GWOU ADMINISTRATIVE RECORD
SECTION TITLE:
GW-500-501-1.02

Mel Carnahan, Governor • David A. Shorr, Director

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

March 24, 1997

Mr. Jerry Van Fossen
Deputy Director
U.S. Department of Energy
Weldon Spring Site Remedial Action Project
7295 Highway 94 South
St. Charles, Missouri 63304

CERTIFIED MAIL / RETURN RECEIPT
Receipt No. P 196 655 401

Mr. Steve Iverson
U.S. Department of the Army
Corps of Engineers, Kansas City District
ATTN: CEMRK-MD-H-KC District
700 Federal Building
601 E. 12th St.
Kansas City, MO 64106-2896

CERTIFIED MAIL / RETURN RECEIPT
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Dear Messrs. Van Fossen and Iverson:

Please find enclosed our comments on the Draft Final *Remedial Investigation for the Groundwater Operable Units at the Chemical Plant Area and the Ordnance Works Area, Weldon Spring, Missouri* and the Draft Final *Baseline Risk Assessment for the Groundwater Operable Units at the Chemical Plant Area and the Ordnance Works Area, Weldon Spring, Missouri*, both dated February 1997.

The MDNR staff have reviewed these documents and have determined that the following are major areas which will need to be resolved prior to our concurrence on these documents. The attached comments are also offered as part of our detailed final comments on the Draft Final. MDNR requests that the Final Draft be edited to incorporate these changes.

- The Southeast Drainage groundwater characterization is incomplete: the nature and extent of contamination has not been finalized. Uranium concentrations of up to 290 pCi/l, as identified by a limited number of in-situ groundwater samples, are clearly above proposed uranium drinking water levels of 14 pCi/l. MDNR earlier requested further characterization of the groundwater within this drainage, in terms of obtaining more representative data points (in terms of a larger number of samples over an extended period of time incorporating seasonal events.) In their responses to MDNR's comments, DOE indicated that they are evaluating the decision to place monitoring well(s) in the Southeast Drainage. MDNR requests that DOE install and monitor at least one monitoring well for at least one year in order to assist in the determination of the nature and extent of contaminants of concern in the Southeast Drainage. (Refer to question #24).

- Based on high uranium concentrations data, in addition to the fact that this "land" is state owned with public access, MDNR would have to find that there would have to be a remedial action in order to cleanup the groundwater within this drainage. The DOE has recommended that within the groundwater operable unit conceptual site exposure model, the future resident has an incomplete pathway and that the future resident is not feasible. MDNR disagrees with this position for the following reasons: 1) DOE must consider all reasonable future scenarios, and 2) studies have shown that population growth is rapidly

moving into St. Charles county. The demand for "unused" property will be/is at a premium for use by home/business developers. This demand could potentially force landowners to sell desirable properties. There is no guarantee that the Missouri Department of Conservation will retain ownership of the land holdings it currently has. It is conceivable that future residents could place wells in the vicinity of the Chemical Plant and receive contaminated groundwater from the site. MDNR believes that the acceptable future receptor that should be considered is residential at a 10^{-6} target risk. (Refer to question #207).

- MDNR acknowledges that the results of the water balance study will be an estimate at best and that DOE and ANL indicated the development of a water balance for Chemical Plant and Southeast Drainage will not provide any worthwhile data. MDNR disagrees with DOE's assessment of the usefulness of this study. One of the reasons this information is needed is to determine whether or not the volume of water going into the system is equal to the volume exiting the system. This will indicate whether or not contaminated groundwater is exiting the system unaccounted for/undetected. It is the responsibility of the RI to determine the nature and extent of contamination which includes that contaminated groundwater unaccounted for. Further, the volume estimates along with estimates of the concentrations of the contaminants will enable DOE to estimate the maximum concentrations that the end points of the groundwater system will reach. This information will enable DOE to predict any future remedial actions to be taken for the groundwater operable unit. MDNR believes that portions of information is all ready available as a result of a number of studies such as dye trace studies performed, angle borings drilled and completion of design work for disposal cell and the leachate management plan. (Refer to question #67.)

- The DOE has committed to supplying additional information regarding the nature and extent of TCE and 1,2 DCE characterization to the south of the Chemical Plant. MDNR earlier requested additional information on the vertical and horizontal extent of TCE. This information (particularly the vertical extent) was not supplied. MDNR understands that the drums containing the TCE have been removed, raffinate pit sludges have yet to be removed and that discovery of TCE contaminated soil would require additional handling and disposal options evaluations. However, residual contamination still remains above the drinking water MCL levels in some areas. DOE has also noted that in some instances, the level of contamination in some of the wells is decreasing. This is expected. Due to the characteristic nature of TCE chemical, a DNAPL, it is common for it to migrate, especially downgradient. Based on the low occurrences of 1,2 DCE, it appears as though this chemical is not degrading to any large extent. Thus, degradation would not account for the decreasing levels of contamination. Another reasonable explanation is that the contamination is probably migrating away from the site. Migration away from the site does not relieve DOE from the responsibility of remediation of this contaminant. MDNR expects that DOE determine the vertical and horizontal extent of TCE and 1,2 DCE in preparation for the Feasibility Study and resultant remedial actions for this contaminant. (Refer to question #92.)

- The Remedial Investigation noted that uranium southeast of Chemical Plant in wells MW-4020, and MW-4024 (18 pCi/l, and 60 pCi/l, respectively) exceed the proposed drinking water MCL for uranium at 14 pCi/l. Characterization of nature and extent is incomplete for this area. MDNR acknowledges the attempts made to identify the nature and extent of the contamination, but believes the results are inconclusive. In light of the fact that this contaminated groundwater is located off DOE property, on state owned public lands, MDNR will require that this contaminated groundwater be remediated.

MDNR further requests nature and extent for uranium also be applied to wells MW-4005 and MW-4010. Finally, MDNR requests that DOE fully discuss the nature and extent of all contaminants of concern present offsite that exceed the MCL/SMCL or background. (Refer to questions #196 and #154.)

- MDNR notes that the reported detection limit for thallium was 5.0 micrograms per liter which is higher than the MCL of 2 micrograms per liter for the insitu groundwater wells in the Southeast Drainage. MDNR also acknowledges DOE's finding that elevated levels of thallium were not detected in groundwater at the site or in the springs and that it not likely to be present in groundwater in the Southeast Drainage. However, MDNR does not agree with this finding. Detection levels of the older data were elevated on the Chemical Plant. The issue of concern here, however is the elevated levels of contamination, especially in the Southeast Drainge and that thallium will not be detected if the detection limit is too high, (which appears to be the case in this example.) The thallium characterization data (and especially detection levels) provided in these documents is questionable. MDNR requests that the detection levels of thallium, lead and nickel be researched and validated and presented in the RI for the Groundwater Operable Unit and especially for the Southeast Drainage as compared to the MCL/SMCL. (Refer to question #86.)

- During the last round of comments, MDNR requested that information on the nature and extent of groundwater contamination for toluene be included in the Draft Final of the Remedial Investigation. This was not done. DOE's response was that a sampling round was conducted on the chemical plant, as well as on two wells in the training area and that nothing was discovered. MDNR requests that they be provided with this data so that the staff may review and evaluate the findings. (Refer to question #2.)

The chart format for the draft responses for comments provided by DOE/ANL is very convenient during the review process. In future documents, it would be extremely helpful if DOE/ANL, in the right hand column of the chart, would make reference to the newly revised text pages for the document being addressed.

We expect and will work diligently with you to resolve these issues. However, in the event that we are unable to resolve these issues, this letter constitutes our statement of dispute pursuant to the WSSRAP and WSOW Federal Facility Agreements.

We request a meeting in the near future to discuss these comments. Should you have any questions, please feel free to contact Martha Windsor at 314-441-8030.

Sincerely,

HAZARDOUS WASTE PROGRAM

Martha Windsor

Martha Windsor
Environmental Specialist

cc: Weldon Springs Citizen's Commission
Dan Wall, USEPA Region VII
Tom Lorenz, USEPA Region VII
Missouri Department of Conservation

MISSOURI DEPARTMENT OF NATURAL RESOURCES - Comments on the Final Drafts of the *Remedial Investigation for the Groundwater Operable Units at the Chemical Plant Area and the Ordnance Works Area, Weldon Spring, Missouri* and the *Baseline Risk Assessment for the Groundwater Operable Units at the Chemical Plant Area and the Ordnance Works Area, Weldon Spring, Missouri.*

2. Page 1-6. Section 1.3.2, Paragraph 3: The question asked pertained to toluene contaminated soils on the chemical plant and the request for characterization to determine whether or not groundwater under the chemical plant is contaminated with toluene. This must be answered.

9. Page 1-10, Figure 1-4: The question asked pertained to the number of production wells located within the St. Charles County wellfield. The response was the figure was deleted. Upon a review of this response, it was discovered that the figure was not deleted. Please correct this discrepancy.

19. Page 2.8, Figure 2.1: The question asked pertained to the inclusion of Spring 5304 in section 4. The response was that only those springs evaluated under the joint sampling effort would be included and that a call out to Figure 3.9 has been added to Section 4.1.1. Upon a review of this response, it was discovered that there was no call out to Figure 3.9. Please correct this discrepancy.

20. Page 2-11, paragraph 2: The question asked pertained to request of comments on the nature and extent of toluene under the chemical plant and ordnance works. The response was that toluene had not been detected in any well since 1989, joint sampling for MWS-5 and MWS-104 did not detect toluene and recent sampling for VOCs at the Chemical Plant network did not detect toluene, and recent results of the groundwater sampling and analysis of toluene will be provided in the RI. Upon a review of this response, it was discovered that none of this information was included. Please correct this discrepancy.

24. Page 2-13, section 2.2.2; 203, page 8-3 and 206, page 8-5, paragraph 2: The question asked pertained to the request for the installation of a permanent monitoring well within the Southeast Drainage in order to characterize the nature and extent of contamination. The response was that there was no text change with regards to additional monitoring within the drainage and that DOE is currently evaluating additional monitoring needs for the drainage. MDNR requests that at least one additional well be placed in the drainage for further characterization. The data already obtained provides concentrations of contaminants taken at a point in time. It does not evaluate nature of concentrations over time (with respect to changes in precipitation and seasonal changes), nor does it characterize the extent of contamination. See the related question in the cover letter.

38. Pages 3-11 and 3-12, figures 3.4 and 3.5: The question asked pertained to why the cross section does not depict the perched water. The response was that the intent of these figures was to illustrate the position of the water table surface relative to the hydrostratigraphic units that compose the shallow aquifer. It is MDNR's position is that the perched water should be considered a portion of the hydrologic/hydrostratigraphic system and should be included in the cross section.

49. Page 3-21, Paragraph 4: The question asked pertained to the retrofitting of a well. DOE indicated that in the retrofitting process a determination of poor construction was based on RI data. MDNR believes that well construction during retrofitting of open hole MW-3008 to deep well MW-3024 may have resulted

in a poor seal in MW-3024. According to the RI (Page 3-22, Table 1 3.3 and Page 3-23, Paragraph 1), the upward vertical gradient observed between MW 3024 and shallow well MW-3025 can be attributed to the possibility that the deeper well is in hydraulic communication with groundwater in the weathered zone. While an artificially high water level elevation may be created by leakage from the weathered zone into the well bore, such leakage could not create the illusion of an upward gradient. If the water level observed in MW-3024 was the result of mixing of water from the weathered and unweathered zones, it would be at a level somewhere between the water levels for the unweathered and weathered zones-not higher than the water levels in the weathered zone. Monitoring wells which are suspected to have poor seals should be properly abandoned so that they do not serve as conduits for the vertical migration of contaminants. Please discuss plans to manage the poor seal in MW-3024.

51. Page 3-24, paragraph 2: The question asked pertained to a request to explain upward vertical gradients at certain wells. DOE responded by including text from Mugel's 1996 report. MDNR's position is that upward vertical gradients are expected near discharge areas; however, it appears as though MW-13 and MW-22 are located in the uplands, at a distance from known discharge areas. DOE's explanation is illogical. Again, please explain the rationale.

54. Page 3-26, section 3.2.5: The question asked pertained to the request for the differences between vertical gradients obtained from average static water levels as compared to average static water levels. Upon a review of the response, the actual static water levels are to be evaluated and Table 3.4 revised. The dates of the actual static water level measurements should also be provided. Please do this.

58. Page 3-26, Section 3.2.5, paragraph 5: The question asked pertained to inclusion of travel times to private drinking wells along Dardenne Creek drainage basin. The response was that the focus of the RI is on the shallow aquifer, there is little data to calculate travel times in the deeper aquifers. However, in response to an EPA question regarding boundaries needing to be placed on the potential for future impacts to the deeper aquifer systems, DOE included recharge data obtained from numerical modeling conducted by the USGS between the shallow, middle and deep aquifers. DOE also noted that the model was calibrated and used to assess flow between the three bedrock aquifers. MDNR acknowledges these facts and responses. However, due to the fact that there is a possibility of residential drinking wells being drilled downgradient from this NPL site, it is the responsibility of the PRP to characterize the nature and extent of contamination. Please provide the information requested.

67. Page 3-31: The question asked pertained to a request for a water balance study for the conceptual groundwater model. The response was that the information a budget provides is the magnitudes of the inflows and outflows and changes in storage, and that the effort and cost associated with conducting specific field investigations to reduce the uncertainty is not worth the information that a water budget with provide to the GWOU RI/FS. MDNR disagrees with this statement and requests a water balance study be performed. Please refer to the related question contained within the cover letter.

81. Page 4-8, paragraph 1: The question asked pertained to the elimination of bad data; the state requested that the resampling of a limited number of wells would substantiate data validity. The response was that the data was removed from the data base and that it is not worthwhile to resample wells for filtered antimony data, given that the results of the filter/nonfilter study did not indicate a significant difference. Has this recent data superceded information contained within the 1995 Work Plan for the GWOU, page 72? The last paragraph of

this page notes that the highest concentrations of antimony were reported for unfiltered samples, so groundwater contamination may be present. Please comment.

85. Page 4-8, last paragraph: The question asked pertained to mentioning in the document that "only a subset of nitroaromatics were analyzed prior to 1995". The response was that the text should appear earlier in the document. MDNR did not identify this in the document and requests that it be placed in this report.

86. Page 4-9, Table 4-3: The question pertained to the in-situ groundwater sampling in the Southeast Drainage, and the fact that the detection limit for thallium exceeded the MCL. The response noted this fact. MDNR requests that DOE provide information to substantiate all data reliability with respect to detection levels as compared to MCL and SMCLs. Please refer to the related question located in the body of the cover letter.

88. Page 4-11, fourth paragraph: The question asked pertained to high sulfate values detected may be from leakage from the raffinate pits. The response was that higher sulfate concentrations are not believed to be from the leakage of the raffinate pits because the majority of the flow from the pits is to the north. If contamination was flowing south to the drainage, we would expect to see similar values at the major discharge points (springs). MDNR refers DOE to the October 31, 1994 (page 2-33) Work Plan which discusses that the effluent from the raffinate pits went into the Southeast Drainage. Please clarify the text.

90. Page 4-12, Table 4.4: The question asked pertained to parameters on this table are different from Table 4.6. The response was that the data in the next revision was corrected and consistent throughout the document. Upon a review of this response, MDNR observed that there were a few differences between Tables 4.3 and 4.4 with regard to selenium, cadmium and antimony. Please explain these differences.

92. Page 4-13, first paragraph: The question asked pertained to why there are not any background data from the overburden and deeper units during the planning stages of the RI, especially in light of the fact that TCE has been discovered. The response was that background data were not obtained because of the difficulties in identifying an available location and that the lack of background data does not affect the discovery of TCE because TCE is not expected to be present in background. Upon a review of this response, MDNR agrees that while this is true, it is important to determine if TCE presently exists on, near the site, or has migrated offsite. It is important to determine TCE not just as background but as baseline or control data points as well as determine if the TCE is migrating vertically down or horizontally into other aquifers. MDNR requests that DOE fully characterize the nature and extent of TCE and 1,2 DCE, vertically and horizontally. Please refer to the related question contained within the body of the cover letter.

115. Page 4-24, Section 4.1.1.3: The question asked pertained to a request to include a brief discussion of possible explanations of similar data for site and background locations. The response was that statistical comparisons indicate that most of the metals in groundwater are not elevated with respect to background. Upon a review of this response MDNR did not find this discussion in the text (pages 4-14 through 4-19). Please provide a reference for this discussion in the text.

122. Page 4-28, Table 4.11: The question asked pertained to a request to note that the detection limit for thallium exceeded the MCL at spring 5402. The

response was that the reported detection limit for thallium was 5.0 micrograms per liter which is higher that the MCL of 2 micrograms per liter. Elevated levels of thallium were not detected in the groundwater at the site or springs and are not likely to be present in the groundwater in the Southeast Drainage. The DOE is considering installation of a monitoring well(s) in the drainage to collect additional data. Please refer to the response in the body of the cover letter and question #86 above.

125 and 127 through 132: The question asked pertained to discrepancies regarding background levels of metals at Spring S402. These discrepancies occurred between the text and Table 4.11. According to the responses to comments, Table 4.11 was corrected. However, the final draft version of the RI does not contain a Table 4.11. Will background data for the springs be presented in tabular form? Please clarify.

133. Pages 4-31 to 4-44, Section 4.2: The question asked pertained to the request for a discussion of the nature and extent of contamination of the deeper and older formations. The response was that all the monitoring wells associated with the chemical plant area have been sampled and analyzed for TCE and other volatile organic compounds. Discussions will be included in the RI. Upon a review of the response, MDNR did not find a discussion regarding the nature and extent of contamination of the deeper and older formations and especially with respect to TCE. MDNR requests that this information be provided in order to complete the characterization for TCE and 1,2 DCE. Please refer to the related comments located within the body of the cover letter.

134. Page 4-31, Section 4.2.1, paragraph 1: The question asked pertained to a discussion on the background comparison of data. The response was that a subset of wells around the raffinate pits will be evaluated separately. MDNR did not find a discussion in the document regarding the subset of wells around the raffinate pits. Please provide a reference so that we may review it.

137. Page 4-33, Figure 4.2: The question asked pertained to wells with uranium levels higher than 1 pCi/l west of the chemical plant and the request to include possible sources for the concentrations detected. The response was that there is not a source of uranium west of the chemical plant, that the uranium in the wells is a function of the background variation. Upon a review of the response, MDNR does not agree with this finding.

138. Page 4-35, Figure 4.4; 141, Page 4-38, paragraph 1; 142, Page 4-38, Overburden, Paragraph 1; 146, Page 4-38. Paragraphs 1 and 2: The question asked pertained to a clarification of a discrepancy of different values for the total uranium UCL for the weathered unit. The response was that the discrepancy has been corrected. MDNR requests that this review would have been facilitated if the question had been answered, rather than just indicating that the discrepancy has been corrected. MDNR requests in all future reviews, in order to facilitate and expedite the work, that these suggestions be implemented.

154. Page 4-41, third paragraph and 196, Page 7-4, section 7.1.1.3: The question asked pertained to MDNR's position that irrespective of the lack of any known source the presence of uranium southeast of the chemical plant does not release DOE from the liability of remediating the contaminated groundwater. The response was that the determination of the need to remediate groundwater would not be based on locating known sources of contamination. The document has noted that contamination in the vicinity of MW 4020, MW 4024 and MW 4025 has uranium concentrations greater than the MCL of 14 pCi/l. In light of the fact that this contaminated groundwater is located off DOE property, on State owned public lands, MDNR will require that this contamination be remediated. Please refer to

the related question contained within the body of the cover latter.

159. Page 4-44, Summary: The question asked pertained to what is preventing limited hits of nitroaromatic compounds from becoming more frequent in the future and causing an impact to the deeper formations. The response was that the text uses various statistics and regulatory standards to discuss the nature and extent of contamination which is believed to be appropriate, the text was revised to clarify where possible and to correct discrepancies. Upon a review of the response, the question was not answered.

Another question asked pertained to the request for a discussion of the exceedances of SMCLs for aluminum, iron and manganese. No response was given. Please provide an explanation.

163. Page 5-3 figure 5.1: The question asked pertained to inclusion of toluene pipelines, etc. as a source of contamination. The response was that figure 5.1 was modified. Upon a review of the response, the toluene pipelines still have not been included in the list of sources. Please see MDNR RI comment #2 and the associated response.

164. Page 5-3, figure 5.1: According to the response, sediment from springs other than Burgermeister Spring were added to the list of "impacted media" contained in Figure 5.1. These sediments have not been added to the list of impacted media. Please do this.

165. Page 5-4, section 5.2: The question asked pertained to the state not agreeing with the site related contaminants. DOE noted that the list is being revisited and that the text would be revised when the reanalysis is complete. This statement leaves the final list of COC undetermined. Will the list of COCs be revised? If so, what contaminants are included on this list? What is the justification for these contaminants?

170. Page 5-8, Section 5.2.3, paragraph 2: The question asked pertains to the request for inclusion of Figures 4.10 and 4.21. The response was that these figures would be included in the revised document. Upon a review of the response, it was determined that figure 4.21 was not included and page 5-8 was not changed. Please do this.

185. Page 5-26, paragraph 4: The question asked pertains to the discrepancy in the text and figure regarding the nitrate trend. The response was that a reexamination of the trend and revision of the text will be done accordingly. According to the text of the draft version of this document, the mass flux of nitrate at Burgermeister Spring is reportedly inversely proportional to the discharge. However, according to Figure 5.7 of the draft, nitrate flux remains constant as the spring discharge increases. The discrepancy between the text and Figure 5.7 remains in this version of the RI. Please correct this discrepancy.

190. Page 6-1, paragraph 1: The question asked pertains to the need for molybdenum to be listed as a PCOC. The response was that molybdenum is discussed earlier in the RI as a site related contaminant, not as a PCOC for human health. It is identified as a PCOC for ecological resources. Molybdenum was screened out because it did not contribute to more than 1% of the total risk. However, in the responses to an MDNR BRA similar comment #9, DOE noted that the use of the 1% risk for screening will not be performed on the next revision. Please comment on this discrepancy.

194. Page 6-2, paragraph 3: The question asked pertains to the request to locate 4 wells with the 1 in 10,000 chemical risk. The response was that the

information was provided in the revision. Upon a review of the response, this information was not located. Please include this information.

195. Page 6-3, paragraph 1: The question asked pertains to whether or not the presence of uranium exceeding the MCL affect the hazard index? The response was that the hazard quotient index at the MCL level for uranium (20 micrograms/l) is 0.18. Upon a review of the response, it was determined that the question was not answered. The question pertained to the exceedance of the MCL. Please respond.

196. Page 7-4, section 7.1.1.3: The question asked pertains to naturally occurring uranium present in bentonite used to seal the annular space of MW-4024 and that uranium may have leached into the water in the wells. Assuming that the elevated uranium levels in MW-4024 are due to leaching of uranium from the bentonite seal and assuming that the well was purged prior to sampling, uranium was also apparently leached into the water surrounding the well. The source of contamination for this area needs to be identified. Please refer to the related comment contained within the body of the cover letter.

197. Page 7-4, section 7.1.1.3: The question asked pertains to the discrepancy of uranium concentrations. The response was that the value of 167 pCi/l is an error and will be corrected. Upon a review of the response, it was determined that this had not been corrected. Please do this.

198. Page 7-5, section 7.1.5: The question asked pertains to a request for an explanation regarding the rationale for the exclusion of large and erratic concentrations of nitroaromatics from the data set. The response was that the data has not been rejected or excluded and that the section will be revised. Upon a review of the response, it was determined that the original text stated that the data was excluded. Please explain this discrepancy and clarify the text.

199. Page 7-6, section 7.1.1.6, bullet 2: The question asked pertained to a request to provide data substantiating equivalence. The response was that additional QA data is being sent under a separate cover. Please submit this data.

201. Page 8-2, second paragraph: The question asked pertained to a request to clarify the discrepancies. The response was that it would be reworded for clarification. Upon a review of this, it was determined that the text had not been reworded. Please do this.

205. Page 8-4, paragraph 4: The question asked pertained to a request to note than nitroaromatics have also been detected throughout the remainder of the training area and on portions of Busch and Weldon Spring Wildlife Areas. The response was that the summary of the nitroaromatics contamination was revised. Upon a review of the document, it was determined that nothing had been revised. Please revise the document.

206. Page 8-5, paragraph 2: The question asked pertained to a request to install well(s) in the Southeast Drainage. The response was that the insitu data would be used for the RI and future data will be incorporated into subsequent reports. This is not acceptable. The Groundwater Operable Unit BRA/RI/FS/ROD will be the final documents towards the remediation of this area. This data can not be put off for future planning purposes. MDNR requests that at least one additional well be placed within the Southeast Drainage in order to determine the nature and extent of contamination. Please see the related comment contained within the body of the cover letter.

207. Page 8-5, paragraph 3: The question asked pertained to the statement that the uranium was within the target risk range. The response was that this range is from 1×10^{-7} to 7×10^{-5}. MDNR considers any risk greater than 1×10^{-6} as too great and is unacceptable. Please see the related comment contained within the body of the cover letter.

216. Page B-7, paragraph 1: The question asked pertained to clarification of unsaturated and saturated overburden in the vicinity of raffinate pit #4. The response was that water levels measured will be reevaluated and the discussion will be revised. It remains unclear whether elevated water levels in the vicinity of the raffinate pits are due to perched groundwater or whether they are due to groundwater mounding. Cross sections illustrating the hydrogeology in the vicinity of the raffinate pits would assist in making this determination.

223. Pages C-1 to C-73: The question asked pertained to the inclusion of units of concentration on the tables. The response was the units will be indicated. In many cases, the appropriate units have not been provided.

224. Page C-6: Regarding thorium versus thallium, if this is thorium, what are the appropriate units for this radionuclide? If this is thorium, should this also have the letter "a" beside it?

225. Page C-10, Table C-2: The question asked pertained to the discrepancy regarding the installation date for well MW-4024. The response was that the discrepancy was eliminated. A review of this found that the discrepancy still remains. Please correct this.

226. Page C-41, Table C-5: The question asked pertained to the discrepancy of uranium values. The response indicated that the text was clarified. These discrepancies remain. Please correct these discrepancies.

Baseline Risk Assessment

The concerns previously expressed by MDNR in the last draft appear to be addressed in this final draft. Inclusion of a residential scenario to assess potential risk from groundwater exposure and examination of additional pathways for the recreational scenario were added to this final draft. The following comments pertain to the revised portions of Section 5.

1. Page 5-1, Section 5: The document reads that the EPA considers the upper range of carcinogenic risk levels 10^{-6} to 10^{-4}, as "acceptable exposure levels for the general public." Is it correct to state that 10^{-4} is considered the upper range of carcinogenic risk levels. Please revise.

2. Page 5-9, Section 5.2.2.1: "...estimates at only 4 wells were at or slightly greater than the target risk range of 10^{-4}." Is 10^{-4} the target risk or target risk range for this site? Would risk levels of 10^{-5} be considered health protective? As stated earlier in this document, EPA's risk range is 10^{-6} to 10^{-4}. Please include those wells in this document that fall within this range.

3. Page 5-25, Section 5.5: the document discusses the quantitative contribution to carcinogenic risk from soils at the site. The second paragraph states due to soil's minimal contribution (at or lower than 10-6) that the total potential exposure incurred for the future resident scenario would..."be no greater than what is presented in this report (see Section 5.1)." Section 5.1, which discusses methodologies does not quantitatively discuss carcinogenic risk and comparisons cannot be made.