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JMM RESPONSES TO COMMENTS ON THE DRAFT/FINAL REMEDIAL INVESTIGATION/
PUBLIC HEALTH AND ENVIRONMENTAL ASSESSMENT (RI/PHEA) REPORT FORT STORY
VA
3/29/1993
JAMES M. MONTGOMERY CONSULTING ENGINEERS

ATTACHMENT A

**JMM Responses to
Comments on the Draft/Final
Remedial Investigation/Public Health and
Environmental Assessment (RI/PHEA) Report
Fort Story, Virginia**

JMM's responses to the client's comments appear in *"ITALICS"* following each comment.

REVIEWER: Lisa Ellis, Virginia Department of Waste Management

Item # Comments/Responses

- 1. On page 2-1, it is stated that surface water is collected from Landfill 3. Later, on page 2-7, this surface water is identified as ponded water on the western flank of the landfill which is "essentially the expression of groundwater in that area (page 4-2)". How was it determined that this ponded water was actually surface water and not leachate from the landfill or just plain collected rainwater? Please note that leachate would tend to give falsely high values for contaminant levels, but ponded rainwater would give falsely low values.

The text was clarified to state that surface water samples were collected from areas outside the boundaries of Landfill 3 where standing water was present.

- 2. Since the existence of monitoring well LF-4 was discovered after monitoring well sampling took place, do you see any merit in sampling LF-4 now to determine the potential for contaminants to migrate downstream? Also, on page 2-1, it is stated that "functional" monitoring wells were sampled. How was functionality of monitoring wells determined? It might be useful to close out any monitoring wells that are non-functional, and make a formal record that this has been done.

While the sampling of monitoring well LF-4 would provide additional data, the groundwater data collected by USAEHA and JMM did not identify the landfill as a source of contamination. The reference to "functional" monitoring wells was clarified to note that two groundwater monitoring wells installed by USAEHA in 1977 did not provide sufficient quantities of groundwater for sampling. Consequently, USAEHA installed four additional groundwater monitoring wells (LF-1 to LF-4) in 1987.

- 3. On page 2-2 in Table 2-1, data for monitoring well LF-4 is included even though this well was not sampled. How was the data determined? Also, if you do not plan to sample the well and include analytical data in the final report, the construction data for LF-4 should be removed from this table as it is not pertinent to the report.

Although JMM's 1990 RI field activities did not collect a groundwater sample from monitoring well LF-4, groundwater level measurements were collected from this well to characterize groundwater flow direction. Therefore, the monitoring well construction data were presented in Table 2-1 for use in evaluating the groundwater elevation measurements.

4. Why weren't wells EMW7, 8 and 9 included in groundwater sampling procedures?

In 1987, USAEHA attempted to sample groundwater monitoring wells EMW-7, 8, and 9. Two of these monitoring wells (EMW-7 and EMW-8) were described in USAEHA's 1987 report as being nonfunctional. Although EMW-9 was sampled, USAEHA installed four new monitoring wells (LF-1, LF-2, LF-3, and LF-4).

5. On page 3-2 in item 3.3.1.2, it is stated that the Site 3A pond was originally intended for recreational fishing. Is the pond used for this purpose?

The text was clarified to state that the pond is still used for recreational fishing.

6. Are the pond (Site 3A) or the surrounding wetlands area receiving runoff from any other potentially contaminating sources beside Site 3 (Landfill)? Does the pond have an outfall to another water body?

There were no other potentially contaminated sources identified which could be contributing runoff to the pond, and there are no outfalls at the pond.

7. On page 3-3, it is stated that seasonal fluctuations in the water table can affect the hydraulic gradient in the water table. Is this hydraulic gradient also tidally influenced since the site is surrounded on three sides by tidally influenced bodies of water? How was the groundwater flow direction determined? Was it determined on a seasonal basis? If the hydraulic gradient is both seasonally and tidally influenced, the statements made in the risk assessment portion of the document and on page 5-5 regarding the contaminants detected in upgradient monitoring wells are not relevant, and the risk associated with these contaminants should also be included, as "upgradient" is not a constant state.

Although season fluctuations may change the groundwater elevation, the impact of tidal or seasonal changes on the hydraulic gradient was not determined. The referenced statements in Sections 3 and 5, regarding changes in the hydraulic gradient, were edited to acknowledge the uncertainties associated with tidal influences. The hydraulic gradient, which was presented in the RI, was calculated based on water level data collected in August 1991 (Table 2-2).

8. Is there any leachate being produced by Site 3? If so, has this leachate been sampled and analyzed?

There is no evidence to suggest that the landfill is producing leachate.

9. Is there any type of drainage ditch or depression present between Site 3 and Site 3A? If so, was sampling performed along this drainage area?

There is a road leaving the landfill and connects to the access road near the pond. There is standing water present on both sides of this road, and surface water sample SW-203 was collected to evaluate potential contamination from this drainage pathway.

10. Figure 5-1 indicates a drainage ditch leading either into or away from Site 3A. What is the flow direction in this drainage ditch? If the flow direction in the drainage ditch is away from Site 3A, was sediment sampling performed along the drainage ditch? If not, it might be worthwhile. Where does this drainage ditch originate/terminate?

The drainage ditch identified in Figure 5-1 consists of an earthen swale which parallels the road. The flow through the ditch is towards the pond, and the RI Scope of Work did not include any sampling activities for this area.

11. Page 5-2 discusses filtered sample analysis results for metals. While filtered results for metals can be informational, please keep in mind that the DWM prefers unfiltered metals analysis in areas where drinking water wells are not developed. These unfiltered (i.e., total metals) results should be used for all risk assessment calculations.

The total metals data were used for all calculations associated with the risk assessment.

12. On page 5-9, in the "Nature and Extent of Contamination" portion of the report, conclusions are drawn about the significance of certain levels of contaminants. These do not appear to be appropriate conclusions to draw in this portion of the report as the risk (and therefore the significance) has not yet been calculated for these contaminants.

The discussion into the nature and extent of site contamination is intended to provide an independent review of contaminant levels with respect to Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered (TBC) Criteria.

13. Page 6-1 addresses possible exposure pathways for Site 3 and page 6-2 addresses possible exposure pathways for Site 3A. In neither area is the potential for installation personnel to be exposed. Is any type of maintenance work or other activity performed by installation personnel in the vicinity of these sites which could result in any type of exposure?

Installation personnel were considered as part of group of "Area Residents". There are no maintenance facilities or maintenance work conducted in this area. Activities in the vicinity of Landfill 3 and the pond are described in Section 7.6.2.1. In general, the probability of exposure at these two sites is considered low because the site is heavily vegetated and typically remains vacant.

14. Page 7-5 of the report states that in order to concentrate the risk assessment on the compounds that have the greatest potential to cause a long-term health effect, only site-related compounds with the highest carcinogen and reference dose indices were chosen. Please note that no contaminants should be ruled out as the additive risk of several "insignificant" contaminants may prove to be significant. Therefore, any site-related contaminants detected that were not included in the risk assessment should be included.

A qualitative discussion has been provided for any contaminants excluded from the quantitative risk assessment.

15. Page 7-10 states that although residential areas within a one-mile radius of Site 3 include areas of Fort Story and Virginia Beach, these communities are hydraulically upgradient. However, as stated in Item #7, the gradient may be seasonally and tidally influenced. This may impact inclusion of these residents in the risk assessment.

Although the Remedial Investigation indicated that groundwater in the vicinity of Landfill 3 is suspected to be tidally influenced, the groundwater gradient is not expected to change significantly. Therefore, the surrounding residential communities are still considered upgradient of the landfill.

16. Page 7-10 states that a few deep production wells were identified on Fort Story during previous investigation, but most of the wells still in use at this time are apparently used for filling swimming pools and for fire protection. Dermal and inhalation exposure to contaminants by swimmers in pools filled using these wells should be addressed in the risk assessment.

There are no swimming pools at Fort Story. This information was inadvertently included in the Draft/Final RI/PHEA report, and the error has been corrected in the Final RI/PHEA report.

17. On page 7-14, it is stated that surface soil was not sampled but available information indicates that the landfill was covered with clean soil at closure. Although there is information that leads to the conclusion that surface soil should be clean, there is no data to support this assumption. Also, on the same page it is stated that VOCs in the ground or surface water could diffuse upward and migrate to locations where the contaminants may be inhaled by humans. These diffusing VOCs also create the potential to contaminate the surface soil. Therefore, some measure of confidence would be acquired by obtaining and analyzing surface soil samples.

The text was clarified to note that concentrations detected in both surface and groundwater samples are relatively low and not indicative of an adequate source for upward diffusion. This diminishes the significance of this pathway.

18. Page 7-17 discusses the elimination of carbon disulfide from the risk assessment. Page 7-25 provides an explanation and a reference for this elimination. Please include a little more detail in the report about the source of naturally occurring carbon disulfide. Also on page 7-25, the statement is made that the levels detected are below concentrations producing biological effects in fish and man. While this may be the case, the additive effect of the risk associated with carbon disulfide in conjunction with the other contaminants detected has not been addressed.

The text was clarified to provide additional information concerning the source of carbon disulfide as well as the significance of its detection.

19. On page 7-19, it is stated that metals chosen as contaminants of concern are not volatile and do not readily cross the outer layer of the skin. Please provide a reference for the dermal behavior of metals.

The reference of Klaasssen, et al., 1986 was referenced in the text and added to Appendix D.

20. On page 7-23 in section 7.6.4.4 and on page 8-2, impact of lead on populations of wildlife consuming water from the ponded area is briefly discussed. Statements about the significance of impacts to wildlife based upon drinking water standards that were developed for human beings are not relevant. Significance of impacts to wildlife can only be assessed by determining how much lead is bioaccumulating in the wildlife, and subsequent risk to the environment via this consumption. Also, on page 7-43, it is stated that metals would not be expected to bioconcentrate and therefore levels in fish tissue would be relatively lower than those detected in sediment. I spoke with Patricia McMurray, Toxicologist with the Superfund program regarding this issue and she did not agree with this statement. Please provide a reference for the statement that metals would not be expected to bioconcentrate. Why was no biota sampling performed for the Remedial Investigation?

Through the development of an Uptake/Biokinetic Model, the EPA is formulating health-related guidance for lead that can be applied to a wide range of media. For the Fort Story RI, the levels of lead detected in surface water and groundwater were run through the EPA Uptake/Biokinetic Model. It should be noted that the Uptake/Biokinetic Model is in preliminary draft format, and it has not been formally released by the EPA. Based on the results of the model and the low likelihood that wildlife in the area will be exposed to surface water or groundwater for an extended period, the significance of lead in surface water and groundwater was considered low. With respect to biota sampling, the Risk Assessment Guidance for Superfund (Volume II) Environmental Evaluation Manual suggests that the level of detail for ecological assessment will vary in the extent to which resources, exposure concentrations, effects, and other variables are identified and quantified. During the scoping of the ecological assessment for the Landfill 3 RI, it was determined that biota sampling was not required.

21. Page 7-30 states that acetone detected in one sample is assumed to be due to external contamination of the sample. Please provide more detail on possible sources of external contamination since this contaminant was not detected in field or trip blanks. Unless possible sources of external contamination can be justified, the acetone should be included in the risk assessment.

Based on EPA Data Validation Guidance, the detection of common laboratory contaminants such as acetone may be qualified as suspect when there is little or no contamination present in the associated quality control blank samples.

22. Page 7-36 states that the overall hazard index was calculated without an RfD for lead. According to Ms. McMurray (Toxicologist), the RfD for lead can be estimated using the Biokinetic model, a software program commercially available. Ms. McMurray has this modeling package available on her computer and can be contacted at (804) 225-3260 regarding calculation of an RfD for lead.

JMM contacted Ms. McMurray regarding the calculation of an RfD for lead. The biokinetic model can provide an estimate of blood levels in children with the cutoff being 10 ug/dL. The model does not provide an RfD for lead.

T R A N S M I T T A L



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Re:

The following items are:

- Requested Enclosed Sent Separately via _____
- Report Specification Cost Estimate Shop Drawings
- Test Result Prints Test Sample Other

No. of Copies	Description
1	Fort Story Response to Comments

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General Remarks: