Comment Response Summary

for the

Remedial Investigation Report for the Burial Grounds Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky DOE/LX/07-0030&D1

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

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
Kentucky Division for Waste Management Comments—November 24, 2008			
1.	General	The uncertainties/assumptions section on the last page of the Executive Summary is incomplete. There is no mention of the following uncertainties: 1) an overall lack of monitoring wells in close proximity to the BGOU SWMUs in order to monitor potential releases temporally from the units; there are no angular UCRS monitoring wells located beneath the BGOU SWMUs to account for potential releases temporally; there is an overall lack of detailed manifests/records for each SWMU to understand the quantities and contamination level of buried objects; a very small fraction of the former workers that buried the materials in each SWMU were interviewed and/or recalled what they buried; it is plausible that uncommon/unexpected items were buried – related to the "Work for Others" Program; the integrity of buried drums are questionable; sufficient quantities of water were not encountered in all of the RI/FS temporary borings to adequately characterize the secondary sources of groundwater contamination beneath each burial ground. KDWM regards a comprehensive list of uncertainties and assumptions as necessary to adequately support and evaluate a remedial alternative in the upcoming FS. Discuss these uncertainties and any other applicable uncertainties. Compile the key project assumptions and other SWMU-specific ones that are scattered throughout this document and summarize them in this section.	Additional discussion of uncertainties, including the uncertainties listed in the comment, has been added to the Executive Summary and Section 7.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
2.	General	From the identified uncertainties, compile a list of data gaps that may need to be addressed prior to the evaluation of a remedial alternative.	The intent of the RI, based on implementation of the BGOU work plan, was to address data gaps that needed to be addressed prior to evaluation of remedial options. No data gaps currently exist that need to be addressed prior to the completing the FS. If additional data is needed to support remedial design, it will be collected. Additional discussion of uncertainties and assumptions has been added to the report. Information regarding managing the uncertainties also has been included. The Executive Summary and body of the document will be updated with the information (i.e., Section 7).
3.	General	Figures and tables presented throughout this document often do not include all of the key features and information that are mentioned in the text. In general, add more detail to the figures and tables throughout the RI Report. See specific comments for detailed examples.	Figures and tables have been revised to add more detail where appropriate, based on specific comments.
4.	General	There are several instances where pertinent information about BGOU SWMUs was discovered after the RIFS WP was approved. In such instances, KDWM recommends that the RI Report capture this information. See specific comments for detailed examples.	Revisions to the text have been made based on the information requested in the specific comments.
5.	General	Geophysical Investigations have a significant role in defining the boundaries of a particular burial ground. When combined with aerial photographs and engineering drawings, geophysical investigations greatly reduce the uncertainty associated with defining each burial grounds footprint. Consider adding the following information to each geophysical investigation figure; outline the investigation boundary where geophysical surveys were conducted, state the grid spacing (ft) between centers, state the geophysical tool used, substitute the words 'BGOU RI/FS WP (2006)' when describing a 'current geophysical anomaly,' add the geophysical interpretations (currently this only exists for a few figures) of outlining waste cells in order to better reflect where buried materials likely reside.	The investigation boundary for the geophysical surveys are delineated by the geophysical results in Figures 2.1 to 2.7. In addition, Appendix A has been revised to include information on equipment and line spacing used for the geophysics conducted during this RI.

COMMENT RESPONSE SUMMARY for the Remedial Investigation Report for the Burial Grounds Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky DOE/LX/07-0030&D1			
Comment Number	**§/Page/¶**	**Comment**	**Response**
6.	General	The RI/FS WP specified that RGA samples would be collected from existing wells, if the wells were deemed suitable. MW 67 and 76 were explored with a down-hole camera and subsequently rehabilitated. In addition MW 420 was installed. There are no RI records of RGA groundwater samples being reported from MW 67, MW 76, or MW 420 in this RI Report. Add the sampling results to the various tables and add discussions to the appropriate sections throughout this RI Report, where appropriate.	Information on MW67, MW76, and MW420 has been added to Section 4.4.2, SWMU 3 Groundwater.
7.	General	On the cross-sectional views of the angle borings, the vertical scale is approximated and there is no reference to a horizontal scale. Providing the angle of entry will add valuable information that is difficult to convey on paper, given that some of the borings appear to more vertical than angled. State the angle of entry for all cross-section views of historical and RI/FS WP angled borings depicted.	Angle of entry has been included on the figures with cross-sectional views where that information is available. The footnote at the bottom of page ES-13 has been revised to state the distance sampled under the SWMU ranged from 30 ft to less than 60 ft, depending on the depth of the burial pit and depth to top of the RGA.
8.	General	For figures depicting angled boring locations, consider overlaying the waste cell interpretations (geophysical-based) and/or a revealing aerial photograph or engineering drawing. If the visual tools (aerial photos and geophysical interpretations) that guided boring placements are shown, the figures can visually represent why boring locations were chosen.	Figures implementing the recommendations in the comment were discussed during the comment resolution meeting and during document revision. These discussions concluded that placing all of the information mentioned in the comment on figures would yield figures that would be difficult to interpret by individuals unfamiliar with the report; therefore, the document narrative was revised to clarify why some boring locations deviated from the locations shown in the work plan.
9.	General	For groundwater sample location figures in section 4, add to the legend (where appropriate) that samples were collected from an angular boring.	Where groundwater samples were collected from temporary borings for this RI, a different symbol has been used in Figures 4.9 through 4.16
10.	General	For SWMU summary tables in section 4 consider shading the cells that exceed a background value and increasing the thickness of the line that separates RI Data from Historical Data.	The summary tables have been revised to have a double line between the RI Data and Historical Data. Since the summary tables only show those values that exceed background (or other screening levels presented in Section 4), the cells were not shaded.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
11.	General	The SWMU Locations of Groundwater Contaminants Tables are not in agreement with the summary tables. Some of the problems discovered are: maximum results presented in the summary tables are not on the corresponding data presentation tables; the total number of samples being represented as a frequency does not always agree with the total number of samples on the corresponding data presentation tables; data presentation tables are not clear as to when a sample exists, resulting in a non-detect versus intervals where no sample was collected. Disclaimer: some specific comments are listed on the following pages; however, KDWM did not check all of the tables, so do not assume that the errors presented constitute a comprehensive list. Check and fix all SWMU summary tables and corresponding data presentation tables. Correct any part of the documents that is impacted by changes to these tables.	The data in Section 4 summary tables has been reviewed. Some of the apparent discrepancy exists because duplicates are considered in the summary tables as "frequency of detection," but are not shown in the "location of contaminant" tables. The complete data set is contained on the CD with Appendix C. A footnote on the summary tables explains that the frequency of detection includes the number of detections of an analyte per number of analyses of regular and duplicate samples combined.
12.	General	For tables that present data in this report, make a distinction between results depicting samples collected that had no detects versus no samples collected. Designating them both as "none" does not present the information in a clear and concise manor.	The text of Section 4 and table footnotes of the "SWMU Locations of Subsurface Contaminants" tables have been revised to indicate where samples do or do not exceed screening levels or there are blank areas where samples were not collected.
1.	Section Executive Summary, Page ES-3, Second Paragraph Below Table ES.1.	"Principle Threat Wastes" are defined in the Risk Methods Document 2001. Please correct the statement, "No threshold level for risk has been established to indicate a principal threat waste…."	The text has been updated to be consistent with EPA guidance.
2.	Section Executive Summary, Page ES-6, Figure ES 1 (Errata)	The figure depicting the location of BGOU SWMUs and Potential POEs is missing. Add the figure.	Figure has been included.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
3.	Section Executive Summary, Page ES-8, 4th paragraph, 2nd sentence	It is unclear why SWMU 2 has an "only" designation and other SWMUs do not. When using the "only" designation, be consistent.	The sentence was checked for accuracy regarding the different contaminants for each of the SWMUs discussed. Section 7 contains the same information and was updated for consistency. All of the "only" designations related to any SWMU were removed from the Risk Assessment summaries in the Executive Summary and Section 7.6.
4.	Section Executive Summary, Page ES-12, 2nd paragraph	The document should provide some justification for limiting the water samples to those collected from 1995 and soil samples to those collected from 1996. While older data may not reflect current conditions, there must be some analysis indicating when data of a particular age ceases to reflect current conditions. It is not reasonable to simply eliminate data without criteria and support. Please provide the analysis necessary to show which data should be eliminated and which should be retained.	Text was added to the Executive Summary that the use of this data was agreed upon during scoping and development of the BGOU RI work plan. During scoping, it was decided to limit groundwater and subsurface soil data to that collected within the past 10 years (BGOU Work Plan Section 5).
5.	Section 1, Page 1-1, 2nd paragraph, last sentence	The "Kentucky Environmental and Public Protection Cabinet (KEPC)" has changed its title to Kentucky Energy and Environment Cabinet (KEEC) – please modify.	Acronym has been changed throughout document.
6.	Section 1, Page 1-1, last paragraph, 1st sentence	This sentence states that "… interviews of former plant personnel identified potential areas of buried metal within the C-746-P and C-746-P1 Scrap Yards (SWMU 13)." It is the understanding of KDWM that only one heavy-equipment operator was interviewed and that single individual identified the areas in SWMU 13, and that individual is still working at the PGDP. Provide KDWM with all interview transcripts of current and/or former plant personnel who identified SWMU 13 as an area containing buried materials.	The SWMU 13 information was based on one interview with an operator at the site and text has been revised to "…an interview with a former plant operator…." The interview transcript has been provided to KDWM.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
7.	Section 1, Page 1-3, Figure 1.2	Add the locations of SWMU 12 and SWMU 13 to the list of BGOU SWMUs. Both SWMUs are mentioned in numerous areas of this document and need to be depicted on this figure.	SWMU 12 is not in the scope of the BGOU and the reference will be removed from the RI Report. SWMU 13 has been added to the BGOU list of SWMUs in the SMP. SWMU 13 is not on many of the figures and list of SWMUs in the RI Report because it was not a part of the original scope of the RI/FS Work Plan. Information on SWMU 13 will be included in the FS. SWMU 12 has been removed from maps. SWMU 13 (burial areas) has been added where appropriate to figures discussing BGOU SWMUs.
8.	Section 1, Page 1-3, Figure 1.2	This figure is missing a legend. Add a legend for surface water, SWMU boundary, and DOE Property boundary.	A legend has been added as requested.
9.	Section 1.2.1, Page 1-5, 2nd paragraph	"The following list summarizes the activities that were conducted as part of the RI:" Rephrase this statement to inform the reader that each activity in the list may not have occurred at every SWMU that comprises the BGOU, as part of the RI. Another option could be to list the specific SWMUs after each bullet when the activity was conducted as part of the RI Report.	Text was changed to clarify that not all activities were performed at every SWMU.
10.	Section 1.2.1, Page 1-6, 2nd paragraph, 1st sentence	"Further, the BGOU RI sought to identify additional disposal areas that might exist beneath the scrap yards, …" What former scrap areas, except for the three defined areas in SWMU 13, did the BGOU RI seek to identify? Document in the RI Report how the additional scrap areas were investigated?	Text was added to reflect the following areas that were surveyed: SWMU 7 (to delineate "Pit E") SWMU 13 (to determine possible burial pits) SWMU 7 and 30 (to delineate pits in the former Drum Mountain area) SWMU 6 (to delineate burial pits)

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
11.	Section 1.2.2, Page 1-6, 1st paragraph	The RI/FS WP stated that each angled boring would be advanced to the UCRS/RGA interface, which is also referred to as the top of the RGA. Rationale for this mutually agreed upon termination point is not present within this paragraph. Revise the sentences in this paragraph that suggest collecting groundwater samples at the top of the RGA was an exception rather than the norm. Also add text that reflects the relative importance of collecting a groundwater sample whenever water of sufficient quantity was encountered.	Section 1.2.2 is taken from page 9-1 of the BGOU work plan. Section 1.2.2 was revised to include language that the sampling was focused on soils and groundwater beneath the burial pits in order to detect releases from the SWMUs. Text also has been added to Section 1.2.2 that states only 18 of 32 UCRS groundwater samples were collected due to low groundwater yield.
12.	Section 1.2.2, Page 1-7, Figure 1.3	Finalize this figure. State the actual number of deep vertical BGOU borings (depth: ~ 100 feet) instead of stating "up to 5 total." Consider adding the burial cell symbol in the legend and state that they are not engineered or lined.	Total number of deep vertical borings is now shown, and a note regarding burial cells not being engineered or lined has been added.
13.	Section 1.2.2, Page 1-7, Figure 1.3	State in the figures description that this illustration depicts the conceptual design for the various types of soil borings utilized in the BGOU. Extend the angular boring to reach the UCRS/RGA interface and change the diamond to blue, depicting a location where groundwater samples are collected.	The title has been changed to reflect the "conceptual" nature of this figure and the angled boring will be extended as suggested.
14.	Section 1.3, Page 1-8, Table 1.2	Add a line between SWMU 4 and SWMU 5.	Table format was changed to add a line between SWMUs 4 and 5.
15.	Section 1.3, Page 1-8, Table 1.2	Approximate the dates of operation for SWMU 7 if exact dates are unknown. If no approximation can be determined, then denote with a question mark.	Additional checking was done to see if a reasonable time frame is possible. Since it could not be determined, a question mark was added to the table for the dates of operation.
16.	Section 1.3, Page 1-8, Table 1.2	Are sources available for the values provided in the 'Cap' column? Are any of these values inferred or approximated?	A sentence has been added to Section 1.3, prior to table 1.2, that cap information (as well as other information) has been taken from former Union Carbide reports. The C-404 RCRA cap material came from the Old Hickory Clay Company in Graves County, KY.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
17.	Section 1.3, Page 1-8, Table 1.2	If the soil caps referenced for each SWMU are undocumented or unknown, then add a statement to the list of assumptions that reflects DOE's assumption concerning the type of soil used to cap the BGOU SWMUs, individually or collectively. It should be noted that a former contractor stated, in an interview with the KDWM, that contaminated soil was removed from inside the security fence, dumped near gravel pits within the Kentucky Ordinance Works area, then brought back into the security area and presented as clean soil. This information was officially transmitted to DOE on April 24, 2008 in a letter from KDWM.	A footnote to the table was added that states the source of the material used for construction of the Caps is unknown or the source was stated. The C-404 RCRA cap material came from the Old Hickory Clay Company material in Graves County, KY. The former contractor information has been reviewed by DOE. Because of the uncertainty regarding this information, it was determined to be inappropriate for inclusion in the RI Report.
18.	Section 1.3, Page 1-8, Table 1.2	Change the description in the 'Known or Expected Contents (Special Hazards)' column for C-748-B. To refer, to C-748-B as a 'Proposed chemical landfill' would only be appropriate if no other information were available.	No other information is available. A reference for the use of the "Proposed chemical landfill" terminology has been footnoted in the table.
19.	Section 1.3, Page 1-8, Table 1.2	Change the description from a singular reference to a plural one in the 'Known or Expected Contents (Special Hazards)' column for Area I.	Table revised to say "Exhaust fans."
20.	Section 1.3, Page 1-8, Table 1.2	Change the description in the 'Known or Expected Contents (Special Hazards)' column for SWMU 2 to include oil (PCB?).	PCBs (?) have been added in the "Known or Expected Contents" column for SWMU 2.
21.	Section 1.3, Page 1-8, Table 1.2	Construction on the PGDP began in January 1951. The dates of operation for SWMU 145 are shown in table 1.2 as 1950-1980. Was SWMU 145 used by the KOW prior to 1951 or is this a typo?	The text was revised to show the operation of SWMU 145 from 1952 to 1980.
22.	Section 1.3, Page 1-9, Table 1.3	Add the 2006 BGOU RI/FS WP to table 1.3.	Table 1.3 has been modified to include the RI/FS Work Plan.
23.	Section 1.3, Page 1-9, Table 1.3	Consider adding columns for SWMUs 12 & 13.	SWMU 12 is not in the scope of the BGOU. Information on SWMU 13 will be included in the FS.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
24.	Section 1.3.1.2, Page 1-10, 1st paragraph	"Disposal records for SWMU 2 indicate that 270 tons of uranium, 59,000 gal of oils, and 450 gal of trichloroethene (TCE) were disposed of in the unit (DOE 1999a)." Table 1.2 does not indicate that oils or TCE are known or expected to exist in SWMU 2. Add these two contaminants to that table.	Both TCE and PCB oils have been added to Table 1.2.
25.	Section 1.3.1.2, Page 1-10, last paragraph, last sentence	Consider replacing the last word 're-covered' with the words 'covered over.'	Wording was revised.
26.	Section 1.3.1.2, Page 1-11, Figure 1.4	Reference contours are not present even though they are referenced in the legend. Add reference contours within the contour lines on the map.	The figure has been revised to include contour labels.
27.	Section 1.3.2.1, Page 1-12, 1st paragraph, line 5&6:	An overflow weir is reported to have existed in the southwest corner. Did the impoundment ever overflow? If so, add text. Add the weir location to figure 1.5, along with the ditch that carried effluent west.	The text in Section 1.3.2.1 implies that the impoundment did overflow and discharged through what is now KDPES Outfall 015. Later, a pipe was put in that went to the North-South Diversion Ditch. Text has been added to clarify this. The weir location was included in Figure 1.5.
28.	Section 1.3.2.2, Page 1-12, 1st paragraph, line 1&2:	What COPCs were known to be associated with C-400 from 1952-1957?	Some of the COPCs known to be associated with C-400 include TCE, nitric acid, sulfuric acid, radionuclides (Am 241, Cs 137, Th 230, Np 237, Pu 239. Tc 99, U 234, 235, 238), hexavalent chromium discharge, fluoride/fluorine, lime/sodium hydroxide, heavy metals from cleaning, and PCBs.
29.	Section 1.3.2.2, Page 1-12, 1st paragraph, last sentence	Add a sentence or two that summarizes the constituents and concentrations associated with the C-404 leachate.	A sentence has been added to Section 1.3.2.2 that reads, "Some of the constituents found in the leachate have included fluoride, TCE, PCBs, neptunium-237, technetium-99, and uranium-238." Leachate concentrations (ranges) also have been included.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
30.	Section 1.3.2.2, Page 1-12, 2nd paragraph, line 2	Define the constituents associated with extraction-procedure.	The following sentence has been added to Section 1.3.2.2: "The drums of extraction-procedure were produced in C-400 during treatment of wastes including sodium bisulfate solution, hydrochloric acid, chromic acid, nickel stripper solution, miscellaneous acids and alkalies, and aqueous solutions containing metals."
31.	Section 1.3.2.2, Page 1-12, 2nd paragraph, last sentence	"A partial clay cap was installed on the eastern end of the landfill in 1982 (DOE 1987)." Add the partial clay cap area to figure 1.5.	Information regarding the partial clay cap was researched. A cross-section view with the partial cap has been added to Figure 1.5.
32.	Section 1.3.2.2, Page 1-12, 3rd paragraph, last sentence	Add text that mentions the installation of new MWs and provide the well designations. Simply mentioning that a revision to the MW network occurred is not informative.	MW420 is the only new MW installed. It has been added to the text.
33.	Section 1.3.2.2, Page 1-13, Figure 1.5	Add directional arrows along surface water pathways to show the direction of flow.	Arrows have been added to appropriate figures showing the direction of surface water flow in ditches.
34.	Section 1.3.3.1, Page 1-14, 1st paragraph, line 3	Add the railroad spur to Figure 1.6 that is mentioned in the text.	The railroad spur is just beyond the area shown in this figure.
35.	Section 1.3.3.2, Page 1-14, 2nd paragraph, last sentence	"… for the disposal of radiologically contaminated scrap metal that could not be sold." This sentence appears to be conveying that radiological contaminated scrap was sold. Was radiological scrap sold to the public or businesses? Revise this statement to accurately reflect past disposal practices.	The sentence was revised to read "… for the disposal of radiologically contaminated scrap metal." Radiologically contaminated scrap metal was not sold.
36.	Section 1.3.4.1, Page 1-16, 1st paragraph, line 2	Specify the name of the scrap yard located to the north in the text.	Text has been added to Section 1.3.4.1 to indicate the scrap yard north of SWMU 5 is C-746-P/P1.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
37.	Section 1.3.4.2, Page 1-16, 1st paragraph	Reflectors were discovered on the SWMU 5 fence after the RIFS WP was approved. These reflectors were used by excavation workers in the 1970s and 1980s as a reference to aide in defining the gridded waste cells. Uncertainty does exist as to when the reflectors were first utilized. Add a sentence intended to memorialize the historic use of these reflectors.	A sentence has been added that reflectors on the fence may have been used as a grid reference.
38.	Section 1.3.4.1, Page 1-17, Figure 1.7	Consider revising the wording used to describe that a disposal cell was utilized. The current description of 'disposal plot filled' is misleading. Documentation supports that varying amounts of material were placed in each disposal cell; therefore, it would be more accurate to say that blue disposal cells were utilized as opposed to "filled."	Figure legend was modified to say, "Disposal cell utilized."
39.	Section 1.3.4.1, Page 1-17, Figure 1.7	Contour lines appear to be missing along the northern SWMU boundary where a drainage ditch is present. Please check and modify the figure accordingly.	The contour lines are not missing (a depression is visible in the figure), but the elevations are missing and have been added.
40.	Section 1.3.5.1, Page 1-18, 1st paragraph, 1st sentence	Clarify the area or areas being referred to as 'this area.'	"This area" was changed to "SWMU 6."
41.	Section 1.3.5.1, Page 1-19, figure 1.8	What is known about the burial pit depicted in the upper northwest corner of SWMU 6? It does not have a corresponding letter, like the other five burial pits in SWMU 6. Why does it extend west of the current SWMU boundary? Submit a revised SAR to account for the portions of the burial pit extending past the current SWMU boundary.	This is a part of Pit I (designated as I-2 on revised Figure 1.8). According to Union Carbide (1978), "An additional burial of exhaust fans from C710 was made in April 1976. The pit size was 6 ft x 6 ft and was located 6 ft north of the previous disposal site." This information has been added to the text in Section 1.3.5. A revised SAR will be submitted.
42.	Section 1.3.5.1, Page 1-19, Figure 1.8	The extent of burial pit 'I' is depicted to the west of SWMU 6. Submit a revised SAR to account for the portions of the burial pit extending past the current SWMU boundary.	A revised SAR will be submitted.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
43.	Section 1.3.6.1, Page 1-20, 1st bullet	It is suggested that Pit B and Pit C may be connected. Depict this in figure 1.9 with dashed lines and a question mark between the two pits.	Text has been revised to indicate recent geophysical surveys suggest Pits B and C are separate pits.
44.	Section 1.3.6.1, Page 1-20, 4th bullet	Pit E is located outside of SWMU 7. Submit a revised SAR to account for Pit E within the SWMU 7 boundary or create a new SWMU.	A revised SAR will be submitted.
45.	Section 1.3.6.1, Page 1-20, 5th bullet	Clarify the bracketed information "(approximately 20 by 80ft)." Is 20x80 a total area for all five pits or an average for each pit?	Text was revised to clarify that the average size of each pit (Pits F1 through F5) is 20 ft by 80 ft.
46.	Section 1.3.6.1, Page 1-20, 2nd paragraph	Clarify this paragraph so it is clear which pits it refers to. Were the 8-15 ft depths determined by drilling/probing or excavation?	The text has been revised to clarify this. The first sentence is referring to all pits in general. The 8-15 ft depth was determined by geophysical survey during the Phase II SI.
47.	Section 1.3.6.2, Page 1-22, 1st paragraph, line 3&4	"Contaminated concrete removed from the C-410 Feed Plant during May and June 1960 was placed in Burial Pits D and E." Share this information and source with the team associated with investigating Rubble Piles.	No change necessary in report. This information will be shared with other project teams.
48.	Section 1.3.6.2, Page 1-22, 1st bullet:	Descriptive words like 'historic records' and 'documented' are used for all of the other pits in SWMU 7 except for Pit B. Do records exist for Pit B?	No records exist for Pit B.
49.	Section 1.3.6.2, Page 1-22, 5th bullet	Label the 'F' Pits (F1, F2, F3, etc). There are six pits depicted on figure 1.9. Are all six defined areas associated with the 'F' Pits? Explain the discrepancy.	Five pits are shown in the work plan and labeled as F1 through F5 (this came from the SWMU 7 and 30 RI report). An engineering drawing used for the BGOU figures indicates 6 pits; the 6th pit never was named. Clarification on the figure and related text has been added to indicate the sixth pit was not named in previous documents. Figure 1.9 will show pits labeled as previously labeled in the work plan.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
50.	Section 1.3.7.1, Page 1-23, 1st paragraph, line 2	What type of incinerator operated at SWMU 30? What did it incinerate? When did the incinerator begin operation?	The "Teepee" incinerator was used to burn paper, cardboard, wood, saw dust, and other combustibles. It was a steel mesh "teepee" shaped structure that could be used to burn waste. SWMU 30 was used as an area to burn combustible trash from 1951 to 1970, but the exact date the Teepee incinerator began operation is uncertain.
51.	Section 1.3.7.1, Page 1-23, 1st paragraph, line 2	Is there an assumption associated with this incinerator, like that of the burn-and-burial pit, that ash from its operation was buried within the confines of SWMU 30? If not, where was the ash disposed of?	Records do not exist, but it is assumed it would not have been taken far and remained in/near SWMU 30. Text in Section 1.3.7.1 has been revised to include this assumption.
52.	Section 1.3.8.2, Page 1-25, 1st paragraph, last two sentences	Add the date when construction began on the S&T landfill. Otherwise, the last sentence that connects ground scarring to areas of discard is misleading for the 1981 aerial photograph.	Text in Section 1.3.8.2 has been revised to state that the C-746-S Landfill began operation in 1981.
53.	Section 2.1, Page 2-1, 2nd paragraph	The approved RI/FS WP called for surface geophysics to be "… implemented along continuous lines spaced 4 to 5 feet apart, covering an area that will extend approximately 10 ft beyond the SWMU boundary," at SWMUs 7&30 and SWMU 145. Explain why additional SWMUs (2 & 5) had geophysical surveys undertaken and state any deviations from the RI/FS WP scope.	Additional geophysical surveys were performed at SWMUs 2 and 5 in support of the excavation/penetration permits procedure. They were done where there was uncertainty in waste boundaries to ensure wastes were not drilled into.
54.	Section 2.1, Page 2-1, 2nd paragraph, line 1	Add text to clarify that this paragraph/sentence is associated with the 2006 RI/FS WP field activities.	Text has been added as suggested.
55.	Section 2.2, Page 2-1, 1st paragraph	Consider adding text to explain that a soil boring is temporary, providing a snap-shot of the conditions at that moment.	Text has been added as suggested.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
56.	Section 2.1, Page 2-2, Figure 2.1	Geophysical anomalies are depicted east of the SWMU 2 boundary, especially in the southeast corner. In previous BGOU RI figures of SWMU 2 and SWMU 3, there are no indications that waste cells from SWMU 2 encroach into SWMU 3. Did the geophysical interpretation suggest that waste cells are present along the western portions of the SWMU 3 boundary? Furthermore, the SWMU boundary and waste cell configuration being depicted in figure 2.1 for SWMU 2 is different than what is being depicted in figure 2.8. Which one is correct? Make them consistent.	Figures 2.1 and 2.8 have been revised and corrected based on historical documents. It is not believed that SWMU 2 waste cells are within the SWMU 3 boundary.
57.	Section 2.1, Page 2-4, Figure 2.3	The 'current geophysical anomaly (to locate sanitary water line)' is confusing. Consider adding the date (2006) to clarify when the geophysics were performed. Also consider changing the word 'current' to 'BGOU RI/FS WP.' These two recommended changes can be applied to all other applicable figures in the RI Report.	The legend and label have been revised. The geophysical anomaly in bright green shows the edge of the waste. The legend was revised to delete the "(to locate sanitary water line)" reference.
58.	Section 2.1, Page 2-4, Figure 2.3:	What is the interpretation provided for the 'current geophysical anomaly' depicted in figure 2.3? It is unclear how extensive this survey was and why it does not correlate to the sanitary water line.	A geophysical survey was run in this area primarily to confirm the existence of the waterline prior to drilling (Appendix A). The anomaly in Figure 2.3 shows the edge of the waste in that area of the figure and is not related to the sanitary water line.
59.	Section 2.1, Page 2-4, Figure 2.3	Are the geophysical anomalies depicted to the west of the 20 by 20 ft waste cells being considered as buried waste?	Yes. The WAG 3 RI Report, Appendix A, interpreted these anomalies to occur within the burial area.
60.	Section 2.1, Page 2-5, Figure 2.4	Depict or explain on the figure why waste cell's H, I, K, and L do not have geophysical anomalies associated with them.	The geophysical surveys were not performed in those areas. While the historical geophysical survey did not cover all of the waste cells (H, I, K, and L) at SWMU 6, it was assumed the engineering drawings were adequate to indicate where buried material was located. Rather than include this on the figure, the explanation has been added to the text on page 2-1.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
61.	Section 2.1, Page 2-5, Figure 2.4:	Are the geophysical anomalies depicted to the north, east, and south of the current SWMU boundary being considered as buried waste?	The anomalies outside the SWMU boundary are related to parked vehicles/equipment. At the time of the geophysical survey, several surface obstructions and influences affected the survey data. They are identified on Figure 6 of Appendix A of the WAG 3 RI Report as a forklift, mower, and metal debris. Text has been added to Section 2.1 to clarify this.
62.	Section 2.2, Page 2-13, Figure 2.10	Add clarification to the term 'waste cell' in the legend. Only one of the SWMU 4 figures state that the 'waste cell' is based on a WAG 3 geophysical interpretation. Apply a clarification to the other SWMU 4 figures indicating that the cell boundaries are the result of geophysical interpretation.	The term in Figure 2.10. has been clarified.
63.	Section 2.2, Page 2-14, Figure 2.10	Consider repeating the figure description on all corresponding pages for figures that are larger than one page. Page 2-14 should be Figure 2.10. SWMU 4 Angled Borings (Continued).	Figure titles are repeated on subsequent pages where they exceeded one page.
64.	Section 2.2, Page 2-15, Figure 2.11	Consider distinguishing between WAG 3 angled borings and RI/FS WP angled borings. This could be easily accomplished with different colors and a corresponding description in the legend. This would apply to SWMU 6 also.	Figures have been revised as suggested.
65.	Section 2.3, Page 2-23, 1st paragraph, last sentence	"Appendix D provides the soil and groundwater analytical results in a searchable database on compact disk." Change to Appendix C, Appendix D is for three dimensional visualization figures.	Text has been revised.
66.	Section 2.4, Page 2-25, Table 2.2	The deep vertical boring 007-010 sampling interval of 66[c] ft bgs has a footnote designation linking it to the McNairy Formation. This is a typo. **Change to 66[b].**	Table 2.2 was revised.
67.	Section 2.4, Page 2-26, Step (4)	Where is the 'rate of rise of water' information stored and is this data readily available?	This information is based on field observation and contained in field logbooks. It is not readily available for inclusion in this report.
68.	Section 2.5.3, Page 2-27, 1st sentence:	Replace KEPC with KEEC.	KEPC has been replaced with KEEC throughout the document.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
69.	Section 2.5.3, Page 2-27, 1st sentence	Original boring placement targeted specific groups of waste cells; however, the size of the grid cells and their configuration could not be verified. Boring 005-101 was relocated to the east, splitting the difference between WAG 3 borings 005-018 and 005-019. Boring 005-102 was originally located on the northern boundary, angled to the south. Boring 005-102 was relocated to the eastern boundary, angled to the west. It targeted a specific burial pit discovered on engineering drawings. Boring 005-103 had the same entry location but the angle was changed from southwest to west.	Text in Section 2.5.3 was revised as suggested for these drilling locations.
70.	Section 2.5.4, Page 2-27, 2nd paragraph, 1st sentence	The original angling for Boring 006-101 was to the east (plant) and not the west. Change west to east.	Text revised as suggested.
71.	Section 2.5.4, Page 2-27, 2nd paragraph, last sentence	The relocated Boring 006-101 is angled to the south (not south east) under the western third (not corner) of Area J.	Text revised as suggested.
72.	Section 2.5.5, Page 2-28, 3rd paragraph, 1st sentence	There is no boring 007-012. Please correct.	Text was revised to reflect this as boring 007-011 (which was 007-003-VSB in the work plan).
73.	Section 2.5.5, Page 2-28, 5th paragraph	This description does not reflect the BGOU RI/FS WP and figure 2.12 in the RI Report. Please correct.	Boring 007-005-ASB was moved northeast of the location proposed in the work plan (Figure 9.6) and reoriented to angle to the southwest beneath the F Pits. This is shown on Figure 2.13 of the RI report. In the work plan, the boring originally was planned to be on the south side of the F Pits and angled northward.
74.	Section 2.5.6, Page 2-28, 1st paragraph, 2nd sentence	Aerial photographs played a large role in moving borings. Please add.	Text has been added to indicate the importance aerial photographs played in locating sampling borings.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
75.	Section 2.5.6, Page 2-28, 2nd paragraph, last sentence	If adjustments were made to soil sample intervals at 145-106 and 145-107 to account for the shallow RGA at this location, then why was no water sample collected?	It was not in the proposed sampling plan to collect RGA groundwater at SWMU 145. The planned samples for SWMU 145 were limited to UCRS soils and groundwater.
76.	Section 2.6.1, Page 2-28, 1st paragraph, 1st sentence	Change Appendix D to Appendix C.	Text has been changed.
77.	Section 2.6.1, Page 2-29, Table 2.3	Consider adding a column indicating the number of borings for each SWMU.	This information is included in Table 2.1.
78.	Section 2.6.2, Page 2-29, last sentence	Consider moving this sentence to the next page.	This will depend on document formatting following revision.
79.	Section 2.6.2, Page 2-30, Data Qualifiers	Add LCS and GC/MS to the Acronyms page on page xvii.	LCS (Laboratory Control Sample) and other acronyms in this section were defined and added to page xvii.
80.	Section 2.6.2, Page 2-31, Table 2.4	How was the TCL PCBs completeness (68%) for water calculated?	The value has been revised to 67%, calculated as follows: (30 total samples - 10 rejected)/30 total samples = 0.67 or 67%.
81.	Section 2.6.2, Page 2-31, Table 2.4	Of the eight rejected TCL PCB samples from SWMU 7, how many were from angular borings?	Two of the rejected samples were from angle borings: 007-001 and 007-002.
82.	Section 3.3, Page 3-3, 1st paragraph, line 2	Specify the id# for the U.S. Geological Survey gauging station.	The gaging station identification number (USGS 03611500) was added to the text.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
83.	Section 3.3, Page 3-3, 3rd paragraph	It is noteworthy to mention that a common historical practice was to dig ditches around the burial grounds to facilitate the draining of saturated soils a few feet below the ground surface. To some degree the shallow water table limited the depth that items could be buried.	It is not known that this was a common practice at the PGDP for the purpose of dewatering the shallow soils.
84.	Section 3.4, Page 3-3, 1st paragraph, line 4	Add 'The' to the beginning of the sentence.	Text has been revised as suggested.
85.	Section 3.3, Page 3-4, Figure 3.1	Several key features were mentioned in the text that is not labeled in the figure. Please add the following labels: Metropolis Lake, Ash Ponds, and Settling Ponds.	These labels have been added to Figure 3.1.
86.	Section 3.6, Page 3-11, Figure 3.5	Make the figure more meaningful by illustrating the BGOU SWMU locations and utilizing more recent interpretation. Add some groundwater flow arrows. Add hatch lines where isopach lines are less certain and get rid of the two arrows on the left and right side of the figure.	The BGOU SWMUs have been added to the figure. Since groundwater flow in the UCRS is predominantly downward, it would not be appropriate to include flow arrows.
87.	Section 3.6.1, Page 3-13, Figure 3.6	Since nine of the ten burial grounds are located in the northeastern portion of the PGDP, use a boring log from that area. If Boring H007 is from the northeastern portion of the PGDP then state it on the figure; otherwise, disregard this comment.	Several burial grounds are in the west-central portion of the plant. Boring H007, located in the center of the plant, is an adequate example of the stratigraphic and hydrogeologic units found across the PGDP, including beneath all BGOU SWMUs.
88.	Section 3.9.2, Page 3-18, 1st paragraph, 1st sentence	Other than utilities being sparse in the area of the BGOU SWMUs, what evidence or samples exist to support the statement that utilities "appear to have had no impact on contaminant migration from or into the SWMU areas?"	No other evidence or data exists to support the statement. The statement is based on utilities being sparse in area of BGOU SWMUs compared to more industrial areas of the plant.
89.	Section 3.9.3.1, Page 3-33, Figure 3.17	Does the value for vertical conductivity in the uppermost layer account for disturbed soil or is it for undisturbed soil?	Figure 3.17 has been revised to indicate that this is the vertical conductivity value for undisturbed soil. The conductivity of the waste pits is unknown.
90.	Section 3.9.3.1, Page 3-33, Figure 3.17	The depth in feet is confusing. What does 490 feet represent relative to the RGA? The base of the RGA is not 490 feet bgs.	The base of the RGA for this figure was 90 ft bgs. The typo has been corrected.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
91.	Section 3.9.3.1, Page 3-34, Figure 3.18	Include the two monitoring wells that were recently installed to enhance the C-404 monitoring well network. Two monitoring wells were proposed during the RI/FS WP, and there is no mention of their existence in this section. If they are too new for data collection and interpretation, they should at least be mentioned in section 3.9.3.1 and depicted on figure 3.18.	After initial results from MW67 and MW76 were reviewed with KDWM personnel, it was determined that only one new MW would be installed (MW420), upgradient of SWMU 3. This was added to Figure 3.18. The text in Section 4 has been revised to include discussion of MW67, MW76, and MW420.
92.	Section 3.9.3.3, Page 3-38, Figure 3.20	Change SWMU 4 to SWMU 5 on the figure title.	Change has been made.
93.	Section 3.9.3.3, Page 3-39, 1st paragraph, 1st sentence	Delete the word 'Well.'	Change has been made.
94.	Section 3.9.3.3, Page 3-39, 2nd paragraph, line 3, fourth word	typo = areas	Typo has been corrected.
95.	Section 3.9.3.3, Page 3-39, 2nd paragraph, line 8, second word	typo = SWMU	Typo has been corrected.
96.	Section 3.9.3.5, Page 3-48, Figure 3.25	Add the feet designation to the figure.	Figure has been revised to note that elevations are "ft amsl."
97.	Section 3.9.4, Page 3-46, Figure 3.28	Consider resizing this figure to a larger format due to its level of detail.	This figure is (now Figure 3.29) has been revised to better show the detail.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
98.	Section 4.3.3, Page 4-32, Table 4.10, footnote b	Consider adding text that clarifies that no samples were collected during RI activities for SWMU 4.	Text has been added to Section 4.5.1 to clarify that no samples were collected and footnote b now states "N/A = not applicable, since no data was collected at SWMU 4 as part of this RI." Table 4.10 is now Table 4.18.
99.	Section 4.3.4, Page 4-37, last paragraph, 1st sentence	"The SWMU 5 burial pits are approximately 20 ft deep." Section one of this report states that SWMU 5 pits were excavated 6 to 15 feet bgs and 2 to 3 feet of soil was added to the top. A majority of the burial cells in SWMU 5 were not excavated past 10 – 15 ft because of the shallow water table. Revise this sentence.	The first sentence of the second paragraph of Section 4.6.1 (formerly 4.3.4) has been revised to read, "The SWMU 5 burial pits were not excavated below 10 to 15 ft due to the shallow water table."
100.	Section 4.4.2, Page 4-62, Table 4.26:	The maximum result reported in table 4.26 of 0.00159 mg/L for dissolved arsenic in the UCRS (RI Data) is not represented in Table 4.28. Was data left off of the table, or is this a transcription error?	In the table MS Excel automatically rounded 0.00159 mg/L to 0.0016 mg/L to fit the column width. Rounding was corrected.
101.	Section 4.4.2, Page 4-62, Table 4.26	The maximum result reported in table 4.26 of 8.72 pCi/L for technetium-99 in the UCRS (RI Data) is not represented in table 4.28. Was data left off of the table, or is this a transcription error?	The 8.72 pCi/L from boring 003-003 doesn't show up (or 3.97 pCi/L from location 003-004) because they are less than the screening level of 14 pCi/L, which is the NAL presented in Table 4.4. While the UCRS does not constitute an aquifer or drinking water source, it has no established background, and it was screened only against MCLs and the child resident NAL. The text states the table shows only those values detected above screening values, but the table footnote has been revised from "ND = not detected" to "ND = not detected above screening levels."
102.	Section 4.4.4., Page 4-101, Table 4.34	DG-002 is being presented in the RI Data when it should be in the Historical Data, please correct.	DG-002 has been moved in the table (now Table 4.27).

Comment Number	§/Page/¶	Comment	Response
103.	Section 5.1, Page 5-1, 1st paragraph, lines 9&10	"Not all SWMUs have transport pathways to all of the POEs." All of the BGOU SWMUs should include the Little Bayou Seeps as a POE. Figures 5.1 and E.3.5 depict how close each SWMUs projected flow paths come to intersecting the Little Bayou Seeps. Well control is poor in the vicinity of the Little Bayou Seeps. The uncertainties in the groundwater model are great enough to warrant SWMUs 4 and 145 being evaluated under the Little Bayou Seeps POE. Flow paths from SWMUs 2 and 5 intersect the Little Bayou Seeps when their particle tracks originate from various locations within their boundaries (see figure E.3.3 and figure E.3.1); therefore, each SWMU needs to be evaluated under the Little Bayou Seeps POE.	Text in Section 5.5.4 and E.3.3.4 has been revised as follows: "Based on particle tracks taken from the calibrated sitewide numerical flow model developed in MODFLOW for PGDP, SWMUs 2, 4, 5, and 145 were shown not to impact the Little Bayou seeps. If the SWMUs were to impact the seeps, it has been shown that SWMUs 2, 4, and 145 have modeled groundwater concentrations at the Ohio River that exceed MCLs for several analytes; therefore, the modeled groundwater concentrations at the Little Bayou Seeps also would exceed the MCLs for these analytes. Modeling results for SWMU 5 show that the groundwater concentrations at the property boundary do not exceed the MCLs for any analytes modeled; therefore, the groundwater concentrations at the Little Bayou Seeps also would be less than the MCLs for each analyte."
104.	Section 5.2.2, Page 5-5, 1st paragraph, last sentence	"The groundwater plumes of TCE and ^{99}Tc at PGDP are similar in size and geometry." Consider revising the sentence to: The groundwater plumes of TCE and ^{99}Tc at PGDP have similarities.	The sentence was revised to clarify that the "… plumes of TCE and technetium-99, particularly the Northwest Plume, have similarities; however, the technetium-99 plume does not currently exhibit technetium-99 concentrations above the MCL at off-site locations, whereas the TCE plumes do exceed MCLs off-site."
105.	Section 5.6.3, Page 5-43, 1st paragraph, last sentence	Spelling typo – plumes.	Section 5.6.3 (now Section 5.5.3) has been revised and the typo corrected.

Comment Number	§/Page/¶	Comment	Response
106.	Section 7.3, Page 7-2, 2nd paragraph, 1st sentence	"Ditches bound each of the BGOU SWMUs." Make sure that text supporting this statement is reflected in all of the appropriate sections and figures in the document.	Figures have been modified to show surface water flow directions in the ditches around the BGOU SWMUs. Text will not be revised.
107.	Section A.9.1, Page A-17	At SWMU 5 it was discovered, at the time of installation, that an angled boring at the southeast corner was not being oriented perpendicular to the waste cells. The error was confirmed and the installation was stopped. A new boring was started a few feet away with the correct orientation. The abandoned boring was far enough along that two or three samples had already been collected. At that time KDWM and PRS Project Managers agreed to submit the samples for analysis, yet the results do not appear in the RI Report. Were these samples analyzed? If so, add the results to the appropriate summary tables and figures. Mention this occurrence in this section.	The following will be added to Appendix A: "At SWMU 5 it was discovered at the time of installation that an angled boring (005-103) at the southeast corner was being drilled in a diagonal orientation to the waste cells and not in a perpendicular orientation, as stated in the text of the work plan. The error was confirmed and the installation was stopped. A new boring was started a few ft away with a perpendicular orientation. The 10 ft and the 15 ft samples collected from the diagonally-oriented boring were discarded. The 30 ft sample was submitted for analysis along with the full set of samples from the new boring oriented perpendicular to the waste cells. Data from the initial boring are included with the summaries in the RI Report with the other data from boring 005-103. This data is available individually within the dataset and is identified by the sample number '005103SA030-2'. "
108.	Section E2.1, Page E2-3	Provide full justification for SADAs interpolation methods like those submitted with the SW Plume document. It is not clear why the nearest neighbor method is preferred for all of the SWMUs when the other methods may be more appropriate.	Additional information has been provided in Attachment 2 to Appendix E to justify the source term develop methodology. Although sampling would provide information at some locations, it is still necessary to use some method to "interpolate" the data, that is to estimate or predict the values at nondata locations. The nearest neighbor method was determined to provide the highest mass concentrations in the source model,

Comment Number	§/Page/¶	Comment	Response
			providing a conservative source term estimate. This addresses, in part, the known low bias in the data caused by the inability to sample the waste. The verification report for SADA (EPA 2000) states that "although geostatistical-based kriging interpolation approaches are more mathematically rigorous than the simple interpolation approaches using nearest neighbor, they are not necessarily better representations of the data. Statistical and geostatistical approaches attempt to minimize the mathematical constraint, similar to a least squares minimization used in curve-fitting of data. While the solution provided is the "best" answer within the mathematical constraints applied to the problem, it is not necessarily the best fit of the data. There are two reasons for this: First, in most environmental problems, the data are insufficient to determine the optimum model to use to assess the data. Typically, there are several different models that can provide a defensible assessment of spatial correlation in the data. Each of these models has its own strengths and limitations, and the model choice is subjective (EPA 2000). "This conundrum leads to the second reason for the difficulty, if not impossibility, of finding the most appropriate model to use for interpolation–which is that, unless the analyst is extremely fortunate, the measured data will not conform to the mathematical model used to represent the data At best, the interpolation can be reviewed to determine if it is consistent with the data" (EPA 2000).

Comment Number	§/Page/¶	Comment	Response
CHFS Comments—November 24, 2008			
1.	General	Section 5.6 addresses, in part, the uncertainties associated with the unknown source inventories within the storage cells, however it may not adequately address contaminants and contaminant levels within the cells. This uncertainty could potentially have a significant impact on risk levels as presented in the document. The Radiation Health Branch (RHB), as expressed in its comments for the Burial Ground Operable Unit Work Plan, still has concerns regarding source inventory of contaminants at each of the disposal units. Critical assumptions made regarding backing sample data in and around the burial grounds into a source inventory of contaminants may not hold and clearly depends upon conditions within the cells. Although this may be the case, the risks still exceed the acceptable levels for the burial grounds. Because acceptable levels are exceeded, the RHB agrees that further actions are needed, but does not agree with all recommendations for future work as cited in Section 7.7.1 This is for informational purposes only, no reply is necessary.	The revised report has an expanded section on uncertainties and assumptions in the Executive Summary (and in Section 7), which includes discussion of the uncertainties related to the nature of the source zone for the SWMUs in the BGOU. The risk assessment concluded these uncertainties related to the source zone were not estimated to have a large effect on the risk characterization. The report states that the BGOU FS may identify the need for a remedial design support investigation. Section 7.7.1 (now Section 7.8.1) has been rewritten based on the comment resolution meeting on December 18, 2008.
Baseline Human Health Risk Assessment Comments transmitted via KY Division of Waste Management—November 24, 2008			
1.	General	Some of the Specific Comments below, particularly, #1 through #74, are more significant to the results of the risk evaluation than others. In an attempt to point out the most significant points, certain portions of these comments are in **bold** text. None of the issues in Specific Comments #75 through #123 contain bold portions, but are all potentially significant.	Comment noted.
2.	F.2.3.2 Evaluation of Concentrations for Soil	• ***Convert units of measure to a consistent basis.*** Much of the VOC and SVOC data (in the "BGOU Data" provided in the Access Database on CD) collected in February, March, April, and May of 2007 were not converted from µg/kg to mg/kg.	The files used in our risk assessment of groundwater based on soil concentrations of contaminants were converted VOC and SVOC data to mg/kg prior to calculations. Risk calculations for surface and subsurface soil for direct exposure are summarized from previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
3.	F.2.3.2 Evaluation of Concentrations for Soil	• *Categorize all sample results as detects or nondetects.* The "BG OREIS DATA—SO and SE" have numerous samples with confusing validation and result qualifiers, but under the heading "DETECTED?" are listed as "TRUE," which made it obvious which samples were detects and which were non-detects. However, this information was not included in the "BGOU Data," with result qualifiers *, B, D, E, N, U, X, or Y and "=" or "J" validation qualifiers. Therefore it was difficult to determine which samples were detects and which were non-detects. *Compare maximum detected concentrations to human health screening values.*	Kentucky will be provided with a new data CD that contains the raw data, the final dataset used in the screening of soil for contaminants modeled to groundwater.
4.	F.2.3.2 Evaluation of Concentrations for Soil	• *Compare maximum detected concentrations to PGDP background soil levels for metals and radionuclides.* The maximum detected concentrations for numerous constituents for each SWMU, as found in the two data files ("BGOU Data" and "BG OREIS DATA—SO and SE"), do not equate to those listed in the tables. Furthermore, the data used for ProUCL calculations of the 95% upper confidence limit (UCL) values often do not equate to the values in the two data files. Finally, there appear to be errors in numerous analytes' "frequency of detection." Specific discrepancies will be noted in further comments on each SWMU's data evaluation.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. This should resolve discrepancies due to differences in the datasets.

Comment Number	§/Page/¶	Comment	Response
5.	F.2.3.2 Evaluation of Concentrations for Soil	• If the number of detections in a sample set is less than 5% of the total number of analyses, then the analyte is not considered a COPC provided that the data set is adequate to characterize the site. Although this is a good general rule of thumb, if any detection is significantly above (i.e., 10x) its relevant screening level, the constituent should be retained for further evaluation.	The screening tables for groundwater now are provided in Appendix E, Attachment 3. Analytes that were not retained based on this criteria exhibit only 1 detection and were not modeled. The exception to this would be Arochlor 1254 and 1260 or SWMU 4, where the 7 detections out of 184 samples were all in the surface soils, thus precluding transport to the aquifer (i.e., analytes would not reach the RGA in the 1,000 year modeling period). The other exception is for silver at SWMU 145, with 3 detections out of 88 samples. These samples are located in NSD-030, which is considered a surface water drainage not affiliated with SWMU 145.
6.	F.2.3.2 Evaluation of Concentrations for Soil	• *Remove protactinium-234m (^{234m}Pa), potassium-40 (^{40}K), and thorium-234 (^{234Th}) from the data sets.* We disagree with the logic of removing all ^{40}K and ^{234}Th results simply to make these results "consistent with the Risk Methods Document and earlier BHHRAs prepared for PGDP." Please provide additional rationale for removal, or include these results in the risk evaluation.	These radionuclides were eliminated because the half-lives of protactinium-234 (1.17 min) and thorium-234 (24.1 days) are so short that these exposures are not relevant on the timescale of a risk assessment. K-40 was eliminated because it is ubiquitous. This material on screening of soil data for groundwater contaminants now appears in section 5.2.1.
7.	Table F.3: Provisional Background Concentrations for Surface and Subsurface Soil at PGDP	There appears to be a typographical error in footnote "b," where it states the following: Details on the derivation of the background concentrations for antimony, beryllium, cadmium, thallium, uranium, and all radionuclides are in DOE 2001. Details on the derivation of the background concentrations for all other inorganic chemicals are in DOE 2001. Please distinguish between the two different "DOE 2001" references.	The table in question has been deleted from the document.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
8.	Table F.4: Summary of COPC Screening for Detected Analytes – SWMU 2 Surface Soil COPCs	The maximum concentration detected for benz(a)anthracene (1.3E-01 mg/kg) is above the resident child NAL (6.7E-02 mg/kg), so this constituent should be retained and the "NA" should be changed to "Y." In addition, the maximum concentration detected for chrysene (1.70E-01 mg/kg) is below the resident child NAL (6.70E+00 mg/kg), so this constituent does not need to be retained and the "Y" may be changed to "NA."	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
9.	Table F.4: Summary of COPC Screening for Detected Analytes – SWMU 2 Surface Soil COPCs	Please explain how the EPC for "Total PCBs" (1.60E+00 mg/kg) is larger than the maximum concentration detected (1.10E+00 mg/kg). Also, the maximum concentration detected for "Total PCBs" listed on the table appears to be from JP-0151, which is purportedly outside the SWMU boundary (e-mail from Kirby Olson, October 22, 2008; NOTE: the fact that JP-0151 is not in SWMU 2 should be included in the document). The actual maximum detected value for PCBs should be 0.5 mg/kg (PCB-1260); however, since PCBs represent 1.1% of the ELCR for industrial workers (Table F.213), 2.3% of the ELCR for recreational users (Table F.220), and 0.7% of the total ELCR for rural residents (Table F.227), correcting this change will not appreciably change the overall risk.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
10.	Table F.4: Summary of COPC Screening for Detected Analytes – SWMU 2 Surface Soil COPCs	The EPC for uranium (9.43E+02 mg/kg) is above the listed maximum detected concentration (2.80E+02 mg/kg), and should be corrected. This error appears to be the result of erroneously using the JP-0151 sample data in determining the EPC. Since this constituent represents 60.9% of the total HI for the industrial worker (Table F.163), 87.6% of the total HI for the child recreational user (Table F.170), 87.9% of the total HI for the teen recreational user (Table F.177), 92% of the total HI for the adult recreational user (Table F.184), 79% of the total HI for the child resident (Table F.191), and 67.7% of the adult resident (Table F.198), the correction will be significant.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
11.	Table F.4: Summary of COPC Screening for Detected Analytes – SWMU 2 Surface Soil COPCs	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: beryllium, chromium and PCB-1260 (3 analyses; 3 detects), mercury and phenanthrene (3 analyses; 2 detects), and benz(a)anthracene (3 analyses; 1 detect). However, the EPC values (95% UCLs calculated using ProUCL: from Appendix F Attachment 3) for uranium-234 and uranium-238 appear to have used ten (10) samples, even though the table lists only eight (8) for the number of analyses for each. Since uranium-238 represents 20.2% of the ELCR for industrial workers (Table F.213), 32.7% of the ELCR for recreational users (Table F.220), and 20.5% of the ELCR for rural residents (Table F.227), the correction may be significant. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
12.	Table F.4: Summary of COPC Screening for Detected Analytes – SWMU 2 Surface Soil COPCs	The detection limit for two (2) of the three (3) antimony analyses was 0.46 mg/kg, the result qualifier for each of these was "U," yet the results indicate a concentration of 6 mg/kg, which is significantly above the detection limit as well as the resident child NAL of 6.35E-02 mg/kg. Please clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
13.	Table F.4: Summary of COPC Screening for Detected Analytes – SWMU 2 Surface Soil COPCs	The following chemicals were detected in at least one sample, but were not included on the table: alpha-chlordane, delta-BHC, endrin-ketone, gamma-chlordane, molybdenum, silver, and tin. This comment applies to Table F.5 as well, with the addition of cis-1,2-dichoroethene and trichloroethene. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
14.	Table F.5: Summary of COPC Screening for Detected Analytes – SWMU 2 Subsurface Soils	Please explain how the EPC for total PCBs (4.70E+00 mg/kg) is larger than the maximum concentration (9.00E-02 mg/kg as the MDL). Also, as noted, the actual maximum detected value for PCBs should be 0.5 mg/kg (PCB-1260), however, since PCBs represent only 5.4% of the total ELCR for excavation workers (Table F.205), correcting this change will not appreciably change the overall risk.	Total PCBs is the sum of the maximum detected concentration of all detected PCBs, so it should always equal or exceed the maximum detected individual PCB. The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
15.	Table F.5: Summary of COPC Screening for Detected Analytes – SWMU 2 Subsurface Soils	The maximum concentrations of barium (350 mg/kg), calcium (5600 mg/kg), **manganese (850 mg/kg), uranium (1500 mg/kg)**, vanadium (37 mg/kg), and total PCBs (0.5 mg/kg), found in the two data files differ from those in the table (1.60E+02 mg/kg, 1.42E+03 mg/kg, 5.40E+02 mg/kg, 2.80E+02 mg/kg, 3.40E+01 mg/kg, and 9.00E-02 mg/kg, respectively). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
16.	Table F.5: Summary of COPC Screening for Detected Analytes – SWMU 2 Subsurface Soils	The actual maximum concentration detected for manganese (850 mg/kg mg/kg) is above the excavation worker NAL (5.66E+01 mg/kg) and the background concentration (8.2E+02 mg/kg), so this constituent should be retained and the "N^{AB}" should be changed to "Y." In addition, since the listed maximum concentration detected of uranium and consequent EPC (2.8E+02 mg/kg) represents 55.2% of the HI for excavation workers, changing this value to the actual maximum concentration detected (1500 mg/kg), the correction may be significant.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
17.	Table F.5: Summary of COPC Screening for Detected Analytes – SWMU 2 Subsurface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. For inorganic constituents, the data files indicate the following: arsenic, barium, chromium, nickel, and vanadium (11 analyses; 11 detects), beryllium (11 analyses; 9 detects), cadmium (11 analyses; 6 detects), calcium, (5 analyses; 5 detects), manganese (11 analyses; 5 detects), thallium (11 analyses; 6 detects), and uranium (13 analyses; 5 detects). Please correct and/or clarify. For radionuclides, the data files have many fewer analyses than listed on the table. The data files indicate the following, which differ from the table: americium-241, neptunium-237, plutonium-239, and technetium-99 (18 analyses; 16 detects), cesium-137 (18 analyses; 11 detects), thorium-230, uranium-234, and uranium-238 (18 analyses; 17 detects), and uranium-235/236 (16 analyses; 16 detects). Please correct and/or clarify by indicating where the additional analyses can be found.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
18.	Table F.5: Summary of COPC Screening for Detected Analytes – SWMU 2 Subsurface Soils	As noted in comment #12 for surface soil samples, the detection limit for two (2) of the five (5) antimony analyses was 0.46 mg/kg, the result qualifier for each of these was "U," yet the results indicate a concentration of 6 mg/kg, which is significantly above the detection limit as well as the excavation worker NAL of 4.92E-01 mg/kg. The detection limits of two (2) other antimony analyses (range 9.27 – 9.99 mg/kg) are also well above the excavation worker NAL. Please clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
19.	Table F.5: Summary of COPC Screening for Detected Analytes – SWMU 2 Subsurface Soils	the EPC values (95% UCLs calculated using ProUCL; from Appendix F Attachment 3) for cesium-137, plutonium-239, thorium-230, uranium 234, uranium 235/236 and uranium-238 appear to have used between 42 and 52 samples, yet we only located between 16 and 18 samples in the data files. These constituents represent 77% of the ELCR for excavation workers (Table F.205); therefore, the correction may be significant. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
20.	Table F.6: Summary of COPC Screening for Detected Analytes – SWMU 3 Surface Soils	The following chemicals were detected in at least one sample, but were not included on the table: molybdenum, thorium-232, thorium-234, and uranium-235 (listed as "activity of U-235). Also see comment #5 above. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
21.	Table F.6: Summary of COPC Screening for Detected Analytes – SWMU 3 Surface Soils	The "N^D" listed for total PCBs should be changed, since it implies that PCBs are essential nutrients. In addition, it should be noted that the detection limit for PCBs (0.09 mg/kg) is above the resident child NAL (5.74E-02 mg/kg), although the constituent will still be eliminated as a COPC since there were no detections in the surface soil at this SWMU.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
22.	Table F.7: Screening for Detected Analytes – SWMU 3 Subsurface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: calcium and cobalt (23 analyses; 22 detects), mercury (23 analyses; 4 detects), plutonium-239/240 (23 analyses; 2 detects), technetium-99 (23 analyses; 6 detects), and uranium-238 (23 analyses; 16 detects). Please correct and/or clarify. For plutonium-239/240, the data files show 23 analyses, as compared to 43 listed on the table. Please correct and/or clarify by indicating where the additional analyses can be found.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
23.	Table F.7: Screening for Detected Analytes – SWMU 3 Subsurface Soils	The ProUCL data (Appendix F Attachment 3) does not include a sheet for uranium, although an EPC was calculated according to the table. In addition, 33 samples each were entered into ProUCL for uranium-234 and uranium-238, although the data tables indicate only 23 samples were analyzed. Because these constituents represent 66.9% of the ELCR for excavation workers (Table F.206), the correction may be significant. Please correct and/or clarify by indicating where the additional analyses can be found.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
24.	Table F.7: Screening for Detected Analytes – SWMU 3 Subsurface Soils	The following chemicals were detected in at least one sample, but were not included on the table: thorium-234, and **uranium-235 (listed as "activity of U-235)**. Also see comment #5 above. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
25.	Table F.8: Summary of COPC Screening for Detected Analytes – SWMU 4 Surface Soils	**The maximum concentration of cesium-137 (181 pCi/g) found in the two data files differ from that in the table (3.9E-01 pCi/g). Based on our calculation of the EPC for this constituent (1.11E+02 pCi/g), it appears that it may be the risk driver for the SWMU 4 surface soils. Please correct and/or clarify.** In addition, the maximum concentration of "total PAH" represents the smallest detection limit used (4.6E-01 mg/kg). As a general rule of thumb, we recommend using the largest detection limit (5.0E-01 mg/kg).	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
26.	Table F.8: Summary of COPC Screening for Detected Analytes – SWMU 4 Surface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: arsenic (13 analyses; 4 detects), lead (13 analyses; 2 detects), zinc (13 analyses; 12 detects), neptunium-237 (12 analyses; 9 detects), and plutonium-239/240 (6 analyses; 2 detects). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
27.	Table F.8: Summary of COPC Screening for Detected Analytes – SWMU 4 Surface Soils	The following chemicals were detected in at least one sample, but were not included on the table: americium-241, di-n-butyl phthalate, mercury, radium-226, and thorium-234. Also see comment #5 above. Please correct and/or clarify. It should also be noted that although there was only one detected concentration for americium-241 (0.894 pCi/g), the detection limit for 13 of the remaining 24 samples (range 2 – 13 pCi/g) is above the resident child NAL. Similarly, there was only one detected concentration for mercury (0.45 mg/kg), but the detection limit for the remaining 12 samples (0.2 mg/kg) is above the resident child NAL (1.58E-01 mg/kg). Also, although there were no detects of uranium-235, the detection limits for all 13 samples (range 1.5 – 13 pCi/g) are above the resident child NAL (5.91E-02 pCi/g). In addition, it is unclear why the analyses for uranium metal resulted only in concentrations with units of pCi/g and was thus excluded as a COPC.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
28.	Table F.9: Summary of COPC Screening for Detected Analytes – SWMU 4 Subsurface Soils	The maximum concentration detected for beryllium (1.11E+00 mg/kg) is below the excavation worker NAL (1.26E+00 mg/kg), so this constituent does not need to be retained and the "Y" may be changed to "NA."	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
29.	Table F.9: Summary of COPC Screening for Detected Analytes – SWMU 4 Subsurface Soils	The maximum concentrations of cobalt (13 mg/kg), magnesium (2590 mg/kg), di-n-butyl phthalate (1.2 mg/kg), **total PCB (27 mg/kg as Arochlor 1254)**, trichloroethene (0.008 mg/kg), and radium-226 (2.53 pCi/g) found in the two data files differ from those in the table (1.76E+01 mg/kg, 2.65E+03 mg/kg, 9.40E-01 mg/kg, 1.00E-01 mg/kg, 4.00E-03 mg/kg, and 2.51E+00 pCi/g, respectively). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
30.	Table F.9: Summary of COPC Screening for Detected Analytes – SWMU 4 Subsurface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: di-n-butyl phthalate (38 analyses; 5 detects), TCE (88 analyses; 2 detects), americium-241 (78 analyses; 1 detect), cesium-137 (61 analyses; 8 detects), **neptunium-237 (25 analyses; 18 detects),** radium-226 (19 analyses; 19 detects), and **technetium-99 (64 analyses; 15 detects**). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
31.	Table F.9: Summary of COPC Screening for Detected Analytes – SWMU 4 Subsurface Soils	The ProUCL data (Appendix F Attachment 3) does not include a sheet for **total PCBs, neptunium-237, plutonium-239/240, technetium-99,** uranium-234, and uranium-238, although EPCs were calculated according to the table. **Since these constituents represent 13.8% of the ELCR for excavation workers (Table F.207), the correction may be significant.** In addition, 40 samples were entered into ProUCL for manganese (with a minimum value of 0.45 mg/kg), although the data tables indicate only 39 samples were analyzed (with a minimum value of 26.1 mg/kg). However, since this constituent represents only 4.8% of the HI for excavation workers (Table F.157), the correction will not appreciably change the overall risk. Finally, please explain how the EPC for total PCB (3.12E+01 mg/kg) is higher than the maximum concentration listed (1.00E-01 mg/kg as the MDL) or the actual maximum concentration (27 mg/kg as Aroclor 1254). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
32.	Table F.9: Summary of COPC Screening for Detected Analytes – SWMU 4 Subsurface Soils	The following chemicals were detected in at least one sample, but were not included on the table: cis-1,2-dichloroethene, and thorium-234. Also see comment #5 above. Please correct and/or clarify. It should also be noted that although there was only one detected concentration for americium-241 (0.894 pCi/g), the detection limit for 53 of the remaining 71 samples (range 2 – 13 pCi/g) is above the excavation worker NAL (1.74E+00 pCi/g). Also, although there were no detects of uranium-235, the detection limits for all 53 samples (range 1.5 – 13 pCi/g) are all above the excavation worker NAL (4.55E-01 pCi/g). In addition, it is unclear why the analyses for uranium metal resulted in concentrations with units of pCi/g and was thus excluded as a COPC.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
33.	Table F.10: Summary of COPC Screening for Detected Analytes – SWMU 5 Surface Soils	The maximum concentration detected for 1,1-DCE (2.8E+00 mg/kg) is above the resident child NAL (2.76E-02 mg/kg), so this constituent should be retained and the "NA" should be changed to "Y." Also, the EPC for fluoranthene should be changed from 5.33E+02 mg/kg to 5.33E+01 mg/kg to reflect the maximum detected concentration. Since this constituent represents 29.7% of the total HI for industrial workers (Table F.166), 11.6% of the total HI for child recreational users (Table F.173), 13.7% of the total HI for teen recreational users (Table F. 180), 6.5% of the total HI for adult recreational users (Table F.187), 12.6% of the total HI for child residents (Table F.194), and 27.3% of the total HI for adult residents (Table F.201), the correction may be significant.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
34.	Table F.10: Summary of COPC Screening for Detected Analytes – SWMU 5 Surface Soils	The maximum concentration of total PCBs (0.306 mg/kg PCB-1260) found in the two data files differs from that in the table (1.00E-01 mg/kg as the MDL), however the EPC reflects the higher value. In addition, although the maximum concentration of nickel (1.35 E+02 mg/kg) matches our review of the data files, the ProUCL data (Appendix F Attachment 3) indicates that the maximum value used in the calculation of the EPC was 119 mg/kg. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
35.	Table F.10: Summary of COPC Screening for Detected Analytes – SWMU 5 Surface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: arsenic (26 analyses; 7 detects), barium and chromium (26 analyses; 26 detects), lead (26 analyses; 1 detect), nickel (26 analyses; 25 detects), sodium (13 analyses; 11 detects), benz(a)anthracene and benzo(b)fluoranthene (56 analyses; 30 detects), benzo(ghi)perylene (57 analyses; 26 detects), fluorene (56 analyses; 16 detects), 1,1-DCE (17 analyses; 1 detect), cesium-137 (26 analyses; 13 detects), technetium-99 (26 analyses; 7 detects), thorium-230 (13 analyses; 12 detects), and uranium-235/236 (25 analyses; 12 detects; assumes inclusion of “activity of U-235” analyses). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
36.	Table F.10: Summary of COPC Screening for Detected Analytes – SWMU 5 Surface Soils	The following chemicals were detected in at least one sample, but were not included on the table: pentachlorophenol, selenium, and thorium-234. Also see comment #5 above. This comment applies to Table F.11 as well. Please correct and/or clarify. It should also be noted that although the table lists the maximum concentration detected for uranium-235 as 8.83E-01 pCi/g, the value from that analysis was measured in wt% and is not comparable to the other radionuclide values. However, the actual maximum concentration detected (0.0773 pCi/g as "activity of U-235") is still below the background concentration. Furthermore, for the uranium-235/236 analyses measured in pCi/g, where there were no detects (as opposed to "activity of U-235" noted in comment #32 above), the detection limits for all of the 13 samples (range 1.7 – 6.4 pCi/g) are above the resident child NAL (5.91E-02 pCi/g). In addition, although the table lists the maximum concentration of uranium metal as 2.79E+02 mg/kg, the detection limits for all of the samples (range 200 – 2000 mg/kg) are well above the resident child NAL (2.16E+00 mg/kg). Similarly, although the maximum concentration listed for cesium-137 is 7.41E-02 pCi/g, the detection limits for all 13 of the non-detects (range 0.48 – 1.7 pCi/g) are above the resident child NAL (1.28E-02 pCi/g) and all but one of these detection limits (0.48 pCi/g) are above the background concentration as well (4.9E-01 pCi/g). Finally, although analyses of antimony resulted in no detections, the detection limits for all 26 samples (range 20 – 25 mg/kg) are well above the resident child NAL (6.35E-02 mg/kg).	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
37.	Table F.11: Summary of COPC Screening for Detected Analytes – SWMU 5 Subsurface Soils	The maximum concentration detected for 1,1-DCE (2.8E+00 mg/kg) is above the excavation worker NAL (1.19E-01 mg/kg), so this constituent should be retained and the "NA" should be changed to "Y." Also, the maximum concentration detected for bis(2-ethylhexyl)phthalate (5.7E+00 mg/kg) is below the excavation worker NAL (1.01E+01 mg/kg), so this constituent does not need to be retained and the "Y" may be changed to "NA."	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
38.	Table F.11: Summary of COPC Screening for Detected Analytes – SWMU 5 Subsurface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: aluminum, copper, iron, magnesium, and manganese (28 analyses; 28 detects), arsenic (29 analyses; 10 detects), beryllium (28 analyses; 10 detects), cobalt (28 analyses; 27 detects), uranium (15 analyses; 2 detects), zinc (28 analyses; 22 detects), benzo(a)pyrene (56 analyses; 30 detects), benzo(ghi)perylene (57 analyses; 26 detects), fluorene (56 analyses; 16 detects), 1,1-DCE (17 analyses; 1 detect), cesium-137 (29 analyses; 13 detects), technetium-99 (29 analyses; 7 detects), thorium-228 and thorium-232 (15 analyses; 15 detects), thorium-230 (16 analyses; 14 detects), uranium-234 (15 analyses; 1 detect), uranium-235/236 (28 analyses; 12 detects; assumes inclusion of "activity of U-235" analyses), and uranium-238 (15 analyses; 12 detects). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
39.	Table F.11: Summary of COPC Screening for Detected Analytes – SWMU 5 Subsurface Soils	Although the table lists the maximum concentration for uranium-235 as 7.33E-02 pCi/g from analyses labeled "activity of U-235" (15 analyses; 12 detects), for the uranium-235 analyses (13 analyses; 0 detects), the detection limits for all of the 13 samples (range 1.7 – 6.4 pCi/g) are above the excavation worker NAL (4.55E-01 pCi/g). In addition, although the table lists the maximum concentration of uranium metal as 2.79E+02 mg/kg, the detection limits for 12 of the 15 samples (range 200 – 2000 mg/kg) are above the excavation worker NAL (1.13E+01 mg/kg). Finally, although analyses of antimony resulted in no detections, the detection limits for all of the 29 samples (range 9.76 – 25 mg/kg) are above the excavation worker NAL (4.92E-01 mg/kg).	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
40.	Table F.11: Summary of COPC Screening for Detected Analytes – SWMU 5 Subsurface Soils	The ProUCL data (Appendix F Attachment 3) does not include a sheet for benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, carbazole, chrysene, indeno(1,2,3-cd)pyrene, and uranium-238, although EPCs were calculated according to the table. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
41.	Table F.12: Summary of COPC Screening for Detected Analytes – SWMU 6 Surface Soils	The maximum concentration detected for benz(a)anthracene (2.55E-01 mg/kg) is above the resident child NAL (6.7E-02 mg/kg), so this constituent should be retained and the "NA" should be changed to "Y." It should also be noted that the detection limits for all eight (8) of the uranium-235 samples (range 1.7 – 7.6 pCi/g) are well above the resident child NAL (5.91E-02 pCi/g). In contrast, **the analyses for "activity of U-235 (7 analyses; 7 detects) has a maximum concentration of 0.075 pCi/g, although the table lists 6.80E+00 pCi/g as the maximum and consequent EPC. Since this constituent represents 39% of the ELCR for industrial workers (Table F.217), 3.3% of the ELCR for recreational users (Table F.224), and 53.5% of the ELCR for rural residents (Table F.231), the correction may be significant.** Also, the maximum concentration detected for manganese (664 mg/kg) found in the two data files differs from that in the table (5.99E+02 mg/kg). Finally, the maximum concentration of "total PCBs" represents the smallest detection limit used (6.00E-02 mg/kg). As a general rule of thumb, we recommend using the largest detection limit (1.08E-01 mg/kg).	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
42.	Table F.12: Summary of COPC Screening for Detected Analytes – SWMU 6 Surface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: uranium (7 analyses; 1 detect), benzo(ghi)perylene (18 analyses; 2 detects), cesium-137 (15 analyses; 6 detects), and uranium-235 (15 analyses; 7 detects; assumes inclusion of "activity of U-235" analyses). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
43.	Table F.12: Summary of COPC Screening for Detected Analytes – SWMU 6 Surface Soils	The following chemicals were detected in at least one sample, but were not included on the table: lithium and selenium. Please correct and/or clarify. In addition, it should be noted that the detection limit for all 15 of the antimony samples (20 mg/kg) is above the resident child NAL (6.35E-02 mg/kg). Also the detection limits for thorium-234, although there were no detects, range between 10 and 21 pCi/g, which would likely be above a calculated NAL. See comment #5 above. The detection limits for thallium as well, although there were no detects, range between 15 and 20 mg/kg, which are well above the resident child NAL (1.07E-01 mg/kg). Similarly, the detection limits for uranium metal (range 100 – 1000 mg/kg) are well above the residential child NAL (2.16E+00 mg/kg) and the background concentration (4.90E+00 mg/kg). Finally, it should also be noted that the detection limits for 8 of 15 of the cesium-137 samples (range 0.65 – 3.2 pCi/g) are above the resident child NAL (1.28E-02 pCi/g) as well the background concentration (4.9E-01 pCi/g).	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
44.	Table F.13: Summary of COPC Screening for Detected Analytes – SWMU 6 Subsurface Soils	The maximum concentrations of chromium (19 mg/kg), iron (54200 mg/kg), manganese (664 mg/kg), vanadium (65.6 mg/kg), thorium-228 (0.506 pCi/g), and **uranium-235 (0.075 pCi/g**) found in the two data files differ from those in the table (1.44E+01 mg/kg, 1.96E+04 mg/kg, 5.99E+02 mg/kg, 2.48E+01 mg/kg, 4.06E-01 pCi/g, and 6.80E+00 pCi/g respectively). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY for the Remedial Investigation Report for the Burial Grounds Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky DOE/LX/07-0030&D1			
Comment Number	**§/Page/¶**	**Comment**	**Response**
45.	Table F.13: Summary of COPC Screening for Detected Analytes – SWMU 6 Subsurface Soils	The maximum concentration detected for benz(a)anthracene (2.55E-01 mg/kg) is above the excavation worker (2.32E-01 mg/kg), so this constituent should be retained and the "NA" should be changed to "Y." Also, the maximum concentration detected for indeno(1,2,3-cd)pyrene (1.59E-01 mg/kg) is below the excavation worker NAL (2.332E-01 mg/kg), so this constituent does not need to be retained and the "Y" may be changed to "NA." It should also be noted that the detection limits for all 12 of the uranium-235 samples (range 1.7 – 7.9 pCi/g) are well above the excavation worker NAL (4.55E-01 pCi/g). **In contrast, the analyses for "activity of U-235 (11 analyses; 7 detects) has a maximum concentration of 0.075 pCi/g, although the table lists 6.80E+00 pCi/g as the maximum. Since this constituent represents 38.1% of the ELCR for excavation workers (Table F.209), the correction may be significant.** Finally, the maximum concentration of "total PCBs" represents the smallest detection limit used (6.00E-02 mg/kg). As a general rule of thumb, we recommend using the largest detection limit (1.08E-01 mg/kg).	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
46.	Table F.13: Summary of COPC Screening for Detected Analytes – SWMU 6 Subsurface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: aluminum, barium, chromium, copper, iron, magnesium, manganese and vanadium (23 analyses; 23 detects), arsenic (23 analyses; 7 detects), cobalt and zinc (23 analyses; 22 detects), nickel (23 analyses; 18 detects), anthracene, bis(2-ethylhexyl)phthalate, and phenanthrene (19 analyses; 1 detect), benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, chrysene, indeno(1,2,3-cd)pyrene, and pyrene (19 analyses; 2 detects), di-n-butyl phthalate (12 analyses; 3 detects), fluoranthene (12 analyses; 2 detects), cesium-137 (23 analyses; 6 detects), technetium-99 (23 analyses; 3 detects), thorium-228 and thorium-232 (11 analyses; 11 detects), thorium-230 (11 analyses; 10 detects), uranium-235 (23 analyses; 7 detects; assumes inclusion of "activity of U-235" analyses), and uranium-238 (11 analyses; 6 detects). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
47.	Table F.13: Summary of COPC Screening for Detected Analytes – SWMU 6 Subsurface Soils	The following chemicals were detected in at least one sample, but were not included on the table: lead, lithium, and selenium. Please correct and/or clarify. In addition, it should be noted that the detection limit for all 23 of the antimony samples (range 8.85 – 20 mg/kg) is above the excavation worker NAL (4.92E-01 mg/kg). Also the detection limits for 12 of 16 non-detects of thorium-234 range between 10 and 21 pCi/g, which would likely be above a calculated NAL. See comment #5 above. Similarly, the detection limits for 19 of 23 non-detects of thallium range between 1.84 and 20 mg/kg, some of which would likely be above a calculated excavation worker NAL. Likewise, the detection limits for six (6) of seven (7) non-detects of uranium metal (range 100 – 1000 mg/kg) are well above the excavation worker NAL (1.13E+01 mg/kg) and the background concentration (4.60E+00 mg/kg). Finally, it should also be noted that the detection limits for 12 of 17 non-detects of cesium-137 samples (range 0.65 – 3.2 pCi/g) are above the excavation worker NAL (1.28E-02 pCi/g) and four (4) of the 17 are above the background concentration (1.15E-01 pCi/g). Similarly, the detection limits for all 17 non-detects of benz(a)anthracene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene (range 0.46 – 0.5 mg/kg) are above the excavation worker NALs (2.32E-01 mg/kg, 2.32E-02 mg/kg, and 2.32E-01 mg/kg, respectively).	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
48.	Table F.13: Summary of COPC Screening for Detected Analytes – SWMU 6 Subsurface Soils	The ProUCL data (Appendix F Attachment 3) does not include a sheet for beryllium, although an EPC was calculated according to the table. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
49.	Table F.14: Summary of COPC Screening for Detected Analytes – SWMU 7 Surface Soils	The historical data from the "BG OREIS DATA—SO and SE" data file combines both SWMUs 7 and 30, with no discussion of which samples were from which SWMU. The document should clearly distinguish the samples into the two SWMUs. In addition, it should be explained that DD-01, SYD004, SYD005, SYD006, SYD007, SYP001, SYP002, SYP002, SYP003, and SYP007 are not included in the analyses because they are outside the SWMU boundary (e-mail from Kirby Olson, October 21, 2008).	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents. The dataset for the screening of groundwater COPCs (on CD) indicates which stations were considered for the screening of soil for contaminants to be modeled to groundwater in Section 5.
50.	Table F.14: Summary of COPC Screening for Detected Analytes – SWMU 7 Surface Soils	Please explain how the EPC for total PCBs (1.81E+01 mg/kg) is larger than the maximum concentration detected (1.48E+01 mg/kg). This applies to Table F.15 as well.	Total PCBs is the sum of the maximum detected concentration of all detected PCBs, so it always should equal or exceed the maximum detected individual PCB. The surface and subsurface soil risk calculations provided in Appendix F now are summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
51.	Table F.14: Summary of COPC Screening for Detected Analytes – SWMU 7 Surface Soils	The maximum concentrations of manganese (900 mg/kg), potassium (870 mg/kg), and **uranium-235/236 (42.1 pCi/g)** found in the two data files differ from those in the table (5.99E+02 mg/kg, 5.30E+02 mg/kg, and 6.03E+00 pCi/g respectively). Please correct and/or clarify. **Since the ELCRs due to exposure to uranium-235/236 were calculated using the EPC of 3.50E+00 pCi/g, incorporating the value of 42.1 pCi/g and recalculating the 95% UCL will likely make a significant difference in the ELCRs.**	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
52.	Table F.14: Summary of COPC Screening for Detected Analytes – SWMU 7 Surface Soils	The maximum concentration detected for plutonium-239/240 (6.80E-01 pCi/g) is below the resident child NAL (2.22E+00 pCi/g), so this constituent does not need to be retained and the "Y" may be changed to "N^{A}."	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
53.	Table F.14: Summary of COPC Screening for Detected Analytes – SWMU 7 Surface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: antimony (14 analyses; 11 detects), barium, cobalt, and lead (14 analyses; 14 detects), beryllium (16 analyses; 14 detects), cadmium (14 analyses; 10 detects), mercury (16 analyses; 10 detects), potassium (12 analyses; 12 detects), selenium (14 analyses; 4 detects), sodium (14 analyses; 12 detects), thallium (14 analyses; 11 detects), uranium (16 analyses; 15 detects), 3-methylcholanthrene (9 analyses; 1 detect), benzoic acid (11 analyses; 3 detects), thorium-228 (6 analyses; 6 detects), thorium-232 (6 analyses; 5 detects), neptunium-237 (19 analyses; 16 detects), and plutonium-239/240 (19 analyses; 18 detects). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
54.	Table F.14: Summary of COPC Screening for Detected Analytes – SWMU 7 Surface Soils	The following chemicals were detected in at least one sample, but were not included on the table: actinium-228, **americium-241**, bismuth-211, bismuth-212, bismuth-214, cyanide, lead-211, lead-212, lead-214, molybdenum, **potassium-40, protactinium-231**, protactinium-233, radium-223, **radium-226, radium-228**, radon-219, silver, thallium-208, thorium-229, thorium-234, and tin. Also see comment #5 above. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
55.	Table F.14: Summary of COPC Screening for Detected Analytes – SWMU 7 Surface Soils	The ProUCL data (Appendix F Attachment 3) does not include sheets for antimony, beryllium, and PCBs, although EPCs were calculated according to the table. **In addition, the inputs to ProUCL for uranium indicated that the maximum detected value (1270 mg/kg) was a non-detect, leading to an erroneous EPC (3.59E+02 mg/kg). Our calculations resulted in an EPC for uranium of 7.07E+02 mg/kg. Since uranium had represented 61.9% of the total HI for industrial workers (Table F.168), 87% of the total HI for child recreational users (Table F. 175), 87.5% of the total HI for teen recreational users (Table F.182), 91.2% of the total HI for adult recreational users (Table F.189), 77.8% of the total HI for child residents (Table F.196), and 68.1% of the total HI for adult residents (Table F.203), the correction may be significant. Please correct and/or clarify.**	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
56.	Table F.15: Summary of COPC Screening for Detected Analytes – SWMU 7 Subsurface **Soils**	The maximum concentrations of antimony (7.5 mg/kg), sodium (400 mg/kg), and uranium (1270 mg/kg) found in the two data files differ from those in the table (1.70E+00 mg/kg, 3.30E+02 mg/kg, and 1.17E+03 mg/kg, respectively). Please correct and/or clarify. In addition, the maximum concentration detected of 1,1-DCE (1.11E+00 mg/kg) is above the excavation worker NAL (1.19E-01 mg/kg), so this constituent should be retained and the “ND” [sic] should be changed to “Y.”	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
57.	Table F.15: Summary of COPC Screening for Detected Analytes – SWMU 7 Subsurface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: barium, lead, and magnesium (37 analyses; 37 detects), antimony (37 analyses; 15 detects), arsenic (37 analyses; 36 detects), beryllium (39 analyses; 22 detects), cadmium (37 analyses; 12 detects), chromium (39 analyses; 39 detects), cobalt (37 analyses; 34 detects), mercury (39 analyses; 16 detects), potassium (20 analyses; 20 detects), selenium (37 analyses; 8 detects), sodium (37 analyses; 32 detects), thallium (37 analyses; 17 detects), uranium (39 analyses; 26 detects), 3-methylcholanthrene (34 analyses; 1 detect), benzo(b)fluoranthene (34 analyses; 7 detects), benzo(ghi)perylene and benzoic acid, (34 analyses; 3 detects), pyrene (32 analyses; 9 detects), 1,1-dichloroethane (25 analyses; 1 detect), *cis*-1,2-DCE (23 analyses; 4 detect), cesium-137 (20 analyses; 3 detects), radium-226 (2 analyses; 2 detects), technetium-99 (40 analyses; 27 detects), thorium-230 (40 analyses; 38 detects), and uranium-235/236 (44 analyses; 33 detects). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
58.	Table F.15: Summary of COPC Screening for Detected Analytes – SWMU 7 Subsurface Soils	The following chemicals were detected in at least one sample but were not included on the table: 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, 2-chlorophenol, 2-methylphenol, 4-methylphenol, actinium-228, bismuth-211, bismuth-212, bismuth-214, di-n-butyl phthalate, di-n-octyl phthalate, hexachlorobutadiene, hexachloroethane, lead-211, lead-212, lead-214, molybdenum, **potassium-40, protactinium-231**, protactinium-233, radium-223, **radium-228**, radon-219, silver, thallium-208, thorium-229, thorium-234, tin, and toluene. Also see comment #5 above. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
59.	Table F.15: Summary of COPC Screening for Detected Analytes – SWMU 7 Subsurface Soils	The ProUCL data (Appendix F Attachment 3) does not include sheets for antimony, arsenic, beryllium, and neptunium-237, although EPCs were calculated according to the table. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
60.	Table F.16: Summary of COPC Screening for Detected Analytes – SWMU 30 Surface Soils	The maximum detected concentration of total PCBs (15 mg/kg PCB-1260) found in the two data files differs from that in the table (2.00E-01 mg/kg), however the EPC reflects the higher value. In addition, the maximum detected concentration of benzoic acid (0.19 mg/kg) found in the two data files differ from that in the table (4.30E-02 mg/kg). Please correct and/or clarify. Finally, the maximum concentration detected of zinc (7.50E+02 mg/kg) is above the resident child NAL (4.01E+02 mg/kg) as well as the background concentration (6.50E+01 mg/kg), so this constituent should be retained and the "NA" should be changed to "Y."	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
61.	Table F.16: Summary of COPC Screening for Detected Analytes – SWMU 30 Surface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: barium and chromium (10 analyses; 10 detects), cadmium (10 analyses; 7 detects), selenium (10 analyses; 4 detects), thallium (10 analyses; 8 detects), uranium and plutonium-239 (8 analyses; 8 detects), and acenaphthylene and benzoic acid (8 analyses; 3 detects). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
62.	Table F.16: Summary of COPC Screening for Detected Analytes – SWMU 30 Surface Soils	The following chemicals were detected in at least one sample, but were not included on the table: cyanide, molybdenum, pyrene, silver, and tin. Please correct and/or clarify. In addition, it should be noted that the detection limit for two (2) of the ten (10) antimony samples (25 mg/kg) is above the resident child NAL (6.35E-02 mg/kg). Also the detection limit for (2) of the ten (10) cadmium sample (10 mg/kg) is above the resident child NAL (2.64E+00 mg/kg). Finally, the detection limit for (2) of the ten (10) thallium samples (60 mg/kg) is above the resident child NAL (1.07E-01 mg/kg).	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
63.	Table F.16: Summary of COPC Screening for Detected Analytes – SWMU 30 Surface Soils	The EPC values for anthracene, benz(a)anthracene, and benzo(a)pyrene appear to have been shifted down a row within the column, and that for benzo(b)fluoranthene was not included. However, it appears that the “Total PAH” calculations were done correctly.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
64.	Table F.17: Summary of COPC Screening for Detected Analytes – SWMU 30 Subsurface Soils	The maximum concentration of total PCBs (15 mg/kg PCB-1260) found in the two data files differs from that in the table (2.00E-01 mg/kg), however the EPC reflects the higher value. In addition, the maximum concentrations of antimony (8.4 mg/kg), arsenic (12 mg/kg), beryllium (1.4 mg/kg), sodium (180 mg/kg), benzoic acid (0.19 mg/kg), and fluorene (1.3 mg/kg) found in the two data files differ from those in the table (3.00E+00 mg/kg, 8.90 mg/kg, 8.50E-01 mg/kg, 1.78E+02 mg/kg, 4.30E-02 mg/kg, and 1.30E-01 mg/kg, respectively). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
65.	Table F.17: Summary of COPC Screening for Detected Analytes – SWMU 30 Subsurface Soils	The maximum concentration detected for thorium-228 (4.65E-01 pCi/g) is below the background concentration (1.60E+00 pCi/g), so this constituent does not need to be retained and the "Y" may be changed to "NB." In addition, if the maximum concentration detected for beryllium is 1.4 mg/kg, as noted above, then it is above the excavation worker NAL and the background concentration, and the "NA" should be changed to "Y."	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
66.	Table F.17: Summary of COPC Screening for Detected Analytes – SWMU 30 Subsurface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: antimony and thallium (18 analyses; 11 detects), arsenic (18 analyses; 15 detects), barium and chromium (18 analyses; 18 detects), beryllium (16 analyses; 12 detects), cadmium and selenium (18 analyses; 7 detects), uranium (16 analyses; 12 detects), zinc (16 analyses; 15 detects), acenaphthene, anthracene, and dibenz(a,h)anthracene (17 analyses; 5 detects), benzo(ghi)perylene (17 analyses; 6 detects), benzoic acid and dibenzofuran, (17 analyses; 3 detects), pyrene (17 analyses; 11 detects), and neptunium-237 and plutonium-239 (17 analyses; 13 detects). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
67.	Table F.17: Summary of COPC Screening for Detected Analytes – SWMU 30 Subsurface Soils	The following chemicals were detected in at least one sample, but were not included on the table: cyanide, diethyl phthalate, molybdenum, potassium, silver, thorium-234, tin, and toluene. Also see comment #5 above. Please correct and/or clarify. In addition, it should be noted that the detection limits for six (6) of the 18 antimony samples (range 9.36 – 25 mg/kg) is above the excavation worker NAL (4.92E-01 mg/kg). Also, the detection limit for (2) of the 18 thallium samples (60 mg/kg) would likely be above a calculated excavation worker NAL.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
68.	Table F.17: Summary of COPC Screening for Detected Analytes – SWMU 30 Subsurface Soils	The ProUCL data (Appendix F Attachment 3) does not include a sheet for arsenic, manganese, or neptunium-237, although EPCs were calculated according to the table. In addition, the page indicating the 95% UCL value calculated for thallium in the Appendix (page F3-121 and F3-122) appears instead to be for vanadium. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
69.	Table F.18: Summary of COPC Screening for Detected Analytes – SWMU 145 Subsurface Soils	The historical data from the "BG OREIS DATA—SO and SE" data file includes data from numerous stations that were not included in the risk evaluation. The document should clearly distinguish which samples were used, and it should clearly explain that AIPNSD2000-01 through AIPNSD2000-07, NSD030, NSD2000-01 bank through NSD2000-08 bank, NSD2000-06 sedi, NSD2000-06 SPT, NSD2000-07 SPT, NS-SD-01 through NS-SD-07, NS-SS-01 through NS-SS-08, SEC3A-5SO, and SEC3A-8SO are not included in the analyses because they are outside the SWMU boundary (e-mail from Kirby Olson, October 27, 2008).	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents. The dataset for the screening of groundwater COPCs (on CD) indicates which stations were considered for the screening of soil for contaminants to be modeled to groundwater in Section 5.
70.	Table F.18: Summary of COPC Screening for Detected Analytes – SWMU 145 Subsurface Soils	The maximum concentration of total PCBs (12.5 mg/kg) found in the two data files differs from that in the table (3.30E-01 mg/kg), however the EPC (1.44E+01 mg/kg) is higher than the maximum concentration. Please clarify and/or correct.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
71.	Table F.18: Summary of COPC Screening for Detected Analytes – SWMU 145 Subsurface Soils	The maximum concentrations of chromium (99.2 mg/kg), cobalt (8.8 mg/kg), copper (89.8mg/kg), iron (17200 mg/kg), mercury (0.07 mg/kg), uranium (311 mg/kg), vanadium (30.7 mg/kg), zinc (81.6 mg/kg), radium-226 (0.7206 pCi/g), thorium-228 (0.9158 pCi/g), thorium-232 (0.619 pCi/g), and uranium-234 (254 pCi/g) found in the two data files differ from those in the table (2.63E+01 mg/kg, 5.96E+00 mg/kg, 8.18E+01 mg/kg, 1.55E+04 mg/kg, 2.04E-02 mg/kg, 5.93E+02 mg/kg – note: this detection was measured in pCi/g, 2.43E+01 mg/kg, 6.52E+01 mg/kg, 1.60E-01 pCi/g, 4.61E-01 pCi/g, 5.38E-01 pCi/g, and 4.70E-01 pCi/g, respectively). Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
72.	Table F.18: Summary of COPC Screening for Detected Analytes – SWMU 145 Subsurface Soils	The number of analyses and number of detects gleaned from the two data files are inconsistent with the table. The data files indicate the following: aluminum, antimony, and magnesium (10 analyses; 7 detects), arsenic and lead (19 analyses; 14 detects), barium and thorium-230 (19 analyses; 19 detects), beryllium (20 analyses; 10 detects), calcium, copper, iron, manganese, and nickel (10 analyses; 10 detects), cobalt and vanadium (10 analyses; 6 detects), molybdenum (10 analyses; 3 detects), potassium (2 analyses; 0 detects – maximum value listed from SEC3A-5SO, which was purportedly excluded), sodium (10 analyses; 8 detects), uranium (18 analyses; 13 detects), zinc (14 analyses; 8 detects), cesium-137 (20 analyses; 8 detects), neptunium-237 (30 analyses; 2 detects), plutonium-239/240 (20 analyses; 2 detects), radium-226 (8 analyses; 2 detects), strontium-90 (10 analyses; 2 detects), technetium-99 (19 analyses; 5 detects), thorium-228 (28 analyses; 21 detects), thorium-232 (27 analyses; 24 detects), uranium-234 (29 analyses; 21 detects), uranium-235/236 (18 analyses; 10 detects), and uranium-238 (29 analyses; 22 detects). In addition, the units of measurement are listed incorrectly (mg/kg) for the radionuclides, and should be changed to pCi/g. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.

Comment Number	§/Page/¶	Comment	Response
73.	Table F.18: Summary of COPC Screening for Detected Analytes – SWMU 145 Subsurface Soils	The following chemicals were detected in at least one sample, but were not included on the table: 1,2-dimethylbenzene, 2-butanone, 4-methyl-2-pentanone, actinium-228, bismuth-211, bismuth-212, bismuth-214, ethylbenzene, lead -210, lead-211, lead-212, lead-214, m,p-xylene, potassium-40, protactinium-231, radium-223, radium-228, radon-219, selenium, silicon, silver, thallium-208, thorium-229, thorium-234, and uranium-236. Also see comment #5 above. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
74.	Table F.18: Summary of COPC Screening for Detected Analytes – SWMU 145 Subsurface Soils	The ProUCL data (Appendix F Attachment 3) does not include a sheet for total PCB or cesium-137, although EPCs were calculated according to the table. In addition, the ProUCL data for arsenic apparently used 49 samples, with 40 detected values, and a maximum value of 14.7 mg/kg. The table lists 17 samples, with 12 detected values, and a maximum value of 11.5 mg/kg. Please correct and/or clarify.	The surface and subsurface soil risk calculations provided in Appendix F are now summarized from the previously published risk assessments. The screening tables for surface and subsurface soil have therefore been removed because the screening was conducted in the previous documents.
75.	**The comment applies to all relevant soil summary tables F.4 through F.18,**	Other than essential nutrients, we recommend using surrogates for constituents that do not have "no action level" (NAL) values as follows: 2-methylnaphthalene → fluoranthene NAL 3-methylcholanthrene → benzo(a)pyrene NAL (and include in "Total PAH") 3-nitrobenzenamine → 2-nitroaniline NAL acenaphthalene → acenaphthene NAL benzo(ghi)perylene → pyrene NAL phenanthrene → acenaphthene NAL We also recommend that NALs be developed for 4-methylphenol (p-cresol) and thallium, or the Region 9 soil PRGs may be used.	The use of surrogates for constituents without NALs was not permitted in previous documents that are now the source of the soil risk values The screening remaining in the current document uses SSLs for migration to groundwater instead of NALs. There is still the issue that some constituents (such as thallium) did not have a screening value and were addressed only as uncertainties in the BGOU Risk Assessment.

COMMENT RESPONSE SUMMARY for the Remedial Investigation Report for the Burial Grounds Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky DOE/LX/07-0030&D1			
Comment Number	**§/Page/¶**	**Comment**	**Response**
76.	Tables F.19 through F.26: Summary of COPC Screening for Detected Analytes – SWMU Groundwater	An initial review of maximum detection values and detection frequencies do not correlate with these values in their corresponding SWMU's tables. Rather than provide additional comments, we request that the revised document clearly indicate which samples were used for each SWMU's groundwater evaluation.	The dataset on CD to be provided to the regulators will include files with the datasets used for screening soil for protection of groundwater.
77.	F.3.4.1 Calculation of EPCs of COPCs	Due to the numerous corrections and clarifications necessary in the soil (Tables F.4 through F.18) and groundwater (Tables F.19 through F.26) data presented, these calculations were not reviewed. Once the necessary changes are made, we will review this section.	The risk assessment has been revised so that surface soil and subsurface soil risks presented are based on summaries of existing risk assessments; therefore, EPCs and CDIs are presented only for the groundwater portion of the risk assessment. The groundwater EPCs are based on modeled groundwater concentrations based on concentrations in soil.
78.	F.3.4.2 Chronic Daily Intakes	Due to likely changes in the EPCs (see comment #78 above), this section was not reviewed. Once the necessary changes are made, we will review this section, including Tables F.48 through F.150.	The risk assessment has been revised so that surface soil and subsurface soil risks presented are based on summaries of existing risk assessments; therefore, EPCs and CDIs are presented only for the groundwater portion of the risk assessment. The groundwater EPCs are based on modeled groundwater concentrations based on concentrations in soil.

Comment Number	§/Page/¶	Comment	Response
79.	Table F.151. Toxicity Values for Chronic Exposure to Carcinogens Via the Ingestion and Inhalation Exposure Routes	**a**. The Oral Unit Risk footnote (d) indicates that the units for this parameter are (mg/L)-1, but the values for arsenic (5.00E-05) and 1,1-DCE (1.70E-05) appear to be in (µg/L)-1. Please revise. **b**. The inhalation slope factor listed for chromium VI is actually for total chromium, assuming a 1:6 ratio of chromium VI to chromium III. Please revise. **c**. Please provide the source for the inhalation slope factor for nickel (9.1E-01 mg/kg-day-1). **d**. Please provide the source for the inhalation slope factor for bis(2-ethylhexyl)phthalate (8.4E-03 mg/kg-day-1). We were unable to find the value in the reference listed (Integrated Risk Information System - IRIS). **e**. Please change the reference for the oral and inhalation slope factors for TCE (3.22E-01 mg/kg-day-1) from IRIS to KDEP. **f**. Please correct the inhalation unit risk for vinyl chloride from 8.8E-05 m3/µg to 8.8E-06 m3/µg. **g**. The oral slope factors listed for neptunium-237, thorium-228, uranium-235, and uranium-238 do not correlate to those on the Risk Assessment Information System (RAIS) website. In addition, the inhalation slope factor for thorium-228 also appears to be in error. The corrected values are shown below:	The tables of toxicity values have been corrected. Only toxicity values for groundwater COPCs now are presented in the document, because soil COPCs are summarized from previous risk assessments. The oral slope factors for the radionuclides listed in the document are correct. The isotope "+D" values were used in the risk assessment to account for contributions from decay products. The value for Am-241+D will be added to the table.

Radionuclide	Oral Slope Factor	Inhalation Slope Factor	
Neptunium-237	1.46E-10		

<table>
<tr><th>Comment Number</th><th>§/Page/¶</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td></td><td><table>
<tr><td>Thorium-228</td><td>2.89E-10</td><td>1.32E-07</td><td></td></tr>
<tr><td>Uranium-235</td><td>1.57E-10</td><td></td><td></td></tr>
<tr><td>Uranium-238</td><td>1.43E-10</td><td></td><td></td></tr>
</table>
h. Americium-241 and its corresponding toxicity values should be added to the table, since it is a COPC at SWMU 2 (surface soil) and SWMU 7 (subsurface soil).</td><td></td></tr>
<tr><td>80.</td><td>Table F.152. Toxicity Values for Chronic Exposure to Noncarcinogens via the Ingestion and Inhalation Exposure Routes</td><td>a. It should be noted that the oral reference dose listed for chromium is for chromium III.

b. IRIS lists an oral reference dose for mercury of 3.0E-04 mg/kg-day-1, which should be added to the table.

c. IRIS lists an oral reference dose for uranium of 3.0E-03 mg/kg-day-1, which should replace the value listed (6.00E 04 mg/kg-day-1).

d. IRIS lists an oral reference dose and inhalation reference concentration for 1,1-DCE of 5.0E-02 mg/kg-day-1 and 2.0E-01 mg/m3, respectively, which should replace the values listed (9.00E-03 mg/kg-day-1 and 3.15E-02 mg/m3, respectively). In addition, this will change the inhalation reference dose from 9.00E-03 mg/kg-day-1 to 5.7E-02 mg/kg-day-1.</td><td>The tables of toxicity values have been corrected. Only toxicity values for groundwater COPCs are now presented in the document, because soil COPCs are summarized from previous risk assessments, which have their own tables of toxicity values.</td></tr>
</table>

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
81.	Table F.153. Toxicity values for Chronic Dermal Contact Exposure to Carcinogens	**a**. According to Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) (RAGS E)(USEPA, 2004a), the gastrointestinal absorption factors (GIABS) for each of the constituents with a dermal slope factor listed on this table is equal to 1.0 (100%), which should make the dermal slope factors equal to the oral (i.e., administered) slope factors. However, the only constituent for which this is true is vinyl chloride. **b**. The dermal absorption factor for semivolatile organic compounds without chemical specific data, such as bis(2-ethylhexyl)phthalate, carbazole, and dibenzofuran should be 0.1, rather than the listed value of 0.01. **c**. The external exposure slope factors listed for the radionuclides do not correlate with the external exposure slope factors we found on the RAIS website. Please elaborate on the sources of these values.	The GI absorption values were used because they are the ones that appear in both the 2001 and 2008 versions of the PGDP Risk Methods Document. These values were the ones on RAIS in Sept 2007, though they do not match the RAGS Part E values. The dermal absorption values apply to soil exposures, which now are based on previous risk assessments. It should be noted that those assessments used the much higher values recommended at the time by KDEP. The effect of those dermal values on the previous assessments is discussed in the observations and conclusions section of the risk assessment. The external exposure slope factors match the external slope factors in the HEAST table accessed through the RAIS website link (note that the table features two external slope factors, one for "isotope" and one for "isotope-m"). Only toxicity values for groundwater COPCs are now presented in the document because soil COPCs are summarized from previous risk assessments.
82.	Table F.154. Toxicity Value for Chronic Exposure to Noncarcinogens via the Dermal Contact Exposure Route	a. Please include the administered reference doses and gastrointestinal absorption factors in this table so that it is possible to recreate the dermal reference doses presented. b. As noted in the previous comment, the dermal absorption factor for semivolatile organic compounds without chemical specific data, such as bis(2-ethylhexyl)phthalate and dibenzofuran should be 0.1, rather than the listed value of 0.01.	Values for GI absorption and administered reference doses will be added to the table. Only toxicity values for groundwater COPCs are now presented in the document, because soil COPCs are summarized from previous risk assessments.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
83.	F.4.1 Inorganic Compounds	Toxicity information for barium should be included in this section.	Only toxicity information for groundwater COPCs is now presented in the document, because soil COPCs are summarized from previous risk assessments.
84.	F.4.1.1 Aluminum (CAS 007429-90-5) (RAIS)	Please provide the source of the GI absorption factor of 10%.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
85.	F.4.1.2 Antimony (CAS 007440-36-0) (RAIS)	Please provide the source of the GI absorption factor of 2%. RAGS E (USEPA, 2004a) recommends a GI absorption factor of 15%.	Value current in RAIS at time the assessment was performed (9/28/07). RAIS 9/28/07 reference added.
86.	F.4.1.3 Arsenic (CAS 007440-38-2) (RAIS)	Please provide the source of the GI absorption factor of 41%. RAGS E (USEPA, 2004a) recommends a GI absorption factor of 100% (i.e., no adjustment of toxicity factors).	Value current in RAIS at time the assessment was performed (9/28/07). RAIS 9/28/07 reference added.
87.	F.4.1.5 Chromium III (CAS 16065-83-1) and Chromium VI (CAS 18540-29-9) (RAIS)	It is stated that the "cancer slope factor for chromium (VI) from RAIS was used in the BHHRA," however, the slope factor listed {4.20E+01 [mg/(kg-day)]-1} is for total chromium. The slope factor for chromium VI is 2.90E+02 [mg/(kg-day)]-1. In addition, using a GI absorption factor of 2%, the conversion from oral to dermal reference dose would result in a dermal RfD of 3.0E-02 mg/kg-day, but the value listed on Table F.154 is 7.5E-03 mg/kg-day. Please correct and/or clarify.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
88.	F.4.1.6 Copper (CAS 007440-50-8) (RAIS)	The oral reference dose (RfD) listed on Table F.152 (3.7E-02 mg/kg-day) is different than the RfD listed here (4.0E-02 mg/kg-day), although both reference HEAST. Please correct this discrepancy. Also, please provide the source of the GI absorption factor of 30%.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
89.	F.4.1.7 Iron (CAS 007439-89-6) (RAIS)	Please provide the source of the GI absorption factor of 15%.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.

Comment Number	§/Page/¶	Comment	Response
90.	F.4.1.8 Manganese (CAS 007439-96-5) (RAIS)	The oral RfD listed on Table F.152 (2.4E-02 mg/kg-day) is different than the RfD listed here (1.40E-01 mg/kg-day). The chronic oral RfD for the total oral intake of manganese is 1.40E-01. However, the author of the IRIS assessment for manganese recommends that the dietary contribution from the normal U.S. diet (an upper limit of 5 mg/day) be subtracted when evaluating non-food (e.g., drinking water or soil) exposures to manganese leading to a RfD of 0.071 mg/kg-day for non-food items. In addition, IRIS further recommends using a modifying factor of 3 when calculating risks associated with non-food sources, thereby lowering the RfD to 2.4E-02 mg/kg-day (USEPA, 2004b). Also, it appears that the dermal RfD was calculated from the oral RfD of 1.4E-01 mg/kg, using a GIABS of 4%, resulting in the dermal RfD of 5.6E-03 mg/kg-day. If the revised oral RfD (2.4E-02 mg/kg-day) is used instead, the dermal RfD becomes 9.6E-04 mg/kg-day. Please correct and/or clarify.	The oral RfD listed in Table F.152 is incorrect. Table has been updated to reflect correct RfD of 1.4E-01 used in risk calculations and listed in the text. Note that manganese was retained only as a COC in subsurface soil for SWMUs 4, 7, and 30 and contributed minimally to the hazard in each (4.8%, 1.4%, and 0.3%, respectively). The RfD used is more conservative (i.e., more protective) than the one recommended in the comment. Using the recommended RfD would marginally lower the hazard at each SWMU. No action taken.
91.	F.4.1.9 Mercury (CAS 007439-97-6) (RAIS)	An inhalation RfD for mercury (8.7E-05 mg/kg-day) is included on Table F.152, and should be included in this section as well.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
92.	F.4.1.10 Nickel (CAS 007440-02-0 for soluble nickel salts) (RAIS)	Please provide the source of the GI absorption factor of 27%. RAGS E (USEPA, 2004a) recommends a GI absorption factor of 4%.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
93.	F.4.1.11 Selenium (CAS 007782-49-2) (RAIS)	Please provide the source of the GI absorption factor of 44%.	RAIS 9/28/07 reference added.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
94.	F.4.1.12 Thallium (CAS 007440-28-0) (RAIS)	Please provide the source of the GI absorption factor of 20%.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
95.	F.4.1.13 Uranium (metal and soluble salts) (CAS 007440-61-1)	As noted in Comment #79c, IRIS lists an oral reference dose for uranium of 3.0E-03 mg/kg-day-1, which should replace the value listed here (6.00E-04 mg/kg-day-1). Also, please provide the source of the GI absorption factor of 85%.	The RfD listed in IRIS is for soluble salt uranium; this value does not apply to soil. The RfD used in the risk calculations and listed in this section (6.00E-04 mg/kg-day^{-1}) is correct per RAIS for insoluble uranium compounds (i.e., soil). No change made. RAIS 9/28/07 reference added.
96.	F.4.1.14 Vanadium (CAS 007440-62-2 for metal) (RAIS)	Please provide the source of the GI absorption factor of 1%. RAGS E (USEPA, 2004a) recommends a GI absorption factor of 2.6%.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
97.	F.4.1.15 Zinc (CAS 007440-66-6 for metal) (RAIS)	Please provide the source of the GI absorption factor of 20%.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
98.	F.4.2 Organic Compounds	Toxicity information for both 1,1-DCE and bis(2-ethylhexyl)phthalate should be included in this section.	Change made to document.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
99.	F.4.2.1 Total PCBs (high risk) (RAIS)	The inhalation and dermal slope factors listed on Tables F.151 and F.153 (2.0E+00 mg/kg-day-1 and 2.22E+00 mg/kg-day-1, respectively) are different than those listed here {2.20E+00 [mg/(kg-day)]-1 and 2.00E+00 [mg/(kg-day)]-1, respectively}. In addition, please provide the source of the GI absorption factor of 90%. RAGS E (USEPA, 2004a) recommends a GI absorption factor of 100% (i.e., no adjustment of toxicity factors). Finally, although a chronic oral RfD is listed here, none is listed on Table F.152, and it appears neither oral nor dermal hazards were calculated for any receptors at any SWMU. Please clarify and/or correct	Tables F.151 and F.153 list correct values for slope factors used in risk calculations. Text updated to match tables. GI absorption factor current in RAIS at time the assessment was performed (9/28/07). RAIS 9/28/07 reference added. Text updated to reflect that RfDs are not available for Total PCBs and, therefore, were not included in this assessment. We will add the PCB hazard assessment.
100.	F.4.2.2 Total PAHs	The inhalation slope factor for benzo(a)pyrene listed on Table F.151 (3.08E-02 mg/kg-day-1) is different that that listed here {2.51E-01 [mg/(kg-day)]-1). Please correct this discrepancy. In addition, please provide the source of the GI absorption factor of 31%. RAGS E (USEPA, 2004a) recommends a GI absorption factor of 100% (i.e., no adjustment of toxicity factors).	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
101.	F.4.2.3 Carbazole	It is stated in this section that "the assessment of the noncarcinogenic effects of carbazole is based on the EPA HEAST provisional toxicity value," but no value is provided here or on tables F.152 or F. 154, and it appears that no hazards were calculated for any receptors at any SWMU. Please correct and/or clarify. In addition, oral and dermal slope factors are listed on Tables F.151 and F.153, but are not included in this section. It appears that a GI absorption factor of 70% was used to calculate the dermal slope factor. Please provide the source of this GI absorption factor. RAGS E (USEPA, 2004a) recommends a GI absorption factor of 100% (i.e., no adjustment of toxicity factors).	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
102.	F.4.2.4 Dibenzofuran (CAS 000132-64-9) (RAIS)	Please provide the source of the GI absorption factor of 80%.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
103.	F.4.2.5 *Cis*- and *trans*-1,2-DCE (CAS 000156-59-2 and CAS 000156-60-5) (RAIS)	*Trans*-1,2-DCE does not appear to be a COPC at any SWMU, so it is unclear why this constituent is included here. It is not listed on Tables F. 152 or F.154. In addition, the inhalation RfD for *cis*-1,2-DCE listed on Table F.152 (1.00E-02 mg/kg-day), is different than that listed here (6.00E-02 mg/kg-day). Please correct this discrepancy.	Reference to *trans*-1,2-DCE RfDs removed from text. Both Table F.152 and text updated to match value used in risk calculations for *cis*-1,2-DCE (9.97E-03 mg/kg-day).
104.	103. F.4.2.6 Fluoranthene	An inhalation reference dose of 4.0E-02 mg/kg-day is listed on Table F.152, but is not listed here. Please correct this discrepancy. In addition, please provide the source of the GI absorption factor of 31%.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
105.	F.4.2.7 Naphthalene (CAS 000091-20-3)	Please provide the source of the GI absorption factor of 80%.	RAIS 9/28/07 reference added.
106.	F.4.2.8 Pyrene (CAS 000129-00-0) (RAIS)	An inhalation reference dose of 3.0E-02 mg/kg-day is listed on Table F.152, but is not listed here. Please correct this discrepancy. In addition, please provide the source of the GI absorption factor of 31%.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.

Comment Number	§/Page/¶	Comment	Response
107.	F.4.2.9 TCE (CAS 000079-01-6) (RAIS)	We recommend that the oral slope factor provided by KDEP (3.22E-01 mg/kg-day-1) be used to calculate the dermal slope factor, rather than the RAIS oral slope factor (4.00E-01 mg/kg-day-1). Also, the oral, dermal, and inhalation RfDs listed on Tables F.152 and F.154 (6.00E-03 mg/kg-day, 4.5E-05 mg/kg-day, and 6.00E-03 mg/kg-day, respectively) are different than those listed in this section (3.00E-04 mg/kg-day, 1.14E-02 mg/kg-day, and 4.5E-05 mg/kg-day). Please correct these discrepancies. In addition, please provide the source of the GI absorption factor of 15%. It also appears as though the oral RfD listed here (3.00E-04 mg/kg-day) was used to calculate the dermal RfD listed on Table F.154 (4.5E-05 mg/kg-day). Please clarify and/or correct.	The KDEP oral SF should have been used to calculate the dermal SF in the BRA; however, the RAIS oral SF is more conservative (i.e., more protective) than the KDEP oral SF. Using the KDEP SF to calculate the dermal SF minimally affects groundwater risk at SWMUs 2, 4, 7, and 30. The largest reduction in risk at all SWMUs would occur below SWMU 4, with a drop of only 0.5% in total risk. No action taken. Dermal and inhalation RfDs were switched in order in the text. They have been corrected, and Tables F.152 and F.154 updated to match the text and risk calculations. Reference to RAIS 9/28/07 added to GI absorption factor.
108.	F.4.3 RADIONU-CLIDES	For each radionuclide, please use and distinguish between the soil ingestion slope factor and the water ingestion slope factor, rather than using the single term "oral slope factor." Some of the discrepancies listed below may be due to this lack of precision. In addition, it appears that the soil ingestion slope factors used are applicable specifically to adults. For calculation of risks to recreational children/teens and residential children, the more conservative soil ingestion slope factor should be used.	Since only groundwater toxicity factors are presented in the revised report, the oral slope factors for radionuclides are water ingestion slope factors.
109.	F.4.3.1 Americium-241 (CAS 014596-10-2) (EPA)	This substance should be added to Table F.151 and F.153. In addition, the oral slope factor listed here (9.10E-11 risk/pCi) is applicable specifically to adults. The oral slope factor (soil ingestion) listed in RAIS of 2.17E-10 risk/pCi, should be used for calculation of risks to recreational children/teens and residential children. Also, it is stated in this section that "[o]ral and inhalation RfDs are available in EPA's IRIS," yet no such documentation could be found. Please correct and/or clarify.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
110.	F.4.3.2 Cesium-137 (EPA)	Please provide the source(s) for the oral, inhalation, and external cancer slope factors listed here (5.85E-14 risk/pCi, 4.11E-14 risk/pCi, and no value listed, respectively). The oral (soil ingestion), inhalation, and external slope factors listed in RAIS are 4.33E-11 risk/pCi, 1.19E-11 risk/pCi, and 5.33E-10 risk/yr per pCi/g soil, respectively. Also, it is stated in this section that "[o]ral and inhalation RfDs are available in EPA's IRIS," yet no such documentation could be found. Please correct and/or clarify.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
111.	F.4.3.3 Neptunium-237 (CAS 013994-20-2)	Please provide the source(s) for the oral and external cancer slope factors listed here (6.74E-11 risk/pCi and 7.97E-07 [(risk x g)/(pCi x yr)], respectively). The oral (soil ingestion) and external slope factors listed in RAIS are 1.46E-10 risk/pCi and 5.36E-8 risk/yr per pCi/g soil, respectively.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
112.	F.4.3.4 Plutonium-239 (CAS 015117-48-3) (EPA)	It appears that the oral and inhalation cancer slope factors listed here (3.33E-08 risk/pCi and 1.21E-10 risk/pCi, respectively) are reversed, and the oral slope factor (presumably 1.21E-10 risk/pCi) is applicable specifically to adults. The oral (soil ingestion) slope factor listed in RAIS of 2.76E-10 risk/pCi should be used for calculation of risks to recreational children/teens and residential children.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
113.	F.4.3.5 Radium-226 (CAS 013982-63-3) (EPA)	It appears that the oral and inhalation cancer slope factors listed here (1.15E-08 risk/pCi and 2.95E-10 risk/pCi, respectively) are reversed, and the oral slope factor (presumably 2.95E-10 risk/pCi) is applicable specifically to adults. The oral (soil ingestion) slope factor listed in RAIS of 7.29E-10 risk/pCi should be used for calculation of risks to recreational children/teens and residential children. In addition, the external exposure cancer slope factor listed here (2.29E-08 risk/year per pCi/g soil) should also be included on Table F.153.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document, because soil COPCs are summarized from previous risk assessments.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
114.	F.4.3.6 Technetium-99 (CAS 014133-76-7) (EPA)	The oral cancer slope factor listed here (2.75E-12 risk/pCi) is for water ingestion. The oral slope factor (soil ingestion) listed in RAIS is 7.66E-12 risk/pCi.	The soil oral SF used in risk calculations is 7.66e-12 risk/pCi. Text updated to reflect this.
115.	F.4.3.7 Thorium (CAS 014274-82-9 for Thorium-228, CAS 014269-63-7 for Thorium-230, and CAS 007440-29-1 for Thorium-232, EPA and ATSDR)	a. It appears that the oral and inhalation cancer slope factors for thorium-228 listed here (1.32E-07 risk/pCi and 6.40E-11 risk/pCi, respectively) are reversed, and the oral slope factor (presumably 6.40E-11 risk/pCi) is for water ingestion. The oral (soil ingestion) slope factor listed in RAIS is 2.89E-10 risk/pCi. In addition, please provide the source for the external exposure slope factor for thorium-228 listed here (7.76E-06 risk/yr per pCi/g soil). The external exposure slope factor listed in RAIS is 5.59E-09 risk/yr per pCi/g soil. Finally, it is stated in this section that "[o]ral and inhalation RfDs are available in EPA's IRIS," yet no such documentation could be found. Please correct and/or clarify. b. The oral slope factor for thorium-230 listed here (9.10E-11 risk/pCi) is for water ingestion. The oral (soil ingestion) slope factor listed in RAIS is 2.02E-10 risk/pCi. c. The oral slope factor for thorium-232 listed here (8.47E-11 risk/pCi) is applicable specifically to adults. The oral (soil ingestion) slope factor listed in RAIS of 2.31E-10 risk/pCi should be used for calculation of risks to recreational children/teens and residential children. In addition, it is unclear why an external exposure slope factor was not listed here. The external exposure slope factor listed in RAIS is 3.42E-10 risk/yr per pCi/g soil).	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.

Comment Number	§/Page/¶	Comment	Response
116.	F.4.3.8 Uranium (CAS 007440-62-2 for metal, CAS 013966-29-5 for Uranium-234, CAS 015117-96-1 for Uranium-235, and CAS 007440-61-1 for Uranium-238) (ATSDR)	a. The oral slope factor for uranium-234 listed here (7.00E-11 risk/pCi) is for water ingestion (actual value listed in RAIS is 7.07E-11 risk/pCi). The oral (soil ingestion) slope factor listed in RAIS is 1.58E-10 risk/pCi. b. Please include the oral, inhalation, and external exposure cancer slope factors for uranium-235. The oral (soil ingestion), inhalation, and external exposure cancer slope factors from RAIS are 1.57E-10 risk/pCi, 1.01E-08 risk/pCi, and 5.18E-07 risk/yr per pCi/g soil, respectively. c. Please provide the source(s) for the oral, inhalation, and external exposure cancer slope factors for uranium-238 listed here (8.71E-11 risk/pCi, 9.25E-09 risk/pCi, and 1.14E-07 [(risk x g)/(pCi x yr)], respectively. The oral (soil ingestion), inhalation, and external exposure cancer slope factors from RAIS are 1.43E-10 risk/pCi, 9.32E-09 risk/pCi, and 4.99E-11 risk/yr per pCi/g soil, respectively.	a. This BHHRA now only calculates risk for water (for which SF is correct). b. U-235 is not included as a COPC for groundwater. c. This BHHRA now calculates risk for water only (for which SF is correct).
117.	F.4.4 Chemicals for which no EPA toxicity values are available	It is stated that "[a]ll the inorganic chemical COPCs, except aluminum, barium, and manganese lack inhalation RfD values." Beryllium and mercury should be added to this list.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document because soil COPCs are summarized from previous risk assessments.
118.	F.4.4 Chemicals for which no EPA toxicity values are available	It is stated that "[a]bsorbed dose RfDs exist for all organic compound COPCs included in the BHHRA except vinyl chloride." However, an absorbed dose RfD (dermal reference dose) is listed, assuming 100% absorption, just as was done for 1,1-DCE (using the oral RfD of 5.00E-02 mg/kg-day) and *cis*-1,2-DCE (oral RfD of 1.00E-02 mg/kg-day).	"…except vinyl chloride" removed from text.

Comment Number	§/Page/¶	Comment	Response
119.	F.4.4 Chemicals for which no EPA toxicity values are available	It is stated that "the organic compound COPCs without an oral slope factor are *cis*-1,2-DCE and *trans*-1,2-DCE." Dibenzofuran and naphthalene should be added to this list.	Naphthalene added to text. Dibenzofuran is not a groundwater COPC.
120.	F.4.4 Chemicals for which no EPA toxicity values are available	It is stated that "[i]norganic chemical COPCs with inhalation slope factors are arsenic and chromium." Beryllium should be added to this list. In addition, an inhalation slope factor is listed for nickel (9.1E-01 $mg/kg\text{-}day^{-1}$), but no source was given.	The toxicity information section has been rewritten. Only toxicity information for groundwater COPCs is now presented in the document.
121.	F.4.4 Chemicals for which no EPA toxicity values are available	It is stated that "[t]hose [organic compound COPCs] without an inhalation slope factor are *cis*-1,2-DCE; *trans*-1,2-DCE." Carbazole, dibenzofuran, and naphthalene should be added to this list.	Change made only for naphthalene; others are not groundwater COPCs.
122.	F.4.4 Chemicals for which no EPA toxicity values are available	It is stated that "[t]he COPCs without absorbed dose slope factors are arsenic; *cis*-1,2-DCE; *trans*-1,2-DCE." This should be changed to read "[t]he COPCs without absorbed dose slope factors are all of the inorganic chemicals except arsenic, as well as 1,1-DCE, *cis*-1,2-DCE, *trans*-1,2-DCE, dibenzofuran, and naphthalene."	Change made.
123.	F.4.4 Chemicals for which no EPA toxicity values are available	We recommend using surrogates for most of the chemicals without an NAL, as noted in Comment #74. In addition, we also recommend that NALs be developed for 4-methylphenol (p-cresol) and thallium, or the Region 9 soil PRGs may be used. An oral reference dose is available for "thallium and compounds" from IRIS (6.6E-05 mg/kg-day), and for 4-methylphenol from HEAST (5.0E-03 mg/kg-day).	The use of surrogates for constituents without NALs was not permitted in previous documents that are now the source of the soil risk values). The screening remaining in the current document uses SSLs for migration to groundwater instead of NALs. There is still the issue that some constituents (such as thallium) did not have a screening value and were addressed only as uncertainties. The use of toxicity values for related but not identical chemicals also should be addressed in the same way.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
124.	F.5.3 Risk Characteriza-tion for Soil	Due to the numerous corrections and clarifications requested in previous comments, this section, including Tables F.155 through F.233, were not reviewed. Once the necessary changes are made, we will review this section.	The risk assessment has been rewritten using previous risk assessment results for soil; therefore, no CDI/risk/hazard tables are presented for soil for individual SWMUs. The risk characterization table for each SWMU contains the summary of the results of the previous risk assessment for soil.
125.	F.5.4 Risk Characteriza-tion For Residential Use 0f Groundwater Drawn From The RGA	Due to the numerous corrections and clarifications requested in previous comments, this section, including Tables F.234 through F.257, were not reviewed. Once the necessary changes are made, we will review this section.	Comment noted.
126.	F.5.5 Risk Characteriza-tion For Residential Use Of Groundwater at Future Modeled Concentrations At Boundaries And River POEs	Due to the numerous corrections and clarifications requested in previous comments, this section, including Tables F.258 through F.262, were not reviewed. Once the necessary changes are made, we will review this section.	Comment noted.
127.	F.5.6 Identification of Land Use Scenarios, Pathways, Media, And COCs	Due to the numerous corrections and clarifications requested in previous comments, this section, including Tables F.263 through F.272, were not reviewed. Once the necessary changes are made, we will review this section.	Comment noted.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
128.	F.7 Conclusions	Due to the numerous corrections and clarifications requested in previous comments, this section, including Table F.273, was not reviewed. Once the necessary changes are made, we will review this section.	Comment noted.
129.		No comment	
130.	F.8 Remedial Goal Options	Due to the numerous corrections and clarifications requested in previous comments, this section, including Table F.274, was not reviewed. Once the necessary changes are made, we will review this section.	Comment noted.
Ecological Risk Assessment Comments transmitted via KY Division of Waste Management- November 24, 2008			
	General	Because we were unable to locate a complete dataset of surface soil contaminant concentrations, we were unable to complete the review. We have, however, reviewed the document to the extent possible in the absence of the data.	The ecological risk assessment has been revised to include summaries of previously completed ecological risk assessments for these SWMUs. COPCs from those previous assessments are tabulated here including frequency of detection, max detected concentration, 95% UCL (if that value was used as an EPC), NOAEL-based HQs for all receptors evaluated, and the reference for screening levels used. Table numbers for the complete screening of all analytes in the original documents are included to allow review of analytes that did not exceed their benchmarks. A section on food web modeling to estimate risks from PCBs bioaccumulating through the food chain also has been added.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
1.	Section 2.6.2 Laboratory QC. (pages 2-30 to 2-31)	Precision refers to the level of agreement among repeated measurements of the same characteristic, usually under a given set of conditions. To determine the precision of the laboratory analysis, a routine program of replicate analyses is performed. The absolute difference between the two values calculated is referred to as the relative percent difference (RPD). Precision was determined for this RI by reviewing laboratory-applied qualifiers that pertain to laboratory duplicates (i.e., "M" and "*" for inorganic analyses, "Y" for organic analyses, and "D" for radionuclide analyses) over all analyses. QA objectives for precision given in the RI Work Plan are performance based, with RPDs that ranged from 13 to 50%. These objectives were met by the data collected during this RI. (In Table 2.4) It is unclear what the column marked "Precision" contains. Are the numbers for "Work Plan Criteria" relative percent differences? What are the numbers for the "RI Data"?	The numbers for RI Data are the relative percent differences of the data collected during the RI, using the criteria cited. The numbers for "Work Plan Criteria" are the numbers given in the Work Plan (Table 11.3) to be used as targets. To provide clarity, the "work plan criteria" values have been deleted from the table in the RI report. The Precision values are the relative percent differences, calculated from the RI data.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
1.	Section 3.8.3 Wetlands and Floodplains (page 3-15)	At PGDP, three bodies of water cause most area flooding: the Ohio River, Bayou Creek, and Little Bayou Creek. The floodplain analysis performed by the COE (COE 1994) found that much of the built-up portions of the plant lie outside the 100- and 500-year floodplains of these streams. In addition, this analysis determined that ditches within the plant area can contain the expected 100- and 500-year discharges. Information in COE (1994) concerning 100- and 500-year floodplains may be superseded by NOAA Atlas 14: Precipitation-Frequency Atlas of the United States, Volume 2 published in 2004, revised in 2006, and available at http://www.ncdc.noaa.gov/oa/documentlibrary/rainfall.html#atlas14.	The RI report will be revised to acknowledge the information in the NOAA Atlas. The following text will be added: "It should be noted that precipitation frequency estimates for the 100- and 500-year events were updated in 2004 in the National Oceanic and Atmospheric Administration's (NOAA) Atlas 14 (NOAA 2004). In the updated report, the mean precipitation estimate for the 100-year, 24-hour event in Atlas 14 for the Paducah area is 10.1% to 15% greater than the mean estimate in previous publications. As stated in Atlas 14, in many cases, the mean precipitation estimate used previously is still within the confidence limits provided in Atlas 14; therefore, it is assumed the plant ditches still will contain the 100- and 500-year discharges."
2.	Figure 4.4. Soil Sample Locations at SWMU 5 (page 4-12)	Many surface soil sampling locations are missing from the figure. Please add all surface soil data to Figure 4.4 or add a new figure conveying all appropriate surface soil information.	See answer to Comment #3.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
3.	Appendix F Attachment 4 (on CD)	SWMU 2 Maximum concentrations are not listed for 4-methylphenol and phenanthrene. The maximum concentration for total PCBs appears to be incorrect. SWMU 3 The only substances listed for this SWMU are antimony, uranium, and uranium-238. SWMU 5 What does the superscript K in the total PCB maximum concentration cell mean? Maximum concentrations are not listed for 2-methylnaphthalene, 3-nitrobenzenamine, acenaphthylene, di-n-butyl phthalate, and phenanthrene. SWMU 6 Maximum concentrations for total PCB and uranium-235/236 are listed, but no total PCB or uranium 235/236 concentrations for any samples are listed. Maximum concentrations are not listed for benzo(ghi)perylene, di-n-butyl phthalate, and phenanthrene. SWMU 7 Maximum concentrations are not listed for 2-methylnaphthalene, 3-methylcholanthrene, acenaphthylene, benzo(ghi)perylene, and phenanthrene. The maximum concentration for plutonium-239/240 appears to be incorrect. SWMU 30 The maximum concentration for total PCB appears to be incorrect. Maximum concentrations are not listed for 2-methylnaphthalene, 3-methylcholanthrene, acenaphthylene, benzo(ghi)perylene, and phenanthrene.	The ecological risk assessment has been revised to summaries of previously completed ecological risk assessments for these SWMUs. COPCs from those previous assessments are tabulated here including frequency of detection, max detected concentration, 95% UCL (if that value was used as an EPC), NOAEL-based HQs for all receptors evaluated, and the reference for screening levels used. Table numbers for the complete screening of all analytes in the original documents are included to allow review of analytes that did not exceed their benchmarks. This is expected to resolve any data discrepancies.

Comment Number	§/Page/¶	Comment	Response
		All SWMUs We assume all concentrations are in mg/kg although this is not stated anywhere. It would be helpful to include additional information concerning PAH and PCB conversions. It is not clear what is being presented.	
4.	Section G.2.1.3 Site Contaminants (page G-21)	Section 4 of this RI Report describes known site contaminants for surface soil at the SWMUs. Section 4 does not appear to fully address surface soil contaminants.	Reference to section 4 for surface soil has been eliminated. Page 1-3 of the BGOU Work Plan states that surface soils will not be included in the BGOU RI/FS.
5.	Table G.3. Surface Soil Contaminants at the BGOU SWMUs (page G-22)	SWMU 2 Cadmium, chromium, copper, selenium, benz(a)anthracene, methylene chloride, and technetium-99 are listed as surface soil contaminants yet Appendix F Attachment 4 contains no SWMU 2 data for these substances. Conversely, beryllium, PAHs, PCBs, and americium-241 have been detected in SWMU 2 (Appendix F Attachment 4) but are not included in Table G.3. SWMU 3 Trichloroethylene, plutonium-239/240, and technetium-99 are listed as surface soil contaminants yet Appendix F Attachment 4 contains no SWMU 3 data for these substances. SWMU 4 Copper, mercury, methylene chloride, cesium-137, and technetium-99 are listed as surface soil contaminants yet Appendix F Attachment 4 contains no SWMU 4 data for these substances. Conversely, beryllium, vanadium, and PCBs have been detected in SWMU 4 (Appendix F Attachment 4) but are not included in Table G.3. SWMU 5	The ecological risk assessment has been revised to summaries of previously completed ecological risk assessments for these SWMUs. COPCs from those previous assessments are tabulated here including frequency of detection, max detected concentration, 95% UCL (if that value was used as an EPC), NOAEL-based HQs for all receptors evaluated, and the reference for screening levels used. Table numbers for the complete screening of all analytes in the original documents are included to allow review of analytes that did not exceed their benchmarks. This is expected to resolve any data discrepancies.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
		Chromium, selenium, pentachlorophenol, 1,1-dichloroethylene, and technetium-99 are listed as surface soil contaminants yet Appendix F Attachment 4 contains no SWMU 5 data for these substances. SWMU 6 Copper, selenium, benz(a)anthracene, and technetium-99 are listed as surface soil contaminants yet Appendix F Attachment 4 contains no SWMU 6 data for these substances. Conversely, uranium-235/236 and PCBs have been detected in SWMU 6 (Appendix F Attachment 4) but are not included in Table G.3. SWMU 7 Cadmium, chromium, selenium, pentachlorophenol, methylene chloride PCB-1248, and PCB-1260 are listed as surface soil contaminants yet Appendix F Attachment 4 contains no SWMU 7 data for these substances. Conversely, beryllium and vanadium have been detected in SWMU 7 (Appendix F Attachment 4) but are not included in Table G.3. SWMU 30 Chromium, zinc, chrysene, PCB-1260, and plutonium-239 are listed as surface soil contaminants yet Appendix F Attachment 4 contains no SWMU 30 data for these substances. Conversely, beryllium has been detected in SWMU 30 (Appendix F Attachment 4) but is not included in Table G.3.	
6.	Figure G.10 (page G-23)	The following email exchange transpired concerning exposure pathways. **From:** Higginbotham, Jeri (EEC) [mailto:jeri.higginbotham@ky.gov] **Sent:** Thursday, September 18, 2008 8:15 AM **To:** Kirby Olson; Begley, Brian (EEC) **Subject:** ecological risk	We acknowledge the approach that groundwater should be screened against surface water screening levels where there is potential for groundwater to discharge to a permanent surface water body, as this could result in a significant exposure. For the BGOU RI, it was determined that the seeps represented the nearest area meeting these criteria and those seeps are covered under

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
		Hi Kirby, The bad news is that I haven't been able to look at the risk methods document. The good news is that I'm looking at the Burial Grounds Operable Unit (BGOU) screening-level ecological risk assessment. I have a question about the conceptual site model which is Figure G.10. The only complete pathways are those involving soil. There are no complete pathways involving water. I know that NAPL source zones beneath the burial grounds are part of the BGOU. Will exposures to ecological receptors either in the Little Bayou seeps or in the Ohio River resulting from burial ground source zones be addressed in the Surface Water Operable Unit RI? I assume they will be, but I just want to nail it down. Thanks, Jeri --- **From:** Kirby Olson [mailto:kolson@portageinc.com] **Sent:** Monday, September 22, 2008 2:42 PM **To:** Higginbotham, Jeri (EEC) **Subject:** RE: ecological risk Hi Jeri, I'm sorry for the delay in getting back to you; I went to Paducah last week and didn't get this until the end of the week. I'm checking to verify whether the ecological risk from the seeps will be in the Surface water OU RI.	a different OU for ecological evaluation. Potential exposures through water at the seeps are expected to be addressed as suggested in the comment (which also consistent with guidance on screening groundwater in the risk methods document) as part of the surface water OU.

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
		Kirby Kirby S. Olson, Ph.D. -- **From:** Kirby Olson [mailto:kolson@portageinc.com] **Sent:** Monday, September 22, 2008 3:39 PM **To:** Higginbotham, Jeri (EEC) **Subject:** seeps and ecological risk Hi Jeri, The project manager at Paducah (Tracey Duncan) confirmed for me that the Surface Water Operable Unit RI will include Little Bayou creek seeps and up to the confluence of the Ohio River, but not the river. So the risk assessment in that RI will address the ecological risks at those areas. Kirby Kirby S. Olson, Ph.D. We acknowledge that risks to ecological receptors involving Little Bayou Creek seeps will be considered in the surface water operable unit strategic initiative. We recommend that risks to ecological receptors in the Ohio River be considered as well. When considering risks to ecological receptors in a screening level risk assessment, groundwater concentrations of contaminants should be compared to the screening levels. For those compounds that do not screen out, alternate concentration levels (ACLs) may be developed in the baseline risk assessment.	

COMMENT RESPONSE SUMMARY
for the Remedial Investigation Report for the Burial Grounds Operable Unit
at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0030&D1

Comment Number	§/Page/¶	Comment	Response
7.	Section G.4.1. Data Summary (page G-24)	The dataset from OREIS developed for the human health risk assessment in this document was used as the dataset from which the maximum concentrations were developed. The dataset used to determine maximum concentrations for the SERA included some analytes that were not assessed in the Baseline Human Health Risk Assessment: those detected only below their background concentrations and analytes that may have been removed as essential nutrients in the human health risk assessment. The reference to "dataset" needs to be more specific, and its location needs to be stated. Section 4 (page 4-1) referenced Attachment F4 for surface soil COPCs. However, this attachment in Appendix F is not complete. It lists far fewer metals for each SWMU than what Table G.4 lists as the number of metals retained as COPCs.	Because the ecological risk assessment has been rewritten to summarize previous ecological assessments, the parameters of the dataset (analytes detected, frequency of analyses and detects, etc.) can be found in the tables in the original risk assessments. The numbers for these tables are provided in Appendix G.
8.	Sections G.4.2 through Section G.6 including Tables G.5 through G.11 (pages G-25 through G-35)	It will be possible to review the remainder of the ecological risk assessment upon resolution of Comment #10.	Comment noted.