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**TRANSMITTAL OF RESPONSES TO THE U.S. ENVIRONMENTAL  
PROTECTION AGENCY AND OHIO ENVIRONMENTAL PROTECTION AGENCY  
COMMENTS ON THE RESTORATION AREA VERIFICATION SAMPLING  
PROGRAM PROJECT SPECIFIC PLAN AND THE REVISED PROJECT  
SPECIFIC PLAN**

**01/14/97**

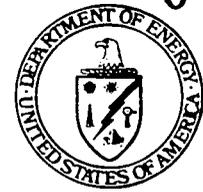
**DOE-0425-97  
DOE-FEMP      EPAS  
~~16~~ 17  
RESPONSES**



**Department of Energy**

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**JAN 14 1997**

**DOE-0425-97**

**Mr. James A. Saric, Remedial Project Director  
U.S. Environmental Protection Agency  
Region V - 5HSF-5J  
77 W. Jackson Boulevard  
Chicago, Illinois 60604-3590**

**Mr. Tom Schneider, Project Manager  
Ohio Environmental Protection Agency  
401 East 5th Street  
Dayton, Ohio 45402-2911**

**Dear Mr. Saric and Mr. Schneider:**

**TRANSMITTAL OF RESPONSES TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY  
AND OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE RESTORATION  
AREA VERIFICATION SAMPLING PROGRAM PROJECT SPECIFIC PLAN AND THE REVISED  
PROJECT SPECIFIC PLAN**

- References:**
- 1) Letter from James A. Saric, U.S. EPA, to Johnny W. Reising, U.S. DOE-FEMP, "Restoration Area Verification Sampling PSP," dated November 22, 1996.**
  - 2) Letter from Thomas A. Schneider, OEPA, to Johnny W. Reising, U.S. DOE-FEMP, "DOE-FEMP MSL 531-0297 Hamilton County, Comments: Aquifer Restoration Project Deliverables," dated December 06, 1996.**

**Enclosed for your review are the subject responses and the revised Project Specific Plan (PSP). The comments addressed in this transmittal are those received via References 1 and 2. The comment response document and the revised PSP incorporate discussions of the comments which took place at the December 19, 1996, meeting.**

If you have any questions, please contact Robert Janke at (513) 648-3124, or Kathi Nickel at (513) 648-3166.

Sincerely



Johnny W. Reising  
Fernald Remedial Action  
Project Manager

FEMP:R.J. Janke

Enclosures: As stated

cc w/encs:

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**U.S. EPA TECHNICAL REVIEW COMMENTS  
ON THE RESTORATION AREA VERIFICATION  
SAMPLING PROGRAM PROJECT SPECIFIC PLAN**

**GENERAL COMMENTS**

1) Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: Not applicable (NA)                              Page #: NA    Line #: NA  
Original General Comment #:1

Comment: The project specific plan (PSP) presents the concept that some non-uranium contaminants (lead and fluoride) can be dismissed from further monitoring outside the restoration footprint because exceedances were identified on the basis of a final remediation level (FRL) based on background values instead of the Safe Drinking Water Act (SDWA) maximum contaminant level (MCL). The PSP states that MCLs, rather than FRL, should be used to guide restoration.

We disagree with the U.S. Department of Energy's (DOE) position on this issue. The final record of decision (ROD) for Operable Unit (OU) 5 clearly states that FRLs are the level of attainment for aquifer restoration in the Great Miami Aquifer. The use of MCLs instead of an established FRL as the guide to restoration of the aquifer does not fulfill the intention of the ROD.

Further, it is inappropriate that DOE dismiss monitoring of certain non-uranium contaminants outside of the restoration footprint because the exceedances were identified on the basis of an FRL based on a background value that is lower than the MCL. The FRL set forth in the ROD were identified by DOE on the basis of background levels and risk-based calculations. The FRLs were agreed upon by DOE and site stakeholders. A change of the remedial levels for aquifer restoration represents a change to the selected remedial strategy and may alter the scope of the remedy. This issue warrants further discussion.

Response: Agree that this issue warrants further discussion and that discussion took place at a meeting on December 19, 1996 with U.S. EPA, OEPA, DOE and FDF participating. In that meeting the development process for groundwater FRLs was revisited and discussed. This process is detailed in the Operable Unit 5 Feasibility Study. As discussed in the December 19 meeting the Operable Unit 5 Feasibility Study (Section 2, page 2-54) outlined two Cases for potential groundwater FRLs. These two Cases are: Case 1 which "considered a target risk level of  $10^{-6}$  ILCR and an HI of 0.2 to a resident farmer," and Case 2 which "employed the MCLs, proposed MCLs and nonzero MCLGs as target cleanup values. For those COCs with no MCLs, proposed MCLs, or nonzero MCLGs, Case 2 considered a target risk level of  $10^{-5}$  and an HI of 0.2 to a resident farmer."

As discussed at the December 19 meeting, Case 2 was ultimately selected as part of the preferred alternative in the approved Operable Unit 5 Proposed Plan and was subsequently utilized to establish the groundwater FRLs found in the final Operable Unit 5 ROD. The attached figure (Process For Development of Groundwater FRLs) was used in the 12-19 meeting to illustrate the Case 2 FRL development process. In the discussion of this process for the development of the fluoride FRL it was acknowledged that the MCL for fluoride (4 mg/L) was inadvertently overlooked, and according to the approved Case 2 development process the MCL should have been

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selected as the FRL (the current FRL was inadvertently established based on the 95th percentile background concentration of fluoride, which is 0.89 mg/L).

The FRL for lead was also discussed in the December 19 meeting. In light of the Case 2 FRL development process it was agreed that the current background based lead FRL 0.002 mg/L is not appropriate. As discussed in the meeting, lead contamination in public drinking water supplies is primarily due to corrosion occurring within the water system distribution pipes, rather than in the source water for the system. The point of compliance for an MCL is prior to entry into a distribution system, therefore, promulgation of an MCL would not have minimized lead contamination in public water supplies. To provide protectiveness to public water supplies, an action level for lead, which is applied to water in distribution systems, was promulgated. This action level of 0.015 mg/L is considered protective for public water distribution systems nationwide.

As requested during the meeting DOE has looked in to the reasons for the absence of lead toxicity information in the Operable Unit 5 FS. The results of this review indicate there are currently no toxicity data from which to derive specific health-based cleanup levels for lead. The apparent reason for this lack of toxicity information is that the appropriate reference dose for lead is widely disputed among toxicologists. However, the 0.015 mg/L action level for lead was promulgated as a protective standard for all drinking water supplies nationwide. In the absence of additional toxicological data, it is reasonable to apply this standard as an appropriate lead cleanup level for the FEMP. DOE understands that U.S. EPA has adopted this approach for lead at a number of Superfund sites nationwide.

The SDWA action level for lead was documented in the Operable Unit 5 Feasibility Study and ROD ARAR tables, however, since it was not a true MCL it was overlooked in the development of the lead FRL for groundwater. In the absence of an MCL for lead DOE believes that the SDWA health based action level is an appropriate substitute for the MCL and should therefore be adopted as the groundwater FRL for lead.

Action: Revise the PSP to provide a more detailed explanation of why the current FRLs for fluoride and lead are inappropriate and provide additional justification (as outlined in the response to this comment) for the selection of new FRL values for these 2 parameters. The text in the PSP, Appendix A, page A-1 will be revised by incorporating the following text:

"During the preparation of this PSP it was discovered that FRLs for two constituents (fluoride and lead) were not selected in accordance with the approved FRL development protocol found in the Operable Unit 5 Feasibility Study. The Operable Unit 5 Feasibility Study (Section 2, page 2-54) outlined two Cases for potential groundwater FRLs. These two Cases are: Case 1 which "considered a target risk level of  $10^{-6}$  ILCR and an HI of 0.2 to a resident farmer," and Case 2 which "employed the MCLs, proposed MCLs and nonzero MCLGs as target cleanup values. For those COCs with no MCLs, proposed MCLs, or nonzero MCLGs, Case 2 considered a target risk level of  $10^{-5}$  and an HI of 0.2 to a resident farmer."

Case 2 was ultimately selected as part of the preferred alternative in the approved Operable Unit 5 Proposed Plan and was subsequently utilized to establish the groundwater FRLs found in the final Operable Unit 5 ROD. Figure A.1-2 (Process For Development of Groundwater FRLs) illustrates the Case 2 FRL development process. In the OU5 FS process for the development of the fluoride FRL, the MCL for fluoride (4 mg/L) was inadvertently overlooked, and according to the approved Case 2

development process the MCL should have been selected as the FRL; (the current FRL was inadvertently established based on the 95th percentile background concentration of fluoride, which is 0.89 mg/L) therefore DOE recommends the MCL for fluoride be adopted as the FRL.

In light of the approved Case 2 FRL development process, the current background based FRL for lead (0.002 mg/L) is also not appropriate. There is no MCL for lead and currently there are no toxicity data from which to derive specific health-based cleanup levels for lead. The apparent reason for this lack of toxicity information is that the appropriate reference dose for lead is widely disputed among toxicologists. However, the 0.015 mg/L action level for lead was promulgated as a protective standard for all drinking water supplies nationwide. In the absence of additional toxicological data, it is reasonable to apply this standard as an appropriate lead cleanup level for the FEMP. DOE understands that U.S. EPA has adopted this approach for lead at a number of Superfund sites nationwide.

The SDWA action level for lead was documented in the Operable Unit 5 Feasibility Study and ROD ARAR tables, however, since it was not a true MCL it was overlooked in the development of the lead FRL for groundwater. In the absence of an MCL for lead DOE believes that the SDWA health based action level of 0.015 mg/L is an appropriate substitute for the MCL and therefore recommends that it be adopted as the groundwater FRL for lead.

Based on the above information the evaluation lead and fluoride contained in this appendix (and summarized in Section 1.0) was completed utilizing the MCL for fluoride (4 mg/L) and the SDWA action level for lead (0.015 mg/L) rather than the using the inappropriate background-based FRLs."

In addition to the above text revisions to the PSP, DOE will also continue to work with EPA and OEPA to determine the most appropriate vehicle to establish these new groundwater FRLs for lead and fluoride. As discussed at the December 19 meeting, DOE believes the revision can be accommodated as a "non-significant change" to be recorded in the post-decision document file, along with the issuance of an optional Remedial Design Fact Sheet, as discussed in EPA's Guide to Addressing Pre-ROD and Post-ROD Changes, 93553-02FS-4.

- 2) **Commenting Organization:** U.S. EPA      **Commentor:** Saric  
**Section #:** NA      **Page #:** NA      **Line #:** NA  
**Original General Comment #:** 2  
**Comment:** The intent of this PSP is not clear. The feasibility report for OU5 stated that the proposed remedial action footprint for the Great Miami Aquifer (GMA) was based on the total uranium contour of 20 parts per billion (ppb) and that several non-uranium constituents are detected sporadically outside the proposed footprint at levels that exceed the FRL. The same issue also was acknowledged in the 1995 Resource Conservation and Recovery Act (RCRA) annual report for groundwater, along with a recommendation for a focused sampling campaign to address geographic outliers and uncertainties in background concentration levels for several non-uranium constituents. It was understood that another purpose of that evaluation was to determine whether modification of the aquifer restoration footprint for the aquifer was necessary because of exceedances of the FRL for non-uranium contaminants, or whether additional monitoring would be required to determine what actions, if any, should be taken.

This PSP reports the results of the evaluation of exceedances of non-uranium contaminants detected outside the remedial action footprint. However, the PSP does not discuss sufficiently the proposed follow-up monitoring program for the constituents that require further characterization. The PSP defers any further monitoring to the Integrated Environmental Monitoring Program (IEMP). Characterization of the restoration footprint for the aquifer appears to be beyond the scope of the IEMP; therefore, such deferral makes the purpose of this PSP unclear. In addition, the PSP does not discuss adequately the follow-up monitoring schedule and the end use of the monitoring data to be obtained. Further, the deferral of monitoring to the IEMP makes it unclear how decisions related to restoration of the aquifer should be made if monitoring data should indicate that the restoration footprint requires modification. The PSP should be revised to address these issues.

**Response:** This comment raises the need to clarify 1) the relationship between the IEMP and the Restoration Area Verification Sampling PSP, and 2) the manner in which both documents will factor into the overall decision-making process for determining the final configuration of the groundwater restoration footprint. Because both documents will provide information for making the final determination, DOE agrees with the commentor that additional elaboration concerning the relationships between the documents and the overall decision-making process would be helpful. This topic was also discussed at the December 19th meeting.

The intent of the Restoration Area Verification Sampling PSP and its role in the decision-making process can be summarized as follows:

- To evaluate all existing non-uranium groundwater data gathered outside of the uranium-based restoration footprint, and determine which sporadic FRL exceedances can be dismissed now, as non-FEMP related and/or not of concern. (Note that this analysis was accomplished as part of the development of the PSP, and is furnished in the PSP as Appendix A.) The intent of this evaluation was to satisfy a key data limitation noted in the Operable Unit 5 RI/FS regarding the sporadic and isolated detections of non-uranium constituents above background. These isolated detections were not formally dismissed during the RI/FS process. Now that final FRLs are available with the issuance of the OUS ROD, it is an appropriate and necessary step of the design process to assess these occurrences with respect to the FRLs.
- From the above evaluation, to determine which of the sporadic FRL exceedances require additional sampling before a final decision can be made regarding whether the exceedances drive a need to expand the restoration footprint beyond that based on uranium. (This determination was also conducted during the development of the PSP.) The results indicated that five constituents (antimony, manganese, cadmium, zinc, and lead) would require follow-up sampling before a final restoration footprint determination can be made.
- In parallel with the evaluation for the non-uranium constituents, to further define the vertical and lateral extent of uranium contamination above the FRL in the vicinity of Monitoring Well 3069, which was identified as a necessary follow-up activity through the FEMP's DMEPP sampling program.

The existing data analysis conducted during the development of the PSP indicated that follow-up sampling focused on the above mentioned parameters would be necessary at eight existing wells outside the uranium-based footprint, and that further definition of

the uranium plume itself in the vicinity of Well 3069 should be conducted using geoprobe technology.

The intent was to complete the follow-up non-uranium sampling activities over the course of a one year period, and report the results in a summary report ("Summary Report: Restoration Area Verification Sampling") as outlined in the final Operable Unit 5 Remedial Design (RD) Work Plan (see Table 3-1 of the RD Work Plan). Because similar sampling activities were already underway at several of the wells of interest as part of the RCRA facility boundary quarterly monitoring program (a program which is destined to be incorporated into the upcoming IEMP), it was decided to fill the remaining data needs for these parameters utilizing the IEMP as the data collection vehicle. Following collection through this existing mechanism, the data acquired would be evaluated and reported in the summary report. Any recommendations to revise the configuration of the restoration footprint to address non-uranium constituents, if found to be necessary, would be provided in the report. This report and the supporting data would be provided to EPA and OEPA so that a collective decision concerning the configuration of the restoration footprint (or any other follow-up actions deemed appropriate to address non-uranium constituents) could be made. The geoprobe data for uranium in the vicinity of Well 3069 would be evaluated as soon as it is generated, and factored into the design process for the South Plume Optimization and Injection Demonstration Modules currently underway.

DOE is aware that the recommendations contained in the summary report could potentially precipitate a change in the currently-defined scope of the IEMP groundwater sampling program, and such a change would be readily adopted via the IEMP's annual scope review and update process.

As alluded to above, the role of the IEMP in the restoration footprint verification process is as follows:

- To provide data via the existing RCRA property boundary sampling program as a means to satisfy the one year sampling specified by the PSP. Five of the eight wells requiring follow-up sampling are RCRA property boundary wells, and the sampling for the remaining three wells will be conducted concurrently with the quarterly RCRA sampling activity for the one year interval.
- To serve as the long-term vehicle to implement any routine follow-up sampling deemed to be necessary following approval of the summary report. --

While it may have appeared confusing to be utilizing the IEMP to procure the Restoration Area Verification PSP's data (as noted by the commentor), the intent was to simply coordinate this follow-up sampling need with that already underway through the RCRA property boundary program, and it would have been duplicative to do otherwise.

Thus both the PSP and the IEMP will have a role in the ultimate determination of the restoration area footprint. The decision process for determining the final restoration footprint (and necessary follow-up actions, as appropriate) will follow these steps:

- Collect four quarter's worth of focused data for the parameters with FRL exceedances at the eight specified locations

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- Complete geoprobe activity to refine the depth and lateral extent of uranium contamination triggered by findings in the vicinity of Well 3069
- Prepare a summary report including recommendations regarding the need for modification of the footprint beyond that dictated by uranium. The report will be submitted 90 days following compilation of the fourth quarter's data, in accordance with the final RD Work Plan.
- Finalize report following input from EPA and OEPA
- Proceed with any design modifications/additions to affected restoration modules, if necessary
- Incorporate any monitoring based actions arising from this process into the IEMP scope.

As a final note, it needs to be emphasized that the sampling discussed above to support the Restoration Area Verification Sampling PSP is a focused effort targeted solely at confirming/refining the restoration area footprint for design purposes. Outside of this effort, the ongoing routine sampling that will be conducted through the IEMP will be utilized for the following broader purposes: to track remedy performance; confirm the success of hydraulic containment; and to continue to fulfill regulatory-driven groundwater monitoring obligations at the property boundary.

Action: Add the following to the PSP, Section 1.0, Introduction: "The intent of the Restoration Area Verification Sampling PSP can be summarized as follows:

- To evaluate all existing non-uranium groundwater data gathered outside of the uranium-based restoration footprint, and determine which sporadic FRL exceedances can be dismissed now, as non-FEMP related and/or not of concern. (Note that this analysis was accomplished as part of the development of the PSP, and is furnished in the PSP as Appendix A.) The intent of this evaluation was to satisfy a key data limitation noted in the Operable Unit 5 RI/FS regarding the sporadic and isolated detections above background. These isolated detections were not formally dismissed during the RI/FS process. Now that final FRLs are available with the issuance of the OU5 ROD, it is an appropriate and necessary step of the design process to assess these occurrences with respect to the FRLs.
- From the above evaluation, to determine which of the sporadic FRL exceedances require additional sampling before a final decision can be made regarding whether the exceedances drive a need to expand the restoration footprint beyond that based on uranium. (This determination was also conducted during the development of the PSP.) The results indicated that five constituents (antimony, manganese, cadmium, zinc, and lead) would require follow-up sampling before a final restoration footprint determination can be made.
- In parallel with the evaluation for the non-uranium constituents, to further define the vertical and lateral extent of uranium contamination above the FRL in the vicinity of Monitoring Well 3069, which was identified as a necessary follow-up activity through the FEMP's DMEPP sampling program."

Add the following to the PSP at the end of Section 1.1: "The decision process for determining the final restoration footprint (and necessary follow-up actions, as appropriate) will follow these steps:

- Collect four quarter's worth of focused data for the parameters with FRL exceedances at the eight specified locations
- Complete geoprobe activity to refine the depth and lateral extent of uranium contamination triggered by findings in the vicinity of Well 3069
- Prepare a summary report including recommendations regarding the need for modification of the footprint beyond that dictated by uranium. The report will be submitted 90 days following compilation of the fourth quarter's data, in accordance with the final RD Work Plan.
- Finalize report following input from EPA and OEPA
- Proceed with any design modifications/additions to affected restoration modules, if necessary
- Incorporate any monitoring based actions arising from this process into the IEMP scope.

The sampling discussed above, to support the Restoration Area Verification Sampling PSP, is a focused effort targeted solely at confirming/refining the restoration area footprint for design purposes. Outside of this effort, the ongoing routine sampling that will be conducted through the IEMP will be utilized for the following broader purposes: to track remedy performance; confirm the success of hydraulic containment; and to continue to fulfill regulatory-driven groundwater monitoring obligations at the property boundary."

### SPECIFIC COMMENTS

3) Commenting Organization: U.S. EPA                      Commentor: Saric  
 Section #:1.1    Page #: 3    Line #: 30 TO 34  
 Original Specific Comment #: 1

Comment: The text states that fluoride can be dismissed from further monitoring outside the restoration footprint because the exceedances were identified using an FRL based on a background value of 0.89 milligrams per liter (mg/L), while the MCL for fluoride is 4 mg/L. The text further states that "the MCL should be used to guide the restoration." The text states that, when fluoride levels detected are compared with the MCL action levels, no exceedances of the FRL result.

The final ROD for OU5 clearly states that the FRL for fluoride is 0.89 mg/L. The ROD also states that "extraction of contaminated groundwater until such time as final remediation levels are attained at all points in the impacted areas of the Great Miami Aquifer" is a key component of the selected remedy for groundwater. The use of FRLs to determine remediation levels for the aquifer is consistent with the ROD for OU5. Any modification of remediation levels would be considered a change in the scope of the remedy. This issue warrants further discussions.

Response: See response to U.S. EPA General Comment #1.

Action: See action for U.S. EPA General Comment #1.

- 4) Commenting Organization: U.S. EPA                      Commentor: Saric  
 Section #:1.1    Page #: 4    Lines #: 7 TO 13  
 Original Specific Comment #: 2  
 Comment: The text states that lead can be excluded from further monitoring outside the restoration footprint because the exceedances were "identified using an FRL based background value of 0.002 mg/L and the SWDA action level for lead is 0.015 mg/L." The text proposes that the decision to monitor for lead outside the restoration footprint be based on the SDWA action level. If that level were applied, the majority of lead exceedances would be eliminated.
- The basis of DOE's position regarding the insignificance of exceedances of the FRL is unclear. The final ROD for OU5 clearly states that the FRL for lead is 0.002 mg/L. The ROD also states that "extraction of contaminated groundwater until such time as final remediation levels are attained at all points in the impacted areas of the Great Miami Aquifer" is a key component of the selected remedy for groundwater. The use of FRLs to determine remediation levels for the aquifer is consistent with the ROD for OU5. Any modification of remediation levels would be considered a change in the scope of the remedy.
- Response: See response to U.S. EPA General Comment #1.  
 Action: See U.S. EPA General Comment #1.
- 5) Commenting Organization: U.S. EPA                      Commentor: Saric  
 Section #:1.1    Page #: 4    Lines #: 25 TO 27  
 Original Specific Comment #: 3  
 Comment: The text states that quarterly sampling for antimony (from well 3423), manganese (from well 2436), and zinc (from well 3091) will be added to the scope of the IEMP. These compounds were detected outside the restoration area footprint at levels above the FRL. The inclusion of monitoring in the IEMP appears to be inconsistent with the purpose of the IEMP. If exceedances of the FRL are found outside of the current restoration footprint, verification and sampling should be completed to determine whether the restoration footprint requires modification. It was U.S. EPA's understanding that it was within the scope of this PSP to outline the verification and sampling program and to show a decision tree for remediation of non-uranium contaminants.
- Response: See response to U.S. EPA General Comment 2.  
 Action: See action for U.S. EPA General Comment 2.
- 6) Commenting Organization: U.S. EPA                      Commentor: Saric  
 Section #: 1.2    Page #: 4    Lines #: 31 To-37  
 Original Specific Comment #: 4  
 Comment: The text discusses the bifurcation of the uranium plume near the water table and the occurrence of relatively high concentrations of uranium at depth. The text further sets forth the interpretation that the behavior of the plume in that area is caused by recharge from the southeast drainage ditch, which is diluting the plume near the water table and pushing higher concentrations of uranium deeper into the aquifer. Section 3 discusses the sampling program to verify that hypothesis.
- It is recommended that, in addition to the analytical work proposed, DOE consider comparing water chemistry from surface water with water chemistry in the water table and the shallow aquifer. A comparison of water chemistry may help to prove this hypothesis.
- Response: Agree, water chemistries are being evaluated as part of the Groundwater Injection Demonstration project. The water chemistry in the aquifer along Willey Road

(including the area around well 3069) has been analyzed to support the design of the Injection Demonstration System. The data does not conclusively indicate recharge but both the iron and dissolved oxygen support the recharge theory.

**Action:** The following text will be added to the first paragraph of Section 1.2: "To further substantiate the recharge theory, water chemistry of the surface water will be determined and compared with water chemistry of the aquifer as part of the Injection Demonstration Project."

- 7) **Commenting Organization:** U.S. EPA      **Commentor:** Saric  
**Section #:** 3.1      **Page #:** 11      **Lines #:** 27 TO 32  
**Original Specific Comment #:** 5  
**Comment:** The text states that quarterly sampling will be added to the IEMP. See Specific comment 3 and general comment 2 for a discussion of that issue.  
**Response:** See response to U.S. EPA General Comment #2.  
**Action:** See action for U.S. EPA General Comment #2.
- 8) **Commenting Organization:** U.S. EPA      **Commentor:** Saric  
**Section #:** 3.1      **Page #:** 11      **Line #:** 36  
**Original Specific Comment #:** 6  
**Comment:** The text states that collection of samples from locations outside of the boundary of the property will be subject to the approval of the landowner. There is no discussion in the text of sampling that will be completed if the landowner does not grant permission for testing. The text should be revised to address that issue.  
**Response:** Landowner access is not an issue at this time. The landowner has allowed access to his property and the sampling defined in the first submittal of this PSP is complete.  
**Action:** No revision to the PSP required.
- 9) **Commenting Organization:** U.S. EPA      **Commentor:** Saric  
**Section #:** 3.1      **Page #:** 13      **Line #:** 4  
**Original Specific Comment #:** 7  
**Comment:** The text states that the "bottom of the probe hole shall be 3 feet above the water table." This statement is unclear as to what is meant by the bottom of the probe hole. The text should be revised to clarify the statement.  
**Response:** The text in question refers to the plugging and abandonment of the geoprobe holes. For purposes of plugging and abandonment of the geoprobe holes the bottom of the hole is considered to be 3 feet above the water table. Previous experience at the FEMP has shown that the aquifer will readily collapse back into the hole below the water table. The addition of bentonite slurry is needed above the water table where the aquifer does not readily collapse.  
**Action:** The text in the PSP, Section 3.2 will be changed to read: "For the purpose of this PSP, the aquifer material will be allowed to collapse naturally up to the water table. Plugging of the probed hole with bentonite slurry will begin 3 feet above the water table and continue to the ground surface."
- 10) **Commenting Organization:** U.S. EPA      **Commentor:** Saric  
**Section #:** A.1      **Page #:** A-1      **Line #:** 9  
**Original Specific Comment #:** 8  
**Comment:** Figure A1-1, which is referred to in the text, is missing from the document. Figure A1-1 should be incorporated into the revised PSP.  
**Response:** Agree  
**Action:** Figure A1-1 will be included in the revised PSP.

- 11) Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: A.3    Page #: A-4    Lines #: 20 To 24  
Original Specific Comment #: 9  
Comment: This section discusses the occurrence of fluoride in the aquifer. The text recommends that an MCL level be used instead of the FRL for fluoride because the levels of fluoride outside the restoration footprint are representative of background levels and the MCL for fluoride was overlooked inadvertently during the development of the FRL process. See general comment 1 for further discussion of the issue.  
Response: See response to U.S. EPA General Comment #1.  
Action: See action for U.S. EPA General Comment #1.
- 12) Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: A.3    Page #: A-5    Lines #: 6 To 15  
Original Specific Comment #: 10  
Comment: This section discusses the occurrence of lead in the aquifer outside the restoration footprint. The text states that if SWDA action levels were to be used instead of FRL the exceedances of lead would occur in only two locations. See general comments 1 and 2 for a discussion of the issue.  
Response: The response to U.S. EPA General Comment #1 addresses this comment. See response to U.S. EPA General Comment #1.  
Action: See action for U.S. EPA General Comment #1.
- 13) Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: A.4    Page #: A-9    Lines #: 20 To 37  
Original Specific Comment #: 11  
Comment: This section presents the conclusions drawn from the evaluation of contaminants with FRL exceedances outside the restoration footprint. Once again, the text proposes the use of SDWA MCLs and action levels instead of the FRL agreed upon in the ROD for OU5, as levels to guide restoration of the aquifer. As stated in general comments 1 and 2 and in the specific comments above, this approach is inconsistent with the intentions of the ROD. This issue warrants further discussion.  
Response: The response to U.S. EPA General Comment #1 addresses this comment. See response to U.S. EPA General Comment #1.  
Action: See action for U.S. EPA General Comment #1.

**OHIO EPA TECHNICAL REVIEW COMMENTS  
ON THE RESTORATION AREA VERIFICATION  
SAMPLING PROGRAM PROJECT SPECIFIC PLAN**

- 14) Commenting Organization: OEPA                      Commentor: GeoTrans, Inc.  
Section#: 1.1                      Pg.#:                      Line#:                      Code: M  
Original Comment# 1  
Comment: One of the purposes of this document is to evaluate FRL exceedances of non-uranium constituents outside the uranium restoration footprint. This evaluation is documented in Appendix A. A concern is that the evaluation fails to include a discussion of the occurrence of these constituents inside the footprint when evaluating their occurrence up and down gradient from the footprint. This information is essential to determining if these occurrences are due to the FEMP.  
Response: The scope of this PSP was outside of the uranium based restoration footprint. The RI and FS Reports did characterize contaminant conditions in the aquifer, both up and downgradient of the FEMP, and did identify contaminant plumes. The PSP identified FRL exceedances that are not located within any RI/FS established plume boundary requiring remediation. The downgradient relationship of the exceedance to the FEMP was used as a criteria for determining whether or not an exceedance could be attributable to the FEMP regardless of whether or not it was located in an RI/FS established plume boundary. Downgradient exceedances will be carried forward as outlined in the PSP.  
Action: No revision to the PSP required.
- 15) Commenting Organization: OEPA                      Commentor: DDAGW  
Section#: 1.1                      Pg.#: 3                      Line#: 30-34                      Code:  
Original Comment# 2  
Comment: The FRL for fluoride is .89 mg/l. This is the limit agreed to by DOE, U.S. EPA, and OHIO EPA in the OU5 ROD. It is inappropriate to modify this after it went through formal public comment and after the ROD was agreed to by all parties.  
Response: See response to U.S. EPA General Comment #1.  
Action: See action for U.S. EPA General Comment #1.
- 16) Commenting Organization: OEPA                      Commentor: DDAGW  
Section#: 1.1                      Pg.#: 4                      Line#: 1-6                      Code:  
Original Comment# 3  
Comment: These bullet items warrant more discussion. Specify why these contaminants are not attributable to the FEMP and reference the detailed discussion in Appendix A.  
Response: Agree. The bullets in question refer to nitrate and arsenic. FRL exceedances for nitrate have been recorded at six location outside of the restoration footprint. Five of the locations are upgradient of the FEMP. The sixth location is an agricultural area downgradient of the FEMP. It is believed that this exceedance is due to fertilizer or some other agricultural activity and is not FEMP related.  
  
FRL exceedances for arsenic have been recorded at 10 locations outside of the restoration footprint. At six of the locations the last two sampling events have been below the FRL. The remaining four locations are upgradient of FEMP source areas.  
Action: The two bullets in question will be revised to read as follows:
- Nitrate can be dismissed from further monitoring outside of the restoration footprint. FRL exceedances for nitrate have been recorded at six location outside

of the restoration footprint. Five of the locations are upgradient of the FEMP. The sixth location is an agricultural area downgradient of the FEMP. It is believed that this exceedance is due to fertilizer or some other agricultural activity and is not FEMP related. Additional information can be found in Appendix A.

- Arsenic can be dismissed from further monitoring outside of the restoration footprint. FRL exceedances for arsenic have been recorded at 10 locations outside of the restoration footprint. At six of the locations the last two sampling events have been below the FRL. The remaining four locations are upgradient of FEMP source areas. Additional information can be found in Appendix A.

- 17) Commenting Organization: OEPA Commentor: DDAGW  
Section#: 1.1 Pg.#: 4 Line#: 7-14 Code:  
Original Comment# 4  
Comment: The FRL which is in the ROD should be used.  
Response: See response to U.S. EPA General Comment #1.  
Action: See action for U.S. EPA General Comment #1.
- 18) Commenting Organization: OEPA Commentor: DDAGW  
Section#: 1.2 Pg.#: 5 Line#: figure 1-2 Code:  
Original Comment# 5  
Comment: Modify figure 1-2 based on FRLs defined in the ROD.  
Response: See response to U.S. EPA General Comment #1.  
Action: See action for U.S. EPA General Comment #1.
- 19) Commenting Organization: OEPA Commentor: OFFO  
Section#: 1.2 Pg.#: Line#: figure 1-3 Code: E  
Original Comment# 6  
Comment: This is a very busy figure. Can the SWIFT model grids and the FEMP boundary lines be omitted? It is also hard for the reader to figure out the location of the map. Unless the reader already knows where the plume delineation activity is taking place, this figure will not help him figure it out. Adding labels to Willey Road and the South Entrance Road would help a reader orient the map.  
Response: Agree  
Action: Revise the figure by: deleting the model grid, deleting the property boundary, adding labels for Willey road and the South entrance road.
- 20) Commenting Organization: OEPA Commentor: DDAGW  
Section#: 3.2 Pg.#: 11 Line#: 37 Code:  
Original Comment# 7  
Comment: Geoprobe completion to 150 feet below ground surface may not be deep enough for this study. No information exists to characterize the type 4 aquifer in this area. This study needs to define the full vertical distribution of uranium in the ground water near the southeast drainage ditch. This is especially important now that uranium has been found in monitoring well 4125 according to the most recent DMEPP report. Additionally, the Geoprobe investigation may require follow-up study based on initial findings. If appreciable uranium contamination is found in the type 4 aquifer system, then a study utilizing monitoring well clusters will be warranted in order to assess the rate and extent of this newly identified plume component.  
Response: DOE believes that the Geoprobe completions called for in the PSP will be deep enough to document a complete vertical profile through the 20 µg/L total uranium plume. The

depths required to obtain the vertical profile are near the depth limits of the Geoprobe tool. If sampling indicates that the deeper sampling is required to profile the plume, then a different method for obtaining the sample may need to be used.

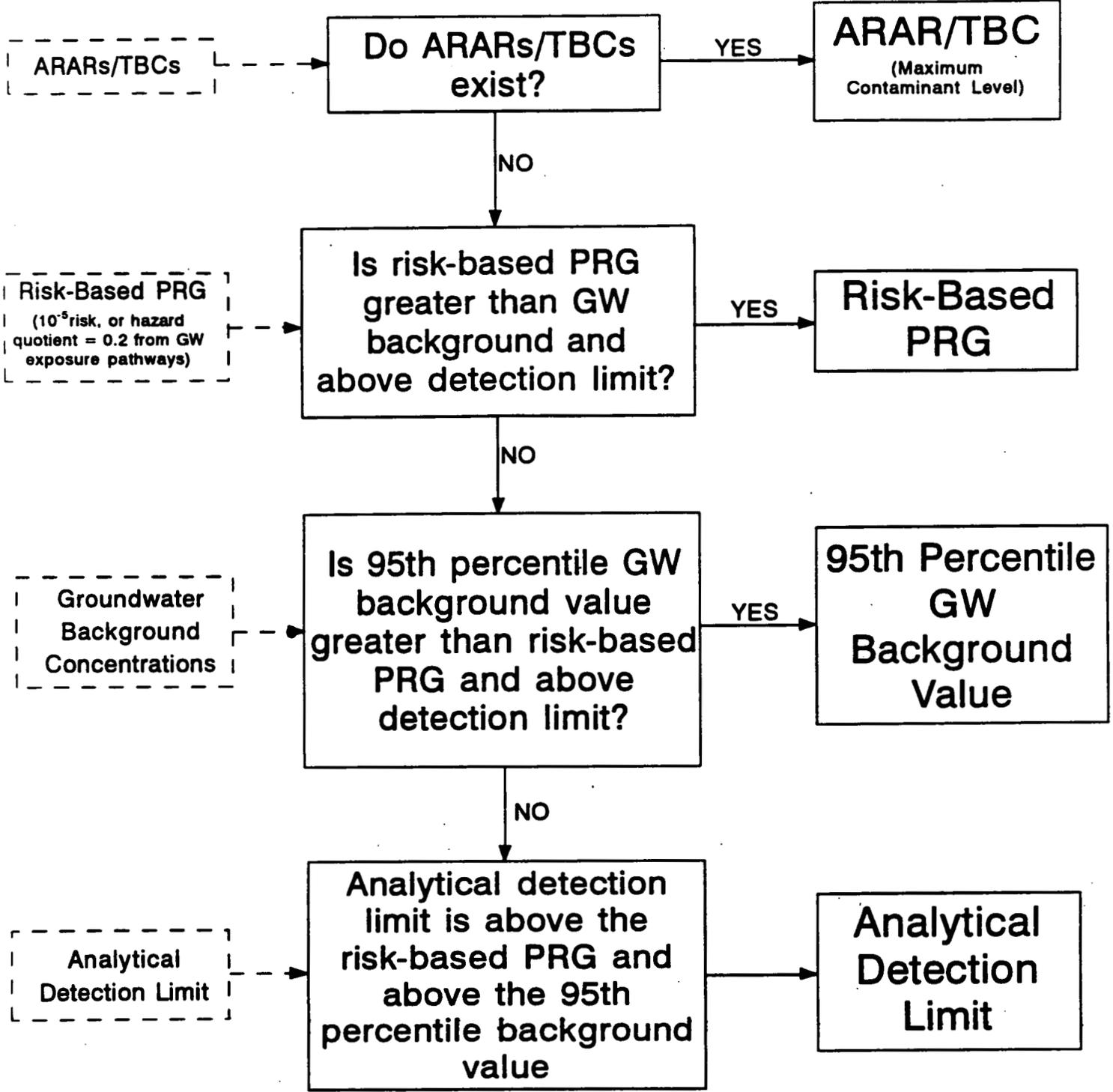
Action: The PSP will be modified by adding the following text to Section 3.2: "...150 feet below the ground surface to obtain a complete vertical profile of the greater than 20  $\mu\text{g/L}$  total uranium plume. The depths required to obtain this vertical profile are near the depth limits of the Geoprobe tool. If sampling indicates that the deeper sampling is required to profile the plume, then a different method for obtaining the sample may need to be used."

- 21) Commenting Organization: OEPA                      Commentor: GeoTrans, Inc.  
 Section#: 1.2                      Pg.#:                      Line#:                      Code: C  
 Original Comment# 8  
 Comment: The uranium plume bifurcates near the water table at Well 3069. The suspected cause is recharge from a drainage ditch in this area. Is there any groundwater chemistry data which supports this conclusion? Recharge water from the ditch would probably have a different water chemistry than the aquifer. Comparing the chemistry of the groundwater upgradient of the bifurcation, at the bifurcation, and recharge water from the ditch or recharge zone would help verify this theory.  
 Response: See response to U.S. EPA Original Specific Comment #4  
 Action: See action for U.S. EPA Original Specific Comment #4.
- 22) Commenting Organization: OEPA                      Commentor: DDAGW  
 Section#: Appendix A                      Pg.#: A-4                      Line#: 19-32                      Code:  
 Original Comment# 9  
 Comment: This approach is unacceptable to Ohio EPA. The ROD has been signed by DOE, U.S. EPA, and Ohio EPA after a period of public review and comment. DOE cannot simply modify the FRL's at this point.  
 Response: See response to U.S. EPA General Comment #1.  
 Action: See action for U.S. EPA General Comment #1.
- 23) Commenting Organization: OEPA                      Commentor: DDAGW  
 Section#: Appendix A                      Pg.#: A-5                      Line#: 5.16                      Code:  
 Original Comment# 10  
 Comment: This approach is unacceptable to Ohio EPA. The ROD has been signed by DOE, U.S. EPA, and Ohio EPA after a period of public review and comment. DOE cannot simply modify the FRL's at this point.  
 Response: See response to U.S. EPA General Comment #1.  
 Action: See action for U.S. EPA General Comment #1.
- 24) Commenting Organization: OEPA                      Commentor: DDAGW  
 Section#: Appendix A-4                      Pg.#: A-9                      Line#: 20-24                      Code:  
 Original Comment# 11  
 Comment: This approach is unacceptable to Ohio EPA. The ROD has been signed by DOE, U.S. EPA, and Ohio EPA after a period of public review and comment. DOE cannot simply modify the FRL's at this point.  
 Response: See response to U.S. EPA General Comment #1.  
 Action: See action for U.S. EPA General Comment #1.

25) Commenting Organization: OEPA                      Commentor: DDAGW  
Section#:                      Appendix A-4                      Pg.#: A-9                      Line#: 30-37                      Code:  
Original Comment# 12  
Comment:    This approach is unacceptable to Ohio EPA. The ROD has been signed by DOE, U.S.  
                 EPA, and Ohio EPA after a period of public review and comment. DOE cannot simply  
                 modify the FRL's at this point.  
Response:    See response to U.S. EPA General Comment #1.  
Action:        See action for U.S. EPA General Comment #1.

**CONSIDERATION:**

**FRL VALUE:**



**NOTE:**  
 ARAR= APPLICABLE OR RELEVANT APPROPRIATE REQUIREMENT  
 GW= GROUNDWATER  
 PRG= PRELIMINARY REMEDIATION GOAL

**PROCESS FOR DEVELOPMENT OF GROUNDWATER FRLs.**

(ARAR/10<sup>-5</sup> Case Contained in the OU5 Proposed Plan and Ultimately Selected in the OU5 ROD [Ref. OU5 FS p. 2-54])