Department of Energy
Washington, DC 20585

August 15, 2014

Mr. Timothy Fischer
U.S. Environmental Protection Agency
Region V-SRF-6J
77 W. Jackson Blvd.
Chicago, IL 60604-3590

Mr. Thomas A. Schneider
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402

Dear Mr. Fischer and Mr. Schneider:

SUBJECT: Transmittal of Responses to Ohio Environmental Protection Agency Comments on the 2013 Fernald Preserve Site Environmental Report

Reference: Letter, T. Schneider to G. Hooten, "Comments-Fernald Preserve 2013 Site Environmental Report, Dated May 2014", dated July 17, 2014

Enclosed for your review are responses to Ohio Environmental Protection Agency (Ohio EPA) comments on the 2013 Fernald Preserve Site Environmental Report (Reference). Consistent with past practice, the 2013 Fernald Preserve Site Environmental Report and appendices will not be revised. Comments will be considered during preparation of the 2014 Fernald Preserve Site Environmental Report.

If you have any questions regarding this report, please call me at (513) 648-3333. Please send any correspondence to:

U.S. Department of Energy
Office of Legacy Management
10995 Hamilton-Cleves Highway
Harrison, OH 45030

Sincerely,

Gwendolyn N. Hooten
2014.08.14 11:58:26
-06'00'

Gwendolyn N. Hooten
Fernald Preserve Manager
DOE-LM-20.2

Printed with soy ink on recycled paper

Enclosure

cc w/enclosure:
S. Helmer, ODH
T. Tucker, Ohio EPA-Columbus
Project Record File FER030.1(A) (thru B. Irvine)

cc w/o enclosure:
(electronic)
B. Hertel, Stoller
J. Homer, Stoller
K. Reed, DOE
K. Voisard, Stoller
C. White, Stoller

Responses to Ohio EPA Comments on the
Fernald Preserve 2013 Site Environmental Report
May 2014

General Comment:

1. Commenting Organization: Ohio EPA
   Section: General
   Comment: As discussed at our 7/16/14 meeting, Ohio EPA believes it would be appropriate and useful to include a summary or spreadsheet of the quarterly OSDF/site inspection results within the SER. The format for inclusion, electronic or paper, can be discussed over the coming months along with any proposed changes to electronic format for paper reduction.

   Response: Agree

   Action: Future version of the SER will include quarter OSDF and site inspection results. Formats for the information will be added as a topic to the August 2014 monthly meeting.

Specific Comments:

2. Commenting Organization: Ohio EPA
   Section: Summary Report , Section 6.2 Page: 94
   Comment: In the 3rd sentence of the first paragraph add "contaminated debris" to the list of what is documented in the site inspections.

   Response: Agree

   Action: Future versions of the SER will include potentially contaminated debris discussed in Section 6.2.

3. Commenting Organization: Ohio EPA
   Section: Figure 4
   Comment: Ohio EPA requests re-evaluation of the depth scale on the Figure 4 hydrostratigraphic cross-section. While the figure referenced on page 13 indicates approximately 75 feet of unconsolidated material beneath the former production area, the OU-5 RI report indicates approximately 200 feet of unconsolidated material beneath the former production facility.

   Response: Agree.

   Action: The scale on Figure 4 will be corrected in future versions of the report.

4. Commenting Organization: Ohio EPA
Section: Attachment A.2/Section A.2.1.1.1
Comment: In regards to the mention of uranium ground water concentration increases at various direct-push sample locations (page 3), Ohio EPA requests clarification of whether observed increases correlate with sample turbidity. A positive correlation could indicate that concentration increases are at least partially attributable to sample turbidity.

Response: Data indicate that the observed increases do not appear to correlate with sample turbidity. Scatter plots for each of the three sampling locations in the former Waste Storage Area for turbidity versus uranium concentration are attached. No clear correlation is indicated in the plots.

Action: No action required.

5. Commenting Organization: Ohio EPA
Section: Attachment A.2/Section A.2.1.1.1
Comment: Ohio EPA recommends that future reports provide justification for filtering direct-push ground water samples through a relatively large, 5 micron filter, prior to uranium sample collection. A smaller 0.45 micron filter is more typical of environmental ground water sampling. The turbidity of filtered direct-push sample remains excessively high in many cases, above 999 NTUs (Tables A.2-4 through A.2-28). Has consideration been given to the potential for turbid sample to bias sample concentration high?

Response: The potential that turbidity can bias direct-push sample concentrations high has been taken into consideration. Based on monitoring experience and EPA research, DOE believes that not filtering groundwater through a 0.45 micron filter is the best and most conservative approach for Fernald.

In 2001, routine filtering was initiated at monitoring wells because it was thought that high turbidity might bias sample concentration high. Both filtered and unfiltered samples were collected and analyzed for uranium. The objective of the filtering was to remove particulate matter from the analysis and get a true measure of the dissolved uranium concentration. The results were mixed. A review of 221 results (unfiltered compared to 0.45 micron filtered samples) indicated that approximately 27 percent of the filtered results were higher in concentration than the unfiltered results. Statistics indicated that there was no evidence to suggest that the two sample sets (unfiltered versus filtered) came from different populations having different means. It appeared that the filtering did not make a consistent difference in the results.

EPA research at the Robert S. Kerr Environmental Research Laboratory reinforced the findings presented above. The EPA reported that use of a 0.45 micron filter was not useful, appropriate, or reproducible in providing information on metals mobility in groundwater systems, nor was it appropriate for determination of truly dissolved

constituents in groundwater (Puls and Barcelona, March 1989, *Ground Water Sampling for Metals Analyses*). Therefore the IEMP no longer directs that groundwater samples be routinely filtered through a 0.45 micron filter. As explained on Page 46 of the IEMP:

> "Not filtering groundwater samples collected at monitoring wells is a conservative (and EPA recommended) approach to determining the true mobility of metals and uranium in groundwater. Filtering of groundwater samples at monitoring wells may take place on a case-by-case basis if deemed appropriate."

Direct-push is sampling slightly different than conventional monitoring well sampling. Due to the temporary nature of the direct-push sampling locations and smaller amount of development that takes place compared to monitoring wells, direct-push samples are often much more turbid than samples collected at monitoring wells. Therefore, direct push samples are routinely filtered through a 5 micron filter to facilitate collection of a sample. The 5 micron filter size was chosen in consultation with the field crew. Based on what was learned during monitoring wells and recommended by the EPA, additional filtering through a 0.45 micron filter is not conducted at the majority of direct-push locations. As discussed below, an exception to this are locations in the former Waste Storage Area. DOE believes that this is a conservative approach and based on EPA research eliminates an unnecessary additional filtering step in the field.

Direct-push sampling in the former Waste Storage Area involves other constituents along with total uranium. As explained on Page 43 of the IEMP, a direct-push sample will be collected prior to any filtering and will be analyzed for nitrate/nitrite. The remainder of the samples (manganese, molybdenum, nickel, total uranium, and technetium-99) will, at a minimum, be filtered through a 5 micron filter. If the turbidity of the 5 micron filter sample is below 5 nephelometric turbidity units (NTUs), the remaining five constituents will be sampled. If the turbidity of the 5 micron filtered direct-push sample is above 5 NTUs, the sample will be further filtered through a 0.45 micron filter. Both the 5 micron and the 0.45 micron filtered sample will be analyzed for total uranium, and the four remaining constituents will be analyzed from the 0.45 micron filtered sample only.

In 2013, three direct push locations were sampled in the former Waste Storage Area (13369A, 13374A, and 13463). The results were reported in Tables A.2-1 thru A.2-3 of the SER, respectively. The maximum uranium results are summarized below.

Location	Filter Size (micron)	Result (ug/L)	Filter Size (micron)	Result (ug/L)
13369A	5	202	0.45	150
13374A	5	232	0.45	293
13463	5	50.2	0.45	49.9

Action: No action required.

6. Commenting Organization: Ohio EPA
Section: Attachment A.2/Section A.2.1.2.3
Comment: Please clarify the apparent discrepancy between the page 7 reference to increasing uranium at multi-channel monitoring well 83124_C4 and map Figure A.2-4. According to the map legend, the concentration was steady, rather than increasing.

Response: The apparent discrepancy is because the discussion on page 7 concerns Channel-4 of Monitoring Well 83124 and Figure A.2-4 concerns Channel 1 of Monitoring Well 83124. As stated on Figure A.2-4, for multi-channel wells, the channel with the highest average uranium concentration is posted on Figure A.2-4. For multi-channel Well 83124, the channel with the highest uranium concentration in 2013 was Channel 1. As reported in Table A.2-29, there was no trend in uranium concentrations detected in Channel 1. There was an increasing uranium concentration trend though detected in Channel 4. This is the trend being discussed on page 7.

Action: No action required.

7. Commenting Organization: Ohio EPA
Section: Appendix D
Comment: The presented monitoring data, along with casual observations of the on-site prairies, suggest native species may be decreasing in abundance and diversity while invasive/non-native species are expanding in the planted prairies. Multiple factors may be at work, but it is likely that the lack of timely burning/mowing may be driving this transition. Ohio EPA would like to add this topic for discussion at an upcoming technical workgroup meeting.

Response: DOE has also taken notice of this issue.

Action: Prairie management will be added as a topic to the August 2014 monthly meeting.

8. Commenting Organization: Ohio EPA
Section: Appendix D
Comment: A discussion regarding the success or lack of success in establishment for the various species within the seed mix would be useful in evaluating future seed mixes on site and at other restoration projects. Ohio EPA would like to add this topic for discussion at an upcoming technical workgroup meeting.

Response: DOE agrees.

Action: See the response to Comment 7.

9. Commenting Organization: Ohio EPA
Section: Appendix D, Table D-24
Comment: *Solidago canadensis* is repeated within this table. It is likely the proper name for one of these is *Solidago rigida*. Correction of the table should improve the score of this area.

Response: DOE agrees with the comment. Correcting the information results in an FQAI of 9.22.

Action: Future functional monitoring evaluations will include this updated FQAI value for this area.

10. Commenting Organization: Ohio EPA
Section: Appendix D, Figures D-3A to D-3Y
Comment: The hydrographs may be more useful at this point if they included multiple years of data on the same graph. This would allow for evaluation of the wetland function over multiple seasonal cycles to see if there are any long term trends in terms of hydrology that need addressed. Single year based data will be highly subject to the variations in weather and thus less useful for interpretation.

Response: DOE agrees with the comment.

Action: Future versions of the SER will include hydrograph data since monitoring began.