



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

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Ref: 8HWM-FF

Mr. Richard Schassburger
Department of Energy
Rocky Flats Office
P.O. Box 928
Golden, Colorado 80402-0928

Dear Mr. Schassburger:

RE: Draft Technical Memorandum No. 11, Operable Unit 1

EPA received draft Technical Memorandum No. 11 (TM 11), Development and Screening of Remedial Action Alternatives for Operable Unit No. 1 (OU 1) on May 3, 1994, and after reviewing it, has the following comments. Most of these comments were discussed during our meeting of May 13 with DOE and its contractors, and at that time, general agreement was reached for revisions to this document which should have begun shortly after the meeting date. Continued timely working meetings are critical to maintaining the progress that we are making in the development of the CMS/FS report for OU 1. In addition, EPA and CDH are attempting, whenever possible, to submit our written comments to DOE in less than the allotted time frame, so as to facilitate meeting the established milestones.

GENERAL COMMENTS

1. The document appropriately refers to the OU 1 Phase III RFI/RI Report for details of the site history and characterization. Nevertheless, some discussion is needed near the beginning of this document regarding the existing source of groundwater contamination at OU 1. In particular this should address the most probable location of solvents at 119.1; such as residuals in vadose zone soils and/or DNAPL pools at the top of bedrock. The uncertainty of such interpretations should also be addressed qualitatively. The effectiveness evaluation of each alternative should also focus on source removal or reduction as well as ground water remediation.
2. The document should more clearly explain why certain process options were selected for inclusion in alternatives and others were not. The rationale for developing alternatives unclear. Due to the innate advantages of in-situ treatment and rapidly evolving technological development in this area, EPA is especially interested in



evaluating process options such as bioremediation, permeable reaction walls, permeable treatment beds, and air sparging. Therefore, solid rationale must be clearly stated if any of these options are to be screened out from further analysis.

3. To provide a range of alternatives, as prescribed by guidance, alternatives that include some intermediate actions should be developed in the document for evaluation in the detailed analysis of alternatives.
4. The existing interim measure/interim remedial action (IM/IRA) water treatment system is included in the majority of remedial alternatives developed. The text should state that this system may require modifications to provide adequate treatment of extracted groundwater, especially in light of the fact that it was recently determined to be ineffective in treating carbon tetrachloride at a concentration of 100 ppb.
5. Cost estimates for each of the alternatives developed should be included in the alternatives screening section for comparison purposes.

SPECIFIC COMMENTS

1. Figure 2-3, Page 2-11. The general response action of containment presented in this figure needs several revisions. The descriptions of grout curtains, sheet pilings, and cryogenic barriers indicate that they should be listed as process options for horizontal subsurface flow control instead of as vertical subsurface flow controls. The impermeable fabric that is in place as part of the IM/IRA, extending upwards from the french drain, should also be listed as a horizontal flow control process option. Since the IM/IRA will be included in the detailed analysis, horizontal subsurface flow control should not be screened out as depicted by this figure. Grout injection should be listed as a possible vertical flow control process option instead of as horizontal flow control.
2. Figure 2-3, Page 2-14. This figure presents the initial screening of technologies and process options. In the initial screening step, technologies and process options are to be evaluated on technical implementability. Two process options, freeze crystallization and evaporation, were eliminated based on cost. Process options should not be eliminated based on cost in the initial screening step of the feasibility study (FS) process.
3. Page 2-16, Section 2.3.3. As stated above in general comment 4, the UV/peroxide treatment system has actually been shown to not be effective for carbon tetrachloride. Therefore, use of this system would most likely require some modification for this and possibly other contaminants. The exact details need not be specified here, however the statement that it is proven to be effective in treating the contaminants must be revised. The Systems Operation and Optimization Test Report was apparently used by DOE to conclude that the system is effective. That document however, only presented data from the initial months of operation, none of which

included substantial concentrations of contaminants.

4. Figure 2-4, Page 2-18, Air Sparging. This figure presents the evaluation of process options. Under the effectiveness comment for air sparging, it should be stated that off-gas collection and treatment is required, as is stated for RF/Ohmic Heating. Also, under the implementability comment, it states that horizontal drilling is required. It should be clarified that air sparging can be accomplished with either vertical drilling or horizontal drilling.
5. Figure 2-4, Page 2-18, Activated Carbon. This figure presents the evaluation of process options. It states that activated carbon is effective only if used as a final polishing step. Activated carbon can be effective as a primary treatment for many organic compounds and the screening comments should reflect this.
6. Table 3-1, Page 3-3. This table presents a summary of the development of groundwater remedial action alternatives. This table should include soil vapor extraction (SVE) as a process option under the removal general response action since it is a part of alternatives 4a and 4b.
7. Section 3.0. This section discusses the development and screening of remedial action alternatives for OU 1. Two additional alternatives should be developed in this section to provide more in the intermediate range of alternatives in the FS. One alternative is to modify the current groundwater extraction and treatment system to concentrate on the contamination found in individual hazardous substance site (IHSS) 119.1. The second alternative is SVE with groundwater pumping for dewatering. SVE is a proven and effective technology for removing chlorinated solvents from soils and dewatered aquifer materials.
8. Page 3-9, Section 3-3. Alternative 2 is labelled limited action, but this is misleading since it actually involves an entire groundwater collection and treatment system. Although most of this system is already in place, the alternative should be renamed to reflect the action and technology being employed.
9. Page 3-10. The effectiveness evaluation for this system was too simplistic and did not take into consideration the more recent information that is available or relatively minor improvements that could be made to the system. Unfortunately, the collection well has never operated efficiently, and this has contributed to the perception that the overall system is ineffective in collecting contaminated ground water. Besides repairing the existing well, consideration should be given to placement of one or more additional wells for increased recovery of the most contaminated groundwater. As stated above, the data that was used to judge effectiveness of this system were only from the initial months of operation. Consideration should also be given to optimizing this system so that it would collect only water needing remediation. This could be done by discontinuing collection of the 881 footing drain water and limiting

the active french drain to only an area down gradient of 119.1. Therefore this alternative should probably include additional extraction wells and a more focussed collection of groundwater, in only the area affected by releases from 119.1.

10. Page 3-11, first sentence, (incomplete). Although the tank coatings in the effluent storage tanks may have contributed to contaminant concentrations in the treated water, none of the concentrations have ever exceeded discharge standards. It is EPA's understanding that the contaminants from tank coatings decreased significantly from the levels that occurred during the initial months of operation. Nevertheless, if this is a problem, it seems that it could be corrected as a modification to optimize the existing system. This statement must be revised.

SUMMARY

In general, Technical Memorandum #11 follows EPA guidance in format and methodology for developing and screening remedial action alternatives. However, more detail should be included in the document concerning background information and alternative development rationale to clarify the development and screening process. Also, the two additional alternatives discussed in specific comment number seven should be included for detailed analysis to provide an adequate range of alternatives. By addressing the above comments, Technical Memorandum #11 will be a clearer and more complete document.

If you have any questions about these comments, please contact Gary Kleeman of my staff at 294-1071.

Sincerely,



Martin Hestmark, Manager
Rocky Flats Project

cc: Scott Grace, DOE
Jeff Swanson, CDH
Zeek Houk, EG&G
Tim Reeves, DOE (Aguirre)