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Ms. Laurie Peterson-Wright
EG&G Rocky Flats, Inc.
P.O. Box 464, Bldg. 080
Golden, Colorado 80402-0464

Subject: Submittal of April 24, 1995 Meeting Minutes
Technical Working Group Meeting for Operable Unit No. 7
(MTS Contract 353017TB3)

Dear Ms. Peterson-Wright:

Enclosed are meeting minutes to document the April 24, 1995, technical working group meeting for the OU 7 landfill closure interim measure/interim remedial action and environmental assessment. The purpose of the meeting was to respond to comments on the Proposed Closure Strategy for OU 7 draft report, and to present preliminary results of the screening-level ecological risk assessment.

If you have any questions, please contact me at your convenience.

Sincerely,

Myra Vaag
Project Manager

Enclosure

| | | | |
|-----|-------------------------|------------------|---------|
| cc: | W. Bartholomew w/o EG&G | B. Caruso | Stoller |
| | T. Lindsay EG&G | M. Eisenbeis | Stoller |
| | P. Martin EG&G | K. Fiebig | Stoller |
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| | | C. Gee | Stoller |
| | | J. Jankousky | Stoller |
| | | D. Palmer | Stoller |
| | | L. Ross w/o | Stoller |
| | | B. Stephanus | Stoller |
| | | MKV Chron w/o | |
| | | OU7 Project File | |

ADMIN RECCRD

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Minutes for the OU 7 Landfill Closure IM/IRA/EA DD
Technical Working Group Meeting
April 24, 1995

Comments on the Proposed Closure Strategy for Operable Unit No. 7, Draft Report, April 13, 1995, were discussed, and responses are presented here as part of the meeting minutes. The purpose of the document was to (1) present the conceptual strategy for closure of OU 7, (2) provide a basis of discussion for the April 25 agency interface meeting, (3) present reasons for modifying the Proposed Action Memorandum (PAM), and (4) solicit approval of the conceptual strategy before the Draft Landfill Closure IM/IRA/EA Decision Document is completed. The document was written for an audience familiar with the site. It was not intended to replace or cover the breadth and depth of information typically covered in an IM/IRA decision document.

Because the Proposed Closure Strategy for OU 7 is an informal position paper and not a deliverable, it may not be finalized and editorial comments and comments on formatting may not be addressed. Where comments pointed out weaknesses in the conceptual strategy, additional information will be added to strengthen the PAM and the Landfill Closure IM/IRA/EA Decision Document. Comments and responses are presented in the order that they appear in the text and were discussed at the meeting, not by reviewer.

Preliminary results of the screening-level ecological risk assessment were presented.

General Comments

1. In general, this document provides good coverage of the conceptual plan for the OU 7 IM/IRA/EA. The strategy for what constitutes the source area presumptive remedy vs. non-source area media remedies is presented well. The document addresses what measures will be taken and what media do not require an active remedy. However, I have specific comments on weaknesses in the presentation, which are listed below in text page order.

No response needed.

2. Change "non-presumptive remedy components" to "other components" because of its negative connotations (verbal comment).

The 1993 EPA guidance document Presumptive Remedy for CERCLA Municipal Landfill Sites presents response action objectives for the presumptive remedy and for non-presumptive remedy media (groundwater, surface water, sediments, and wetland areas). Although the term "non-presumptive" is used in EPA guidance, it will be changed to "other" as requested.

3. Report needs an executive summary.

An executive summary will be added to the Proposed Closure Strategy for Operable Unit No. 7 if the report is revised.

4. Location of OU 7 relative to the Rocky Flats site should be included.

It was assumed that the reader would know where OU 7 is located. Location maps will be included in the Seep/Groundwater Control PAM and the Landfill Closure IM/IRA/EA Decision Document.

5. The outline of the report appears to be adequate for communicating the DOE strategy for closure of this Operable Unit. However, a brief discussion on the history of this project would help the reader understand the current position.

A discussion of the history of the OU 7 project will be included in the introduction of the Landfill Closure IM/IRA/EA Decision Document.

6. QA/QC of this document is strongly recommended. Tables in the appendices appear to be obtained directly from another source and are formatted different from the those in the text. Table numbers in the appendices require corrections.

If EPA and CDPHE approve the closure strategies for OU 7, the document will not be revised. If the agencies have significant concerns with any of the strategies, new strategies will be developed and the document may be revised. If the document is revised, QA/QC will be performed and tables will be reformatted and renumbered.

7. I was somewhat disappointed by the lack of data presentation. For example, Tables 1 and 2 present maximum concentrations of compounds that exceed ARARs. This type of data table has gotten us into the current situation. We should not present any data without qualifiers added by the lab or the data validation contractor. In addition, mean and the method detection limits should also be presented. The data tables currently in the report do not present an accurate picture of the contamination at the site. The DOE position should be backed up with enough data so that an independent reviewer can reach the same conclusion.

Data tables will be revised to include frequency of detection, qualifiers, and detection limits in the Landfill Closure IM/IRA/EA Decision Document.

8. The Tables present maximum concentration data, or maximum concentrations which exceed ARARs. These data would be much more convincing and informative if the numbers of samples collected, the range of results, and the ARARs against which the numbers have been compared were also presented. If the numbers of samples collected are too small for statistical analysis then the maximum results must be presented. If there are sufficient numbers of samples, the 95% upper confidence limit would be a better choice.

Data tables will be revised to include numbers of samples collected and range of detected concentrations. Maximum results were used for background comparisons; 95% upper confidence limit values were used for the focused risk assessments. Data tables will be revised to include frequency of detection, qualifiers, and detection limits in the Landfill Closure IM/IRA/EA Decision Document.

9. There are numerous references to Colorado and federal regulations in this document. The federal references for RCRA should be changed to the state regulations, and the state regulations should be correctly referenced. (Examples: Page 3 - 40 CFR Part 261 should be 6 CCR 1007-3, Part 261); Figure 1 - 6 CCR Part 260.10 and 8 CCR Part 261.31 should be 6 CCR 1007-3, 261.10 and 6 CCR 1007-3, 261.31).

References to regulations will be revised in the Seep/Groundwater Control PAM and the Landfill Closure IM/IRA/EA Decision Document.

10. Groundwater flow direction(s) should be clearly stated prior to discussion of groundwater.

Groundwater flow directions are discussed on page 34 of the document. Discussions of groundwater in the Seep/Groundwater Control PAM and the Landfill Closure IM/IRA/EA Decision Document will be clarified, as appropriate.

11. Risk assessment methodology utilized is lacking. Information regarding how are risks calculated and how they are used to determine if remediation is required is missing.

Risk assessment methodology will be included in the Landfill Closure IM/IRA/EA Decision Document.

12. Groundwater Risk Assessment - Please provide information on how an office worker at OU 7 will be exposed to groundwater. The only two exposure routes are ingestion of groundwater and direct contact via bathing or washing. It appears that both these exposure routes to an office worker are mitigated via institutional control (i.e. groundwater water is not used). It appears that there is no groundwater risk to an office worker due to institutional control. The groundwater risk should be evaluated at the boundary of the site where DOE has no institutional control.

Groundwater ingestion by an office worker was used as a bounding scenario to determine if the groundwater required remedial action. However, DOE does not presume that groundwater will be ingested by office workers. Additional information on the methodology will be included in the Landfill Closure IM/IRA/EA Decision Document.

13. Explanations on cover and slurry walls are lacking:

a. What type of cover are we proposing? Is this a single layer clay cap or something else? If this action is a RCRA closure, then do we need a RCRA cap?

b. Why do we need both a cover and the slurry wall. What are the risks associated for the following scenarios:

(1) without any action (baseline);

(2) with a cover only;

(3) with a slurry wall only; and

(4) with a cover and slurry wall.

c. Costs associated with the cover and slurry wall.

d. What other alternatives have we evaluated and their associated costs?

Details about the slurry wall will be presented in the Seep/Groundwater Control PAM; details about the cover will be presented in the Landfill Closure IM/IRA/EA Decision Document.

14. Depth and type of the slurry wall proposed are lacking. Please provide information on the implementability of the proposed slurry wall.

Depth and type of slurry wall are discussed on page 26 of the document. Additional details will be presented in the Seep/Groundwater Control PAM.

15. DOE is proposing to delist surface water in the East Landfill Pond under CERCLA. The report should cite an example where this has been proposed and has been successful. If Rocky Flats is going to be the first site, it may not be worth fighting the battle.

Stoller is reviewing information from other sites in EPA Region VIII and will include this information in the Landfill Closure IM/IRA/EA Decision Document, where appropriate. If risk to human health is low, delisting the seep water and/or pond water will alleviate treating to standards, resulting in a significant cost savings to DOE.

16. There is a lack of information in the report on what was done at other sites in the state of Colorado. This information would help support DOE's position and communicate to the agencies that the DOE proposal is not unreasonable.

Stoller is reviewing the Records of Decision from other sites in EPA Region VIII to obtain this information. Information will be included in the Landfill Closure IM/IRA/EA Decision Document, if appropriate.

Specific Comments

1. Section 1.1, page 1: Reference a figure that shows the location of IHSS 114, 203, 167.2, and 167.3.

A figure should be referenced. The Seep/Groundwater Control PAM and the Landfill Closure IM/IRA/EA Decision Document will include a site location map that shows IHSSs.

2. Section 1.1, page 1, paragraph 2: What is the "process improvement proposal for OU 7?" The document should be referenced in the text of the section.

The process improvement proposal for OU 7 is a letter proposal from EG&G to DOE (EG&G 1993a) and from DOE to EPA and CDPHE (DOE 1994b) and is referenced in the text.

3. Page 1, paragraph 3, "...PAM will be modified to address upgradient groundwater intrusion and migration into the source area by isolation and containment which will ultimately retard the volume of leachate generated."

The statement in the Seep/Groundwater Control PAM will be modified as follows: "...PAM will be modified to address intrusion and migration of upgradient groundwater into the source area by isolation and containment, which will ultimately reduce the volume of leachate generated."

4. Page 1, paragraph 3, This modified accelerated action, consists of building a slurry wall on the north side of the landfill where the existing groundwater intercept system has failed, and is more consistent with the final remedy than the seep collection and treatment action. The evidence and causes of failure are the following: (1) Groundwater reports have shown insignificant heads in wells that straddle the system (2) Modeling has shown 60% of the total groundwater migration into the source is from the north side (3) The intercept system was never extended in depth to the weathered bedrock which allowed migration underneath the system (4) The minimum slope which could allow sediment buildup and blockage within the pipe drain.

A similar statement that presents the evidence and possible causes of failure of the existing groundwater intercept system will be included in the Seep/Groundwater Control PAM.

5. Page 2 - In the first sentence of the first full paragraph, do we need to add a discussion of the EA requirements, which I do not think are actually addressed by the IAG as being part of the IM/IRA Decision Document requirements?

The EA will be presented in the Landfill Closure IM/IRA/EA Decision Document.

6. Page 2 - The discussion of the submittal schedule in the first full paragraph should also reference the public involvement activity that tracks with IM/IRA development and approval. We understand that the OU 4 IM/IRA for Solar Ponds closure may be subjected to multiple, duplicative public involvement activities related to the closure plan requirements of RCRA. A single public involvement program should be proposed that would address the IM/IRA/EA and any related RCRA closure or permitting action that CDPHE thinks is necessary and RFFO agrees to. The EG&G OU 7 Project Manager should confer with the OU 4 counterpart on this experience.

A single public comment period is envisioned for the Landfill Closure IM/IRA/EA Decision Document, which (along with the Final Work Plan Technical Memorandum) constitutes the closure plan. This schedule will be presented to EPA and CDPHE.

7. Section 1.3, Page 3, paragraph one: Since the definition provided for F039 leachate in 6 CCR 1007-3, Part 261 refers to land-disposed waste, the references to disposal of hazardous waste should be replaced with land-disposed hazardous waste.

Text in the Landfill Closure IM/IRA/EA Decision Document will be changed as requested.

8. Section 1.3, page 3: In reference to the flow chart in Figure 1, "the fourth and final step is to determine if the "contained in" policy applies to these environmental media. If it does, a risk-based analysis should be performed to determine whether or not the environmental media contain hazardous waste." Although this is true from a practical perspective, from a regulatory perspective it is untrue. If you have a listed waste it must meet standards. Here, if risk is below 1E-06 it is presumed that the water no longer "contains" listed waste whether or not treatment is applied.

The text and figure will be changed for the Landfill Closure IM/IRA/EA Decision Document. Concentrations of contaminants in environmental media will be compared to standards.

9. Section 1, Page 4, Figure 1: This figure should be replaced with the updated version prepared by EG&G. The updated version differentiates between new spills and leaks of hazardous waste which are cleaned up within a specified time period, thereby meeting the definition of land disposal.

The updated figure will be used in the Landfill Closure IM/IRA/EA Decision Document.

10. Figure 1 and 2 and Section 1.3, pp. 3-7: The methodology presented in Figure 1 appears correct with the exception of the definition of "disposal." I understand that Judith Stewart is providing comments on this point. I have a conceptual problem with this section being presented as a methodology for determining if only treatment is required. It seems that the main use for the methodology in the remainder of this document is for determining of whether or not remedial action is needed, whether it be treatment, containment or removal. The need for treatment, per se, would be assessed if remediation were determined to be necessary and if the remedy chosen involves active management of the waste or contaminated media (removal, pumping, piping, discharge, or disposal, etc.). Further, the need for treatment would then depend upon the levels of contamination vs. ARARs, which would include RCRA Land Disposal Restriction standards. The LDRs are not mentioned in this section. Would Figure 2 still be a correct presentation if "treatment" were replaced with "remediation" in the boxes just downflow of the decision boxes?

Figure 1 - The figure has been revised (land disposal), and the updated figure will be used in the Landfill Closure IM/IRA/EA Decision Document. Treatment will be replaced with remediation.

Figure 2 - The figure will be revised. Treatment will be replaced with remediation. The ARARs comparison will be moved down to follow the decision box for risk within the 1E-04 to 1E-06 range.

11. Page 6 - Why weren't subsurface soil samples taken? Are those samples taken at the depth of 0-10 inches considered subsurface soils? Are we assuming that soil at a depth greater than 10 inches is not affected?

Subsurface soil samples were collected for the Phase I RFI/RI. Results are presented in Section 4 (Nature and Extent of Contamination) of the Final Work Plan Technical Memorandum for OU 7. The exposure scenario for an open-space recreational user includes soils from 0 to 12 feet. Analytes detected in

subsurface soils (0-12 feet) from downgradient boreholes that exceed the background UTL_{99/99} value include barium, lead, strontium, zinc, cesium-137, and nitrate/nitrite. Analytes detected in subsurface soils (0-12 feet) from upgradient boreholes that exceed the background UTL_{99/99} value include cesium-137 and radium-228. These data could be included in the focused risk assessment, if appropriate.

12. Page 7 - The 95% UCL was stated as the key parameter for COC determination. On pages 12, 32, E-1, etc., and Tables 4-20, 4-21, SED-1, 4-18, etc., 99% UTL was used and pages 35, B-1, etc., 95% UCL was used. Please provide explanation on how the 95% UCL and the upper tolerance interval (UTL) of the 99% at the 99% upper confidence level (UCL) were used.

The UTL_{99/99}, which represents a value for which there is 99-percent confidence that the UTL is equal to or greater than the true 99th percentile of the background population, was used for statistical comparisons of site data to background data in accordance with Rocky Flats guidance. The 95% UCL, which is the 95 percent upper confidence limit on the arithmetic average chemical concentration, was used for the focused risk assessment in accordance with the 1989 EPA Risk Assessment Guidance for Superfund because it is more representative of the population than the UTL_{99/99}.

13. Section 2, page 8: Why is it stated that "measures to control landfill leachate, affected groundwater at the perimeter of the landfill, and/or upgradient groundwater that is causing saturation of the landfill mass may be implemented as part of the presumptive remedy." These measures are described in the proposed Closure Strategy section. Is there reason to doubt that they will be implemented?

The statement refers to EPA guidance on the general response actions that may be implemented using the presumptive remedy approach. Specific remedies for OU 7 are detailed later in the section.

14. Page 8 - In the second paragraph of Section 2.1.1, RCRA terminology should not be used in reference to leachate that was generated and being managed during the 1970s.

The term "leachate" was inadvertently changed globally to "F039 contained in groundwater" throughout the document; it will be changed back to "leachate."

15. Page 8, Section 2.1.1, Second paragraph: F039 term should not be used to discuss data that was collected prior to enactment of RCRA.

See response to comment 14.

16. Section 2.1.1, page 8, paragraph two: The RCRA waste code, F039, for leachate was not in existence until June 3, 1990, therefore, F039 contained in ground water could not have been draining from the landfill in 1973. All references to F039 contained in waste being present prior to the 1990 date, ground water or otherwise, should be deleted.

See response to comment 14.

17. Page 11, paragraph 1, Need to revise this sentence because it sounds awkward, "The depth to groundwater is anomalously high in the middle of the landfill (projected to be between 20 and 33 feet) because groundwater has migrated under or through the groundwater intercept system in this area."

The sentence will be revised in the Seep/Groundwater Control PAM as follows: "The depth to groundwater is anomalously high in the middle of the landfill due to intrusion of groundwater on the north side of the landfill."

18. Page 11 - In Section 2.1.3, the initial reference to the cover system being proposed is to a "RCRA Subtitle C composite cover" and the discussion then switches to a "single barrier cover" that "will meet the RCRA requirement." This needs to be presented better as it is central to our strategy for the landfill proper. We should not say that the composite cover "is recommended," but that a "RCRA Subtitle C cover is an applicable ARAR" in view of the disposal of hazardous wastes in the landfill. Then, we need to explain the equivalent protectiveness of the single barrier cover to make a logical progression to the second paragraph of Section 2.1.3.

The discussion of the landfill cover will be clarified in the Landfill Closure IM/IRA/EA Decision Document.

19. Section 2.1.3, Page 11: The first paragraph refers to a composite cover and the second paragraph refers to a single-barrier cover. This is confusing and should be clarified.

The standard RCRA Subtitle C cover for hazardous waste landfills is a composite cover, according to EPA guidance, and is an applicable ARAR that should be considered. However, the text in the Landfill Closure IM/IRA/EA Decision Document will be expanded, and HELP modeling results will be used to show that a single-barrier cover will provide equivalent protection. The purpose of the landfill cover is to control the source of surface water to the landfill to reduce leachate generation and subsequent migration.

20. Page 11, last paragraph of Section 2.1.3. Given the large, costly slurry wall that is being proposed as an accelerated action, is well abandonment in 1995 still part of the strategy? Also, we should reference retaining a few wells for slurry wall monitoring prior to closure, per Section 2.6.3.

Budget is outside the scope of this document. Page 26 references the four wells proposed for slurry wall monitoring.

21. Page 11, sections 2.1.3 and 2.1.4 state the closure and post closure objectives or strategies, however, you may want to rephrase them to ensure they cover the following:

Closure Objectives - A. Provide long term minimization of migration [infiltration] of liquids through the cap B. Function with minimum maintenance C. Promote drainage and minimize erosion or abrasion of the cover D. Accommodate settling and subsidence E. Have a permeability less than or equal to the permeability of the natural subsoils.

Postclosure Objectives - A. Maintain the integrity and effectiveness of the cover (settling, subsidence, erosion, etc.) B. Maintain and monitor the groundwater monitoring system C. Prevent runoff and runoff from eroding or damaging the cover D. Protect and maintain surveyed benchmarks E. Maintain and monitor the passive [gas-venting] system.

Remedial action objectives for landfill closure and for the post-closure care period will be clarified in the Landfill Closure IM/IRA/EA Decision Document using the points listed above.

22. Page 11 - In Section 2.1.4, cover maintenance should be discussed, including maintaining surface contours and vegetation, and inspecting and repairing the liner, if necessary, in areas of cover subsidence.

Cover maintenance activities, including those listed above, will be discussed in the Landfill Closure IM/IRA/EA Decision Document.

23. Page 12; Section 2.2.2: Data should be given with the chemical. It is pointless to say that concentrations were elevated.

Concentrations of chemicals will be provided in the Landfill Closure IM/IRA/EA Decision Document, where appropriate.

24. Section 2.3.2, Page 14, paragraph one: The third sentence refers to uncontaminated plutonium molds being found near the asbestos pit. Since the molds are only solid waste, and referring to plutonium only clouds the discussion, this sentence should be deleted.

This sentence will not be included in the Landfill Closure IM/IRA/EA Decision Document.

25. Section 2.4.2, page 16-17: The methods used to arrive at the landfill gas investigation results are not clear. Paragraph three states that EPA Level II field instruments were used to measure total combustible gases, methane, non-methane organic compounds (NMOC) and carbon dioxide. Paragraph five states that concentrations of non-methane organic compounds were determined by subtracting methane concentrations from total combustible gas concentrations. These statements appear to be in conflict with one another.

There seems to be sufficient data available to determine if venting of landfill gases will require an air discharge permit, if discharged gases will require thermal destruction and if existing gas venting wells can continue to be used. Paragraph five estimates total NMOC emissions from the landfill to range from 1 Mg/yr to 54 Mg/yr. Paragraph two discussed measured gas pressures and measured gas flow rates. Paragraph six discusses *in situ* gas sampling results. This data has not been pulled together sufficiently to address closure issues. The proposed closure strategy states that emissions from the burners will be monitored to evaluate the need for additional gas controls. The need for any control, beyond those existing now, needs to be determined.

EPA Level II field instruments were used to measure total combustible gases, methane, and carbon dioxide. Concentrations of NMOCs were determined by subtracting methane concentrations from total combustible gas concentrations.

The purpose of this document was to present conceptual strategies for landfill closure. The data will be "pulled together" and details will be presented in the Landfill Closure IM/IRA/EA Decision Document. Gas venting from existing wells does not require a permit; however, some landfill gas may be diffusing through the interim soil cover and reaching the atmosphere. Once the cap is in place, landfill gases will be controlled by the gas-collection layer in the cover and will be vented to the surface at discrete points; no diffusion will take place. For this reason, concentrations of HAPs may be greater than they are at the present time. Gas emission points will be monitored to determine if burning of emissions is necessary and if a permit is required.

26. Section 2.4.3, Page 17: This section describes the existing gas-venting wells and proposes to leave them in place, while elsewhere, justification has been provided to close the ground water monitoring wells within the landfill, to eliminate compromising the cap. Presumably, the gas-venting wells will not penetrate the cap, but will feed into the passive gas-venting system. This should be clarified.

Details of the gas-venting system, including how the existing gas-venting wells are connected with the gas collection layer of the cap, will be included in the Landfill Closure IM/IRA/EA Decision Document.

27. Page 17 - Last sentence of Section 2.4.2 is too indefinite about air permitting for hazardous air pollutants (HAPs). Either the need for permitting should be pinned down or the means to establish the need should be described through sampling prior to closure or by collecting operating information once the cover is placed.

HAPs detected at the landfill may trigger Clean Air Act permitting requirements under the provisions of Colorado Air Regulation No. 3. As stated in the response to comment 25, concentrations of HAPs may be greater after the cap is in place because no diffusion will take place. Gas emissions will be monitored after

closure to determine if burning of emissions is necessary and if a permit is required. Details will be included in the Landfill Closure IM/RA/EA Decision Document.

28. Page 18, Section 2.5.2: The quantity of groundwater present in the landfill gives the reader an idea that there is lot of water there. Perhaps if number for similar size land area in the front range area is also presented it may help the reader put this into perspective.

The volume of groundwater in a similar size land area would depend on the type of rock and the percent porosity. Perhaps the volume of leachate should be deleted from the discussion.

29. Section 2.5.1, Page 18: See the comment on Section 2.1.1, paragraph two, above. [comment 16]

The term "leachate" was inadvertently changed globally to "F039 contained in groundwater" throughout the document; it will be changed back to "leachate."

30. Section 2.5.2, Page 18, paragraph one and two: All references to F039 contained in ground water within the landfill should be deleted. The text should only refer to ground water in the landfill. F039 should be applied when the ground water leaves the landfill.

The term "leachate" was inadvertently changed globally to "F039 contained in groundwater" throughout the document; it will be changed back to "leachate."

31. Page 21, Table 1: This table does not appear to be referenced in the text.

The table will be referenced in the text if the document is revised.

32. Table 1

| | Table 1 Max Value | Table 4-19 Range |
|--------------------|----------------------|---------------------|
| 1,2-Dichloroethane | 14 ug/l | Missing |
| Benzene | 2 ug/l | 1 - 5 ug/l |
| Chloromethane | 7 ug/l | 4 - 10 ug/l |
| Trichlorethene | 4 ug/l | 1 - 5 ug/l |
| 4-Methylphenol | 4 ug/l | 1 - 10 ug/l |

QA/QC of all tables in the this report strongly recommended.

The maximum value in Table 1 is different than the maximum value in Table 4-19 because the range of detected concentrations in Table 4-19 includes detection limits.

33. Chapter 1: References to Tables 1, 2 & 3 appear to be missing from the text. Analytical values listed in Tables 1 and 2 appear to be identical. Is the assumption that seep and the surface water maximum concentrations are almost identical correct? Verification(s) and explanation(s) of the identical seep and surface water maximum concentrations would be helpful.

References to tables are missing from the text and will be added if the document is revised. Recharge to the East Landfill Pond occurs from groundwater below the pond, seep water, and surface-water runoff from the landfill and surrounding slopes. Pond water is characterized by combining results from two sampling stations, one at the seep and the other at the west end of the pond. Maximum concentrations generally occur at the seep, and thus, are listed for the seep water and for surface water.

34. Section 2.5.3, Page 22, paragraph two: The landfill is regulated by Colorado as a RCRA landfill, as it operated as a hazardous waste landfill from 1980 to 1987. All RCRA requirements for delisting must be met, unless Colorado agrees to reduce those requirements. These actions cannot be taken as just CERCLA actions.

The Landfill Closure IM/IRA/EA Decision Document will present information to show that the seep water and surface water pose no risk to human health and do not contain hazardous characteristics under RCRA. RCRA and CERCLA requirements for delisting will be addressed.

35. Page 22 - The last sentence of the first paragraph of Section 2.5.3 should be made more specific as to how the exposure pathway for F039 in ground water will be incomplete. It is not only that the seep discharge point will be covered, but that XX % of the source water for leachate generation will be eliminated (90%, 99%, 99.9%?).

The corresponding section of the Landfill Closure IM/IRA/EA Decision Document will be clarified by discussing what percent of the source water for leachate generation will be eliminated.

36. Page 22 - Per comment 4 [10] above, the significance of delisting the F039 contained in ground water must be succinctly and completely presented. Either here or in Section 1.3, the use of the CERCLA delisting process instead of the "CDPHE conservative screen" for delisting should be explained and the significance of delisting in terms of the need for either treatment or remediation in general carefully laid out.

The delisting proposal will be strengthened in the Landfill Closure IM/IRA/EA Decision Document.

37. Section 2.6.1, Page 22-23, paragraph one: This paragraph does not clearly describe the groundwater intercept system. Is the "slurry wall groundwater intercept system" as described in the Figure 8 Explanation equal to the "Groundwater Intercept System" or does it also include the "(perforated) and (non perforated)" locations? The text states that "the system is a clay barrier (not a slurry wall) on the outside wall of the leachate collection trench" but there is no reference to a leachate collection trench on Figure 8. For clarity, Figure 8, Figure 9 and the text need to be coordinated.

The groundwater intercept system consists of a leachate collection trench with a clay barrier on the outside wall and a perforated/nonperforated pipe outside of the trench that diverts groundwater around the landfill. Two soil-bentonite slurry walls, tied into the pipe, were added to the system later because waste was disposed in the leachate collection trench during landfill expansion. The figures will be revised and the appropriate section of the Seep/Groundwater Control PAM, and the Landfill Closure IM/IRA/EA Decision Document will be clarified.

38. Section 2.6.1, page 24, paragraph one: It is stated that "Approximately...400 feet of the trench along the southwest side are not keyed into bedrock and, therefore, do not effectively intercept groundwater." This statement does not agree with Appendix C (page C-1, paragraph 3) which stated that the wells on the south side of the landfill are dry in the area where the intercept system is not keyed into the weathered bedrock and asserts that the groundwater intercept system is working on the south side.

Although the intercept system is not keyed into the weathered bedrock on the south side of the landfill, heads are lower (some wells are dry), and groundwater does not appear to be flowing into the landfill. The appropriate sections in the Landfill Closure IM/IRA/EA Decision Document will be clarified.

39. Section 2.6.2, page 24, paragraph three: It is stated "the water balance shows that both a cap and a slurry wall on the north side of the landfill would prevent additional leachate generation." This statement

appears to be misleading. The addition of a cap and slurry wall on the north side were not modeled; and therefore, it can not be stated that additional leachate generation would be prevented. Based on the discussion in Appendix C, it appears that only the current conditions were modeled which demonstrated the ineffectiveness of the groundwater intercept system on the north side.

Additional groundwater modeling, with a slurry wall on the north side only and with a slurry wall and cap, is being performed to show that infiltration of precipitation and groundwater inflow will be significantly reduced, preventing additional leachate generation within the landfill.

40. Section 2.6.3, page 26, paragraph two: A figure is needed to show the location of the proposed slurry wall. Also, justification should be given for the selection of the slurry wall length.

The proposed location, justification for length, and conceptual design of the slurry wall will be presented in the Seep/Groundwater Control PAM.

41. Page 27: If no investigation was conducted for the surface water upgradient of the landfill, then why do we need to install a new ditch for diverting surface water runoff?

The existing ditch will be used to divert surface water around the landfill. This will be clarified in the Landfill Closure IM/IRA/EA Decision Document.

42. Section 2.7.3: Will the ditch be lined?

The existing unlined ditch will be used to divert surface water around the landfill.

43. Section 3, page 28: The meaning of this paragraph is not clear.

This paragraph lists environmental media to be addressed during landfill closure that do not fall under guidance for the presumptive remedy (i.e., non-presumptive remedy components). Closure strategies for these media are presented in the text that follows.

44. Section 3.1.1, page 28, paragraph one: See comment on Section 2.1.1, paragraph two, above. [RCRA terminology should not be used in reference to leachate that was generated and being managed during the 1970s.]

The term "leachate" was inadvertently changed globally to "F039 contained in groundwater" throughout the document; it will be changed back to "leachate."

45. Page 29, Section 3.1.3, First Paragraph, Second Sentence: Not clear what is meant by "portion."

DOE proposes to leave the "portion" of the pond that is not covered by the landfill cap in place. The exact area of the pond will be clarified in the Landfill Closure IM/IRA/EA Decision Document.

46. Section 3.1.3, page 31, second paragraph (on page): See the comment on Section 2.5.3, page 22, paragraph two, above. [The landfill is regulated by Colorado as a RCRA landfill, as it operated as a hazardous waste landfill from 1980 to 1987. All RCRA requirements for delisting must be met, unless Colorado agrees to reduce those requirements. these actions cannot be taken as just CERCLA actions.]

The Landfill Closure IM/IRA/EA Decision Document will present information to show that the seep water and surface water pose no risk to human health and do not contain hazardous characteristics under RCRA.

47. Page 31 - First Sentence of Section 3.2.1: see comment 5. [In the second paragraph of Section 2.1.1, RCRA terminology should not be used in reference to leachate that was generated and being managed during the 1970s.]

The term "leachate" was inadvertently changed globally to "F039 contained in groundwater" throughout the document; it will be changed back to "leachate."

48. Page 34 - In Section 3.3.2, for the contaminants that exceed PRGs, we should point out their average and UCL₉₅ concentrations, the extent of exceedances by maximum values, and, in the case of radium-226, a comparison with the upper limit of background.

Data presentations in the Landfill Closure IM/IRA/EA Decision Document will include average concentrations, 95% UCL concentrations, frequency of exceedances, and background values, as appropriate.

49. Page 34 - A general question on how we present our downgradient ground water strategy -- Although we have said that the point of compliance will be established in the CAD/ROD, should we not discuss where in the ground water system we already see full ARARs compliance so that a point of compliance can be established for the no action scenario. If this point is just downgradient of the East Landfill Pond dam, it would help CDPHE get comfortable with no action.

The ARARs comparison will show where groundwater (and surface water) is in full compliance. This information will be presented in the Landfill Closure IM/IRA/EA Decision Document.

50. Page 36 - The proposal for "containment of the OU 6 IHSSs as part of the landfill closure" should be tightened up to reference only IHSS 166.1 and state what type of containment is intended.

DOE proposes to contain IHSS 166.1, which may be the source of selenium in groundwater, under the landfill cap to prevent surface water from flowing through the IHSS. It is also possible that the source of selenium is the bedrock itself. Most detections of selenium in groundwater are in weathered bedrock wells. Further investigation into selenium geochemistry will be conducted before the Landfill Closure IM/IRA/EA Decision Document is completed.

51. Page 37 - The blanks in Table 3 for Carbon Tetrachloride (downgradient), Carbonate as CaCO₃ (vicinity of the pond), etc. should be explained in a footnote.

If the maximum concentration of the analyte was below the ARAR, the column was left blank. This will be clarified in the Landfill Closure IM/IRA/EA Decision Document.

52. Table 3: Since selenium is a chemical of concern, why is it that this critical information on the downgradient side is missing?

Selenium was not detected in the wells downgradient of the dam.

53. Tables 1, 2 & 3: Please provide explanation on why maximum values were used instead of sample means? Were maximum values used for COC determinations? From information provided in Appendix B, it appears that sample means should be used.

Maximum results were used for background comparisons to identify PCOCs; 95% upper confidence limit (UCL) values were used for the focused risk assessments (COCs). The UTL_{99/99} was used for statistical comparisons of site data to background data in accordance with Rocky Flats guidance. The 95% UCL was

used for the focused risk assessment in accordance with the 1989 EPA Risk Assessment Guidance for Superfund because it is more representative of the population than the UTL_{99/99}.

54. Page 38 - In the last sentence, paragraph 2 of Section 4. Conclusion, the same comment as Comment 10 [35] above applies. [The last sentence of the first paragraph of Section 2.5.3 should be made more specific as to how the exposure pathway for F039 in ground water will be incomplete. It is not only that the seep discharge point will be covered, but that XX % of the source water for leachate generation will be eliminated (90%, 99%, 99.9%?).]

The corresponding section of the Landfill Closure IM/IRA/EA Decision Document will be clarified by discussing what percent of the source water for leachate generation will be eliminated.

55. Page 38 - In the last paragraph, the statement that no action is being taken on downgradient ground water is incorrect in that an action is being taken to contain the suspected source of the primary contaminant that causes a slightly elevated non-carcinogenic risk--selenium.

DOE proposes to contain IHSS 166.1, which may be the source of selenium in groundwater, under the landfill cap as the remedial action for groundwater. It is possible that the source of selenium is the bedrock itself. Most detections of selenium in groundwater are in weathered bedrock wells. Further investigation into selenium geochemistry will be conducted before the Landfill Closure IM/IRA/EA Decision Document is completed.

56. Appendix A: In the RCRA MCLs column, replace 40 CFR with 6 CCR 1007-3. Units are not indicated for most of the ARARs.

The ARARs table will be revised for the Landfill Closure IM/IRA/EA Decision Document.

57. Appendix A: Please provide substantiation for the PQLs listed for the volatile organics. The U.S. EPA's most recent recommended Contract Required Reporting Limits (CRDLs) for volatile organics are approximately 10 times higher than our PQLs.

PQLs will be checked for the Landfill Closure IM/IRA/EA Decision Document.

58. Appendix A

| | ARAR | PQL |
|----------|------------|-----------|
| Antimony | 0.006 ug/l | 0.30 ug/l |
| Silver | 0.050 ug/l | 0.70 ug/l |

Please provide explanation on the proper approach to convince the regulatory agencies that we are in compliance for antimony and silver when our PQLs exceed the ARAR requirements.

The ARARs are in mg/L, not ug/L, so the ARAR is greater than the PQL. Units will be added to each number in the ARARs table.

59. Appendix B, Table SW-1: Surface water ARARs for surface water (such as 1,1-Dichloroethane, 1,1-Dichloroethene, 2-hexanone, etc.) appear to be missing from Appendix A. Please review all tables in the appendices and incorporate the ARARs in Appendix A.

Surface water ARARs for 1,1-dichloroethane, 1,1-dichloroethene, and 2-hexanone are the PQL, which is listed in the ARARs table in Appendix A.

60. Appendix B, Table SW-2: Please modify the statement "Only analytes with PRGs are evaluated in a risk assessment..." Explanation on why some of the PRGs are not developed for Rocky Flats is more appropriate.

PRGs are developed only for analytes that have toxicity criteria.

61. Appendix C: Not enough data are presented to evaluate the representativeness of the modeling effort. In addition to the information presented, tables should be included that present the modeling input parameters for each layer, the boundary conditions, and the modeling assumptions. Also, a figure should be added that shows the cells with numbered rows and columns to relate to Table C-1.

Additional data, including input parameters, boundary conditions, and modeling assumptions, and a figure to show the cells will be included in the Seep/Groundwater Control PAM and the Landfill Closure IM/IRA/EA Decision Document.

62. Appendix F: Please provide an explanation on why the maximum value was used for to determine if arsenic exceeded the PRG value. Use of the maximum value when there are insufficient samples is the proper method. But when there are 216 samples available, a statistical mean is more appropriate. METHODOLOGY FOR USAGE OF MAXIMUM VALUES TO DETERMINE IF PRG VALUES HAVE BEEN EXCEEDED WHEN THERE ARE SUFFICIENT SAMPLES TO OBTAIN A STATISTICAL MEAN SHOULD BE RE-EVALUATED. Same for radium-226.

In accordance with EG&G's methodology for performing risk assessments, maximum values are used for PRG comparisons.

63. Appendix F, Tables SS-1, SS-8 and SS-9: Please provide explanations on why the PRG value for arsenic (10 mg/kg) is lower than the maximum background value (13 mg/kg).

The carcinogenic slope factors derived for arsenic were based on early toxicological studies which may come under review this summer. Background studies on arsenic in the Rocky Mountain region indicate that this metal is naturally high in the marine shales found along the Front Range.

64. Appendix G, Tables GW-1, GW-2 and GW-4: These tables are for OU 7 total groundwater. Please provide an explanation on why the the two sets of data are separated and not combined as a total OU 7 groundwater data set.

As discussed on page 34, groundwater downgradient of the landfill is separated into two populations for data evaluation to assist in determining the optimum location for potential groundwater collection: groundwater in the vicinity of the East Landfill Pond upgradient of the dam and groundwater downgradient of the dam.

Screening-Level Ecological Risk Assessment

The purpose of the screening-level ecological risk assessment was to address the risk of leaving the East Landfill Pond and sediments in place under the proposed OU 7 closure strategy. Media investigated included the pond water, seep water, and sediment associated with the East Landfill Pond.

Chemicals used in the risk assessment were those PCOCs identified for each medium in the Final Work Plan Technical Memorandum for OU 7. Abiotic and biotic data collected during OU 7 field investigations were

used to estimate exposure point concentrations and evaluate site-specific effects. Exposure routes for aquatic life included dermal absorption and ingestion. Exposure routes for wildlife included ingestion of water, incidental ingestion of sediments, and aquatic forage and prey. Receptors included the following:

- Aquatic life (fish and bugs) and sediment associated benthos
- Aquatic-feeding avian species (mallards)
- Aquatic-feeding mammal species (raccoons)
- Herbivores that use the pond for drinking water (mule deer)
- Carnivores that use the pond for drinking water (coyotes).

Preliminary conclusions indicate that there is no risk to aquatic life from pond water (Hazard Index [HI] < 1). The risk to aquatic life from pond sediments is much greater (HI > 1,000), but is dominated by contaminants such as fluorene, anthracene, chrysene, and benzo(b)fluoranthene. Results of water and sediment toxicity testing show survivorship at 75 to 100 percent. The risk to wildlife varies by medium: mallards (HI > 10 for surface water, HI > 10 for seep water, HI < 1 for sediments), raccoons (HI < 1 for surface water, HI > 1 for seep water, HI > 1 for sediment), mule deer (HI < 1 for surface water, HI < 1 for seep water, HI > 10 for sediment), and coyotes (HI < 1 for surface water, HI > 1 for seep water, HI > 1 for sediment). The hazard index is based on no observed effect levels (NOELs). Decisions on acceptable risk levels should be made by risk managers, not risk assessors.

Because the screening-level ecological risk assessment for OU 7 will be the first one completed for Rocky Flats, it may be used as a basis for sitewide ecological risk assessments and risk assessments for other operable units. EG&G and Stoller will meet with EPA and CDPHE to discuss methodology for risk assessments, risk management, and other issues on a sitewide basis separately from OU 7.

Agency Meeting

The purpose of the agency meeting is to obtain agency approval of the basic strategy for closure of OU 7 and resolve potential problems before the Landfill Closure IM/IR/EA Decision Document is completed.

Action Items

- | | |
|---------|--|
| 01-210 | Completed. |
| 211 | Research EPA guidance on applying for ARARs waivers (S. Franklin, Stoller). In progress. |
| 212-216 | Completed. |
| 217 | Research data usability for other OUs to see if OU 7, which used 1990 to 1995 data, is consistent (L. Peterson-Wright, EG&G). |
| 218-229 | Completed. |
| 230 | Research effectiveness, implementability, and cost of alternative technologies for slurry walls, such as the grout curtains/sheet pilings used at Hanford (T. Lindsay, EG&G). |
| 231 | Completed. |
| 232 | Research RCRA regulations to determine if treatment for F039 listed waste is required under RCRA corrective action, and if so, do treatment standards have to be met (L. Peterson-Wright, EG&G, and M. Vaag, Stoller). |

- 233 Completed.
- 234 Research VHS modeling, exposure scenario used, and location of hypothetical receptor well for delisting under CERCLA (J. Jankousky, Stoller).
- 235 Keep current on Pond Water IM/IRA issues (L. Peterson-Wright, EG&G).
- 236-237 Completed.
- 238 Field check the proposed slurry wall for location of mixing stations and potential problems with the existing fence. Stake the proposed slurry wall and have it surveyed (T. Lindsay, EG&G, and P. Corser, TerraMatrix).
- 239 Determine if the following items should be included in the Seep/Groundwater Control PAM: schedule for implementation, header on each page, sign-off sheet, NEPA environmental impacts (L. Peterson-Wright, EG&G).
- 240 Call DOE, EPA, and CDPHE about the May 3 site visit to observe construction of a slurry wall at a site north of Denver (L. Peterson-Wright, EG&G).
- 241 Arrange review of conceptual costs, including overhead percentage, contingency percentage, and health and safety costs (L. Peterson-Wright, EG&G). In progress.
- 242 Discuss project schedule with Advanced Terra Testing to expedite permeability tests and mixing tests, if possible (T. Lindsay, EG&G). Advanced Terra Testing will start the compatibility tests today using potable water. When those tests are completed, tests will be run using site groundwater. The process takes time and will be completed as soon as possible. Completed.
- 243 Investigate delisting strategy under RCRA (talk to G. Guinn, EG&G). Is a CDPHE conservative screen required? Can CERCLA delisting be used for no further action? (L. Peterson-Wright, EG&G, and M. Vaag, Stoller).
- 244 Check regulations for each ARAR to determine if mean values or maximum values should be used to compare to the standard (S. Franklin, Stoller).
- 245 Provide EG&G with a list of environmental impacts to be addressed in the Environmental Assessment section of the IM/IRA/EA Decision Document (M. Vaag, Stoller).
- 246 Check OU 7 database to determine if all lab qualifier columns were captured in the data extraction (J. Jankousky, Stoller).
- 247 Obtain a copy of the new flow chart for F039 determination, which is Figure 1 in the proposed Closure Strategy for OU 7 (L. Peterson-Wright, EG&G).
- 248 Keep current on sitewide point-of-compliance issues (L. Peterson-Wright, EG&G).
- 249 Determine threshold levels for HAP permitting requirements (L. Peterson-Wright, EG&G).
- 250 Revise groundwater and surface water ARARs for radionuclides in accordance with DOE Order 5400.5 (S. Franklin, Stoller).

- 251 Perform groundwater modeling of north slurry wall and north slurry wall combined with landfill cap (J. Jankousky, Stoller).
- 252 Compare mean concentrations of all analytes in groundwater downgradient of the landfill to ARARs (J. Jankousky, Stoller).
- 253 Change references in ARARs tables from federal regulations to state regulations (S. Franklin, Stoller).
- 254 Obtain language on PQLs from L. Brooks (L. Peterson-Wright, EG&G).

Next Meeting

The next meeting will be at 10:00 a.m. on April 26, 1995, in the small west conference room at EG&G. The topics of discussion include feedback from the agency meeting and the Seep/Groundwater Control PAM.

Field trip on May 3, 1995, to observe construction of a slurry wall.

List of Attendees

| Name | Organization | Phone |
|------------------------|-------------------------|--------------|
| Laura Brooks | EG&G | 966-6973 |
| Mary Eisenbeis | Stoller | 546-4474 |
| Linda Guinn | EG&G | 966-8559 |
| Mark Lewis | Stoller | 546-4346 |
| Tom Lindsay | EG&G | 966-6985 |
| Peter Martin | EG&G | 966-8695 |
| Laurie Peterson-Wright | EG&G Project Manager | 966-8553 |
| Paul Pigeon | RTG/DOE Support | 966-5611 |
| Rotha Randall | EG&G | 966-6924 |
| Myra Vaag | Stoller Project Manager | 546-4417 |
| Frank Vertucci | EG&G | 966-8678 |
| Anne Doud White | Stoller | 546-4379 |

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