

START

September 18, 1990

Meeting Minutes Transmittal/Approval  
Unit Managers Meeting: 1100-EM-1 Operable Unit  
Federal Building Room G-59,  
Richland, Washington  
August 15, 1990

From/ Appvl.: Robert K. Stewart Date: 9/19/90  
 Robert K. Stewart, 1100-EM-1 Unit Manager, DOE-RL (A6-95)

Appvl.: David R. Egan Date: 19 Sept 90  
 David R. Egan, 1100-EM-1 Unit Manager, EPA (B5-01)

Appvl.: Larry Goldstein Date: 10/16/90  
 Larry Goldstein, 1100-EM-1 Unit Manager, WA Department of Ecology

Meeting Minutes are attached. Minutes are comprised of the following:

- Attachment #1 - Meeting Summary/Summary of Commitments and Agreements
- Attachment #2 - Agenda for the Meeting
- Attachment #3 - Attendance List
- Attachment #4 - Operable Unit Commitments/Agreements Status List
- Attachment #5 - "Analyses of Volatile Organic Compounds in Ground Water Samples", Status Date: 8/1/90
- Attachment #6 - "Sampling of Ground Water Monitoring Wells", Status Date: 8/1/90
- Attachment #7 - RI/FS Work Schedule, Status Date: 8/1/90
- Attachment #8 - TPA Schedule of Deliverables
- Attachment #9 - "Schedule for Delivery and Review of RI/FS Documents for the 1100-EM-1 Operable Unit", Meeting Minutes
- Attachment #10- ANF Hydrology and Ground Water Analytical Data
- Attachment #11- Validated Non-CLP Ground Water Analytical Data

Prepared by: Dave Fassett Date: 9/19/90  
 SWEC Support Services

Concurrence by: L.W. Egan Date: 9/17/90  
 WHC RI Coordinator



91113931697

Distribution:

Chuck Cline, WDOE  
Ward Staubitz, USGS  
Mike Thompson, DOE-RL (A6-95)  
Mary Harmon, DOE-HQ, (EM-442)  
Doug Fassett, SWEC (A4-35)  
John Stewart, USACE  
Jack Waite, WHC (B2-35)  
Tom Wintczak, WHC (B2-15)  
Mel Adams, WHC (H4-55)  
Steven Clark, WHC (H4-55)  
Roy Gephart, PNL (K6-97)  
Brian Sprouse, WHC (H4-22)  
Diane Clark, DOE-RL (A5-55)  
Bill Price, WHC (S0-03)  
Don Kane, Battelle EMO (K1-74)  
Donna Lacombe, PRC  
Jim Patterson, WHC

Ronald D. Izatt (A6-95)  
Director, DOE-RL, ERD  
June M. Hennig (A5-21)  
DOE-RL, WMD  
  
Roger D. Freeberg (A6-95)  
Chief, Rstr. Br., DOE-RL, ERD

Steven H. Wisness  
Tri-Party Agreement Proj. Mgr.  
Richard D. Wojtasek (B2-15)  
Prgm. Mgr. WHC

Kaerae Parnell (H4-18)  
Doug Sherwood, EPA (B5-01)  
Michael Neely, PNL (K6-96)

ADMINISTRATIVE RECORD: 1100-EM-1; Care of Susan Wray, WHC (H4-22)

Please contact Doug Fassett if there are any deletions or additions to this list.

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Attachment #1

Meeting Summary and Summary of Commitments and Agreements  
1100-EM-1 Operable Unit Managers Meeting  
Federal Building, Room G-59  
August 15, 1990

1. Doug Fassett (SWEC) circulated the 1100-EM-1 minutes from the July 17, 1990, meeting for approval and signature. There were no comments; the minutes were approved and signed.
2. John Stewart (USACE) and Vic Armacost (USACE) were introduced. USACE will be assuming responsibility for the 1100-EM-1 Operable Unit at the beginning of the new fiscal year.
3. Meeting minutes from the August 7, 1990 meeting on "Schedule for Delivery and Review of RI/FS Documents for the 1100-EM-1 Operable Unit" were given to Doug Fassett for inclusion in the Unit Manager Meeting Minutes (see Attachment #9).
4. Steve Clark presented the hydrology and ground water Advanced Nuclear Fuels (ANF) data (Attachment #10) and the validated non-CLP groundwater data (Attachment #11) to the regulators. The data so far indicates that there is VOC and nitrate contamination in ground water beneath the Operable Unit. However, much more additional information is needed concerning the contaminant plumes beneath the site. The nitrate analyses are reported as nitrogen and need to be converted to correspond to the data reported previously.
5. A discussion was held on the necessity to *include ANF in the Phase II RI* and how to handle this. Wayne Johnson (WHC) suggested that now is the time for EPA and Ecology to exercise their authority and inform ANF of their responsibility to join in the investigation. Dave Einan (EPA) stated that there is not yet sufficient information for this.
- 6 ANF is reluctant to pay for CLP analyses. One alternative is that ANF provide analysis for the contaminants of concern. Steve Clark (WHC) proposed using this alternative for now. Bob Stewart (DOE) agreed that this will be acceptable, until a more formal relationship can be established with ANF. The next round of groundwater sampling is scheduled to be performed on August 20, 1990.

Action Item #11EMI.44: WHC is to work with Golder to prepare a concise summary of the work which is needed for the RI Phase II at ANF. The participation of ANF should be included in the summary. This will also include a discussion of the possible implications of the findings based on discussions with DOE attorneys. Action: Merl Lauterbach

7. A preliminary TPA Schedule of Deliverables was circulated for discussion (see Attachment #8). It will be necessary to submit a change request for the RI/FS Work Schedule (see Attachment #7) to *implement the TPA schedule*. There is a conflict between the schedules in the TPA and in the RI/FS Work Plan. The current Work Plan Schedule is to be replaced

with a more detailed revised schedule in the RI Phase II Work Plan Supplement.

Action Item #11EM1.45: WHC will prepare a change request to bring the Work Plan schedule and the TPA schedule into agreement. All parties agreed that the Work Plan supplement schedule will be similar in detail to the current Work Plans (the workplans for 300-FF-1 and 200-BP-1 are good examples). Action: Jim Patterson

8. Soil gas, GPR and electromagnetic surveys are planned for *the South Pit, across from* the Horn Rapids landfill. The surveys are scheduled to begin October 15. [Drums are not expected to be identified, but concrete is expected.]\*

\* Proposed for deletion.

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**Attachment #2**

**1100-EM-1 Unit Managers Meeting Agenda  
August 15, 1990  
Federal Building, Room G-59**

1. Introduction
2. Action Item Status
3. Work Progress
  - o DOE and WHC reviewers comments have been incorporated into the RI Phase 1 Report to meet the August 31, 1990, target date for delivery to EPA and Ecology.
  - o The RI Phase 2 Work Plan Supplement will be delivered for parallel review by DOE, EPA, Ecology, and WHC on October 1, 1990.
  - o The FS Phase 1 & 2 Report will begin joint review by DOE and WHC on September 7, 1990.
  - o The third round of groundwater monitoring well sampling will begin on August 20, 1990.
4. Schedule
5. Issues
  - o Transition of 1100-EM-1 work to the Army Corps of Engineers.
  - o Interaction with Advanced Nuclear Fuels in the Phase 2 Remedial Investigation.
6. Other Topics (as required)
  - o Analyses to be requested from sampling of ANF wells.
7. Summary of Agreements and Commitments

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Attachment #3

Attendance List  
1100-EM-1 Unit Managers Meeting  
August 15, 1990

Name	Organization	1100-EM-1 Responsibility	Phone
Stewart, R. K.	DOE-RL	Unit Manager	509-376-6192
Hildebrand, Doug	DOE-RL	EOB	509-376-2287
Thompson, K. M.	DOE-RL	GW	509-376-6421
Goldstein, Larry	Ecology	Unit Manager	206-438-7018
Einan, D.	EPA	Unit Manager	509-376-3883
Cheatham, Jane	ES	FS	509-943-0909
LaCombe, Donna	PRC	EPA Consultant	206-624-2692
Davis, Kathy	SWEC	GSSC for DOE/RL	509-376-0412
Fassett, Doug	SWEC	GSSC for DOE/RL	509-376-3136
Stewart, John	USACE	Information	509-522-6531
Armacost, Vic	USACE	Information	509-522-6588
Drost, Brian	USGS	EPA Consultant	206-593-6510
Staubitz, Ward	USGS	EPA Consultant	206-593-6510
Johnson, Wayne	WHC		509-376-1721
Patterson, Jim	WHC	ER Programs	509-376-0568
Stalker, Kelly	WHC		509-376-2038

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Attachment #4

Commitments/Agreements Status List  
1100-EM-1 Operable Unit  
August 15, 1990

Item No.	Action	Status
11EM1.42	The ARARs are in the process of being identified. An update will be presented at the next meeting. Action: S. Clark (7/17/90, 11EM1-UMM)	Open The ARARs have been identified and are undergoing peer review. The ARARs will be included in the FS I and II report. They will be discussed at the next meeting. (8/15/90)
11EM1.43	DOE-RL and WHC to meet with EPA on August 7 to review radiological data to determine the need to include data in the report. Action: Merl Lauterbach. (7/17/90, 11EM1-UMM)	Closed The meeting took place on 8/07/90, radiological data has been delayed (the meeting minutes are included as Attachment #9). (8/15/90)
11EM1.44	WHC is to work with Golder to prepare a concise summary of the work which is needed for the RI Phase II at ANF. The participation of ANF should be included in the summary. This will also include a discussion of the possible implications of the findings based on discussions with WHC attorneys. Action: M. Lauterbach (8/15/90, EM1-UMM)	Closed The draft summary letter was provided to Bob Stewart by WHC. A letter documenting ANF participation will be sent to ANF by DOE-RL by 9/19/90.
11EM1.45	WHC will prepare a change request to bring the Work Plan Schedule and the TPA schedule into agreement. All parties agreed that the Work Plan schedule will be similar in detail to other Work Plans (the workplans for 300-FF-1 and 200-BP-1 are good examples). Action: J. Patterson (8/15/90, EM1-UMM)	Open

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## 1100-EM-1 Operable Unit

## ANALYSES OF VOLATILE ORGANIC COMPOUNDS IN GROUND WATER SAMPLES

Status Date: 8/1/90

Well Number	Analysis, parts per billion (ppb)					
	TCA		TCE		PCE	
	1st	2nd	1st	2nd	1st	2nd
MW-1	-	-	-	-	-	-
MW-2	-	-	-	-	-	-
MW-3	-	-	-	-	-	-
MW-4	3	2	-	-	1	1
MW-5	4	4	-	-	0.8	0.8
MW-6	2	0.9	-	-	0.7	0.8
MW-7	-	-	-	-	-	-
MW-8	0.8	0.8	-	-	-	-
MW-9	-	-	-	-	-	-
MW-10	1	1	0.6	2	-	-
MW-11	0.8	1	0.9	3	-	-
MW-12	2	2	92	110	0.8	0.7
MW-13	2	2	90	91	0.6	-
MW-14	2	1	40	73	0.9	0.6
MW-15	-	-	84	80	-	-
MW-17	-	-	-	-	-	-
S37-E14	-	-	-	-	-	-
S40-E14	-	-	-	-	-	-
S41-E13A	-	-	-	-	-	-
S41-E13B	-	-	-	-	-	-
S43-E12	-	-	-	-	-	-
S27-E14	-	-	-	-	-	-
S29-E12	-	-	-	-	-	-
S30-E15A	-	-	-	-	-	-
S31-E13	-	-	-	-	-	-
S32-E13A	-	-	-	-	-	-
Well Field(W)	-	-	-	-	-	-
Well Field(E)	-	-	-	-	-	-
ANF Well # 14	-	7	-	22	-	-
ANF Well # 15	-	5	-	58	-	-
ANF Well # 16	-	5	-	53	-	-

-: not detected

TCA: 1,1,1-Trichlorethane - Drinking Water MCL, 200 ppb

TCE: Trichloroethene - Drinking Water MCL, 5ppb

PCE: Tetrachloroethene (Perchloroethylene) - MCL not listed

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## 1100-EM-1 Operable Unit

## SAMPLING OF GROUNDWATER MONITORING WELLS

Status Date: 8/1/90

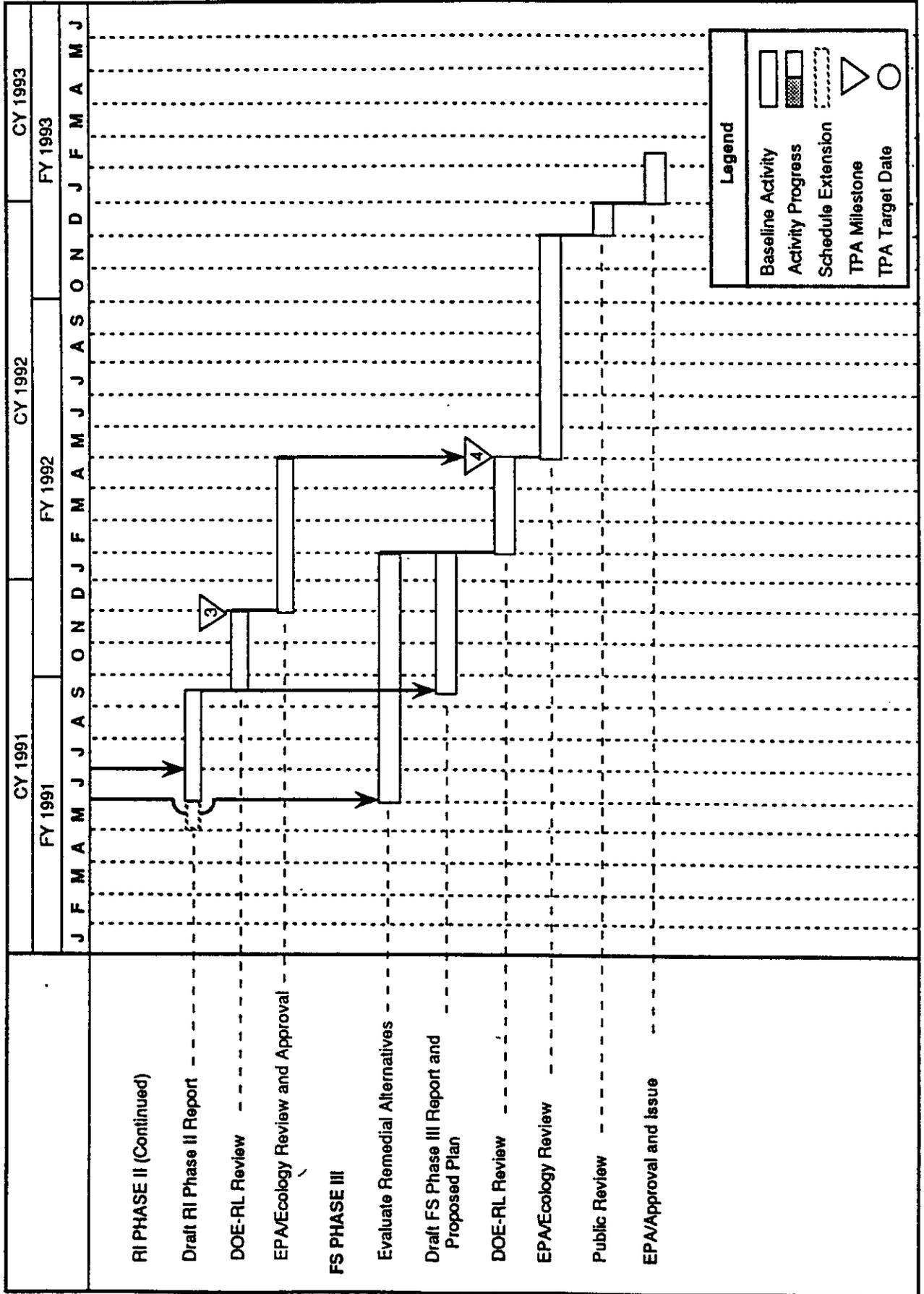
Temporary Well Number	Hanford Well Number	Sampling		
		1st Round Feb., 1990	2nd Round May, 1990	3rd Round Aug., 1990
MW-1	S41-E11	X	X	X
MW-2	S34-E10	X	X	X
MW-3	S41-E12	X	X	X
MW-4	S38-E12A	X	X	X
MW-5	S38-E12B	X	X	X
MW-6	S37-E11	X	X	X
MW-7	S38-E11	X	X	X
MW-8	S31-E08	X	X	X
MW-9	S32-E08	X	X	X
MW-10	S30-E10A	X	X	X
MW-11	S30-E10B	X	X	X
MW-12	S31-E10A	X	X	X
MW-13	S31-E10B	X	X	X
MW-14	S31-E10C	X	X	X
MW-15	S31-E10D	X	X	X
MW-17	S41-E13C	X	X	X
	S37-E14	X	X	X
	S40-E14	X	X	X
	S41-E13A	X	X	X
	S41-E13B	X	X	X
	S43-E12	X	X	X
	S27-E14		X	X
	S29-E12		X	X
	S30-E15A		X	X
	S31-E13		X	X
	S32-E13A		X	X
Well Field(W) Composite		X	X	X
Well Field(E) Composite		X	X	X
ANF Well # 14			X	X
ANF Well # 15			X	X
ANF Well # 16			X	X

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Status Date 08/01/90

**1100-EM-1 REMEDIAL INVESTIGATION/  
FEASIBILITY STUDY WORK SCHEDULE**



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## HANFORD FEDERAL FACILITY AGREEMENT AND CONSENT ORDER

### Action Plan Work Schedule - Dates for Deliverables

#### 1100-EM-1 Operable Unit

##### RI Phase I Report:

- o RI Phase I Report to DOE-RL - (Completed 6/01/90)
- o Reviewers Comments to WHC - (Completed 6/29/90)
- o \*RI Phase I Report to Regulators - August 31, 1990
- o Regulatory Comments to WHC - October 15, 1990
- o Disposition Regulatory Comments - November 15, 1990

##### FS Phase I & II Report:

- o FS Phase I & II Report to DOE-RL - September 7, 1990
- o FS Reviewers Comments to WHC - October 8, 1990
- o FS Phase I & II Report to Regulators - December 21, 1990
- \*\*FS Phase I & II Report to Regulators - December 31, 1990
- o Regulatory Comments to WHC - February 1, 1991
- o Revised FS Report to Regulators - March 18, 1991
- o 2nd Regulatory Comments to WHC - April 17, 1991
- o Finalize FS Phase I & II Report - May 17, 1991

##### RI Phase II Work Plan Supplement:

- o \*Work Plan Supplement to Reviewers - October 1, 1990
- o Reviewers Comments to WHC - November 15, 1990
- o RI Phase II Field Activities - October 15, 1990
- o Finalize RI Phase II Work Plan Suppl. - December 14, 1990

##### RI Phase II Report:

- o Draft RI Phase II Report to DOE-RL - September 15, 1991
- o Reviewers Comments to WHC - October 15, 1991
- \*\*RI Phase II Report to Regulators - November 30, 1991

##### FS Phase III Report:

- o FS Phase III Report to DOE-RL - January 31, 1992
- o FS Reviewers Comments to WHC - February 28, 1992
- \*\*FS Phase III Report to Regulators - April 30, 1992
- o Public Review of FS Phase III Report - November 30, 1992

\* Target Date from Federal Facility Agreement and Consent Order Action Plan Work Schedule

o Scheduled Deliverable Dates in Westinghouse Hanford Company Statements of Work to Subcontractors

\*\*Milestone from Federal Facility Agreement and Consent Order Action Plan Work Schedule

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8/14/90

## MEETING MINUTES

SUBJECT: Schedule for Delivery and Review of RI/FS Documents for the 1100-EM-1 Operable Unit

FROM: R. K. Stewart, DOE-RL  
 (Draft Minutes prepared by S. W. Clark, WHC)  
 (Incorporates revisions per tel/con to Dave Einan 8/14/90)

DATE OF MEETING: 8/7/90 LOCATION OF MEETING: EPA, HPO Office

## CONCURRENCES/APPROVALS:

*Steve Clark*  
 (Concur by tel/con w/RKS) WHC 1100-EM-1 RI Coordinator 8/16/90 Date  
Robert K. Stewart DOE-RL 1100-EM-1 Unit Mgr. 8/15/90 Date  
David R. Einan EPA (Lead Agency) 1100-EM-1 Unit Mgr. 8/15/90 Date

## MINUTES TO: ATTENDEES &amp; DISTRIBUTION:

## Attendees

R. K. Stewart - DOE-RL  
 S. W. Clark - WHC  
 D. R. Einan - EPA  
 M. L. Lauterbach - WHC  
 A. K. Stalker - WHC

## Distribution

M. R. Adams - WHC  
 P. T. Day - EPA  
 L. Goldstein - Ecology  
 T. M. Wintczak - WHC  
 R.F. Freeberg - DOE-RL

Meeting Highlights/Agreements

All target dates and milestones for delivery of documents from the remedial investigation and feasibility study (RI/FS) process for the 1100-EM-1 operable unit will be met as scheduled in the calendar year 1990 annual update to the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement, TPA).

The following agreements were reached for delivery and review of near-term documents in preparation:

1. RI Phase 1 report

- Will be delivered to EPA and Ecology to meet the TPA target date of August 31, 1990, and will include;
  - o All first round ground water monitoring well data
  - o Partial results of second round ground water sampling, including all CLP, non-CLP (except for radiochemical data), and drinking

water standards data for 1100 Area and Advanced Nuclear Fuels, Inc. wells,

- Additional agreements concerning the RI Phase I Report include:

- o Second round data not included will be clearly noted in the report.
- o All available second round data will be included in an appendix to the RI Phase I report. Data not available, e.g. radiochemical data, will be included in the RI Phase II report.
- o Available results from the 2nd sampling round appear to be substantially similar to the first round, and therefore it is anticipated that the background risk assessment will not require rewriting.
- o The RI Phase I report will not be revised after regulatory review. Rather, as a secondary document under the TPA, regulatory review comments will be responded to in writing and attached as a part of the Administrative Record.

2. FS Phase 1 and 2 draft report

- Will be delivered to DOE-RL on September 7, 1990, as scheduled, for parallel DOE and WHC review. This draft will not include any second round groundwater data. It was agreed that WHC/Golder would attempt to develop recommendations to reduce confusion on the part of DOE Reviewers possibly caused by this draft being issued and out for review during the time that the RI Phase I report is also undergoing review (The RI Phase I report to be distributed by August 31 is to include partial round 2 groundwater data and analyses, as noted above). After review, the report will be revised to include second round ground water data before it is delivered to EPA and Ecology to meet the TPA interim milestone date of December 31, 1990.

3. RI Phase 2 Work Plan Supplement

- Will be delivered to DOE-RL, EPA, Ecology, and WHC on the TPA target date of October 1, 1990, for concurrent Tri-Party and WHC review. It is to include 2nd round groundwater data available as of August 9, 1990, to WHC/Golder. It, as delivered, will be conservative; i.e. based on the rest of the 2nd round data, the scope of the RI Phase II Investigation may need to be reduced ~~(but not increased)~~. After review it will be revised to include comments and the rest of the 2nd round ground water data. This is a change in that a draft work plan supplement was to have been submitted to DOE-RL by August 31 for internal DOE review. This revised agreement permits available second round groundwater data to be included. EPA will determine at a later date if the Work Plan Supplement is to be a primary or secondary document, per the TPA Action Plan, page 7-12, ~~thus determining whether or not the a plan is to be revised or only supplemented with review comments and responses.~~ \*

\* Deletions by DRE 8/15/90

ADVANCED NUCLEAR FUELS CORPORATION

3000 EAST BEAVER CREEK ROAD, RICHLAND, WA 99352  
 (509) 937-7111

August 6, 1990  
 CWM:90:115

U.S. Department of Energy  
 Attn: Mr. Bob Stewart  
 Environmental Restoration Division  
 Richland Operations Office  
 P. O. Box 550  
 Richland, WA 99352

Dear Mr. Stewart:

#### HYDROLOGY AND GROUNDWATER ANALYTICAL DATA

The purpose of this letter is to transmit certain hydrology and groundwater analytical data as previously agreed by the Department of Energy (DOE) and Advanced Nuclear Fuels Corporation (ANF). Figure 1 displays the location of and identifies the various test wells in the ANF grid system. Table 1 tabulates the Lambert Grid coordinate for each test well and the elevation above mean sea level of the water table as measured at each well. There are also two additional enclosures which are an analytical data sheet from Northwest Health Services, Inc., and analytical data and quality assurance information from Pacific Northwest Environmental Laboratories (PNEL) (seven packages). The PNEL analytical data consists of the following items:

- Inorganic Sample Data
- Cyanide Sample Data
- Volatile Data Package
- Semi-volatile Data Package
- Pesticide Data Package
- Data Summary Package
- Floppy Disk Data Package

There are certain radioanalyses which are not complete as yet. That data will be forwarded when received.

Very truly yours,



Charles W. Malody, Manager

jrs

August 13, 1990

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TABLE 2.2

SUMMARY OF VALIDATED INORGANIC AND ORGANIC ANALYSIS RESULTS  
 ANF GROUNDWATER MONITORING WELLS  
 (Results in ug/L)

Well No.: Date Sampled:	Well #14 June 6, 1990		Well #15 June 6, 1990		Well #16 June 6, 1990	
	Result	Q	Result	Q	Result	Q
Aluminum	251	U	338	U	118	U
Antimony	32	U	32	U	43.8	
Arsenic	5.5	J	5.2	J	3.4	J
Barium	181	J	104	J	91.9	J
Beryllium	1	U	1	U	1	U
Cadmium	4	U	2	U	2.6	U
Calcium	99,700		55,400		52,100	
Chromium	4	U	4	U	4	U
Cobalt	12.3	U	13.4	U	18.2	U
Copper	13.8	U	15.9	U	13.1	U
Iron	437		778		5,570	
Lead	3.7		2.3		2	
Magnesium	26,000		16,400		14,500	
Manganese	1	U	4.7		85.6	
Mercury	0.2	U	1.1	R	0.2	U
Nickel	19.2	U	16.0	U	21.5	U
Potassium	18,000	J	14,600	J	9,460	J
Selenium	2	U	2	U	2	U
Silver	7.8	U	7.2	U	6.4	U
Sodium	40,900	J	38,700	J	19,000	J
Thallium	3	U	3	U	3	U
Vanadium	34.5	U	28.2	U	47.7	U
Zinc	244		75.5		191	
Cyanide	10	U	10	U	10	U
1,1,1-Trichloroethane	7		5		5	U
Trichloroethene	22		58		53	
Di-n-butyl phthalate	3		10	U	4	
bis(2-Ethylhexyl)phthalate	15		21		27	
Unknown SV-TIC @ 11.62 mins.	ND		ND		68	
Unknown SV-TIC @ 14.59 mins.	ND		ND		27	

RECEIVED

JUN 12 1990

REGULATORY COMPLIANCE

**NHS, INC.**

805 Goethals Drive • Richland, WA 99352 • (509) 943-0802

a subsidiary of Hanford Environmental Health Foundation

June 11, 1990

CO# 90-0376

Advanced Nuclear Fuels  
2101 Horn Rapids Rd.  
Richland, WA 99352

Attn: Steve Lockhaven

WATER ANALYSIS OF TEST WELLS

The water samples received May 24, 1990, have been analyzed for anions, turbidity and coliform in accordance with Standard Methods for the Examination of Water and Wastewater, 16th Ed. Results follow:

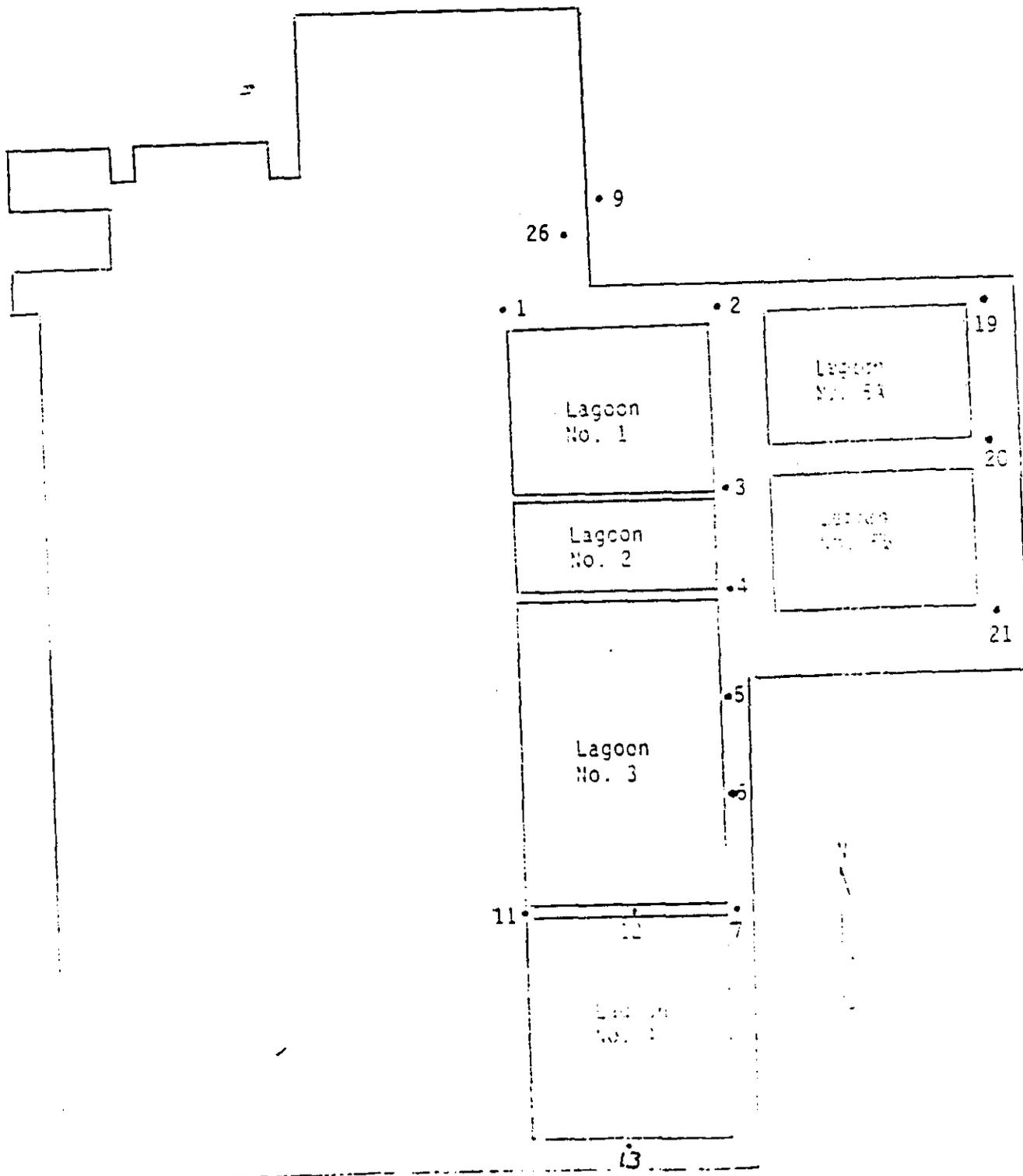
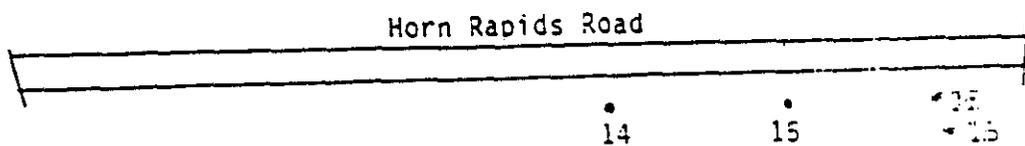
<u>SAMPLE ID</u>	<u>PARAMETER</u>	<u>RESULT</u>
Test Well #14	Turbidity	<2 NTU
	Fluoride	4.4 µg/mL
	Chloride	33.1 µg/mL
	NO <sub>3</sub> -N	79.5 µg/mL
	Sulfate	81.7 µg/mL
	coliform	<2 colonies/100mL
Test Well #15	Turbidity	<2 NTU
	Fluoride	11.5 µg/mL
	Chloride	16.3 µg/mL
	NO <sub>3</sub> -N	61.4 µg/mL
	Sulfate	111.4 µg/mL
	coliform	<2 colonies/100mL
Test Well #16	Turbidity	18.5 NTU
	Fluoride	3.9 µg/mL
	Chloride	9.9 µg/mL
	NO <sub>3</sub> -N	42.7 µg/mL
	Sulfate	51.4 µg/mL
	coliform	<2 colonies/100mL

No nitrite (<0.06 mg/L NO<sub>2</sub>-N) or phosphate (<0.5 mg/L) was found in any of the samples.

If you have any questions concerning this report, please contact NHS, Inc.

*S. J. Crowner*  
S. J. Crowner  
NHS, Inc.

FIGURE 1



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TABLE 1

ANF Well No.	Location (Lambert Grid)		Elevation of Water Table Above Mean Sea Level (7/19/90)
1	N372769.0	E2303158.0	353.50
2	N372769.0	E2303443.0	353.52
3	N372526.5	E2303443.0	353.55
4	N372385.0	E2303443.0	353.56
5	N372255.0	E2303443.0	353.59
6	N372141.0	E2303443.0	353.62
7	N371966.7	E2303443.0	353.57
9	N372941.0	E2303289.0	353.53
11	N371981.0	E2303182.0	353.58
12	N371986.0	E2303306.8	353.65
13	N371713.7	E2303306.8	353.62
14	N373443.0	E2303359.5	353.35
15	N373443.9	E2303529.0	353.36
16	N373447.4	E2303693.7	353.29
19	N372774.2	E2303767.2	353.42
20	N372581.4	E2303767.2	353.53
21	N372371.7	E2303767.7	353.57
22	N371536.1	E2303410.0	353.63
23	N371555.1	E2302493.8	353.75
24	N372116.9	E2302231.9	353.71
25	N372619.6	E2302040.7	353.68
26	N372884.2	E2303261.6	353.53

1212681116

**DON'T SAY IT --- Write It!**

**DATE:** August 15, 1990

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**TO:** File

**FROM:** S. W. Clark H4-55

---

**Telephone:** 6-1513

**SUBJECT:** VALIDATED NON-CLP DATA FROM SECOND ROUND GROUND WATER MONITORING WELL SAMPLING

---

Attached are the validated non-CLP (contract laboratory program) analyses of second round ground water monitoring well samples taken in the 1100-EM-1 Operable Unit, May 14-24, 1990.

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WEYERHAEUSER TECHNOLOGY CENTER  
Analytical Laboratories  
Tacoma, Washington

Service Request 02683  
Page 1 of 1

REPORT

Westinghouse Water Samples  
1100 EM1

Sample Description	Analytical Lab Code	pH	Turbidity NTU	Specific Conductance $\mu\text{s}/\text{cm}$	TDS mg/L	Alkalinity mg/L CaCO <sub>3</sub>	COD mg/L
B000G0	MW-15 50007	7.9	0.7	730	540	160	<5 $\mu\text{J}$
B000J2	MW-3 50010	7.4	4.6	1000	680; 710	223; 226	13 J
B000G4	MW-2 50012	8.0; 8.0	1.8; 1.8	410	280	140	9 J
B000G9	MW-1 50056	7.8	1.7	560	370	200	10J 7J
B000H3	MW-6 50059	8.0	1.2	400	280	150	7J
B000H7	MW-7 50061	8.0; 8.0	0.3	440; 440	300	160	8 J

Sample Description	Analytical Lab Code	NH <sub>3</sub> -N mg/L	NO <sub>3</sub> -NO <sub>2</sub> -N mg/L	SO <sub>4</sub> mg/L	AOX mg/L	CN mg/L	TP mg/L
B000G0	MW-15 50007	0.02J	0.04J 32.8	57; 59	0.06 J	<0.01; <0.01	0.04
B000J2	MW-3 50010	<0.02 $\mu\text{J}$	1.5; 1.5	58	0.02 J	<0.01	0.08
B000G4	MW-2 50012	0.04 J	2.8	44	<0.01 $\mu\text{J}$	<0.01	0.07
B000G9	MW-1 50056	0.02 J	4.4	29	0.02 J	<0.01	0.04
B000H3	MW-6 50059	<0.02 $\mu\text{J}$	2.8	26	0.03 J	<0.01	0.07
B000H7	MW-7 50061	<0.02 $\mu\text{J}$	2.2	39	<0.01 $\mu\text{J}$	<0.01; <0.01	0.06; 0.06

*JJ* 08/08/90

Notebook \_\_\_\_\_

Approved *Maime Rade* Date 6-22-90 Page Number \_\_\_\_\_

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ATTACHMENT #11

SR 02683

WEYERHAEUSER TECHNOLOGY CENTER  
Analytical Laboratories  
Tacoma, Washington

TOC REPORT  
WESTINGHOUSE 1100 EMI

SUBMITTER'S DESIGNATION	SAMPLE NUMBER	TOC C mg/L AS REC'D BASIS	DATE ANALYZED	DATE SAMPLED
MW-15	B000G0	50007	0.8	6/7/90 5/16/90
MW-3	B000J2	50010	2.7	6/7/90 5/16/90
MW-2	B000G4	50012	2.5	6/7/90 5/16/90
MW-1	B000G9	50056	1.7	6/7/90 5/17/90
MW-6	B000H3	50059	1.7	6/7/90 5/17/90
MW-7	B000H7	50061	0.9	6/7/90 5/17/90

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Approved *[Signature]*

Date 6/27/90

Notebook 000000

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Page 1

SR 02683

WEYERHAEUSER TECHNOLOGY CENTER  
Analytical Laboratories  
Tacoma, Washington

ANION REPORT  
WESTINGHOUSE 1100 ENI

SUBMITTER'S DESIGNATION	SAMPLE NUMBER	FLUORIDE F mg/L AS REC'D BASIS	CHLORIDE Cl mg/L AS REC'D BASIS	BROMIDE Br mg/L AS REC'D BASIS	NITRATE NITROGEN NO3-N mg/L AS REC'D BASIS	PHOSPHATE PO4 mg/L AS REC'D BASIS	SULPHATE SO4 mg/L AS REC'D BASIS	DATE ANALYZED	DATE SAMPLED	
MW-15	B000G0	50007	0.4	14.6	0.2	32.2	<0.5	59.4	5/19/90 6/6/90	5/16/90
MW-3	B000J2	50010	<0.1	127.3	0.2	1.5	<0.5	25.6	5/19/90 6/6/90	5/16/90
MW-2	B000G4	50012	0.4	9.8	<0.2	2.4	<0.5	32.1	5/19/90 6/6/90	5/16/90
MW-1	B000G9	50056	0.3	28.4	<0.2	3.9	<0.5	26.6	5/19/90 6/6/90	5/17/90
MW-6	B000H3	50059	0.3	9.3	<0.2	2.5	<0.5	26.2	5/19/90 6/6/90	5/17/90
MW-7	B000H7	50061	0.3	11.0	<0.2	2.1	<0.5	32.2	5/19/90 6/6/90	5/17/90

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Date 6/27/90

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WEYERHAEUSER TECHNOLOGY CENTER  
Analytical Laboratories  
Tacoma, Washington

Service Request 02755  
Page 1 of 1

REPORT

Westinghouse Water Samples  
1100 EM1

Sample Description	Analytical Lab Code	pH	Turbidity NTU	Specific Conductance $\mu\text{s}/\text{cm}$	TDS mg/L	Alkalinity mg/L CaCO <sub>3</sub>	COD mg/L
B00B16 <u>Blank</u>	50446	5.7	0.1	1.5	<5	<5	<5; <5
B00B20 <u>Blank</u>	50448	5.8	0.3	1.7	<5	<5	<5
B009X1 <u>Blank</u>	50451	6.2	<0.05	1.6	<5	<5; <5	<5
B009X5 <u>232-E13A</u>	50452	7.7	93	480	330	223	<5
B009X9 <u>229-E12</u>	50454	7.9	4.2	420	260	141	<5
B009Y3 <u>231-E13</u>	50456	7.4	79	520	330	230	<5
B009Y7 <u>230-E15A</u>	50458	7.7	3.4	450	280	202	<5
B009Z1 <u>227-E14</u>	50460	8.1	0.1	460; 460	300; 300	149	<5

Sample Description	Analytical Lab Code	NH <sub>3</sub> -N mg/L	NO <sub>3</sub> -NO <sub>2</sub> -N mg/L	SO <sub>4</sub> mg/L	AOX mg/L	CN mg/L	TP mg/L
B00B16 <u>Blank</u>	50444	<0.02	<0.05	<1	<0.01 $\mu\text{J}$	<0.01	<0.01
B00B20 <u>Blank</u>	50448	<0.02	<0.05	<1; <1	<0.01 $\mu\text{J}$	<0.01	<0.01
B009X1 <u>Blank</u>	50451	<0.02	<0.05	<1	<0.01 $\mu\text{J}$	<0.01	<0.01
B009X5 <u>232-E13A</u>	50452	<0.02	4.3	20	<0.01 $\mu\text{J}$	<0.01	0.04
B009X9 <u>229-E12</u>	50454	<0.02; <0.02	4.1	23	<0.01 $\mu\text{J}$	<0.01	0.07
B009Y3 <u>231-E13</u>	50456	<0.02	4.0	19	<0.01 $\mu\text{J}$	<0.01	0.05
B009Y7 <u>230-E15A</u>	50458	<0.02	2.4; 2.2	14	<0.01 $\mu\text{J}$	<0.01	0.04
B009Z1 <u>227-E14</u>	50460	<0.02	7.2	38	<0.01 $\mu\text{J}$	<0.01; <0.01	0.04; 0.06

Approved Maxine Ratz Notebook \_\_\_\_\_ Date 6-22-90 Page Number \_\_\_\_\_

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ATTACHMENT #11

Page 5 of 13

SR 02755

WEYERHAEUSER TECHNOLOGY CENTER  
Analytical Laboratories  
Tacoma, Washington

TOC REPORT  
WESTINGHOUSE 1100 EMI

SUBMITTER'S DESIGNATION	SAMPLE NUMBER	TOC C mg/L AS REC'D BASIS	DATE ANALYZED	DATE SAMPLED
Blank	B00816	50446	<0.1	6/7/90 5/24/90
Blank	B00820	50448	<0.1	6/7/90 5/24/90
Blank	B009X1	50451	<0.1	6/7/90 5/24/90
232-E13A	B009X5	50452	1.3	6/7/90 5/24/90
229-E12	B009X9	50454	0.8	6/7/90 5/23/90
231-E13	B009Y3	50456	2.2	6/7/90 5/24/90
230-E15A	B009Y7	50458	2.8	6/7/90 5/24/90
227-E14	B009Z1	50460	0.7	6/7/90 5/23/90

Approved

*Kui Dorsey*

Date 6/27/90

Notebook \_\_\_\_\_

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SR 02755

WEYERHAEUSER TECHNOLOGY CENTER  
Analytical Laboratories  
Tacoma, Washington

ANION REPORT  
WESTINGHOUSE 1100 EMI

SUBMITTER'S DESIGNATION	SAMPLE NUMBER	FLUORIDE F mg/L AS REC'D BASIS	CHLORIDE Cl mg/L AS REC'D BASIS	BROMIDE Br mg/L AS REC'D BASIS	NITRATE NITROGEN NO3-N mg/L AS REC'D BASIS	PHOSPHATE PO4 mg/L AS REC'D BASIS	SULPHATE SO4 mg/L AS REC'D BASIS	DATE	DATE
								ANALYZED	SAMPLED
Blank	B00816	50446	<0.1	<0.2	<0.2	<0.1	<0.6	<0.5	5/25/90 5/24/90
Blank	B00820	50448	<0.1	<0.2	<0.2	<0.1	<0.6	<0.5	5/25/90 5/24/90
Blank	B009X1	50451	<0.1	<0.2	<0.2	<0.1	<0.6	<0.5	5/25/90 5/24/90
232-E13A	B0009X5	50452	0.2	8.2	<0.2	4.8	<0.6	23.2	5/25/90 5/24/90
239-E12	B009X9	50454	0.3	12.0	<0.2	4.5	<0.6	34.2	5/25/90 5/23/90
231-E13	B009Y3	50456	0.3	7.9	<0.2	4.5	<0.6	21.5	5/25/90 5/24/90
230-E15A	B009Y7	50458	0.2	6.3	<0.2	2.4	<0.6	18.0	5/25/90 5/24/90
237-E14	B009Z1	50460	0.3	13.4	0.2	7.5	<0.6	39.7	5/25/90 5/23/90

Approved



Date 7/2/90

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WEYERHAEUSER TECHNOLOGY CENTER  
Analytical Laboratories  
Tacoma, Washington

Service Request 02715  
Page 1 of 1

REPORT

Westinghouse Water Samples  
1100 EM1

Sample Description	Analytical Lab Code	pH	Turbidity NTU	Specific Conductance $\mu\text{s}/\text{cm}$	TDS mg/L	Alkalinity mg/L CaCO <sub>3</sub>	COD mg/L
B00B08 <u>RWF-East</u>	50186	8.2	0.4	170	80	71	<5
B00B12 <u>RWF-West</u>	50189	8.3	0.9	170	83; 81	69	<5
B000J8 <u>MW-4</u>	50275	8.0	7.9	320	190	129	<5
B000K2 <u>MW-5</u>	50278	8.0	3.1	320	260	107	<5
B000L7 <u>241-E13A</u>	50280	8.1	1.6	300	190	130	<5
B000M1 <u>241-E13B</u>	50282	7.8; 7.8	0.3	460	280	215	<5
B000K6 <u>243-E12</u>	50348	7.6	1.0	710	450	241; 240	<5
B000M6 <u>237-E14</u>	50351	8.1	0.3	240	180	83	<5
B000L1 <u>MW-17</u>	50353	8.1	1.8	260	180	110	<5
B000L5 <u>MW-17(Quap)</u>	50355	8.1	1.6	260; 260	200	111	<5
B009W5 <u>240-E14</u>	50357	8.0	0.3	160	96	65	<5; <5

Sample Description	Analytical Lab Code	NH <sub>3</sub> -N mg/L	NO <sub>3</sub> -NO <sub>2</sub> -N mg/L	SO <sub>4</sub> mg/L	AOX mg/L	CN mg/L	TP mg/L
B00B08 <u>RWF-East</u>	50186	<0.02	0.17; 0.17	9	<0.01 WJ	<0.01	0.02
B00B12 <u>RWF-West</u>	50189	<0.02	0.22	10; 9	0.03J 0.03J	<0.01	0.02
B000J8 <u>MW-4</u>	50275	<0.02; <0.02	1.7; 1.7	16	0.02J	<0.01	0.07
B000K2 <u>MW-5</u>	50278	0.03	1.6	16	0.04 J	<0.01	0.08
B000L7 <u>241-E13A</u>	50280	<0.02	1.4	9	<0.01 WJ	<0.01	0.04
B000M1 <u>241-E13B</u>	50282	<0.02	0.51	7	<0.04 WJ	<0.01	0.03
B000K6 <u>243-E12</u>	50348	<0.02	4.6	28	0.02 J	<0.01	0.05
B000M6 <u>237-E14</u>	50351	<0.02	1.7	17	<0.01 WJ	<0.01	0.05
B000L1 <u>MW-17</u>	50353	<0.02; <0.02	<0.05	11	<0.01 WJ	<0.01	0.70
B000L5 <u>MW-17(Quap)</u>	50355	<0.02	<0.05	11	<0.01 WJ	<0.01	0.66*
B009W5 <u>240-E14</u>	50357	<0.02	0.16	10	<0.01 WJ	<0.01; <0.01	0.02; 0.02

\*Value is high due to precipitate which formed after the color development.

Approved Marlene Rand Date 6-22-90 Notebook \_\_\_\_\_ Page Number \_\_\_\_\_

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ATTACHMENT #11

Page 9 of 13

02715TOC.XLS

Page 1

SR 02715

WEYERHAEUSER TECHNOLOGY CENTER  
Analytical Laboratories  
Tacoma, Washington

TOC REPORT  
WESTINGHOUSE 1100 EN1

SUBMITTER'S DESIGNATION	SAMPLE NUMBER	TOC C mg/L AS REC'D BASIS	DATE ANALYZED	DATE SAMPLED
B00808	50186	RWF-East 0.8	6/7/90	5/20/90
B00812	50189	RWF-West 0.9	6/7/90	5/20/90
B000J8	50275	MW-4 0.6	6/7/90	5/21/90
B000K2	50278	MW-5 0.4	6/7/90	5/21/90
B000L7	50280	241-E13A 1.2	6/7/90	5/21/90
B000M1	50282	241-E13B 1.4	6/7/90	5/21/90
B000K6	50348	243-E12 1.3	6/7/90	5/22/90
B000M6	50351	237-E14 0.4	6/7/90	5/22/90
B000L1	50353	MW-17 <0.1	6/7/90	5/22/90
B000L5	50355	MW-17 (Dup) <0.1	6/7/90	5/22/90
B009W5	50357	240-E14 1.3	6/7/90	5/22/90

Approved



Date 6/27/90

Notebook \_\_\_\_\_

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SR 02715

WEYERHAEUSER TECHNOLOGY CENTER  
Analytical Laboratories  
Tacoma, Washington

ANION REPORT  
WESTINGHOUSE 1100 ENI

SUBMITTER'S DESIGNATION	SAMPLE NUMBER	FLUORIDE F mg/L AS REC'D BASIS	CHLORIDE Cl mg/L AS REC'D BASIS	BROMIDE Br mg/L AS REC'D BASIS	NITRATE NITROGEN NO3-N mg/L AS REC'D BASIS	PHOSPHATE PO4 mg/L AS REC'D BASIS	SULPHATE SO4 mg/L AS REC'D BASIS	DATE	DATE	
								ANALYZED	SAMPLED	
RWF-EAST	B00808	50186	0.1	1.2	<0.2	0.2	<0.6	10.9	5/22/90 6/7/90	5/20/90
RWF-WEST	B00812	50189	0.1	1.1	<0.2	0.2	<0.6	10.5	5/22/90 6/7/90	5/20/90
MW-4	B000J8	50275	0.2	6.0	<0.2	1.6	<0.6	17.5	5/23/90 6/7/90	5/21/90
MW-5	B000K2	50278	0.3	5.6	<0.2	1.5	<0.6	18.7	5/23/90 6/7/90	5/21/90
24-E13A	B000L7	50280	0.2	4.0	<0.2	1.3	<0.6	11.3	5/23/90 6/7/90	5/21/90
24-E12B	B000M1	50282	0.2	9.5	<0.2	0.5	<0.6	10.0	5/23/90 6/7/90	5/21/90
243-E12	B000K6	50348	0.2	51.8	0.2	4.7	<0.6	27.2	5/24/90 6/7/90	5/22/90
237-E14	B000M6	50351	3.7	2.5	<0.2	1.6	<0.6	16.0	5/24/90 6/7/90	5/22/90
MW-17	B000L1	50353	0.3	2.6	<0.2	<0.1	2.4	15.6	5/24/90 6/7/90	5/22/90
MW-17 (dup)	B000L5	50355	0.3	2.6	<0.2	<0.1	2.6	15.4	5/24/90 6/7/90	5/22/90
240-E14	B009W5	50357	0.1	1.0	<0.2	0.2	<0.6	10.0	5/24/90 6/7/90	5/22/90

Approved

*Kari Dovesel*

Date 7/2/90

Notebook

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**WEYERHAEUSER TECHNOLOGY CENTER**  
**Analytical Laboratories**  
**Tacoma, Washington**

Service Request 02666  
Page 1 of 1

REPORT

Westinghouse Water Samples  
1100 Area R1/FS

Sample Description	Analytical Lab Code	pH	Turbidity NTU	Specific Conductance $\mu\text{S}/\text{Cm}$	TDS mg/L	Alkalinity mg/L CaCO <sub>3</sub>	COD mg/L
B00070 <u>MW-8</u>	49931	7.9; 7.9	0.4 J 0.2 J	480; 480	340	160	8; 8
B00074 <u>MW-9</u>	49933	8.1	0.5 J	260	220	94	9
B00078 <u>MW-10</u>	49935	7.7	11 J	800	580	150	9
B00083 <u>MW-11</u>	49938	7.7	0.6 J	800	580	150	10
B00087 <u>MW-12</u>	49940	7.6	8 J	900	660	180	9
B00091 <u>MW-12 (dup)</u>	49942	7.6	2 J	900	310	180	8
B00095 <u>MW-13</u>	49944	7.7	1 J	870	620	170	9
B00100 <u>MW-14</u>	49947	7.7	0.3 J	920	700	180	14

Sample Description	Analytical Lab Code	NH <sub>3</sub> -N mg/L	NO <sub>3</sub> -NO <sub>2</sub> -N mg/L	SO <sub>4</sub> mg/L	AOX mg/L	CN mg/L	TP mg/L
B00070 <u>MW-8</u>	49931	<0.02	7.2	27; 28	<0.01	<0.01	0.04
B00074 <u>MW-9</u>	49933	0.06	<0.05; <0.05	29	0.09; 0.10	<0.01	0.06
B00078 <u>MW-10</u>	49935	0.11; 0.11	39.4	78	<0.01	<0.01	0.04
B00083 <u>MW-11</u>	49938	0.81	43.4	77	0.01	<0.01	0.05
B00087 <u>MW-12</u>	49940	<0.02	52.1	75	0.06	<0.01	0.03
B00091 <u>MW-12 (dup)</u>	49942	<0.02	50.4	75	0.06	<0.01; <0.01	0.03
B00095 <u>MW-13</u>	49944	0.18	47.6	69	0.06	<0.01	0.03
B00100 <u>MW-14</u>	49947	0.94	52.3	86	0.06	<0.01	0.02; 0.02

Notebook \_\_\_\_\_

Approved Maxine R. [Signature] Date 6-22-90 Page Number \_\_\_\_\_

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ATTACHMENT #11

Page 12 of 13

02666TOC.XLS

Page 1

SR 02666

WEYERHAEUSER TECHNOLOGY CENTER  
Analytical Laboratories  
Tacoma, Washington

TOC REPORT  
WESTINGHOUSE 1100 RI/FS

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SUBMITTER'S DESIGNATION	SAMPLE NUMBER	TOC C mg/L AS REC'D BASIS	DATE ANALYZED	DATE SAMPLED
MW-8	800070	49931	0.8	6/6/90 5/14/90
MW-9	800074	49933	1.0	6/6/90 5/14/90
MW-10	800078	49935	1.2	6/6/90 5/14/90
MW-11	800083	49938	1.2	6/6/90 5/15/90
MW-12	800087	49940	2.1	6/6/90 5/15/90
MW-12 (dup.)	800091	49942	1.0	6/6/90 5/15/90
MW-13	800095	49944	1.6	6/6/90 5/15/90
MW-14	800100	49947	1.8	6/6/90 5/15/90

Approved *Kari D. Dalseg*

Date 6/27/90

Notebook 000001

02666.XLS

Page 1

SR 02666

WEYERHAEUSER TECHNOLOGY CENTER  
Analytical Laboratories  
Tacoma, Washington

ANION REPORT  
WESTINGHOUSE 1100 RI/FS

SUBMITTER'S DESIGNATION	SAMPLE NUMBER	FLUORIDE	CHLORIDE	BROMIDE	NITRATE	PHOSPHATE	SULPHATE	DATE ANALYZED	DATE SAMPLED	
		F mg/L AS REC'D BASIS	Cl mg/L AS REC'D BASIS	Br mg/L AS REC'D BASIS	NO <sub>3</sub> -N mg/L AS REC'D BASIS	PO <sub>4</sub> mg/L AS REC'D BASIS	SO <sub>4</sub> mg/L AS REC'D BASIS			
MW-8	B00070	49931	0.3	15.6	<0.2	6.7	<0.5	30.3	5/17/90 6/6/90	5/14/90
MW-9	B00074	49933	0.3	2.4	<0.2	<0.1	<0.5	29.8	5/17/90 6/6/90	5/14/90
MW-10	B00078	49935	0.3	16.9	0.2	36.9	<0.5	78.6	5/17/90 6/6/90	5/14/90
MW-11	B00083	49938	0.3	17.2	0.2	40.5	<0.5	85.3	5/17/90 6/6/90	5/15/90
MW-12	B00087	49940	0.3	16.0	<0.2	49.0	<0.5	81.7	5/17/90 6/6/90	5/15/90
MW-12(Rep)	B00091	49942	0.3	16.2	<0.2	48.3	<0.5	81.8	5/17/90 6/6/90	5/15/90
MW-13	B00095	49944	0.5	14.7	0.2	44.9	<0.5	72.8	5/17/90 6/6/90	5/15/90
MW-14	B00100	49947	0.3	15.5	<0.2	50.9	<0.5	86.8	5/17/90 6/6/90	5/15/90

Approved



Date 6/27/90

Notebook

