

## Department of Energy

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**JUL 31 2013**

Mr. Todd Mullins  
Federal Facility Agreement Manager  
Kentucky Department for Environmental Protection  
Division of Waste Management  
200 Fair Oaks Lane, 2<sup>nd</sup> Floor  
Frankfort, Kentucky 40601

PPPO-02-1979495-13

Ms. Jennifer Tufts  
Federal Facility Agreement Manager  
U.S. Environmental Protection Agency, Region 4  
61 Forsyth Street  
Atlanta, Georgia 30303

Dear Mr. Mullins and Ms. Tufts:

**TRANSMITTAL OF PAGE CHANGES FOR REMEDIAL ACTION WORK PLAN FOR  
PHASE IIA OF THE INTERIM REMEDIAL ACTION FOR THE VOLATILE  
ORGANIC COMPOUND CONTAMINATION AT THE C-400 CLEANING BUILDING  
AT THE PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY  
(DOE/LX/07-1271&D2/R2)**

References:

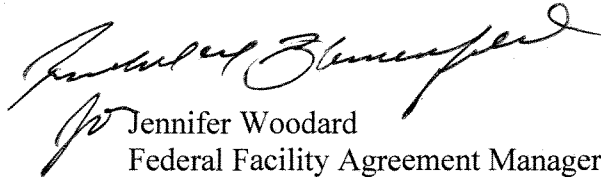
1. Letter from W. Ballard to R. Knerr, Untitled [Subject: EPA Conditional Approval of the Remedial Action Work Plan for Phase Iia of the Interim Remedial Action for Volatile Organic Compound Contamination at the C-400 Cleaning Building at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/LX/07-1271&D2/R1)]," dated July 31, 2012
2. Letter from A. Webb to R. Knerr, "Approval of the Remedial Action Work Plan for Phase Iia of the Interim Remedial Action for Volatile Organic Compound Contamination at the C-400 Cleaning Building (DOE/LX/07-1271&D2/R1), Paducah Gaseous Diffusion Plant, Paducah, McCracken County, Kentucky, KY8-890-008-982," dated July 30, 2012

Please find enclosed the certified page changes to the *Remedial Action Work Plan for Phase Iia of the Interim Remedial Action for the Volatile Organic Compound Contamination at the C-400 Cleaning Building at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-1271&D2/R2 (RAWP). A redline version of the RAWP page changes is provided to assist you with your review. These changes to the RAWP were discussed at the Federal Facility Agreement parties' teleconference on January 17, 2013, and will allow the use of an alternative suspended solids treatment technology to the filter press. After evaluation of the various technologies available, DOE is requesting modification of the RAWP to remove the reference of the filter press and replace it with a more generic treatment of suspended solids to allow for

flexibility in the final treatment process. Pages 71 and 105 of the RAWP have been edited to remove language that restricted use of other treatment technologies. The enclosed page changes incorporate changes and clarifications to the RAWP that are consistent with those discussed and agreed to among Federal Facility Agreement parties via the teleconference.

If you have any questions or require additional information, please contact David Dollins at (270) 441-6819.

Sincerely,



Jennifer Woodard  
Federal Facility Agreement Manager  
Portsmouth/Paducah Project Office

Enclosures:

1. Certification Page
2. Clean page changes to the C-400 Phase IIa RAWP
3. Redline page changes to the C-400 Phase IIa RAWP

e-copy w/enclosures:

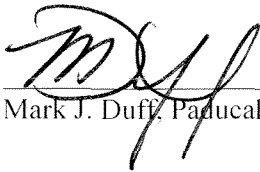
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CERTIFICATION

**Document Identification:** *Remedial Action Work Plan for Phase IIa of the Interim Remedial Action for the Volatile Organic Compound Contamination at the C-400 Cleaning Building at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/LX/07-1271&D2/R2*

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 ensure 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.

LATA Environmental Services of Kentucky, LLC



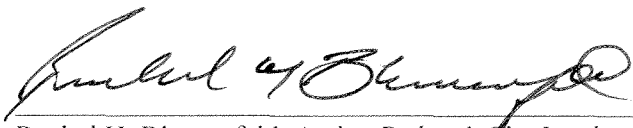
Mark J. Duff, Paducah Project Manager

7-31-13

Date Signed

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 ensure 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.

U.S. Department of Energy (DOE)



Rachel H. Blumenfeld, Acting Paducah Site Lead  
Portsmouth/Paducah Project Office

7-31-13

Date Signed

DOE/LX/07-1271&D2/R2  
Primary Document

**Remedial Action Work Plan  
for Phase IIa of the Interim Remedial Action  
for the Volatile Organic Compound Contamination  
at the C-400 Cleaning Building  
at the Paducah Gaseous Diffusion Plant,  
Paducah, Kentucky**



**CLEARED FOR PUBLIC RELEASE**



**DOE/LX/1271&D2/R2  
Primary Document**

**Remedial Action Work Plan  
for Phase IIa of the Interim Remedial Action  
for the Volatile Organic Compound Contamination  
at the C-400 Cleaning Building  
at the Paducah Gaseous Diffusion Plant,  
Paducah, Kentucky**

Date Issued—July 2013

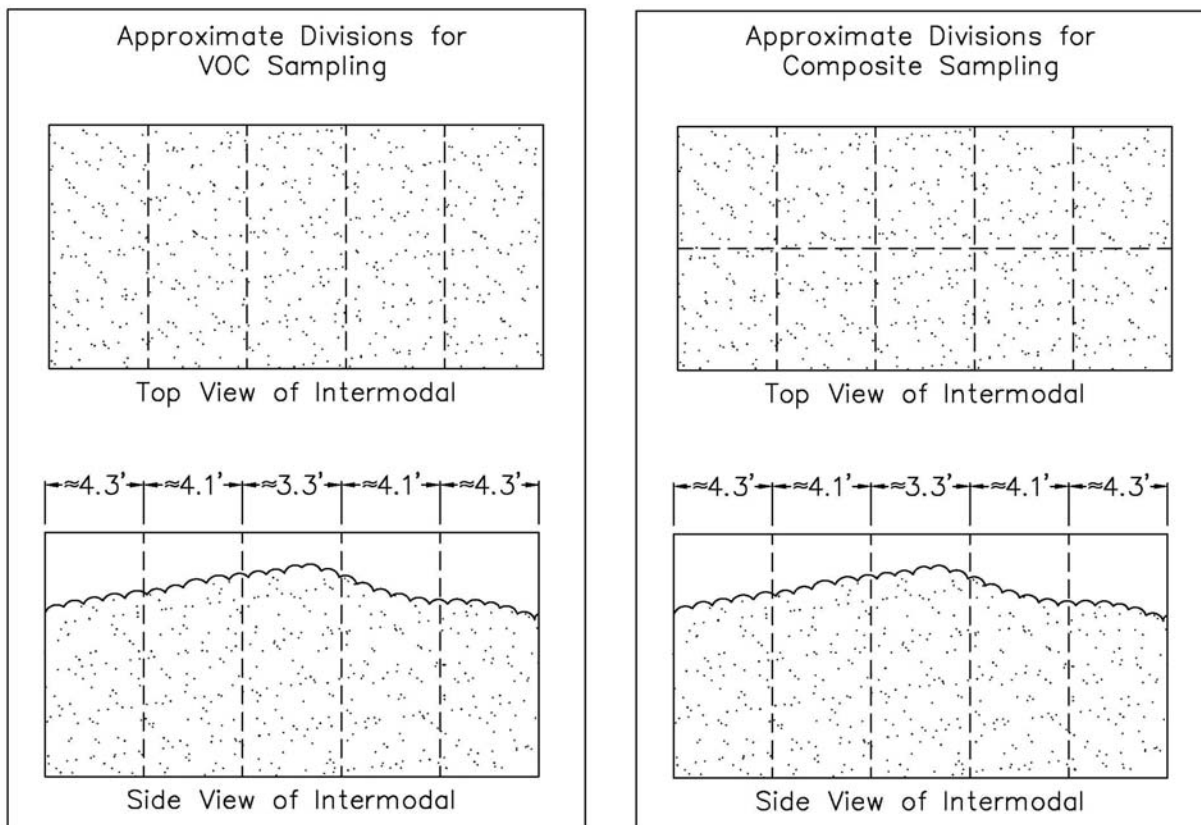
U.S. DEPARTMENT OF ENERGY  
Office of Environmental Management

Prepared by  
LATA ENVIRONMENTAL SERVICES OF KENTUCKY, LLC  
managing the  
Environmental Remediation Activities at the  
Paducah Gaseous Diffusion Plant  
under contract DE-AC30-10CC40020

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Additional analyses to meet off-site disposal WAC also may be required and will be specified upon selection of the disposal site.



**Figure 8. Approximate Division Locations for Intermodal Waste Sampling**

### 8.3.3.2 Aqueous Waste

All liquid waste water samples will be collected directly from the 55-gal drums, 1,000-gal portable containers, or larger tanks, as applicable, which will be located in a CERCLA storage area.

Collecting samples from the drain valve is the preferred method, but this method will be conducted only if the drain valve is high enough from the ground to allow containment of any spilled material. Decontamination/drilling water containing solids will be transferred to C-752-C for on-site treatment of suspended solids, if necessary. Once the solids are removed (when required), the water will be characterized for treatment and disposal at the C-612 Northwest Plume Groundwater System. If the water otherwise meets discharge requirements for KPDES Outfall 001, including health-based levels for TCE and TCA and water quality criteria for TCE of 30.8 ppb, then the C-613 Sedimentation Basin may be used as the most appropriate on-site treatment for high total suspended solids removal before discharge. The water will be discharged through a KPDES outfall. One sample per portable water tank or drum will be collected for analysis when capacity is reached or fieldwork is complete. One duplicate sample will be obtained for every 20 samples collected.



#### **8.3.4 Waste Water Treatment**

Water from the decontamination of drilling equipment will be collected and stored as CERCLA waste. Following sampling and characterization to determine if the acceptance criteria are met, the water will be processed to remove suspended solids, if necessary, and then transported to either the C-400 IRA water treatment facility, C-612 Northwest Plume Groundwater System, or other acceptable facility for treatment to remove the hazardous constituent TCE. Following treatment, as necessary, to meet the effective effluent parameters in the KPDES permit, the wastewater will be discharged through KPDES Outfall 001.

A portion of the drill cuttings from inside the areas mapped to have free-phase DNAPL may be determined to be characteristically hazardous and will be managed on-site in accordance with substantive requirements of RCRA. Wastes determined to be hazardous will be transferred to an on-site, permitted RCRA storage facility until such time as it is transferred off-site to an approved RCRA treatment and disposal facility.

The remainder of the drill cuttings that are not from the mapped areas of free-phase DNAPL is assumed not to be characteristically hazardous. This waste will be characterized and the concentrations of listed constituents, TCE and 1,1,1-TCA, will be compared to health-based levels for a “no longer contains” determination. If the concentrations are less than health based levels, the waste will not be managed as a RCRA-listed waste. If analytical results show that this waste meets the WAC of the C-746-U Landfill, the waste will be disposed of there as nonhazardous waste.

### **12.2.3 Personal Protective Equipment**

PPE will be worn as specified in the HASP, Chapter 7 of this work plan, by personnel performing the field tasks during the C-400 IRA. While site personnel use procedures and BMPs to minimize opportunities for contacting TCE contaminated media and equipment, it is likely that some PPE or related debris (e.g., plastic sheeting) will come into contact with TCE-contaminated materials during the remediation process. Process knowledge, visual inspections, or direct sampling will be used to characterize PPE and any related debris. Based on the results of the characterization, any PPE or the related debris determined by site personnel to be contaminated by a listed waste or exhibiting a RCRA characteristic will be managed as hazardous waste, decontaminated, or a no longer contaminated-with determination will be made pursuant to Section 8.3.1. In cases where site personnel conclude, based on the above characterization process, that the PPE or related debris has not been contaminated by a listed waste or does not exhibit a characteristic, then the materials will not be considered a RCRA hazardous waste. An estimated total 205 ft<sup>3</sup> of this waste is expected to be generated as nonhazardous waste.

### **12.2.4 Purge/Decontamination/Drilling Water**

Wastewater will be generated during the installation and development of newly constructed soil borings. An estimated total of 452,000 gal of this waste is expected to be generated during approximately nine months of drilling activities.

Groundwater and any related aqueous wastes generated from well sampling, well development, and well purging shall not be considered a hazardous waste at the point of generation, if the TCE concentrations are below 1 ppm and the 1,1,1-TCA concentrations are below 25 ppm, provided that the subject aqueous waste will be further treated in an on-site wastewater treatment unit and discharged through a PGDP KPDES-permitted outfall as required by 401 KAR 31:010, Section 3. Other aqueous environmental media waste contaminated with TCE or 1,1,1-TCA that does not qualify for the exemption cited herein will use a health-based concentration of 0.081 ppm as the criterion for making contained-in determinations for media destined for on-site treatment and discharge through a KPDES-permitted outfall.

Wastewater will be accumulated and stored on-site until it can be processed through the on-site C-752-C treatment unit for removal of suspended solids, as necessary. The C-752-C treatment unit meets the definition of a wastewater treatment unit in 40 CFR § 260.10 and can process water at a rate of approximately 1,200 gal per day. After solids removal, the water will be collected in a manner that will minimize the possibility of spills; then it will be sampled to ensure it meets the appropriate acceptance criteria and treated at the on-site C-400 IRA water treatment facility or transported to the on-site C-612 Northwest Plume Groundwater System, the on-site C-613 Sediment Basin, or other acceptable facility for treatment and/or disposal through KPDES-permitted Outfall 001. The C-400 IRA water treatment facility

and the C-612 facility both have adequate additional capacity to treat the 1,200 gal per day produced generated through C-752-C. The 452,000 gal of treated drilling, purge, and decontamination water to be discharged through Outfall 001 is a small fraction of the approximately 800,000,000 gal released annually to this outfall from current sources.

Aqueous waste (including, but not limited to, well sampling, well development, well purging, and decontamination waters) that has undergone wastewater treatment and meets the KPDES discharge limits shall be considered to “no longer contain” listed hazardous waste (i.e., TCE). This treated wastewater may be directly discharged to permitted KPDES Outfalls or on-site ditches that flow to permitted KPDES Outfalls.

The proposed target analytes for this waste are those required to meet KPDES discharge limits and include TCE, PCBs, oil and grease, total residual chlorine, total phosphorous, total metals, Tc-99, hardness, dissolved and suspended alpha, beta, total uranium, and pH.

### 12.2.5 Sediment and Mud from Separation of Decontamination and Purge Water

Decontamination water and mud (soil sediment/mud) will be generated during cleaning of the drilling and sampling equipment. An estimated total of 375 ft<sup>3</sup> is expected to be generated. The water will be collected in a sump in the decontamination facility, decanted on-site, and collected in a manner that will minimize the possibility of spills, to the extent possible, and added to the Purge/Decontamination/Drilling water waste stream described in Section 12.2.4. The mud will be containerized as it is removed from the sump, then sampled and managed similarly to drill cuttings (Section 12.2.2).

### 12.2.6 Treated Groundwater

An aboveground treatment system will be installed to treat groundwater extracted during operation of the ERH process. The treatment system will remove VOCs and Tc-99 from the groundwater prior to discharge to an on-site ditch, which drains to KPDES-permitted Outfall 001. The system will have a treatment capacity of approximately 80 gal per minute (gpm). During Phase I operations, the system operated at approximately 30 to 50 gpm. During Phase II, the system is expected to operate between 45 to 65 gpm. At full capacity of 80 gpm, the C-400 treatment system discharge will only increase the overall flow to Outfall 001 by approximately 5%.

The treatment system influent and discharge design parameters are shown in the Table 18.

**Table 18. Liquid Treatment System Design Parameters and Discharge Criteria Relative to Outfall 001**

Analyte/Design Parameter	Influent	Discharge Limit
Groundwater flow	20–80 gpm	N/A
Condensate flow	10 gpm max	N/A
TCE concentration	5–1,100 ppm	30 ppb <sup>a</sup>
1,1-DCE concentration	154 ppb	3.2 ppb <sup>a</sup>
Tc-99 activity	14-342 pCi/L (observed in groundwater sampled during the Six-Phase Treatability Study and Phase I)	900 pCi/L <sup>b</sup>
Temperature	203°F (95°C) maximum 18°F (85°C) average	89°F (31°C) daily max <sup>c</sup>
pH	5.5–6.5	6–9 <sup>c</sup>
Total suspended solids	10–50 ppm	30 mg/L monthly average <sup>c</sup> 60 mg/L daily max <sup>c</sup>