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Department of Energy
Office of Legacy Management

November 2, 2009

Mr. Timothy Fischer, Remedial Project Manager
United States Environmental Protection Agency
Region V-SR-6J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Thomas Schneider, Project Manager
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402-2911

Dear Mr. Fischer and Mr. Schneider:

Subject: **Transmittal of Responses to Ohio Environmental Protection Agency (OEPA) Comments on the 2008 Site Environmental Report**

Reference: 1) Letter, T. Schneider to J. Powell, "Re: Comments 2008 Site Environmental Report," dated October 5, 2009

Enclosed for your review are responses to OEPA comments on the 2008 Fernald Site Environmental Report (Reference 1). Consistent with past practice, the 2008 Site Environmental Report and appendices will not be revised. Comments will be considered during preparation of the 2009 Site Environmental Report.

If you have any questions or require any additional information, please call me at (513) 648-3148.

Sincerely,

Jane Powell

Jane Powell
Fernald Preserve Site Manager
DOE-LM-20.1

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REPLY TO: Harrison Office		

Response to Ohio Environmental Protection Agency Comments on the 2008 Fernald Preserve Site Environmental Report

1. Commenting Organization: Ohio EPA
Section #: ES Pg #: xi Line #: na Code: C
Comment: Under the "Groundwater Pathway" title, the first bullet does not make sense. Consider rewording.

Response: In future SER reports DOE will reword this bullet in an effort to clarify the message.

Action: This bullet shall be reworded in future SERs in an effort to clarify the message.

2. Commenting Organization: Ohio EPA
Section #: ES Pg #: xii Line #: na Code: C
Comment: 3rd bullet from the top of the page states, "Leak detection monitoring at Cells 1 through 8 of the OSDF indicates that all of the individual cell liner systems are performing as expected and within the specifications outlined in the approved OSDF design." This bullet should be reworded to reflect that the changing uranium concentrations, as evidenced in the water quality monitoring, in the HTW horizon were not expected; however, flow data indicates the cells are performing as designed.

Response: DOE disagrees that the changing uranium concentrations, as evidenced in the water quality monitoring, in the HTW horizon were not expected. As presented in Section 2.4 (Existing Contamination) of Attachment C (Groundwater/Leak Detection and Leachate Monitoring Plan) of the January 2009 LMICP, given the residual soil contamination below the FRLs present in the area of the HTWs, and the fact that the installation of the OSDF changed recharge/infiltration conditions in the area, it is not unexpected that contaminant concentrations in perched groundwater would increase. The maximum observed concentration for perched groundwater (0.021 mg/L) prior to OSDF construction is slightly lower than the observed maximum HTW value (Cell 3, 0.029 mg/L).

Action: None.

3. Commenting Organization: Ohio EPA
Section #: ES Pg #: xiv Line #: na Code: C
Comment: One of the highlights associated with "Natural Resources" in 2008 was the settlement of the NRDA claim with the State of Ohio.

Response: Agree.

Action: A discussion of Trustee activities shall be included in the Executive Summary of the 2009 SER.

Section 2.0 Remediation Status and Compliance Summary

4. Commenting Organization: Ohio EPA
Section #: 2.1 Pg #: 2-2 Line #: na Code: C
Comment: The second bullet toward the bottom of the page states, "...and leakage is significantly less that established action levels." This statement suggests that the OSDF is leaking. DOE should consider rewording this statement to reflect that water balance calculations are within the design parameters for the OSDF.

Response: Agree.

Action: In future SERs, better wording will be used so as not to create a misunderstanding that a cell is leaking.

5. Commenting Organization: Ohio EPA
Section #: 2.2.3 Pg #: 2-7 Line #: na Code: E
Comment: The first sentence in this section should reflect that the dose is calculated for ***radioactive*** air emissions (excluding radon-222).

Response: Agree

Action: Future versions of the SER will refer to radioactive air emissions when discussing NESHAP Subpart H.

6. Commenting Organization: Ohio EPA
Section #: 2.2.5 Pg #: 2-8 Line #: na Code: C
Comment: A discussion of the Ohio rules governing water quality associated with the OSDF need to be included.

Response: DOE disagrees. ARARs have been established for the OSDF which are a CERCLA related evaluation.

Action: None.

7. Commenting Organization: Ohio EPA
Section #: Table 2-1 Pg #: 2-10 Line #: na Code: C
Comment: The last section, "Natural Resource Requirements under CERCLA and Executive Order 12580", incorrectly states who the natural resource trustees (NRTs) are. The NRTs are the DOE, Ohio EPA, and Department of the Interior (administered by the U.S. Fish and Wildlife Service).

Response: Agree.

Action: Table 2-1 will be revised in the 2009 SER to reflect the language above.

8. Commenting Organization: Ohio EPA
Section #: 5.4 Pg #: 5-8 Line #: na Code: C
Comment: The reason that EPA has agreed to DOE request to discontinue radon monitoring is not because the 0.5 pCi/L limit has not been exceeded. The reason EPA has agreed to discontinuing radon monitoring is that the source, K-65 residues, have been removed from the site, ending DOEs radon monitoring requirements of the FFCA.

Response: Comment acknowledged.

Action: None.

2008 Environmental Summary (Appendixes A Through E)
Comments: Appendix A
Attachment A.1

9. Commenting Organization: OEPA
Section #: Attach. A.1 Pg #: A.1-4 Line #: 13 Code: C
Comment: The text states that the Fernald groundwater model predicts the future average pounds of uranium that will be removed from the aquifer. For clarification purposes, the text should discuss the model's assumptions regarding the sorption/desorption of total uranium since these assumptions will significantly influence the model-predicted duration of the pump and treat stage of the aquifer remedy. Specifically, the text should note that model predictions are based on the assumption that an equilibrium linear isotherm accurately describes the partitioning of total uranium between the sorbed and dissolved phases.

Response: DOE agrees that adding clarity will improve the report.

Action: In future SERs a statement will be added that the model predictions are based on the assumption that an equilibrium linear isotherm adequately describes the partitioning of total uranium between the sorbed and dissolved phases.

10. Commenting Organization: OEPA
Section #: Attach. A.1 Pg #: A.1-4 Line #: 31 Code: C
Comment: Since any realistic assessment of percent completeness would include monitoring well and direct push sampling results, some clarifying text is needed. Change "the estimated percent complete for the pump and treat stage of the aquifer remedy…" to "the extraction well concentration trend-based estimated percent complete for the pump and treat stage of the aquifer remedy…"

Response: DOE agrees that adding clarity will improve the report

Action: In future SERs this statement will be clarified by adding that it is based on the trend of extraction well concentrations.

Attachment A.5

11. Commenting Organization: Ohio EPA
Section #: General Pg #: na Line #: na Code: C
Comment: The graphs of water quality data should be evaluated for trends for the period after cap closure, as well as, the way the data is currently evaluated.

Response: DOE disagrees that additional trending evaluations are necessary. Current trending methods are sufficient.

Action: None.

12. Commenting Organization: Ohio EPA
Section #: A.5.0 Pg #: A.5 - 1 Line #:na Code: C
Comment: The sentence, "Water quality trends observed in the horizontal till wells (HTWs) and GMA wells are attributed to concentration fluctuations taking place beneath the facility and not to a potential leak from the facility," is not supported by the water quality data nor does the statement make any sense. If there was a leak, one would also expect there to be fluctuations in the water quality data. Ohio EPA suggest that a statement such as, "Water quality trends observed in the horizontal till wells (HTWs) and GMA wells indicate changing water conditions beneath the facility. DOE will continue to investigate these conditions through continued monitoring and assessment."

Response: The paragraph containing the sentence points out that measured flow conditions within the facility do not substantiate a cause for the changing background water quality conditions beneath the facility. The paragraph should have done a better job explaining this and referring the reader to a contamination discussion found in Section 2.4 of Attachment C (Groundwater/Leak Detection and Leachate Monitoring Plan) of the September 2009 LMICP that presents data that begins to substantiate a cause for the changing water quality conditions.

DOE agrees that adding the statement that DOE will continue to investigate these conditions through continued monitoring and assessment is a good idea.

Action: In future SERs this discussion will be clarified by adding information concerning pre-existing contamination, doing a better job linking water quality data to facility flow data, and stating that DOE will continue to investigate these conditions through continued monitoring and assessment.

13. Commenting Organization: OEPA
Section #: Attach. A.5 Pg #: A.5-3 Line #: 29 Code: C
Comment: Plots of the LCS, LDS, and HTW flows should be revised in future SERs so that they are presented on a common y-axis scale to facilitate comparisons between individual cells. A logarithmic scale is recommended to accommodate the wide range of flows while preserving the ability to discern low end flow variations.

Response: Agree. DOE will modify the graphs as suggested.

Action: As stated in the response.

14. Commenting Organization: OEPA
Section #: Attach. A.5 Pg #: A.5-4 Line #: 21 Code: C
Comment: The text states that the plots of LCS flow volumes "are diminishing over time" which is true if current flow rates are compared to the rates initially observed during cell construction and cap installation. However, it incorrectly describes current trends that have been long established over several years of monitoring. This text needs to be revised to reflect what is actually shown by the LCS plots. LCS flows for Cells 1, 2, and 3 have become asymptotic at approximately 2,000 gallons per month (they are NOT diminishing). Cell 4 LCS flows appear to be stabilizing at 3,000 gallons per month and, since July 2007, have remained fairly steady (NOT diminishing). Flows are similarly asymptotic in the several thousand gallons per month range in Cells 5 – 8 (NOT diminishing).

Response: DOE agrees that the LCS decline curves are flattening, however the flows are continuing to decrease. When the January 2009 LCS flow data is compared to the September 2009 monthly data, every cell shows an LCS flow decline of at least 200 gallons per month, with 6 of the cells showing a decline of 600 gallons per month or more. For the same period, the overall facility leachate flow declined by nearly 5000 gallons per month or nearly 24% (20,403 gallons for January 2009 versus 15,533 gallons for September 2009). In future SERs DOE will provide additional discussion concerning the decreasing trend.

Action: As stated in response.

15. Commenting Organization: OEPA
Section #: Attach. A.5 Pg #: A.5-4 Line #: 21 Code: C
Comment: What is the final (say, in 50 years) LCS flow rate that DOE anticipates will occur from each cell? What is (are) the source(s) of this flow if greater than zero?

Response: Leachate generation rates are provided in Volume II of the *Final Design Calculation Package, On-Site Disposal Facility*, May 1997, Revision 0. The leachate generation rate of a cell in the facility for the post closure stage is calculated as 0.002 gpad. The source for the leachate generated post closure would likely be residual soil moisture or infiltration through the cap.

Action: None.

16. Commenting Organization: OEPA
Section #: Attach. A.5 Pg #: A.5-6 Line #: 6 Code: C
Comment: High HTW purge volumes are observed for Cells 1 through 5 relative to those seen for Cells 6 through 8. The Cell 5 HTW is not purged dry after the extraction of three volumes. Is the difference in purge performance related more to the saturated thickness of the till at each cell or to local coarse-grained heterogeneity?

Response: As presented in the OU5 RI report (page 3-37) the glacial overburden is saturated from approximately 3 to 5 feet below the ground surface down to the base of the glacial overburden. The upper surface of saturation within the glacial overburden therefore essentially mimics topography. The north end of the OSDF is cut deeper into the overburden than the south end indicating that HTWs in the northern end of the OSDF are set deeper within the glacial overburden than the HTWs in the southern end of the OSDF. The difference in purge volumes between the horizontal till wells is related to the ability of the surrounding glacial overburden material to yield water to the HTW, which in turn is a function of both the saturated thickness and heterogeneity of the surrounding overburden material.

Action: None.

17. Commenting Organization: OEPA
Section #: Attach. A.5 Pg #: A.5-6 Line #: 19 Code: C
Comment: The text notes that a statistical analysis procedure (aka, the LMICP Volume II Attachment C Appendix E [pages 12 and 13] procedure) of the LCS data for Cells 1, 2, and 3 was conducted in 2007 but not in 2008. As per Variance/Field Change Notice No. LMS-FER-S03496-3.0-02, LCS sampling will resume for the parameters shown in Table 2-1 provided with that document. Statistical analysis of these data to identify any appropriate changes to monitoring parameters is also expected to resume. It is anticipated that the results of this sampling and data evaluation for 2009 will be reported in the 2009 SER.

Response: The statistical analysis noted above will next be conducted for Cells 4 and 5, and reported in the 2009 SER.

Action: As stated in the response.

18. Commenting Organization: OEPA
Section #: Attach. A.5 Pg #: A.5-7 Line #: 1 Code: C
Comment: The term "standardized quarterly sampling" is introduced here but is not defined. The use of standardization in the tabulation, presentation, and evaluation of OSDF data is a significant modification to this report. DOE needs to rigorously define what "standardized quarterly sampling" is, how it is calculated, how it will be used in the statistical analyses of OSDF data, and why DOE believes it is necessary.

Response: OSDF data have been standardized to quarterly for many years. As presented in the *Technical Memorandum for the On-Site Disposal Facility Cells 1, 2, and 3 Baseline Groundwater Conditions* (July 2002) it was decided to standardize the sample frequency in an effort to alleviate the biased weighting by samples collected on a more frequent basis.

Action: Commenter is referred to the approved Technical Memorandum for the On-Site Disposal Facility Cells 1, 2, and 3 for the requested information.

19. Commenting Organization: OEPA
Section #: Attach. A.5 Pg #: A.5-7 Line #: 1 Code: C
Comment: It is indicated that data summarized in the cell specific data tables and plots is based on a "standardized quarterly sampling" frequency. Data plots should depict all data (including outliers) without being first subjected to a preprocessing step such as standardization. On data plots, outliers should be flagged as such.

Response: DOE disagrees. The preprocessing step of standardization has been the approved method for years (Technical Memorandum for the On-Site Disposal Facility Cells 1, 2, and 3 Baseline Groundwater conditions, July 2002).

Action: None

20. Commenting Organization: OEPA
Section #: Attach. A.5 Pg #: A.5-7 Line #: 29 Code: C
Comment: This statement appears to be misplaced and is considered erroneous; it is not associated with any supporting data or analysis.

Response: This comment is similar to Comment 12.

Action: Please refer to action for Comment 12.

21. Commenting Organization: Ohio EPA
Section #: A.5.3 Pg #: A.5-8 Line #: na Code: E
Comment: The text states that a report is submitted to DOE after each site inspection, which documents the inspection and findings. However, it is not mentioned that the report is also sent to the Agencies as a follow up providing information gathered by all involved and how findings will be handled.

Response: Comment acknowledged.

Action: Future SERs will also include this additional information.

22. Commenting Organization: Ohio EPA
Section #: A.5.4 Pg #: A.5-8 Line #: na Code: C
Comment: Again, DOE makes unsubstantiated claims that fluctuations in water quality data are not from a leak in the facility. See previous comment.

Response: This comment is similar to Comment 12.

Action: Please see action to Comment 12.

23. Commenting Organization: Ohio EPA
Section #: A.5.4 Pg #: A.5-8 Line #: na Code: C
Comment: Again, DOE makes unsubstantiated claims that fluctuations in water quality data are not from a leak in the facility. See previous comment.

Response: This comment is similar to Comment 12.

Action: Please see action to Comment 12.

Sub-Attachment A.5.1 - Cell 1

24. Commenting Organization: Ohio EPA
Section #: A.5.1.1 Pg #: A.5.1 – 1 Line #: na Code: C
Comment: Ohio EPA has not approved the 2009 GWLMP but looks forward to discussing evaluation techniques to assess water quality data.

Response: Comment acknowledged.

Action: None.

25. Commenting Organization: OEPA
Section #: Attach. A.5.1 Pg #: A.5.1-1 Line #: 23 Code: C
Comment: As shown by Figure A.5.1-2, Cell 1 LDS flows declined asymptotically from over 150 gallons/month in 2002 to zero in November 2005. Since that time, LDS flows exhibit a seasonal pattern. Measureable flow occurs from January to May in 2006, 2007 and 2008. Flow is zero the rest of the year. No such pattern is observed at any of the other cells. Given the observed seasonal pattern, do these flows originate from groundwater, surface water, precipitation infiltration, a combination of these, or some other source?

Response: It is difficult to determine the origin of these very minor flows which are insignificant compared to the design established action levels. DOE does not wish to speculate on their origin.

Action: None.

26. Commenting Organization: OEPA
Section #: Attach. A.5.1 Pg #: A.5.1-1 Line #: 25 Code: C
Comment: This statement is incorrect. Theoretically, a leak could exist and the associated LDS flow rate could be less than the action level. Removal or rewording of this text is necessary.

Response: DOE disagrees that this statement is incorrect.

Action: None.

27. Commenting Organization: OEPA
Section #: Attach. A.5.1 Pg #: A.5.1-1 Line #: 27 Code: C
Comment: Data evaluation techniques will be in accordance with the 2009 GWLMP as amended by V/F No. LMS-FER-S03496-3.0-02 and associated discussions between Ohio EPA and DOE.

Response: Comment acknowledged.

Action: None.

28. Commenting Organization: OEPA
Section #: Attach. A.5.1 Pg #: A.5.1-1 Line #: 32 Code: C
Comment: As per V/F No. LMS-FER-S03496-3.0-02, LCS sampling at Cell 1 will resume for GWLMP Appendix B Table 2-1 analytes.

Response: Comment acknowledged.

Action: None.

29. Commenting Organization: Ohio EPA
Section #: Attach. A.5.1 Pg #: A.5.1-5 Line #: 20 Code: C
Comment: Confirmatory sampling should conform to the parameter lists included in V/FC Notice No. LMS-FER-S03496-3.0-02.

Response: Comment acknowledged.

Action: None.

30. Commenting Organization: OEPA
Section #: Attach. A.5.1 Pg #: A.5.1-5 Line #: 25 Code: C
Comment: The Common Ion Study analysis cannot be used as a basis for rejecting any monitoring parameter since this study utilized the 4:1 source to target criterion in assessing parameter usefulness. The problems associated with applying this criterion to monitoring parameter selection have been thoroughly documented in previous comments and discussions with DOE.

Response: DOE continues to disagree with OEPA on this point.

Action: None.

Sub-Attachment A.5.2 - Cell 2
31. Commenting Organization: OEPA
Section #: Attach. A.5.2 Pg #: A.5.2-1 Line #: 32 Code: C
Comment: This text and associated table are preempted by V/FC Notice No. LMS-FER-S03496-3.0-02.

Response: Comment acknowledged.

Action: None.

Sub-Attachment A.5.4 - Cell 4
32. Commenting Organization: OEPA
Section #: Attach. A.5.4 Pg #: A.5.4-3 Line #: 1 Code: C
Comment: The LMICP Volume II Attachment C Appendix E procedure was designed by DOE and Ohio EPA to be applied on a cell by cell basis. In the referenced text, an attempt is made to somehow adopt the results of the statistical testing on Cell 1 into the monitoring approach for Cells 4 through 8. In accordance with V/FC Notice No. LMS-FER-S03496-3.0-02 and associated discussions between Ohio EPA and DOE, the LMICP Volume II Attachment C Appendix E procedure will need to be applied annually to the LCS data from each cell and the results reported in the SER.

Response: Based on previous discussions with OEPA, DOE is of the understanding that the statistical analysis approach to be utilized is a one time application, run when the data set from each cell is complete after 8 rounds. The purpose is to help identify potentially useful monitoring parameters based upon a comparison of the average concentration detected in the LCS to the average concentration detected in the pre-design or background data set. The statistical analysis for Cells 1, 2, and 3 have been completed. The results were reported in the 2007 SER. Analysis of Cells 4 and 5 will be presented in the 2009 SER. Analysis of Cell 6 will be presented in the 2010 SER, and analysis of Cells 7 and 8 in the 2011 SER.

Action: As stated in the response.

Sub-Attachment A.5.6 - Cell 6

33. Commenting Organization: OEPA
Section #: Attach. A.5.6 Pg #: A.5.6-1 Line #: 3 Code: C
Comment: The text indicates that Figure A.5.6-2 includes precipitation data with the monthly LDS accumulation rates. The precipitation data is missing but should be added to this figure and to the corresponding figures for the other cells.

Response: The text reference is in error and will be corrected in future SERs. DOE disagrees that adding precipitation data to the monthly accumulation plots for the LDS will add value to the report. The decision to remove the precipitation data from these graphs was made several years ago with EPA/OEPA concurrence.

Action: None.

Appendix C
Attachment C.1

34. Commenting Organization: Ohio EPA
Section #: C.1.1 Pg #: C.1 – 3 Line #: na Code: C
Comment: The explanation for the elevated TSP and uranium concentrations is not necessary, and most likely not correct. In the future, apply appropriate dust control measures to prevent elevated concentrations from fugitive dust.

Response: Comment acknowledged

Action: Fugitive dust will continue to be evaluated and controlled when appropriate.

35. Commenting Organization: Ohio EPA
Section #: C.1.2 Pg #: c.1 – 8 Line #: na Code: C
Comment: Remove the portion of the sentence from the paragraph at the top of the page. "…the locations have essentially the same result, which indicates the remediation of soil achieved the OU5 final remediation levels established for radionuclide contaminants." The fact that the air monitors concentrations are indistinguishable from background has nothing to do with whether soil FRLs were met.

Response: Comment acknowledged.

Action: The portion of the sentence referenced above will be reworded in the 2009 SER as follows: "…the locations have essentially the same result, and these results are in line with the soil certification results that demonstrate remediation of soil achieved the OU5 final remediation levels for radionuclide contaminants."

Attachment C.5

36. Commenting Organization: Ohio EPA
Section #: C.5.0 Pg #: C.5 – 1 Line #: na Code: C
Comment: Remove the following phrase from the second paragraph in this section. "As the soil has been certified to contain contaminant levels below the Operable Unit 5 final remediation levels, there is no remaining source to deliver a statistically significant dose to the public." There is an associated risk and dose from the residual contaminants on site, and from a number of smaller areas that have not been remediated as of 2008. There is a source that delivers a dose to the public; however using current measurement techniques this dose is indistinguishable from background.

Response: Comment acknowledged.

Action: The sentence referenced above will be reworded in the 2009 SER as follows: "As the soil has been certified to contain contaminant levels below the Operable Unit 5 final remediation levels, there is no significant remaining source to deliver a dose to the public in excess of the dose that corresponds to an incremental lifetime cancer risk of 1 in 10,000, which is acceptable for EPA superfund sites."