley Ballfields (also known as Khoury League Park) to recreational use. Task Force members have asked DOE to look into removing the most radioactive soils from "hot spots" and covering the site with enough clean fill to make it safe for future use. Before DOE begins any work, it will seek public review and comment on any proposed plans.

Continues on page 2 . . .



St. Louis Site Task Force recommends cleanup priorities

Restoring the Berkeley Ballfields for public use is one of the priorities recommended to the U.S. Department of Energy (DOE) by the St. Louis Site Remediation Task Force

At its September 12, 1995 meeting, the Task Force agreed to recommend a series of cleanup activities for the DOE to undertake for its fiscal years 1996 and 1997. Fiscal year 1996 began October 1, 1995. DOE has agreed to pursue the Task Force recommendations.

These near-term priorities were developed by the Task Force as it continues to refine a recommendation for an overall cleanup program at the St. Louis Site.

The DOE anticipates spending a total of \$30 million

Continues on page 4 . . .

From the Site Manager

After months of hard work, the St. Louis Site Remediation Task Force appears to be entering the home stretch. The group is shifting from an information gathering phase, such as the just completed Coldwater Creek investigation, to its alternative development phase. The Task Force's report is expected in September 1996.

It has been a long, often arduous process. And yet by any number of measures, it can already be considered a success. For the first time, the many diverse interests and viewpoints represented by the St. Louis Site have come together, dedicating their time and energies to addressing these important issues. The issues have been discussed in a spirit of openness and cooperation. Environmentalists, property owners, and regulators have found common ground and shared values. More tangibly, interim cleanup priorities have been established, and a range of long-term options has been identified and examined.

Public awareness has been enhanced as Task Force members have taken the groups' deliberations back to you and others who make up their various constituencies. This report-back function is even more critical now that we've entered the alternative development phase. I hope you will feel free to talk with members of the task force about your views and concerns. (Information about how to contact Task Force members is available from the DOE Public Information Center.) And of course, the Task Force meetings continue to be open to any interested member of the public, with time set aside for public comment.

The result of all these activities will be better, smarter decision making, and the best remedy possible for the St. Louis Site.

This has been a new and, at times, apprehensive experience for myself and others at DOE. Never before have we so empowered stakeholders at a FUSRAP site. Never before have stakeholders become so directly involved in the decision-making process. In my role as an ex-officio member of the Task Force, I have taken off my site manager's hat and served primarily as a resource. From that vantage point, I've witnessed an incredible amount of hard work and dedication on the part of Task Force members, and I've been greatly impressed by the level of sophistication they've developed regarding the many complex technological, logistical, and programmatic questions involved.

As I mentioned, the Task Force has already issued recommendations involving use of FY 1996 and 1997 funds for interim cleanups. This report has enabled DOE to plan for a significant amount of work this year. (See related stories in this **Update**.) Many key issues remain to be addressed as part of the final recommendation: How much of the site's contaminated material should be excavated? Where should the material be taken? To what extent should DOE pursue emerging technologies that may reduce the tremendous volumes of contaminated soil? And to what extent should future use of a site determine the level of cleanup to be performed?

Precisely how these findings may impact the Task Force's final recommendation remains to be seen. Whatever the outcome, one thing is certain: The Task Force experience has been a winning proposition for all concerned.



David Adler

FUSRAP Update is issued periodically to inform St. Louis residents about current activities at the radioactivity contaminated sites in the St. Louis area.

For more information about the FUSRAP site in St. Louis, call the DOE Public Information Center at (314) 524-4083. Or you may call DOE toll free at (800) 253-9759.

Documents and other relevant information about the St. Louis Site are located in two information repositories. One is at the St. Louis Public Library, 1301 Olive Street in St. Louis; the other is at the DOE Public Information Center, 9170 Latty Avenue in Berkeley.

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St. Louis.

Cleanup Continued from page 1

A related aspect of this initiative would be the cleanup and improvement of adjacent roadside drainage ditches.

Downtown Site

Mallinckrodt and FUSRAP officials have met on several occasions to decide how best to apply the downtown site's share of FY '96 funding. They have settled on what is known as the 50-Series of buildings, situated between Mallinckrodt and Destrehan streets. Plans call for the buildings to be demolished.

The work is expected to be modeled on last year's successful Plant 10 cleanup in which Mallinckrodt and FUSRAP worked together to remediate an entire city block.

FUSRAP completes Plant 10 cleanup

FUSRAP recently cleaned up an entire city block of the St. Louis Downtown Site. Known as Plant 10, the area is part of an industrial complex owned by the Mallinckrodt Chemical Company, which plans to redevelop the property.



During . . .

Looking north from Anglerodt Street. Broadway is to the left and the Mississippi River to the right.

. . . and After

Recommendations Continued from 1

during this fiscal year and the next. DOE officials asked the Task Force to recommend how the money be allocated.

The recommendations reflect the Task Force's concern that funding be equitably distributed among the various properties in the St. Louis area. Task Force members also told DOE that they thought it important to focus on projects that will be consistent with whatever long-term cleanup recommendations are developed.

Additionally, as part of its recommendations, the Task Force asked DOE to ensure that all recommended cleanup actions will protect human health and the environment.

Specific recommended activities to be undertaken in fiscal years 1996 and 1997 include:

- Evaluate use of local disposal facilities for minimally contaminated soils.

Scope: Attempt to obtain approvals from appropriate regulatory agencies, particularly the State of Missouri. Coordination with the U.S. Nuclear Regulatory Commission and the Environmental Protection Agency would also be required.

Cost: \$200,000 per year (total \$400,000).

- Identify and evaluate suitable location(s) for a new in-state disposal or interim storage facility.

Scope: Work with the State of Missouri to identify a location(s) for construction of a permanent disposal or interim storage facility. Identify and use state criteria to identify land areas for evaluation as potential sites.

- Critically evaluate existing geological surveys and other siting studies

for hazardous waste facilities. Perform supplementary evaluations as needed incorporating values, criteria, and objectives stated in the alternative sites working group report of April 18, 1995.

Cost: \$200,000 per year (total \$400,000)

- Remove contaminated soils from haul route properties located in North County.

Scope: Continue cleanup efforts along Frost and Hazelwood avenues (public and private properties) by excavating soils alongside the roadways, then restoring roadsides using clean soil. Material located underneath roadways would not be removed. Generated soils could either be stored on a local property under engineered and monitored conditions, or shipped to a licensed disposal facility.

Cost: \$4 million per year (\$8 million total) with the disposal option to be recommended by the Task Force.

- Restore and stabilize the St. Louis Airport Site (SLAPS).

Scope: Projects include:

– Initiate actions to address the conclusions and recommendations of the Coldwater Creek Panel.

– Based on findings of that panel, address current erosion by mitigating the concentrated contamination in roadside ditches along McDonnell Boulevard.

– Create clean corridor(s) for relocation of multiple utility lines currently located on the south side of McDonnell Boulevard.

– Excavate and remove ballfield hotspots; cover remainder of contami-

nated ballfields with two feet of clean soil. Release ballfields for use.

– Ship soils generated by selected hotspot excavations to a licensed disposal facility.

Cost: \$3.5 million to \$4 million per year (total \$7 million to \$8 million).

- Continue cleanup efforts at the St. Louis Downtown Site (SLDS).

Scope: Plans are to clean up buildings known as the "50 Series" on a phased basis over two years, with work scheduled to begin in July 1996. Actual site restoration measures/techniques would be similar to those applied this year for the City Block 1201 cleanup at the SLDS. Resultant soil/rubble with above guideline contamination could either be managed on site or shipped to a licensed disposal facility.

Cost: \$4 million to \$4.5 million per year (total \$8 million to \$9 million).

- Continue soil treatability investigations for the St. Louis Site.

Scope: Options range from continuation of laboratory-based evaluation/refinement of treatment techniques to deployment of on-site pilot plants to conduct applied tests of field-scale treatment technologies. Use local resources where possible.

Cost: \$100,000 to \$250,000 per year depending on scope of effort.

The Task Force may modify its recommendations for the ballfields and St. Louis Airport Site (SLAPS) to reflect the conclusions of the Coldwater Creek Panel. (See related story.) The Task Force expects to receive the panel's final written report soon.

Panel assesses site impacts to Coldwater Creek and groundwater

An independent panel of expert geologists and hydrogeologists has delivered its findings about whether the radioactive wastes buried at the St. Louis Airport Site pose a significant threat to Coldwater Creek and deep ground water aquifer. The Task Force is considering the panel's report in developing recommendations for short- and long-term cleanup plans for the St. Louis Site.

The six-member panel was formed in September at the request of the St. Louis Site Remediation Task Force. Panel chairman David W. Miller presented the panel's findings at the January Task Force meeting and a draft report was released in February.

Key issues examined by the panel include the effects of contaminated groundwater at the St. Louis Airport Site (SLAPS) on Coldwater Creek, the effects of surface water runoff from SLAPS on the creek, and the effect of SLAPS on the deep groundwater aquifers.

Panel findings

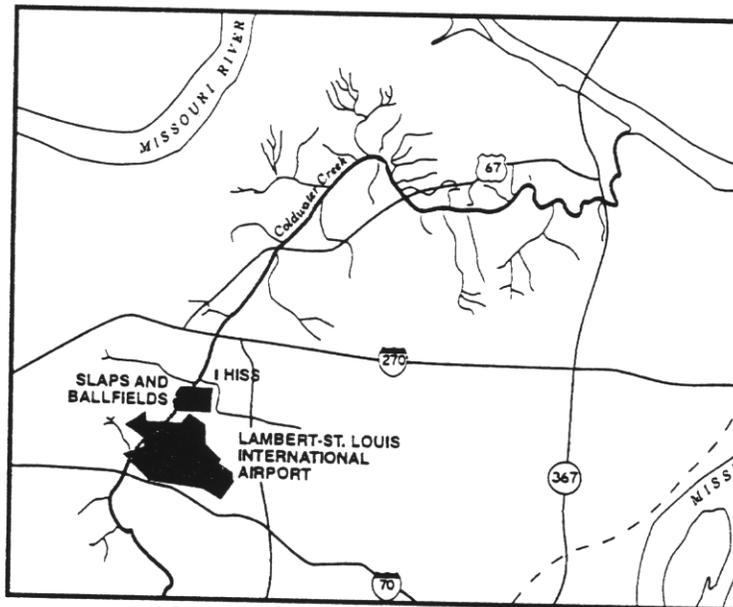
Specifically the panel found:

- Although surface water, sediments, and shallow groundwater quality have been affected in the past by stormwater runoff from SLAPS, "Results of the groundwater modeling also indicate that the levels of contamination that might eventually reach the creek should not impact surface water sediments so that DOE guidelines would be exceeded for at least 100 years.
- Stream bank erosion adjacent to SLAPS and sheet and gully continue to result in contribution of radionuclides

into surface waters of Coldwater Creek.

However, the panel also found that erosion appears to have been more significant in the past, prior to construction of a Gabion Wall to control bank erosion and the restoration of vegetative cover over parts of the site.

- The panel determined that the presence of radionuclides in the soil and upper aquifer system "will not have a significant impact on the lower aquifer system within the foreseeable future (100 years). "This conclusion is supported by investigations to date. However, the panel concluded that the deep groundwater system has not yet been sufficiently characterized."



- The panel acknowledged that although wastes are already present at the site, underlying hydrogeological features do not meet criteria for siting a radioactive waste storage or disposal facility.

The panel suggested several actions to address current site conditions.

- The panel expressed concern about "the proximity of radioactive contamination to the creek and the presence of contaminat-

ed material in the floodplain," noting that the "stormwater runoff ditches and pipe provide a rapid pathway for potential contaminated migration into the creek . . . therefore, at a minimum a site drainage control and prevention program should be designed and implemented.

- The panel called for the evaluation of additional facilities to maximize erosion protection during periods of flooding along the creek.
- The shallow soil contamination along McDonnell Boulevard and the railroad right-of-way by SLAPS should be considered for removal as part of the ongoing remediation activities.

The panel also concluded that more data is needed "to develop a more complete hydrogeological assessment of the deep groundwater system and a more comprehensive analysis of contaminant sources." The data would be gathered by way of wells and stream gauges.

In addition to Miller, other members of the panel include Thomas Aley, director of the Ozark Underground Laboratory; James Cox, Walsh Environmental, Inc.; and John D. Rockaway, professor and chair,

Department of Geological and Petroleum Engineering at the University of Missouri-Rolla.

Serving in a technical advisory role only were Angel Martin, staff hydrologist for the U.S. Geological Survey, and Mimi Garstang, deputy director of the Division of Geology and Land Survey at the Missouri Department of Natural Resources.

Making sense of risk

This is the first of a regular series featuring various technical issues pertaining to the St. Louis Site. This article provides an introduction to risk assessment and how it is used in restoration activities.

What is Risk?

Risk is the chance that some harmful event will occur. In the case of environmental cleanups, we think of risk as the potential for negative health impacts as a result of exposure to contamination.

Health impacts are generally classified as carcinogenic or toxic. Carcinogenic risks are quantified as the risk of contracting cancer over a lifetime and usually are stated in scientific notation. (See discussion below about scientific notation.) Toxic health impacts are non-cancerous illnesses and are quantified using a health index. A health index of 1 or above is considered hazardous. Calculations of risk are used to identify threats and calculate cleanup levels.

Because of the probability, risk is expressed as a fraction, without units. It takes values from 0 to 1.0. Zero is the absolute certainty that there is no risk (which can never be shown). One is the absolute certainty that a risk will occur. Values between 0 and 1 represent the chance that a risk will occur.

For example, we say that a lifetime cancer risk from carcinogen A at an average daily dose of B is 1 in 100,000 (0.00001 or 10^{-5}). If this number is accurate, it means that one in every 100,000 people exposed to carcinogen A at a lifetime average daily dose of B will develop cancer over a lifetime. The probability also describes the extra risk incurred by each individual in that exposed population.

People are more familiar with

expressions of risk associated with various activities than they are with risks associated with chemical exposures. We speak, for example, of the annual risk of dying as a result of certain activities.

The annual chance of dying in automobile accidents for people who drive the average number of miles is about 1 in 4,000, according to federal statistics. The lifetime risk of developing cancer in the United States is about 1 in 5.

These types of expressions of risk are more familiar, but they mean roughly the same thing as those risks of toxicity from chemical exposure. However, information on death rates from automobile accidents, for example, is more reliable than statistics pertaining to most chemical risks.

Most of the risk associated with environmental chemical exposure are not so well known. So although chemical risk information often is expressed in the same form as directly-measured risks such as automobile fatalities, chemical risk information is calculated using different methods. Chemical risk information almost always includes estimates where measured risk data are not available.

What is Risk Assessment?

Risk assessment is the science of defining the health effects of exposure to hazardous materials and situations. At the St. Louis Site, risk assessment information helps determine what actions should be taken to clean up the site. Risk assessments are one type of information considered in risk management.

Although risk assessment is a science, it is not a perfect one. Most scientists agree that there is a great deal of uncertainty associated with risk assessment; however, to compensate for this uncertainty, the risk assess-

ment process is deliberately conservative. That is, it errs on the side of safety when calculating potential risks to people.

Risk is a function of how much of a contaminant is present (dose), how dangerous a chemical is to humans (toxicity), how the chemical enters the body (method of exposure) and how often a person is exposed to the chemical (level of exposure).

A risk assessment should be able to answer the questions: "What is the problem, and how bad is it?"

Therefore the calculation may be expressed as:

$$\text{Risk} = \text{Dose} \times \text{Toxicity} \times \text{Method of Exposure} \times \text{Level of Exposure}$$

• **Dose.** The dose of a contaminant is represented as the concentration of the compound of concern at the point of human contact. These concentrations may be present in soil, sediments, surface water, ground water, or air. If human contact occurs in more than one of these media, the dose in each case must be taken into account to identify the cumulative risk from the contaminant.

• **Toxicity.** The U.S. Environmental Protection Agency and other government agencies have calculated the toxicity of many hazardous compounds. Much of this information is gained from statistical evidence from laboratory tests on animals. Not all compounds have well understood toxicity values. Special consideration is given to populations such as pregnant women and children that may be especially susceptible to a contaminant's toxic effects.

• **Method of Exposure.** Exposure to contamination may occur from many routes, including direct ingestion from air inhalation, water consumption,

accidental consumption of soil or wind blown particulates, or eating contaminated foods. Exposure also can occur through direct contact between contaminants and skin.

• **Level of Exposure.** The level of exposure is defined by the activities taking place at the point of exposure. Factors calculated into level of exposure estimates include the amount of time (e.g, hours per day of direct exposure) or volume (e.g, liters of water consumed per day or number of breaths per day).

What is Risk Management?

Risk management is the process of weighing policy alternatives and selecting the most appropriate regulatory action. Risk management is not a science; rather it combines information about risk with economic, political, legal, ethical, and value judgments to reach decisions.

The term "risk management" describes a type of decision making. First, a decision must be made as to whether an assessed risk needs to be reduced to protect public health and the environment. Second, a decision must be made about the means to reduce that risk, should action be deemed necessary.

For environmental cleanups at Superfund sites, risk management decisions are primarily driven by legal requirements. The U.S. Environmental Protection Agency is responsible for developing risk assessment guidelines for Superfund. Current Superfund regulations consider the range of 1 in 10,000 to 1 in 1,000,000 excess lifetime risk of cancer to be acceptable. An excess lifetime risk of cancer is the probability above the 1 in 5 risk of developing cancer in the United States.

Interpreting Risk Numbers

Risk is expressed in *scientific notation*, which is the use of numbers raised to a power, such as 10^4 or 10^{-6} . Writing numbers in scientific notation is much more concise on a page, but that economy of space often sacrifices comprehension for the non-technical audience.

If the number has an exponent, it is multiplied by itself the number of times indicated. (The exponent is the small number to the upper right.) For example, 10^2 (2 is the exponent) is 100, or 10×10 .

Negative exponents are different; a negative exponent indicates a fraction. So 10^{-4} is the same as $1/(10 \times 10 \times 10 \times 10)$ or 1 divided by $(10 \times 10 \times 10 \times 10)$. This is $1/(10,000)$, which equals 0.0001. Another way to think about 10^{-4} is to think that it is 10,000 times

smaller than 1. Other examples of scientific notation are:

$$1.5 \times 10^1 = 15$$

$$7.3 \times 10^{-4} = 0.00073$$

$$4.18 \times 10^2 = 418$$

References and Further Reading

- *Calculated Risks: the Toxicity and Human Health Risks of Chemicals in Our Environment*, Joseph V. Rodricks
- *Risk Assessment in the Federal Government: Managing the Process*, National Research Council
- *Risk Analysis: A Guide to Principles and Methods for Analyzing Health and Environmental Risks*, John J. Cochrane and Vincent T. Covello
- *Risk Assessment Guidance in Superfund*, U.S. Environmental Protection Agency
- *Environmental Risks and Hazards*, Susan L. Cutter, ed.

Task Force elects new chair

The St. Louis Site Remediation Task Force unanimously elected Sally P. Price chair at its October meeting.

Former chair Alpha Fowler Bryan resigned from the Task Force because of professional commitments.

Price, a registered nurse, also serves as a member of the FUSRAP committee of the Environmental Management Advisory Board (EMAB), which is a national advisory board to DOE's assistant secretary for environmental management. She also is a member of the St. Louis County Radioactive & Hazardous Waste Oversight Commission.

Anna Ginsburg, director of the St. Louis City Neighborhood Stabilization Office, remains vice chair of the Task Force.

The Task Force was formed in August 1994 to develop a public consensus about cleanup and future courses of action at the St. Louis Site. DOE has agreed to carefully consider the Task Force's recommendations in making its decisions about the site. For more information about the St. Louis Site, the Task Force and its public meetings, call the DOE Public Information Center at (314) 524-4083.

The Task Force meets at 7:30 a.m. the third Tuesday of each month at the Hazelwood Civic Center East, 8689 Dunn Road, Hazelwood.

FUSRAP goes on-line with new Web page

FUSRAP has joined the world of on-line information and communication via the Internet. The program has established a site, or "home page" on the global network's World Wide Web. The site is:

<http://www.fusrap.doe.gov>

Visitors to the Web site are greeted by a U.S. map showing the location of FUSRAP's 46 cleanup sites in 14 states. Users can simply click on a given state for a brief description and the state's sites and their cleanup status. In addition, a menu directs users

to fact sheets on a variety of FUSRAP topics, such as detailed site backgrounders, laws and regulations governing the project, program success stories, news releases, and public participation opportunities.

Future upgrades will include site newsletters, video clips, and an administrative record index with downloadable project documents.

The FUSRAP home page includes links to several Web sites of related interest, such as DOE's Environmental Management home page. In addition, users can provide feedback on the FUSRAP home page or otherwise cor-

respond with project officials by way of an automated E-mail feature.

For information on how to use your home computer to access the Internet and the FUSRAP home page, call the DOE Information Center at 524-4083.

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FUSRAP Update **The St. Louis Site**

U.S. Department of Energy • Formerly Utilized Sites Remedial Action Program • Fall 1995

Task Force enters critical phase

The St. Louis Site Remediation Task Force is steadily moving toward its goal of proposing a cleanup strategy to the U.S. Department of Energy.

Since beginning monthly meetings in October 1994, the task force has selected a facilitator, ranked criteria for evaluating site remedies, and organized several working groups. The working groups consist of 5 to 10 members who take a more in-depth look at specific issues. The groups meet more frequently, in some cases weekly, and are reporting recommendations back to the full task force.

Facilitator Jim Dwyer credits the "extraordinary dedication of those in the working groups" for the task force's momentum.

The alternative sites working group met weekly the first three months of this year. More recently, the priorities working group has met weekly to assess and rank interim cleanup options for the next two years. Other working groups have formed to assess site cleanup standards and to develop communications plans.

The task force meets at 7:30 a.m. the second Tuesday of each month, at the Hazelwood Civic Center East. All meetings are open to the public. The group plans to deliver a final report to DOE in the spring.



Members of the St. Louis Site Remediation Task Force discuss cleanup priorities at their September meeting.

FROM THE SITE MANAGER

During the next few months, we have what I believe is one of our best opportunities ever for reaching consensus on a remedy for the St. Louis Site.

Since last August, members of the Remediation Task Force have been working diligently toward that goal. Week after week, month after month, they've immersed themselves in FUSRAP— studying documents, reviewing proposals, and debating the issues. They've grappled with such weighty topics as disposal site alternatives, cleanup standards and health risks, and near-term cleanup priorities.

The challenge Task Force members have undertaken is not for the fainthearted — the issues are complex, the hours have been long, and at times the tensions high. It's no simple matter, finding a remedy that everyone can live with and that Congress will pay for. (Now more than ever, we must deal with stark fiscal realities. Whether on Capitol Hill or at the White House, budget cutting is the name of the game, and as you'll read elsewhere in this newsletter, FUSRAP has not been spared.)

Despite these hardships, the Task Force has persevered. The dedication of these people is commendable. I hope you'll join me in wishing them the best and expressing heartfelt appreciation for their efforts.



David Adler, Site Manager

Survey gauges attitudes toward St. Louis Site issues

Ever wonder what others in your neighborhood and beyond are thinking about the St. Louis FUSRAP site? The Energy, Environment Resources Center at the University of Tennessee recently conducted an awareness and opinion survey of St. Louis Site stakeholders. More than 1,000 surveys were mailed to a randomly selected sample of individuals living in proximity to either the North County sites or the downtown site. Of those, some 200 were returned.

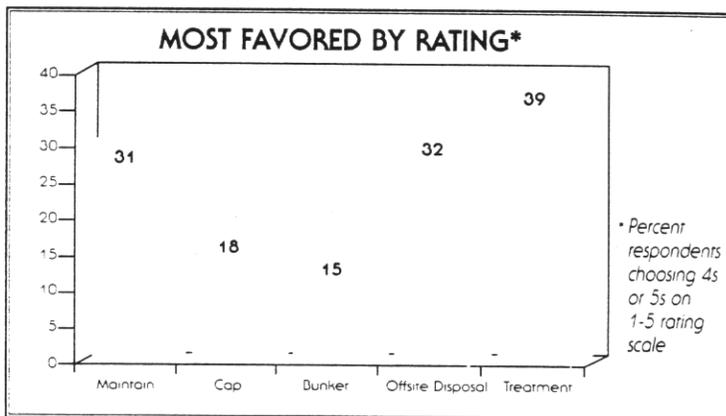
Views were sought on a variety of site-related issues such as perceived risks, preferred site remedies and public involvement. Treatment of soils to remove contaminants and reduce disposal volumes was the most preferred course of action. Next was excavation with off-site disposal; 32 percent gave it a favorable rating of 4 or 5 (on a scale of 1-5). However, 35 percent gave it an unfavorable rating (1 or 2), largely out of concern for costs.

Controlling and monitoring, but leaving the material in place ranked in the middle range of preferences. Equal percentages (32 percent) gave it low and high marks. Scenarios involving consolidation of contaminated materials and disposal on site received the lowest level of support.

In addition, nine site-related concerns — which are commonly voiced — were provided to respondents for ranking. The top three were water contamination (66 percent), overall health risks (59 percent), and the need for public involvement (57 percent).

Project director David Feldman said he was pleased with the level of response and noted the quality of additional written comments provided by respondents.

A summary report has been published and copies are available by calling 1-800-253-9759.



FUSRAP News

FUSRAP budget trimmed; DOE seeks cost-effective cleanups

As part of the national effort by the Administration and Congress to reduce the deficit and streamline government, the Department of Energy recently announced a strategic realignment and downsizing initiative. Congress also is in the midst of the appropriations process for the FY '96 budget year, which begins October 1, 1995.

Attendees of the National Summit in May will recall that DOE officials projected an increasing budget for FUSRAP. At that time our budget planning figures were: FY '95, \$74.1 million; FY '96, \$85.2 million; FY '97, \$129.1 million. As a result of the actions described above, these budget projections are being reduced. The FY '95 reduction is 3.2 percent. For FY '96, based on the recent House actions, our budget would drop by 10.4 percent; final congressional action is expected by the end of September.

For FY '97, the Administration is still formulating its budget proposal that will go to the Congress in January 1996, but at this stage, the DOE request to the Office of Management and Budget will reflect a reduction of 32 percent from the earlier projections.

Despite these reductions, FUSRAP officials expect to have sufficient funds to maintain a vigorous cleanup program, focusing on final actions at a number of small sites and interim actions at the larger sites, such as St. Louis.

"The fiscal realities facing the DOE put an even greater emphasis on our shared tasks of finding protective, cost-effective cleanup approaches at major sites that are acceptable to the affected communities," observed DOE Site Manager David Adler. "Public involvement is an essential ingredient in this process."

St. Louis County resident joins EMAB's FUSRAP committee

The FUSRAP Committee of DOE's Environmental Management Advisory Board (EMAB) met for the first time in St. Louis earlier this summer. The EMAB was established to serve as a board of advisors to assist DOE Assistant Secretary Thomas Grumbly on various program issues.

The FUSRAP committee of EMAB was formed to allow Mr. Grumbly to give the program appropriate attention as it pursues its nationwide mission. A major goal of the committee, as defined at the National Stakeholders Summit, is to propose a set of general principles for guiding the implementation of DOE's FUSRAP efforts. The principles will promote consistent and cost-effective remedies across FUSRAP projects.

St. Louis' own Sally Price has been named to the FUSRAP Committee. Price also serves on the St. Louis Site Remediation Task Force.

For more information, please contact Jeff Weaver, U.S. Department of Energy EM-5, 1000 Independence Ave., S.W., Washington, D.C. 20585, (202) 586-4400.

Missouri delegation attends national FUSRAP summit

More than 60 FUSRAP site stakeholders from around the country convened in Washington May 2-3 for the first FUSRAP National Stakeholders Summit. The independently facilitated event consisted of breakout groups and plenary sessions with DOE Environmental Management officials.

Summit participants identified and prioritized values and issues and developed action plans. The five major issues were funding, cleanup criteria, risk, remedy selection and community acceptance.

Representing the St. Louis Site were: Rita Bleser, City of St. Louis; Kay Drey, Remediation Task Force (RTF); Jim Dwyer, RTF facilitator; Mayor David Farquharson, Hazelwood and RTF; June Fowler, St. Louis County; Mayor Jean Montgomery, Berkeley and RTF; Sally Price, RTF; Elsa Steward, MDNR and RTF; Conn Roden, County Department of Health and RTF; and Alan Wehmeier, EPA.

soil treatment Initial lab tests show promise

In a recent test, researchers were able to remove 99.5 percent of the radioactive materials from a sample of contaminated St. Louis Site soil. The test was one of several being conducted for DOE by the Clemson Technical Center Laboratory in South Carolina to help determine the treatability of soils at the St. Louis site.

The 99.5 percent separation was achieved using chelants (pronounced key'-lants). Chelants are chemical agents that can surround and "grab" radioactive particles and metals so that they can be selectively removed from the rest of the soil. (One chelant, EDTA, is sometimes used by doctors to treat patients who have high levels of lead or other heavy metals in their bloodstream.)

The stakes for treatment are high. The St. Louis Site contains an estimated 800 million cubic yards of contaminated soil, enough to fill Busch Stadium. "The challenge," says DOE site

manager Dave Adler, "is to turn one very large pile of contaminated soil into two piles — a smaller one containing most of the radio-activity and a larger one consisting of clean dirt." Adler stressed that although encouraging, the Clemson tests are preliminary and require further verification.

Another technique studied by the Clemson researchers has shown less promise. Soil separation, in which soil particles are physically separated and sorted by size, appears to leave significant amounts of contamination in all the size fractions.

Whether treatment will actually save money is a question future tests will help determine. If the removal efficiency of chelants is confirmed and the chemical agents can be recycled effectively, the costs of the various disposal alternatives may be significantly reduced.

Task Force delegation visits Clemson Lab

In May a delegation from the Remediation Task Force traveled to South Carolina for a firsthand look at how treatability tests for St. Louis soils are being conducted. The Clemson Technical Center Laboratory welcomed RTF representatives Kay Drey, Jim Grant, Tom Binz, Dan Wall (EPA), Bob Geller (MDNR), and facilitator Jim Dwyer.

The Clemson Technical Center Laboratory welcomed RTF representatives Kay Drey (Coalition for the Environment), Jim Grant (Mallinckrodt Chemical), Tom Binz (Laclede Gas), Dan Wall (EPA-Region VII), Bob Geller (Missouri Department of Natural Resources), and facilitator Jim Dwyer.

The tour included several hands-on demonstrations, a review of Clemson's state-of-the-art technology, and an up-to-the-minute briefing on the status of St. Louis soil tests.

Accompanying the group was Dave Adler of the Department of Energy, which sponsored the trip.



Task Force members watch as Kay Drey checks her "pocket dosimeter," which monitors gamma radiation exposure, during a tour of the Clemson Lab. As a precautionary measure, dosimeters are issued to all visitors and workers upon entering the facility.

Residential cleanup complete

Residential property owners along Hazelwood Avenue in Hazelwood and Frost Avenue in Berkeley are resting a little easier now that roadsides fronting their yards are free of radioactive contamination. Although the material posed minimal health risk to the owners or their families, it had created other hardships and prevented them from enjoying the full use of their property.

The cleanup, which began October 18, was complete by the end of December. Ninety containers of contaminated soil were shipped by rail to a licensed disposal facility.

The project generated 1,300 cubic yards of wastes, a smaller volume than originally estimated.

David Adler, DOE site manager, said, "The cleanup went well, and we're as pleased as the owners are to have those properties declared clean and safe for unrestricted future use."

Soil removed from two vicinity commercial properties

DOE cleaned up two commercial vicinity properties in North County.

One property on Latty Avenue was cleaned in two phases. Earlier this spring DOE removed a small amount of mixed wastes after improvements made by the tenant last year produced several piles of oil contaminated dirt, including one with radiation mixed in. The "mixed" pile, located in the rear of the commercial property, was removed by DOE and disposed of in a licensed disposal facility.

In September, DOE excavated additional radioactively contaminated soil from the front of this property along Latty Avenue. That remedial work is complete.

Another commercial vicinity property also was cleaned up in September. Approximately 1,450 cubic yards of soils were loaded onto 20 gondola cars and shipped for disposal.



Property owner Dale Lakenburger admires the new landscaping along Hazelwood Ave.

Downtown site cleanup underway

Cleanup work has begun on a portion of the St. Louis Downtown Site known as Plant 10. FUSRAP and Mallinckrodt Chemical, Inc. engineers have worked closely together since early this year to plan the work.

Plant 10 was known as Plant 4 back in the 1940s and early 1950s when several of the buildings were used in the production of uranium metal for the federal government. Although the buildings involved in the uranium work were decommissioned and demolished, some contamination remained.

DOE, Mallinckrodt, and the Remediation Task Force members began discussing a downtown component of an interim cleanup earlier this year. Mallinckrodt identified Plant 10 as a good cleanup target because of its potential value to future plant expansion and to the St. Louis city tax base. DOE's review of the Mallinckrodt proposal confirmed that the scope of the project was within the range of funding available in FY '95.

In order to make the contaminated soil accessible, Mallinckrodt had to first dismantle the existing buildings in Plant 10, none of which were used in uranium processing for DOE predecessor agencies.

Prior to the cleanup, FUSRAP technicians conducted sampling efforts at Plant 10 to more clearly define the areas of contamination. Sampling results showed the maximum depth of the contaminated soil to be some 6 to 8 feet. The waste generated during remediation will be shipped to a licensed disposal facility.



Workers core drill for soil samples at the downtown site.

FUSRAP Update is issued periodically to inform St. Louis residents about current activities on the contaminated sites in the St. Louis area that are slated for cleanup under the U.S. Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP). These sites were contaminated during the early days of the nation's atomic energy program.

For more information about the FUSRAP site in St. Louis call the DOE Public Information Center
9170 Latty Avenue, Berkeley, MO 63134.
Telephone (314) 524-4083.

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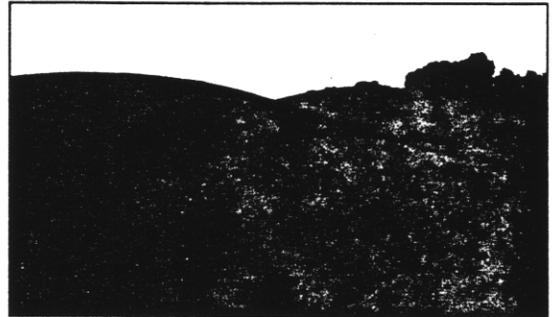
HISS piles not affected by May flooding

The rains came down, the creeks came up, and St. Louisans once again were coping with their second major flood in just two years. Yet, unlike the great flood of '93, in which the Mississippi and Missouri rivers covered giant swaths of lowlands, this flood was more localized.

Coldwater Creek, which flows past the Hazelwood Interim Storage Site on Latty Avenue, crested the night of May 16. Combined with the overflow from area storm drains, the floodwaters put the site under 12 to 18 inches of water.

While the DOE information center trailer and other site buildings incurred some minor water damage, the two HISS piles were unaffected. The piles, which contain low-level radioactive soils from previous area cleanups, were constructed with just such circumstances in mind.

Each is protected by geotextile membrane cover with overlying reinforcing grid. Rip-rap (large rocks supported by wire) surrounds the base of each pile, extending up the sides to a level 2 feet above the 100-year flood level for Coldwater Creek.



The HISS piles as seen from the DOE Information Center on Latty Avenue.

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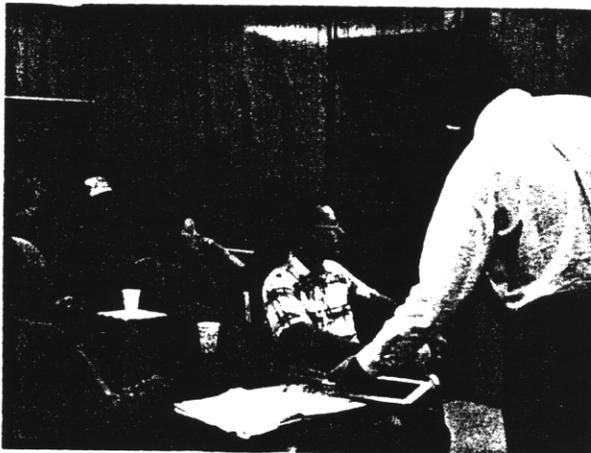


FUSRAP Update

The St. Louis Site

U.S. Department of Energy • Formerly Utilized Sites Remedial Action Program • November 1994

Cleanup of residential properties underway



FUSRAP's Joe Williams conducts a workshop for the residential property owners. (left to right: Dale Lakenburger, Leo Vasquez, Velma Vasquez, Jack Granicke).

Owner Jack Granicke said he is looking forward to having the contamination cleaned up. "It hasn't affected us adversely, but I will be happy to know that if I want to dig along the edge of my property, I can do so without disturbing contaminated soil."

An orientation for the owners was held at the Information Center in October to discuss how and when the work would be done and to answer questions.

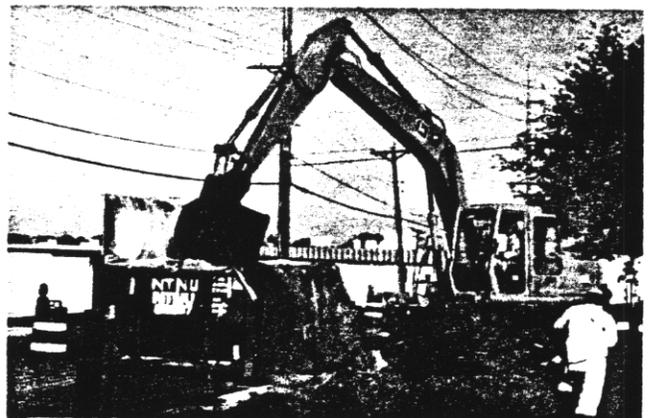
The cleanup began October 18 and should last approximately six weeks. After a brief staging at the airport site in steel waste shipping containers, contaminated soil will be shipped to a facility in Utah licensed to accept low level radioactive waste.

Residential properties near the St. Louis Airport will soon get a clean bill of health.

The properties were contaminated in the late 1960s when a commercial company hauled residues from the airport site to Latty Avenue. Because of hauling practices that would not be allowed today, some of these residues blew off the trucks and contaminated properties along road rights-of-way and portions of private properties along the haul routes.

The cleanup primarily affects road shoulders and ditches along portions of Hazelwood Avenue in Hazelwood and Frost Avenue in Berkeley.

All affected property owners recently signed agreements allowing the work to proceed and are pleased that the cleanup is underway.

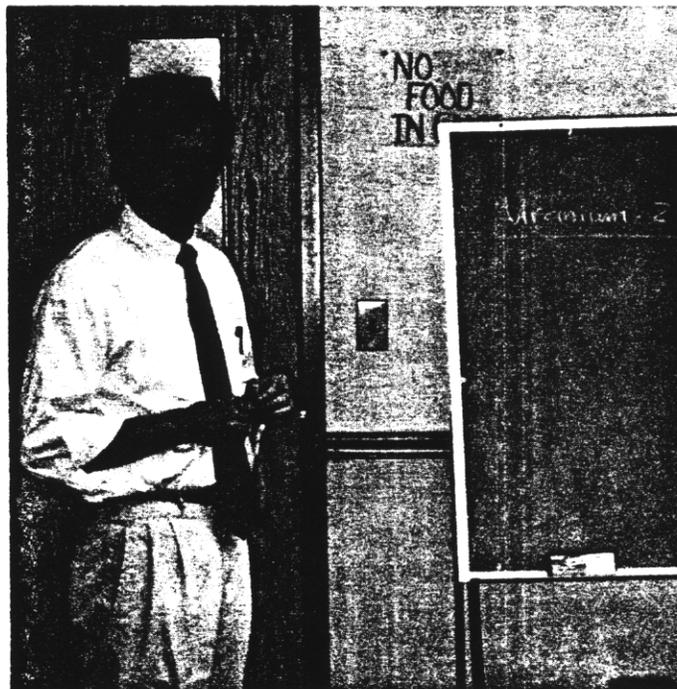


First buckets of contaminated soil are placed in an intermodal container.

DOE Conducts Neighborhood



FUSRAP's Bill Lenczuk answers a question about radioactivity.



FUSRAP's George Goveltz explains the characteristics of uranium.

"Enjoyable informative interesting." These are just a few of the comments from participants of the Grace Hill Neighborhood College environmental course, recently sponsored by the Grace Hill Wellness Initiative and the DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP). The course was designed specifically to address the environmental concerns of the staff and neighbors of Grace Hill, which is located near the St. Louis Downtown Site.

To date, approximately 60 people have attended three FUSRAP-sponsored classes focusing on radiation basics. Some of the topics included terminology and definitions, types and sources of radiation, health effects, radiation monitoring, and radon. The setting was structured but casual, and neighbors interacted with questions and comments throughout each segment.

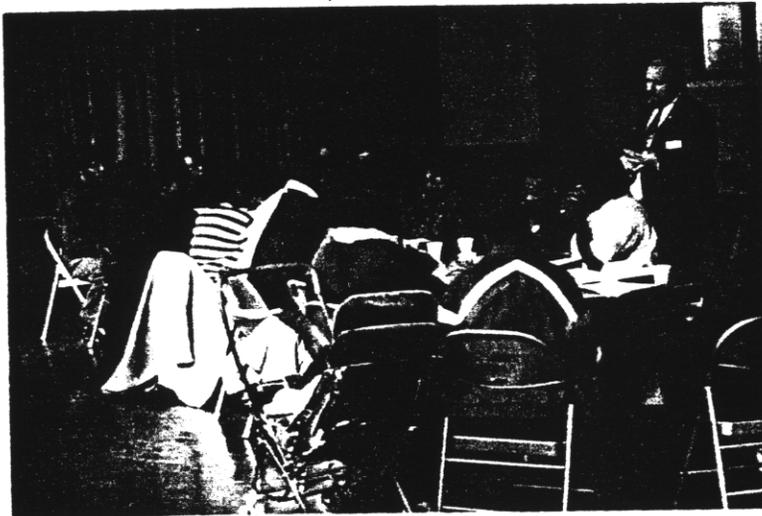
Class participants also involved their neighbors by asking them to compile a list of their top environmental concerns. They submitted names and addresses of neighbors to be added to the site mailing list and identified stakeholder groups that might be interested in learning about the site.

A highlight for one class was a field trip to the Information Center on Latty Avenue. The visit included a slide presentation and overview of the FUSRAP program, a history of the St. Louis Site, a segment on how neighbors can become involved in the decision-making process, and a tour of the Hazelwood Interim Storage Site, the St. Louis Airport Site, and vicinity properties.

Chris Byrne, director of the Air, Land and Water Branch of the St. Louis County Department of Health, was the graduation speaker for the class. He commended the neighbors for completing the course, and challenged them to put their knowledge to work in their community.

College Course

Site Manager Dave Adler said he was pleased with the level of participation and interest shown by the Grace Hill neighbors. "We need more of this type of citizen involvement if we are to make sound decisions that are in the best interests of all concerned. I applaud the participants and the Grace Hill Wellness Council for making this forum available."

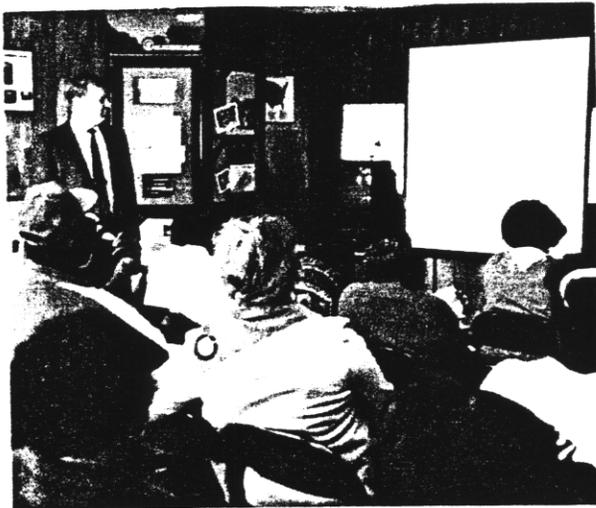


Sr. Louis County Health Department's Chris Byrne challenges a group of graduates to use their knowledge in their neighborhood.

FUSRAP Staffer Joins Grace Hill Board

Site Community Relations Coordinator Patti Hazel was recently named a member of the Grace Hill Wellness Advisory Board. Hazel is assisting the Wellness Initiative by defining needs, setting goals, and developing a fund-raising plan. To begin this process, Hazel toured several Grace Hill sites and met with residents and Wellness Council members to make a "wish list" of items that would enhance programs and facilities. The information will be compiled and a plan of action drafted and implemented.

Hazel said she is pleased to be working with an organization that assists people in such practical ways, and hopes that her input will help to accomplish lasting results.



FUSRAP's Gerry Palau gives FUSRAP overview at the Information Center.



FUSRAP's Patti Hazel informs class about public participation opportunities.

The St. Louis Stakeholder Summit: A turning point for the St. Louis site?

A group of more than 30 people comprised of property owners, environmental activists, and government officials met with DOE Assistant Secretary Tom Grumbly in August to voice their goals, frustrations and hopes about finding a permanent remedy for radiological contamination at the St. Louis Site.

Some 70 more concerned citizens made up the audience at the St. Louis Site Stakeholder Summit, held at the Henry VIII Hotel in Bridgeton.

The summit had its roots in Grumbly's visit to St. Louis last spring at which he acknowledged the lack of public consensus on a final remedy for the site. Grumbly suggested that his agency as well as site stakeholders take a fresh look at



DOE Assistant Secretary Tom Grumbly greets Jeanette Eberlin, Hazelwood city councilwoman.



More than one hundred area residents either participated in or attended the St. Louis Site Stakeholder Summit.

the various options, and called for a decision-making process that allows for broader stakeholder input.

"DOE is committed to a process that will lead to increased stakeholder input and involvement in decisions that affect both the near term cleanup and ultimate disposition of these materials," said Grumbly.

Grumbly announced that \$15 million would

be allocated for St. Louis Site activities in FY 95. That includes cleanup of the residential vicinity properties (see related article), as well as additional properties to be determined by DOE in consultation with stakeholders.

Regarding the final remedy for the site, Grumbly acknowledged there is currently a "general consensus against permanent disposal for these wastes in highly populated areas of the country such as Lambert field," and promised to explore alternatives such as soil treatment and the siting of a disposal facility elsewhere in Missouri.

Grumbly urged participants to "continue our momentum" by forming the core of a group that would study site-related issues and develop viable alternatives.

Several participants welcomed what they perceived as a new atmosphere of cooperation, and expressed hope for a timely resolution of site-related issues.

Innovative Technologies Tested at SLAPS

Safer. Faster. Cheaper. These are the goals of the Department of Energy (DOE) in characterizing and cleaning up radioactively contaminated sites. In September, Ames Laboratory mobilized at the St. Louis Airport Site to test prototype technologies and techniques in radiological characterization. The laboratory, which is affiliated with Iowa State University in Ames, Iowa, has a grant from the Department of Energy to develop new approaches involving both new technologies and new ways of looking at existing information.

The tests conducted at SLAPS on September 12 and 13 are called Expedited Site Characterization (ESC). ESC, pioneered for DOE by Argonne National Laboratory, emphasizes a concentrated coordination of the various steps of the characterization effort. It takes days, rather than weeks or months, to get back results needed to analyze a site.

Approximately 80 people attended the workshops and demonstrations. They not only observed the technology close up, but were able to interact

and exchange information with professionals about environmental cleanup issues and objectives.

Dave Adler, site manager for the St. Louis Site, welcomed the opportunity for Ames to demonstrate their technology. "The fact that so much data already exists at SLAPS will allow Ames to compare their techniques to those traditional ones we have used to date and assess their effectiveness. From what I've seen of their approach so far, it looks exceptional."

One promising technology being developed by Ames is a field screening tool, which is believed to be capable of quantifying radionuclides down to very low levels. The tool uses a laser to separate the elements from the soil, then passes the elements through an analyzer that

yields real-time analytical results. The laser can be tuned to different elements and focused on different soil depths.

"This type of technology could replace traditional sampling and lab analysis for screening and post-remedial action data," Adler said.

Ames is in the process of comparing their results to the existing data collected by DOE over the past several years. A report detailing the findings should be issued in the near future. From there, the new approach can be used to conduct safer, faster and cheaper site assessments.



A group observes one of the Ames Lab technology demonstrations at SLAPS.

Information Center Change of Address

You may have noticed a different address on recent mailings and information.

We haven't moved, but the Post Office has changed our address.

Our new address is 9170 Latty Avenue, Berkeley, MO 63134. Please send any correspondence to our new address.

FUSRAP Update is issued periodically to inform St. Louis residents about current activities on the contaminated sites in the St. Louis area that are slated for cleanup under the U.S. Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP). These sites were contaminated during the early days of the nation's atomic energy program.

For more information about the FUSRAP site in St. Louis, contact Patti Hazel at the DOE Public Information Center, 9170 Latty Avenue, Berkeley, MO 63134. Telephone (314) 524-4083.

Citizens Task Force to assist with radioactive waste issues

A task force made up of St. Louis-area officials and residents has organized to study St. Louis' radioactive waste problem and recommend remedies to the U.S. Department of Energy. The group met for the first time September 13 and began regularly scheduled monthly meetings on October 11.

At its organizational meeting, the group adopted the title "St. Louis Site Remediation Task Force" and elected Dr. Alpha Fowler Bryan task force chairperson. Bryan, who is director of the St. Louis County Health Department, has also been serving as chairman of the county's Radioactive and

Hazardous Waste Oversight Commission – an advisory panel to the county executive.

Also at that meeting, the group defined its mission and goals, considered a proposed charter, and discussed past impediments to progress.

The group's genesis was in the recent site "stakeholder summit" attended by DOE Assistant Secretary for Environmental Management Tom Grumbly, who said DOE needed to accommodate broader public input in St. Louis. Invitations to participate in the summit were based on an individual's unique position to represent site stakeholders – those who have a stake

in what is decided at the site. Task Force membership is expected to number about 30.

Task force proceedings are open to the public, with the first 10 to 15 minutes of each meeting set aside for audience comments and questions. The group meets on the second Tuesday of each month from 7:30 to 9:30 a.m. at the Hazelwood Civic Center East at 8969 Dunn Road. The December meeting will be held on December 6.

Post cards announcing the date and location of each meeting will be mailed to the site mailing list, and area media will also be notified.

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FUSRAP Update The St. Louis Site

U. S. Department of Energy • Formerly Utilized Sites Remedial Action Program • March 1994

DOE Conducts Neighborhood College Course

"Enjoyableinformative....interesting." These are just a few of the comments from participants of the Grace Hill Neighborhood College environmental course, recently sponsored by the Grace Hill Wellness Council and the Department of Energy's Formerly Utilized Sites Remedial Action Program. The course was specifically designed to address the environmental concerns of the staff and neighbors of Grace Hill, which is located near the St. Louis Downtown Site.

Twenty-five people attended the class, which focused on radiation basics. Some of the topics included terminology and definitions, types and sources of radiation, health effects, radiation monitoring, and radon.

The setting was structured but casual, and neighbors interacted with questions and comments throughout each segment.



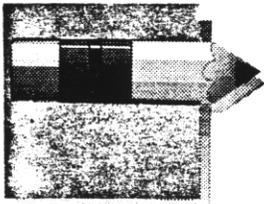
George Govelitz, a FUSRAP health physicist, covered radiation basics such as how it affects the human body, determining exposure levels, and sources of radiation in the downtown area.

Class participants also involved their neighbors by asking them to compile a list of their top environmental concerns. They also submitted names and addresses of neighbors to be added to the site mailing list and identified stakeholder groups that might be interested in learning about the site.

One of the highlights of the class was a field trip to the Information Center on Latty Avenue. The visit included a slide presentation and overview of the FUSRAP program, a history of the St. Louis Site, a segment on how neighbors can become involved in the site decision-making process, and a tour of the Hazelwood Interim Storage Site, the St. Louis Airport Site, and some of the vicinity properties.

Chris Byrne, Director of the Air, Land and Water Branch of the St. Louis County Department of Health, was the graduation speaker. He commended the neighbors for completing the course, and challenged

(continued page 3)



From the Site Manager to You

You have read a lot in this space lately about Department of Energy activities at the St. Louis FUSRAP site. You've read about the site's history. You have read about the complex process by which key decisions are made.

Now it's our turn to read and hear what you have to say. Since the early phases of this project, you've been providing valuable input — at the Public Scoping Meeting, in workshops and open houses, and in direct contact with the information center in Hazelwood. But now your input is more critical than ever.

You will soon receive notification that several key project documents have been finalized and are available. Of these documents, we want to know what you think about the Feasibility Study, which develops, evaluates, and compares the cleanup alternatives, and the Proposed Plan, which identifies the preferred alternative. You will have a 2-month opportunity later this spring to submit formal, written comments. Although this time limit is necessary for the practical reason of keeping our cleanup on schedule, we will always accept and listen to comments you make at any time. And to the extent possible, we will try to address any comments received at any time.

In addition, midway through those 2 months we will hold a public meeting, during which you may also make a statement for the record. The exact date, time, and location of the meeting will be announced in an upcoming mailing and in your local newspapers.

Your comments from the formal comment period, both written and verbal, will be incorporated into a Responsiveness Summary, which together with the Feasibility Study and the Proposed Plan will form the basis for the Record of Decision. The Record of Decision concludes the review process, documenting and mandating the chosen alternative.

Each of you has a stake in what happens at the St. Louis site. Each of you has a viewpoint that is important for us to hear. Your input has made, and will continue to make, a difference.

I look forward to working with you as we enter this next important phase of the project.

Sincerely,

David G. Adler
FUSRAP Site Manager
St. Louis Site



SLAPS Sampling Completed

As late night passersby may have noticed, FUSRAP personnel spent a cold and wet December conducting round-the-clock testing and sampling operations on the St. Louis Airport Site.

The work was in response to questions raised by the Missouri Department of Natural Resources and the U.S. Environmental Protection Agency regarding the St. Louis Site Feasibility Study and Proposed Plan.

The testing involved the groundwater and geology under the site, and required that wells be tested and monitored continuously throughout the period.

Results of the sampling and testing were provided to MDNR and EPA for review in January.



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For more information about the FUSRAP site in St. Louis, contact the DOE Public Information Center, 9200 Latty Avenue, Hazelwood, MO 63042. Telephone (314) 524-4083.

(from page 1)

DOE Conducts Neighborhood College Course

them to put their knowledge to work in their community.

Site Manager Dave Adler said he was pleased with the level of participation and interest shown by the Grace Hill neighbors. "We need more of this type of citizen involvement if we are to make sound decisions that are in the best interests of all concerned. I applaud the participants and the Grace Hill Wellness Council for making this forum available."

If you are interested in scheduling a meeting for your organization, please call the Information Center at 524-4083.

Students learn how they can have an impact on the site decision-making process.



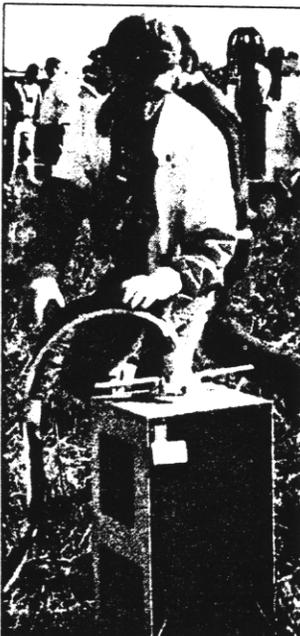
Course participants hear about DOE cleanup programs and the status of the St. Louis Site from FUSRAP Project Manager Gerry Palau.



Grace Hill neighbors review environmental course materials.



The college commencement speaker was Chris Byrne, Manager of the Air, Land & Water Engineering Brand for the St. Louis County Department of Health.



Innovative Technologies to be Tested at SLAPS

The Ames Laboratory has selected the St. Louis Airport Site to test prototype technologies and techniques in radiological characterization. The DOE-owned, Iowa State University-operated laboratory is developing new approaches involving both new technologies and new ways of looking at existing information.

Dave Adler, Site Manager for the St. Louis Site, welcomed the announcement. "The fact that so much data already exists at SLAPS will allow Ames to compare their techniques to those traditional ones we have used to date and assess their effectiveness. From what I've seen of their approach so far, it looks exceptional."

One promising technology being developed by Ames is a field screening tool, which is believed to be capable of quantifying radionuclides down to very low levels. The tool uses a laser to separate the elements from the soil, then passes the elements through an analyzer that yields real-time analytical results. The laser can be tuned to different elements and focused on different soil depths.

"This type of technology could replace traditional sampling and lab analysis for screening and post-remedial action data," Adler said.

Ames is planning to start field work by mid-summer.

FUSRAP's Hall Monitor for Health and Safety

When workers enter and exit controlled areas on the St. Louis site, the first and last person they see is Roger Hall. Roger checks everyone going into areas of contamination onsite to ensure they have the necessary training and are using the proper protective equipment, and then makes sure they don't leave the site with any contamination on them.

Roger serves as the site safety and health officer and is the site manager for the project's radiological support subcontractor, TMA/Eberline. Roger has worked on FUSRAP sites for the past nine years.

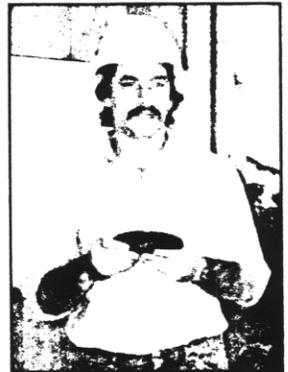
Roger grew up in a small desert mining town in southeastern Utah. He worked on drilling rigs exploring for uranium, and even worked as a uranium miner 700 feet underground. Roger has also drilled for oil, natural gas, oil shale, and gold.

Roger later worked for a uranium ore buying station where he began his career in environmen-

tal health and safety, collecting and analyzing air samples and performing exposure calculations. At another desert location, he collected various types of environmental samples for the start-up of a uranium mill.

"Having spent much of my life around uranium, I've developed a healthy respect for radiation," Roger says. "We can't see the radiation with our eyes but we can measure it and understand it. And as long as the hazards are identified and common-sense precautions are taken, there's really little or no cause for concern."

When he's not at the site keeping tabs on health and safety, Roger enjoys gardening, wood-working, computers, and spending time with his wife and their two children.



Site health and safety officer, Roger Hall

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FUSRAP Update The St. Louis Site

U. S. Department of Energy • Formerly Utilized Sites Remedial Action Program • December 1993

Commission to receive DOE grant

The St. Louis County Hazardous and Radioactive Waste Oversight Commission will receive up to \$50,000 in federal funding for independent technical services, the U.S. Department of Energy has announced. The commission is expected to use the funds to hire a technical consultant who will provide independent review of DOE's site-related documents, proposed plans, and future remedial actions.

Dr. Alpha Fowler Bryan, Director of the St. Louis County Department of Health and commission chairwoman, says, "Timing is critical; the commission will begin immediately to compile a list of possible candidates.

"Our goal," she added, "is to review and recommend to DOE the most efficacious, health-conscious, and reasonable solution to our local radioactive waste problem. Hopefully, the

selected technical consultant will help to assist and expedite our efforts."

DOE Site Manager David Adler will coordinate the grant for DOE. "Once the commission makes its selection, we will get a contract in place and work can begin," Adler said. "The whole process actually moves fairly swiftly."

"Aside from meeting some very basic contractual requirements, the contractor takes orders from the commission, and the commission only," Adler added. "We encourage this type of independent review because it raises everyone's comfort level regarding the decisions being made."

DOE makes technical services grants available to boards and commissions that have been created by local governments for the purpose of overseeing DOE activities. Adler said that although more than 40 FUSRAP sites have been designated in 14 states, only two other grants of this kind have been awarded to date.

Upcoming Events

Document Workshops

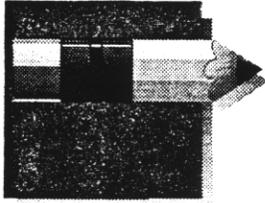
*At the DOE Information Center,
9200 Latty Avenue in Hazelwood*

Remedial Investigation	January 18
Feasibility Study	January 25
Baseline Risk Assessment	February 1

Information Sessions

At the Hazelwood Civic Center February 22-23

Dates are tentative. Please watch your mail for official announcements.



From the Site Manager to You

After many years of field studies and considerable expenditure of resources, we are finally close to proposing a remedy for conditions present at the St. Louis site.

Although much remains to be done, I'd like to thank all stakeholders who have participated in this critical phase of the process; Region VII of the Environmental Protection Agency, the Missouri Department of Natural Resources, the St. Louis County Radioactive and Hazardous Waste Oversight Commission, and most important the concerned citizens who have attended the open houses and workshops, visited or called our information center, and offered comments and suggestions.

When the proposed plan is released, along with several other key documents (see related article in this issue), you'll once again be encouraged to speak up and be heard.

A 60-day public comment period follows the release of the project documents. Midway through that period, we'll hold our second public meeting. Meeting notices will appear in St. Louis-area newspapers and radio.

Within a day or two of the public meeting, we'll hold our second open house at the Hazelwood Information Center on Latty Avenue. (I'd like to thank specifically Mayor Farquharson, Councilwoman Rickey, Bob Shelton representing Berkeley City Hall, and all Berkeley and Hazelwood residents who attended our first open house back in July. I'm convinced we all benefit from these informal exchanges of ideas and information.)

I've often said the actual implementation of a cleanup plan is the easy part; reaching consensus on a plan is the bigger challenge. Nevertheless, such lengthy decision-making processes help to ensure that all stakeholders are heard, all viewpoints examined, and the best alternative chosen.

Tremendous credit goes to all Missourians who have taken the time to learn about the project, to get involved and helped shape its outcome. Thank you again for your continued interest in this project.

Sincerely,

David G. Adler
FUSRAP Site Manager
St. Louis Site



St. Louis Site Well-Prepared for Flood of '93

Home and business owners weren't the only ones taking emergency action during the Great Flood of '93. As flood waters began to rise, DOE set about to assess potential threats to the St. Louis FUSRAP sites. It appeared that the only site that might be affected was the St. Louis Downtown Site, located close to the edge of the Mississippi River, about two miles north of the Arch.

Anticipating that the levee might break, DOE moved radioactive samples and hazardous chemicals into upstairs storage, above the projected flood crest level.

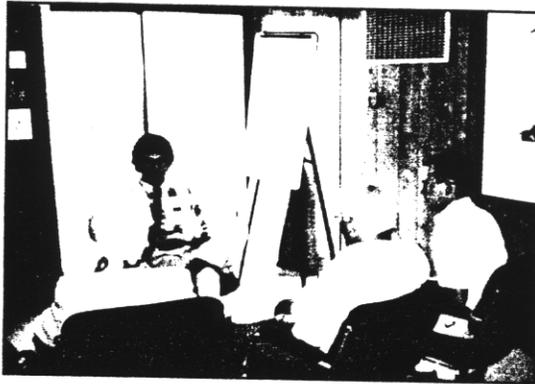
Buoyant objects were tied down to keep them from possibly causing damage. And finally, DOE coordinated with local businesses, the Army Corps of Engineers, and Metropolitan St. Louis Sewer District.

The flood did not reach the site, but just in case, all reasonable precautionary measures were taken.

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For more information about the FUSRAP site in St. Louis, contact the DOE Public Information Center, 9200 Latty Avenue, Hazelwood, MO 63042. Telephone (314) 524-4083.

Local Residents Open House



Site Manager Dave Adler discusses St. Louis site issues with Hazelwood and Berkeley residents during the recent open house. Pictured left to right are Hazelwood City Councilwoman Molly Rickey, Mayor John Farquharson, and Hazelwood resident Jack Granicke. The open house also featured site tours and informational exhibits.



Deputy Project Manager Joe Williams takes Jack Granicke on a tour of the Hazelwood Interim Storage Site during the open house.

Document Daze

A virtual blizzard of documents is on the way to support cleanup activities at the St. Louis site. In the coming months, the St. Louis community will encounter such terms as RI, BRA, WP/IP, ISA, and others. These are all documents or studies required by the Comprehensive Environmental Response, Compensation, and Liability Act and the National Environmental Policy Act (CERCLA/NEPA). The release of these documents early next year will mark the beginning of the 60-day public comment period. Public comments will be incorporated into the feasibility study (FS), which will lead to the final record of decision (ROD) in mid-1995.

The following is a brief description of some of these documents and how they relate to the CERCLA/NEPA process.

• **Baseline Risk Assessment (BRA)** — an analysis of site

conditions if no remedial action were performed. The BRA defines the current and potential impact to public health and the environment, and it tries to assess potential risks based on likely future land use of the site and surrounding areas.

• **Environmental Impact Statement (EIS)** — assesses the environmental impact of proposed DOE actions. An EIS integrates NEPA policies into DOE programs, and it informs the public and decision-makers of significant impacts of proposed actions and reasonable alternative actions.

• **Remedial Investigation (RI)** — documents the results of field radiological, geological, and ecological investigations at a FUSRAP site. An RI also defines the nature and extent of contamination at the site and provides an assessment of

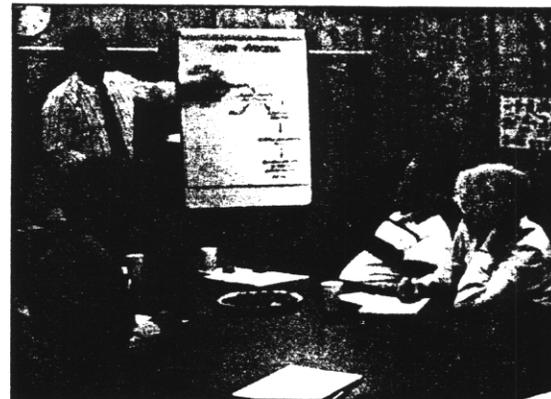
impacts to the surrounding population and environment.

• **Initial Screening of Alternatives (ISA)** — discusses all available cleanup alternatives and technologies appropriate for a particular FUSRAP site, along with associated advantages, disadvantages, and costs. Technologies that are not feasible are screened out; those remaining are evaluated in detail in the FS.



nts Attend Workshops

FUSRAP Health Physicist George Govelitz leads a workshop on health and safety issues. The workshop was held on two consecutive evenings at the DOE information Center in Hazelwood.



FUSRAP Project Manager Gerry Palau explains the remedy-selection decision-making process during a workshop at the Information Center. The workshop was presented a second time at the Hazelwood Civic Center.

- **Feasibility Study (FS)** — develops cleanup alternatives, evaluates them using a standard set of criteria, and gives detailed comparisons of those alternatives.

- **Work Plan-Implementation Plan (WP-IP)** — documents the actions and evaluations that will be made during a RI/FS at a FUSRAP site. A WP-IP (1) provides background information on the site, (2) identifies the type and extent of contamination onsite, (3)



identifies needs for additional data on the site and describes activities planned to fill those gaps, and (4) describes

the approach for evaluating potential cleanup alternatives for the site.

- **Community Relations Plan (CRP)** — describes how the public will be involved in the decision-making process.

- **Proposed Plan (PP)** — highlights key aspects of RI/FS reports, provides a brief analysis of cleanup alternatives, identifies the preferred alternative, and provides to the public information on how they can participate in the cleanup selection process.

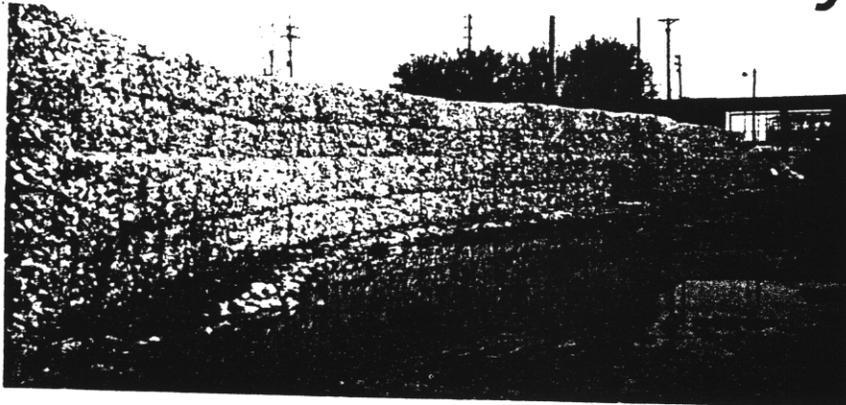
- **Record of Decision (ROD)** — documents and mandates the cleanup alternative chosen at the end of the review process for a given site. The decision made is based on the EIS, testimony presented at public hearings, and comments on the final EIS. Once the decision is documented in a ROD, the decision-making process is closed and all subsequent cleanup activities are

directed toward that end.

There are other required documents in the CERCLA/NEPA process that will be explained as they approach issuance, but the foregoing are the primary documents for the process.

The WPIIP has been published and is available to the public. The WPIIP is the primary document that controls the remedial investigation/feasibility study (RI/FS) work at the St. Louis FUSRAP site. Public comments from the January 1992 public meeting were compiled into a responsiveness summary. This summary has been incorporated into the WPIIP.

Coldwater Creek Again Tests Favorably



Request for '93 flood relief inspires volunteer spirit

Images of the Flood of '93 brought out the sympathy and compassion of almost everyone who saw them. Teresa Adcox of Bechtel National in Oak Ridge, Tennessee, decided to do something about it. Bechtel is DOE's project management contractor for the St. Louis FUSRAP site.

"I saw an ad in the paper asking for volunteers," Adcox said. "So, I signed up to help out." Adcox said about 25 people from the Oak Ridge area



Bechtel's Teresa Adcox lends a hand in cleaning up flood-damaged St. Louis.

came to St. Louis from August 19 to 22 to aid in the cleanup work.

"When we got there, the floodwaters had receded some, so we didn't see it at its worst," she said. "But there were water lines, so you could see how high it had been. Some roads were still flooded out."

She started to work as soon as she arrived, cleaning up debris and making preparations for repair work. "One building we cleaned out had 6 inches of sludge," she said. "We carried out all the wet furniture and tore out a lot of ruined walls. It seemed like we almost had to tear the whole building down."

"We stayed at a church near Lambert Airport and camped out on the floor of one of the Sunday school rooms," she said. "We ate at the Salvation Army. They set their food station up in a cemetery and called it the 'Tombstone Cafe.'"

Adcox said she felt good about being able to help out in the crisis. "There was a lot of volunteer spirit, and I was glad to have been a part of it."

County Health Department Reports on Coldwater Creek

In its annual monitoring of water upstream and downstream from the St. Louis Airport Site on Coldwater Creek, the St. Louis County Health Department has reported that contamination levels are within guidelines. Overall readings remain consistently near background levels.

Mr. Chris Byrne of the County Health Department said, "The county's test results have compared favorably with those of DOE, their contractor, Bechtel, and the Missouri Department of Natural Resources. The health department will continue to monitor the creek water readings at the site."

In addition to surface water sampling, other types of environmental monitoring routinely performed at the St. Louis site include air, soil sediments, and groundwater.

Results of the monitoring activities at the Hazelwood Interim Storage Site were recently compiled in a site environmental report for calendar year 1992. The report is now available at the Hazelwood DOE Information Center at 9200 Laffey Ave. in Hazelwood.

Long-time resident is key member of FUSRAP team

John Henry, a 10-year FUSRAP employee, has a vested interest in the operations of St. Louis sites — he and his family also are long-time residents of the area. John is in charge of site security, site maintenance and inspection, environmental monitoring, and several other technical jobs at the St. Louis sites.

John's family has lived in St. Louis for 27 years, and in addition to his FUSRAP duties, he and his wife Linda are involved in many projects to make their community a better place to live. John and Linda are active members in the Forest Park Southeast Block Unit. The Block Unit gets youths involved in community activities, encour-

ages them to "Just Say No" to drugs, and to keep their neighborhood safe and clean. John says, "One of the most important values I try to teach to our young people is to be proud of who they are in the world."

In what little spare time he has, John likes to go bowling with his family and he jogs and exercises regularly, "to keep my mind clear and my body in shape," he says.

John's "can do" attitude naturally carries over into his work on FUSRAP. "Working for the Department of Energy is always a challenge. By using our skill and training to respond to whatever problems arise, our team works like clockwork every time."



Site Maintenance Supervisor John Henry monitors automatic well sampler at Hazelwood Interim Storage Site

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FUSRAP Update The St. Louis Site

U. S. Department of Energy

Formerly Utilized Sites Remedial Action Program

July 1993

Oversight commission hears DOE site manager

The St. Louis County Radioactive and Hazardous Waste Oversight Commission met on May 10 with David Adler, St. Louis FUSRAP site manager. Appointed by County Executive Buzz Westfall and chaired by Dr. Alpha Fowler Bryan, director of the St. Louis County Department of Health, the group's purpose is to provide input to DOE in selecting the best cleanup and disposal option for the St. Louis site.

Commissioners had the opportunity to discuss DOE's plans with the site manager, who answered questions and provided information on costs and time frames for implementation of alternative cleanup options. Group members were told that a recommended remedial action is being reviewed by the Environmental Protection Agency and the Missouri Department of Natural Resources, and that this proposal will be presented for public

comment in February 1994. Adler also distributed copies of the environmental monitoring reports for the Hazelwood Interim Storage Site.

The commission membership includes a variety of local elected officials, educators, technical experts, and environmental activists. They are Karen Acker, project engineer for Environmental Science and Engineering; Kay Drey, citizen activist; David Farquharson, mayor of Hazelwood; Nancy Lubiewski, Florissant Environmental Quality Commission member; William Miller, mayor of Berkeley; Sally Price, registered nurse; Geri Rothman-Serot, county councilwoman from the 3rd District; Dr. Barry Siegel, professor of radiology and medicine and director of the Division of Nuclear Medicine at Washington University; and Dr. Lee Sobotka, professor of chemistry and physics at Washington University.

In their first meeting, held March 23, members were presented with a site history and an overview of what's been done so far. The commission met again in early July.

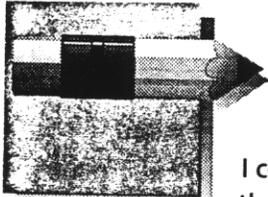
Dr. Bryan chairs Oversight Commission

Dr. Alpha Fowler Bryan, director of the St. Louis County Department of Health, has been named chair of the county's Radioactive and Hazardous Waste Oversight Commission.

Appointed by County Executive Buzz Westfall, Dr. Bryan assumes a challenging role as head of the commission. "My goal is to mediate parties from varied backgrounds with a multiplicity of ideas and ideals to some common ground of agreement in order to perfect our overall mission. No doubt, this goal may be as ambitious as the cleanup itself," Dr. Bryan said.



(continued next page)



From the Site Manager to You

I consider communicating with members of the St. Louis community to be one of the most important parts of my job. I recently met and had excellent discussions with several groups about the cleanup and disposal options for the St. Louis FUSRAP site.

In the coming months, my goal is to meet and talk with as many of you as I possibly can about the cleanup and disposal options for the FUSRAP St. Louis site. I am gathering as much input as I can prior to finalizing the drafts of the feasibility study and proposed plan, which will be available for public comment in early 1994.

We don't have to wait until 1994 to have a discussion about the options being considered. I look forward to having informal meetings with small or large groups in the St. Louis area to present information and answer your questions.

Please call Patti Hazel at DOE's Hazelwood Public Information Center to set up a date and time. (See related article elsewhere in this newsletter.)

The Department of Energy is also very much looking forward to working with the Oversight Commission appointed by the St. Louis County Executive. This group will serve as an effective interface between DOE and those who seek an independent review of our FUSRAP sites in St. Louis.

Now, we are close to decision-making time, and your participation is extremely important. Please call or come by the Information Center for information that will help you in this process.



David G. Adler
FUSRAP Site Manager
St. Louis Sites

Bryan

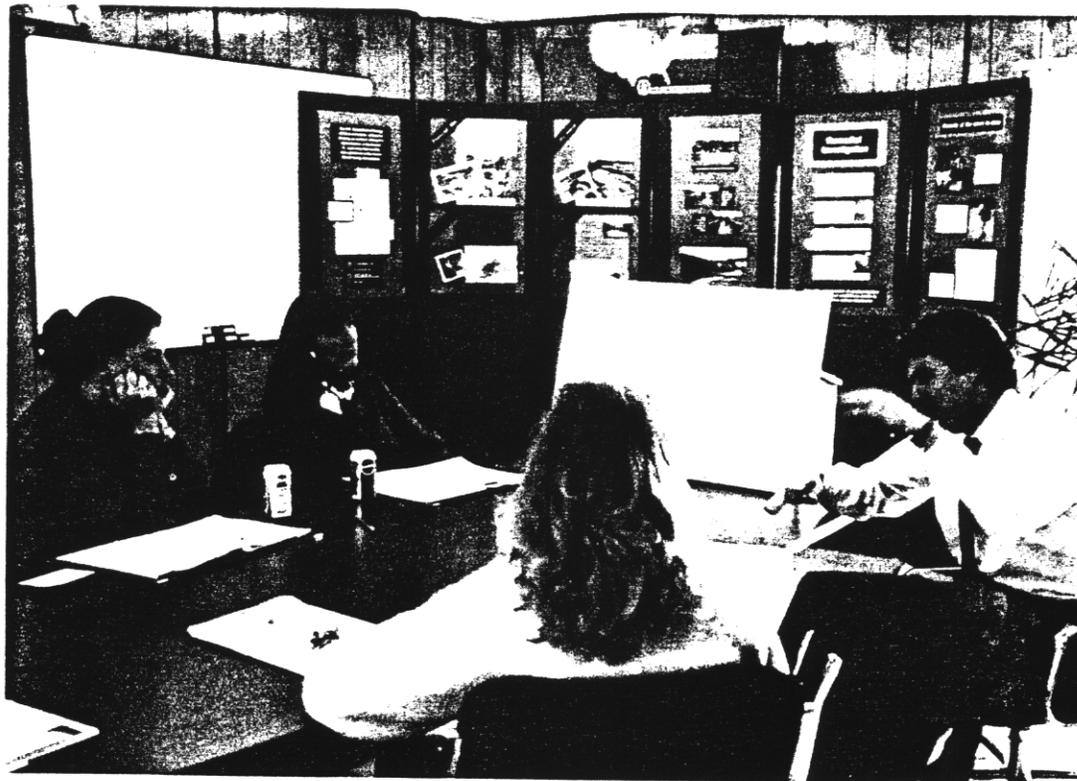
(continued from first page)

In her 15 years as a health professional, Dr. Bryan has had a wide range of experience. After receiving her medical degree from Meharry Medical College in Nashville, Dr. Bryan spent two years as an ophthalmology intern at Homer G. Phillips Hospital in St. Louis and later entered a residency in family practice at Lutheran Medical Center. In her affiliation with the Southern Illinois Healthcare Foundation from 1985 to 1991, she served as medical director of Centreville's Community Health Center. She was appointed to head St. Louis County's Department of Health in April 1991.

According to Dr. Bryan, "In the St. Louis Metropolitan area we all live with the legacy of the 'Manhattan Project.' Some would say that not only the St. Louis region, but the entire country in general, benefited from this operation. Others might disagree. Regardless of where one stands on the issue, it is an established fact that multiple radioactive and hazardous waste sites now exist in our region which must be remediated."

FUSRAP Update is issued periodically to inform St. Louis residents about current activities on the contaminated sites in the St. Louis area that are slated for cleanup under the U. S. Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP). These sites were contaminated during the early days of the nation's atomic energy program.

For more information about the FUSRAP site in St. Louis, contact the DOE Public Information Center, 9200 Latty Avenue, Hazelwood, MO 63042. Telephone (314) 524-4083.



◀ Congressional field office staff members listen as DOE Site Manager David Adler explains cleanup alternatives.

Local officials, legislators attend DOE workshops

DOE recently held workshops at the Hazelwood Public Information Center for congressional field staff, members of the state legislature, and the mayors and city councils of Hazelwood and Berkeley.

The workshop for field staffers and legislators was attended by a number of state senators and representatives, as well as field staffers for two Missouri congressmen and both U.S. senators.

Mayors William Miller of Berkeley and David Farquharson of Hazelwood were among those who attended a February 8 workshop for Berkeley and Hazelwood city officials. Both city managers and a majority of council members also attended the session.

Attendees at both workshops received an update on site cleanup and disposal options that are outlined in the draft "Feasibility Study for the St. Louis FUSRAP Site." They also had the opportunity to ask questions of David Adler, DOE's St. Louis FUSRAP site manager.

City of Berkeley Public Relations Specialist Bob Shelton observed, "This workshop gave city officials one of the best opportunities they've had so far to see where DOE is going with the cleanup effort."

Those attending the legislative workshop included Jo-Ann Digman, representing U.S. Sen. Kit Bond; Brent Evans, representing U.S. Rep. Jim Talent; Linda Getz, representing Missouri State Sen. Frank Flotron; Wayne



Berkeley and Hazelwood city officials, DOE Site Manager David Adler. From Steve Thieme, Berkeley City Councilman Gerry Palau, Adler, and Berkeley C

Recent studies address residents' safety

Residents of Nyflot Avenue and Heather Lane in Hazelwood have received more good news about health risks associated with living

"...the types of radiation found in the area and the most likely routes of exposure for the current residents are not likely to lead to the types of cancer found in the residents."

near sites contaminated with low levels of radiation. According to a recent study by the Missouri Department of Health, "the waste sites do not appear to pose a current threat to residents."

An inquiry from Nyflot Avenue residents concerned about the possibility of a high number of cancer cases in

the area prompted the study, which was initiated in 1989.

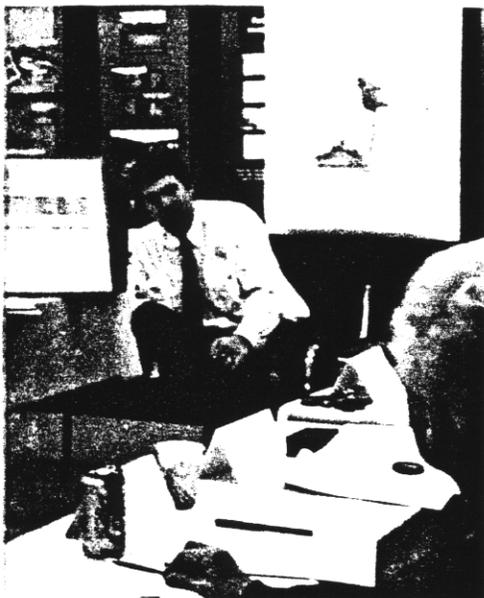
Through interviews with current and former residents, examination of medical records, and a chronological construction of the deposition of radioactive materials, the Department's Division of Chronic Disease Prevention and Health Promotion was able to ascertain that "the types of radiation found in the area and the most likely routes of exposure for the current residents are not likely to lead to the types of cancer found in the residents."

This confirms the results obtained from two previous studies, which also concluded that the St. Louis area FUSRAP sites do not pose an unaccept-

able cancer risk to residents.

The Federal Agency for Toxic Substances and Disease Registry conducted an independent study released in 1991 that determined that a "cancer cluster" (a grouping of a number of cases of the same type of cancer) "did not exist in the area."

More recently, DOE's draft "Baseline Risk Assessment" indicated that "current radiation exposures fall well below DOE standards for the protection of human health." Janet Johnson, PhD., a health physicist acting as an independent consultant for the study conducted by MDOH, confirmed that "DOE's risk assessments are accurate and are based upon conservative assumptions."



▲ Discuss site cleanup alternatives with left to right are Site Superintendent Theodore Hoskins, Project Manager Councilwoman Jean Montgomery.

Goode, Missouri state senator; David Hale, Missouri state representative; Ron Keeven, Missouri state representative; Mary Renick, representing U.S. Rep. Richard Gephardt; Karla Roeber, representing U.S. Sen. John Danforth; and John Shear, chairman of the St. Louis County Council.

Those attending the workshop for Berkeley and Hazelwood city officials included:

Norma Caldwell
Hazelwood city clerk
Edwin Carlstrom
Hazelwood city manager
Jeanette Eberlin
Hazelwood city council
David Farquharson
Mayor of Hazelwood
Arbon Hairston
City manager of Berkeley

Theodore Hoskins
Berkeley city council

Louvenia Mathison
Berkeley city council

William Miller
Mayor of Berkeley

Jean Montgomery
Berkeley city council

Mollie Rickey
Hazelwood city council

Judy Shaw
Berkeley city council

Bob Shelton
City of Berkeley public relations specialist

Carol Stroker
Hazelwood city council

To schedule a workshop for your group, call Patti Hazel at 524-4083, or write to her at the DOE Public Information Center.

FUSRAP Speakers Bureau Established for St. Louis

Now that a speakers bureau has been established to keep the public informed about the St. Louis FUSRAP site, it's easier than ever to get the word out regarding cleanup alternatives. Recent engagements have included everyone from curious third-graders, to civic groups, to Japanese legislators.

The following individuals represent just a few of the experts available to speak to your group. Each is part of the management team and well-qualified to address the issues related to the clean up of the St. Louis site:

David Adler is DOE's site manager for the St. Louis Site. He's responsible for overseeing the entire monitoring, characterization, cleanup, and restoration process. He earned a B.S. in environmental science from Rutgers University and a



◀ An ecology student tries on a Tyvek protective suit. FUSRAP Deputy Project Manager Joe Williams recently spoke to students at Clayton High School.

master's degree in environmental toxicology from the University of Michigan School of Public Health. Prior to joining DOE, Adler worked for the Michigan Department of Natural Resources in the area of Surface Water Quality. While working for the U.S. Environmental Protection Agency as a policy analyst, he was involved in the writing of environmental regulations.

Gerry Palau is project manager for Bechtel, DOE's project management contractor. His job includes overseeing field work, controlling cost and schedule, and coordinating activities with EPA, the Missouri Department of Natural Resources, and local officials. A nuclear engineer, Palau has a B.S. and an M.S. from Pennsylvania State University. He has spent 14 years working in various areas of radioactive waste management, including research development of decontamination technology, and cleanup of contaminated facilities.

Joe Williams is Bechtel's deputy project manager. He provides technical oversight of engineering and design, directs field work, and is responsible for document preparation. He holds

a B.S. degree in civil engineering from the University of Tennessee. Before coming to FUSRAP, Williams was decontamination superintendent and then civil field engineer at the Pilgrim Nuclear Power Station in Plymouth, Mass.; before that, he was a facilities engineer on the cleanup of Three Mile Island.

Tom Gangwer is project manager for Science Applications International Corporation, the FUSRAP environmental compliance contractor. His responsibilities include ensuring that all regulatory requirements are met for any proposed remedial action. He has a B.S. in chemistry from Lebanon Valley College, and a Ph.D. in physical chemistry from the University of Notre Dame. Dr. Gangwer's 21 years of experience span the areas of chemistry, radioactive waste management, project management, regulatory compliance/licensing, management with a nuclear utility and management with a national laboratory.

These folks, as well as a host of other team specialists such as geologists, engineers, and safety and health professionals, are ready, willing, and able to share their expertise and answer your questions. Your group is welcome to meet in the conference room at the Public Information Center on Latty Avenue, or, if you prefer, our speakers will come to you.

To schedule a speaker, call Patti Hazel at 524-4083, or write to her at the DOE Public Information Center, 9200 Latty Avenue, Hazelwood, MO 63033.

Berkeley resident promoted at DOE center

If you want general information on the St. Louis site, Patti Hazel is the person to see. Need a site map? Somebody to speak to your civic group? How about a tour of the information center?

As an administrative assistant with Bechtel for the past two years, Patti's had plenty of opportunities to respond to all kinds of requests for information.

With her recent promotion to site community relations coordinator, her responsibilities have expanded. With the overall goal of increasing community awareness of the the St. Louis Site, Patti's the front line of communication between FUSRAP personnel and area residents. From responding to requests for site

background information to monitoring the local community for changes that may have an effect on the site, she really does it all. Patti is also available as a speaker, and does a good general overview presentation on the St. Louis FUSRAP site.

And because she's been a resident of this area for the past eight years, she's uniquely qualified to provide this kind of information from a home-town perspective. Patti and her family live in Berkeley and attend church in Hazelwood. She says she's really come to love this part of the country and especially enjoys taking advantage of the many cultural and recreational opportunities in the St. Louis metropolitan area.



▲
Site Community Relations Coordinator Patti Hazel, pictured here with son Benjamin, says meeting people is her favorite part of the job.

DOE Public Information Center
9200 Latty Avenue
Hazelwood, MO 63042

Your toll-free number to the DOE Public Information Center is 1-800-253-9759



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FUSRAP - St. Louis Information Update

U.S. DEPARTMENT OF ENERGY
Formerly Utilized Sites Remedial Action Program

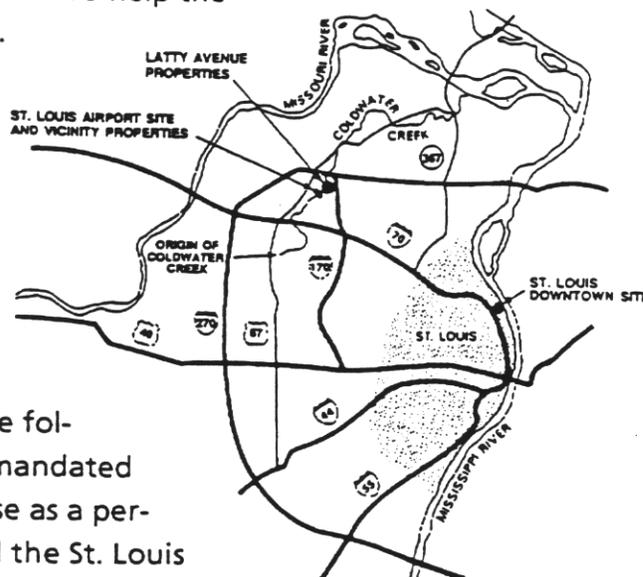
February 1993

This Information Update has been prepared to address community outreach requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Environmental Policy Act (NEPA). Information Updates are one part of an effort to provide public information on environmental restoration and waste management.

In 1995, a formal decision will be made regarding the long-term cleanup of the four FUSRAP sites in St. Louis. The public will be involved as we go about the lengthy and complex process of making that decision. To help the public develop informed opinions, the U.S. Department of Energy (DOE) is issuing preliminary information on the process, and will seek input from local residents and officials to ensure that the public's concerns are considered when the final cleanup alternative is selected.

The cleanup alternatives and disposal options being considered are shown on the following pages. In 1985, the U.S. Congress mandated one option, the acquisition of SLAPS for use as a permanent disposal cell for the waste from all the St. Louis sites. When the U.S. Environmental Protection Agency (EPA) placed a portion of the airport site on the National Priorities List, DOE was then allowed to consider a broader range of disposal options. DOE has decided to address all St. Louis sites as a single, large site, with a total volume of waste possibly as much as 730,000 cubic yards of contaminated soil.

All the alternatives (except for the no-action alternative) have as a common trait protectiveness of people and the environment. Also the reader should note that only alternatives 4 and 5 entail construction of a new waste disposal cell. In the discussion of waste excavation, the difference between partial and complete excavation has to do with how accessible the waste is. Finally, none of the options call for waste treatment. Currently no practical way exists of removing radiation from waste (the only advantage of which is reduction of waste volume), so this alternative was screened out early in the



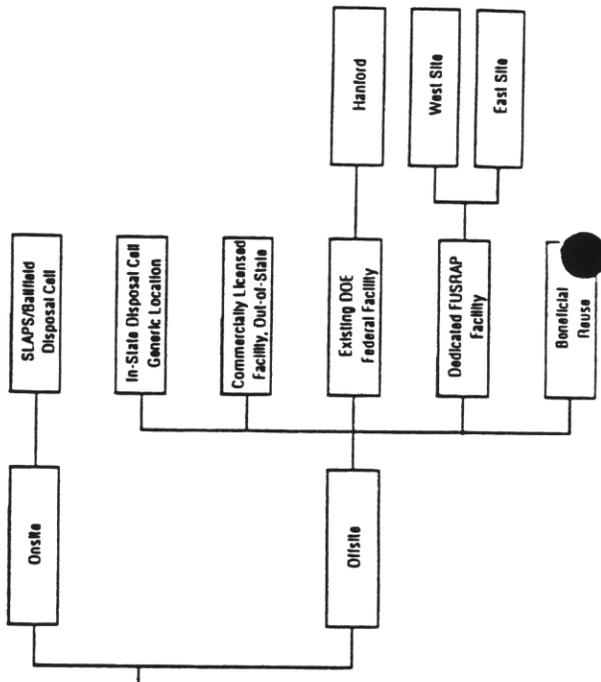
	NO ACTION	INSTITUTIONAL CONTROLS AND SITE MAINTENANCE
Description of Cleanup Option	Included to satisfy CERCLA and NEPA regulations and to provide a baseline with which to compare other alternatives.	Involves the use of deed restrictions and site security measures (e.g., fences), to restrict site access and prevent significant public exposure to the site contaminants.
Implementation Costs	\$2.7 Million	\$16 Million
Implementation Time Frame	N/A	Establishes perpetual surveillance and maintenance requirements
Soil Volume Requiring Excavation	0	Less than 50,000 yd ³
Special Considerations	<ul style="list-style-type: none"> • Not protective to human health or environment • Required by NEPA/CERCLA • Established to provide baseline for comparison to other alternatives 	<ul style="list-style-type: none"> • Protective • Depends on institutional and legal controls vs. engineering controls on future exposure • Eliminates unrestricted-use option for affected properties; may cause burden on property owners • Low cost • Does not comply with relevant soil cleanup guidelines • Potentially difficult to enforce on privately owned vicinity properties • Minimal waste transportation requirements • Takings clause not costed

CONSOLIDATION AND CAPPING	PARTIAL EXCAVATION	PHASED COMPLETE EXCAVATION																					
<p>alternative, DOE would use the St. Louis Airport Site and use it for consolidation of soil and building from offsite areas. Waste then be covered using natural materials that prevent water from entering the soil, and blocks from releasing into the surface environment.</p> <p>\$115 Million</p> <p>14 years</p> <p>490,000 yd³</p> <p>Complies with Congressional restrictions of groundwater use beneath the site; no engineered liner beneath waste; dependent on site geology and groundwater monitoring to ensure protection of drinking water.</p> <p>DOE have successfully used this at other large sites. This use of groundwater complies with soil cleanup standards.</p> <p>Large volume of waste to be transported</p>	<p>Accessible contaminated soil would be excavated for disposal using one of six disposal options. Institutional controls would be used to prevent future exposure to access-restricted soils.</p> <table border="0"> <tr> <td>SLAPS Onsite</td> <td>\$206 Million</td> <td>\$217 Million</td> </tr> <tr> <td>Hanford Ben. Reuse*</td> <td>\$220 Million</td> <td>\$233 Million</td> </tr> <tr> <td>U.S. East</td> <td>\$320 Million</td> <td>\$340 Million</td> </tr> <tr> <td>In-state</td> <td>\$354 Million</td> <td>\$378 Million</td> </tr> <tr> <td>U.S. West</td> <td>\$356 Million</td> <td>\$382 Million</td> </tr> <tr> <td>Comm. Disposal</td> <td>\$542 Million</td> <td>\$598 Million</td> </tr> <tr> <td>Hanford Current*</td> <td>\$889 Million</td> <td>\$994 Million</td> </tr> </table> <p>14-36 years</p> <p>740,000 yd³</p> <ul style="list-style-type: none"> • Protective • Considered highly effective in reducing long-term exposure • Complies with soil cleanup guidelines • Minimizes disruption of businesses activities and transportation routes at affected properties • Significant volume of waste to be transported <p>* "Not Tested" with State of Washington.</p>	SLAPS Onsite	\$206 Million	\$217 Million	Hanford Ben. Reuse*	\$220 Million	\$233 Million	U.S. East	\$320 Million	\$340 Million	In-state	\$354 Million	\$378 Million	U.S. West	\$356 Million	\$382 Million	Comm. Disposal	\$542 Million	\$598 Million	Hanford Current*	\$889 Million	\$994 Million	<p>All contaminated soil would be excavated and disposed of. Excavation of restricted-access soils would be delayed until they are made accessible by property owners.</p> <p>14-40 years</p> <p>840,000 yd³</p> <ul style="list-style-type: none"> • Protective • Highest degree of permanence and effectiveness to reduce long-term exposure • Complies with soil cleanup guidelines • Dependent upon continuously accessible disposal capacity • Requires longest time to complete • Substantial volume of waste to be transported
SLAPS Onsite	\$206 Million	\$217 Million																					
Hanford Ben. Reuse*	\$220 Million	\$233 Million																					
U.S. East	\$320 Million	\$340 Million																					
In-state	\$354 Million	\$378 Million																					
U.S. West	\$356 Million	\$382 Million																					
Comm. Disposal	\$542 Million	\$598 Million																					
Hanford Current*	\$889 Million	\$994 Million																					

Description	ONSITE DISPOSAL			OFFSITE DISPOSAL			BENEFICIAL REUSE
	CAPPING	ENCAPSULATION	IN-STATE	OUT-OF-STATE	OUT-OF-STATE AT DOE FACILITY	OUT-OF-STATE AT COMMERCIAL FACILITY	
	St. Louis waste consolidated at SLAPS and a barrier constructed over all waste.	SLAPS waste excavated and set aside; liner placed, and all St. Louis waste placed and covered at SLAPS.	Construction of a new disposal facility in Missouri on land acquired by DOE.	Construction of a new disposal facility on federal land in the eastern or western U.S.	Shipping waste to a DOE facility capable of accepting FUSRAP waste.	Shipping waste to an existing commercial facility.	Excavation of contaminated soil for use as backfill for roads, airport runway, or certain disposal facilities.
Relevant Comments	Requires use of _____ acres at SLAPS. Directed by Congress in 1985 Energy and Water Development Appropriations Act; CERCLA/NEPA now requires broader considerations.	Requires use of _____ acres at SLAPS.	Needs site suitability study. Considerable delays would result from need to site a new facility.	Needs site suitability study. Considerable delays would result from need to site a new facility.	Hanford, WA, is such a facility. Requires acceptance by receiving state.	Two such facilities are expected to be licensed. Very high transportation and disposal costs.	Relatively low cost; dependent on identification of suitable end-use.

The DOE site manager would be pleased to receive your comments or questions about the proposed options for long-term cleanup of the St. Louis sites. You may write or call him at the DOE Public Information Center or through the toll-free public access line, 1-800-253-9759.

For more information or to request documents or other printed materials about the St. Louis sites, please call or visit the DOE Public Information Center at 9200 Latta Avenue, Hazelwood, Missouri 63042; telephone (314)524-4083.



Another way of looking at the disposal options is illustrated on the right.





FUSRAP Update

The St. Louis Sites

St. Louis, Missouri



Department of Energy
Field Office, Oak Ridge
Post Office Box 2001
Oak Ridge, Tennessee 37831-8723

Dear St. Louis Resident:

August 1992

The April issue of *FUSRAP Update* focused on the Department of Energy's proposal to conduct limited cleanup measures in the Hazelwood/Berkeley area. DOE continues to seriously pursue this proposal, but we are awaiting an opportunity to discuss technical issues with an oversight committee that is being appointed by St. Louis County before proceeding.

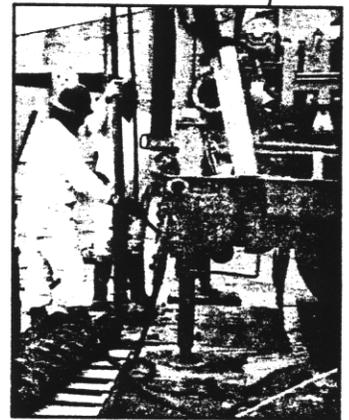
This decision allows time for DOE to respond to technical issues raised during the public comment period and in a hearing conducted by the St. Louis County Council. We are pleased that the County Council adopted a resolution calling for appointment of an oversight committee which will conduct an independent assessment of the issues. We look forward to meeting and working with the County's technical panel. See page 2 for more information.

Although we are not performing the interim cleanup on North County properties this summer, DOE is conducting a limited field sampling activity on all four of the St. Louis sites. The photo inset shows one of the field sampling crews. This field sampling will provide all data needed to complete the Feasibility Study for St. Louis. See page 2 for more information.

In response to an invitation from State Representative Louis H. Ford, DOE met on June 11 with community leaders in the neighborhood surrounding the St. Louis Downtown Site. The agenda included a discussion of what effect, if any, the SLDS contamination would have on the community. A preliminary decision was made by the community leaders to work more closely with DOE in following the characterization schedule leading to a decision on cleanup and tentatively to set up an oversight committee for the SLDS.

Thank you again for your interest in the FUSRAP environmental restoration projects in the St. Louis area. If you would like to meet or talk with me, you can reach me at either 524-4083 or (615) 576-9634.

Sincerely,
David G. Adler
David G. Adler
FUSRAP Site Manager
St. Louis Sites



Issues raised by public comments

Technical experts to discuss interim cleanup

DOE's plan to pursue interim cleanup in the North County area is the main agenda item when discussions begin between DOE and a technical review committee appointed by St. Louis County.

The delay allows time for DOE and the County's oversight committee to resolve issues that were raised during a recent public comment period. The St. Louis County Executive is in the process of appointing a group of technical and public health

professionals to work with DOE representatives.

The proposed interim removal action for the North County properties was detailed in a report called an engineering evaluation/cost analysis-environmental assessment (EE/CA-EA). The document was released to the public this spring. A public comment period conducted from April 8-May 8 provided opportunity for residents and public officials to let DOE know their thoughts on the proposal.

The proposed interim removal action is part of the comprehensive environmental review of the St. Louis FUSRAP sites that DOE is conducting in accordance with federal, state, and local regulations.

Copies of the EE/CA-EA are still available and may be requested from the DOE Public Information Center in Hazelwood, telephone 524-4083.

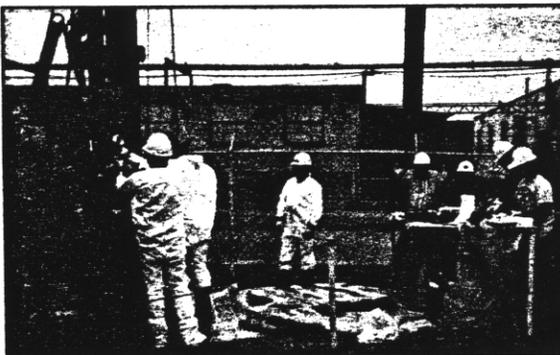
Field sampling underway at St. Louis FUSRAP sites

DOE is conducting a limited field sampling activity on and around the St. Louis FUSRAP sites. The work began in mid-July and will continue for about eight weeks.

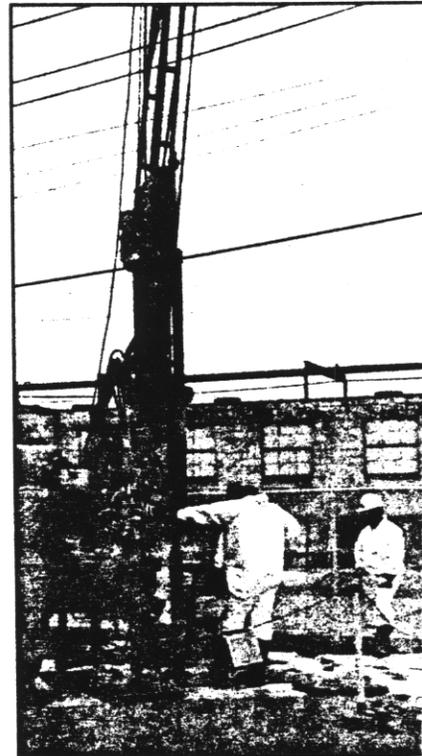
St. Louis residents may see workers taking soil samples on such locations as the ball fields across from the St. Louis Airport Site. Crews will also be taking samples on SLAPS, the Latty Avenue properties, and at the St. Louis Downtown Site.

The field sampling results supplement existing data to support the Feasibility Study (FS) for the St. Louis Site. Results from the current sampling activities are expected to provide all remaining information necessary to complete the FS.

The FS is the culmination of characterization activities that DOE has been conducting at the St. Louis sites under the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act and the National Environmental Policy Act. Site characterization is required under these laws prior to reaching a decision on cleanup of the properties.



Sampling crews operate drill rig at St. Louis Downtown Site.



How to learn more about the St. Louis Sites

The resources available at the DOE Public Information Center, 9200 Latty Avenue, Hazelwood, provide everything from general to technical information about the St. Louis FUSRAP sites. The Center is located at the Hazelwood Interim Storage Site.

Visitors are welcome at the DOE Public Information Center on Latty Avenue. That's Bob Gebhardt, site superintendent, on the entrance ramp.



Here are just a few of the resources:

- A 13-minute videotape, "FUSRAP Overview"
- Four Fact Sheets
 - "Formerly Utilized Sites Remedial Action Program"
 - "Principal Laws and Regulations Affecting the FUSRAP Cleanup Program"
 - "Administrative Record Requirements for FUSRAP"
 - "The St. Louis Site"
- Site Maps
- An observation deck with a view of the small storage pile
- Administrative Record containing all the documents that form the basis for selecting a response document at a Superfund Site.
- A large exhibit with a graphic display about FUSRAP and the St. Louis sites.

The public is welcome to visit the site at any time week days between the hours of 9 a.m.- 2 p.m. Some space limitations exist, so it is recommended that larger groups call ahead. To obtain directions or a map, please call the Center at 524-4083.

FUSRAP Update is issued periodically to inform St. Louis residents about current activities on the contaminated sites in the St. Louis area that are slated for cleanup under the U.S. Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP). These sites were contaminated during the early days of the nation's atomic energy program.

For more information about the FUSRAP sites in St. Louis, contact the DOE Public Information Center, 9200 Latty Avenue, Hazelwood, MO 63042. Telephone (314) 524-4083.

Student letters bring FUSRAP speaker to Clayton High

Twenty students studying ecology at Clayton High School wrote letters to DOE expressing their views on the proposed interim cleanup in the Hazelwood/Berkeley area. One student added this postscript, "A response would be appreciated."

This student's note prompted David Adler, DOE's site manager, to contact the teacher, Barbara Riley. Adler's idea was to respond to concerns expressed by the students while at the same time providing more information about the federal, state, and local requirements regulating environmental cleanup.



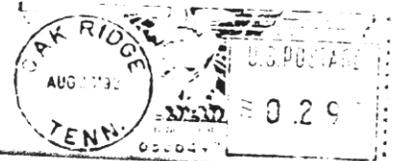
▲ *Joe Williams and other members of the St. Louis FUSRAP team will speak to area groups or organizations.*

On June 1, Joe Williams, a civil/environmental engineer and deputy project manager, addressed both of Ms. Riley's ecology classes. The students "asked many questions on their own and a few expressed an interest in visiting DOE's information center," he said. "One of the sessions was quite lively, according to Williams, who enjoyed it all immensely."

These students are an important part of DOE's philosophy of public participation, Adler said. DOE views the public as a partner and a resource in the decision-making process in solving environmental problems.

Please contact the DOE Information Center, 524-4083, if you would like to schedule someone on DOE's St. Louis FUSRAP team to talk with your group or organization.

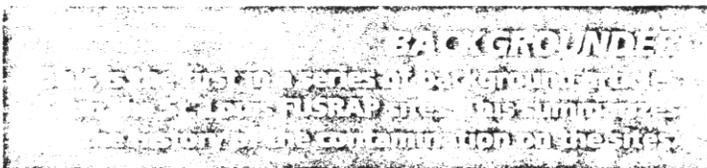
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Hazelwood, MO 63042



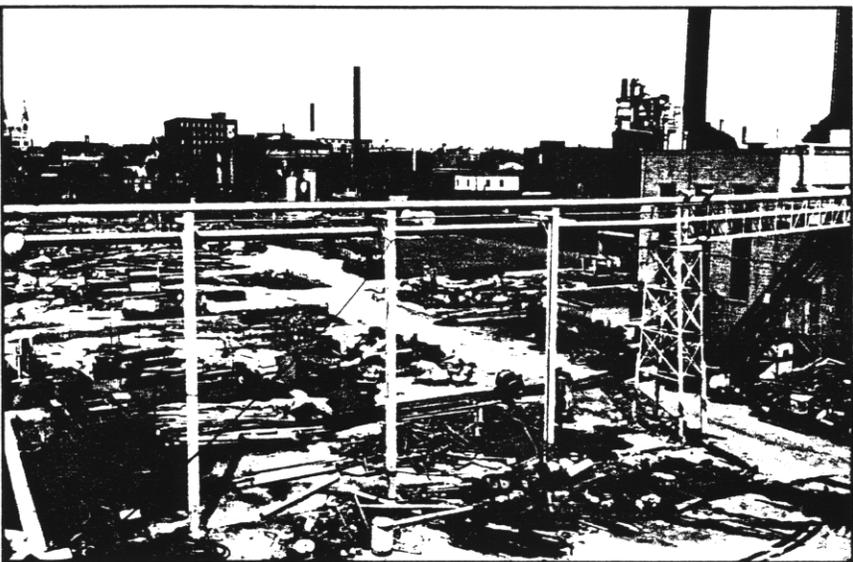
Your toll-free number to the DOE Public Information Center is 1-800-253-9759



This Update is printed on recycled paper.



St. Louis contamination begins with atomic age



▲ Uranium processing for government nuclear projects began during World War II at this site in downtown St. Louis.

The four sites in St. Louis that are slated for cleanup under the Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP) were contaminated as a result of activities conducted in the 1940s and 50s as part of the nation's defense program.

In those early years, most uranium, the principal source of nuclear fuel, was extracted from foreign ores. Uranium is an element that occurs naturally, usually in combination with other elements. In its raw form, uranium ore cannot be used as a fuel. The uranium must be separated from all other elements, and the part that is used as fuel, called fissionable uranium, must be concentrated.

Much of the government-sponsored research and development in the 1940s was conducted at national laboratories and universities, with commercial firms producing

the needed raw and finished material.

One of these commercial firms was the Mallinckrodt Chemical Works that had already been operating in downtown St. Louis for more than 50 years.

MCW processes uranium

From 1942 to 1957, the Manhattan Engineer District/Atomic Energy Commission contracted with Mallinckrodt to perform several operations, including processing and producing various forms of uranium compounds and pure uranium metal. As a result of these activities, materials, equipment, buildings, and parts of the property became contaminated with naturally occurring radioactive materials.

At completion of the MED/AEC operations, the facilities were cleaned up and decontaminated according to the standards and survey methods in effect at the time. However, later radiological surveys showed that portions of the facility retain levels of radioactivity in excess of current, more stringent, federal guidelines.

DOE to clean up

The Department of Energy, which is the successor agency of the AEC, has taken the lead for cleanup of contamination that occurred as a result of government operations on that site and on the other sites that became contaminated as a result of transporting and storing the contaminated materials from the downtown site.

The portion of the Mallinckrodt property included in DOE's cleanup operation is referred to as the St. Louis Downtown Site. Six vicinity

properties also exhibit residual areas of contamination.

Residues taken to North County

In 1946, the MED acquired a 21-acre site just north of the St. Louis Airport for storage of residues from uranium processing conducted at SLDS. Residue from uranium processing and from cleanup of buildings at the plant was taken to the St. Louis Airport Site for storage. The property was fenced to prevent public access.

No permanent buildings or facilities remain at SLAPS. They were demolished and buried on site under 1-3 feet of clean material in 1969.

SLAPS is sometimes mentioned as a possible permanent disposal cell location for the St. Louis sites. This is because Congress directed DOE to acquire SLAPS for this purpose in the 1985 Energy and Water Development Appropriations Act. However, under the comprehensive process required by federal law prior to cleanup and disposal, DOE is directed to consider other options in addition to the directions of Congress.

Residues reach Latty Ave.

In 1966, Continental Mining and Milling of Chicago, Illinois, purchased process residues at SLAPS for its commercial value and hauled it in trucks about one-half mile to a site on Latty Avenue, just north of the airport site. These residues contained valuable metals in addition to the uranium.

As a result of hauling practices that would not be allowed today, some of these residues blew off the trucks and randomly contaminated vicinity properties such as highway rights-of-way and portions of private properties along the haul routes. Continental stored the residues at the Latty Avenue properties during 1966-67. A successor firm, Commercial Discount Corporation, dried and shipped the material to a new owner, the Cotter Corporation in Colorado.

Later, Cotter purchased the remaining materials at Latty Avenue and continued shipments to their property in Colorado.

Surveys and a renovation were

conducted at the Latty Avenue properties in the late 1970s. The contaminated soil and debris from these decontamination efforts are currently stored at the portion of the Latty Avenue properties called the Hazelwood Interim Storage Site (HISS). The piles at HISS also contain material from a cleanup along Latty Avenue, some of which was in support of a storm sewer installation.

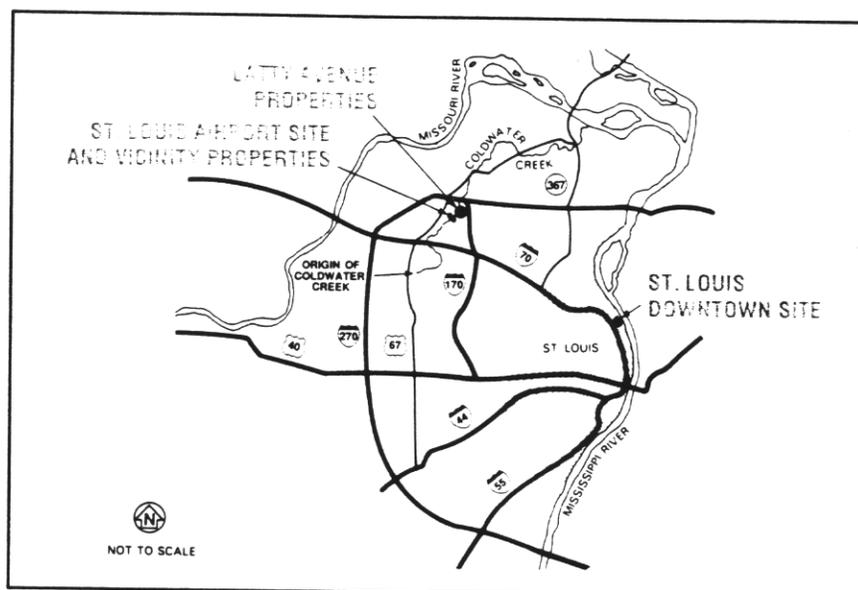
The primary radioactive contaminant on the St. Louis sites is thorium-230. Analyses have also identified the presence of uranium-238 and radium-226. Given present land use, the low-level radioactivity found on these properties poses no immediate threat to public health or the environment. However, performing remedial action and

measures will be preceded by a complete environmental review process as required by CERCLA and the National Environmental Policy Act (NEPA).

In 1990, DOE and EPA signed an agreement that outlines the environmental review process, referred to as the remedial investigation/feasibility study (RI/FS), that leads to a decision on cleanup alternatives on the St. Louis sites.

DOE is well into the RI/FS process and anticipates release of the draft Feasibility Study-Environmental Impact Statement and the Proposed Plan in early 1994.

Selection of a final cleanup strategy will not be made until after public review of the RI/FS and the record of decision, which is cur-



Locations of FUSRAP properties in the St. Louis, Missouri, area.

achieving cleanup standards will ensure that the contamination poses no significant risk if land use changes in the future.

Cleanup process underway

In October 1989, the Environmental Protection Agency placed SLAPS and the Latty Avenue properties on the National Priorities List. This action requires cleanup to proceed under the authority of EPA and the guidelines of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Comprehensive cleanup

is currently scheduled for mid-1995. DOE will design and begin the cleanup after a record of decision has been reached.

The RI/FS process is lengthy, but it assures that when a decision is made on cleanup for the St. Louis sites that it will have been reached after consideration of all aspects of environmental, public health, and safety concerns.



FUSRAP Update

The St. Louis Sites

St. Louis, Missouri



Department of Energy
Field Office, Oak Ridge
Post Office Box 2001
Oak Ridge, Tennessee 37831-8723

Dear St. Louis Resident:

April 1992

Much has happened since the last *FUSRAP Update* was issued in December 1991. I am pleased to report that the engineering evaluation/cost analysis-environmental assessment (EE/CA-EA) was issued by the U.S. Department of Energy in March 1992 for the proposed decontamination of specific properties in Hazelwood and Berkeley. See page 2 for more information.

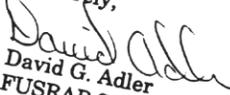
I believe that the proposed activities would be beneficial both for affected property owners and the DOE's cleanup program. As examples, implementation of the proposal could allow decontamination of residential properties and the athletic complex located in the Hazelwood/Berkeley area. Benefits to the cleanup program include preventing the uncontrolled disturbance of contaminated soils and prevention of waste volume growth due to such disturbance.

Please write to me during the public comment period which ends May 8, 1992, and let me know your thoughts on this interim cleanup measure. My address is given at the end of the article on page 2.

Other highlights of the past few months include the public scoping meeting that was held January 28 at Berkeley Senior High School. We are most appreciative that so many residents chose to attend and provide testimony. This written and oral testimony is an important part of the decision-making process. A document which responds to all of the public concerns raised at the meeting is currently under preparation and should be available for public review soon.

On January 15, copies of the work plan and the community relations plan for the St. Louis Site were distributed to approximately 35 public and state officials and other interested parties. Anyone else who would like a copy can request one by calling the DOE Public Information Center on Latty Ave., telephone (314) 524-4083.

Please feel free to contact me if you require any additional information or would like to meet to discuss this matter further.

Sincerely,

David G. Adler
FUSRAP Site Manager
St. Louis Sites

DOEA-ORNL-89-1
Engineering Evaluation/Cost Analysis-
Environmental Assessment for the
Proposed Decontamination of Properties
in the Vicinity of the Hazelwood Interim
Storage Site, Hazelwood, Missouri

March 1992



DOE proposing interim cleanup in Hazelwood and Berkeley

The U.S. Department of Energy is moving a step closer toward removal of radioactively contaminated soil from the properties of several homeowners, businesses, and roadway right-of-ways in the communities of Berkeley and Hazelwood.

The opportunity for activity could come as early as this Spring and Summer. Details of DOE's interim plan that would expedite cleanup in the North County area are contained in a report called an engineering evaluation/cost analysis-environmental assessment (EE/CA-EA).

David Adler, DOE's site manager, said that the interim action proposed by the report would relieve property owners and municipalities of the burden associated with contamination on their properties. He said that residential properties are first in line for cleanup if the plan is approved. These property owners have already been contacted regarding radiological surveys and access agreements needed for each property slated for cleanup.

For a 30-day period which ends May 8, 1992, Adler would like to receive written comments from the public. "We believe that we have a technically sound plan for cleaning up the contaminated material, and we would like to know what the people in the communities think about it," Adler said.

Please address your written comments to David G. Adler, FUSRAP Site Manager; U.S. Department of Energy Oak Ridge Field Office; Former Sites Restoration Division; P.O. Box 2001; Oak Ridge, TN 37831-8723.

How to review or get a copy of the EE/CA-EA

In order to learn more about DOE's interim cleanup plan for Hazelwood and Berkeley, you will probably want to review or request your own copy of the EE/CA-EA. Here are several ways to gain access to the document:

- DOE Public Information Center
9200 Latty Avenue
Hazelwood, MO
Telephone: (314) 524-4083
- Government Information Section of the St. Louis Public Library
1301 Olive Street
St. Louis, MO
- St. Louis County Library
Prairie Commons Branch
915 Utz Lane
Hazelwood, MO

FUSRAP Update is issued periodically to inform St. Louis residents about current activities on the contaminated sites in the St. Louis area that are slated for cleanup under the U.S. Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP). These sites were contaminated during the early days of the government's atomic energy program.

For more information about the FUSRAP sites in St. Louis, contact the DOE Public Information Center, 9200 Latty Avenue, Hazelwood, MO 63042. Telephone (314) 524-4083.

Public meeting records citizen concerns

More than 250 St. Louis residents participated in DOE's public scoping meeting on January 28 at Berkeley Senior High School.

Approximately 30 private citizens and 16 public officials made statements for the record. Many of the speakers encouraged DOE and the Environmental Protection Agency to expedite the environmental review process and remove contaminated material from the St. Louis area.

A display advertisement announcing the public scoping meeting for the St. Louis Sites Remedial Investigation/Feasibility Study-Environmental Impact Statement and availability of the work plan was published in the *St. Louis Post-Dispatch*. A news release announcing the meeting was issued by the DOE Public Information Office in Oak Ridge. Announcements about the meeting were sent to some 300 people on the St. Louis Site mailing list.

Media coverage at the meeting included the *St. Louis Post-Dispatch*, the Suburban Newspaper Group, two television stations, and one radio station.

These St. Louis residents arrived early to sign in and stayed late so that their opinions could be heard at the public scoping meeting on January 28.





These 20 fifth graders from Grace Chapel Lutheran School visited the DOE Information Center on Latty Avenue on February 19 to learn more about radioactivity and specifics about the St. Louis FUSRAP sites. They were accompanied by their teacher Renee Borgman and parent chaperone Edward Heinz. Roger Hall, a site manager for TMA/Eberline, is shown demonstrating radiation monitors for the class.

DOE Public Information Center
9200 Latty Avenue
Hazelwood, MO 63042

Your toll-free number to the DOE Public Information Center is 1-800-253-9759



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APPENDIX J
PRINCIPAL LAWS AND REGULATIONS

APPENDIX J

Principal Laws and Regulations

Below are some of the most important laws that affect the St. Louis Formerly Utilized Sites Remedial Action Program (FUSRAP) Sites.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. CERCLA is the main law governing cleanup at many FUSRAP sites. The act created a special tax that goes into a trust fund, commonly known as Superfund, to investigate and clean up abandoned or uncontrolled hazardous waste sites.

A Preliminary Assessment (PA) is used to place a FUSRAP site on the National Priorities List (NPL). This list targets the most pressing sites for cleanup. Cleanup at FUSRAP NPL sites is guided by Federal Facilities Agreements (FFAs) with the U.S. Environmental Protection Agency (EPA), with input from states where the sites are located.

CERCLA then calls for a remedial Investigation (RI) and Feasibility Study (FS) process. The RI studies the site and checks possible cleanup alternatives, while the FS develops and screens these alternatives. A cleanup remedy is selected, and a record of decision (ROD) is issued to record the preferred method and manner of cleanup. The ROD considers and addresses public comments and community concerns. Plans are drawn and cleanup begins. After the work is done, the site is monitored to make sure that the cleanup worked as designed.

National Oil and Hazardous Substances Contingency Plan (NCP). The NCP is the blueprint for implementing CERCLA and specifies that cleanup remedies must protect human health and the environment. Remedies must also comply with all federal and state environmental standards, which are sometimes called applicable or relevant and appropriate requirements (ARARs). The NCP also identifies cost as a criterion for consideration when cleanup remedies are evaluated.

The NCP specifies nine criteria when selecting remedies for cleanup:

1. overall protection of human health and the environment;
2. compliance with ARARs;
3. long-term effectiveness and permanence;
4. reduction of toxicity, mobility, or volume through treatment;
5. short-term effectiveness;
6. implementability;
7. cost;
8. state acceptance; and
9. community acceptance.

All alternatives must (1) protect human health and the environment and (2) satisfy ARARs (unless a waiver is granted). The next five criteria are then considered equally to help determine the most effective remedy.

The final two criteria, state and community acceptance, also play a role in remedy selection. These criteria are considered to be modifying criteria that can affect remedy selection after all the other factors have been evaluated.

Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments (1984). RCRA serves to manage hazardous wastes, requiring that safe and secure procedures be used to treat, ship, store, and dispose of hazardous wastes. Facilities performing these functions must hold special permits and are required to operate within specific guidelines

Other Laws and Regulations

A variety of other laws might apply to the St. Louis FUSRAP Sites to address the contaminants that have been found, their location, and the activities taking place to remove or control their spread. These laws are federal and state requirements that might be determined to be ARARs.

Clean Air Act. Sets standards for emissions of radionuclides into the air.

Clean Water Act. Requires that a permit be obtained to discharge pollutants from pipes or other “point sources” into state waters.

Primary Drinking Water Standards–Maximum Containment Levels for Radionuclides. Sets limits on the maximum concentration levels for the radionuclides radium-226 and radium-228.

Uranium Mill Tailings Radiation Control Act (UMTRCA 1992)–Cleanup of Radioactively Contaminated Land and Contaminated Buildings. Sets dose limits for radiation from radium-226.

Nuclear Regulatory Commission Radiological Criteria for License Termination. Sets radiation standards for cleanup levels at a site when a site can be considered decommissioned and the license can be terminated.

Protection of Wetlands. Under this executive order, a federal agency must minimize the destruction, loss, or degradation of wetlands and preserve and enhance their natural and beneficial values.

Governor’s Executive Order, Floodplains. Requires an evaluation of actions taken in a floodplain to avoid adverse impacts.

Floodplain Management and Protection. Sets procedures on floodplain management and protection, as could occur during excavation in a floodplain.

Archeological Resources Protection Act. Serves to preserve historical and archeological data that might otherwise be destroyed by cleanup activities.

Native American Graves Protection and Repatriation Act. Requires protection and repatriation of any Native American cultural items found on or taken from federal or tribal lands.

Other guidelines and standards not yet written into law might also have a bearing on the proposed action, along with U.S. Army Corps of Engineers' orders and guidelines. These guidelines are "to be considered" in formulating and conducting the cleanup.

