



October 23, 1991

Robert K. Stewart
Unit Manager
U.S. Department of Energy
P. O. Box 550, A5-19
Richland, Washington 99352

Re: 1100-EM-1 Operable Unit Feasibility Study

Dear Mr. Stewart:

The purpose of this letter is to formally transmit the combined comments from the U.S. Environmental Protection Agency and the Washington State Department of Ecology on the above referenced document. These comments were electronically transmitted to you on October 18, 1991.

If you have any questions, please don't hesitate to call me at (509) 376-3883.

Sincerely,

David R Einan
David R. Einan
Unit Manager

Enclosure

cc: R. Hibbard, Ecology
J. Stewart, USACE
Administrative Record (1100-EM-1)



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COMMENTS ON THE
PHASE I AND II FEASIBILITY STUDY
REPORT FOR THE HANFORD SITE
1100-EM-1 OPERABLE UNIT
(DOE/RL-90-32)

1. Glossary, page ix-x.

Comment: The glossary does not include LDR, TCLP, O&M, and HRL.

Recommendation: Define LDR, TCLP, O&M, and HRL in the glossary.

2. Section 1.2.1, page 1-5, second paragraph.

Deficiency: This section serves as the introduction to descriptions of the operable subunits. The referenced paragraph indicates that no WIDS identifiers have been assigned to four of the operable subunits. Two of these subunits are the major topics of the remaining report.

Recommendation: The report should indicate whether or not WIDS identifiers will be assigned to these subunits.

3. Section 1.2.1.9, Page 1-10;

Deficiency: At 440 ug/kg PCBs represent a health risk of 3.4×10^{-6} health risk. This calculation was performed using the formula for carcinogenic health risks, WAC 173-340-740(2)(B). Risk = (Soil contaminant level, 0.44 mg/kg)(Soil ingestion rate, 200 mg/day)(Gastrointestinal absorption rate, 1.0)(Duration of exposure, 6 years)(Frequency of contact, 1.0)/(Average body weight, 16 kg.)(Lifetime, 75 years)(Unit conversion factor, 1,000,000 mg/kg). A risk of 3.4×10^{-6} is within the acceptable range of 1×10^{-4} to 1×10^{-8} for EPA lead cleanups on Superfund sites.

Recommendation: Revise the text to read "At this low concentration of PCBs there is a minor risk to human . . ."

4. Section 1.2.1.9, page 1-10.

Deficiency: This section discusses contamination at Pit 1, a subunit within the 1100-EM-1 Operable Unit. This section states:

"One sample out of six revealed PCBs contamination at a concentration of 440 μ g/kg. As this low concentration of PCBs presents no risk to human health or the environment, this subunit is not discussed further in this FS report."

These statements are deficient in that PCBs, as carcinogens, are typically assumed by U.S. EPA risk assessment guidelines to be associated with a finite carcinogenic health risk at any non-zero dose, and therefore cannot present "no risk to human health" without further evidence that no complete pathway of exposure exists. Also, no reference is cited to support the statement that a

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concentration of 440 $\mu\text{g}/\text{kg}$ PCBs is below concern for adverse effects on human health or the environment.

Recommendations: Revise Section 1.2.1.9 to acknowledge that the PCBs may be associated with a finite risk to human health or the environment. Cross-reference to appropriate documentation supporting the statement that the quantitative degree of risk is below any level of concern (e.g., Table 2-1 or Appendix C calculations).

5. Section 2.1, Page 2-1;

Comment: After reviewing the reference (EPA 1988b), Ecology could not reproduce the six steps for screening a technology. This screening methodology is suspect and should be fully explained.

6. Section 2.1, page 2-1, first paragraph.

Comment: The first sentence of this paragraph states the objectives of the Draft Phase I and Phase II FS. There are three objectives of the FS report indicated on page 1-2 of the report. The sentence in question only identifies the objective of Section 2.0.

Recommendation: Replace the words "Draft Phase I and II FS report" with "Section."

7. Section 2.2.1, page 2-2, last paragraph.

Comment: The phrase "...their calculated increased cancer risk..." is confusing.

Recommendation: Reword the sentence to more clearly describe the situation.

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8. Table 2-1, Page 2-3;

Deficiency: This table is suspect. How did USDOE identify chemicals of concern?

Recommendation: Revise the table to adequately reflect the cleanup levels that will be applied to this OU.

Operable Unit	Chemical	Cleanup Level
Discolored Soil Site 1100-6	BEHP	(A)
	Chlordane	(A)
Horn Rapids Landfill	As	(A)
	Cr	(B)
	PCBs	(A)
Ephemeral Pool	Chlordane	(A)
	PCBs	(A)
	Lead	(B)

(A) WAC 173-340-740(3)(a)(ii) concentrations that will not cause contamination of ground water cleanup levels (i.e., 100 x WAC 173-340-720 method B formulas).

(B) WAC 173-340-740(3)(a)(ii) concentrations that will not cause contamination of ground water cleanup levels (i.e., 100 x MCLs established under 40 CFR 141, 40 CFR 143, and Chapter 248-54 WAC).

9. Table 2-2, page 2-4.

Comment: This table seems to be misplaced placed within the text. It's reference first appears in subsection 2.3.1 at the end of page 2-8.

Recommendation: Move Table 2-2 so it appears after the reference is made in the text.

10. Section 2.2.3.1, page 2-7, second paragraph.

Deficiency: The soil cleanup level for PCBs, i.e., 10 mg/kg, is cited as having come from EPA Dir. 9355.4-01FS 1990. This source is not included in the references provided in Section 5.0.

Recommendation: Provide a complete reference in Section 5.0 corresponding to "EPA Dir. 9355.4-01FS 1990."

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11. Section 2.2.3.1, page 2-7, second and fifth paragraphs.

Deficiency: It is stated in each of the referenced paragraphs that because the PCBs detected in soils at the Ephemeral Pool are at concentrations below the action level and do not pose unacceptable risk, no remedial actions are needed at this subunit. This seems to be in direct conflict with the conclusions drawn at the end of chapter 1 stating that the calculated risks for the three subunits each contribute to the cumulative risk for 1100-EM-1 of 2×10^{-6} . It seems inconsistent to suddenly delete the Ephemeral Pool from additional analysis when up to this point it has been seen as a contributing factor to human health risk.

Recommendation: Provide additional discussion to rectify this inconsistency.

12. Table 2-3, page 2-10.

Comment: This table seems to be misplaced placed within the text. It's reference first appears in subsection 2.4.1 at the end of page 2-14.

Recommendation: Move Table 2-3 so it appears after the reference is made in the text.

13. Section 2.4.1, page 2-14.

a. Deficiency: This section states that Table 2-3 provides an initial screening "... based on their technical applicability to site soils. . . ." The guidance document for RI/FS under CERCLA (EPA 1988) states that this stage of screening is performed with respect to technical implementability.

Recommendation: Change applicability to implementability.

b. Deficiency: This paragraph also states that the purpose of the initial screening is to identify the most appropriate process option in each technology group or general response action. Again referring to EPA's RI/FS guidance document, no such mention is made that selection of the most appropriate option is the purpose of the technical screening.

Recommendation: Delete that sentence.

14. Section 3.2.4.2, page 3-3, second paragraph.

Comment: The first sentence of this paragraph states that chemical concentrations in 1100-EM-1 are given in the Draft Phase I RI report. It would be helpful to the reader if the concentrations (the few tables) were repeated in the text to avoid having to go back and forth between the two documents.

15. Section 3.3.1.2.2, page 3-8, second paragraph.

Deficiency: This section states that there should be no unacceptable risk to the public under normal operations of the Richland Well Field. Normal operations are not defined.

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Recommendation: Expand the discussion of the Richland Well Field to include information on normal operations and what would constitute deviations from normality. Also, these "normal operations" must be considered to be institutional controls and identified as such.

16. Section 3.3.1.3.3, page 3-10, first paragraph.

Deficiency: This section explains the implementability of the excavation and treatment alternative for the Discolored Soil Site. It states that the site is 104 m by 30 m. However, in Appendix C it states the site is elliptical with dimensions of 62.5 ft (19.1 m) by 18.75 ft (5.715 m).

Recommendation: Determine which dimensions are more accurate and adjust the other to correspond.

17. Section 3.3.1.4.1, page 3-10.

a. Deficiency: The first sentence assumes a depth of contamination of 4 feet. Section 2.3.2.1 (page 2-14) assumes a depth of one foot for the same site.

Recommendation: Use consistent values for volumes of contaminated soils or provide an explanation of the differences.

b. Comment: In the second sentence, reference is given to Section 2.4.2.4 for the discussion of In Situ Biological Treatment. The reference should be to Section 2.4.2.8.

Recommendation: Correct the reference.

18. Table 3-3, page 3-13.

Deficiency: The PCB ARAR is not discussed under Effectiveness for Alternative 5 Excavation/Disposal. Compliance with contaminant ARAR is pointed out in all other alternatives with Table 3-2 and 3-3.

Recommendation: Include a sentence regarding compliance with PCB ARAR.

19. Table 3-4, page 3-21.

Deficiency: This table contains a summary of the criteria assessment for Hanford Site 1100 area. In the discussions of each criteria under each alternative, it does not make the determination as to which site it is addressing.

Recommendation: Make all discussions similar to Implementability under Biological Degradation on page 3-23.

20. Section 4.4, page 4-2, third paragraph.

Deficiency: In the last sentence of this paragraph, a recommendation is made to gather groundwater data near the Discolored Soil Site. However, no

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groundwater monitoring for the No-Action alternative for that site is recommended (page 3-6).

Recommendation: Clear up this apparent contradiction.

21. Appendix A, page A-8, Table A-1, Item 1.10

Deficiency: Table A-1 lists Applicable and Relevant or Appropriate Requirements (ARARs) and To Be Considered (TBC) materials for guiding remedial actions at 1100-EM-1. The Method C cleanup goals for industrial soils shown for chemicals listed under item 1.10 (WAC 173-340-745 Model Toxics Control Act [MTCA] Cleanup Regulations) do not match those presented in Table 2-1, which are also described as having been derived using MTCA Method C for industrial-use site soils.

Recommendation: Reconcile discrepancies between Table A-1 and Table 2-1, and make any necessary clarifications or revisions.

22. Appendix C, page C-1, Ephemeral Pool.

Deficiency: This section shows the area and volume calculations for the Ephemeral Pool. This section states that the area is elliptical, however, as in the calculation done for the Discolored Soil Site, the ellipse area formula was used incorrectly. See comment below for a description.

Recommendation: Correct the calculation and use only $\frac{1}{2}$ the axes lengths.

23. Appendix C, page C-1, UN-1100-6, Discolored Soil Site.

Deficiency: This section shows the area and volume calculations for the Discolored Soil Site. However, the area equation used for finding the area of an ellipse was used incorrectly. The formula is Area = $\pi a b$, where a is $\frac{1}{2}$ the major axis and b is $\frac{1}{2}$ the minor axis. In Appendix C, $\frac{1}{2}$ the major and minor axes were not used, the full axis was used.

Recommendation: Correct the calculation and use only $\frac{1}{2}$ axes lengths. The areas given in the text will have to be adjusted accordingly.

24. Appendix C, page C-3, Horn Rapids Landfill (HRL) - PCB.

Deficiency: This section shows the area and volume calculations for the PCB-contaminated hot spot at the Horn Rapids Landfill. The elliptical area calculation is done incorrectly as stated above for the Ephemeral Pool and the Discolored Soil Site.

Recommendation: Correct the calculation and use only $\frac{1}{2}$ the axes lengths.

25. Appendix C, page C-3, Horn Rapids Landfill - Chromium.

a. Comments: This section shows the area and volume calculations for the Chromium contamination at the Horn Rapids Landfill. In the second paragraph, it states:

"A depth of 13 ft will be used for the area estimation."

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However, instead of "area estimation," it should read, "volume estimation."

Recommendation: Correct the text to read, "volume estimation."

- b. Deficiency: This equation has no explanation where or what the numbers represent.

Recommendation: Add an explanation as to where the numbers come from and what they represent in the calculation.

26. Appendix C, page C-6, Integrated Risk Information System (IRIS) data summary

Deficiency: This page summarizes data apparently obtained from U.S. EPA's Integrated Risk Information System (IRIS) on-line database. This information is incomplete in that the date of the information is not provided (these data are frequently updated) and no data are provided for arsenic or chromium.

Recommendation: Add summaries of data for arsenic and chromium. Provide the date of the IRIS records reviewed for each substance listed.

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1100-EM-1 ARAR's

- A. Soil
1. Chemical Specific

WAC 173-303 Dangerous Waste Regulations APPLICABLE

Chapter 173-303 WAC establishes procedures for characterizing hazardous waste as Dangerous Waste (DW) or Extremely Hazardous Waste (EHW). Additional distinction is based on Persistence, carcinogenicity, mutagenicity, teratogenicity, concentration of certain compounds, and toxicity as defined by WAC 173-303-070 to 110. Wastes excavated on sites which upon testing designates as DW or EHW must be handled under this regulation. Other sections not identified here should be considered relevant and appropriate.

WAC 173-340 MTCA Cleanup Regulations APPLICABLE

Chapter 173-340 WAC defines specific cleanup levels for numerous contaminants. The following cleanup levels were derived using Method B cleanup procedures (WAC 173-340-740) and are listed below:

PCB's - 0.001 mg/kg
bis(2-ethylhexyl)phthalate - 0.63 mg/kg

2. Location Specific

WAC 173-304 Minimum Functional Standards for Solid Waste Handling APPLICABLE

Chapter 173-304 WAC regulations pertain to solid waste handling facilities (e.g., municipal landfills). They contain provisions for facility design, maintenance, and closure.

- B. Surface and Groundwater
1. Chemical Specific

WAC 173-340 MTCA Cleanup Regulations APPLICABLE

Chapter 173-340 WAC cleanup levels were adopted by the State of Washington January 25, 1991. Specific cleanup goals are identified in this regulation. The following cleanup levels were derived using Method B cleanup procedures for Ground Water (WAC 173-340-720) and are listed below:

PCB's - 0.01 ug/l
bis(2-ethylhexyl)phthalate - 6 ug/l

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2. Action Specific

WAC 173-160 Minimum Standards for Construction and Maintenance of Wells RELEVANT AND APPROPRIATE

Well construction regulations establish minimum standards for water well construction and require the preparation of construction reports.

WAC 173-162 Rules and Regulations Governing the Licensing of Well Contractors and Operators RELEVANT AND APPROPRIATE

Chapter 173-162 WAC establishes requirements for licensing of well drillers.

WAC 173-216 State Waste Discharge Permit Program APPLICABLE

Chapter 173-216 WAC establishes a permit system for discharges of waste water to groundwater and surface water via municipal sewage systems.

WAC 173-218 Underground Injection Control Program APPLICABLE

Chapter 173-218 WAC pertains to the injection of wastes into aquifers that are used for drinking water.

WAC 173-220 National Pollutant Discharge Elimination System Permit Program RELEVANT AND APPROPRIATE

The purpose of this chapter is to establish a state permit program, applicable to the discharge of pollutants and other wastes and materials to surface waters of the state.

WAC 173-240 Submissions of Plans and Reports for Construction of Waste Water Facilities RELEVANT AND APPROPRIATE

Chapter 173-240 WAC regulations require that Ecology review and approve plans and for waste water treatment facilities that discharge to ground water.

3. Location Specific

WAC 173-154 Protection of Upper Aquifer Zones RELEVANT AND APPROPRIATE

Chapter 173-154 WAC provides for protection of the upper aquifers and upper aquifer zones to avoid depletions, excessive water level declines, or reductions in water quality. State regulations for upper aquifer zones are applicable to remedial alternatives that involve treating ground water or presenting risks of ground water contamination.

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WAC 173-201 Water Quality Standards for the State of Washington
APPLICABLE

Ecology classifies surface waters according to their water quality and uses of the water body. The surface waters of the Columbia River are classified as Class A.

C. AIR

1. Chemical Specific

WAC 173-400 General Regulations for Air Pollution Sources
APPLICABLE

Chapter 173-400 WAC establishes standards that are technically feasible and reasonably attainable for air pollution sources.

WAC 173-474 Ambient Air Quality Standards for Sulfur Oxides
APPLICABLE

Chapter 173-474 WAC establishes maximum acceptable levels for sulfur dioxide as a measure of the sulfur dioxide concentration in the ambient air.

WAC 173-475 Ambient Air Quality Standards for Carbon Monoxide, Ozone, and Nitrogen Dioxide APPLICABLE

Chapter 173-475 WAC defines state wide air quality standards for carbon monoxide, ozone, and nitrogen dioxide.

WAC 173-480 Ambient Air Quality Standards and Emission Limits for Radionuclides APPLICABLE

Chapter 173-480 WAC defines maximum allowable levels for radionuclides in the ambient air.

WAC 173-490 Emission Standards and Controls for Sources Emitting Volatile Organic Compounds (VOC) APPLICABLE

Chapter 173-490 WAC establishes technically feasible and reasonable attainable standards for sources emitting VOC's.

2. Action Specific

RCW 70.94 Washington Clean Air Act APPLICABLE

Chapter 70.94 RCW directs the state to secure and maintain levels of air quality that will protect human health and prevent injury to plant and animal life.

WAC 173-303-670 Incinerators RELEVANT AND APPROPRIATE

If incinerators are used as a remedial technology this regulation would be applicable.

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WAC 173-403 Implementation of Regulations for Air Contaminant Sources RELEVANT AND APPROPRIATE

Chapter 173-403 WAC establishes procedures for the implementation of regulations and rules generally applicable to control and/or prevention of the emission of air contaminants.

WAC 173-470 Ambient Air Quality Standards for Particulate Matter RELEVANT AND APPROPRIATE

Chapter 173-470 WAC establishes concentrations for particle fallout standards for all areas within the State of Washington.

D. Miscellaneous

WAC 173-300 Certification of Operators of Solid Waste Incinerator and Landfill Facilities RELEVANT AND APPROPRIATE

Chapter 173-300 WAC defines when certification of operators is necessary at incinerators and landfills.

WAC 173-434 Solid Waste Incinerator Facilities RELEVANT AND APPROPRIATE

This regulation defines emission standards and design and operation of solid waste incinerator facilities.

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