

**Response to EPA General Comments on August 1994
Draft Final Corrective Measures Study/Feasibility Study (CMS/FS)
881 Hillside Area (Operable Unit 1)
Rocky Flats Environmental Technology Site**

February 1995

ADMIN RECORD

A-OU01-000743

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General Comments

Comment 1

DOE has incorrectly concluded that State Groundwater Standards are not applicable to Rocky Flats. This fundamental mistake will mean that much of this document must be rewritten in order to adequately assess compliance with this ARAR. DOE has not presented full rationale with supporting evidence that would convince EPA that these standards are not applicable.

Response

DOE has carefully reviewed the State's groundwater ARARs position and the regulations concerning the State's Basic Standards for Ground Water (5 CCR 1002.8.3.11.5). DOE has determined that the State's basic standards are potential ARARs for all contaminants except radionuclides. The CMS/FS will be revised to reflect this potential ARAR at OU 1.

Resolution

As discussed in meetings held on December 8 and December 14, 1994, between DOE, EPA, and CDPHE, the resolution to this comment is as stated in the response above.

Comment 2

In light of the above comment, it is obvious that DOE's preferred alternative of institutions controls will not achieve compliance with State Groundwater Standards. Therefore, one of the other alternatives that will remediate groundwater must be chosen as a preferred alternative. Since the french drain and treatment plant are already in place, it seems that there is much advantage to utilizing both of these components and optimizing this system through added enhancements in order to reduce the remediation time frame. As such, it may be necessary to consider other modifications to the alternatives already presented, such as the use of surfactants, horizontal wells, etc. It is also necessary to more thoroughly and accurately evaluate the effectiveness and cost of the french drain and treatment plant, factoring in the discontinued collection of 881 footing drain water.

Response

The selection of a preferred remedy at OU 1 should be based on the results of the detailed analysis of alternatives. This approach to a preferred remedy selection is consistent with both RCRA and CERCLA and subsequent guidance under each. Assuming that a remedial action is warranted prior to examining the revised results of the detailed analysis of alternatives is both premature and potentially inconsistent with both RCRA and CERCLA guidance. DOE has followed the approach outlined in the preamble to the NCP rules concerning program goals, program management principles, and expectations (55 FR

8702 8706) Further it is not obvious that the preferred alternative recommended in the OU 1 draft final CMS/FS report would not achieve compliance with State Groundwater Standards. Until a specific point of compliance is agreed upon the EPA's assumption that a remedial action is necessary to achieve compliance under the State Groundwater Standards (which are different from the chemical specific ARARs presented in the CMS/FS) is invalid. DOE has suggested demonstrating compliance with certain performance monitoring points prior to selection of a remedy while compliance at several locations is evaluated by the agencies and the public.

Resolution

As discussed in the meeting held on December 14, 1994 between DOE, EPA and CDPHE, the results of the revised CMS/FS report will be reviewed prior to selecting a preferred remedy for OU 1. The results of the revised detailed analysis of alternatives will be presented to both agencies and input will be solicited at that time for selecting an appropriate remedial action for preparation of the proposed plan for OU 1.

Comment 3

The FS states that the preferred alternative for OU1 is institutional control without the french drain but with groundwater monitorings. Under this strategy chlorinated solvents in the subsurface will continue to contaminate groundwater until sources diminish through natural processes. However due to some uncertainty regarding the location and nature of the sources it is difficult to determine with confidence how long institutional controls and groundwater monitoring will be required. Modeling results presented in the FS indicate that concentrations at Woman Creek will continue to increase until the year 2369 or for 375 years into the future. To ensure that Woman Creek is protected it follows that groundwater monitoring will be required as long as concentrations increase but only 30 years of monitoring is accounted for in the cost estimate for the preferred alternative.

Response

Due to the impact of present worth analysis on cost estimates of monitoring periods extending beyond 30 years, EPA guidance recommends that costs occurring beyond thirty years be neglected in feasibility study cost analyses. Specifically the *Remedial Action Costing Procedures Manual* (EPA 1987) states on page 3-21 "Remedial action alternatives requiring perpetual care should not be costed beyond thirty years for the purpose of feasibility analysis. The present worth costs beyond this period become negligible and have little impact on the total present worth of an alternative." Also the *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA 1988) states on page 6-13 "In general the period of performance for costing purposes should not exceed 30 years for the purpose of detailed analysis." In addition 30 year monitoring periods are required under RCRA for closure actions that may impact groundwater (6 CCR 1007.3-264.117). The costing of monitoring periods for thirty years does not limit the actual monitoring period which would be extended if continued monitoring is required.

Resolution

As discussed in the meeting held on December 14, 1994 between DOE, EPA and CDPHE, the monitoring period described in the CMS/FS report will remain at 30 years as prescribed by guidance except for remediation alternatives which may limit the amount of monitoring required.

Comment 4

The source removal remedial alternatives offer the possibility of removing source areas and potentially reducing the post-closure monitoring period and the potential for future corrective action. Therefore the time required to reach remedial action objectives (RAOs) is one of the major difference among the three general types of alternatives evaluated (monitoring, containment, and source removal followed by residual contaminant containment and monitoring). The FS must evaluate the time element in more detail before a remedial alternative is recommended. The report must also provide more discussion about the uncertainty of the source extent and how this uncertainty affects the effectiveness of the source removal technologies. These discussions must also consider the degree of confidence gained after the proposed soil gas study is conducted. In addition, the FS must estimate the time it will take to reach a point when monitoring is no longer required for each alternative and incorporate these results into the comparative analysis. The FS must also consider the uncertainty associated with the models when evaluating the effectiveness of the various strategies. Finally, the FS should incorporate a sensitivity analysis into the model results to further evaluate the impact of subsurface contaminant uncertainty.

Response

Where possible, the elements of this comment will be included in the revised CMS/FS report. In particular, more text will be added to the document discussing the uncertainties involved with each remedial action and with the source areas in general. However, it is because of the large uncertainty associated with the source areas at OU 1 that it was not deemed appropriate to specify the monitoring periods required for each alternative. Until data are available concerning the actual performance of a remedial action at OU 1, it is impossible to accurately predict the monitoring period required for any alternative other than through standard guidance (i.e., 30 years). In addition, it is believed that these time periods will not affect the selection of a preferred remedy and therefore are not critical to the detailed analysis of alternatives.

Uncertainties associated with the groundwater model will be discussed further in the revised CMS/FS. A sensitivity analysis was suggested by DOE previously but could not be accomplished in the schedule provided. Both EPA and CDPHE acknowledged this fact and agreed that it would not be presented in the draft final CMS/FS. A sensitivity analysis will be initiated for the OU 1 CMS/FS and will be incorporated based on schedule constraints.

Resolution

As discussed in meetings held on December 8 and December 14, 1994, between DOE, EPA, and CDPHE, the resolution to this comment is as stated in the response above.

Comment 5

Given the proximity of OU1 to Woman Creek, one of the primary functions of any remediation that occurs at OU1 should be to protect Woman Creek and the associated ecological receptors. Therefore, protecting ecological receptors associated with Woman Creek must be an RAO for OU1.

Response

This issue will be discussed further through a special work group designated by DOE and the regulatory

agencies to resolve specific comments. However, this exposure route was not included in the RFI/RI report or the BRA and it is unclear why the EPA is raising the issue at this time.

Resolution

As discussed in meetings held on December 8 and December 14, 1994, between DOE, EPA, and CDPHE, this comment will be resolved by including additional detail in the short-term effectiveness evaluation of each alternative concerning impacts to Woman Creek and other environmental receptors. In addition, an RAO will be added to include protection of ecological receptors in Woman Creek.

Comment 6

It is uncertain whether Woman Creek and the associated ecological receptors will be protected under the proposed remedial alternative. Throughout the FS, the text states that maximum contaminant levels (MCLs) need to be met only at Woman Creek to be protective. It is not clear whether MCLs will protect ecological receptors associated with Woman Creek. The FS must be revised to illustrate how Woman Creek ecological receptors will be protected from OU1 contamination.

Response

See response to General Comment #5.

Resolution

See resolution to General Comment #5.

Comment 7

More detailed discussion about the proposed monitoring plan must be added to the FS, particularly since monitoring is one of the primary features of the preferred alternative and is common to all alternatives. The alternatives that would suspend french drain operations but leave it in place (Alternatives 0 and 1) imply that monitoring will continue and that the french drain will be reactivated only if monitoring results exceed predicted values. The only locations for which predicted values are given in Appendix B are both down gradient of the french drain. The text does not specify which monitoring wells correspond to these locations. Regardless, by the time concentrations begin to exceed predicted values down gradient of the french drain, it may be too late for the french drain to be effective. If a contamination front is detected below the french drain, it is probable that the contaminants have already spread throughout the length of the french drain. Monitoring wells that will be used to trigger remedial decisions should be located above the portion of the french drain that intersects the expected contaminant flow path. Currently, the closest well reported to have 9,500 micrograms per liter ($\mu\text{g/L}$) of trichloroethene (TCE), 2,600 $\mu\text{g/L}$ of carbon tetrachloride, and 590 $\mu\text{g/L}$ of tetrachloroethane (PCE) from a sample collected in late 1992. On the basis of these results, french drain operation should not be discontinued under any of the alternatives. If future wells are planned for the area above the french drain, investigative methods should be used that will optimize the well location with respect to bedrock topography and the contaminant plume.

Response

The location of monitoring wells is typically not a component of the CMS/FS as it does not affect alternative development or the detailed analysis of alternatives. This information is usually included in the PRAP/PP CAD/ROD or in a post-closure monitoring plan. More information regarding the monitoring plan will be incorporated into the CMS/FS report at the agency's request although DOE disagrees that the information is relevant to the remedy selection process. Note that both regulatory agencies will have input to the monitoring plan through any of the documents mentioned above.

Resolution

As discussed in meetings held on December 8 and December 14, 1994 between DOE, EPA and CDPHE, the resolution to this comment is as stated in the response above.

Comment 8

There is no mention in this document of the buried gas transmission line that crosses OU1 in an east-west direction between 119 1 and the French Drain. The existence of this feature could certainly impact some of the alternatives discussed in this document. Additionally, since this line lies in the path of the migrating contaminated groundwater, an evaluation of how it might be affecting migration is needed.

Response

It is unclear how this comment could impact the remedial action alternatives presented in the CMS/FS report. The line is a utility feature which will undoubtedly be reviewed during detailed design. The purpose of the CMS/FS report is to evaluate conceptual approaches to remediation of OU 1. Details such as the transmission line do not impact the analysis, especially in the case where the line is not in the immediate vicinity of the treatment zone as is the case here. In addition, evaluation of the transmission line as a potential route for contaminant migration is not within the scope or purpose of the CMS/FS report. This issue should have been raised during the preparation of the RFI/RI report if EPA felt that it warranted significant attention.

Resolution

As discussed in meetings held on December 8 and December 14, 1994 between DOE, EPA and CDPHE, this comment will be resolved by including a reference to the gas transmission line wherever alternatives are presented that could potentially be impacted by the presence of the line.

Comment 9

This report fails to make use of all available and pertinent data, and this is especially critical in the ground water modeling that was performed. Apparently only analytical data from 1990 through mid 1992 was used in the modeling, even though data from 1987 to the present is readily available for this purpose. Nor were the soil gas survey results from December 1993 mentioned or presented, although a much older (pre 1987) soil gas survey was cited a few times in the text. What happened to the cores and associated data that were proposed in the OU1 Treatability Study Work Plan, Soil Flushing, Biotreatment, and Radio Frequency Heating, September 1992? That work plan was designed for the purpose of collecting site

specific data to be used in evaluating alternatives for the OU1 CMS/FS and any data that was collected must be presented in this report

Response

DOE believes it is appropriate to use the data set considered in the RFI/RI report for the groundwater model constructed for the OU 1 CMS/FS. Groundwater monitoring data for the hillside is available to the present date and will continue to be available in the future. However the groundwater model must consider a data set that is static and cannot be updated continuously based on current monitoring programs. The data set selected for the model is the most appropriate data set to use given its use in the RFI/RI report to which results of the model are being compared. Remedy selection is based on the results of the CMS/FS report which in turn is based on the results of the RFI/RI report. However at the request of both agencies the groundwater model has been revised to include data through 1994. It is assumed that this data will be sufficient to satisfy this comment.

Note that the intent of the treatability study work plan was not to gather soil characterization data. Rather the intent of the study was to gather soil samples for testing of various treatment technologies. Unfortunately soil samples recovered contained few if any detectable concentrations of contaminants even though they were taken from the most probable contaminant regions at IHSS 119.1. Data from the tests themselves were supposed to be used for evaluating alternatives. Since the tests were not performed due to the unavailability of contaminated soils the data are not available to include in the CMS/FS report.

The CMS/FS report will be revised to reference both soil gas surveys. The data was used indirectly in the CMS/FS during conceptualization of remedial action alternatives. The text will be revised to include this information.

Resolution

As discussed in meetings held on December 8 and December 14, 1994 between DOE, EPA and CDPHE the resolution to this comment is as stated in the response above.