

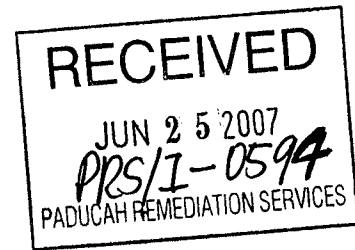


## Department of Energy

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JUN 22 2007

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Kentucky Department for Environmental Protection  
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Frankfort, Kentucky 40601

PPPO-02-305-07

Mr. David G. Williams  
United States Environmental Protection Agency  
Region IV  
DOE Remedial Section  
Federal Facilities Branch  
Waste Management Division  
61 Forsyth Street  
Atlanta, Georgia 30303

Dear Mr. Scott and Mr. Williams:

**TRANSMITTAL OF THE REMOVAL ACTION REPORT FOR THE C-402  
LIME HOUSE AT THE PADUCAH ENVIRONMENTAL REMEDIATION  
PROJECT, PADUCAH, KENTUCKY (DOE/LX/07-0010&D1)**

Enclosed for your review is the *Removal Action Report for the C-402 Lime House at the Paducah Environmental Remediation Project, Paducah, Kentucky (DOE/LX/07-0010&D1)*.

If you have any questions or require additional information, please call Rob Seifert at (270) 441-6825.

Sincerely,

Reinhard Knerr,  
Paducah Site Lead  
Portsmouth/Paducah Project Office

Enclosure:  
Removal Action Report for C-402

ENV 1.A-00345

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**Removal Action Report  
for the C-402 Lime House at the  
Paducah Environmental Remediation Project,  
Paducah, Kentucky**



This document is approved for public release per review by:

*M. Brennan*

Paducah Classification and Control Office  
Swift and Staley Team

*6.15.07*

Date



**Removal Action Report  
for the C-402 Lime House at the  
Paducah Environmental Remediation Project,  
Paducah, Kentucky**

Date Issued—June 2007

Prepared for the  
U.S. DEPARTMENT OF ENERGY  
Office of Environmental Management

PADUCAH REMEDIATION SERVICES, LLC  
managing the  
Environmental Remediation Activities at the  
Paducah Gaseous Diffusion Plant  
under contract DE-AC30-06W05001

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# CONTENTS

FIGURES .....	v
TABLES .....	v
ACRONYMS .....	vii
EXECUTIVE SUMMARY .....	ix
1. INTRODUCTION .....	1
2. SITE DESCRIPTION .....	3
2.1 LOCATION .....	3
2.2 DESCRIPTION .....	3
2.3 CONTAMINANTS .....	3
2.4 PREVIOUS INVESTIGATIONS/ACTIONS .....	3
3. PROJECT DESCRIPTION .....	5
3.1 SCOPE AND PURPOSE .....	5
3.2 REMOVAL ACTION OBJECTIVES .....	5
3.3 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS .....	5
4. REMOVAL ACTION ACTIVITIES .....	7
4.1 PROCESS DEFINITION .....	7
4.2 PROCESS SEQUENCE .....	7
4.2.1 Electrical Power Isolation .....	8
4.2.2 Electrical Component Removal .....	8
4.2.3 Equipment/Material Removal .....	8
4.2.4 Filling of Basement with Flowable Fill .....	8
4.2.5 Site Preparation .....	10
4.2.6 Concrete Demolition .....	10
4.2.7 Site Cleanup .....	11
4.2.8 Waste Disposal .....	12
5. WASTE MANAGEMENT AND TRANSPORTATION ACTIVITIES .....	13
5.1 WASTE CHARACTERIZATION .....	13
5.2 WASTE PACKAGING .....	13
5.3 WASTE TRANSPORTATION .....	14
5.4 WASTE DISPOSAL .....	14
6. PROJECT COST AND SCHEDULE .....	15
6.1 PROJECT SCHEDULE .....	15
6.2 PROJECT COST .....	15
7. REFERENCES .....	17

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## FIGURES

Figure 1.	Photograph of C-402 Lime House Facility .....	4
Figure 2.	C-402 Lime House Basement Area Section View Showing Filling of Basement and Floor Openings.....	9
Figure 3.	C-402 Lime House Floor Slab Partial Plan View Showing Floor Openings to Basement .....	10
Figure 4.	C-402 Concrete Demolition.....	11
Figure 5.	C-402 Post Demolition .....	11

## TABLE

Table 1.	C-402 Waste Categories, Volumes, and Disposition .....	12
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## ACRONYMS

ACM	asbestos-containing material
AL	authorized limit
ARAR	applicable or relevant and appropriate requirement
BJC	Bechtel Jacobs Company LLC
CA	contamination area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
LLW	low-level waste
MLLW	mixed low-level waste
MgF <sub>2</sub>	magnesium fluoride
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PGDP	Paducah Gaseous Diffusion Plant
PRS	Paducah Remediation Services, LLC
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
ppm	parts per million
S&M	surveillance and maintenance
TSCA	Toxic Substances Control Act
USEC	United States Enrichment Corporation

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## EXECUTIVE SUMMARY

The C-402 Lime House Facility is located in the central portion of the Paducah Gaseous Diffusion Plant at the intersection of Virginia Avenue and Eleventh Street, immediately east of C-400 Building and south of C-403. This facility was placed in the Decontamination and Decommissioning (D&D) Operable Unit in the 2004 Site Management Plan.

The D&D of the C-402 facility was performed as a non-time-critical removal action under the Paducah Federal Facility Agreement. Comprehensive Environmental Response, Compensation, and Liability Act documents that described the logic for this project and the basis for its implementation are as follows: *Engineering Evaluation/Cost Analysis for the C-402 Lime House, C-405 Incinerator, and C-746-A West End Smelter at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-2227&D2); *Action Memorandum for the Removal of the C-402 Lime House, the C-405 Incinerator, and the C-746-A West End Smelter at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-2237&D2); *Removal Action Work Plan for the C-402 Lime House Inactive Facility D&D Project at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-2247&D1/R1); and "Removal Notification for the C-405 Incinerator (SWMU 55), C-402 Limehouse (SWMU 480), and C-746-A West End Smelter (SWMU 464) at the Paducah Gaseous Diffusion Plant (PGDP), Paducah, Kentucky."

The Engineering Evaluation/Cost Analysis analyzed two removal alternatives for the C-402 facility. The alternatives included (1) no action or (2) removal of building contents, demolition of the structure, and characterization and disposal of waste. The alternatives were evaluated for effectiveness, implementability, and cost. The removal action objectives for this action were to accomplish the following:

- Prevent the potential health and safety hazards to on-site personnel from deterioration of the contaminated structures; and
- Minimize or eliminate the potential health and environmental hazards of radiation and hazardous material exposure caused by the potential uncontrolled release of contaminated dust, equipment, and building materials from the facility.

The alternative selected for C-402 was the removal and disposal of the building contents and structure to the first floor concrete slab. This alternative met the removal action objectives and was performed in a safe and expeditious manner. The total demolition cost was approximately \$928,000. This value includes the off-site waste shipment and disposal costs. The C-402 D&D field activities began on March 21, 2006, and the field completion date was August 17, 2006. The work was accomplished through the use of approved work control documents that guided the field activities throughout the project duration.

Cost reductions to the project included filling the basement with flowable fill in lieu of placing covers over the basement openings and material and equipment substitutions due to worker involvement. Filling the basement will reduce the surveillance and maintenance costs and eliminate personnel hazards that would be associated with workers entering a confined space when performing future inspections.



## 1. INTRODUCTION

This Removal Action Report has been prepared to document completion of activities described in the *Action Memorandum for the Removal of the C-402 Lime House, the C-405 Incinerator, and the C-746-A West End Smelter at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-2237&D2) and its basis document, *Engineering Evaluation/Cost Analysis for the C-402 Lime House, C-405 Incinerator, and C-746-A West End Smelter at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-2227&D2) as well as the *Removal Action Work Plan for the C-402 Lime House Inactive Facility D&D Project at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-2247&D1/R1). These documents outline the activities and requirements for the infrastructure and structure removal phases for the C-402 facility. The facility structure was demolished to the first floor concrete slab. A permanent safety barrier surrounds the perimeter of the concrete slab. This is an Occupational Safety and Health Administration (OSHA) safety requirement due to the slab floor being greater than 4 ft from the ground level in areas. The concrete slab is posted as a fixed contamination area.

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## **2. SITE DESCRIPTION**

### **2.1 LOCATION**

The C-402 Lime House Facility is located in the central portion of the Paducah Gaseous Diffusion Plant (PGDP) at the intersection of Virginia Avenue and Eleventh Street, immediately east of C-400 Building and just south of the C-403 Neutralization Pit. Figure 1 provides a photograph of the C-402 Lime House Facility.

### **2.2 DESCRIPTION**

The C-402 facility was a single, one-story building constructed in 1953. Its original function was to prepare a lime slurry for neutralization of water discharged from C-400 that was piped into the C-403 Acid Neutralization Pit located immediately north of the facility. Later, the main floor area was used to house several pieces of equipment that were necessary to produce magnesium fluoride ( $\text{MgF}_2$ ) pellets. The facility ceased operation prior to 1978. It later was used as a storage facility. The building was constructed of reinforced concrete (walls, roof, and floor) with a partial, below-grade basement located in the northern third of the building. The footprint of the building encompassed 1,742  $\text{ft}^2$ . The basement housed lime slurry equipment (lime slaker and hopper) as well as  $\text{MgF}_2$  pelletizing equipment.

### **2.3 CONTAMINANTS**

The C-402 facility was radiologically contaminated. The primary radionuclides were uranium and technetium-99. Prior to characterization and decontamination and decommissioning (D&D) of the facility, asbestos-containing material (ACM), some Resource Conservation and Recovery Act (RCRA) waste, and polychlorinated biphenyls (PCBs) in oil were expected to be present. Samples of material suspected to contain asbestos (e.g., roofing material and window caulk) were collected and characterized to determine if ACM was present. The characterization results indicated that neither material contained ACM. A small amount (approximately 1  $\text{ft}^3$ ) of mixed low-level waste (MLLW) was generated from fuses in the equipment and the building electrical system. Through field characterization, the presence of PCBs greater than 50 parts per million (ppm) was not detected in the oil. Due to the small volumes of waste generated during this project, the MLLW and the oil were consolidated with similar waste streams for future characterization and disposal.

### **2.4 PREVIOUS INVESTIGATIONS/ACTIONS**

A walk down of the C-402 facility was conducted in 2003 during the development of the Environmental Compliance Improvement Plan. As a result, the potential for a small quantity of MLLW to be generated from fuses in the equipment and from the building electrical system was identified. Additionally, oil in the equipment was identified as a possible PCB source. Personnel who performed the walk down also noted the potential for ACM to exist due to the age of the facility. No previous removal actions were conducted at the C-402 facility.



**Figure 1. Photograph of C-402 Lime House Facility**

### **3. PROJECT DESCRIPTION**

#### **3.1 SCOPE AND PURPOSE**

The scope of this non-time-critical removal action included the removal, characterization, and disposal of the C-402 Building contents and structure to the existing concrete slab. The scope did not include removal of external utilities and ancillary equipment, the concrete building slab, building foundation and partial basement, or the soil in Solid Waste Management Unit 480. These items will be addressed as part of subsequent actions (i.e., Soils Operable Unit, Gaseous Diffusion Plant D&D).

#### **3.2 REMOVAL ACTION OBJECTIVES**

The removal action objectives form the basis for the C-402 facility removal action. The removal action objectives for this action were to accomplish the following:

- Prevent the potential health and safety hazards to on-site personnel from deterioration of the contaminated structures; and
- Minimize or eliminate the potential health and environmental hazards of radiation and hazardous material exposure caused by the potential uncontrolled release of contaminated dust, equipment, and building materials from the facility.

#### **3.3 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS**

In accordance with 40 *CFR* § 300.415(j) of the National Oil and Hazardous Substances Pollution Contingency Plan, U.S. Department of Energy (DOE) on-site removal actions conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) are required to attain applicable or relevant and appropriate requirements (ARARs) to the extent practicable, considering the scope and urgency of the action.

The approved ARARs for this removal action can be found in Appendix B of the *Engineering Evaluation/Cost Analysis for the C-402 Lime House, C-405 Incinerator, and C-746-A West End Smelter at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/OR/07-2227&D2).

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## **4. REMOVAL ACTION ACTIVITIES**

### **4.1 PROCESS DEFINITION**

The general activities of the removal action included the following:

- Isolation of power and temporary power set up;
- Removal of electrical components;
- Removal of equipment/material, including loose material, installed equipment, and associated piping/ductwork;
- Filling the basement with flowable fill;
- Site preparation for concrete demolition;
- Removal of building structure—demolition of roof and walls to the first floor concrete slab;
- Site cleanup—demobilization of equipment and materials, radiological posting of the slab walls and slab;
- Disposal of waste at on-site C-746-U Landfill; and
- Disposal of waste at an off-site treatment, storage, and disposal facility.

### **4.2 PROCESS SEQUENCE**

The C-402 Lime House Facility D&D was performed by the DOE prime contractors, Bechtel Jacobs Corporation LLC (BJC) and subsequently by Paducah Remediation Services, LLC (PRS). Fieldwork was started on March 21, 2006, under the BJC work control program. PRS replaced BJC as DOE's prime remediation contractor on April 24, 2006. Fieldwork was restarted under PRS on April 26, 2006, utilizing work control documents that were BJC work packages and/or developed per PRS procedures and regulatory requirements. The BJC work packages were reviewed and evaluated to verify compliance with PRS programs and procedures prior to the start of work. All work planning incorporated the Integrated Safety Management Systems process that included defining the scope of work, analyzing the hazards, mitigating the hazards, executing the work, and providing worker feedback and continuous improvement. This work control method ensured compliance with technical; regulatory; and environmental, safety, and health requirements. Radiological control technicians provided full-time support for the project and monitored activities to ensure control of contamination.

Prior to the facility D&D, the facility was in shutdown/inactive status under surveillance and maintenance (S&M) in the D&D program. The walls and roof were sound structurally; however, the roof leaked. All installed equipment was abandoned in place, aged, and covered with dust. Installed equipment included a lime hopper, lime slaker, lime mixer, pelletizer steam heater and dryer duct assembly,  $\text{MgF}_2$  pelletizer, conveyers, and a drying cabinet. Loose debris was stored in random areas throughout the first floor of the facility. The electrical equipment was aged and the conduit was intact.

The auxiliary and utilities (i.e., electrical, water, and steam) systems operability was unverified at the beginning of this project; however, the electrical panel still was actively supplying power to the adjacent United States Enrichment Corporation (USEC)-operated facility, C-400. A visual inspection indicated that the steam piping was isolated and air-gapped at a location outside the facility. The water piping also was isolated and air-gapped at a location in the adjacent USEC-operated facility, C-400. This isolation was verified by PRS-qualified mechanics. During facility D&D, the water line valve located in the C-402 basement was closed and the supply piping was removed back to the valve.

Building access was controlled by the facility manager and the entrance requirements for S&M activities were established and defined by a radiological work permit. Access to the lime storage hopper was controlled by a posted fixed radiological material area while the remainder of the building (first floor and basement) was posted as a contamination area (CA). All areas posted as a CA were roped off and placarded to control access.

#### **4.2.1 Electrical Power Isolation**

Prior to the D&D of the C-402 Lime House, electrical power was isolated. During the planning of the facility D&D, it was determined that 480V and 110V power was operational inside the facility. The 480V power was isolated by USEC and verified by BJC-qualified electricians. PRS-qualified electricians performed isolation of the 110V power supply and air-gapped the conduit in the basement. Once the facility's permanent power was isolated, temporary power was established. This power was supplied by a portable generator to temporary string lights and power tools required during the D&D process.

#### **4.2.2 Electrical Component Removal**

At the completion of the permanent power isolation, all electrical components interior and exterior to the facility were removed and packaged for disposal. Electrical components removed included conduit, wiring, breaker boxes, load centers, motor control centers, motor starters, junction boxes, light fixtures, and other miscellaneous components. A visual inspection of the electrical equipment was performed to identify items containing hazardous constituents. Components suspected of being characteristically hazardous were declared to be MLLW, then segregated, containerized, and transported to a permitted on-site storage facility.

#### **4.2.3 Equipment/Material Removal**

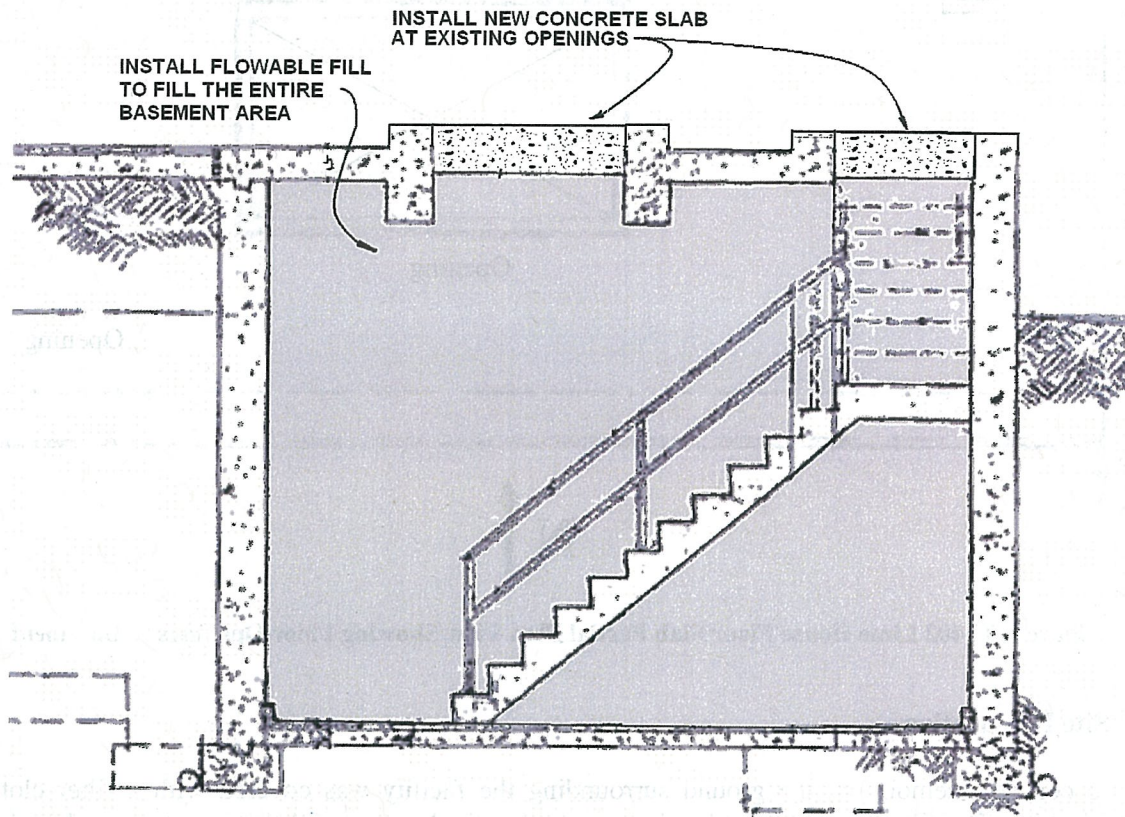
The C-402 facility housed installed equipment, loose debris, and accessories required to produce lime slurry and  $\text{MgF}_2$  pellets. The loose debris in the facility was containerized for disposal and removed from the facility. The doorway was enlarged to accommodate the use of larger equipment to transport containers in/out of the facility. Radiological control technicians provided full-time support for the project and monitored activities to ensure control of contamination. Prior to the removal of installed equipment, engineering controls, such as applying fixative to the exterior of all equipment and wrapping the waste removed from the facility, were required. Larger equipment was dismantled into smaller more manageable sections to remove it safely from the facility. General housekeeping activities were performed throughout the equipment removal process to prevent the spread of contamination.

#### **4.2.4 Filling of Basement with Flowable Fill**

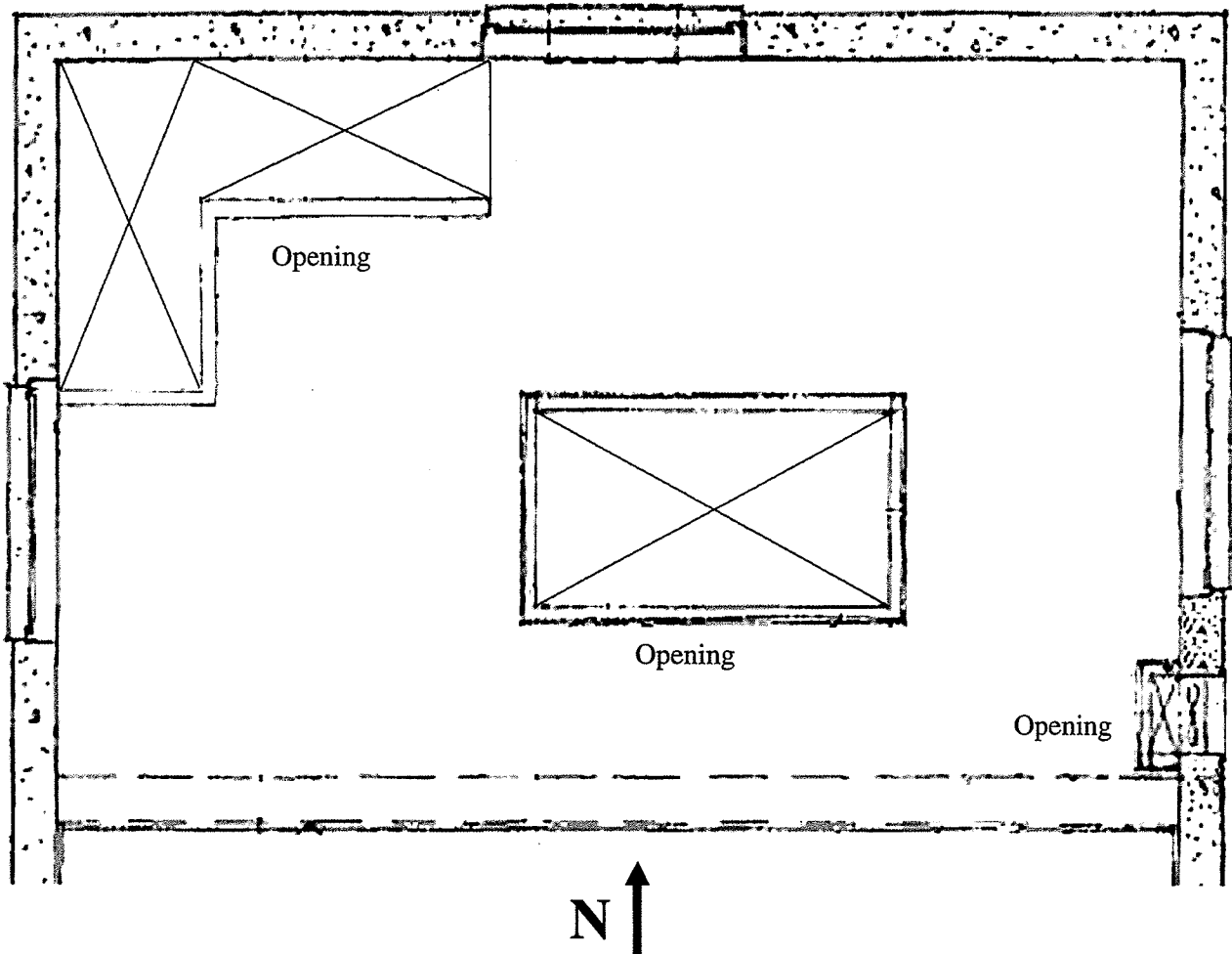
After all equipment and materials were removed from the basement, the floor drains located in the basement were plugged; the lime slurry drain line to C-403 Neutralization Pit was air-gapped and capped; and the water line valve was closed, air-gapped, and plugged. In Section 3.4.2, Structure Removal of the C-402 Remedial Action Work Plan (RAWP), it states, "The existing curbs will be removed..." During the



demolition, it was determined that removal of the curbing would not be practical from technical, schedule, and cost considerations. The stairwell and lime hopper floor openings, which were surrounded by a curb, were left in place. The curbing around the perimeter of the facility was cut with strategically located drain troughs to facilitate drainage. This change was considered a minor change. It was discussed with the U.S. Environmental Protection Agency (EPA) and Commonwealth of Kentucky personnel during the Federal Facility Agreement managers meetings and a walk down in the summer of 2006. This change does not affect the removal action objectives. The basement was filled with a low-strength, self-compacting, cementitious flowable fill. Once the fill cured, a 6-inch concrete cap was poured on top of the fill and sealed (see Figures 2 and 3).



**Figure 2. C-402 Lime House Basement Area Section View Showing Filling of Basement and Floor Openings**



**Figure 3. C-402 Lime House Floor Slab Partial Plan View Showing Floor Openings to Basement**

#### **4.2.5 Site Preparation**

Prior to concrete demolition, the ground surrounding the facility was covered with a filter cloth and ground barrier. The filter cloth was utilized to capture particulate material that was expected in the dust suppression water and any small debris from the structure demolition. A construction safety barrier was installed around the work area to restrict personnel from entering the area.

#### **4.2.6 Concrete Demolition**

After site preparation was complete, the building shell was ready for demolition. An excavator was used to demolish the walls and roof in a systematic way until only the first floor building concrete slab remained. A water mist was used to suppress the dust during this demolition activity. A skid steer loader collected all the demolition debris. All protruding rebar in the demolition debris was cut to eliminate hazards while packaging the waste for disposal (see Figure 4).





**Figure 4. C-402 Concrete Demolition**

#### **4.2.7 Site Cleanup**

After demolition of the facility was complete, all equipment and materials were demobilized and site cleanup activities began. All ground barrier and filter cloth were removed and properly containerized for disposal. General housekeeping activities were performed on the concrete slab and around the facility grounds. Radiological surveys of the facility concrete slab and slab walls were performed to determine the posting requirements. A perimeter boundary control was installed around the concrete slab per OSHA requirements. The slab and slab walls also were demarcated clearly as a fixed CA (see Figure 5).

The demolition and disposal of C-402 met all remedial action objectives for removal in compliance with the RAWP. Upon completion of the demolition, verification of the removal action was performed to ensure compliance with the RAWP.



**Figure 5. C-402 Post Demolition**

#### 4.2.8 Waste Disposal

All waste generated during the infrastructure and structure removal phases of the C-402 facility D&D was containerized for disposal. All waste materials were segregated according to the waste acceptance criteria of the disposal facility. Approximately 68% of the generated waste was disposed of at the Paducah on-site landfill. The remaining 32% of the waste was shipped to the EnergySolutions facility in Utah. Refer to Table 1, C-402 Waste Categories, Volumes, and Disposition.

**Table 1. C-402 Waste Categories, Volumes, and Disposition**

<b>Waste Stream<sup>1</sup></b>	<b>Waste Volume<sup>2</sup></b>	<b>Disposition Location</b>
Low-Level Radioactive Debris	4,644 ft <sup>3</sup>	EnergySolutions Utah Facility
Demolition Debris Less than the PGDP Authorized Limits	9,720 ft <sup>3</sup>	Paducah C-746-U Landfill
MLLW/RCRA-Hazardous Waste (Includes Radiologically Contaminated Oil)	10 ft <sup>3</sup>	Transferred to interim storage for bulking or accumulation

<sup>1</sup> Table 3.1 of the Waste Management Plan was completed before characterization data was received. Table 3.1 predicted small amounts of ACM and PCBs. Analytical data confirmed that no ACM or PCBs were generated during this project.

<sup>2</sup> Actual volume of nonhazardous solid waste was higher than estimated in Table 3.1 of the Waste Management Plan due to swell.

ACM = asbestos-containing material  
MLLW = mixed low-level waste  
PCB = polychlorinated biphenyl  
PGDP = Paducah Gaseous Diffusion Plant  
RCRA = Resource Conservation and Recovery Act

## 5. WASTE MANAGEMENT AND TRANSPORTATION ACTIVITIES

Waste management activities were conducted in accordance with the ARARs and the *Waste Management Plan for the C-402 Lime House at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (BJC/PAD-728).

### 5.1 WASTE CHARACTERIZATION

One of the first steps in the planning phase of the project was to characterize the facility to determine health and safety requirements for initial entry and to assess potential hazards. This was accomplished by reviewing available radiological survey data and documentation that described the process that had taken place in the building.

A Sampling and Analysis Plan was developed and implemented to characterize waste for compliance with treatment and disposal regulations. Selection of sample locations and media was based on observations of material and waste in the facility, previous radiological survey data, waste characterization criteria for the proposed disposal facility, and other relevant historical data on known or suspected hazards. Examples of media and waste targeted for sampling and analysis include these: (1) containerized wastes; (2) liquids; (3) soil-like material; (4) applied dry paint; (5) roofing material, caulking, and other waste suspected of being ACM. Hexane wipe samples were collected on oil-stained debris and analyzed for PCBs.

Field screening was used as a qualitative indicator of the presence or absence of regulated materials. The most frequently used field screening tests were for lead, pH, and PCBs. Positive field screening results were used as segregation criteria for liquids and debris prior to disposal. Liquids were characterized by laboratory analysis prior to disposal. Debris that had positive field screening results was declared MLLW.

Information on the type, volumes, and disposition of waste generated from C-402 D&D is summarized in Table 1, C-402 Waste Categories, Volumes, and Disposition.

### 5.2 WASTE PACKAGING

Waste materials generated during the D&D of the C-402 Lime House were containerized for transportation and disposal. The type of packaging chosen for each waste stream depended on the following:

- U.S. Department of Transportation (DOT) classification;
- Quantity of the waste stream generated; and
- Requirements of the selected disposal facility.

Container selection was based on the requirements of the *Engineering Guidance on the Selection and Management of Containers at the Paducah Gaseous Diffusion Plant* (BJC/PAD-710). Containers used for off-site shipments were purchased in accordance with *Procurement and Inspection of Items Critical for Paducah Off-Site Waste Shipments* (PA-3012). Additional guidance for waste packaging is included in procedure PAD-3015, *Guidelines on Packaging Waste for Release from the Paducah Site*.

### 5.3 WASTE TRANSPORTATION

Waste shipped off-site for disposal was in compliance with all applicable DOT regulations. Guidance for on-site and off-site transportation compliance is contained in the *Waste Management Plan for the C-402 Lime House at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (BJC/PAD-728); the On-Site Transportation Safety Document (BJC/PAD-661), as applicable; and procedure PA-3015, *Guidelines for Packaging Waste for Release from the Paducah Activities at the Paducah Site*.

### 5.4 WASTE DISPOSAL

The D&D of the C-402 facility generated three distinct waste streams: (1) low-level radioactive waste (LLW); (2) demolition debris meeting the authorized limit (AL) for the PGDP C-746-U Contained Landfill; and (3) MLLW.

The largest volume of waste generated was the demolition debris consisting of nonhazardous equipment and construction/demolition debris that met the ALs for radioactive contamination at the PGDP C-746-U Landfill and was disposed of locally.

The second largest waste stream was nonhazardous waste that exceeded the AL for the C-746-U Landfill and met the DOT definition of LLW. This waste was disposed of at the EnergySolutions facility in Utah under waste profile 8007-15.

The third waste stream consisted of radiologically contaminated oil and characteristically hazardous debris (i.e., fuses, elemental lead, etc.). A field screening test was performed on the oil to establish if PCBs existed above Toxic Substances Control Act (TSCA) standards. The screening test indicated that PCBs were not identified above the TSCA standards; therefore, oil was transferred to a permitted storage at the PGDP for bulking and additional analysis. The debris was declared MLLW and is being accumulated for off-site treatment by macroencapsulation and disposal at the EnergySolutions facility in Utah. Each of these wastes have been bulked/combined with other similar waste due to the small volumes and cost efficiencies and will be disposed of under the Material Disposition project.

## **6. PROJECT COST AND SCHEDULE**

### **6.1 PROJECT SCHEDULE**

Key milestones included the following:

- Issued Removal Notification April 8, 2005
- Issued D1 Engineering Evaluation/Cost Analysis June 13, 2005
- Issued D1 Action Memorandum September 28, 2005
- Issued D1 Removal Action Work Plan February 3, 2006
- Received regulatory approval on RAWP March 7, 2006
- Started fieldwork March 21, 2006
- Completed fieldwork August 17, 2006
- Completed waste disposition October 13, 2006.<sup>1</sup>

### **6.2 PROJECT COST**

The total demolition cost to date is approximately \$928,000. This value includes all fieldwork and off-site waste shipment and disposal costs.

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<sup>1</sup> Except for the bulked waste scheduled for disposal under the Materials Disposition Project.

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## 7. REFERENCES

- Action Memorandum for the Removal of the C-402 Lime House, the C-405 Incinerator, and the C-746-A West End Smelter at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-2237&D2, December 2005.*
- C-402 Lime House Building Removal Work Package, Revision 0, WP-05-RM0048.
- Engineering Evaluation/Cost Analysis for the C-402 Lime House, C-405 Incinerator, and C-746-A West End Smelter at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-2227&D2, August 2005.*
- Environmental Compliance Improvement Plans for RCRA-Regulated Units, Miscellaneous Materials and Legacy Low Level Waste and Listed Waste in Environmental Media at the U.S. Department of Energy Facilities Managed by Bechtel Jacobs Company LLC, BJC/OR-1372/R1, Bechtel Jacobs Company LLC, July 2003.*
- Federal Facility Agreement for the Paducah Gaseous Diffusion Plant, DOE/OR/07-1707, U.S. Environmental Protection Agency, Atlanta, GA, February 1998.*
- Removal Action Work Plan for the C-402 Lime House Inactive Facility D&D Project at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-2247&D1/R1, February 2006.*
- "Removal Notification for the C-405 Incinerator (SWMU 55), C-402 Limehouse (SWMU 480), and C-746-A West End Smelter (SWMU 464) at the Paducah Gaseous Diffusion Plant (PGDP), Paducah, Kentucky," April 2005.
- Site Management Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-1849&D1/R1, April 2005.*

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# **Comment Response Summary**

for DOE Legal Review of the

***Removal Action Report  
for the C-402 Lime House at the  
Paducah Environmental Remediation Project,  
Paducah, Kentucky  
(DOE/LX/07-0010&D0)***



Prepared for  
U.S. Department of Energy  
Office of Environmental Management

**Comment Response Summary from DOE Legal Review**  
***Removal Action Report for the C-402 Lime House at the Paducah Environmental Remediation Project,***  
***Paducah, Kentucky***  
**DOE/LX/07-0010&D0**

<b>Comment No.</b>	<b>Reviewer</b>	<b>Location in Document</b>	<b>Comment</b>	<b>Response</b>
1.	Ray Miskelley	Section 4.2, first sentence	Add "subsequently by" after and	Revised as suggested.
2.	Ray Miskelley	Page 9, Section 4.2.4, 2 <sup>nd</sup> sentence	How documented & regulator approval? Minor change?	This change was considered a minor change. The change was reviewed with the regulators as part of the Federal Facility Agreement (FFA) managers meeting and also during field walk downs of the work. Based on the discussions with the U.S. Department of Energy (DOE) and the regulators and the fact that leaving the curbing in place would not impact the remedial action objectives, Paducah Remediation Services, LLC, (PRS) determined that leaving the curbing in place with the cuts to allow drainage would be acceptable. Approval of the Removal Action Report (RAR) by the regulators will provide documented acceptance for leaving the curbing in place.
3.	Ray Miskelley	Page 9, Section 4.2.4, 3 <sup>rd</sup> sentence	Contemplated by RAWP?	Yes, an errata sheet to incorporate the change was submitted in June 2006, and regulatory approval was received in June 2006 to fill the basement with flowable fill.

Comment No.	Reviewer	Location in Document	Comment	Response
4.	Bert Gawthorp	Page 9, Section 4.2.4	Why is this change in process okay? What, if any, notifications were required? If any, were they made?	This change was considered a minor change. The change was reviewed with the regulators as part of the FFA Managers Meeting and also during field walk downs of the work. Based on the discussions with DOE and the regulators and the fact that leaving the curbing in place would not impact the RAOs, PRS determined that leaving the curbing in place with the cuts to allow drainage would be acceptable. Approval of the RAR by the regulators will provide documented acceptance for leaving the curbing in place.
5.	Ray Miskelley	Page 11, Section 4.2.7, 2 <sup>nd</sup> paragraph last sentence	Part of RAWP or being conducted under other authority?	Deleted paragraph due to description of activity not being part of the removal action.
6.	Bert Gawthorp	Page 11, Section 4.2.7	What limits are you referencing when you state in paragraph 2, "contamination levels above limits." Is this complete without the fixative?	Deleted paragraph due to description of activity not being part of the removal action.
7.	Ray Miskelley	Page 14, Section 5.3	Why is the On-site Transportation Safety Document referenced for off-site disposal?	Section 5.3 describes all applicable documents utilized for transportation of waste both on- and off-site. For clarification, "on-site and off-site" was deleted from the section title and the second sentence of the paragraph was revised as follows: "Guidance for on-site and off-site transportation compliance is contained in the <i>Waste Management Plan....Site.</i> "

<b>Comment No.</b>	<b>Reviewer</b>	<b>Location in Document</b>	<b>Comment</b>	<b>Response</b>
8.	Ray Miskelley	Page 14, Section 5.4, page 15 ; Sections 6.1 and 6.2	Not as CERCLA action? Intent not clear. Completed all work if not yet disposed?	Added the following at the end of the paragraph to clarify the final disposition of the waste, "Each of these wastes have been bulked/combined with other similar waste due to the small volumes and cost efficiencies and will be disposed of under the Material Disposition project." Also, deleted last sentence in Section 5.4.
9.	Ray Miskelley/Bert Gawthorp	Page 14, Section 5.4 ; page 15, Section 6.1	Is this complete if the waste has yet to be disposed of? Last bullet contradicts	Added the following at the end of the paragraph to clarify the final disposition of the waste, "Each of these wastes have been bulked/combined with other similar waste due to the small volumes and cost efficiencies and will be disposed of under the Material Disposition project." Also, deleted last sentence in Section 5.4.

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10.	Reinhard Knerr	Sections 2.3, 2.4, 4.2.2, 5.1, 5.4	Change reference to RCRA waste to Mixed Low Level Waste to clarify waste classification.	Document revised as requested.
11.	Reinhard Knerr	Section 4.2.1	Were the electricians that verified the isolations BJC or PRS?	The electrician work was performed under BJC and the reference was changed to BJC.



<b>Comment No.</b>	<b>Reviewer</b>	<b>Location in Document</b>	<b>Comment</b>	<b>Response</b>
12.	Reinhard Knerr	Section 4.2.4	Since this is considered a minor change, regulatory approval should not be required.	Text referenced, "Approval for this change will be assumed with approval of the Removal Action Report by EPA and the Commonwealth of Kentucky," has been deleted. It should be noted, however, that this now deleted text had been added to the D1 document in order to respond to comments 2 and 4.
13.	Reinhard Knerr	Table 1 footnote 2	The use of the term bulking could be confused with in Section 5.4.	Agree. Bulking was changed to swell.
14.	Reinhard Knerr	Section 5.2, first bullet	Use of the term DOE specification does not make sense.	"DOE specification for the waste stream based upon" was deleted.
15.	Reinhard Knerr	Section 6.2	Add a footnote to the last bullet concerning waste disposal to clarify all waste except for the bulked waste has been disposed.	Revised as requested.