

CDM FEDERAL PROGRAMS CORPORATION
a subsidiary of Camp Dresser & McKee Inc.

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Ms. Caroline Kwan
U.S. Environmental Protection Agency
26 Federal Plaza
New York, New York 10278

PROJECT: TBS V, EPA CONTRACT NO: 68-W9-0002
Work Assignment C02048

DCN: TBSV-C02048-LR-CVXN

SUBJECT: Review of Technical Memorandum II
Results of the Field Program,
Tutu Service Station Investigation,
St. Thomas, U.S. Virgin Islands

Dear Ms. Kwan:

CDM FEDERAL PROGRAMS CORPORATION (CDM Federal) has completed its review of Geraghty & Miller's (G&M's) report "Technical Memorandum II, Results of the Field Program, Tutu Service Station Investigation, St. Thomas, U.S. Virgin Islands", prepared for the Tutu Environmental Investigation Committee (TEIC) and dated February 1993. The report was received by CDM Federal on March 3, 1993.

The purpose of the TEIC report is to present preliminary results of the field investigation and to determine if additional investigation is necessary before completing the remedial investigation (RI). CDM Federal's general comments concerning the report are presented below, followed by specific comments with respect to the text.

GENERAL COMMENTS

1. CDM Federal concurs with G&M that the downgradient extent of petroleum contamination has been adequately defined. Based on the maps, it appears that the upgradient extent of petroleum contamination can be delineated without additional wells. However, a well might be warranted to the west of Western Auto, to establish whether that facility contributes to groundwater contamination. (The Target Soil Gas Survey of the Western Auto property did not indicate any major areas of concern, however.) The locations of the proposed wells should be plotted on a map.

Several questions remain as to the sources of chlorinated volatile organic compounds (VOCs) in groundwater. CDM Federal concurs with G&M that there are apparently at least two sources of chlorinated VOCs at the site - one in the vicinity of the Curriculum Building and, possibly, Tillet Gardens, the second in the vicinity of O'Henri cleaners. ~~The Texaco and Esso stations do not appear to be major~~

contributors of the chlorinated plume.

2. CDM Federal has compared the analytical results of our split sample analyses with G&M's results. All the split and PRP data compare within acceptable limits. Data comparison tables will be submitted to EPA following receipt of one outstanding validated data package from EPA's Monitoring Management Branch (MMB).
3. For the pumping tests, it is standard to present the following data graphically: background water level fluctuations; rainfall and barometric pressure data, if collected; and all measured water levels in all wells monitored during testing.
4. It would be useful to present subsurface soil data from borings and monitoring wells on the same map in the RI report to create a more integrated picture of soil contamination.
5. Detailed core logs and drillers logs have not been provided. Though not crucial for this technical memorandum, they should be presented in the RI report.
6. The VIHA supply wells should definitely be included in the next round of groundwater sampling. A schedule of pumping should be included, if available.

SPECIFIC COMMENTS

1. Page 2-1, Paragraph 2, first sentence - The other principal contaminants of concern (i.e., PCE, TCE and DCE) should be named.
2. Page 2-2, Paragraph 1 - The logs in Appendix A do not show blows/foot or HNu readings as indicated in this paragraph.
3. Page 2-2 - The fact that EPA's contractor, CDM Federal, split a number of samples with Geraghty and Miller and sent them to a separate laboratory for confirmatory analysis should be mentioned in the QC sample discussion in the RI report. (As mentioned in General Comments, the results of the separate analyses are comparable.)
4. Page 2-3, Section 2.2.1 - The outcrop descriptions are not provided.
5. Page 2-4, Paragraphs 1 and 2 - Downhole drilling pressure, rate of penetration per foot and water circulation observations are not provided. Nor are the bedrock coring logs.
6. Page 2-4, Section 2.2.3 - The downhole geophysical logs (caliper and sonic) are not provided in this technical memorandum.
7. Page 2-6, Paragraph 2, last sentence - The sentence should read that well MW-12D was completed as a deep, not a shallow, well.
8. Page 2-12, Section 2.4, Paragraph 2 - G&M needs to mention that the maximum aquifer test pumping rate was constrained by the capacity of the on-site water treatment system. Thus the aquifer was not stressed as much as it could have been.
9. Page 2-13, Paragraph 1 - G&M should specify the frequency of manual

water level measurements collected during the test.

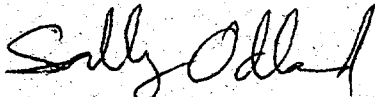
10. Page 2-13, Section 2.4.2, first sentence - The text should make clear that the two wells were not pumped simultaneously.
11. Page 3-2, Section 3.1.2 - How do the volcanic sandstone and siltstone described equate to the formations described under regional geology?
12. Page 3-10, Paragraph 4, last sentence - Two possible explanations exist for the difference in heads observed between the shallow and deep wells: 1) local perched conditions may exist; or 2) a recharge source exists in the vicinity.
13. Page 3-12, Paragraph 1, last sentence - The wells for which the data are not usable should be specified.
14. Page 3-12, Section 3.3.1 - Drawdown data should have been superimposed on a variety of type curves to assess the type of aquifer before determining that the Cooper-Jacob straight-line method was the appropriate one to use.
15. Page 3-12, Section 3.3.1, 6th sentence - The text states that correction of drawdown values was not necessary, but on the associated figures, the y-axis is labelled "corrected drawdown".
16. Page 3-14, Section 3.3.2 - If the data for the pumping test of MW-6D is not useable due to the rainfall as stated on page 3-12, then G&M should qualify the discussion and numbers presented in this section. Based on figures 3-8 and 3-9, CDM Federal believes that steady state conditions had not been reached after 24 hours of pumping and that the shape of the drawdown curves indicate that the system is being dewatered.
17. Page 3-15 - The "drawdown" measured in well MW-7 is less than 0.1 foot. This change may not be due to the pumping well, located 230 feet away.
18. Page 4-1, Section 4.1 - The results from the soil boring samples should be considered in conjunction with those from the monitoring wells because they are really the same medium. Treating them separately makes it harder to assess the distribution of contaminants in subsurface soil.
19. Page 4-3, Paragraph 2, item 2 - Total Petroleum Hydrocarbon (TPH) results are often elevated in fine-grained soils because the extraction method is more efficient due to the greater surface area from which the solvent can extract the TPH. This effect, however, does not result in "false positives".
20. Page 4-6, Section 4.3.1, Paragraph 1, fourth sentence - Only sample SS-5 is from the Tillett property; Sample SS-3 is from the Curriculum Building.
21. Page 4-7, Section 4.5 - The analytes that are present above background concentrations should be listed, especially if any of them are contaminants of concern from a health perspective.
22. Page 4-8, Section 4.6 - See preceding comment.

23. Page 6-1, Last Paragraph - G&M should try to obtain more information on which supply wells are pumping and at what rates.
24. Page 6-2, Section 6.2, Paragraph 2, last sentence - G&M has not provided adequate evidence for "false positive" TPH concentrations. TPH is certainly not unexpected in a service station study. Furthermore, as stated earlier, fine-grained soils may result in elevated concentrations due to more efficient extraction, but should not result in false-positive values.
25. Page 6-2, Section 6.2, Paragraph 3 - The focus of the BNA discussion should not be on the possible laboratory artifacts, but rather on the polynuclear aromatic hydrocarbons that were detected at a number of properties.
26. Page 6-3, Paragraph 3 - According to the maps, arsenic was detected at 185 ppm in boring B-13 on the O'Henri property. This is three orders of magnitude higher than background.
27. Page 6-5, Paragraph 3 - Based on the groundwater results presented in this report, it appears that the upgradient extent of petroleum constituents can be defined with the existing data. Additional wells might be warranted to conclusively establish liability with respect to chlorinated compounds.
28. Page 7-1, item 2 - EPA Region II only accepts total, not dissolved, metals results in remedial investigations. Total metal values are used both in the assesement of groundwater risk and in evaluating remedial technologies.
29. Figure 3-1 - The labelling of geologic units from well to well is inconsistent on this diagram.

If you have any questions concerning this review, please contact me at (212) 393-9634.

Sincerely,

CDM FEDERAL PROGRAMS CORPORATION



Sally Odland
Work Assignment Manager