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Department of Energy

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DEC 19 2012

Mr. Wm. Turpin Ballard Remedial Project Manager U.S. Environmental Protection Agency, Region 4 61 Forsyth Street Atlanta, Georgia 30303

Mr. Todd Mullins, FFA Manager Kentucky Department for Environmental Protection Division of Waste Management 200 Fair Oaks Lane, 2nd Floor Frankfort, Kentucky 40601

Dear Mr. Ballard and Mr. Mullins:

PADUCAH FEDERAL FACILITY AGREEMENT – TRANSMITTAL OF RESOLUTION AGREEMENT OF INFORMAL DISPUTE FOR THE D2/R2 FEASIBILITY STUDY FOR SOLID WASTE MANAGEMENT UNITS 5 AND 6 OF THE BURIAL GROUNDS OPERABLE UNIT AT THE PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY (DOE/LX/07-0130a&D2/R2)

Please find enclosed the signed "Memorandum of Agreement for Resolution of Informal Dispute for the D2/R2 Feasibility Study for Solid Waste Management Units 5 and 6 of the Burial Grounds Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/LX/07-0130a&D2/R2)."

The U.S. Department of Energy (DOE) appreciates the U.S. Environmental Protection Agency's and the Commonwealth of Kentucky's efforts and willingness to work with DOE to reach a mutually agreeable resolution of this matter.

If you have any questions or require additional information, please contact Lisa Santoro at (270) 441-6804.

Sincerely,

Enrife Wooda &

Federal Facility Agreement Manager Portsmouth/Paducah Project Office

Enclosure:

Memorandum of Agreement (including Attachment 1)

e-copy w/enclosure:

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MEMORANDUM OF AGREEMENT FOR RESOLUTION OF INFORMAL DISPUTE

for the D2/R2 Feasibility Study for Solid Waste Management Units 5 and 6 of the Burial Grounds
Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
(DOE/LX/07-0130a&D2/R2)

Background

In accordance with Section XX.I. <u>Finalization of Documents</u> of the Federal Facility Agreement (FFA) for the Paducah Gaseous Diffusion Plant (PGDP), the U.S. Environmental Protection Agency, Region 4 (EPA) and the Kentucky Division of Waste Management (KDWM) in letters to the U.S. Department of Energy (DOE), dated September 18, 2012, and September 26, 2012, respectively, non-concurred on the D2 Feasibility Study (FS) for SWMUs 5 and 6 of the Burial Grounds Operable Unit (BGOU) [DOE/LX/07-0130a&D2/R2] and invoked informal dispute as well as issued conditions to be satisfactorily addressed before they could approve a revised FS. The FFA Parties, in good faith, conducted a period of informal dispute under Section XXV.A. <u>Informal Dispute</u>: of the FFA and reached mutually acceptable resolution on the conditions raised by EPA and KDWM in their letters.

Resolution

The undersigned agree that the Informal Dispute invoked by the EPA and KDWM is hereby resolved. The terms of the dispute resolution agreement (DRA or Agreement) are set forth below.

- DOE shall incorporate resolution of the conditions into the revised (D2/R3) Feasibility Study for Solid Waste Management Units 5 and 6 of the Burial Grounds Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky. The attached table SWMUs 5 & 6 Burial Grounds FS Informal Dispute: Summary of Resolutions to EPA/KDWM Conditions and FS Revisions lists all of the EPA and KDWM conditions by number and summarizes the revisions to the FS that the Parties agreed shall be made by DOE in order to resolve the conditions.
- The Condition Response Summary for the Feasibility Study for Solid Waste Management Units 5 and 6 of the Burial Grounds Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/LX/07-0130a&D2/R2) which includes EPA and KDWM Conditions from their respective letters, DOE Responses, EPA/KDWM Assessment to DOE Responses, and DOE Assessment Responses to EPA/KDWM as well as proposed revisions to the FS in redline/strikeout was instrumental in the Parties resolving the informal dispute and is part of the Administrative Record file for this project.
- During the development of the FS revision DOE will make its best effort to include language consistent with the agreed upon resolutions as summarized in the attached table. If DOE believes the proposed language might modify and/or conflict with these resolutions, then DOE will gain written agreement from KDWM and EPA prior to effecting the changes and submittal of the revised FS on the deadline specified below. Per FFA Section XX.G.2. Review and Comment on Documents, EPA and KDWM will have 30 days (unless extended) to review the revised (D2/R3) FS.
- A new D1 Proposed Plan will be issued by DOE to incorporate the elements of the resolution agreement, as applicable and consistent with the Parties path forward for the preferred alternative.

This D1 Proposed Plan will replace the Proposed Plan for the Burial Grounds Operable Unit Source Areas at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky: Solid Waste Management Units 5 and 6, DOE/LX/07-1275&D1, dated August 29, 2012. Per FFA Section XX. Review/Comment on Draft/Final Documents, EPA and KDWM will have 45 days (unless extended) to review and provide comments on the new D1 Proposed Plan.

Consistent with Section XXV.B.11 of the FFA, the Parties agree that the submittal dates for the following Primary Documents and field start have been affected by this dispute and shall be extended as follows:

Document/Work	Enforceable Deadlines	
D2/R3 Feasibility Study	2/15/2013	
D1 Proposed Plan	5/16/2013	
D1 Record of Decision	11/12/2013	
D1 Remedial Design Work Plan	12/12/2013	
DI Remedial Design Report	12/12/2014	
D1 Remedial Action Work Plan	1/11/2015	
Field Start	7/23/2015	

Assumes resolution of dispute on 12/17/2012.

Signature of this Agreement will constitute the FFA Managers approval to modify Appendix C. Current Year Timetables and Deadlines and Appendix G. Site Management Plan of the FFA to incorporate the above agreed-to due dates. All Parties agree that this is a minor modification to the FFA.

Nothing in this Agreement shall prevent any of the Parties from disputing, under the FFA, any other matters related to the aforementioned projects. Nor does the Agreement modify the terms and conditions of the FFA (e.g., related to review and comment on Primary Documents, Extension Requests, and Dispute Resolution) except as specifically stated above. Failure to abide by the terms of the Agreement may resultin one or more of the Parties taking any action authorized under the FFA.

Wm. Turpin Ballard PGDP FFA Manager

U.S. Environmental Protection Agency, Region 4

Todd Mullins

PGDP FFA Manager

Division of Waste Management

Kentucky Department for Environmental Protection

12/18/12

Jennifer Woodard

PGDP FFW Manager

DOE Portsmouth/Paducah Project Office

12-17-2012 Date

SWMUs 5 & 6 Burial Grounds FS Informal Dispute: Summary of Resolutions to EPA/KDWM Conditions and FS Revisions

Conditions	Topics	Resolutions and Revisions
GC 2	Alternative 2	Alternative 2 Land Use Controls (LUCs) and Monitoring will be screened out and does not move to the detailed analysis based on its lack of effectiveness because it does not mitigate the significant uncertainty due to the lack of surface soil characterization and would not meet the threshold criterion of protection of human health and the environment. NOTE: Condition originally for SWMU 5 but as result of resolution, FS will be revised to remove Alternative 2 for SWMU 6 as
		well.
GC 3	Cap/Cover	In addition to the requirements already identified in Table D.2 Action-Specific ARARs and TBC Guidance, the NRC and KY equivalent regulations specified below for land disposal of low level radioactive waste (LLW) are deemed relevant and appropriate requirements (ARAR) for a permanent containment remedy that involves capping buried LLW at SWMUs 5 and 6.
		DOE will revise the FS to include 902 KAR 100:022 § 23 Disposal Site Design for Land Disposal, paragraphs (4) and (5) [10 CFR §§ 61.51(a) (4) and (5)] as Action-Specific ARARs for SWMUs 5 & 6 Alternative 5; however, DOE will not revise the FS to include these provisions as ARARs for Alternatives 3 or 4 as they will be screened out before detailed analysis based on their lack of effectiveness.
		Three Alternatives for SWMUs 5 and 6 will be carried through the detailed analysis phase: Alternative 1- No Action; Alternative 5 - KY Subtitle D Cap, Long-term Monitoring, LUCs; and Alternative 6 - Excavation and Disposal.
		Alternatives 5 and 6 will be added for SWMU 6.
	Intruder Barrier	The FS will not identify 902 KAR 100:022 § 19 Protection of Inadvertent Intrusion as a relevant and appropriate ARAR for SWMUs 5 and 6.
		The following paragraph will be added to the FS at the following locations (based on the D2/R2 section numbers): Executive Summary (description of Alternative 5), FS Sections: 2.4.1.5.2 Surface barriers (now "Capping"), 3.3.5 Alternative 5 description, and 5.6.5.1 Overall Protection analysis for Alternative 5.
		"Installation of a Kentucky Subtitle D Cap at SWMUs 5 & 6, which includes multilayers that are distinctly different to the natural subsoils, provides greater depth to the buried waste. These aspects (thickness and distinct properties) of the cap are expected to provide protection of individuals from inadvertent intrusion by alerting them that this is a man-made engineered cover over something that is potentially hazardous to human health and by making it more difficult to expose the buried waste. Based upon the waste inventory, the buried wastes at SWMUs 5 & 6 (including low-level radioactive waste) are considered low level threat waste consistent with EPA guidance."

SWMUs 5 & 6 Burial Grounds FS Informal Dispute: Summary of Resolutions to EPA/KDWM Conditions and FS Revisions

Conditions	Topics	Resolutions and Revisions
SC 1	Baseline Risk Assessment and Land Use	The first paragraph of Section 1.3.1.2.1 will be revised to remove the phrase, "with direct contact to subsurface soils and wastes controlled," and the second paragraph of Section 2.2.2 will be revised to remove the phrase, "with controlled access."
SC 2	LLW	Executive Summary (page ES-2) will include the following sentences.
	determination	"The BGOU consists of contamination associated with PGDP's landfills and burial grounds as listed in Table ES.1. In general, the contents of the burial grounds, upon excavation and characterization for disposal, may include RCRA hazardous waste, PCB waste, and low-level radioactive waste (LLW). Some of the materials in the PGDP burial grounds are considered to be principal threat waste (PTW). Based upon disposal records, SWMUs 5 and 6 contain industrial wastes, some of which are LLW. Without more definitive waste characterization (i.e., sampling and analysis), it is not possible to state whether or not PCBs or RCRA hazardous wastes are also present at SWMUs 5 and 6. Based upon the waste inventory, the buried wastes at SWMUs 5 & 6 (including low-level radioactive waste) are considered low level threat waste consistent with EPA guidance."
		FS Sections 1.3.2, 1.4.2.1, 2.2.3.3, and 5.1.1, describing Nature and Extent of Wastes and/or Contamination will include the following sentences.
		"Based upon disposal records, SWMUs 5 and 6 contain industrial wastes, some of which are LLW. Industrial wastes in burial grounds at the PGDP are known to contain waste that could be contaminated with PCBs or RCRA hazardous wastes. Without more definitive waste characterization (i.e., sampling and analysis), it is not possible to state whether or not PCBs or RCRA hazardous wastes are also present at SWMUs 5 and 6. Based upon the waste inventory, the buried wastes at SWMUs 5 & 6 (including low-level radioactive waste) are considered low level threat waste consistent with EPA guidance."
SC 7c	Eco Risk	As noted above for GC2, Alternative 2 will be removed from detailed analysis and only Alternatives 5 and 6 remain. Therefore, ecological implications from original comment SC 7c no longer are applicable.
		The ecological risk discussion is based on the existing data; however, FS Section 2.2.2 will be revised to state, "Existing SWMU 5 data are limited and offer a degree of uncertainty as to whether existing data are representative of the surface soil. For SWMU 5 risk characterization for terrestrial receptors is uncertain due to the limited soils data used in the screening ecological risk assessment."
SC 11	Seeps	DOE will revise the FS text in the noted sections to be consistent with EPA's and KY's Assessment. Specifically the statement, "releases to the surface are unlikely" will be removed from Sections 1.3.4 and 5.1.3.2.
		DOE will revise the FS text in Sections 1.3.4 and 5.1.3.2 to clarify that the original hypothesis of "waste cells may fill with infiltration water and then spill over the HU 1," is identified clearly in the document.

SWMUs 5 & 6 Burial Grounds FS Informal Dispute: Summary of Resolutions to EPA/KDWM Conditions and FS Revisions

Conditions	Topics	Resolutions and Revisions
		FS Section 1.3.4 and Section 5.1.3.2 will be revised to state, "These periodic circumstances, should they occur, would create a route for SWMU 5 contaminants to migrate to the surface. These periodic circumstances, should they occur, would create a route for SWMU 5 contaminants to migrate to the surface and could contaminate adjacent surface soils and/or expose workers to potential contamination in seep water. These circumstances could result in an unacceptable level of risk."
		DOE will delete the last paragraph of FS Section 2.2.3.3.
SC 17	Process Option Descriptions and Hydraulic Containment	DOE will include a new General Response Action, FS Section 2.3.2, Surface Controls, for the purpose of capturing those technologies, soil covers, and associated process options that provide a physical means of preventing direct contact with surface soils, waste, and associated soils without inclusion of a low-permeable layer. As a result of the inclusion of this action, subsequent sections will have different numbers than in previous versions of this document.
		Within the Containment General Response Action, FS Section 2.4.1.6.2 (formerly 2.4.1.5.2), "Surface Barriers" will be revised to "Capping." This technology now contains those process options that are designed to both prevent direct contact and significantly reduce infiltration into buried wastes through either an impermeable layer (Subtitle C and D landfill final covers, concrete based covers, conventional asphalt covers, MatConTM asphalt, and flexible membranes) or through soil mass and vegetation (evapotranspiration cover).
		FS Section 2.4.1.6.2 (Formerly 2.4.1.5.2, and now is titled "Capping") will be revised to state that capping, including RCRA Subtitle C and Kentucky Subtitle D landfill covers with the specified impermeable layer, will prevent infiltration of water into the buried waste.
		FS text will be revised to clarify that the soil covers are intended to prevent direct contact only and promote runoff, but not provide hydraulic containment.
		Table D.2 Action-specific ARARs and TBC - The prerequisite for 902 KAR 100:022 § 23(4) and § 23(5) will be revised to state, "Closure of a LLW near-surface disposal unit—relevant and appropriate" (consistent with the resolution of Conditions GC 3 and SC 53).
		FS Table 2.1, "Surface Controls" row, "Description" cell will be modified to state, "Monolayered cover used for <u>surface soil</u> <u>contamination</u> waste landfill closures."
		FS Section 2.3.2 Surface Controls, first sentence will be modified to state, "Surface controls are those technologies and associated process options with the primary purpose of providing a physical barrier that will prevent direct contact exposure to surface soil contamination."

SWMUs 5 & 6 Burial Grounds FS Informal Dispute: Summary of Resolutions to EPA/KDWM Conditions and FS Revisions

Conditions	Topics	Resolutions and Revisions
		FS Section 2.4.1.2.1 Surface Barriers will be modified to state, "Both a 1-ft soil cover and a 2-ft soil cover will provide a physical barrier to existing surface soil, and enhance the existing cover already present, and serve to limit direct contact with the waste and surface soils contaminated soils. Soil covers, as described in this FS, will be designed and constructed in a manner that limits direct contact with waste contaminated soils to control the risk from direct contact exposure. Soil covers will be designed and installed to provide adequate site drainage, but are not constructed with a defined low-permeable layer. This type of cover potentially is effective, technically implementable, commercially available, and is retained for further consideration."
		Globally (throughout the FS), these revisions will be incorporated into other sections of the FS where appropriate.
SC 18	GC 3 Cap/Cover	Per GC 3, DOE will revise the FS to include 902 KAR 100:022 § 23(4) and § 23(5) [10 CFR §§ 61.51(a) (4) and (5)] as action-specific ARARs for Alternative 5 (i.e., "Closure of a LLW near-surface disposal unit").
SC 19	KY Subtitle D	FS Sections 2.4.1.6.2 (formerly 2.4.1.5.2) Surface barriers, Subtitle D Cover, will be revised to add reference to KDEP regulations for contained landfill cap systems that provide relevant and appropriate requirements for a final cover of a landfill with industrial waste.
		The text, "Kentucky Subtitle D requirements are for nonhazardous waste landfills," will be reinserted into the FS but modified to specify the Kentucky requirements. Additional conforming changes will be made in FS Section 2.4.1.6.2 (formerly 2.4.1.5.2).
		Also, globally (throughout the FS) the term "Subtitle D" will be replaced with the term "Kentucky Subtitle D" when referring to the cap components or capping regulations since the KDEP requirements are more stringent than the EPA's Subtitle D landfill cap requirements.
SC 28	BGOU Scope	DOE will delete the final paragraph of FS Section 5.1.2 to eliminate confusion.
SC 29	Seeps	In FS Section 1.3.4, the sentence "the sidewalls of the waste cells at SWMU 5 and 6 are composed of HU 1 preventing migration to nearby ditches" will be revised as requested to say, "are expected to prevent migration to nearby ditches."
		The following text will be added to FS Sections 1.3.4 and 5.1.3.2 to establish that cross-media contamination is possible, which could present unacceptable risk through exposure to workers: "These periodic circumstances, should they occur, would create a route for SWMU 5 contaminants to migrate to the surface. These periodic circumstances, should they occur, would create a route for SWMU 5 contaminants to migrate to the surface and could contaminate adjacent surface soils and/or expose workers to potential contamination in seep water. These circumstances could result in an unacceptable level of risk."
		The statement, "releases to the surface are unlikely" will be removed from FS Sections 1.3.4 and 5.1.3.2. DOE has revised the text in FS Sections 1.3.4 and 5.1.3.2 to clarify that the original hypothesis remains in the document as follows: "waste cells may fill with infiltration water and then spill over the HU 1."
SC 37	Alternative 2	As a result of GC 2, Alternative 2 will be eliminated from detailed analysis for SWMU 5; therefore, SC 37 no longer is applicable, and no other revisions are necessary.

SWMUs 5 & 6 Burial Grounds FS Informal Dispute: Summary of Resolutions to EPA/KDWM Conditions and FS Revisions

Conditions	Topics	Resolutions and Revisions
SC 48	Comparative Analysis and Rankings of Remedial Alternatives	Tables 5.3 and 6.2 will be revised to remove quantitative analysis and to distinguish more clearly among the remedial alternatives with respect to the Primary Balancing Criteria using the analysis factors shown in Tables 6-1 to 6-4 of the EPA RI/FS guidance. DOE additionally has included a qualitative ranking against each balancing criterion that summarizes the analysis' factors with clarifying text that has been added to the SWMUs 5 and 6 comparative analysis.
		The "rankings" will be removed from the FS and replaced with a summary discussion of the comparative analysis.
		The FS text changes proposed for Table 5.3, Alternative 5 column, "Magnitude of Residual Risk" row, second paragraph of cell, will be reworded to state, "Uncertainties associated with seeps and future potential groundwater impacts are mitigated through installation of a low-permeable layer incorporated into the cap that will eliminate water infiltration."
		The FS text changes proposed for Table 5.3, Alternative 5 column, "Magnitude of Residual Risk" row, third paragraph of cell, will be reworded to state, "Monitoring provides information that helps understand uncertainties associated with groundwater and surface water impacts."
		The FS text changes proposed for Table 5.3, Alternative 5 column, "Environmental Impacts" row, will be reworded similar to the following, "Placement of an impermeable cap covered with topsoil will support a healthy vegetative cover to prevent erosion."
		FS text revisions that deleted statements regarding uncertainty will be reviewed by DOE and re-inserted where appropriate (e.g., Section 5.7.1.1 "yet uncertainty remains because of the lack of source term data," and Section 5.1.3.2).
SC 53	ARAR Prerequisites	FS Table D.2 Action-specific ARARs and TBC, rows with citations 902 KAR 100:022 § 21; 902 KAR 100:022 § 23 (4) and (5); and 902 KAR 100:022 § 24 (7), (8), (9) & (10) - The "Prerequisite" cell text will be revised to state, "Closure of a LLW near-surface disposal unit—relevant and appropriate."
SC 54	ARAR Prerequisites	FS Table D.2 Action-specific ARARs and TBC, row with citations 401 KAR 48:080 §§ 8 and 9 - The "Prerequisite" cell will be revised to state, "Closure of a contained landfill unit under 401 KAR 48:070 § 15, including installation of final cap system – relevant and appropriate."
		FS Table D.2, row with citations 401 KAR 48:080 §§ 8 and 9, the "Actions" cell text will be modified to state, "Installation of an industrial solid waste landfill cover system."
		FS Table D.2, row with citation 401 KAR 48:070 § 15(1), the "Prerequisite" cell text will be modified to state, "Closure of a contained landfill unit under 401 KAR 48:070 Section 15, including installation of final cap system – relevant and appropriate."
KC 1	Alternative 2	As stated above for GC2, Alternative 2 has been eliminated from the alternatives retained for detailed analysis at SWMU 5 and 6.

SWMUs 5 & 6 Burial Grounds FS Informal Dispute: Summary of Resolutions to EPA/KDWM Conditions and FS Revisions

Conditions	Topics	Resolutions and Revisions
KC 4	Seeps	The statement, "releases to the surface are unlikely" will be removed from Sections 1.3.4 and 5.1.3.2.
		The text in FS Sections 1.3.4 and 5.1.3.2 will be revised to clarify that the original hypothesis of waste cells may fill with infiltration water and then spill over the HU 1, is identified clearly in the document."
		The FS Sections 1.3.4 and Section 5.1.3.2 will be revised to state, "These periodic circumstances, should they occur, would create a route for SWMU 5 contaminants to migrate to the surface. These periodic circumstances, should they occur, would create a route for SWMU 5 contaminants to migrate to the surface and could contaminate adjacent surface soils and/or expose workers to potential contamination in seep water. These circumstances could result in an unacceptable level of risk."
		In FS Section 6.1.3.2, the discussion will be confined to SWMU 6 only. Discussions of other SWMUs will be removed.
KY ARARS	Section 21 – Stability	902 KAR 100:022 § 21 Stability of the Disposal Site After Closure will be added to FS Table D.2 as follows. A new row will be created under the row that contains 902 KAR § 100:022 Section 23 (5) and 10 CFR § 61.51(a)(5); this row will fall under the existing "Action" of "Installation of a LLW near-surface disposal unit cover system." The "Requirement" cell will cite the text of 902 KAR 100:022 § 21 (without modification).
		The "Requirement" cell will include the following text, "NOTE: For purposes of this remedy only, that portion of the regulation that is relevant and appropriate is as follows: 'shall be closed to eliminate to the extent practicable the need for ongoing active maintenance of the disposal site following closure so that only surveillance, monitoring, or minor custodial care are required."
	Section 24 – Boundary Markers	The FS Table D.2 will be revised to include 902 KAR 100:022 § 24 (7), (8), (9) & (10) as ARARs regarding boundary markers with the following clarification, "Note: For the purpose of implementation of these ARARs the 'disposal unit' is defined by the boundary of the cap."
	Section 17 – Use of Process or Other Engineering Controls	Withdrawn by KDWM; no FS revisions necessary since requirements relate to controlling worker occupational exposure to radioactive emissions.