



## Department of Energy

Portsmouth/Paducah Project Office  
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Lexington, Kentucky 40513  
(859) 219-4000

**MAY 28 2010**

Mr. W. Turpin Ballard  
U.S. Environmental Protection Agency, Region 4  
Federal Facilities Branch  
61 Forsyth Street  
Atlanta, Georgia 30303

PPPO-02-562-10

Mr. Edward Winner, FFA Manager  
Kentucky Department for Environmental Protection  
Division of Waste Management  
200 Fair Oaks Lane, 2<sup>nd</sup> Floor  
Frankfort, Kentucky 40601

Dear Mr. Ballard and Mr. Winner:

**TRANSMITTAL OF THE REPLACEMENT PAGES FOR THE REMOVAL ACTION  
WORK PLAN FOR THE C-746-A EAST END SMELTER DECOMMISSIONING AT  
THE PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY  
(DOE/LX/07-0296&D2/R1)**

Please find enclosed replacement pages for the *Removal Action Work Plan for the C-746-A East End Smelter Decommissioning at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/LX/07-0296&D2/R1) (RAWP). The Department of Energy (DOE) has incorporated text satisfying the verbal comments from the U.S. Environmental Protection Agency (EPA) received May 19, 2010. Also enclosed are the certification page, red-lined version of the D2/R1 RAWP replacement pages, and revised Comment Response Summary documents (clean and red-lined).

If you have any questions or require additional information, please contact Rob Seifert at (270) 441-6823.

Sincerely,

A handwritten signature in black ink, appearing to read "Reinhard Knerr", with a long horizontal line extending to the right.

Reinhard Knerr  
Paducah Site Lead  
Portsmouth/Paducah Project Office

Enclosures:

1. Certification Page
2. Replacement pages for D2/R1 RAWP C-746-A EES
3. Red-lined replacement pages for D2/R1 RAWP C-746-A EES
4. Red-lined CRS for EPA
5. Replacement pages for EPA CRS

cc w/enclosures:

AR File/Kevil

e-copy w/enclosures:

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## CERTIFICATION

Document Identification: ***Replacement Pages for the Removal Action Work Plan for C-746-A East End Smelter Decommissioning at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/LX/07-0296&D2/R1)***

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Paducah Remediation Services, LLC

Operator



Dennis Ferrigno, PM, Site Manager  
Paducah Remediation Services, LLC

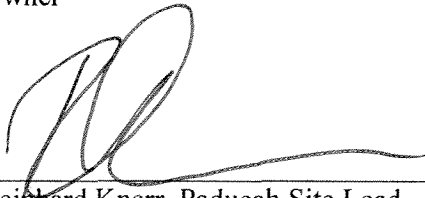
5-28-10

Date Signed

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U.S. Department of Energy (DOE)

Owner



Reinhard Knerr, Paducah Site Lead  
Portsmouth/Paducah Project Office

5/28/10

Date Signed

**Removal Action Work Plan  
C-746-A East End Smelter Decommissioning at the  
Paducah Gaseous Diffusion Plant,  
Paducah, Kentucky**



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**Removal Action Work Plan  
C-746-A East End Smelter Decommissioning at the  
Paducah Gaseous Diffusion Plant,  
Paducah, Kentucky**

Date Issued—May 6, 2010

Revised Date—May 28, 2010

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

Prepared by  
PADUCAH REMEDIATION SERVICES, LLC  
managing the  
Environmental Remediation Activities at the  
Paducah Gaseous Diffusion Plant  
under contract DE-AC30-06EW05001

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# C-746-A EAST END SMELTER DEMOLITION PLAN

## DEMOLITION ACTIVITIES

The Demolition Plan defines the detailed activities required to remove the structure of the East End Smelter (EES) to the slab and to decontaminate/stabilize the slab and subsurface pits, trenches, and sumps for subsequent actions under the post-gaseous diffusion plant Soils and Slabs Operable Unit activities.

The C-746-A EES Building is made of a steel frame with supporting interior floors made of concrete slab, steel grating, or steel deck plates. Exterior walls and roof are corrugated steel with steel sash windows.

It is anticipated that all accessible interior asbestos-containing materials (ACM) will have been removed and any systems (e.g., process piping, equipment) containing chemical and/or radionuclides will have been emptied of residual material, to the extent practicable, during the deactivation activities. Additionally, certain wastes, such as polychlorinated biphenyl (PCB) capacitors, mercury switches, or manometers, etc., will have been removed. During the deactivation process the building surfaces and infrastructure (i.e., floors, walls, residual piping, and equipment) will be vacuumed and sealed to contain and minimize airborne releases. Prior to initiating activities that could result in the spread of contamination to the adjacent center section of C-746-A and surrounding soils, barriers such as plastic screens, temporary walls, isolation of areas by using existing doors, etc., will be installed to minimize cross-contamination during decommissioning.

The decommissioning phase of this project will be accomplished in a manner consistent with applicable or relevant and appropriate requirements. The buildings and remaining infrastructure will be removed, size reduced, packaged, and transported to a designated disposal location. The slab will be cleaned and coated with fixative. The subsurface pits, trenches, and sumps will be backfilled.

The small amounts of contaminants that may remain after deactivation are expected to include radiological contamination from uranium, PCBs in paint, and small amounts of hazardous substances that cannot be accessed for removal and dust potentially containing beryllium or lead. Any hazardous materials that may be present in nonprocess systems and become commingled with the demolition debris are expected to be in sufficiently low quantities that they would not require the building debris to be regulated as Resource Conservation and Recovery Act hazardous waste. The demolition debris will be characterized and is expected to consist of various types of waste such as low-level waste, PCB bulk product waste, and solid waste.

### Block Building Demolition

This work involves the removal of the office located at the northeast corner of C-746-A EES. The office is made of concrete block outer walls with metal windows and doors. The following activities will be performed during the demolition of the block building.

- (1) Establish a safety barricade inside the building around the office area.
- (2) Construct silt fence and install runoff control, as required.
- (3) Remove the office windows and doors.
- (4) Remove conduit, wiring, and piping in the office area.
- (5) Remove the overhead fluorescent lights and fixtures.



- (6) Dismantle the metal deck ceiling and concrete block walls of the office. Remove all concrete blocks and mortar to floor level. Spray amended water mist on the debris during this activity to mitigate the generation of dust.
- (7) Decontaminate slab, as appropriate, and apply fixative.
- (8) Package waste for shipment.

### **Roof, Wall and Support Structure Demolition**

The following activities will be performed during the demolition of the roof, walls, and support structure of EES.

- (1) Establish a safety barricade around the building perimeter.
- (2) Construct silt fence; install runoff controls, as required. Use amended water to control fugitive dust.
- (3) Remove overhead doors and man doors from the north, south, and east walls.
- (4) Remove the corrugated sheet metal roof panels.
- (5) Remove the corrugated sheet metal wall panels on the north and south walls.
- (6) Remove purlins, girders, and girts; lower to the floor and downsize as required for containerization.
- (7) Remove the roof and wall panels.
- (8) Tie or band bundles of roof or wall panels together and place in a roll-off bin or intermodal container for disposal.
- (9) Remove the roof purlins and girts then lower the purlins to the floor and downsize, as required for containerization.
- (10) Position crane or excavator and shear, necessary hoisting and rigging equipment, and stabilize and remove the roof trusses from the columns.
- (11) Lower the trusses to the floor and downsize, as required for containerization.
- (12) Remove the building columns, with the exception of column line 23 and stabilize, as necessary, by cutting the base of the column or the studs holding the base of the column to the concrete floor. After the base is loose from the floor, slowly lower the column to the floor and downsize, as required for containerization. Repeat this step until all columns have been removed. Column line 23 is adjacent to the west wall of EES. It must be left in place to support the roof of the central waste storage and treatment area.
- (13) Cut bolts fastening the column to the concrete slab flush with the top of the slab.
- (14) Cut the drain line near the north-south center of the east edge of the slab at groundlevel and fill with grout.

## C-746-A EAST END SMELTER DEMOLITION REMOVAL ACTION VERIFICATION PLAN

This Demolition Removal Action Verification Plan identifies sampling and/or monitoring necessary to confirm that the groundlevel slab of East End Smelter (EES) has been placed in a protective state that will prevent migration of contaminants from the slab after the buildings have been demolished. During removal action implementation, fugitive emissions and cross-contamination will be controlled through a combination of methods including, but not limited to, negative air machines, fixing agents, physical barriers (e.g., plastic sheeting), and other contamination control measures.

The criteria for determining success of the removal action include the removal of the physical structure to slab and removal of the associated residual contaminants, which include radionuclides, polychlorinated biphenyls (PCBs), asbestos-containing materials, and components containing residual heavy metals contamination. Tables B.1-B.4 illustrate the analytical parameters and U.S. Environmental Protection Agency (EPA) test method for each of the types of samples that may be obtained during the decommissioning activities.

**Table B.1. Paint Sampling Parameters and Test Methods**

Analytical Parameter	Test Method
PCBs	EPA SW-846-8082

**Table B.2. Hexane Wipe Sampling Parameters and Test Methods**

Analytical Parameter	Test Method
PCB Wipe analysis	EPA SW-846-8082

**Table B.3. Oil and Lubricant or Water Sampling Parameters and Test Methods**

Analytical Parameter	Test Method
pH	EPA SW-846-9045
Total Metals (RCRA 8 plus Zn, Tl)	EPA SW-846-6020 EPA SW-846-6010
Total Metals—Mercury	EPA SW-846-7470/7471
PCBs	EPA SW-846-8082
Total U, U-234, U-238, Th-228, Th-230, Th-232, Pu-238, Pu-239, Pu-240, Np-237, Am-241, Mass of U-235, Activity of U-235, Weight Percent of U-235	Alpha Spectroscopy/Inductively Coupled Plasma Mass Spectrometry
Cs-134, Cs-137, Co-60, Th-234, K-40	Gamma Spectroscopy
Tc-99, Sr-90	Liquid Scintillation
VOAs	EPA-SW-846-8260
SVOAs	EPA-SW-846-8270 (includes Halogens)

Total metals include arsenic, barium, cadmium, chromium, lead, selenium, silver, beryllium, antimony, nickel and zinc.

pH = hydrogen-ion concentration

PCB = polychlorinated biphenyl

RCRA = Resource Conservation and Recovery Act

SVOA = semivolatile organic analytes

VOA = volatile organic analytes

**Table B.4. Asbestos Sampling Parameters and Test Methods**

<b>Analytical Parameter</b>	<b>Test Method</b>
TCLP Metals (except Mercury) plus Zn	EPA SW-846-6010
TCLP Metals—Mercury	EPA SW-846-7470
Total U, U-234, U-238, Th-228, Th-230, Th-232, Pu-238, Pu-239, Pu-240, Np-237, Am-241, Mass of U-235, Activity of U-235, Weight Percent of U-235	Alpha Spectroscopy/Inductively Coupled Plasma Mass Spectrometry
Cs-134, Cs-137, Co-60, Th-234, K-40	Gamma Spectroscopy
Tc-99	Liquid Scintillation
Sr-90	Gas Proportional
Asbestos	NIOSH-9002

TCLP = toxicity characteristic leaching procedure

Surfaces around the perimeter of the removal action will be protected from cross-contamination by paint chips and other debris through the use of physical barriers. Such barriers, which will be installed prior to activities that could result in the spread of contamination to the adjacent center section of C-746-A and surrounding soils, include plastic screens, temporary walls, isolation of areas by using existing doors, etc. The slab that will remain after structural demolition will be inspected, visually, surveyed, decontaminated, as appropriate, and sealed to minimize the possibility of spreading contamination. Loose and scaling paint will be removed from the foundation and other hard surfaces to the extent the U.S. Department of Energy deems practicable using available equipment and techniques. Successful removal of paint chips will be verified by visual inspection of the foundation.

Fixatives may be applied to prevent scaling paint and fugitive dust, which may contain contaminated materials, from being released to the environment. Loose material such as paint chips will be segregated from the primary waste streams to the extent possible via vacuuming and other physical means. The slab will be sampled and analyzed for the presence of beryllium.

There are no known unremediated PCB spills that will remain in C-746-A EES following deactivation.

Following demolition, the slab will be surveyed in accordance with the criteria of 10 *CFR* § 835, Appendix D, and posted accordingly. The slab surface will be decontaminated by washing, scabbling, or other physical means prior to applying a fixative when the removable contamination levels on the slab surface exceed the levels specified in 10 *CFR* § 835, Appendix D.

**Removal Action Work Plan  
C-746-A East End Smelter Decommissioning at the  
Paducah Gaseous Diffusion Plant,  
Paducah, Kentucky**



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Asbestos	NIOSH-9002

TCLP = toxicity characteristic leaching procedure

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Following demolition, the slab will be surveyed in accordance with the criteria of 10 *CFR* § 835, Appendix D, and posted accordingly. The slab surface will be decontaminated by washing, scabbling, or other physical means prior to applying a fixative when the removable contamination levels on the slab surface exceed the levels specified in 10 *CFR* § 835, Appendix D.

**COMMENT RESPONSE SUMMARY**  
**for the**  
**Removal Action Work Plan**  
**C-746-A East End Smelter Decommissioning at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky**  
**(DOE/LX/07-0296&D1)**

**Comments from EPA; Received on March 11, 2010**

Comment Number	§/Page/¶ in Document	Comment	Response
6.	Section 3.8/Page 16/only paragraph	“Section 3.8 indicates a beryllium plan would be developed (if required). Will it or won't it? The EES is flagged as a beryllium area. Under what conditions would it not require such a plan?”	The EES contains beryllium contamination and is currently regulated as a beryllium area under a beryllium control program. To the maximum extent practicable, materials that are contaminated with beryllium will be removed during the deactivation activities. Additionally, the building will be cleaned and fixative applied to mitigate any remaining beryllium; however, it is expected that some beryllium will remain fixed to certain structural elements. As a result, a beryllium control plan will remain in place during the structural demolition for East End Smelter. Since the existing beryllium control plan will remain in place during structural demolition, “Beryllium Plan (if required)” has been deleted from Section 3.8.
7.	Appendix B/Page B-3	“Appendix B, the Removal Action Verification Plan, should include a table of sampling and analytical procedures that are expected to be needed in order to achieve the objectives of the Plan. This would be a summary table and the SAP would then provide more detail.”	The text and tables on page 6 will be added to Appendix B of the RAWP.
8.	Appendix B/Page B-3/3rd paragraph	“Appendix B, page B-3, states that surfaces around the perimeter of the removal action will be protected from cross-contamination by paint chips and other debris through the use of physical barriers. Give examples of the types of barriers that may be used and how and when they would be deployed. Logically this would have to happen before the removal action was started, but there is no line item for this activity in Appendix A, Demolition Plan.”	The following text has been added: “Such barriers, <u>which will be installed prior to activities that could result in the spread of contamination to the adjacent center section of C-746-A and surrounding soils,</u> include plastic screens, temporary walls, isolation of areas by using existing doors, etc.”  Additionally, the following language has been included in the Demolition Activities section, paragraph 3 of Appendix A. “ <u>Prior to initiating activities that could result in the spread of contamination to the adjacent center section of C-746-A and surrounding soils,</u> barriers such as plastic screens, temporary walls, isolation of areas by using existing doors, etc., will be installed to minimize cross-contamination during decommissioning.”

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**COMMENT RESPONSE SUMMARY**  
**for the**  
**Removal Action Work Plan**  
**C-746-A East End Smelter Decommissioning at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky**  
**(DOE/LX/07-0296&D1)**

**Comments from EPA; Received on March 11, 2010**

Comment Number	§/Page/¶ in Document	Comment	Response
4.	Section 3.5/Page 15/only paragraph	“Section 3.5 does not constitute a Waste Management Plan, and an adequate WMP should be included. It is not sufficient to state that we will follow the ARARs.”	<p>Project-specific agreement on 3/17/10: Current WMP format is adequate as supplemented below. Parties agree that this agreement does not constitute a precedent, except in the case of the C-340 removal action.</p> <p>Section 3.5 of the RAWP now reads:  The FFA does not have a specific requirement for the inclusion of a WMP in an RAWP, though it is not precluded. Due to the prescriptive nature of the ARARs relative to the waste management activities expected during implementation of this removal action and the well-defined waste stream volume and characteristics expected to be generated for this project, waste management activities will be performed in accordance with the approved ARARs. Specific work instructions and procedures that incorporate and flow down the requirements of the ARARs either are in place or will be developed for the field personnel to utilize when performing day-to-day operations.”</p>
5.	Section 3.6/Page 15/only paragraph	“Section 3.6 – If a Programmatic QAPP exists, as is suggested, it should be added to the References section.”	The Programmatic QAPP is now included by reference: “PRS (Paducah Remediation Services, LLC) 2009. <i>Quality Assurance Program Plan for the Paducah Environmental Remediation Project, Paducah, Kentucky</i> , PRS-CDL-0058/R4.”

**COMMENT RESPONSE SUMMARY**  
**for the**  
**Removal Action Work Plan**  
**C-746-A East End Smelter Decommissioning at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky**  
**(DOE/LX/07-0296&D1)**

**Comments from EPA; Received on March 11, 2010**

Comment Number	§/Page/¶ in Document	Comment	Response
6.	Section 3.8/Page 16/only paragraph	“Section 3.8 indicates a beryllium plan would be developed (if required). Will it or won't it? The EES is flagged as a beryllium area. Under what conditions would it not require such a plan?”	The EES contains beryllium contamination and is currently regulated as a beryllium area under a beryllium control program. To the maximum extent practicable, materials that are contaminated with beryllium will be removed during the deactivation activities. Additionally, the building will be cleaned and fixative applied to mitigate any remaining beryllium; however, it is expected that some beryllium will remain fixed to certain structural elements. As a result, a beryllium control plan will remain in place during the structural demolition for East End Smelter. Since the existing beryllium control plan will remain in place during structural demolition, “Beryllium Plan (if required)” has been deleted from Section 3.8.
7.	Appendix B/Page B-3	“Appendix B, the Removal Action Verification Plan, should include a table of sampling and analytical procedures that are expected to be needed in order to achieve the objectives of the Plan. This would be a summary table and the SAP would then provide more detail.”	The text and tables on page 6 will be added to Appendix B of the RAWP.
8.	Appendix B/Page B-3/3rd paragraph	“Appendix B, page B-3, states that surfaces around the perimeter of the removal action will be protected from cross-contamination by paint chips and other debris through the use of physical barriers. Give examples of the types of barriers that may be used and how and when they would be deployed. Logically this would have to happen before the removal action was started, but there is no line item for this activity in Appendix A, Demolition Plan.”	The following text has been added: “Such barriers, which will be installed prior to activities that could result in the spread of contamination to the adjacent center section of C-746-A and surrounding soils, include plastic screens, temporary walls, isolation of areas by using existing doors, etc.”  Additionally, the following language has been included in the Demolition Activities section, paragraph 3 of Appendix A. “Prior to initiating activities that could result in the spread of contamination to the adjacent center section of C-746-A and surrounding soils, barriers such as plastic screens, temporary walls, isolation of areas by using existing doors, etc., will be installed to minimize cross-contamination during decommissioning.”