

**3474**

**RESPONSES TO U.S. EPA AND OEPA COMMENTS  
ON THE INTEGRATED ENVIRONMENTAL  
MONITORING PLAN, REVISION 2**

**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT  
FERNALD, OHIO**

**JANUARY 2001**

**U.S. DEPARTMENT OF ENERGY**





summary provided and discussed on the November 28, 2000 weekly conference call. The subject text will be revised accordingly.

5. Commenting Organization: USEPA Commentor: Saric  
 Section #: 8.3.3 Pg.#: 8-7 Line #: NA Code: C  
 Original Specific Comment #: 5  
 Comment: The text states that notable results to be reported in the new quarterly summaries might include unexpected FRL or other action level exceedances and results that show upward trends in contaminant levels. The text should be revised to state that the new quarterly summaries will explain all action level exceedances and upward-trending results. The summaries should provide qualitative discussions of upward-trending results and actions to be taken in order to mitigate upward trends.  
 Response: DOE agrees that all unexpected final remediation level (FRL)/action level exceedances and results that show upward trends in contaminant levels are notable events, and therefore, will be discussed in the quarterly summaries. This discussion will include any actions necessary to mitigate the situation. However, there are many instances where FRL/action level exceedances are expected (e.g., groundwater total uranium concentrations in the South Plume), and therefore, do not warrant special mention.  
 Action: In the quarterly summaries, DOE will include a discussion of action level exceedances and upward trending results comparable to what has been provided in the previous quarterly status reports. Section 8.3.3 of the IEMP will be updated to reflect this.
6. Commenting Organization: USEPA Commentor: Saric  
 Section #: 8.3.3 Pg.#: 8-7 Line #: NA Code: C  
 Original Specific Comment #: 6  
 Comment: The text states that the new quarterly summaries will be submitted to the regulatory agencies for informational purposes and will not be subject to regulatory review and comment. The text should be revised to state that the regulatory agencies will review and comment on the quarterly summaries.  
 Response: DOE agrees that the quarterly summaries will be submitted for review and comment. However, it is DOE's hope that a majority of the issues will be resolved proactively through improved communications with the agencies, rather than through the comment-response cycle.  
 Action: DOE will revise Section 8.3.3 to state that the quarterly summaries will be submitted for agency review.
7. Commenting Organization: USEPA Commentor: Saric  
 Appendix #: A Pg.#: A-13 Line #: NA Code: C  
 Original Specific Comment #: 7  
 Comment: Section A.5.2 proposes that hexavalent chromium be removed from the IEMP groundwater monitoring program, but there is no other mention of this hazardous constituent in the appendix. Unless hexavalent chromium and its FRL are removed from the ROD, this constituent should be included in the appendix. However, it is reasonable to consider hexavalent chromium a "<N" constituent for which groundwater samples should be analyzed only every 5 years.  
 Response: This comment is similar to Comment #50. Please refer to Comment Response #50.  
 Action: Refer to Action #50.
8. Commenting Organization: USEPA Commentor: Saric  
 Appendix #: C Pg.#: C-6 Line #: NA Code: C  
 Original Specific Comment #: 8  
 Comment: The text should be revised to refer to Section C.3.1.2 rather than Section C.2.1.2.  
 Response: DOE agrees with the comment.  
 Action: DOE will revise the text to refer to Section C.3.1.2 rather than Section C.2.1.2.







17. Commenting Organization: OEPA  
Section #: 3 Pg.#: 3-33  
Original Specific Comment #: 9

Commentor: HSI GeoTrans, Inc.  
Line #: 1 Code: C

Comment: It is indicated that weekly monitoring in selected Paddys Run Road Site wells will be conducted to assess whether potential increases in South Plume Module pumping rates will adversely affect arsenic concentrations in the plume. Samples will be collected weekly for a minimum of three weeks after the increase. The data will be used to evaluate the presence of an increasing trend. The increased frequency of sampling will be discontinued if no increasing trend is observed. Will three additional samples be adequate to distinguish an increasing trend from random noise in the data? Will the arsenic data collected before the pump age rate increase be sufficient to establish any pre-existing trends that could potentially mask the trend caused by the pump age rate change?

Response: The subject-monitoring requirement was established to look for immediate arsenic concentration changes resulting from "shocks" to the aquifer caused by over-pumping, not subtle statistical changes. For the reasons presented below, it is felt that this approach is adequate.

Pumping rates for the South Plume Module, and the effects that these rates have on the Paddys Run Road Site plume, have been established through seven years of operation. These rates are defined in Table 5-1 of the Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Project (OMMP). It is very doubtful that these prescribed rates for the four leading edge wells would ever be exceeded because operational experience has shown that doing so would compromise the objectives of maintaining capture of the 20 micrograms per liter (µg/L) total uranium plume and minimizing impact to the Paddys Run Road Site plume.

If the rates prescribed in the OMMP are ever exceeded, it is anticipated that it would only be a short-term change. The concern then is that over-pumping for a short time could cause Paddys Run Road Site contaminants to be pulled to the South Plume pumping wells before ever being detected. The minimum three-week look is designed to prevent that from happening. Keep in mind that it is very doubtful that any pumping increases above OMMP requirements for the four leading edge wells would ever be made, let alone last for more than three weeks.

Action: No revision to the IEMP is required.

18. Commenting Organization: OEPA  
Section #: 3 Pg.#: 3-51  
Original Specific Comment #: 10

Commentor: HSI GeoTrans, Inc.  
Line #: 17 Code: C

Comment: An analysis of water level data from well clusters installed in the former production area indicates that slight downward gradients exist in this area. Given the existence of these downward gradients and that the clay interbed separating the Type 3 and 4 monitoring horizons are discontinuous at some locations in the former production area, the Type 4 Property Boundary Program monitoring wells should be retained for monitoring as a necessary precaution in the proposed plan. These wells include the following: 4424, 41217, 4426, 4067, and 4432. An additional consideration for continued monitoring of these wells is that they will provide the ability to verify that no impacts to offsite groundwater quality in the Type 4 zone occur as the result of startup of new groundwater restoration modules in the South Field, Pilot Plant Drainage Ditch, and Waste Pit areas. It should be noted that in the 1997-98 IEMP, DOE included these five wells in the Property Boundary Monitoring Program to monitor aquifer conditions through startup of the South Field and Injection Demonstration modules. Likewise, monitoring the property boundary





24. Commenting Organization: Ohio EPA                      Commentor: DSW  
 Section #: 4.2.2                      Pg. #: 4-3                      Line #: Bullet #2                      Code: C  
 Original Specific Comment #: 16  
 Comment: This references the surface water BTVs protective of ecological receptors from the OUS FS. The BTV used for uranium concentrations in surface water was 890 µg/L (taken from Parkhurst et al 1984). Please note that DOE is currently using 150 µg/L (eg. Depleted UF6 PEIS, Section D.2.6) which is taken from Hyne et al (1992). It does not appear as though this will change the current sampling prescribed by the IEMP, however it will be important to demonstrate concentrations below this value at the close of remediation activities.  
 Response: The total uranium surface water benchmark toxicity value (BTV) was established in the Remedial Investigation Report for Operable Unit 5 and subsequently reported in the Feasibility Study Report for Operable Unit 5 and the Sitewide Excavation Plan. Any revision of the surface water BTV for total uranium should be conducted as part of the 2001 Comprehensive Environmental Response, Compensation, and Liability Act five-year review process. At that time, updated information, such as the Depleted UF6 PEIS, will be evaluated to determine if the total uranium surface water BTV should be changed. Until then, the IEMP will compare data against the approved BTV set forth in the Operable Unit 5 remedial investigation/feasibility study process.  
 Action: No revision to the IEMP is required.
25. Commenting Organization: Ohio EPA                      Commentor: DSW  
 Section #: 4.2.2                      Pg. #: 4-4                      Line #: NA                      Code: C  
 Original Specific Comment #: 17  
 Comment: The statement is made that "The single project-specific surface water monitoring driver is the Storm Water Pollution Prevention Plan..." There are other drivers for project-specific surface water monitoring (e.g. OAC 3745-01-04) and the word "single" is inappropriate. Addressing the regulatory drivers for project-specific monitoring is not appropriate for this document (see comment: Table 4-1).  
 Response: DOE agrees with the comment. The first three sentences of the paragraph cited will be deleted. The fourth sentence will be added after the first sentence of the following paragraph.  
 Action: As noted in the response.
26. Commenting Organization: Ohio EPA                      Commentor: DSW  
 Section #: 4                      Pg. #: 4-5                      Line #: Table 4-1                      Code: C  
 Original Specific Comment #: 18  
 Comment: It is inappropriate to address/limit/describe project-specific drivers or monitoring in this document. Project-specific monitoring is the responsibility of the individual project. It is the responsibility of the IEMP to report the results of the project-specific monitoring and to monitor the collective impact of remediation projects on a particular medium. Each project must conduct its own ARAR and TBC analysis, including any specific concerns to that individual project. This is beyond the programmatic scope of the IEMP. It would be prudent for the IEMP monitoring group to work with the individual projects to develop the most efficient monitoring plan for the individual projects. However, it is beyond the scope of the IEMP to direct these sampling efforts. As indicated in section 4.3, the IEMP will provide surveillance monitoring downstream from the project specific controls. This essentially defines the programmatic boundary for surface water as the geographic boundary of the specific project. Beyond that (geographic-programmatic) boundary is the responsibility of the specific project and should be addressed on a project by project basis.











Response: The referenced section properly identifies DOE Order 5400.1 as a driver of the IEMP reporting strategy. Specifically, Appendix C of the IEMP contains and delineates the dose assessment reporting requirements and methodology satisfying DOE Order 5400.1, Section II, 8, c.  
Action: No revision to the IEMP is required.

45. Commenting Organization: Ohio EPA Commentor: DSW  
Section #: 8.3.1 Pg #: 8.5 Line #: NA Code: C  
Original Specific Comment #: 37

Comment: Not listed under the drivers is DOE/EH-0713T (Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance) (this is noted for being listed in the references), 10 CFR 834 (Radiation Protection of the Public and the Environment; Proposed Rule), or the new: DOE Standard, A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota (Available for interim DOE use, DOE-STD-XXXX-00, Proposed). Please explain why they are not in the driver's list, or the references.

Response: The referenced documents and proposed rule are either guidance documents or draft documents and do not in and of themselves direct specific IEMP activities and are therefore not considered drivers. Guidance documents may be considered in developing IEMP monitoring programs. Promulgated final regulations will be reviewed to determine if any changes to the IEMP are warranted.

Action: No revision to the IEMP is required.

46. Commenting Organization: Ohio EPA Commentor: DSW  
Section #: 8.3.3 Pg #: 8-7 Line #: NA Code: C  
Original Specific Comment #: 38

Comment: The statement is made that the summaries "...will be submitted to the regulatory agencies for informational purposes, and will not be subject to regulatory review and comment." Please be aware that, after reviewing the summaries, we may be offering suggestions on content/format. Although not part of a regulatory review, we should not eliminate the positive exchange of ideas for improvement.

Response: DOE agrees, and will continue to work cooperatively with EPA and OEPA through several iterations of the new quarterly summaries to achieve a product that satisfies the needs of all parties. Note that per the response to Comment #6, DOE has agreed to submit the quarterly summaries for agency review. However, DOE anticipates that efforts to improve communications with the agencies will allow the majority of issues to be resolved proactively during the quarter, instead of through a comment-response cycle.

Action: As noted in the response.

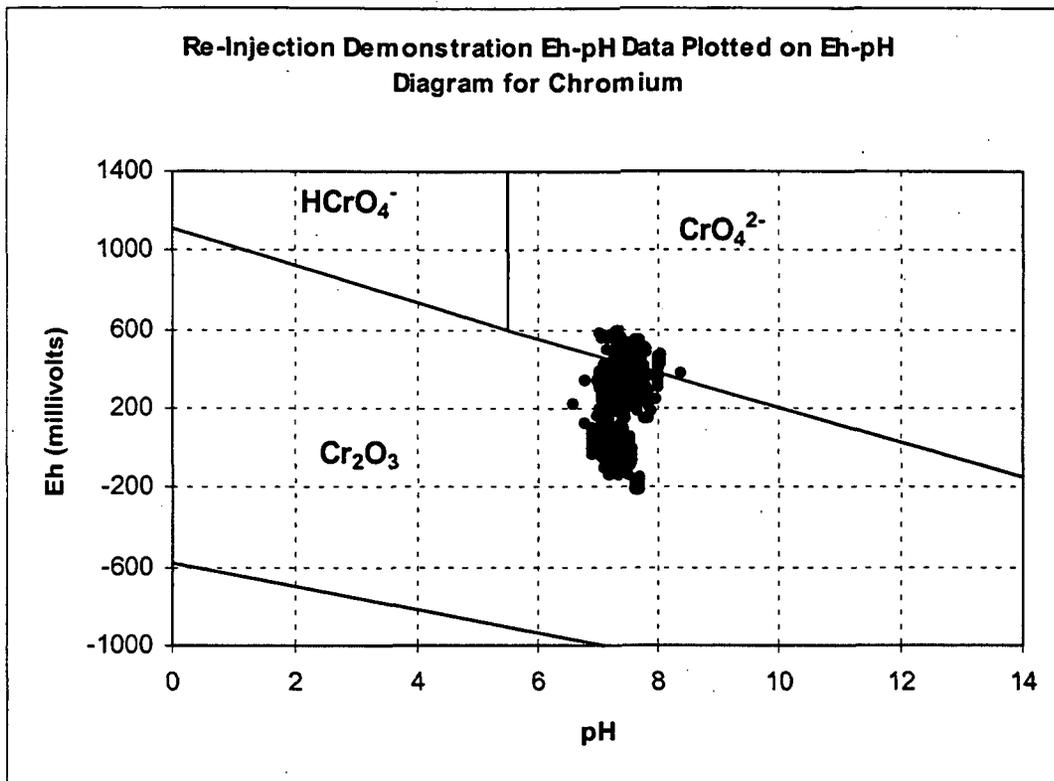
47. Commenting Organization: OEPA Commentor: OFFO  
Section #: 8.3.3 Pg #: 8-7 Line #: NA Code: C  
Original Specific Comment #: 39

Comment: It is understandable that the quarterly summaries serve as documentation and the Extranet Site provides the Agencies the data for "regulatory review." However if there is a discrepancy in the data, by what mechanism, other than the weekly conference calls, will DOE use to resolve the issue? Ohio EPA's concern is that in the likelihood of a "notable event," we wont be notified until after the fact.

Response: Under the new reporting structure, DOE is committed to improving communications with the agencies regarding IEMP-related issues, including data discrepancies and notable events, both through the weekly conference calls and otherwise. In addition, IEMP data will be made available to the agencies via the IEMP Extranet Site up to a month before submittal of the quarterly summaries, and the agencies can e-mail comments/questions directly through the IEMP Extranet Site.

Action: As noted in the response.

48. Commenting Organization: OEPA Commentor: OFFO  
 Section #: 8.3.3, Figure 8-1 Pg.#: 8-9 Line #: NA Code: C  
 Original Specific Comment #: 40  
 Comment: A) The text below Figure 8-1 states that the sediment data will be "added to the Extranet Site as it becomes available." If sediment is collected in June, wouldn't data be available by August? Figure 8-1 shows that the data would be reported in November on the Extranet Site. Please clarify.  
 B) In section 7.6.2, page 7-13 the text states that biota data will be available on the Extranet Site. However Figure 8-1, in section 8.3.3, does not show the month when the data will be reported on the Extranet Site. Please clarify.  
 Response: The availability of sediment data will vary somewhat from year to year for reasons discussed in Comment Response #34. These data will start being added to the IEMP Extranet Site approximately three to four months after collection. Biota data will be provided on the IEMP Extranet Site approximately four months after collection. Figure 8-1 does not identify a month when biota data will be added to the Extranet Site because this figure only covers the 2001-02 timeframe, and no biota data will be collected or come available during this timeframe. Biota samples are collected only once every three years, and the next sampling event will be in 2003.  
 Action: No revision to the IEMP is required.
49. Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.  
 Section #: Append. A Pg.#: Figure A-1 Line #: NA Code: C  
 Original Specific Comment #: 41  
 Comment: The first occurrence of "<N" below the second text box should be changed to ">N" to indicate constituents that are not mobile and persistent but have been detected in the GMA.  
 Response: DOE agrees with the comment.  
 Action: The subject text in the IEMP will be revised to read ">N", instead of <N".
50. Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.  
 Section #: Append. A Pg.#: A-13 Line #: 13 Code: C  
 Original Specific Comment #: 42  
 Comment: The chromium investigation discussed in the 1998 Integrated Environmental Report considered Eh-pH conditions in the GMA prior to the initiation of re-injection. Under those conditions, it is agreed that hexavalent chromium species are not formed. The water used for re-injection, however, is enriched in oxygen. Re-injection of this water, therefore, has resulted in the establishment of conditions that locally are, at least on a transient basis, favorable for hexavalent chromium species. The plot below compares the Re-injection Demonstration Project Eh-pH data from the nine monitoring wells where in-situ water quality data was collected with the chromium Eh-pH diagram. The data were collected over monthly 24 hour periods in the year long data collection period for the demonstration project. Approximately 20 percent of the measurements fall within the region of the diagram where the hexavalent species chromate ( $\text{CrO}_4^{2-}$ ) is stable. Accordingly, DOE should continue to analyze groundwater samples for hexavalent chromium collected in the vicinity of injection wells located in areas where trivalent chromium has been observed or could exist because of previous site activities.



**Response:** Comments #1, #7, and #50 all pertain to monitoring for hexavalent chromium in the aquifer. This issue was also discussed at a meeting held on November 14, 2000 at the Fernald site. Based on the results of an investigation into the presence of hexavalent chromium in the aquifer, completed in the spring of 1999, DOE has proposed to drop the analysis of hexavalent chromium in the aquifer from the latest revision of the IEMP. This proposal to discontinue monitoring for hexavalent chromium is based on the conclusion reached from the study that hexavalent chromium was not present in any of the samples collected and the Eh-pH conditions measured in the aquifer would not support hexavalent chromium.

DOE agrees that some of the measurements fall slightly within the  $\text{CrO}_4^{2-}$  stability field, as calculated for the maximum observed chromium concentration. However, it is noted that the samples in the  $\text{CrO}_4^{2-}$  field are predicted to be stable with respect to chromium VI from a thermodynamic perspective. In reality, the kinetics of oxidation are likely to require much higher oxygen levels and/or a catalyst to initiate the oxidation of chromium III or IV to chromium VI. If the assumption is made that the oxidation kinetics are instantaneous (a poor assumption), then the same assumption should be made for the reduction kinetics. That is, as soon as the chromium VI migrates outside the slightly elevated oxygen zone it will be reduced to chromium IV or III.

Although DOE believes that monitoring for chromium VI is not needed, the chromium VI monitoring will be conducted every five years in areas near re-injection, as suggested by the EPAs.

**Action:** DOE will modify the IEMP by revising the chromium VI monitoring requirements as noted in the response.





