

RESPONSES TO
COLORADO DEPARTMENT OF HEALTH COMMENTS
CONCERNING THE DRAFT PHASE I
RFI/RI WORK PLAN (Dated 06/22/92)

ROCKY FLATS PLANT
700 AREA
OPERABLE UNIT NO. 8

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

ENVIRONMENTAL RESTORATION PROGRAM

December 1, 1992

REVIEWED FOR CLASSIFICATION/UCNI

By *[Signature]*

Date 1/13/93 *[Signature]*

ADMIN RECORD

A-DU08-000047

INTRODUCTION

The document review comments displayed on the following pages were received from the Colorado Department of Health; undated, received September 11, 1992 . These comments pertain to its review of the document entitled Draft Phase I RFI/RI Work Plan, Rocky Flats Plant, 700 Area, Operable Unit 8; supplements dated June 22, 1992. Responses are provided and follow each comment. The response indicates the position of DOE and the manner in which the comment was addressed and included in the Final Phase I RFI/RI Work Plan dated December 1, 1992.

RESPONSES TO
COLORADO DEPARTMENT OF HEALTH COMMENTS CONCERNING THE
DRAFT PHASE I RFI/RI WORK PLAN (Dated 06/22/92)
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GENERAL COMMENTS:

1. The Phase I RFI/RI Work Plan for OU 10 is the first work plan to be finalized in which an investigation of varied IHSSs within the industrialized portions of the plant is presented. While it is not necessary for the OU 8 Workplan to be identical to the workplan for OU 10, please refer to the final version for guidance. There were lengthy sets of comments and long discussions that set many ground rules for investigations in the industrialized portions of the plant and there should be no reason to re-invent the same concepts. Any presentation technique in the OU 10 Workplan that would enhance the clarity and/or brevity of this workplan should be incorporated.

Response: No response necessary other than reference to and consideration of the OU10 Final Work Plan in preparing specific sections of this Final Plan. Particularly, OU10 will be considered for organization and methodology presented in Sections 5.0 and 6.0 of the plan.

2. The Division has noted many inconsistencies in the industrial area OUs with regard to soil sampling. Please refer to our letter of 9/1/92 (Gary Baughman to Frazer Lockhart) which outlines how we think these inconsistencies can be overcome.

Response: The 9/1/92 letter was obtained from CDH. The Soil Sampling Methodology will be considered and incorporated (or otherwise explained) into the Field Sampling Plan (Section 6.0) of this Final Work Plan.

3. Portions of some of the OU 8 IHSSs lie beneath buildings. Since these portions of the IHSSs cannot be investigated and evaluated, they will need to be monitored until the buildings are removed. Specifically, this means that a sufficient number of ground water monitoring wells will need to be installed to determine if any contaminated water migrates out of the unit. While monitoring of this type is not within the scope of the RFI/RI investigation, determination of the extent and location of any present or past release from the unit is within the investigation scope. Therefore, we urge DOE to consider how the FSP could be modified since the logistical implementation necessary to satisfy both of these concerns could be the same (i.e., installation of wells).

Response: *Section 6.0 discusses the program involving various staged screening and data evaluation activities and subsequent recommendations (Technical Memoranda) that will eventually lead to selecting and siting of monitoring wells to be installed during later stages of the RFI/RI. The location and construction of new monitoring wells and sampling of existing wells will be developed in Technical Memos and implemented during later stages of this Final Work Plan. For all the OU8 IHSSs, considering the general lack of existing investigative data and poor confidence in historical records concerning actual IHSS locations or release(s); the nature of potential contaminates of concern is currently site-specific or knowledge regarding extent and nature of potential contaminates of concern is currently inadequate to recommend location of monitoring wells at this point in development of the Final OU8 RFI/RI Work Plan.*

4. The Field Sampling Plan should contain sub-sections that describe the rationale of each sampling strategy and preferred methodology specific to the conditions and expected contaminants of each IHSS. Not only should the work plan give instructions to the individuals who will ultimately implement the plan, as Table 6.1 attempts to do, but it also must demonstrate to the Division and EPA that the plan represents a sound design.

Response: *Within the FSP section, for each IHSS, a discussion of the rationale and objectives is provided concerning the selection, location, and extent of initial and subsequent staged site investigations and methodology.*

5. Although some issues remain that may need to be addressed in the HRR quarterly updates, the HRR is final and approved. DOE should consider which PACs may be logically and efficiently incorporated into this work plan versus their inclusion into potentially new operable units. (The Division, as specified in Section I.B. 5 of the IAG Statement of Work (SOW), will review the HRR to determine whether DOE will be required to initiate new RFI/RI or amend existing RFI/RI Work Plans as specified by IAG, SOW, Section VI.A.)

Response: *In accordance with the decisions and understandings reached during the CDH/EPA Comment Review Meeting (09/24/92) PACs will not be incorporated or investigated as part of this Work Plan until EPA and CDH directs DOE to do so per Section I.B.5, Attachment 2 of the IAG.*

6. Footing drains of building were raised as a large issue during scoping meetings but are for all practical purposes ignored in the FSP. DOE must revisit the FSP in regard to footing drains and determine if sampling of these structures is appropriate in determining the nature and extent of contamination.

Response: *As with CDH General Comment 3, above, the necessary understanding concerning*

location, extent and engineered construction of footings drains and underdrains will be developed during implementation of Stage 1 of the Final Work Plan. Location of the drains and the methodology for investigations and sampling of drains and outfalls within OU8 will be presented in Technical Memorandum 1 and implemented during Stage 2. This is the same intent as presented in the June 22 Draft plan. The discussion of this staged activity has been reviewed and an attempt made to fully explain and clarify this activity.

SPECIFIC COMMENTS:

Comment: Table of Contents: A list of acronyms should be added to this work plan.

Response: *A listing is provided following the table displaying contents of appendices.*

Section 1.0 - INTRODUCTION

Comment: Section 1.6.1: At the top of page 1-8 the statement is made that Figure 1-3 locates "... the 38 IHSSs for which Phase I RFI/RI activities are planned..." Please revise the text here, and elsewhere as needed, to reflect the reduction to 24 IHSSs under this work plan.

Response: *38 is changed to 24.*

Comment: Section 1.6.7.3: The statement under "Hydraulic Conductivities", page 1-29, regarding the conclusion that hydrostratigraphic units "...are not generally believed to be capable of producing amounts of water of economic significance..." is appropriate and must be amended. While the aquifers may not produce salable water it is yet to be determined if quantities are sufficient to support "beneficial use" as the term is applied by the State Engineer's Office. Additionally, contamination of alluvial water that may transmit contaminants to other surface or groundwater resources may not be dismissed.

Response: *Revisions have been made to cross sections.*

Section 2.0 - OPERABLE UNIT 8 SITE CHARACTERIZATION

Comment: Section 2.3.1: Regarding the first reference of this section, first paragraph, there is no EG&G, 1990e reference listed in Section 11.0. Please either

correct the citation or amend Section 11.0.

Response: *Corrected reference (EG&G, 1990C).*

Comment: Reference is made to Figure 1-3 in this and subsequent sections. It would be better to include this figure, redundantly if necessary, with the Section 2 figures. Also, any buildings referenced in the text (e.g. Building 701) should to identified on the figure.

Response: *This figure has been duplicated in this section and is referenced as Figure 2-2. Building numbers referenced in the text of sections 2.3 and 2.4 have been identified on this and other figures throughout the revised Final Work Plan.*

Comment: In the Division's Notice of Violation No. 92-05-22-01 concern over changes to IHSS configurations and locations, and impacts on the appropriateness of proposed sampling locations, was raised. DOE management, during the June 17, 1992 OU-8 Dispute Resolution Meeting, expressed the belief that the OU-8 IHSSs as of May 1992 reflected the Final HRR. The Division acknowledged the value of updated information but further explained the need to arrive at reasonably established locations to provide confidence in the Field Sampling Plan (FSP). However, the Division now observes that the size of IHSS 118.1 has been reduced, since the May submittal, to more closely conform to the size of a tank upon which this IHSS is based. This appears to be an inappropriate reduction. The historical information, Section 2.4.1.1, states that tank overflows were flushed "with large volumes of water" and that carbon tetrachloride from the tank's sump pit was "pumped out of the pit onto the ground." The Division doubts that large volumes of water were confined to either a 30 x 13 or 20 x 40 foot area. As a stage of effort, DOE must determine the probable surface flow direction, the impacts of any under drains on the extent and direction of the release, and establish a FSP that is capable of determining the nature of contamination within the IAG schedule.

Response: *Size is still 30 x 13 and areas outside IHSS will be investigated.*

Comment: Although the Division generally agrees with the repositioning of IHSS 118.1 based upon findings of the Historical Release Report, as amended for this work plan, DOE must show the location of Building 730 on Figures 2-7, 6-2 and 6-8. It will then be clearer why IHSS 118.1 is proposed at its new location.

Response: *Building 730 has been located and identified on each of these figures.*

These figures are renumbered in the Final Plan as figures 2-32, 6-4, and 6-5, respectively.

Comment:

Section 2.3.2: In the second paragraph of this section, IHSS 118.2 is reported to be an organic solvent tank inside Building 776; however, based on the information in the Historical Release Report (HRR), the IHSS has been reduced in size and location, such that it is no longer physically associated with Building 776. Later, Section 2.4.1.2 states that "one of the tanks ruptured and leaked solvent onto the ground". It is unclear whether this is the organic solvent tank in Building 776 that constitutes IHSS 118.2. Much later, in Section 2.5.3.3.1, the Division is informed that the above-ground carbon tetrachloride tank, north of Building 707, is the primary source of contamination. However, two paragraphs later, the Division is informed that the organic solvent tank in Building 776 "is described" as the primary source. These inconsistent, segmented and vague historical descriptions demonstrate the lack of a basic understanding of the IHSS, the inability to express an understanding, the inability to determine what constitutes the IHSS, or whether two sites need to be investigated. DOE must resolve these types of deficiencies to provide a clear discussion of this and other IHSSs. Only then can the Division determine the adequacy of the FSP.

Response:

This section has been reviewed and the IHSS information verified and corrected for clarification. Text has been changed to clarify the organic solvent and carbon tetrachloride tanks are located within a bermed area outside and along the north side of Building 707. Figure 2-4 is provided to locate the IHSS. Information is provided to clarify that previous HRR descriptions of the IHSS being south of Building 776 were actually referring to the tank location at Building 707.

Comment:

Section 2.3.3: Either this section or Section 2.5.3.1.1 needs to contain a more complete description of expected or potential contaminants resulting from the release of process waters. The Division presumes that radionuclides may be a contaminant; are non-radioactive metals and solvents potential contaminants? For each IHSS, DOE must consistently use process knowledge to describe potential contaminants rather than merely referring to the vehicles, e.g. process water or laundry water.

Response:

The purpose of Section 2.5.3.1.1 is not appropriate to discuss the constituents of the process waste lines. Section 2.4.1.3 discussed the types of potential contaminants to be expected at IHSS 123.1 based on previous limiting sampling and site history. Development of the Technical Memo described in Section 6.4 and 6.8.6 identify analytical parameters for Stage

3 (sampling) investigations.

Comment: Section 2.3.4: Building 373 is referenced in the second paragraph of this section; consequently, it should be included on Figures 6-2 and 6-3. From the HRR the Division assumes that Building 373 is contiguous with Building 374 but requests that DOE verify this assumption. The Division needs to see the geographical relationships of the cooling tower and the pond.

Response: *Building 373 is located on a new map/photograph of the IHSS, see Figure 2-6. See also Figure 6-8. The boundary of the IHSS in this Work Plan encompasses the "holding pond" where tanks 808A and 808B are now located inside a sunken concrete-walled structure.*

Comment: Section 2.3.5: The reference in the first paragraph of this section appears to be to Figure 2-1 not 3-1. Also, Buildings 712 and 713 need to be labeled on Figure 6-8.

Response: *The reference to Figure 3-1 in the Draft was incorrectly transposed and should have read as Figure 1-3. The text of this subsection has been revised and a new Figure 2-7 has been added. Buildings 712 and 713 are shown on Figure 2-7, 6-5, and Figure 2-2 (Note: map scale does not permit numbering all buildings).*

Comment: Section 2.3.6: Building 779 must be shown on Figure 2-1, 6-3 and 6-6.

Response: *The congestion on Figure 2-1 does not warrant labeling Building 779. However, Building 779 is identified on Figures 2-2, 2-8, and 6-9.*

Comment: Section 2.3.8: 139.2 must be provided. Better justification of the relocation of IHSS 139.2 must be provided. Appendix B and the Appendix B Supplement are inadequate. The distance from the original to the new site, 350 feet south and 250 west, raises concern that two sites are possible and that each may warrant investigation. The Appendix B discussion of IHSS 139.2 only briefly discusses the hydrofluoric acid supply area before turning full attention to the nitric acid dumpster. The Division wishes to know the basis for the location change of IHSS 139.2; the discussion of the nitric acid dumpster not only clouds the discussion of the HF supply area but is also tangential. Please verify and justify the location change.

Response: *This subsection has been rewritten to provide ample clarification and rationale that the IAG location of the IHSS is inaccurate. Investigations*

would be inappropriate at the previous IAG location based on current knowledge and conditions at this IHSS.

Response: Both the HRR and Doty and Associates report the location of the IHSS as is stated in this Work Plan. The IAG location appears to be inaccurate.

Comment: It is also unclear, as described in Section 2.3.8 or Table 6.1, whether the IHSS 139.2 configuration includes the nitric acid area for the purpose of investigation.

Response: This section has been rewritten to clarify that investigation will also be conducted at the nitric acid dumpster area. Section 2.3.8, paragraph five clearly states the IHSS includes only the hydrofluoric acid shed (Building 714) area.

Comment: Section 2.3.9: A clean-out plug overflow is briefly discussed in the first paragraph of this section. Further information is necessary on this overflow to ensure that the release is included in the investigation and that the investigation is adequate.

Response: This subsection has been rewritten to include information previously in subsection 2.4.1.9. Discussion of the clean-out plug now occurs in the seventh paragraph of this subsection. The HRR and recent research by Doty and Associates (Appendix B) were unable to provide "further information" on the clean-out plug.

Comment: Show Building 730 on Figures 6-2 and 6-8, etc.

Response: Previous Figures 6-2 and 6-3 are renumbered 6-4 and 6-5, respectively. Building 730 is shown on Figure 2-12, but omitted on new Figures 6-4 and 6-5 to allow location and mapping of investigations for neighboring IHSS 118.2. Scale and congestion on Figure 6-4 does not permit the location of Building 710; however, the important information, location of IHSS 144(N), is shown.

Comment: Please specify that 144(S) is the original IAG IHSS location and that 144(N), assuming this is correct, includes the Tank and Building 701/770f leaks.

Response: Paragraph seven of subsection 2.3.9 describes the original HRR IHSS location between Buildings 777 and 779 and justifies the dividing of the IHSS into two locales. The original IHSS location is retained; see the last sentence of paragraph seven.

Comment: The second and third paragraph of this section represents the commingling of subjects and facts evident throughout many of the previously described IHSSs. To discuss Tanks 776A-D then to jump to the alley way between Building 777 and 779, then back to the tanks, is very difficult to follow. Please reorganize this section to discuss each segment of the IHSS sequentially.

Response: *The text of this subsection describing the IHSS has been rewritten and reorganized. Previous paragraphs two and three are now paragraphs one and eight, and two, respectively. Additional paragraphs have been added to clarify and elaborate on IHSS 144.*

Comment: Other than radionuclides, what potential contaminants from laundry waste waters are under consideration, metals, solvents? What types of contaminants were potentially contained in the process waters from Tanks 776 C & D?

Response: *Subsection 2.4.1.9 describes potential contaminants and those of known concern based on IHSS history and limited availability of sampling and analytical results.*

Comment: Regarding the last paragraph, page 2-13, how does the floor drain relate to this IHSS? Please clarify.

Response: *The relationship of the floor drain to the IHSS is described in paragraph six of the subsection.*

Comment: Section 2.3.10: The dimensions of this IHSS are inconsistent with the intent of extending the boundary 120 feet east. The HRR dimensions are less than those reported by EG&G (1990c) as shown on the IAG IHSS map. Clearly, the eastward extension from Building 770, per Figure 6-4, is IHSS 172.

Response: *The text of this subsection has been rewritten; former paragraph one is now paragraph six of subsection 2.3.10. Confusion concerning the IHSS boundary for IHSS 150.1 results from inconsistencies in the IAG and that of information presented in Appendix B (Doty & Assoc.) which has (was) not incorporated into the June 1992 Final HRR. The paragraph of concern states the 120 foot eastward extension of the IHSS was included in the IHSS area often the IAG was finalized and is included in the area of this IHSS in the Final HRR. Information developed by Doty and Assoc. (Appendix B) which shortens the IHSS boundary northwest of Building 771 was omitted (reason unknown) in the Final HRR. The 60 x 360 foot area*

described in the paragraph is consistent with Figures 2-1, 2-14 and 6-11 depicting the IHSS.

Comment: The last sentence, third paragraph, page 2-15 is superfluous and should be deleted from the work plan.

Response: *The third paragraph, page 2-15 of the Draft Work Plan is relocated to paragraph two of this subsection. The last sentence is not considered to be superfluous as it describes the type of potential contaminant present at the site and related to the tank which leaked and eventually disposed of.*

Comment: Section 2.3.11: Once again, the long dimensions of the IHSS do not appear consistent. An expansion of 245 feet from 250 feet does not equal 600 feet. As shown on Figure 6-2, the IHSS is approximately 680 feet long. Please reconcile these differences and discuss them in a clear manner.

Response: *IHSS boundaries are corrected and clearly discussed. Also shown on Figures 2-2 and 2-15.*

Comment: Section 2.3.13: Regarding the last paragraph, page 2-18, it is stated that the preceding section on IHSS 150.2 discussed the May 1969 fire. There is no discussion in Section 2.3.11. Please discuss and reference the fire as appropriate.

Response: *Fire is discussed appropriately.*

Comment: Section 2.3.16: Figures 1-3, 6-2, and 6-9 do not show the courtyard corresponding to IHSS 150.7. This courtyard must be shown.

Response: *The courtyard adjacent corresponding to IHSS 150.7 has been more clearly identified.*

Comment: Also, with the courtyards isolated by enclosed hallways, how will the borings and HPGe surveys, etc., as proposed in Table 6.1, be accomplished?

Response: *As discussed in subsection 6.4.1, Technical Memorandum will provide the procedural details, SOP, and any document change notices that may be necessitated by site physical limitations.*

Comment: Section 2.3.23: Building 992 is referenced in this section and thus needs to be shown on Figures 6-2 and 6-12.

Response: Figures 6-2 and 6-12 are renumbered 6-4 and 6-13, respectively. Building 992 is shown on Figures 2-25 and 6-13. Scale of Figure 6-4 does not permit numbering the building; however, its location is indicated.

Comment: Section 2.4: The background Geochemical Characterization Report is being revised; it should be stated that current comparisons to the report are preliminary.

Response: *References to the Background Geophysical Report (see paragraph 3, page 2-39) is accepted.*

Comment: DOE's continual reference, in this and subsequent sections, to constituents being in excess of upper tolerance limits but less than maximum background concentration is inappropriate. Although a single exceedance of tolerance may be viewed as an anomaly, as would some background values, the concentration could also be indicative of contamination. It is noteworthy how often DOE has reported exceedance of tolerance in the subsequent sections; is it hoped that all such exceedances will be mere anomalies? As more sampling is done, it could well be that additional exceedance of background tolerance will occur. This would be additional indication of contamination. Please remove comparisons to maximum background values or acknowledge that exceedance of tolerance limits may be indicative of contamination.

Response: *Text indicates that exceedance of tolerance limits may or may not be indicative of contamination.*

Comment: Section 2.4.1.1: Is there any information available to indicate whether the spill flowed to the sump or flowed onto the ground? If not, indicate if possible the most likely dispersal of the solvent, i.e. to the ground, the sump, or under drains.

Response: *Restating of information presented in Section 2.3.1 is not necessary or warranted. All of the available information on spillage and the sump is presented in subsection 2.3.1, Appendix B, and the Final HRR (as referenced in subsection 2.3.1).*

Comment: Section 2.4.1.2: Please specify the tank that ruptured and where it is, or was, located. Is it in Building 776?

Response: *It is not necessary or warranted to repeat information discussed in subsection 2.3.2, paragraph 1, Appendix B, and the Final HRR (as referenced in subsection 2.3.2).*

Comment: Table 6.1 for IHSS 118.2 states that Americium 241 was added as an analyte of interest; however, there is no discussion here or elsewhere in Section 2 of this contaminant. Please add.

Response: *Table 6.1 has been eliminated in the revised text of Section 6.0. IHSS 118.2 is identified as a result of solvent spills. Radionuclide contamination is not reported in the Final HRR or documented in sampling results discussed in subsection 2.4.1.2 and thus is not warranted or planned (subsection 6.5.2).*

Comment: Section 2.4.1.3: Unless the pipeline's integrity can be demonstrated, or is covered under another OU, it is inappropriate to exclude the pipeline from the investigation.

Response: *The scope of work for this work plan indicates that underground drains, pipes, or sewers are assumed to be intact and functional unless evidence indicates otherwise, such as the case of a ruptured pipe.*

Comment: Section 2.4.1.6: Please locate collection trench number six on Figure 6-8.

Response: *See above comment regarding underground features.*

Comment: Regarding the last paragraph, page 2-44, please locate Building 783 on Figure 6-8 and specify whether the spill is covered by a Potential Area of Concern (PAC) or is covered under IHSS 138.

Response: *Building 783 was referenced incorrectly in the "Draft". The correct reference is 785 and it is labeled on Figure 28. Spill is part of the IHSS.*

Comment: Section 2.4.1.9: In the second paragraph of this section, please specify the types of potential contaminants, i.e. volatiles, metals, radionuclides, etc.

Response: *Volatiles, semivolatiles, metals, and radionuclides are specified.*

Comment: In the second paragraph, page 2-54, the ground east of Building 701 is reported to be contaminated. Does the IHSS 144(N) boundary encompass the contaminated ground or is it merely the site of the tanks? The contaminated ground, and the clean-out plug, must be investigated.

Response: *Clean-out plug is inside building and not covered in this Work Plan.*

Comment: Building 730 corresponds to the locations of the four underground tanks and should be shown on Figure 6-8.

- Response: Building 730 is shown on Figure 6-8.*
- Comment:** Section 2.4.1.10: Regarding the last paragraph, page 2-62, attention is again called to inconsistencies in the IHSS dimensions.
- Response: IHSS dimension corrected.*
- Comment:** Section 2.4.1.12: How deep is, or was, the Process Waste Line? This knowledge would provide important direction to the FSP.
- Response: Depth of process waste lines is unknown but will be determined during Stage 1 activities by reviewing engineering/as-built drawings.*
- Comment:** Section 2.4.1.16: There is no clear indication that IHSS 150.7 encompasses potential airborne contamination to the west-southwest. DOE must ensure that this release area is properly investigated.
- Response: IHSS 150.7 expanded to south.*
- Comment:** Section 2.4.1.21: A recommendation is made in the second paragraph, page 2-80, that portions of the roadway, where asphalt was previously removed, be excluded from this investigation. The Division, at present, does not concur with exclusions, nor does the FSP reflect any exclusions. Table 6.1, in fact, specifies that soil samples be collected. It is unclear whether these soil samples would be collected from unpaved areas of the road (if such exist), from beneath the pavement, or from soils adjacent to the roadway. Collection of soil samples beneath or adjacent to paved portions of the roadway would indicate that removal of asphalt is not a good cause for an exclusion. If DOE can provide a better rationale for an exclusion; the Division will consider the request.
- Response: Based on site history (roadway redesign and paving) and documented removal of sections of pavement, portions of roadway that were removed are excluded. Section 6 investigations reflect this but include the entire ditch on either side of the roadway.*
- Response: Per FSP (i.e., subsection 6.5.19), during Stage 2 vertical profile and surface soil samples may be collected based on evaluation of results from preceding radiological surveys. TM2 may recommend additional soil sampling (surface or subsurface).*
- Comment:** Section 2.5: Reference is made in this section to Figures 2.5-1 through 2.5-5. It is awkward having these figures based upon the section number.

Please change Figure 2.5-1 to Figure 2-8 and Figure 2.5-5 to Figure 2-9, etc.

Response: *The figures have been renumbered as Figures 2-32 through 2-36, respectively. The reference to these figures in the text of Section 2.5 is also changed.*

Comment: Section 2.5.3.1.1: In the last sentence of page 2-99, please indicate that the primary release mechanisms at this IHSS are believed to be overflow, leakage and pumping onto the ground. This addition is important in that pumped liquid may have been of a greater volume, may have affected a greater area, and may have flowed in a different direction than overflows and leaks. Furthermore, the FSP must recognize this greater potential for the spread of contamination and the need to devise a complete investigation.

Response: *Primary release mechanism "pumping onto the ground" has been added to sentence.*

Comment: This section does not always, nor adequately, discuss the contaminants of principal concern. For example, IHSSs 135, 137 and 138 express concern about blowdown water but not specifically hexavalent chromium, as it should. Please revise Sections 2.3 and 2.5.3.1.1. and consistently and completely discuss the contaminants of potential concern that the FSP need to target.

Response: *The purpose of Section 2.5 (The Conceptual Model) is not to thoroughly discuss contaminants of concern but to aid in identifying exposure pathways through which receptors may be exposed to contaminants (See 2.5.1 - Summary of IHSS Conceptual Models). A detailed discussion of contaminants would be redundant since this discussion occurs in Section 2.4 which immediately proceeds 2.5. This concern for redundancy also applies to the comment's suggestion that 2.3 be revised to "consistently and completely discuss the contamination of potential concern that the FSP needs to target".*

Response: *The comment addressing potential target COCs is not specific with its comment to allow addressing concerns. The sections have been reviewed and are believed to adequately and completely address target contaminants.*

Comment: Section 2.5.3.3.1: The discussion of IHSS 118.2 is also insufficient; carbon tetrachloride is discussed in Section 2.3 along with other organics

but discussion of the "other organics" is missing from this section.

Response: *Reviewer should refer to Section 2.4 for detailed discussions of contaminants of concern.*

Comment: Table 2.1: The footnote reference on the second page of the table should read "Historical Release Report".

Response: *"Hazardous" changed to "historical".*

Comment: Table 2.2: This table should be retitled "Listing of Non OU 8 IHSSs, PACs and UBCs Located Within the OU 8 Boundary, etc." The current title can be misinterpreted to mean that the units are part of OU-8.

Response: *Changed to "Listing of non-OU8 IHSSs, PACs...within OU8..."*

Comment: Figure 2-1: The Building 730 Tanks are relative to PAC 700-132 but appears, on this figure, to be related to PAC 700-1007. Please revise this map.

Response: *The note "(Building 730 Tanks)" has been removed to avoid confusion on the figure.*

Comment: Figure 2.5-2: The conceptual model flow chart presented here is not sufficient to determine whether the proposed FSP is adequate to provide data on each pathway for the Baseline Risk Assessment and Environmental Evaluation. DOE must ensure that each pathway is covered by the sampling. Attached is a General Conceptual Model that may be helpful in redeveloping the flowchart. Please note that additional primary and secondary release mechanisms are shown on the example. DOE need not, and should not, incorporate this example into the work plan verbatim, but should fully consider all possible and complete pathways.

Response: *Flowchart (rev. Figure 2-34) has been revised.*

Section 3.0 - ROCKY FLATS PLANT CHEMICAL SPECIFIC BENCHMARKS

Comment: Section 3.0: Please refer to the Division's letter of June 12, 1992 on Chemical-Specific Benchmarks Tables (re: Gary Baughman, CDH to Martin Hestmark, EPA with copy to Richard Schassburger, DOE). Attachment A of the letter provides our guidance on the key points of benchmarks to establish detection limits and ARARs to establish cleanup

standards. Please verify that the current Section 3.0 contains the latest updates of the tables as requested in the subject correspondence.

Response: The text for this section has been substantially revised to include the Attachment A as referenced.

Response: Tables were obtained from OUI3 Final Work Plan (dated October 2, 1992) as provided by EG&G in mid-April, 1992.

Section 4.0 - RCRA FACILITY INVESTIGATION/REMEDIAL INVESTIGATION

General Response: No Comments were provided by CDH concerning this section.

Section 5.0 - DATA QUALITY OBJECTIVES AND DATA NEEDS

Comment: Section 5.1.1.2: The Colorado Department of Health, Water Quality Control Division notes that contaminants believed to have been released from certain IHSSs were not always included in the analyte lists of existing wells. In a latter substage of this RFI/RI, DOE should consider using suitably located wells, despite their scarcity, as additional data sources by expanding the analyte lists.

Response: Stage 5 of the FSP proposes to locate wells, as needed and justified in TM4. Analytes to be tested for will be presented in the TM based on evaluation of results from preceding investigations.

Comment: Section 5.2.1.1: The Water Quality Control Division should be identified as a data user.

Response: Per agreement obtained at the 9/24/92 comment resolution meeting with EPA & CDH, only major departments (not subdivisions) will be listed as data users.

Comment: Section 5.2.1.3: The Division agrees with the use of the conceptual models as expressed in the last paragraph of this section. Thus, our comment on the insufficiency of the flowchart, Figure 2.5-2.

Response: Revised Figure 2-34 (former Figure 2.5-2) is changed to agree with text discussion.

Comment: Section 5.2.2.5: In the first paragraph, page 5-17, Environmental

Management Division Manual 5-21000, Volume III, Geotechnical, is referenced. In Section 6.3 Standard Operating Procedures (SOPs) are discussed. Although the former reference is the most precise, some confusion could be eliminated by indicating that this manual is a group of SOPs. Perhaps both sections should be amended for better continuity.

Response: This document and reference has been presented verbatim in other work plans and has been acceptable.

Comment: Please note the slight error in the second and fourth paragraphs of page 5-18, 521000 versus the correct form 5-21000.

Response: These paragraphs, and reference, are eliminated in the all new text for this section.

Comment: Table 5.8: The grid spacings of IHSSs 150.3, 150.4 and 150.6, i.e. 2 rows of 3 boreholes, etc. does not correspond to 7 boreholes, etc. nor to the corresponding figures of Section 6.0. Perhaps stating the grid as a nominal 25 x 75 foot, etc. would be less confusing. IHSS 150.6, Figure 6-6, certainly is poorly described as 2 rows by 4 boreholes.

Response: Table 5.8 is eliminated in the all new text for this section.

Response: Figures are revised, the location of potential boreholes are not shown pending recommendations and evaluation of results in TM2, TM3, and TM4.

Response: Potential borehole locations are eliminated on all figures in Section 6.0.

SECTION 6.0 - FIELD SAMPLING PLAN

GENERAL COMMENTS

Comment 1): The Division views the lack of IHSS specific subsections as a serious omission. DOE must relate potential contaminants of concern and affected media to rationales for the proposed FSP activities. Merely stating activities in Table 6.1 does not adequately support the FSP. The DQOs of Section 5.2.2.5 are good, but too general.

Response: Section 6.0 has been rewritten to provide IHSS specific sampling methodologies and rationale.

Comment 2): With some exceptions, specific Standard Operating Procedures (SOPs) are not referenced.

Response: Table 6.1 provides SOPs to be followed for the FSP other SOP references are appropriately made throughout the text.

Comment 3): Clearly, in light of the Historical Release Report (HRR) alterations of IHSS boundaries and locations, Table 5 of the IAG Statement of Work should be amended. DOE has not taken advantage of the proposed staged approach to base boring locations upon initial results.

Response: This comment has been addressed through the rewrite of the text.

Comment 4): DOE appears to have violated its own sub-staging protocols. For example with some IHSSs, borings are a logical Sub-stage 2 activity that cannot benefit from and should not be delayed by the results of Field Surveys or Surface Investigations. Borings, in such circumstances, should be in Sub-Stage 2. The Division acknowledges that mobilization of drilling equipment may add cost to the program; however, any additional costs must be weighed against program delays. Perhaps drilling activities can be coordinated with the needs of other Ous to eliminate the need for re-mobilization.

Response: This issue will be addressed in Technical Memo #1. The time frame in which field activities are coordinated will be up to the DOE, EPA, and CDH for implementation of the FSP. Just because drilling is referred to as a Stage 3 activity does not mean it cannot be implemented simultaneously with Stage 2 activities.

Comment: Also, those borings that are appropriate to Sub-Stage 4, should not be proposed at this time; the number and locations of these borings should be proposed in Technical Memorandum 1. In essence, Table 5 will be re-scoped at that time.

Response: The number and location of all borings will be proposed in the appropriate Technical Memoranda.

Comment 5): DOE needs to clarify, in this section, that sampling will continue to the edge of any possible contamination anomaly, even if this is past the edge of an IHSS. This is necessary to establish the extent of any contamination.

Response: This comment has been addressed on page 10 of Section 6.0 using the

following statement. Any one or all of the following sampling techniques, where appropriate, will be continued to the edge of any possible contamination anomaly, or until another IHSS boundary is encountered.

Comment 6): The Division acknowledges the difficulty of determining the grid required to meet a strict statistical objective. However, the Division expects that the data obtained through implementation of the FSP will allow DOE to determine the level of sampling needed to achieve a 95% confidence level. Viewed as a staged approach, the FSP as proposed should support subsequent rounds of sampling within the time frame of the IAG schedules. DOE should prepare a budget which assumes a staged approach.

Response: Stage 2 sampling grid has been determined using the "hot spot" method by Gilbert (per Section 5). Stage 3 follows with a more rigorous design that will review cost versus power.

SPECIFIC COMMENTS

Comment: Section 6.4.1: Under Sub-stage 2b, page 6-13, the assumption that "...radionuclide distribution is relatively homogeneous over the field of view, and that the distribution varies only with depth" is not likely to be the norm for this OU and is of major concern. The proposed method will provide one data point, expressed in terms of pCi/g units for each survey point covering a 45 foot circle. This result will purport to represent the average radionuclide concentration over the area. The detector has no capability to determine the distance of a gamma source within the viewed area. Therefore, a hot spot immediately below the detector will result in a larger reported concentration than a hot spot at the edge of the field of view of the detector. DOE must demonstrate the ability of HPGe to both detect and locate hot spots with the proposed grid spacing. The applicability of the Sodium Sampling Probe Radiation Survey to this Substage 2b must be further clarified to state that this necessitated surficial soil and depth profile samples are being collected. These commitments are discussed in the second full paragraph of page 6-14.

Response: The statement concerning a homogenous distribution within the field of view has been removed. In addition, page 6-14 discusses the use of a NaI probe and vertical profile soil samples.

Comment: Table 2.37 indicates the potential for metals contamination in five IHSSs. Since soil gas surveys and radiation screens are not capable of detecting non-radioactive metals, surficial sampling for metals should be initiated

early in the investigation, i.e. during the time frame of Sub-Stage 2 even if DOE considers it to be a Sub-Stage 3 activity.

Response: *Surficial soil and vertical depth profile sampling of soil in conjunction with the HPGe along with concrete and asphalt (i.e., paving) are planned for Stage 2 investigations. Surficial soil sampling has been advanced to a Stage 2 sampling task (see final plan, page 6-22) at those IHSSs where site history and known contamination (see sections 2.3 and 2.4) currently warrant its investigation. It will be continued during Stages 3 and/or 4 as warranted per Technical Memoranda 2 and 3.*

Comment: The Division recently received a SOP for the HPGe; however, protocols for the laboratory HPGe, as discussed in the first paragraph of page 6-15, has not been provided in this SOP. DOE must include laboratory protocols in the HPGe SOP. Also, the use and reliability of a laboratory HPGe has not been demonstrated to the Division; therefore, it is inappropriate to substitute this technique for the standard radiochemistry lab analysis. At a minimum, lab HPGe results will need to be confirmed by a subset of radiochemistry lab analysis or documentation must be submitted that properly demonstrates lab HPGe accuracy and precision based on test results.

Response: *The work plan no longer includes use of a laboratory HPGe. A radiochemical laboratory is proposed to be used for all vertical profile samples.*

Comment: Regarding the first paragraph, page 6-15, the statement is made that additional soil samples will be collected at a subset of HPGe survey points. Surficial soil samples must be randomly located to confirm both HPGe negatives and positive. Collecting samples at the HPGe stations does not provide a suitable level of confidence that HPGe results are accurate.

Response: *Soil samples will be collected at hot spots and three samples will be collected at randomly selected sites that have relatively low readings.*

Comment: Regarding Sub-Stage 3a -- Surface Scrapings, page 6-17, the Division has previously noted weaknesses in SOP GT.8 and has specified that it be modified (OU-11 comments May 8, 1992); consequently, references to soil sampling techniques must be precise by name and procedure number (e.g. Section 6.3) pending revision of GT.8. Also in keeping with the soil sampling procedures of OU-11, the sampling of unpaved areas should use the meter square template approach and collect five sub-samples at each surficial soil sampling station. Given both the difficulty of access and the

decreased potential for disturbance, sampling beneath paved surfaces may be limited to one sample versus five sub-samples. (Please refer to the Division's letter from Gary Baughman to DOE's Frazer Lockhart date 9/1/92 for a full discussion on soil sampling issues prior to re-writing this FSP).

Response: *This issue has been addressed by proposing a surface soil sampling program outlined in the Division's from Gary Baughman.*

Comment: Reference to Technical Memorandum (TM) 5 of OU-1 is unacceptable. Sampling crews should not be referred to other work plans or TMs. The procedures described in TM 5 must be incorporated into SOP GT.8 or a SOP addendum, preferably GT.8.

Response: *Reference to TM 5 of OUI has been removed and the surface soil sampling plan is proposed as described in the Division's letter from Gary Baughman. In addition, page 6-9 states that each IHSS may have unique conditions that require modification of an SOP; modifications will be requested by a Document Change Notice (DCN) and when possible will be included in the appropriate TM.*

Comment: Neither Table 6.1 nor 6.2 support the depth of collection for surface sampling, as stated in the first paragraph of this section, not even by reference to SOP GT.8. Also, Table 6.2 does not support analytical parameters as stated.

Response: *The depth in which surface soil samples will be collected is described on page 6-15 within Section 6.4.2. Table 6-2 has been eliminated and Table 6-1 has been completely revised.*

Comment: Furthermore, for all samples within the industrialized area of the plant, the Division has adopted the position (9/1/92 letter) that a 5 centimeter sample should be collected for surficial soil samples whether intended for radionuclide or non-radionuclide analysis.

Response: *Shallow soil samples have been eliminated from the plan.*

Comment: The last sentence beginning of page 6-18 states that shallow soil samples will be collected to meet IAG requirements. Although the Division views Table 5 of the SOW as minimum requirements, it is recognized that more recent information renders some requirements inappropriate. The Division questions the need for 9 shallow soil samples on a grid for IHSS 139.2 and will consider alternate FSP activities relative to Hydrofluoric and Nitric

acid. Sampling in the immediate vicinity of the Hydrofluoric and Nitric acid containers would be more realistic and appropriate.

Response: It is currently proposed that surficial soil samples be collected at IHSS 139.2 nitric acid dumpster

Comment: Under Sub-Stage 4a, page 6-20, "Soil borings are defined as borings from which soil samples are collected from a depth of six feet or greater". This statement should not imply that the 0-6 foot increment will be excluded from sampling, especially when shallow soil sample are not proposed. For example, residual carbon tetrachloride may be found in the near surface despite its DNAPL properties.

Response: This statement has been corrected on page 6-19.

Comment: Under Sub-Stage 5b, page 6-24, DOE must ensure that SOPs for vadose monitoring are prepared and submitted prior to or concurrent with the submittal of TM2.

Response: Vadose sampling (described in section 6.2.3) is now planned to be accomplished during Stages 3 and 4 (pages 6-25 and 6-30) utilizing the BAT sampler which is addressed by SOP GT.22 (See Table 6.1). The SOP is scheduled for development (date unknown) by EG&G.

Comment: Under Sub-Stage 1c, second paragraph, page 6-27, reference is made to a Phase II RFI effort. The Division has repeatedly stated its opposition to a Phase II except as specified by the IAG. To the fullest extent possible, staging within Phase I should be used to perform a full, complete, and adequate RFI/RI investigation.

Response: Section 7.B, Attachment 2 of the IAG discusses Phase II RFI/RI.

Response: Under "Soil Borings/Soil Surface Scrapes" the locations of soil borings are discussed. It is acceptable to discuss borings as a staged activity; however, the locations and number of borings should be specified in the proposed Technical Memorandum #1.

Table 6.1

Comment: IHSS 118.1: Under the Proposed Action "Surface/Shallow Soil", it is stated that surface soil samples may be collected. Above background concentrations of certain radionuclide, as described within Section 2, justify the inclusion of surficial soil samples following HPGe to confirm

positive and negatives. Samples should be collected now, not possibly later.

Response: Surface soil samples are not being collected at this site.

Comment: Under "Soil Borings/Soil Surface Scrapes" the locations of soil borings are discussed. It is acceptable to discuss borings as a staged activity; however, the locations and number of borings should be specified in the proposed Technical Memorandum #1.

Response: Soil boring frequency and locations are not discussed they will be proposed in Technical Memorandum 2.

Comment: Under "Suggested Modifications to the IAG Plan" the statement is made that soil gas detection limits will depend upon the instrument used. For screening and locating contaminant "hot spots", instrument detection limits may be sufficient; however, nature and extent of contamination will require that analytical capabilities achieve the contaminant levels specified in the Benchmark Tables.

Response: Page 6-15 provides a clearer description of how the soil gas survey is intended to be used.

Comment: IHSS 132.1: The FSP for this IHSS is an example of a combination of both sampling insufficiency and overindulgence. Pertaining to insufficiency, DOE has merely characterized the contamination as process waste without identifying the potential contaminants within the waste. The Division understands that radionuclides are of concern, but why not solvents or metals? Pertaining to overindulgence, borings are proposed down drainage of the vault while soil gas surveys and surficial soil or sediment sampling is not proposed. Likewise, swipes of the vault interior may be appropriate within the initial stage of activity.

Response: Note: IHSS 132.1 does not exist within OU8; this comment does apply to IHSS 123.1. Page 6-26 identifies the released contaminants and proposed screening-level sampling for both VOCs and metals. Also, borings will only be drilled if required based on Stage 2 sampling.

Comment: DOE must propose surficial soil sampling to verify HPGe and to investigate trace metals contamination unless DOE is able to show, through "process knowledge", that metals were not in the process waste.

Response: Vertical profile soil samples are proposed to augment HPGe.

Comment: When DOE provides a clearer and more complete discussion of potential contaminants of concern (COCs), then the Division can determine the adequacy of the FSP.

Response: *Comment acknowledged. No response or action required.*

Comment: IHSS 135: DOE needs to justify the basis for the easterly limitation of the IHSS and explain why surficial soils/sediment sampling were not considered as a screening survey within the drainage.

Response: *The IHSS boundary has been defined by Doty & Associates and will be incorporated in to the quarterly update. This boundary does not indicate the stopping point for investigation. As stated on page 6-10, any one or all of the sampling techniques, where appropriate, will be continued to the edge of any possible contamination anomaly, or until another IHSS boundary is encountered. Surficial soil samples are being proposed.*

Comment: IHSS 135, IHSS 137 and 139: What is the basis for the COCs for these IHSS's soil gas surveys? Since this is a cooling tower, what is the source of volatiles? The potential COCs of a volatile nature justifying the soil gas survey need to be discussed in Section 2.0.

Response: *Soil gas surveys are no longer being proposed for these IHSSs.*

Comment: IHSS 139.1 (N), (S) and 139.2: Since these are caustic/acid spills what is the purpose of the soil gas surveys?

Response: *Soil gas surveys are no longer being proposed for these IHSSs.*

Comment: IHSS 144 (N), (S): These IHSSs need to be subdivided in the table for clarity.

Response: *The format of the final Table 6.1 is changed from that as it occurred in the Draft Work Plan and is no longer pertinent to the comment. Table 6.4 is similar to the draft Table 6.1; IHSS 144(N) and (S) are subdivided on Table 6.4.*

Comment: Section 2, page 2-54, second paragraph, notes that a ruptured line resulted in the "ground east of the building (Building 701)" being contaminated. Also, Table 5 of the IAG SOW required surficial soil sampling. Lastly, the "Suggested Modifications..." of this table states that "surface and shallow soil sampling have been added." Despite these indications, the proposal is that surficial soil samples "may" be added. There is an initial need for shallow soil sampling to determine the impact of the spill to the

ground surface. Soil borings may also be warranted given the fact that IHSS 144 (N) consists of four underground tanks. However, the proposal for eighteen soil borings appears to be overindulgent at this juncture of the investigation. Proposing extensive borings prior to conducting surficial sampling appears to violate the staged approach discussed in Section 6.4.1. The Division will support borings at downgradient locations and, as needed, to fill informational gaps. Please reconsider the sampling needs and discuss, if necessary, with the Division and EPA.

Response: Sediment samples, soil gas surveys, and radiological surveys are proposed for screening the areas of concern. The area east of Building 701 is also being addressed. Soil boring frequency and locations will be proposed in the TM.

Comment: IHSS 150.1: Given the nature of the release, shallow soil sampling would seem to be more appropriate, initially, with boring locations and frequency to be defined by a subsequent technical memorandum.

Response: Surficial screening (i.e. radiological survey and soil gas survey) will be performed prior to boring installation. Soil boring frequency and locations will be proposed in the TM.

Comment: IHSS 150.2: The rationale for sixteen borings appears to be based on Table 5 of the IAG SOW and Well 1986. Although this well is technically downgradient from the IHSS, the need to drill boreholes at this stage appears to be unwarranted given the fact that this IHSS is based on a radioactive materials release. Shallow soil samples are needed but have not been proposed (despite what the modifications column suggests). The Division would look favorably upon two or three boreholes at the immediate downgradient boundary of the IHSS. As to the Table 5 requirement of twenty boreholes, they may be staged as needed under TM1. Under the "Soil Gas" column, IHSS 144(N) is referred to twice while 144(S) is not referenced. The Division assumes that the latter reference should be for 144(S).

Response: Boreholes are no longer proposed until initial screening is completed. A radiological survey, including surficial soil sampling is proposed for screening.

Comment: IHSS 150.3: Since this IHSS involves the potential contamination of shallow soils, borings, the Division agrees, may be warranted as an investigation activity. However, a grid is not necessarily the best approach. If information is available to target where the leak occurred, or

at least the general area of the leak, the effort may be more successful. It is hoped that the HPGe and subsequent radiation screenings, as warranted, will help pinpoint favorable locations for borings which will then be proposed in TM1.

Response: *A radiological survey and surficial sampling are being performed to assist in guiding the boring frequency and location.*

Comment: IHSS 150.4, 150.6 and 150.8: Why are borings proposed at this time when contamination appears to be at the surface as a result of the 1969 fire in Building 776/777? Boreholes, as needed, should be proposed in TM1. The IAG SOW requires eight (not twelve) boreholes; however, given the history of this IHSS they can be delayed, if not eliminated.

Response: *Borings are no longer proposed as an initial stage of investigation. Various screening methods are being proposed to assist in the necessity and/or frequency and location of soil borings.*

Comment: IHSS 151: The proposed action under "Surface/Shallow Soils" i.e. "surface soil samples may be collected and analyzed for radionuclides contingent upon results from radiation surveys" is not appropriate. It appears that this proposed action was erroneously carried forward on the table. The Division agrees that a radiation survey is not warranted given that this IHSS is based upon a fuel oil leak.

Response: *A radiation survey is no longer proposed for this IHSS.*

Comment: Shallow soil samples should be proposed as a confirmation of and follow-up activity to the soil gas survey. Soil borings to bedrock may become necessary but the numbers and locations of the borings should be discussed in TM1.

Response: *Surficial soil sampling and tank inspection will be followed with soil borings. Soil gas is not recommended because No. 2 diesel is not very volatile.*

Comment: IHSS 163.1: Since this IHSS is based upon potential radionuclide release to the surface accompanied, possibly, by organic and inorganic compounds, surficial and depth profile sampling appears to be more appropriate as a staged activity than borings. Borings specified by the IAG SOW may be proposed, as needed, in TM1.

Response: *Borings are no longer proposed as an initial stage of investigation.*

Various screening methods are being proposed to assist in the necessity and/or frequency of soil borings.

Comment: Soil gas analysis for TCE, PCE, etc., appears to be another carry forward error on the table. Table 5 of the IAG SOW does not specify PCE, TCE, etc.; apparently the potential compounds released are unknown. Consequently, noting "peaks for other compounds" is not sufficient. Any other peaks need to be identified by name.

Response: *Comment acknowledged, no response is necessary.*

Comment: The report of potential releases of inorganic compounds suggests the need for a full analysis suite not merely nitrates.

Response: *Tables 6.2 and 6.5 list the compounds of interest and the analytical program for IHSS 163.1 based on the history (i.e., Final HRR) and nature and extent of contamination as outlined in Sections 2.3 and 2.4 of the Final Work Plan. Degradation of nitric acid (including soap, release substances at this IHSS) would yield nitrates. At this time, Rads, organic solvents, TPH, metals, and nitrates are the known potential contaminants of concern. Technical Memoranda 2 will present results of Stage 2 soil gas and radiological surveys and soil sampling/analysis and may increase the list of contaminants of concern, as warranted. Agency acceptance and approval of the TM and Stage 3 tasks and analytes will be obtained prior to implementation.*

Comment: IHSS 163.2: Borings are proposed contingent on radiation survey results. With the concrete slab at a depth up to ten feet, the radiation survey would not be expected to define reliable borehole locations. What is needed is a reliable geophysical method of locating the slab.

Response: *Geophysical methods (i.e., GPR and magnetics) are now proposed as an initial stage to identify the location of the slab.*

Comment: Why is soil gas survey proposed for this IHSS? Neither the Section 2 descriptions nor IAG SOW Table 5 supports the inclusion of a soil gas survey. If the Section 2.0 discussion has omitted information that supports the need for a soil gas survey, please revise the discussion to justify this proposed activity.

Response: *Soil gas is no longer proposed at this IHSS.*

Comment: The column "Suggested Modifications..." states that "Surface/Shallow Soil

Sampling" has been added. The "Surface/Shallow Soil" column only commits to a "may be".

Response: Surface/shallow soil sampling is not planned to be conducted at this IHSS.

Comment: IHSS 173: This IHSS is based upon potential radionuclide releases to the surface; borings should be proposed, as necessary, in TM1.

Response: Borings are no longer proposed as an initial stage of investigation. Various screening methods are being proposed to assist in the necessity and/or frequency and location of soil borings.

Comment: IHSS 184: It is unclear based on the historical descriptions of Section 2 why PCE, TCE and carbon tetrachloride, etc., are being targeted. Were these constituents on the parts that were cleaned? If not, why is a soil gas survey being performed?

Response: A soil gas survey is not longer being proposed at this IHSS. Cleaning solutions or solvents, if any, were not reported as used during steam cleaning operations as outlined in HRR information. However, acetone and PCE have been detected above background concentrations in two wells downgradient of the IHSS.

Comment: Presuming sediments actually exist in the drainage of this IHSS, sediment samples are needed. If no actual stream sediments were deposited, then, surficial soil sampling is needed. HPGe positives and negatives need to be confirmed.

Response: A radiological survey, including collection of surface soil samples is proposed. Investigation activities discussed in this Work Plan require that vertical depth profile or confirmation samples be collected (and analyzed at a laboratory) at each IHSS to confirm screening results. See revisions to Section 6.2.4.1.

Comment: The IAG SOW Table 5 has an additional requirement of investigating spillage identified from an August 6, 1971 aerial photograph. Please include in the FSP.d.

Response: Because the approach to the investigation of each IHSS is to investigate to the outer limits of the plume, this area will be investigated.

Comment: IHSS 188: The column "Suggested Modifications..." states that "Surface/shallow soil sampling" has been added. The "Surface/shallow

soil" column only commits to a "may be".

Response: *The format of Final Table 6.1 is revised from draft Table 6.1; the comment is no longer pertinent to this table. Table 6.5 specifies that surface soil sampling "will" be performed at this IHSS. Discussion in subsection 6.5.22 outlines the rationale and currently planned investigations for this IHSS. The scope of subsequent investigations (i.e., post-Stage 2) may be modified by the results of Stages 1 and 2 to be discussed in Technical Memoranda 1 and 2 and of which agency approval will be obtained prior to implementation.*

Comment: The basis for this IHSS is an acid leak that may have contained heavy metals. Why then is a soil gas survey proposed? Also, borings are less appropriate given the nature of the release than surficial or shallow soils sampling. Borings, as needed, may be proposed in TMI.

Response: *Surficial soil sampling for metals detection, is being planned as an initial screening activity. The results will assist in defining the necessity and/or frequency and location of soil borings.*

Comment: Table 6.2: Table 5.8 specifies one additional borehole for the IHSS 150 sub-units; therefore, Table 6.2 should be amended for IHSSs 150.3, 150.6, 150.7 and 150.8 to add one borehole each.

Response: *Table 6.2 is deleted from this version.*

Comment: The soil borings requirements do not correspond to IAG SOW Table 5 requirements. A clear statement should be made that a re-scoping has occurred as a result of HRR revised IHSS sizes and configurations and upon the Division's comments.

Response: *The rewriting of this section has nullified this comment.*

Comment: Figure 6-2: The index map color schemes of Figures 6-3 versus 6-9 and Figure 6-6 versus 6-7 are not distinguishable on this map.

Response: *Map colors and designation are changed.*

Comment: Please label Building 701.

Response: *Building 701 is identified on all appropriate figures.*

Comment: The line drawn from IHSS 150.7 to the index map is hidden by the Figure

6-10 boundary line. Please reposition.

Response: The line has been repositioned as per this comment.

Comment: Figure 6-8: Reference in the title to IHSS 144 should be 144(N).

Response: Title of the IHSS is corrected as per this comment.

Comment: Figure 6-9: This figure needs to be revised to show the narrow passage way that exists between Building 776/777 and 778.

Response: The figure is revised and corrected as per this comment.

Section 7.0 - PHASE I RFI/RI TASK SCHEDULE

Comment: Figure 7-1: DOE's submittal and EPA/Division approval of the Final Phase are not due on the same date. The EPA and the Division are currently scheduled to approve, or further comment on, the work plan by October 27, 1992.

Response: A three week review period ending January 15, 1993 has been added and is planned following submittal of the Final Work Plan for agency review. On January 16 receipt of agency approval and authorization-to-proceed is anticipated.

Section 8.0 - HUMAN HEALTH RISK ASSESSMENT PLAN

Comment: Section 8.1.1: Reference to the Risk Assessment Guidance for Superfund, page 8-3, should now include Parts B and C, December 1991.

Response: Acknowledged. The references to Parts B and C have been included in the citation on Section 8.1.1, page 8-4.

Comment: Section 8.1.2: In the first paragraph, please refer to the Final HRR.

Response: The text has been updated and includes a document reference (i.e., DOE, 1992a) to Section 11.0. Reference to the Final HRR is also updated in the second paragraph.

Comment: In the third paragraph, DOE's future ecological land use plans are irrelevant, future on-site residents must be considered in the risk

assessment.

Response: At the 8/24/92 meeting, DOE stated that a scenario considering on-site residents in the industrial area as not reasonable for the future land use and risk assessment.

Comment: Regarding the first paragraph, page 8-6, although it is acceptable to stage activities to determine the nature and extent of contamination of all media, it is not acceptable to assume that groundwater investigations may be delayed to a Phase II or to miss the Phase I Report schedule. Reasonable efforts must be made to meet the IAG schedules.

Response: The reference to a Phase II RFI/RI has been deleted.

Response: The language of the text has been changed per the comment. The schedule for investigations is referenced to the schedule presented in Section 7.0.

Comment: Section 8.3.5: External irradiation should be included in the last paragraph of this section to conform to Section 8.3.3.

Response: The number of exposure sources is changed to four and to include external irradiation.

Comment: Section 8.5: Regarding the third paragraph, page 8-20, DOE must look beyond IRIS and HEAST to EPA's Environmental Criteria Assessment Office (ECAO) for assistance in development of toxicity values. The latter step should be coordinated through the EPA Region VIII Rocky Flats Project group.

Response: The following sentence has been added to the end of the paragraph - "As a possible latter step in estimating risks, coordination will be conducted with the EPA, Environmental Criteria Assessment Office (ECAO) for assistance in developing toxicity values."

Sections 9.0, 10.0 and 11.0

General Response: No comments were provided by CDH concerning any of these sections.

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