



Department of Energy

Richland Field Office

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SEP 8 1992

92-ERB-155

Mr. Paul T. Day
Hanford Project Manager
U.S. Environmental Protection Agency
Region 10
712 Swift Boulevard, Suite 5
Richland, Washington 99352

Mr. David B. Jansen, P.E.
Hanford Project Manager
State of Washington
Department of Ecology
Post Office Box 47600
Olympia, Washington 98504-7600

Dear Messrs. Day and Jansen:

DISTRIBUTION OF APPROVED REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) WORK PLANS FOR THE 100-FR-1 OPERABLE UNIT (OU)

The U. S. Department of Energy, Richland Field Office is pleased to distribute copies of the 100-FR-1 (enclosure #1) OU RI/FS Work Plan, approved by the U.S. Environmental Protection Agency (EPA) on September 1, 1992.

A Hanford Federal Facility Agreement and Consent Order change control form will be initiated to incorporate interim milestones identified in the work plan task schedule into the M-15 milestone (Complete the RI/FS process for all operable units).

Please address any comments or questions regarding this correspondence or 100 Area past-practice environmental investigations to Mr. E. D. Goller on (509) 376-7326.

Sincerely,

Steven H. Wisness
Hanford Project Manager

ERD:EDG

Enclosures: as stated

cc: Attached



9255529D
Enclosure 1

100-FR-1 Work Plan

9255529D
Enclosure 2

Revisions to the Work Plan

Global Changes

- Change the document number in the header to "DOE/RL-90-33, Rev. 0"
- Change all occurrences of "chemical-specific" to "contaminant-specific"
- Change "Environmental Engineering and Technology" to "Environmental Restoration Engineering"
- Change "1.5 m" to "2 m" when ever sampling intervals are discussed.

LIST OF ACRONYMS

Add

ACLs	Alternate Concentration Limits
CRDLs	Contract Required Detection Limits
CRQLs	Contract Required Quantification Limits
DOW	Description of Work
NA	not applicable
NR	not reported

Delete

ACGIH	American Conference of Governmental Industrial Hygienists
ARCL	allowable residual contamination levels
CEC	cation exchange capacity
COD	chemical oxygen demand
DCS	DOE-derived concentration guide
DOW	Department of Wildlife
EE&T	environmental engineering and technology
EHPSS	Environmental Health and Pesticide Services Section
EIMP	Environmental Information Management Plan
EIS	environmental impact statement
GC	gas chromatography
GIS	geographic information system
GPR	ground penetrating radar
HLAN	Hanford Local Area Network
HRS	hazard ranking system
ISV	in situ vitrification
Ksat	saturated hydraulic conductivity
LLD	lower limit of detection
MDA	minimum detection activity
MDL	method detectable limit
msl	mean sea level
NEPA	National Environmental Policy Act
NIOSH	National Institute for Occupational Safety and Health
PNL	Pacific Northwest Laboratory
POTWs	Publicly-owned Treatment Works
RPD	relative percent difference
SCBA	self-contained breathing apparatus
SHPO	State Historical Preservation Officer
TDS	total dissolved solids
TR	training records
UNC	United Nuclear Corporation

Modifications (Capitalization and other slight changes)

CLP	Contract Laboratory Program
DQOs	Data Quality Objectives
EIIs	Environmental Investigations Instructions
ER	Environmental Restoration
HEIS	Hanford Environmental Information System
ICRP	International Council on Radiation Protection
MCS	Management Control System
NCRP	National Council on Radiation Protection and Measurements
NPL	National Priorities List
OSM	Office of Sample Management
PCBs	polychlorinated biphenyls
QA	Quality Assurance
QAPI	Quality Assurance Program Index
QC	Quality Control
QI	Quality Instruction
QR	Quality Requirement
TAL	Target Analyte List
TCL	Target Compound List
TSD	treatment, storage, or disposal
VOA	Volatile Organic Analysis
WIDS	Waste Identification Data System

Table of Contents

Revise title for Section 3.2.1 to "Contaminant-Specific Requirements"
 Revise title to Section 5.2 to "Feasibility Study Process"

Revisions to List of Figures as noted

1-3 The Three Record of Decision Levels	WP 1F-3
1-4 Hanford Site Past-Practice RI/FS (RFI/CMS) Process for the 100 Area	WP 1F-4
1-5 RI/FS Process for the 100-FR-1 Operable Unit	WP 1F-5
2-1 Map of the 100 Area Showing the Facilities Present During Reactor Operation....	WP 2F-1
2-6 Ringold-Type Facies at the Hanford Site and Vicinity....	WP 2F-6
2-22 Geologic Cross-Section A-A' in the 100-F Area ..	WP 2F-22
2-23 Geologic Cross-Section B-B' in the 100-F Area...	WP 2F-23
2-30 Fish and Bird Statistics for the Hanford Site....	WP 2F-30

Section 1.0 third paragraph

Change the number of source operable units from "three" to "two"

Section 1.1.2, second paragraph, first sentence

Delete "In developing" and insert "As a result of"

Last sentence

Insert this phrase "rescoping conducted by the three parties" between the words "and" and "necessitated"

Figure 1-5

Retitle Box 1 to read "Begin the Operable Unit Work Plan"

Section 2.2.2.1.2

Replace "170,500 km³" with "171,000 km³"

Replace "103,600 km²" with "103,700 km²"

Section 2.2.2.1.3

Replace "400 m" with "370 m"

Section 2.2.4.3, second paragraph

Replace "1,020 to 7,080 m³/s" with "1,000 to 7,100 m³/s"

Section 2.2.5, first paragraph, fourth sentence

Modified to Read "Unless otherwise noted, summaries presented in the following sections were extracted from DOE (1987a)."

Delete the last sentence; "These data may be reviewed at the beginning of the RI."

Section 2.2.5.2, first paragraph

Revise the first two sentences to read as "Hanford Site average monthly temperatures presented in this section were taken from Stone et al. (1983) for the period 1912 through 1980. During this period the average monthly temperatures at the Hanford Site ranged from -1.5° C (29.3° F) in January to 24.7° C (76.4° F) in July."

Change "July 1960" to "July 1963"

Section 2.2.5.3, second paragraph

Change "(6.2 to 6.8 mi/h)" to "(6 to 7 mi/h)"

Change "(8.7 to 9.9 mi/h)" to "(9 to 10 mi/h)"

Section 2.2.6.4, First paragraph, first sentence

Delete "and is expected to remain this way for the foreseeable future"

First paragraph, second sentence

Modified to read "The Hanford Site is presently maintained ..."

Third paragraph

Change "(32,100 acre)" to "(50 mi²)" and "(55,600 acre)" to "(87 mi²)"

Section 3.1.1, fourth paragraph

Delete "(HRS)" from the text and insert "(EPA 1988c)"

Section 3.1.1.1

Change "15x10⁶ gal" to "15x10⁷ gal"

Section 3.1.1.3, second paragraph

Change "(DOE/RL 1991a)" to "(DOE/RL 1992a)"

Section 3.2.1.2, tenth paragraph

Capitalize the letter "c" in the word "Controls"

Section 3.2.3.1, second paragraph

Abbreviate the word "year" to "yr"

Section 3.3

Removed original paragraph and inserted the following text from the 100-BC-5 work plan; "This section presents a conceptual model of exposure pathways. Information on waste sources, pathways, and receptors is used to develop a conceptual understanding of exposure pathways for evaluation of potential risks to human health and the environment. The conceptual model of exposure pathways presented in Draft A of this work plan was used by the three parties during work plan rescoping as a basis for evaluating the need for ERAs, and for identifying potential locations for IRMs and, hence, areas where the LFI investigation would focus. The conceptual model has remained essentially unchanged since Draft A, and hence does not alter the decision of the three parties regarding ERAs. The conceptual model is developed in Section 3.3.1, and the assessment of the need for ERAs is reviewed in Section 3.2.2. The conclusions in this section are tentative, and will be subject to refinement as data is gathered throughout the RI/FS process."

Section 3.3.1, first paragraph

Remove the existing first and second paragraphs and insert the following text from the 100-BC-5 work plan;" This section presents a conceptual model of potentially significant contaminant exposure pathways for the 100-FR-1 operable unit. The conceptual model is based upon information presented in Chapter 2 and Section 3.1, and is therefore intended to be preliminary. The exposure pathways in the conceptual model include soil, groundwater and surface water and sediments, as shown in Figure 3-10. Exposure pathways resulting from contamination of media below the 100-FR-1 operable unit are specifically discussed in the 100-F Area groundwater operable unit work plan (e.g., 100-FR-3).

The conceptual model presents hypotheses of unit-specific contaminant exposure pathways. During the RI process, the conceptual model hypotheses will be tested and refined repeatedly until the understanding of the operable unit is sufficient to support subsequent decisions regarding remedial actions. By conducting the RI in this manner, the project becomes more efficient as the investigation is kept focused on unit-specific objectives."

Section 3.3.3, first paragraph

Remove the existing paragraphs and insert the following text;" ERAs are either removal actions under the DOE authority of the Atomic Energy Act, removal actions under CERCLA 40 CFR 300.415, or interim measures under RCRA proposed 40 CFR 264.540. In deciding whether an ERA is appropriate, both technical engineering judgement, and an evaluation of potential threat to human health and the environment are considered. The decision to conduct an ERA is based on the immediacy and magnitude of the potential threat to human health and the environment, the nature of appropriate corrective action, and the implications of deferring the corrective action.

During work plan rescoping the three parties determined that ERAs are not currently warranted in the 100-FR-1 operable unit. This determination was based in part on the conceptual exposure pathway model presented in Draft A of this work plan. This conceptual model has remained essentially unchanged since Draft A, and hence

does not alter the decision of the three parties regarding the need for ERAs. The discussion in this section briefly reviews the assessment of the need for ERAs, which was based on the current understanding of site conditions. The conclusions in this section are tentative, and will be subject to refinement as data is collected throughout the RI process."

Section 3.3.3.2, first paragraph

Modify the paragraph to read ;" Based on the existing environmental data discussed in Section 3.1 and the exposure pathways discussed in Section 3.3.1, the 100-FR-1 operable unit does not appear at this time to pose an immediate danger to the environment. Essentially all of the contamination is below the ground surface, and as such is inaccessible to most animals. Although no ERAs are planned at this time, as data is collected and evaluated during the RI process, the need for ERAs will be reassessed."

Section 3.3.4, first paragraph, fourth sentence

Modify to read as "The 100-FR-1 operable unit does not currently pose an immediate danger to human health or the environment."

Fifth sentence

Change "DOE, EPA and Ecology" to "the three parties"

Section 3.4.2, fifth paragraph

Revise the phrase "make the waste inaccessible to" to read "isolate the contaminants from" and delete "of contaminants" from the last part of this sentence

Section 3.4.3, second paragraph, second sentence

Delete the word "this" and insert the word "such"

Section 3.4.4, second paragraph, fifth bullet,

Change "A no interim or final action" to "An interim or final no-action"

Third paragraph

Delete the existing paragraph and insert the following; "The 100 Area and focused feasibility studies will address additional remedial action alternatives or eliminate existing alternatives described in the above section."

Section 4.1, second paragraph, sixth bullet

Add a period following the last bulleted statement

Section 4.1.1.2, fifth paragraph

Modify the third sentence to read as" At the high-priority sources, a limited amount of data will be collected, analyzed, and evaluated to determine whether an IRM is warranted and can be selected."

Change "EPA, Ecology and DOE" to "the three parties"

Section 4.1.2.1, first paragraph, sixth bullet

Remove "and 100 Area aggregate investigation" from the parenthesis

Ninth bullet

Replace with the following text; "Information on the nature of contamination in water emanating from seeps and springs along the shoreline of the Columbia River in the 100 Area, and the nature and extent of contamination in seep and spring sediments and adjacent river water (100 Area aggregate study to meet TPA Milestone M-30-01, as described in the Surface Water/Sediment Investigation for the 100 Area, Appendix D-1)"

Twelfth bullet

Modify the text in parenthesis to include " and 100 Area aggregate investigations to meet TPA Milestones M-30-04 and M-30-05"

Section 4.1.2.2

Change "EPA, Ecology and DOE" to "three parties"

Section 4.1.2.4, second paragraph

Modify "(e.g., version 2.10, Runchal and Sager 1990)" to "(e.g., Version 2.10) (Runchal and Sager 1990)"

Section 4.2.1.1, third paragraph, second bullet

Insert ", data collected from analogous facilities" between "plans" and "and"

Section 4.2.2.1, first paragraph

Change occurrences of "1.5 m" to "2 m"

Second paragraph, first sentence

Modify to read "Samples will be collected at a maximum of 2 m (5 ft) intervals in the borings and test pits."

Table 4-1

Under the table section "Groundwater Data", change "Hydraulic Conductivity" to "Hydraulic Properties"

Table 4-2

"Proposed Boreholes" for the 116-F-1 facility should read; "1 (2 test pits)"

Modify the Investigation Approach for 116-F-1, 116-F-2, 116-F-3, 116-F-6, 116-F-9, 116-F-14 and 108-F to state that "Samples will be collected at a maximum of 2 m (5 ft) intervals."

Change all reference to "5 ft" to read "2 m (5 ft)"

Section 5.1.1.1.5, first paragraph, fifth sentence

Modify to read as; "Where appropriate, the DOWs will reference Westinghouse Hanford Environmental Investigation Instructions (EIIs) from the *Environmental Investigations and Site Characterization Manual*, WHC-CM-7-7 (WHC 1991b) rather than listing the entire procedure for a task."

Second paragraph, fifth bullet

Change "1.5 m" to "2 m"

Section 5.1.1.2.1, third paragraph

Change "(WHC 1991b)" to "(WHC 1991a)"

Section 5.1.1.2.2, first paragraph

Remove "(NGVD)" and "(NAD)"

Section 5.1.1.3

Change "5.1.3" to "5.1.1.3"

Section 5.1.1.5, third bullet

Add a period to the end of the sentence

Third paragraph

Change "5.1.5.2" to "5.1.1.5.2"

Section 5.1.1.5.2, first paragraph, fourth sentence

Change "geodetic" to "plane"

Second paragraph, first sentence

Delete the existing first sentence and replace with this sentence; "One borehole and two test pits are proposed for 116-F-1 and three boreholes are proposed for 116-F-9."

Fourth and fifth paragraphs

Change "1.5 m" to "2 m"

Sixth paragraph, fourth sentence

Change the word "minimum" to "maximum"

Tenth sentence

Change "5.1.5.3" to "5.1.1.5.3"

Section 5.1.1.5.3,

Change "1.5 m" to "2 m"

Section 5.1.1.11.2, second paragraph

Insert as the second sentence; "Both assessment and measurement endpoints are used in these evaluations."

Fourth paragraph

Change "(DOE-RL 1991d)" to "(DOE-RL 1992b)"

Section 5.1.1.13

Replace the words "interim remedial measures" with "IRMs" in the last sentence of the paragraph

Section 5.2

Change the section title to "Feasibility Study Process"

First paragraph, third sentence

Should read as; "This process includes preparation of a 100 Area FS completed on an aggregate basis, and a focused FS and a final FS completed on an operable unit basis."

Section 5.2.1, first paragraph

Replace existing first paragraph with the following text; " The 100 Area FS will use existing data to identify and screen remedial alternatives for the 100-N Area, and generic alternatives for the remainder of the 100 Area. The 100-N Area is treated separately due to the recent operation of the N reactor, and the relatively unique design of the reactor and its ancillary facilities. The results of this study provide a foundation for all subsequent focused feasibility studies to be performed for IRM selection, and for selection of all operable unit remedial and corrective actions. The 100 Area FS consists of four primary tasks:"

First paragraph, statement 1

Add the following to the end of the statement; "(solid waste, soil, river sediments, and groundwater)"

Statement 2

Delete the following from the statement; "applicable or relevant and appropriate requirements" and delete the parenthesis from "ARARs"

Statement 4

Delete the period following "(focused FS)" and insert ", and identify treatability studies necessary to support the detailed analysis."

Section 5.2.2, first paragraph

Modify the first sentence to read "The basis for this evaluation will be summarized from the results of the 100 Area FS, treatability studies, and 100 Area aggregate studies, high-priority site LFIs, and the qualitative risk assessment."

Section 5.2.2.2.7, first paragraph

Abbreviate the word "years" to "yr"

Insert the following text as the second paragraph; " The cost analysis will also include cost-benefit analyses to fully evaluate the costs versus benefits for each IRM alternative. Costs for institutional controls will be compared with costs of various technologies used for clean-up. A comparison of these costs with the actual benefits to human health and the environment will be made. This cost-benefit analysis will be factored in as part of the cost analysis for the detailed evaluation."

Table: 5-3

Change "116-K-4" to 116-F-4"

Section 6, first paragraph, first sentence

Change "Hanford Federal Facility" to "Tri-Party"; delete "and Consent Order (Ecology et al. 1990a)"

Third sentence

Change "100 Area activities" to "100-Area wide activities"

Last sentence

Insert "6-3," between "6-2" and "6-4" and delete "and that portion of Figure 6-3 not directly applicable to 100-FR-1"

Add the following sentence to the end of the paragraph

"The approval of this work plan is for the work associated with 100-FR-1 and is not binding for any other work plan."

Second paragraph

Insert "wide" between "Area" and "activities".

Section 8

Remove the following citations from the list of references

EPA, 1988d

EPA, 1989d

Insert the following reference

Ledgerwood, R.K., 1991, *Summaries of Well Construction Data and Field Observations for Existing 100 Aggregate Area Operable Unit Resource Protection Wells*, WHC-SD-ER-TI-006, Westinghouse Hanford Company, Richland, Washington

Appendix A, Table of Contents

Insert Section 2.1, Quality Assurance Officer Responsibilities

Renumber the remaining Sections listed.

Section 2.0

Insert new Section 2.1, " Quality Assurance Officer Responsibilities"

The paragraph reads" The Quality Assurance Officer is responsible for coordination and/or oversight of performance to the QAPjP requirements by means of internal auditing and surveillance techniques. The Quality Assurance Officer has the necessary organizational independence and authority to identify conditions adverse to quality and to inform the technical lead of needed corrective action."

Renumber the remaining sections in 2.0.

Section 2.2

Change "Environmental Engineering Group" to "Environmental Restoration Engineering" and also delete the use of "(EE&T)" as an acronym

Section 11

Insert a new sentence following the third sentence; "When samples are analyzed using EPA reference methods, the preventative maintenance requirements for laboratory analytical equipment are as defined in the procured laboratory's QA plan(s)."

Appendix C, Table of Contents

Change title of Section 2.4.1 to "Environmental Restoration Engineering"

Section 4.0

Change "(DOE-RL-1989)" to "(DOE-RL 1989)"

Section 5.0

Change "WHC. 1990b" to "WHC, 1990b"

cc w/ encl:

M. Adler, Federal Docket File
S. Balone, EM-442 (7)
B. Burke, Umatilla Confederated Tribes
B. Cook, Yakima Indian Nation
A. DeAngeles, PRC
D. Gaeka, State of Washington Department of Wildlife
L. Goldstein, Ecology (3)
B. Kane, Parametrix
B. Karotko, NPS
A. Kucera, U. S. Fish and Wildlife Service
C. Mebane, NOAA
R. Patt, State of Oregon Water Resources Department
A. Slickpoo, Nez Perce Indian Tribe
J. Sprecher, Brown and Caldwell
W. Staubitz, USGS
D. D. Teel, Ecology (3)
G. Thomas, ATSDR
Administrative Record, H4-22

cc w/o encl.:

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CORRESPONDENCE DISTRIBUTION COVERSHEET

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Subject: DISTRIBUTION OF APPROVED REMEDIAL INVESTIGATION/FEASIBILITY STUDY
(RI/FS) WORK PLAN FOR THE 100-FR-1 OPERABLE UNIT (OU)

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		H. E. McGuire, Level 1	B3-63	
		T. M. Wintczak	H6-27	
		R. D. Wojtasek, Assignee	H6-27	
		EDMC	H4-22	
		W. E. Green	H6-20	

*Enclosure (200-FR-1 Work Plan) is not provided.

