November 19, 1991

Meeting Minutes Transmittal/Approval
1100-EM-1 Operable Unit Managers Meeting
450 Hills St., Richland, Washington
September 18, 1991

FROM/APPROVAL: Robert K. Stewart Date 11/20/91
Robert K. Stewart, 1100-EM-1 Operable Unit Manager (DOE-RL)

APPROVAL: David R. Einan Date 20 Nov 91
Dave Einan, 1100-EM-1 Unit Manager, EPA

APPROVAL: Richard G. Hibbard Date 11/20/91
Richard Hibbard, 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 - Attendance List
Attachment #3 - Agenda
Attachment #4 - Action Items Status List
Attachment #5 - Radiochemical Analyses of Groundwater Monitoring Well Samples
Attachment #6 - Analyses of Volatile Organic Compounds in Ground Water Samples
Attachment #7 - Analyses of Inorganic Compounds in Ground Water Samples
Attachment #8 - Letter to W. L. Greenwald, Elucidation of Technetium Methods
Attachment #9 - Summary of Soil Gas Monitoring at Permanent Monitoring Probes in the Horn Rapids Landfill
Attachment #10 - Geophysical Survey Summary, Horn Rapids Landfill
Attachment #11 - Agreement/Approval Form for Test Pits in Horn Rapids Landfill
Attachment #12 - 1100-EM-1 Operable Unit Final RI/FS Report
Attachment #13 - Decommissioning Work Plan, Horn Rapids Landfill Test Pits
Attachment #14 - Change Control Form, M-15-91-2, Revision to Milestones M-15-01B and M-15-01C

PREPARED BY: Doug Fassett Date 12/16/91
SWEC Support Services

CONCURRENCE BY: [illegible] Date 20 Nov 91
~~WHC~~ WACE RI Coordinator

Attachment #1

Meeting Summary and Summary of Commitments and Agreements

1100-EM-1 Unit Managers Meeting
September 18, 1991

Work Progress - Wendell Greenwald (Army Corps of Engineers, ACE) presented the status of Remedial Investigation/Feasibility Study work progress.

Ground Water Sampling

1. Wendell Greenwald presented the latest volatile organic and inorganic sample results from the ground water monitoring wells (see Attachments #6 and #7). The June 1991 volatile organic well sample results showed that the levels of trichloroethene (TCE) and tetrachloroethene (PCE) were pretty consistent with previous results. The June 1991 inorganic well sample results showed a nitrate concentration that was consistent with previous results. Radiochemistry analytical results for the sixth round of sampling have not yet been reviewed. Mr. Greenwald said data from the Siemens Nuclear Power Corporation (Siemens) wells would be included in the tables of groundwater data.

2. The last sampling collection effort of wells that will supply data for the RI Phase II report was under way the week of September 16. This sampling effort included Siemens' wells and should provide a fairly complete picture of the plume on both Siemens' property and at the 1100 Area. Chuck Malody (Siemens) said three new wells were installed down-gradient of Siemens and one well was installed up-gradient of Siemens.

3. Samples collected in September will be analyzed for technetium by both PNL and K-25 labs (see Attachment #8). To improve the accuracy in quantifying technetium, PNL will employ two different analytical methods. The results from the two PNL analytical techniques and from the K-25 lab will be compared.

HRL Quarterly Soil Gas Sampling Results

4. The quarterly soil gas sample data for samples taken in August were presented by Wendell Greenwald (see Attachment #9). A total of 35 soil gas probes were used by Golder to gather soil gas information at the Horn Rapids Landfill during the period of August 13 through August 16, 1991. The samples were analyzed for TCE, 1,1,1-trichloroethane (TCA), PCE, carbon tetrachloride and other compounds. Mr. Greenwald said the high levels of organics in the first round of soil gas samples were probably due to moisture in the near surface soil that acted as a cap. No defined vadose zone source of contamination by volatile organic compounds can be identified at the Horn Rapids Landfill based on the results of soil gas sampling.

HRL Geophysical Survey Results

5. Test pits will be excavated based on the new geophysical survey information (see Attachment #10). Wendell Greenwald said the new geophysical survey indicated that there was no material below the target zone for buried drums. The survey results will be provided to the regulators the week of September 30 or October 7, 1991. This information will be reviewed and comments will be provided by the regulators. The regulators and DOE will agree to the number and depth of the test pits before excavation begins (see Attachment #11).

Action Item #11EM1.88: Arrange a meeting between Golder and the regulators (Ward Staubitz) to review the latest geophysical survey. Action: Wendell Greenwald

HRL Test Pits

6. Weathered asbestos was found in test pit #7 in HRL and this resulted in a work stop. Work will resume after the health and safety documents and procedures can be revised to include the requirements for handling asbestos. Asbestos was also found in test pit #3B at the 3-foot level. Digging will begin in test pit #6 on September 19.

7. Wendell Greenwald proposed that the test pits be excavated to depths based on the new geophysical survey. The proposed appropriate new depths of the test pits are indicated in Attachment #11. Concern was expressed by Mr. Greenwald regarding the depth of the excavations identified in the agreement made on July 25. The problem is the difficulty in excavating the test pits to a depth of 20 feet with asbestos present. Bob Stewart suggested that the pits be excavated to the shallower depths based on the new surveys. If the regulators determined that the pits should be excavated deeper, it would be done. Mr. Stewart suggested a change package be produced instead of Attachment #11 if the July 25th agreement needed to be modified.

8. Mr. Greenwald said the scope of work (SOW) for the HRL test pits was revised (see Attachment #13 - Decommissioning Work Plan). A copy of the SOW was provided to Dave Einan on September 12, 1991 and to Rich Hibbard on September 18, 1991. Mr. Greenwald said it would be several more days until official copies of the SOW would be available. He said the critical issues in the SOW were the investigation derived waste and the test pit depths. The safety documentation and procedures paperwork for excavation of asbestos are being developed. Mr. Greenwald said that Dave Einan said a separate 45-day notice before excavation of the test pits began was not necessary. Dave Einan had also indicated that all materials excavated will be returned to the test pits.

Siemens Nuclear Power Corp. Status

9. Chuck Malody (Siemens) provided an update on their work plan and on some activities Siemens has been involved with. Siemens will hold a meeting

on September 23, 1991 (1:30 p.m.) at their facility on Horn Rapids Road. At the meeting Geraghty & Miller will present the work plan that was prepared for Siemens. The names, including middle initial, of the individuals who will be attending the presentation, and their social security numbers are needed by Siemens. Comments on the work plan are requested to be returned to Siemens no later than noon October 4, 1991. A second meeting might be held the 15th of October, depending on the comments that are received. Mr. Malody said Siemens is aware that their plan must fit in with the DOE plans as far as the plume at HRL is concerned. The results of the groundwater well survey at Siemens will be sent out in the near future.

"Good Faith" Dispute Status

10. John Stewart (ACE) said an extension of Interim Milestones M-15-01B and M-15-01C was granted by the dispute resolution committee (see Attachment #14). Prior to the final resolution, a modified change request was agreed to by the unit managers. It changed the interim milestones for M-15-01B (the RI phase II report) and M-15-01C (the Phase III study report) to December 1992 and, it combined the associated reports. The schedule included with Attachment #14 shows the result of these changes.

Potential Dispute on Land Use and Risk Assessment Status

11. Bob Stewart said that the use of the 1100 Area for residential purposes was not yet agreeable to DOE and therefore a dispute may result. He expected a decision to be made by DOE in the near future. However, if there was dissent between the regulators and DOE, then a dispute should be declared before the December 1992 time frame when a formal document would be issued. Rich Hibbard explained that whether the residential or industrial scenario was chosen, the Model Toxic Control Act (MTCA) is an ARAR and the cleanup levels are the same since both situations are linked to the groundwater path. Wendell Greenwald reiterated that the land use and risk assessment issues are now a major concern since a dispute could impact the schedule. Mr. Hibbard felt it would be better to discuss this issue in a smaller group and then bring the discussion back to the UMM.

Overall Project Status

12. Wendell Greenwald said that due to some problems in developing some agreements on how the work would be done, the start date for work slipped quite a bit. In addition, there have been some problems with getting the safety documentation signed and finalized. There have also been problems with the crafts people, with finding resources and with finding Health Physics Technicians. However, these problems are being resolved. If a dispute results from the land use issue, it could potentially impact schedules. Bob Stewart questioned the use of MTCA as an ARAR and suggested that this be discussed in the future.

Action Item Status

11EM1.55, 11EM1.64, 11EM1.65D: Wendell Greenwald and Bob Stewart planned to meet with the city of Richland management the week of September 23 to discuss activities associated with the 1100 Area. Ward Staubitz said the city should be aware of the effect of changing the use of the well fields and the infiltration basins. He said it had been agreed that monitoring the wells between the city well field and the waste sites would not be necessary as long as the infiltration basins continued to be operated as they were. Mr. Greenwald said that the monitoring of these wells could be turned over to the site-wide monitoring group.

11EM1.65C: Open

11EM1.68: Closed

11EM1.72: Wendell Greenwald said that Mr. Don Flyckt believes that the C-018 treatment facility could probably treat the contaminated groundwater under HRL. However, Mr. Fetchet did not believe it would be practical to treat the water at C-018 because the Part B permit would limit the volume of water the facility could treat. Also, it would not be cost effective to transport the water to the 200 Area. The best solution would be to build a treatment plant in the 1100 area. Dave Einan requested a summary of the feasibility of treating the water at C-018.

11EM1.85: Closed; the meeting that was to be held was canceled.

11EM1.86: Closed; the EPA requirement for notification before excavation of the test pits was provided to DOE in a letter by Dave Einan.

11EM1.87: Closed; the handling of decon water was resolved in an Investigation Derived Waste follow-up meeting.

Discussion

13. Bob Stewart said it was his understanding that the FS I/II report would be revised based on the comments by the regulators and no other changes would then be made to the report. Mr. Stewart said that DOE and ACE had the perception that any issues that remain on the FS I/II report would carry over to the Feasibility Study. However, Rich Hibbard said he would provide additional comments by Ecology to Dave Einan who would review them. John Stewart and Bob Stewart suggested that Dave Einan then call a meeting with DOE to discuss the regulator comments. Mr. Hibbard said that by not commenting on the FS I/II report at this time, it would appear that the regulators were accepting the risk assessment. Dave Einan said that if the regulators still had problems with the FS I/II report, they still had to comment on it. Mr. Einan and John Stewart said that a dispute should be considered to resolve the outstanding issues on the FS I/II report to save time. Rich Hibbard *agreed* that the additional comments by the regulators could be included in the administrative record rather than in the FS I/II report.

Action Item 11EM1.89: The regulators will call a meeting of the unit managers when they are ready to discuss their comments on the FS I/II report. Action: Dave Einan, Rich Hibbard

14. Wendell Greenwald said the supplemental work plan would be out for review in one to two weeks. The schedule in it was revised.

15. Bob Stewart said that the agreement between Siemens and DOE had not been signed yet. The issue of land use has been a glitch in signing the agreement. Rich Hibbard *acknowledged* that it *would be* difficult to clean up groundwater to the residential drinking water standards. Mr. Hibbard *hypothesized* that Siemens being required to clean up the groundwater to residential drinking water standards *could be a* reason that Siemens was reluctant to sign the agreement.

Attachment #2

Attendance List

1100-EM-1 Unit Managers Meeting
September 18, 1991

Name	Organization	1100-EM-1 Responsibility	Phone
Cannon, Dennis	ACE	Prog. Manager	509-376-9487
Greenwald, Wendell	ACE		
Stewart, John	ACE	Project Manager	509-376-9101
Harris, Allan	DOE-RL	Unit Manager	509-376-4339
Stewart, Bob	DOE-RL	Unit Manager	509-376-6192
Werdel, Nancy	DOE-RL	Unit Manager/QA	509-376-5500
Cline, Chuck	Ecology	Geohydrology	206-438-7556
Hibbard, Richard	Ecology	Unit Manager	206-493-9367
Mullen, Rich	PMX	Ecology Support	206-455-2550
Einan, Dave	EPA	Unit Manager	509-373-3883
Lacombe, Donna	PRC	EPA Contractor	206-624-2692
Malody, C. W.	Siemens		509-375-8537
Minor, Doris	Siemens	Reg. Support	206-633-3208
Thomas, Jane M.	Siemens		509-375-8767
Fassett, Doug	SWEC	GSSC, DOE-RL	509-376-5011
Fryer, Bill	SWEC	GSSC, DOE-RL	509-376-9830
Knox, Kathy	CNES	GSSC, DOE-RL	509-376-5011
McClung, Bill	SWEC	GSSC, DOE-RL	509-376-1853
Shigley, Diane	SWEC	GSSC, DOE-RL	509-376-5038
Staubitz, Ward	USGS	EPA Support	206-593-6510
Drost, Brian	USGS	EPA Support	206-593-6510
Clark, Steve	WHC	Env. Engr.	509-376-1513
Patterson, Jim	WHC	ER Program Office	509-376-0368

Attachment #3

Agenda

1100-EM-1 Unit Managers Meeting
September 18, 1991

1. Introduction

2. Field Work Progress
   - Groundwater Sampling
     - June sample analysis results
     - Radiochemistry Data
       - Status of August Sampling
       - Technetium analysis for September samples
   - HRL Quarterly Soil Gas Sampling Results
   - HRL Geophysical Survey Results
   - HRL Test Pits
     - Status and Summary of Material Excavated
     - Scope of Work
     - Excavation of Asbestos

3. Siemens Nuclear Power Corp. Status

4. "Good Faith" Dispute Status

5. Revision to Milestones Request Status

6. Potential Dispute on Land Use and Risk Assessment Status

7. Overall Project Status

8. Action Item Status

AGENDA FOR 1100-EM-1 UNIT MANAGERS MEETING

September 18, 1991
2:15 to 4:30 pm
450 Hills St./Rm. 47

1. Introduction
2. Field Work Progress
   - Ground Water Sampling
     - · June sample analysis results
     - · Radiochemistry data
       - Status of August Sampling
       - Technetium analysis for September samples
   - HRL Quarterly Soil Gas Sampling Results
   - HRL Geophysical Survey Results
   - HRL Test Pits
     - · Status and Summary of Material Excavated
     - · Scope of Work
     - · Excavation of Asbestos
3. Siemans Nuclear Power Corp. Status
4. "Good Faith" Dispute Status
5. Revision to Milestones Request Status
6. Potential Dispute on Land Use and Risk Assessment Status
7. Overall Project Status
8. Action Item Status

4

Actions Items Status List

1100-EM-1 Operable Unit
September 18, 1991

Item No.	Action/Source of Action	Status
11EM1.55	WHC will review the Well Inventory Report to determine if the report is sufficient to send to the City of Richland and obtain an opinion from WHC Legal on the release. Action: Steve Clark (1/23/91, EM1-UMM)	Open. Draft a letter to transmit the report.
11EM1.64	Schedule a meeting with the City of Richland in mid-April to brief the city on the groundwater investigation and monitoring results, as they pertain to the city well field. ANF should be apprised of these activities. Action: Bob Stewart (DOE-RL), John Stewart (USACE), and Steve Clark (WHC) (3/20/91)	Open. Will be scheduled after ground water summary report received.
11EM1.65C	Dave Einan (EPA) will provide information regarding sampling and analysis for vinyl chloride, and investigate the handling of vinyl chloride issues on other EPA Region 10 sites. Action: Dave Einan (EPA) (3/1/91)	Open.
11EM1.65D	Contact appropriate DOE-RL and WHC personnel to investigate the possibility of having wells S37-E14, S40-E14, S41-E13A, S41-E13B and S43-E12 monitored under the site-wide monitoring program per section 2. Action Bob Stewart (DOE-RL) and Steve Clark (WHC) (3/1/91)	Open. Will be scheduled after ground water summary report received.

Item No.	Action/Source of Action	Status
11EM1.68	EPA and Ecology will schedule a meeting to review the Geophysical report and data, and notify DOE-RL and WHC so that representatives can attend. Action: Dave Einan (EPA) and Rich Hibbard (Ecology) (5/24/91).	Closed. Meeting 7/25/91.
11EM1.72	Investigate use of the C-018 Water Treatment Facility to treat contaminated groundwater from the HRL plume. Action: Bob Stewart (5/24/91) - Wendell Greenwald (6/20/91).	Open.
11EM1.73	Investigate the red drum sitting near the burn cage at HRL. Action: Steve Clark (WHC) (6/6/91).	Closed. 6/13/91
11EM1.85	Information on cost, schedule, and other constraints associated with technetium analysies is to be provided to the regulators. The information is to be provided in a meeting on Wednesday, August 21. Action: Wendell Greenwald (8/14/91).	Open. Meeting canceled by Regulators
11EM1.86	EPA is to determine whether or not a notice is required 45 days before excavation begins on the test pits. The requirements for handling material excavated from the asbestos trench will also be determined. Action: Dave Einan (8/14/91).	Open. Memo delivered Sept. 4, 1991.
11EM1.87	USACE and WHC are to provide to the regulators the strategy for handling decon water related to excavation of the test pits. The strategy will also be attached to the September UMM minutes. Action: Wendell Greenwald (8/14/91).	Open.

1100-EM-1 Operable Unit

RADIOCHEMICAL ANALYSES OF GROUND WATER MONITORING WELL SAMPLES

Temp. Well Number	Hanford Well Number	Gross Alpha, pCi/l 1st 2/90	2nd 5/90	3rd 8/90	4th 11/90	5th 2/91
MW-1	S41-E11	8.4	-	3.1	-	
MW-2	S34-E10	4.4	-	-	-	
MW-3	S41-E12	17.0	-	-	3.5	
MW-4	S38-E12A	2.9		4.3	3.8	
MW-5	S38-E12B	3.9	-	-	-	
MW-6	S37-E11	3.6	-	-	-	
MW-7	S38-E11	4.8	-	3.3	-	
MW-8	S31-E08	3.8	-	-	-	
MW-9	S32-E08	-	-	-	-	
MW-10	S30-E10A	11.9	-	-	6.6	-
MW-11	S30-E10B	12.2	-	6.6	4.2	-
MW-12	S31-E10A	7.6	4.8	-	6.5	-
MW-13	S31-E10B	9.1	4.1	6.5	5.8	6.4
MW-14	S31-E10C	6.3	4.9	9.6	9.2	-
MW-15	S31-E10D	9.3	-	3.7	5.0	-
MW-17	S41-E10C		-	-	-	
MW-18	S37-E12					6.6
	S27-E14		-	5.5	3.2	
	S29-E12		-	-	-	
	S30-E15A		-	-	-	
	S31-E13		-	-	2.6	
	S32-E13A		-	-	3.3	
	S37-E14	-	-	-	-	-
	S40-E14	1.1		-	-	-
	S41-E13A	-	-	-	-	-
	S41-E13B	6.0	3.7	-	-	3.5
	S43-E12	2.6	-	-	-	-
ANF # 14			5.3	22.9		
ANF # 15			37.0	36.7		
ANF # 16			10.0	4.0		
RWF East		-	-	-	-	
RWF West		-	-	-	-	-

- = Below upper tolerance limit (for rounds 1-4)
- = Below error limit (for round 5)

Values for rounds 1-4 from Data Validation Report, Fourth Quarter Groundwater Chemical Analysis, 1100-EM-1 Operable Unit, Phase I Remedial Investigation

Radionuclide Maximum Contaminant Levels (MCL), 40 CFR 141, EPA 1986a:
Gross Alpha . . . . 15 pCi/l

1100-EM-1 Operable Unit

RADIOCHEMICAL ANALYSES OF GROUND WATER MONITORING WELL SAMPLES

Temp. Well Number	Hanford Well Number	Gross Beta, pCi/l				
		1st	2nd	3rd	4th	5TH
		2/90	5/90	8/90	11/90	2/91
MW-1	S41-E11	12.7	-	12.1	9.2	
MW-2	S34-E10	8.2	-	9.3	11.9	
MW-3	S41-E12	14.7	7.9	12.5	15.0	
MW-4	S38-E12A	-		10.6	-	
MW-5	S38-E12B	-	-	-	8.9	
MW-6	S37-E11	-	-	-	10.4	
MW-7	S38-E11	6.1	-	7.9	9.1	
MW-8	S31-E08	-	-	9.4	-	
MW-9	S32-E08	-	-	7.6	-	
MW-10	S30-E10A	30.2	85.2	95.4	88.9	63.0
MW-11	S30-E10B	35.2	86.5	74.7	81.0	60.0
MW-12	S31-E10A	34.6	87.6	91.0	77.6	61.0
MW-13	S31-E10B	28.8	71.0	81.2	85.8	61.0
MW-14	S31-E10C	25.1	89.4	90.8	89.0	70.0
MW-15	S31-E10D	23.2	51.4	63.6	57.6	46.0
MW-17	S41-E10C		-	-	8.1	
MW-18	S37-E12					13.0
	S27-E14		19.7	31.5	14.9	
	S29-E12		-	10.5	-	
	S30-E15A		-	-	-	
	S31-E13		-	-	-	
	S32-E13A		-	11.0	7.9	
	S37-E14	-	-	-	-	-
	S40-E14	-		-	-	-
	S41-E13A	-	-	-	-	12.0
	S41-E13B	-	9.4	11.2	-	12.0
	S43-E12	8.8	8.3	10.5	13.8	8.8
ANF # 14			6.5	58.9		
ANF # 15			126.7	98.4		
ANF # 16			58.4	19.1		
RWF East		-	-	8.1	-	
RWF West		-	-	-	-	-

- = Below upper tolerance limit (for rounds 1-4)
- = Below error limit (for round 5)

Values for rounds 1-4 from Data Validation Report, Fourth Quarter Groundwater Chemical Analysis, 1100-EM-1 Operable Unit, Phase I Remedial Investigation

Radionuclide Maximum Contaminant Levels (MCL), 40 CFR 141, EPA 1986a:
Gross Beta . . . . 50 pCi/l

1100-EM-1 Operable Unit

ANALYSES OF VOLATILE ORGANIC COMPOUNDS IN GROUND WATER SAMPLES

Well Number	Analysis, parts per billion (ppb)					
	TCE					
	1st 2/90	2nd 5/90	3rd 8/90	4th 11/90	5th 2/91	6th 6/91
MW-1	-	-	-	-		-
MW-2	-	-	-	-		-
MW-3	-	-	-	-		-
MW-4	-	-	-	-		-
MW-5	-	-	-	-		-
MW-6	-	-	-	-		-
MW-7	-	-	-	-		-
MW-8	-	-	-	-		-
MW-9	-	-	-	-		-
MW-10	0.6J	2	2	-	-	2.J
MW-11	0.9J	3	2	3	-	3.J
MW-12	92	110	80	74	79	78
MW-13	90	91	81	69	68	70
MW-14	40	73	60	66	82	75
MW-15	84	80	82	59	60	62
MW-17	-	-	-	-		-
MW-18					-	-
MW-19						-
MW-20						3.J
MW-21						-
MW-22						-
S27-E14		0.9J	0.9J	1J		-
S29-E12		-	-	-		-
S30-E15A		-	-	-		-
S31-E13		-	-	-		-
S32-E13A		-	-	-		-
S37-E14	-	-	-	-	-	-
S40-E14	-	-	-	-	-	-
S41-E13A	-	-	-	-	-	-
S41-E13B	-	-	-		-	-
S43-E12	-	-	-	-	-	-
RWF East	-	-	-	-	-	-
RWF West	-	-	-		-	-
ANF # 14		22				
ANF # 15		58				
ANF # 16		53				

- = Not detected

Values for rounds 1-4 from Data Validation Report, Fourth Quarter Groundwater Chemical Analysis, 1100-EM-1 Operable Unit, Phase I Remedial Investigation

TCE: Trichloroethene - Drinking Water MCL, 5ppb

1100-EM-1 Operable Unit

ANALYSES OF VOLATILE ORGANIC COMPOUNDS IN GROUND WATER SAMPLES

Well Number	Analysis, parts per billion (ppb) PCE					
	1st 2/90	2nd 5/90	3rd 8/90	4th 11/90	5th 2/91	6th 6/91
MW-1	-	-	-	-		-
MW-2	-	-	-	-		-
MW-3	-	-	-	-		-
MW-4	1.J	1	0.9J	-		-
MW-5	0.8J	0.8J	0.8J	-		-
MW-6	0.7J	0.8J	1	-		2.J
MW-7	-	-	-	-		-
MW-8	-	-	-	-		-
MW-9	-	-	-	-		-
MW-10	-	-	-	-	-	-
MW-11	-	-	-	-	-	-
MW-12	-	-	-	-	-	-
MW-13	-	-	-	-	-	-
MW-14	-	-	-	-	-	-
MW-15	-	-	-	-	-	-
MW-17	-	-	-	-		-
MW-18					2.J	-
MW-19						-
MW-20						-
MW-21						-
MW-22						-
S27-E14		-	-	-		-
S29-E12		-	-	-		-
S30-E15A		-	-	-		-
S31-E13		-	-	-		-
S32-E13A		-	-	-		-
S37-E14	-	-	-	-	-	-
S40-E14	-	-	-	-	-	-
S41-E13A	-	-	-	-	-	-
S41-E13B	-	-	-		-	-
S43-E12	-	-	-	-	-	-
RWF East	-	-	-	-	-	-
RWF West	-	-	-		-	-
ANF # 14		-				
ANF # 15		-				
ANF # 16		-				

-: Not detected

Values for rounds 1-4 from Data Validation Report, Fourth Quarter Groundwater Chemical Analysis, 1100-EM-1 Operable Unit, Phase I Remedial Investigation

PCE: Tetrachloroethene - Drinking Water MCL, 5ppb

1100-EM-1 Operable Unit

ANALYSES OF VOLATILE ORGANIC COMPOUNDS IN GROUND WATER SAMPLES

Well Number	Analysis, parts per billion (ppb)					
	TCA					
	1st 2/90	2nd 5/90	3rd 8/90	4th 11/90	5th 2/91	6th 6/91
MW-1	-	-	-	-		-
MW-2	-	-	-	-		-
MW-3	-	-	-	-		-
MW-4	3.J	2	2	2.J		-
MW-5	4.J	4	3	3.J		3.J
MW-6	2.J	0.9J	2	-		-
MW-7	-	-	-	-		-
MW-8	0.8J	0.8J	0.8J	-		-
MW-9	-	-	-	-		-
MW-10	1	1	1	-	-	2.J
MW-11	0.8J	1	1	1.J	-	-
MW-12	-	-	2	2.J	-	3.J
MW-13	-	-	2	1.J	-	-
MW-14	-	-	1	-	-	-
MW-15	-	-	2	1.J	-	-
MW-17	-	-	-	-		-
MW-18					-	-
MW-19						-
MW-20						-
MW-21						-
MW-22						-
S27-E14		-	-	-		-
S29-E12		-	-	-		-
S30-E15A		-	-	-		-
S31-E13		-	-	-		-
S32-E13A		-	-	-		-
S37-E14	-	-	-	-	-	-
S40-E14	-	-	-	-	-	-
S41-E13A	-	-	-	-	-	-
S41-E13B	-	-	-		-	-
S43-E12	-	-	-	-	-	-
RWF East	-	-	-	-	-	-
RWF West	-	-	-		-	-
ANF # 14		7				
ANF # 15		5				
ANF # 16		-				

-: Not detected

Values for rounds 1-4 from Data Validation Report, Fourth Quarter Groundwater Chemical Analysis, 1100-EM-1 Operable Unit, Phase I Remedial Investigation

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

1100-EM-1 Operable Unit
ANALYSES OF INORGANIC COMPOUNDS IN GROUND WATER SAMPLES

Well Number	Analysis, parts per ~~billion~~ million (ppm) NITRATE					
	1st 2/90	2nd 5/90	3rd 8/90	4th 11/90	5th 2/91	6th 6/91
MW-1	10	17	20	34.J		18
MW-2	15	11	15	15.J		27
MW-3	16	7	12	20.UJ		11
MW-4	7	7	8	7.J		8
MW-5	8	7	7	7.J		7
MW-6	12	11	10	10.J		11
MW-7	10	9	10	9.J		16
MW-8	30	30	33	31.J		30
MW-9	-	-	-	-		-
MW-10	170	163	187	170.J	173	168
MW-11	180	179	212	206.J	177	204
MW-12	217	217	251	225.J	222	217
MW-13	208	199	268	207.J	199	204
MW-14	215	225	270	221.J	208	208
MW-15	143	143	196	137.J	133	
MW-17	-	-	-	-		-
MW-18					10	
MW-19						
MW-20						
MW-21						
MW-22						
S27-E14		33	41	25.J		53
S29-E12		20	20	17.J		
S30-E15A		11	13	9.J		
S31-E13		20	19	15.J		
S32-E13A		21	18	18.J		
S37-E14	1	7	0.9	0.8J	5	1
S40-E14	0.8	0.9	0.9	1.J	0.8	0.5
S41-E13A	6	6	4.J	5.J	4	5
S41-E13B	2	2	3	2.J	4	2
S43-E12	16	21	26	25.J	23	25
FF-5 #7A						35
FF-F #8A						
RWF East	0.9	0.9	0.4	-	0.8	0.7
RWF West	0.8	0.9	0.4	-	2	0.6
ANF # 14		352				
ANF # 15		272				
ANF # 16		189				

-: Not detected

Values for rounds 1-4 from Data Validation Report, Fourth Quarter Groundwater Chemical Analysis, 1100-EM-1 Operable Unit, Phase I Remedial Investigation

Nitrate - Drinking Water MCL, ~~10~~ 45 ppm

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

September 17, 1991 9156940

Mr. W. L. Grenwald, Technical Manager
Department of the Army, Corps of Engineers
Walla Walla District
Walla Walla, Washington 99362-9265

Dear Mr. Grenwald:

ELUCIDATION OF TECHNETIUM METHODS REQUESTED OF PNL FOR 1100-EM-1 PROJECT

Analyses of past 1100-EM-1 groundwater samples have shown elevated gross beta results. Various beta emitters were analyzed for, in order to explain the elevated gross beta results. Technetium results were reported, and they were higher than the gross beta results, despite the fact that technetium is a pure beta emitter. It was determined that the previous analyses were inappropriate for technetium and that additional technetium analyses were needed.

The rationale for the selection of analyses is that the 1100-EM-1 project is required to prepare a report for the regulators in support of a Hanford Federal Facility Agreement and Consent Order (TPA) milestone. The August and September samples are the only rounds of sampling that will include definitive technicium and total beta analyses in time for inclusion for the report. A number of analyses are being requested to ensure that the required information is collected. Results from previous sampling rounds have indicated that high amounts of technetium may be present in the groundwater. Unfortunately, these results were rendered suspect by the technique used to determine technetium. The method used had problems definitively identifying the activity as technetium and quantitating results due to sample levels near the quantitation limit.

Technetium by ICP/MS, PNL-ALO-280,281 will enable the positive identification and quantitation of technetium. This method is free from any likely interferences and can provide a definitive identification of technetium. It also has the advantages of a low detection limit and is a relatively quick analysis.

As a quantitation check, method PNL-7-40.39 represents a chemical separation and beta counting technique similar to other laboratories. Continued monitoring of 1100-EM-1 groundwater will require analysis from other laboratories, and a way of comparing results between the ICP method (a very rare technique) and the standard technetium methods is necessary. Split samples from the September round will be sent to Martin Marietta Energy Systems, Incorporated, K-25 Laboratory and will be analyzed using a comparable technique. This type of analysis uses more sample and takes more time than other methods available at PNL, and may not be run, depending on sample size and time available.

Total activity by liquid scintillation is a necessary analysis since other methods of determining gross beta may not retain technetium. Total alpha will enable us to subtract out the alpha portion of the total activity. Total activity minus the gross alpha yields a value for gross beta that will include technetium.

The technetium loss method for gross beta will determine beta activity excluding technetium. This information when taken with the value for technetium by the liquid scintillation method will enable the calculation of relative amounts of technetium and other beta emitters in the sample. The use of this method is considered tentative at this time, as method development is ongoing and should be completed by the time this letter is received.

The QA information included with these analyses will be:

- Calibrations
- Matrix Spikes (Tc-99 with ALL analyses, even gross beta)
- Duplicates (this may not be possible with the August round of samples, due to limited sample, but will be done for later rounds)
- Blanks

It should be noted that a formal letter requesting these analyses has not been sent as of this date. The formal letter and sample shipment are being withheld until written confirmation of availability of the methods discussed here and approvals of the relevant quality assurance personnel at WHC and PNL are received.

Formal data packages will be requested, but arrangements are being made to have preliminary data sent to W. L. Grenwald, the Technical Manager for the 1100-EM-1 Project.

Very truly yours,

Mark A. Beck

M. A. Beck, Scientist
Office of Sample Management

bmc

SUMMARY OF SOIL GAS MONITORING AT PERMANENT MONITORING PROBES IN THE HORN RAPIDS LANDFILL DURING AUGUST 1991 - THIRD ROUND OF QUARTERLY MONITORING

A total of 35 permanent soil gas monitoring probes at the Horn Rapids Landfill were sampled and analyzed by Golder Associates Inc. (Golder) during the period of August 13 through August 16, 1991, as part of the quarterly monitoring program included in the Remedial Investigation Phase 2 Supplemental Work Plan for the 1100-EM-1 operable unit (DOE/RL-90-37). Soil gas samples were collected and analyzed for trichloroethene (TCE), 1,1,1-trichloroethane (TCA), and tetrachloroethene (PCE). Additionally, all data were reviewed for the presence of other compounds. As in the first two quarters, carbon tetrachloride was detected in one soil gas sample. Results of the soil gas analyses are summarized below:

- Results of the third quarter of analyses from the permanent soil gas probes show routine variations from first and second quarter results. The results indicate no increase in the concentration of volatile organic chemicals in the soil gas at the landfill and no contaminant source can be identified.

- TCE was detected in 21 of the 35 permanent monitoring probes at concentrations ranging from two parts per billion by volume (ppbv) to 103 ppbv. TCE has also been measured at levels above drinking water standards in ground water monitoring wells at the Horn Rapids Landfill.

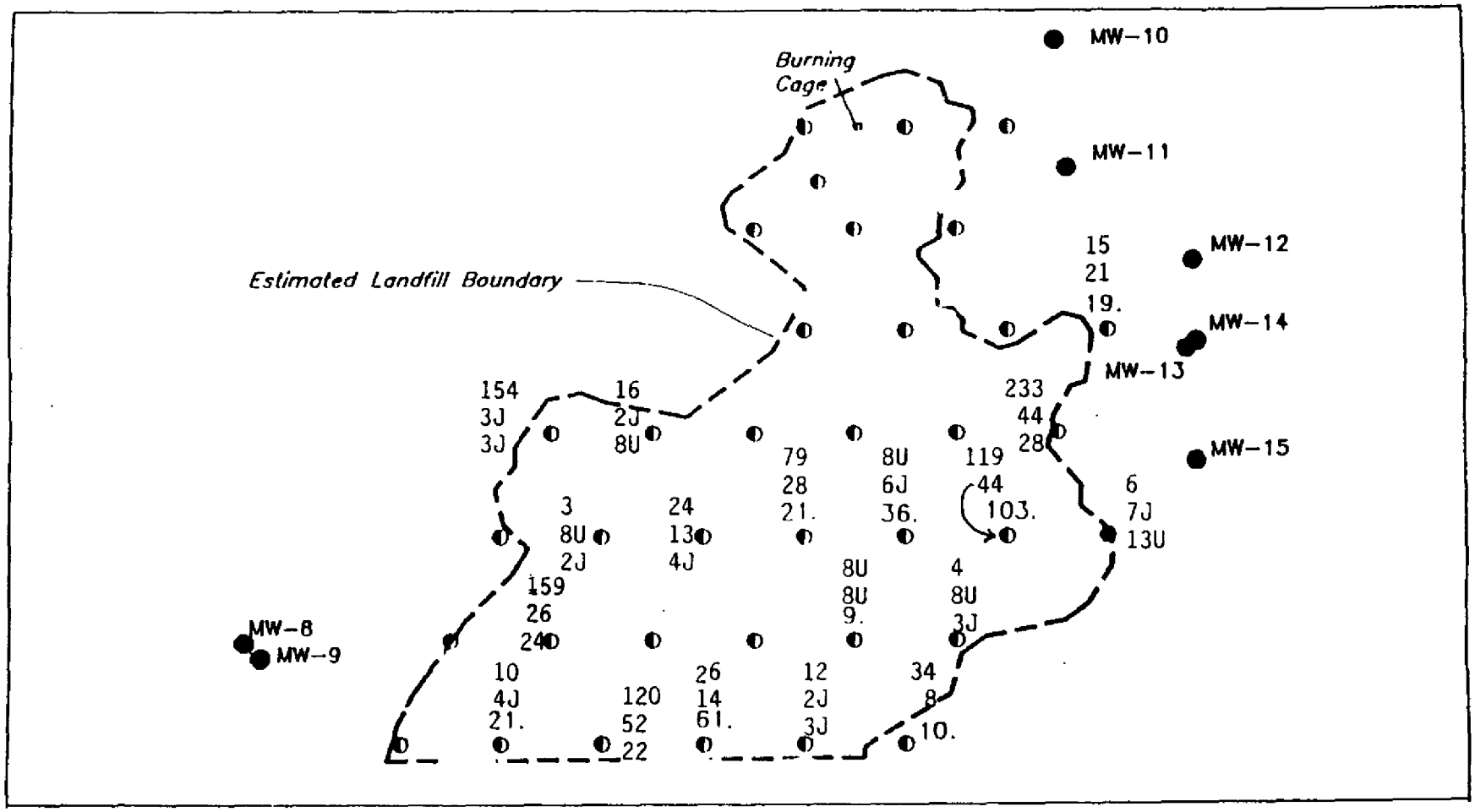
- TCA was detected in 5 of the 35 locations at concentrations ranging from 10 ppbv to 14 ppbv. PCE was detected at 9 of the 35 locations at concentrations ranging from 5 ppbv to 11 ppbv. Carbon tetrachloride was detected at a single sample location at a concentration of 14 ppbv.

CONCLUSIONS

As observed during the first and second rounds of sampling of the permanent soil gas monitoring probes, no defined vadose zone source of contamination by volatile organic compounds can be identified at the Horn Rapids Landfill based on the results of soil gas sampling. If TCE existed as a free liquid phase in either the soil (vadose zone) or the ground water it is expected that soil gas concentrations would be many orders of magnitude above the concentrations observed. If TCE were present as a free (interstitial) liquid in the soil the soil gas concentration immediately above this liquid would be approximately 7%, or 70,000,000 ppbv.

RECOMMENDATIONS

In anticipation of future closure activities, it is recommended that quarterly sampling of the permanent soil gas monitoring probes at the Horn Rapids Landfill continue and the data be reviewed for changes which may indicate releases of volatile organic hydrocarbons from suspected buried wastes.

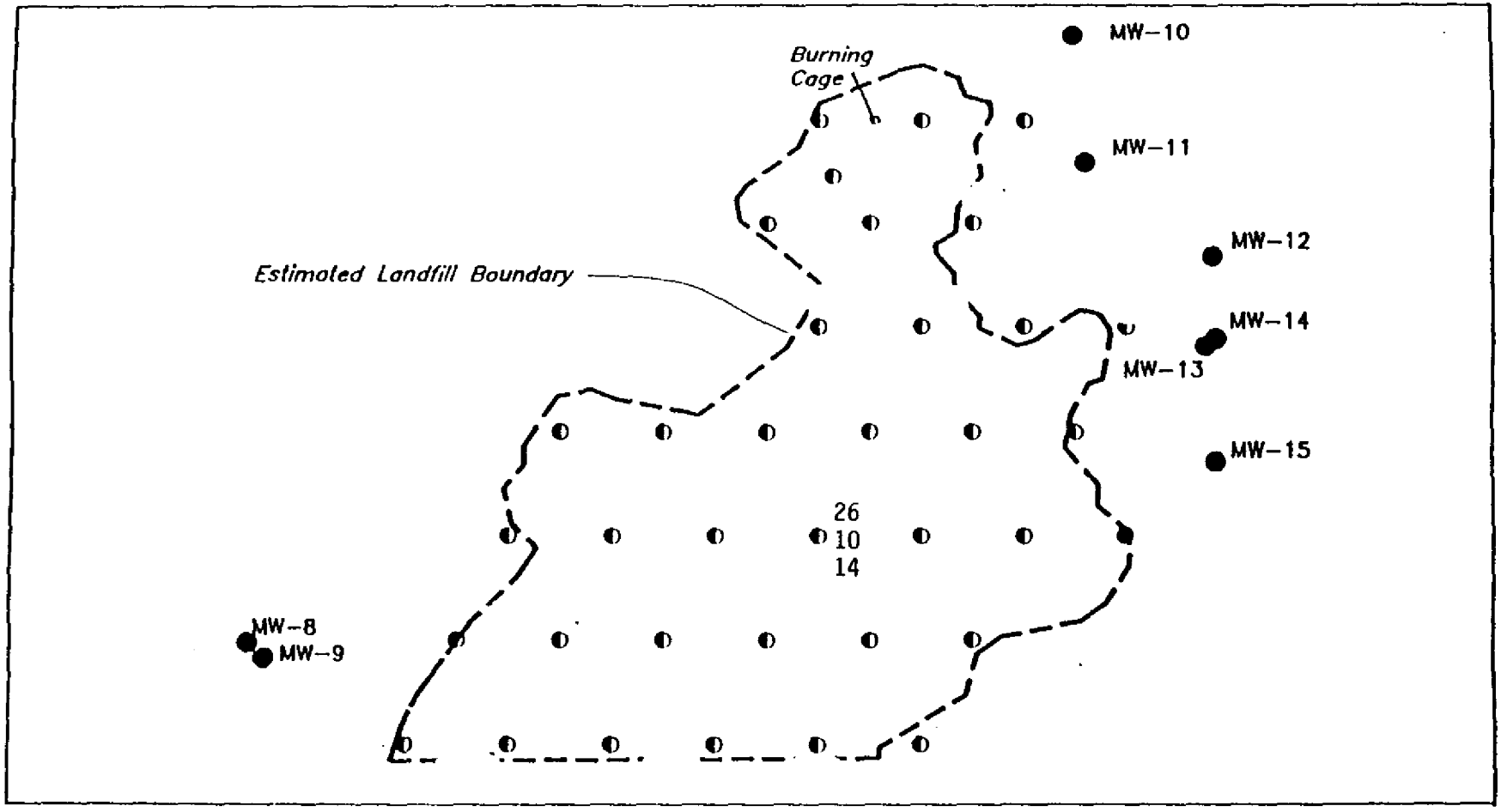


Legend

10 Jan & Feb 1991
25 May 1991
13 Aug. 1991

Note: Values qualified with a J or U are not shown.

Trichloroethene Soil Gas Concentrations

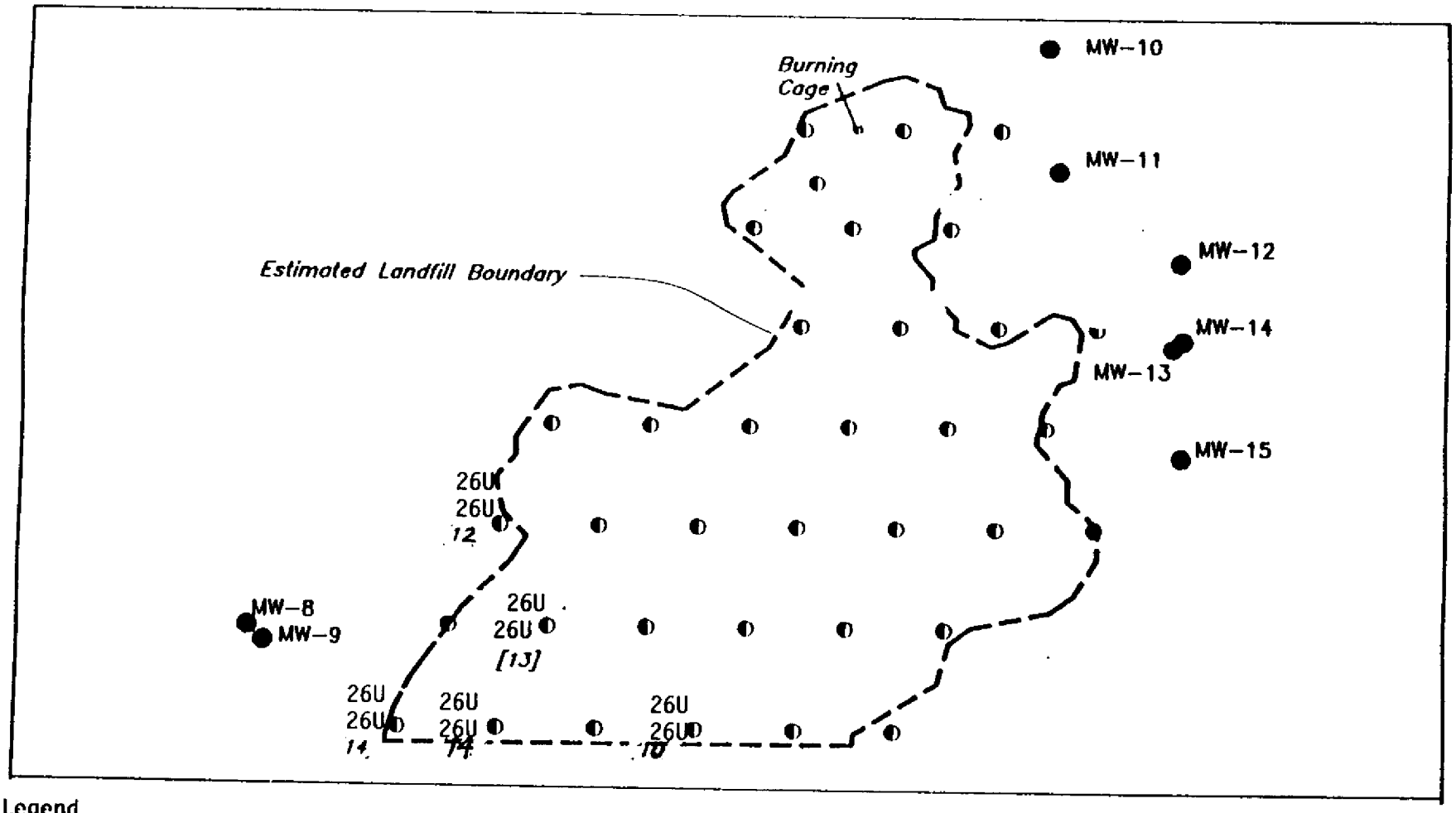


Legend

10 Jan. & Feb. 1991
25 May 1991
13 Aug 1991

Note: Values qualified with a J or U are not shown.

Carbon Tetrachloride Soil Gas Concentrations

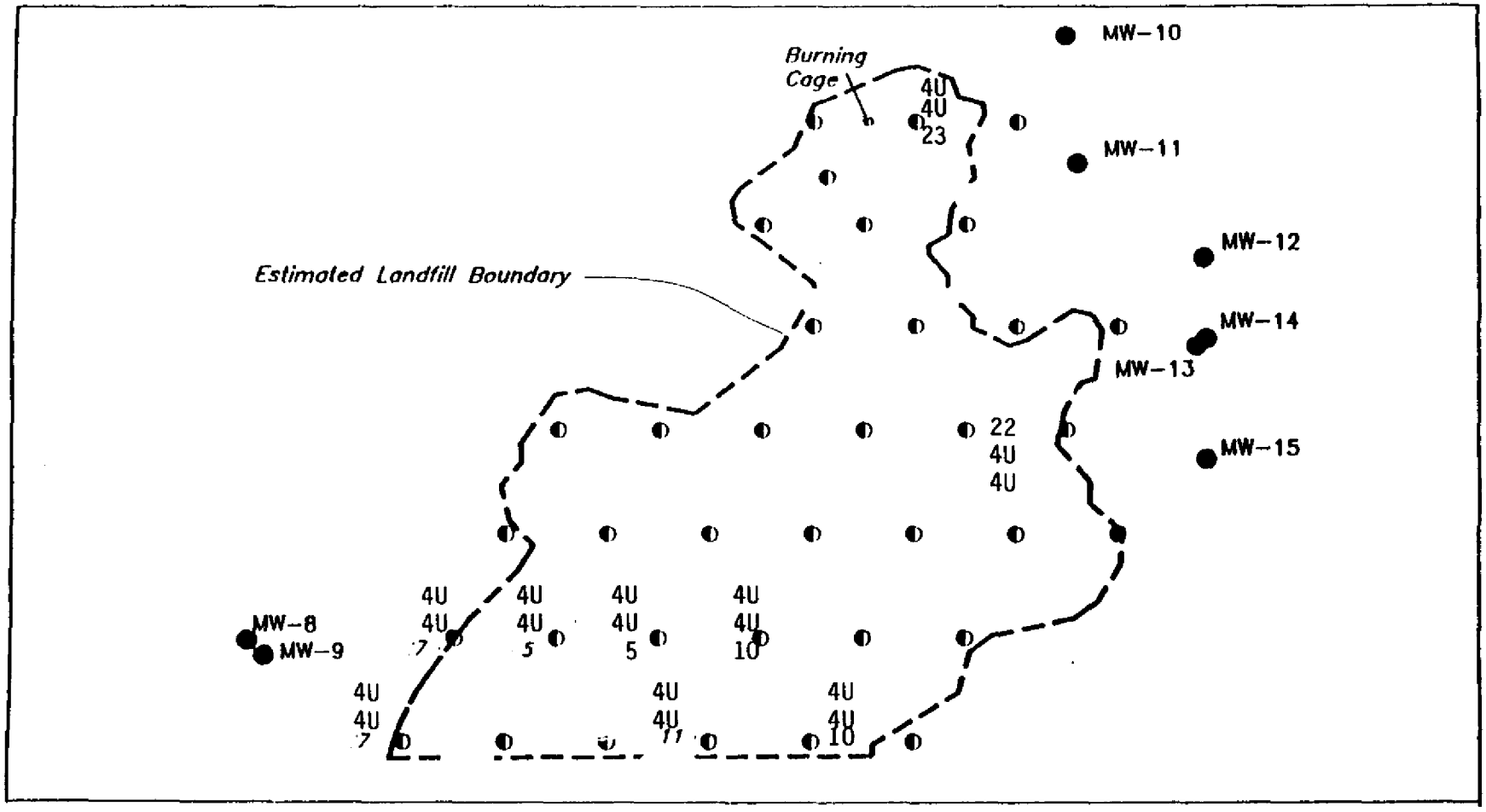


Legend

10 JaN. & Feb. 1991
25 May 1991
13 Aug. 1991

Note: Values qualified with a J or U are not shown.

1,1,1 - Trichloroethane Soil Gas Concentrations



Legend

10 Jan. & Feb. 1991
25 May 1991
13 Aug 1991

Note: Values qualified with a J or U are not shown.

Tetrachloroethene Soil Gas Concentrations

GEOPHYSICAL SURVEY SUMMARY
HORN RAPIDS LANDFILL, 1100-EM-1 OU
Survey Completed September 12, 1991

Test Pit #	Depth Survey Compl. May 91 (ft)	Depth Survey Compl. Sept. 91 (ft)	Target Zone Dimension (ft)
1	10-12	8-10	10 X 20
2	10-12	5-8	10 X 10
3A	20	12	5 X 5
3B		6	5 X 5
4	10-12		
4/5	5-6	12	10 X 10
6	20	6	10 X 10
7	10-12	6	10 X 10
8	5-6	5	5 X 5
11	10-12	5	10 X 10

September 18, 1991

Agreement/Approval
Horn Rapids Landfill Characterization: 1100-EM-1 Operable Unit
EPA Hanford Project Office, Richland, Washington

FROM/APPROVAL: _____ Date _____
Robert K. Stewart, 1100-EM-1 Operable Unit Manager (DOE-RL)

APPROVAL: _____ Date _____
Dave Einan, 100-EM-1 Unit Manager, EPA

APPROVAL: _____ Date _____
Richard Hibbard, 1100-EM-1 Unit Manager, WA Dept. Ecology

The following items of work associated with the excavation of test pits at Horn Rapids Landfill were discussed at the September 18, 1991 Unit Manager's Meeting and agreed to by the Unit Managers.

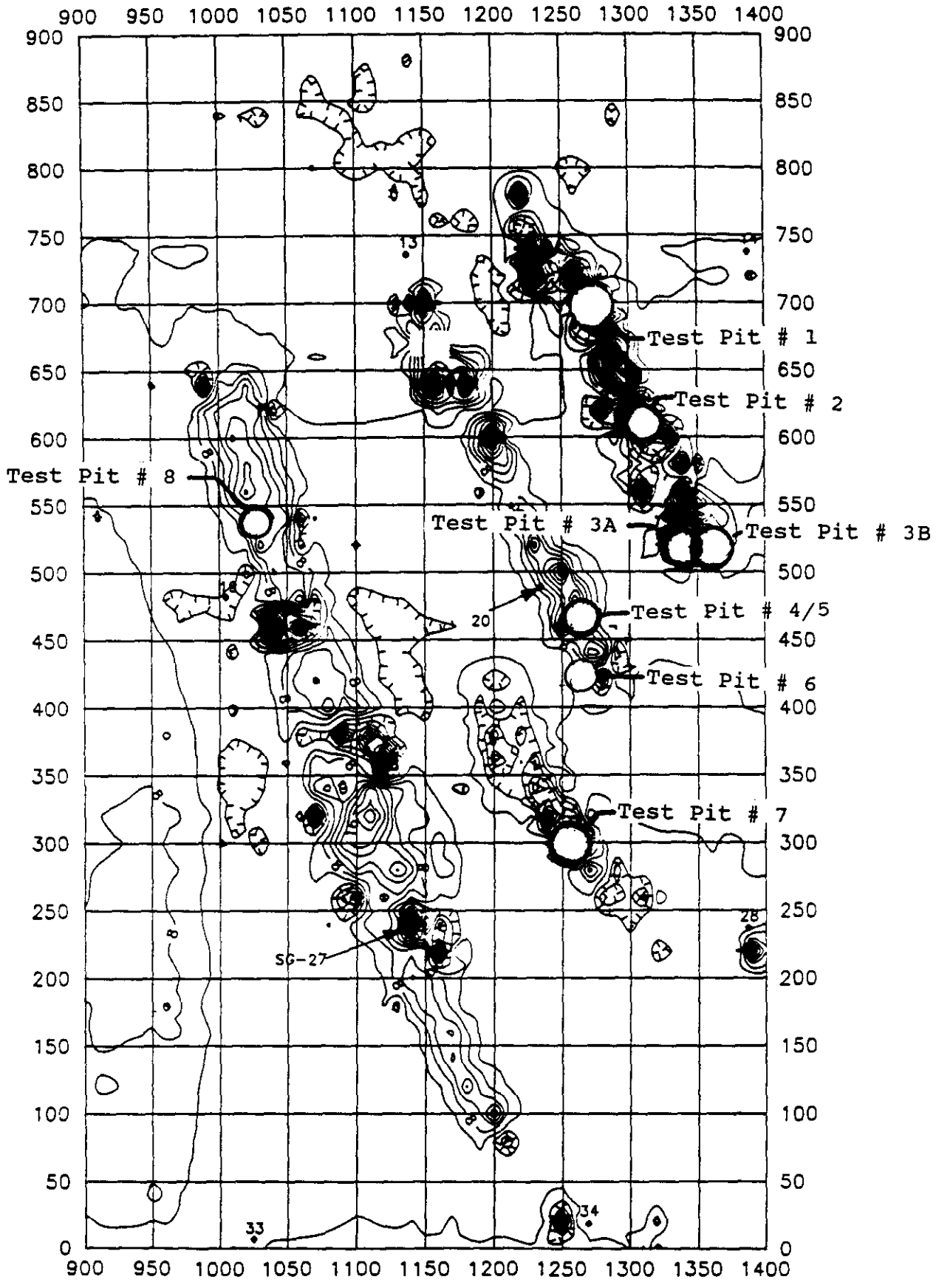
Investigation Derived Waste to be Containerized:

Relatively pure forms of hazardous wastes visualy identified or indicated by very high concentrations of organic vapors or the predominance of one constituent on the XR-F spectrum shall be segregated from other materials and containerized separately.

Test Pit Depth:

Geophysical surveys completed on September 12, 1991 were more detailed than previous surveys to date and indicates the target zone depth to be less than previously assumed. Depths of test pit excavations and sizes of target zones based upon this survey are shown below:

Test Pit #	Depth (ft)	Target Zone Dimension (ft)
1	8-10	10 X 20
2	5-8	10 X 10
3A	12	5 X 5
3B	6	5 X 5
4/5	12	10 X 10
6	6	10 X 10
7	6	10 X 10
8 *	5	5 X 5
11	5	10 X 10



Test Pit Locations for Horn Rapids Landfill Characterization

(EMI Quadrature Map)

RECORD OF COMMUNICATION

☐ PHONE CALL ☒ DISCUSSION ☐ FIELD TRIP ☐ CONFERENCE
☐ OTHER (SPECIFY)

(Record of item checked above)

TO:	FROM:	DATE
Rich Silvey, WHC	Dave Einan, EPA	4 Sept 91
		TIME 3:00 p

SUBJECT

Regulatory Requirements for Asbestos in the 1100-EM-1 HRL

SUMMARY OF COMMUNICATION

The discussion was centered around the applicability of, and compliance with, the Asbestos NESHAP during ~~the~~ RI activities in the 1100-EM-1 operable unit, specifically the Horn Rapids Landfill (HRL). One trench in the HRL ~~is~~ has a perimeter of signs warning of asbestos. One RI activity includes digging a test pit to look for solvent drums in the asbestos trench. This raised the question of "What are the requirements?"

CONCLUSIONS, ACTION TAKEN OR REQUIRED

1. The activity does not require special notification
2. Appropriate asbestos dust control measures must be implemented during the activity.
3. Materials (especially asbestos-containing materials) will be returned to the test pit. ~~site~~
4. The trench will be closed, ~~will be~~ in accordance with the asbestos NESHAP, [40 CFR 61.151 (Nov. 90)] as part of the RA.

INFORMATION COPIES

TO: EPA 1100-EM-1 file; R. Stewart, DOE; W. Greenwald, USACE, R. Hibbard, Ecl.

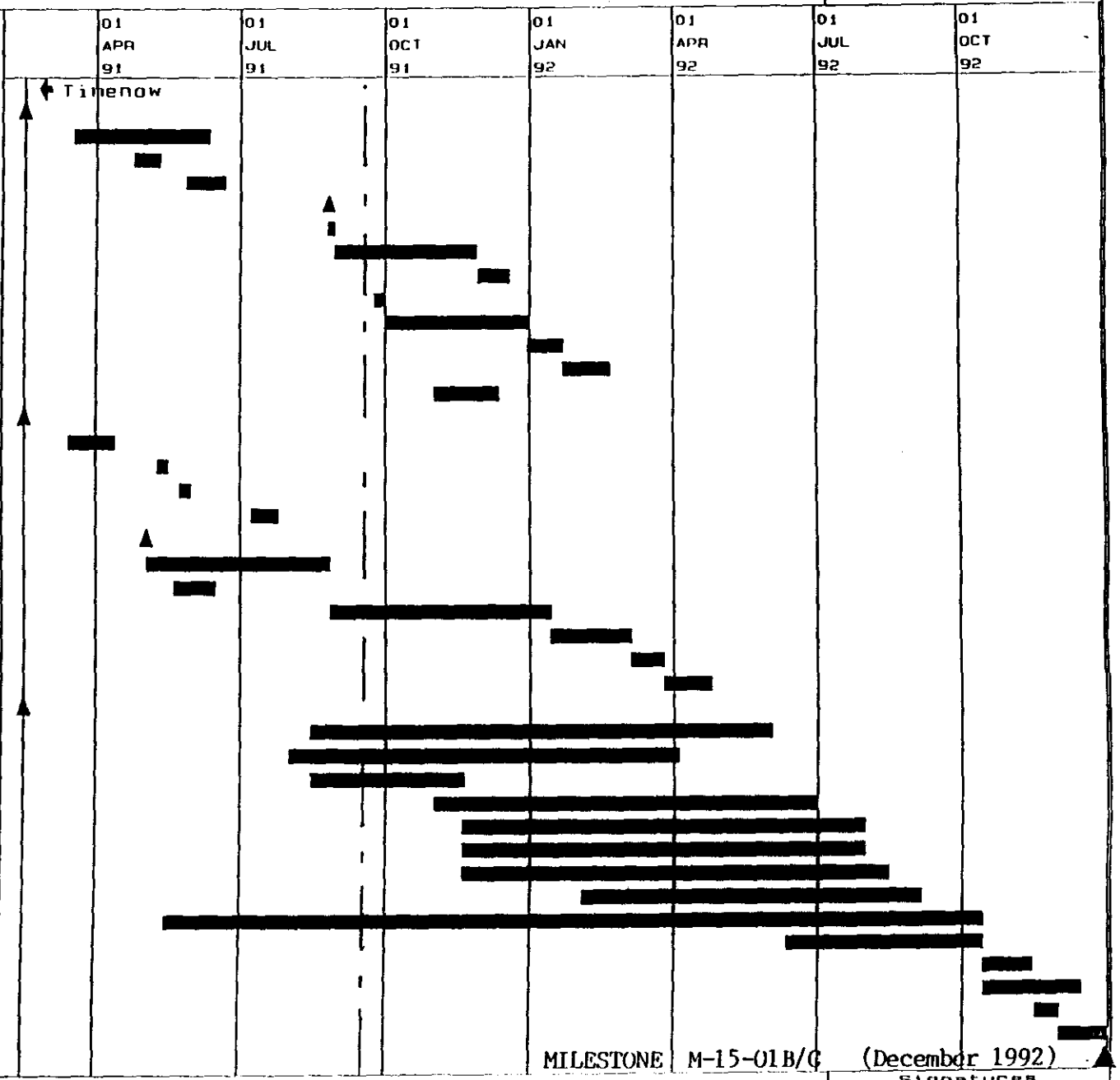
EPA Form 1300-6 (7-72) REPLACES EPA HQ FORM 8300-3 WHICH MAY BE USED UNTIL SUPPLY IS EXHAUSTED.

OPEN PLAN (tm)
Report: GRAFBARS
Project: 1100EM1
Time Now: 15FEB93
Date: 11AUG91
Time: 15:49:02
Page: 1

1100-EM-1 Operable Unit Final RI/FS Rpt

COE Walla Walla District

Activity	Description	Start	Finish	Dur
GW01	MONITORING WELL INSTALLATION			0
GW02	Coordinate Drilling	18MAR91	18JUN91	60
GW03	Install FF-5 Wells No. 7 & 8	25APR91	10MAY91	12
GW04	Install MW-19 thru MW-22	28MAY91	20JUN91	18
GW05	GROUNDWATER SAMPLING			0
GW06	August Sampling	26AUG91	29AUG91	4
GW07	Sample Analysis - August	30AUG91	27NOV91	61
GW08	Sample Validation - August	29NOV91	18DEC91	14
GW09	September Sampling	24SEP91	30SEP91	5
GW10	Sample Analysis - September	01OCT91	30DEC91	61
GW11	Sample Validation - September	31DEC91	21JAN92	14
GW12	Summary and PARCC Evaluation	22JAN92	20FEB92	21
GW13	COMPILE & QUALIFY ANF GW DATA	01NOV91	11DEC91	27
V201	GEOPHYSICAL INVESTIGATION			0
V202	Safety Documentation	15MAR91	12APR91	21
V203	Field Work	10MAY91	16MAY91	5
V204	Preliminary Report	24MAY91	30MAY91	4
V205	Review Draft Report	08JUL91	24JUL91	13
V206	BURIED TRENCH INVESTIGATIONS			0
V207	Preparation for Field Work	03MAY91	26AUG91	80
V208	Safety Documentation	20MAY91	14JUN91	19
V209	Field Work	27AUG91	13JAN92	94
V210	Sample Analysis	14JAN92	04MAR92	35
V211	Sample Validation	05MAR92	25MAR92	15
V212	Report	26MAR92	24APR92	22
FAP101	FINAL RI/FS REPORT			0
FAP103	Dev Vadose Zone Concept Model	15AUG91	01JUN92	199
FAP105	Dev GW Conceptual Model	01AUG91	03APR92	169
FAP106	Resolve Land Use Dispute	15AUG91	19NOV91	66
FAP107	Fate and Transport Analysis	01NOV91	30JUN92	166
FAP108	Risk Assessment (???)	19NOV91	30JUL92	176
FAP109	Develop Contaminants of Concrn	19NOV91	30JUL92	176
FAP110	Develop Remedial Action Object	19NOV91	14AUG92	187
FAP111	Dev, Screen, & Evaluate Alts	03FEB92	04SEP92	152
FAP112	Write Final RI/FS Report	15MAY91	13OCT92	356
FAP113	Proposed Plan	11JUN92	13OCT92	86
FAP114	CENPW Review and Cmt Resolutn	14OCT92	13NOV92	22
FAP115	CENPD Review and Cmt Resolutn	14OCT92	14DEC92	42
FAP116	Document Clearance	16NOV92	30NOV92	10
FAP117	DOE-HQ Review and Cmt Resolutn	01DEC92	30DEC92	21
FAP118	SUBMITTAL TO REGULATORS/DOE-RL	31DEC92		0



Legend
-In progress
-Planned
-Critical

Bar Chart Key:
All characters represent 9 time unit (s)

Signatures
Prep: _____
Appv: _____

HORN RAPIDS LANDFILL
BURIAL TRENCH CHARACTERIZATION

1.0 PURPOSE

This procedure describes the work activities associated with the excavation of test pits in areas of disposal at Horn Rapids Landfill (HRL) in the 1100-EM-1 Operable Unit. This work is necessary to implement the CERCLA Phase-2 Remedial Investigation for the 1100-EM-1 Operable Unit. There will be 9 test pits excavated at the locations shown on Attachment 1.

The test pits will be excavated to identify the types of waste material disposed of in the burial trenches, and to substantiate or disprove anecdotal information alluding to the disposal of significant quantities of solvents and other hazardous materials. Handling and containerizing of contaminated material encountered during the excavation of the test pit will be required.

Field work is currently planned to begin in early September 1991.

2.0 IMPACT LEVEL

The impact level is 3.

3.0 FACILITY DESCRIPTION

The HRL is located in the 600 Area immediately to the north of the Horn Rapids Road and approximately 2,000 feet west of Stevens Drive. This landfill, roughly 50 acres in size, was used from the early 1950's to 1970 for the disposal of primarily office and construction wastes and apparently consists of several distinct cells. One of the landfill cells is marked as an asbestos disposal site, one open trench contains old tires, another area appears to have been used to dispose of sludges of some kind. A burn cage that was used to destroy classified documents also exists on the landfill. Some long-time employees have alleged that drummed waste solvents were disposed of at this facility.
Burning of combustible materials was a common practice for

landfills prior to the 1970's and much of the wastes at HRL may have been disposed of in this manner. Additionally, the waste material was probably spread in layers over the bottom of the trench using a dozer which would tend to crush containers and compact the material. Until the early 1970's, when DOE directed that hazardous materials should be disposed of in a 200 Area landfill and not in landfills such as the HRL, all types of waste could have been disposed of in the landfill.

Wastes are observed to be sparsely scattered over the landfill and include paint cans, steel cables, sheet metal, concrete rubble, and sewage sludge. Anecdotal information indicates past disposal of waste liquids, slurried fly ash, possibly 200 drums of carbon tetrachloride, small amounts of explosive compounds (picric acid and ethers) and asbestos. Soil gas surveys and ground water samples show measurable concentrations of trichloroethene, tetrachloroethane and 1,1,1-trichloroethane at the landfill. These contaminants appear to be carried by the ground water from a release by Advanced Nuclear Fuels (ANF). Carbon tetrachloride has not been detected in the ground water, but was detected in one soil gas probe at very low concentrations.

4.0 TOOLS AND SUPPLIES

- DOT Specification 17-H and 17-C Drums in 30-gallon, 85-gallon, 95-gallon and 110-gallon sizes
- DOT Specification 17-E Drums in 55-gallon size
- Plastic (bags and sheeting 10 mil)
- Plastic sheeting 8 mil
- Drum Liners (10 mil plastic)
- 448 Metal Burial Boxes
- Spark proof tools (uncovering target zone)
- Wood Pallets
- Absorbent (kitty litter)
- Steam cleaner
- Water jugs
- Tractor crawler (dozer)
- Water truck with hoses and nozzles

- Hydraulic excavators
- Construction trailers
- Water pump for dust control
- Portable generator
- Personnel protective clothing and equipment as required by the Radiation Work Permit (in the event that radioactive contamination is discovered and an RWP is prepared) and the Hazardous Waste Operation Permit (HWOP).
- Change room

Contingent Items

- Pumping Equipment (Attachment 3)
- Rubber plugs (various sizes 1/2" to 2")
- Dry ice or liquid Argon dewars
- Nitrogen dewars

5.0 HEALTH AND SAFETY/QUALITY ASSURANCE REQUIREMENTS

5.1 Radiological Controls

There is no process knowledge which would indicate that radioactive contamination exists within the vadose zone at this site. A Radiation Work Permit (RWP) will be prepared in the event that radioactive contamination is discovered, and all field work whall be performed in compliance with that RWP.

5.2 Industrial Safety

5.2.1 Hazardous Waste Operations Permit: Industrial safety controls will be implemented through compliance with a separate Hazardous Waste Operations Permit (HWOP).

5.2.2 Safety Assessment: The Safety Assessment (9154275) for this activity has identified one Operational Safety Limitation (OSL) to minimize the potential for the release of fugitive dust from this activity. The Safety Assessment is included in Attachment 2.

5.2.3 Weather Conditions: Work will stop when weather poses a potential safety hazard.

- The decision to stop work when conditions that create

an unacceptable potential for resuspension of contaminants, will be made by the Field Team Leader (FTL) and Site Safety Officer (SSO) in accordance with the provisions of the HWOP.

5.3 Quality Assurance: Quality Assurance will be in accordance with the Remedial Investigation Phase 2 Supplemental Work Plan for the Hanford Site 1100-EM-1 Operable Unit, Appendix A, Quality Assurance Project Plan.

6.0 REFERENCED PROCEDURES AND ADMINISTRATIVE REQUIREMENTS:

- EII 1.1 Hazardous Waste Site Entry
- EII 1.4 Deviation from Environmental Investigations Instructions
- EII 1.5 Field Logbooks
- EII 1.6 Records Management
- EII 1.7 Indoctrination, Training and Qualification
- EII 2.1 Preparation of Hazardous Waste Operations Permits
- EII 2.2 Occupational Health Monitoring
- EII 2.3 Administration of Radiation Surveys to Support Environmental Characterization Work on the Hanford Site
- EII 3.2 Health and Safety Monitoring Instruments
- EII 5.1 Chain of Custody
- EII 5.2 Surface Sampling Method (Test Pits/Trenches)
- EII 5.4 Field Decontamination of Drilling, Well Development and Sampling Equipment
- EII 5.11 Sample Packaging and Shipping
- EII 5.13 Drum Sampling
- EII 5.14 Drum Handling
- EII 9.1 Geologic Logging
- EII 11.2 Geophysical Survey Work

- Hanford Restoration Operations Waste Management, Packaging, and Storage Instructions (WHC IP-0728)
- Safety Documentation for the Characterization of the Horn Rapids Landfill at the Hanford Site 1100-EM-1 Operable Unit (9154275) Operation Safety Limit
- Hanford Site Radioactive Solid Waste Acceptance Criteria (WHC-EP-0063
- Radiation Protection (WHC-CM-4-10)
- Non-Routine Releases (WHC-CM-7-5, Part B)
- Remedial Investigation Phase 2 Supplemental Work Plan for the Hanford Site 1100-EM-1 Operable Unit (DOE/RL-90-37)

7.0 PRE-START

7.1 Excavation Permit: Verify that an approved Excavation Permit is posted at the job site.

Field Team Leader signature:_____ Date:_____

7.2 Radiation Work Permit: Verify that the Radiation Work Permit (in the event that radioactive contamination is discovered and an RWP is prepared) has been reviewed with the workers.

Field Team Leader signature:_____ Date:_____

7.3 Hazardous Waste Operations Permit: Verify that the Hazardous Waste Operations Permit (HWOP) has been approved.

Field Team Leader signature:_____ Date:_____

7.4 Plant Force Review: Verify that the Plant Force Review has been completed.

Field Team Leader signature:_____ Date:_____

7.4 Readiness Review: Verify that the Readiness Review has been completed for this effort.

Field Team Leader signature:_____ Date:_____

7.3 Work Area Boundary: Verify that the work area boundary is established and all necessary signs posted as required by the HWOP and for the storage of hazardous waste containers (section 10.0, Investigation Derived Waste).

Field Team Leader signature:_____ Date:_____

7.4 Access Control: Verify that the access control points are established and all necessary signs posted.

Field Team Leader signature:_____ Date:_____

7.5 Pre-Job Safety Meeting: Prior to work start, conduct a pre-job safety meeting.

7.6 Training Requirements: Training requirements shall be verified in accordance with EII 1.1, Hazardous Waste Site Entry.

Field Team Leader signature:_____ Date:_____

8.0 EXCAVATION OF TEST PITS

8.1 The test pit excavations will be conducted in accordance with EII 5.2 Appendix F, Surface Sampling Method (Test Pits/Trenches).

8.2 The depth of each test pit and the order in which they are to be excavated is shown in the table below. Deviation from this schedule shall be approved by the Cognizant Project Engineer.

Test Pit #	Depth (ft)	Order of Excavation
1	8-10	7
2	5-8	4
3A	12	8
3B	6	2
4/5	12	6
6	6	3
7	6	1
8 *	5	9
11	5	5

* Asbestos Burial Trench

8.3 Test Pit No. 8 is located within the burial trench assumed to contain asbestos material. Excavation shall not begin on this test pit until the appropriate modifications have been issued for the HWOP, Safety Assessment, and this DWP. These modifications shall accommodate the excavation, handling and disposal of asbestos.

8.4 The target zone being investigated at each test pit location will be accurately delineated by geophysical surveys (performed in accordance with EII 11.2 Geophysical Survey Work) and will guide the FTL in establishing the limits of the test pit bottom.

8.5 Prior to beginning excavation, the FTL will stake the location of the top of the test pit side slopes based upon the slope requirements in the HWOP.

8.6 The backhoe will generally be located at the east or west end of the test pit, up-wind of the excavation, and the spoil piles accumulated to the south of the backhoe.

8.7 Tanker trucks shall be available for supplying water for dust control. Water shall be evenly applied over the surface of the pit and the spoil stockpiles as required to prevent problems with blowing dust and avoid concentrations of water that could wash soil and wastes from the slopes of the test pit and stockpiles. As an alternative to continuous water application, the stockpiles and test pit slopes may kept moist by covering them with sheets of plastic. The plastic will be firmly anchored and sufficiently over-lapped as directed by the FTL to preclude loss of moisture during strong wind conditions.

8.8 Excavation shall stop if drums are encountered or if there are visual, odor, or instrument indications that hazardous wastes have been uncovered by the excavation. Additionally, excavation will stop at the direction of the SSO or FTL. The FTL will provide direction for continuing excavation or initiating a contingency procedure. If the SSO so indicates, all personnel will leave the site, and assemble upwind and await further instructions from the SSO or FTL.

8.9 Excavation of the test pit will cease when the excavation is within 12 inches of the suspected buried waste. A pilot hole will be excavated by hand, for the remaining 12 inches, into the target horizon. The shovels and other equipment used will be spark-proof. Vapors and gases will be carefully monitored during the excavation of the pilot hole. If the target horizon consists of innocuous debris, then excavation will proceed using the backhoe. If drums of liquid waste are present in the target horizon (or any zone encountered), then section 11.0 Contingency Procedures will be followed.

8.10 The excavation will be enlarged as necessary to remove all drums in a grouping of drums or to remove zones of relatively pure hazardous solid waste.

8.11 If zones of contaminated soil extend beyond the limits of the excavation and removal of this soil would cause undermining of the slope, then the contaminated soils shall be removed flush with the slope and that portion of the slope covered with 2

layers of 10 mil plastic. The plastic will extend a minimum of three feet beyond the edges of the contamination and will be securely anchored with wooden stakes.

8.12 The geologist shall log the test pit in accordance with EII 9.1, Geologic logging. The test pits shall be photographed and documented as described in EII 5.2 Appendix F, Surface Sampling Methods. Any identifying characteristics, such as legible labels, recognizable equipment parts, etc., will be recorded. The approximate quantities of top soil, nonhazardous soil, nonhazardous trash and debris, health hazard solid waste, suspected hazardous solid waste, suspected hazardous liquid waste, PCB's, radioactive waste, and suspected mixed waste (as defined in section 9.0, Field Screening) will be estimated for each test pit and entered in the log.

8.13 Upon completion of excavation, the bottom and sides of the test pit will be compacted by tamping with the bucket of the backhoe to reduce the permeability of the disturbed surface. Water will be evenly applied onto the surface of the excavation during tamping to moisten the soil and facilitate compaction. The quantity of water will be sufficient to moisten without causing washing of soil or wastes from the test pit slopes. The test pit will be backfilled using material from the spoil stockpile. As backfilling proceeds, trash and debris will be placed in the lower portion of the trench and soil materials which are relatively free of debris will be used as a cap and the area dressed with top soil (if any top soil was present at the site). The trash and debris returned to the trench will, generally, be placed in the reverse order from which it was removed (last excavated will be first placed into the trench).

9.0 Field Screening

9.1 Field screening will be used to identify potentially hazardous or radioactive waste so that they may be segregated and stored separately from other excavated materials. Field screening will include the monitoring of soils and debris for radioactivity, organic vapors, corrosivity, reactivity, combustibility and inorganic contamination above background levels utilizing the following six instrumentation/methodologies:

- RAD - Counters
- Organic Vapors - HNU, OVA
- Corrosivity - pH meter
- Reactivity - Process Knowledge and instrument/test kit detections
- Combustibility - Combustible gas meter if OVM/HNU readout capabilities are exceeded.
- Inorganics - XR-F

9.1.1 Nonhazardous Soil: Soil material that is relatively free of debris and hazardous waste shall be identified as nonhazardous soil. Waste concentrations shall be below the action levels specified in the HWOP for upgrading from level D to level C protection.

9.1.2 Nonhazardous Trash and Debris: Excavated material having high concentrations of trash and debris but other-wise free of hazardous waste contamination shall be identified as nonhazardous trash and debris. Waste concentrations shall be below the action levels specified in the HWOP for upgrading from level D to level C protection.

9.1.3 Health Hazard Solid Waste: Soil and debris which are mixed with sufficient quantities of hazardous waste to pose a health concern shall be identified as health hazard solid waste. Waste concentrations shall exceed the action levels specified in the HWOP for wearing level D protection. This classification shall not include relatively pure forms of wastes.

9.1.4 Suspected Hazardous Solid Waste: Relatively pure forms of hazardous wastes as indicated by very high concentrations of organic vapors or the predominance of one constituent on the XR-F spectrum shall be identified as suspected hazardous solid waste.

9.1.5 Suspected Hazardous Liquid Waste: In the event that drums of liquid wastes are encountered during excavation of the test pits, the contents shall be assumed to be hazardous waste.

9.1.6 PCB's: Debris commonly associated with PCB's, such as transformers and florescent light ballasts, shall be separated form other materials and identified as PCB's.

9.1.7 Radioactive Waste: Excavated soil and debris shall be considered to be radioactive waste when the HPT determines that the material contains radioactive contamination. Because of process knowledge, radioactive wastes are not anticipated. In situations where the configuration of the debris may preclude a thorough radiological survey, the debris will be assumed to be free of radioactive contamination.

9.1.8 Suspected Mixed Waste: If hazardous wastes are present and the HPT determines that radioactive contamination is present, the material shall be identified as suspected mixed waste . Hazardous wastes are considered to be present when the action levels specified in the HWOP for wearing level D protection are exceeded.

9.2 The control, use, handling, maintenance, and calibration of instruments used in field screening shall be in accordance with WHC-CM-7-7, EII 3.2, "Health and Safety Monitoring Instruments" and is the responsibility of the SSO.

9.3 The field screening shall be conducted at regular intervals, at a minimum of every tenth backhoe bucket of material excavated from the test pit and as directed by the FTL based upon his observations of the materials being excavated. Results from the six instrumentation/methodologies shall be recorded in the SSO's log book and the time and depth of excavation at which the readings were taken shall be noted.

9.4 Action levels governing health and safety monitoring requirements are specified in the HWOP and RWP.

10.0 INVESTIGATION DERIVED WASTE

10.1 Wastes, soils and debris excavated from the test pits shall be segregated to meet the intent of EEGP's Waste Minimization Plan (WHC-SD-WM-EV-037) Waste Minimization Plan - Environmental Engineering and Technology Function. The segregation shall be based upon field instrument readings and observations as defined in section 9.0, Field Screening. Nine categories of materials/wastes are identified for materials potentially encountered during excavation of the test pits. Included are top soil, nonhazardous soil, nonhazardous trash and debris, health hazard solid waste, suspected hazardous solid waste, suspected hazardous liquid waste, PCB's, radioactive waste, and suspected mixed waste.

10.1.1 Top Soil: Top soil (if any) shall be stripped from the excavation area and stockpiled separately from all other materials. This stockpile may be located within the exclusion zone or outside the exclusion zone as directed by the FTL. This top soil shall be spread over the excavation area upon completion of backfilling the test pit.

10.1.2 Nonhazardous Soil: Nonhazardous soil shall be stockpiled separately from other materials. This stockpile may be located within the exclusion zone or outside the exclusion zone as directed by the FTL.

10.1.3 Nonhazardous Trash and Debris: Nonhazardous trash and debris shall be stockpiled separately from other materials. This stockpile may be located within the exclusion zone or outside the exclusion zone as directed by the FTL.

10.1.4 Health Hazard Solid Waste: Soil and debris mixed with hazardous waste (not relatively pure form of waste) shall be segregated from other materials. This stockpile shall be located within the exclusion zone.

10.1.5 Suspected Hazardous Solid Waste: Relatively pure forms of wastes which are identified by the field screening as Suspected Hazardous Solid Waste shall be segregated from other

materials and containerized separately. These materials shall be stockpiled within the exclusion zone until containerized.

10.1.6 Suspected Hazardous Liquid Waste: In the event that drums of liquid wastes are encountered during excavation of the test pits, the contents will be transferred to new drums as described in section 11.0 Contingency Procedures.

10.1.7 PCB's: Debris suspected of containing PCB's shall be segregated separately for other materials and containerized.

10.1.8 Radioactive Waste: In the event that soil or debris are determined to have radioactive contamination, that material shall be segregated from other materials and containerized.

10.1.9 Suspected Mixed Waste: In the event that soil or debris are determined to have radioactive contamination and hazardous waste contamination, that material shall be segregated from other material and containerized.

10.2 Nonhazardous soil, nonhazardous trash and debris and health hazard solid waste materials shall not be containerized. The stockpiles of these material shall be used for backfilling the test pit upon completion of excavation.

10.3 Suspected hazardous solid wastes, suspected hazardous liquid waste, PCB's, radioactive waste, and suspected mixed waste shall be separately containerized within 72 hours of being excavated and transported to the Centralized Waste Container Storage Area for storage. The solid materials shall remain there until the remedial action for this material is identified in the operable unit-specific Record of Decision (ROD). Liquid wastes shall be shipped for disposal at a RCRA facility.

10.4 Contaminated debris will be placed in drums if the size of the objects in the debris will permit. If the size of the debris precludes storage in drums, then the debris will be contained in 448 metal burial boxes. As necessary, debris may be size-reduced to fit into the 448 burial boxes or to achieve necessary segregation. Significant quantities of soil will not be placed into the burial boxes.

10.5 Control of Decontamination Fluid and PPE:

10.5.1 Decontamination Fluids: Decontamination fluids will be managed as suspected hazardous liquid waste until laboratory results are received that show it to be nonhazardous. Upon determination of the non-hazardous nature of the decontamination fluid, the drum contents will be disposed of to the ground outside the exclusion zone. Decontamination fluids from different test pits may be collected in the same container. A composite sample of decontamination water shall be taken and

submitted for Chemical Waste Disposal Analysis. The drums will be stored at the Centralized Waste Container Storage Area in DOT approved, over-packs to prevent possible breach of containment caused by freezing and expansion until shipped for disposal or disposed of to ground.

10.5.2 Personal Protection Equipment: Disposable personal Protection Equipment (PPE) and rags used by personnel directly in contact with soil or debris excavated from the test pits shall be containerized. PPE worn by personnel not in contact with soil or debris will not be restricted as to method of disposal. Only PPE worn during excavation and handling of soil and debris identified as health hazard solid waste, suspected hazardous solid waste, suspected hazardous liquid waste, PCB's, radioactive waste, and suspected mixed waste shall be containerized. Daily accumulations of PPE to be containerized will be placed into 10 mil plastic bags, labeled and identified as to the test pit number and specific interval of excavation which occurred during the wearing of that PPE. The drums of PPE will be stored at the Centralized Waste Container Storage Facility until remediation of the site is accomplished. Reusable personal protective equipment shall be used if appropriate and allowed by the HWOP so that waste materials generated by the work is minimized.

10.6 Containers/Liners

10.6.1 U.S. Department of Transportation (DOT) Specification 17-H, 17-C or 17-E drums shall be used to contain unknown or regulated waste. The 55-gallon drum size is generally used; however, 30-gallon, 85-gallon, 95- gallon and 110-gallon sizes (DOT specification) 17-H and 17-C may be used for overpacking and salvage. Type 17-H or 17-C drums must have a gasket for the lid before containing wastes.

10.6.2 The D&D personnel placing materials into waste storage containers shall check for visual damage to the container. Damaged containers shall not be used.

10.6.2.1 Prior to placing wastes in a type 17-E drums, the D&D personnel shall inspect the bung for rust and structural integrity. Bungs which are not in good condition or will not properly seal shall not be used when the drum contains liquids.

10.6.3 Prior to filling, drums will be lined with a plastic liner at least 10 mil thick for all nonradioactive waste material and for dry Radioactive waste material. Radioactive waste material which contains free liquids shall be stored in drums shall be packaged in a drum having a lining of 90 mil (min.) thick plastic.

10.6.4 When beta emitters are stored in metal drums, the criteria for storage is outlined in WHC-EP-0063, sections

entitled "Surface Dose Rates," which allows no material to be put into drums with a surface dose of >200 mrem/hr for low level radioactive contamination and 100 mrem/hr for suspected mixed waste at any point on the drum surface. This would include all energy emitting isotopes (beta, gamma, neutrons). Quantities of energy emitting isotopic IDW placed in containment will be limited to comply with these criterion.

10.6.5 The 448 Metal Burial Boxes shall be used for disposal of oversize objects and shall be lined with double 8 mil plastic.

10.6.5.1 In the event that large objects having radioactive contamination are encountered, these objects shall be individually wrapped with 10 mil plastic prior to placement in the burial box.

10.7 SEALING CONTAINER

When the container is ready to be sealed by the D&D workers, the opening of each plastic bag shall be twisted closed and secured with tape (when applicable). For drums, check to confirm a gasket is on the lid; then attach and secure with a locking ring and locking ring nut.

10.8 Interim Control of Unknown, Suspected Hazardous and Mixed Waste form (IC form)

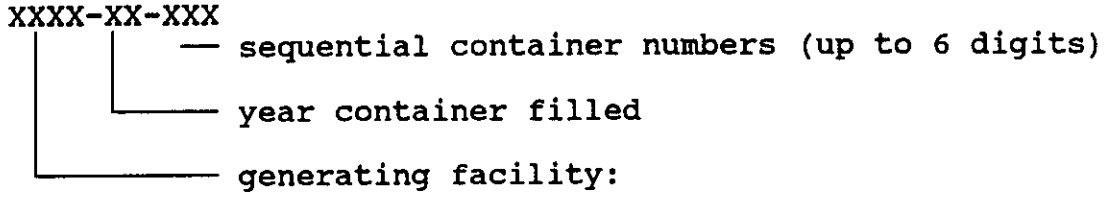
10.8.1 The Interim Control of Unknown, Suspected Hazardous and Mixed Waste form IC form) shall be completed by the D&D workers as they place wastes into the waste storage containers under the supervision of the FTL. An IC form shall be completed for each drum and secured to the container. A copy shall be submitted to the cognizant Environmental Field Services Group (EFSG) Facility Generator. The EFSG Facility Generator will review the IC Form, inspect the waste containers to ensure appropriate marking, labeling and packaging requirements are met. If acceptable, the Facility Generator will sign the IC Form, thereby accepting responsibility for the waste.

10.8.2 All entries on the IC form shall be entered in permanent, reproducible black ink. Corrections shall be made by striking one line through the incorrect information, entering corrected data (when appropriate), initialing, and dating.

10.9 UNIQUE CONTAINER TRACKING NUMBER

10.9.1 The FTL shall obtain unique container tracking numbers from the EPSG Facility Generator. The container tracking numbers shall track containers of waste using the following

numbering system.



10.10 Container Designation

10.10.1 The container shall be designated with an indelible marking pen and displayed on a background of sharply contrasting color.

10.10.2 The following shall be legibly written on the lid with indelible black ink by the D&D personnel placing materials into the waste storage containers:

a. Project name
b. Test pit number
c. Footage (enter footage intervals)
d. Contents (enter contents of drum)
e. Beginning date (enter date material first placed in drum)
f. Date sealed (enter date material last placed in drum)
g. Unique container number (enter when sealed).
h. Name of person sealing the drum.

10.10.3 The IC form shall be completed by the D&D personnel responsible for packaging waste and placing it into the drum. The form shall be secured to the side of container. The original shall be placed in a plastic sleeve and attached to the side of the container (for drums, place between the ribs on upper third of drum). The edges shall be completely taped to minimize exposure to moisture. Verification shall be made that the container number is legible on the form.

a. The D&D workers or FTL shall document any indications of contamination (organic, inorganic, radioactive) in the Comments/Suspected Hazards section of the IC form.

b. The IC form copy shall be submitted to the Cognizant Facility Generator for review and processing.

10.10.4 The words "SUSPECT HAZARDOUS" shall be written on the top and sides of containers containing suspected hazardous waste, as determined by the field screening (section 9.0, Field

Screening). Each container must be marked to identify the major risks associated with the waste in the container (e.g., corrosive, reactive, etc.).

10.10.5 Soil and debris identified as radioactive shall be segregated into DOT specified drums or an approved alternate container for radioactive material. The words "RADIOACTIVE" shall be written on the top and sides of the container. Each container shall be labeled with a DOT Radioactive hazard class label.

10.10.6 Radioactive waste also suspected of containing hazardous constituents shall be handled as suspected mixed waste. The words "SUSPECT MIXED" shall be written on the top and sides of the container, as well as the major risks associated with the containers waste (e.g., corrosive, reactive, etc.). Each container of radioactive and/or suspected mixed waste shall be labeled with a DOT Radioactive hazard class label.

10.10.7 Within 90 days of sealing, a permanent weatherproof identification tag will be affixed to the waste container by the Cognizant Facility Generator.

10.11 Handling and Transportation of Containers

Drums and the 448 burial boxes shall be handled and transported in accordance with applicable portions of the Hanford Restoration Operations Waste Management, Packaging, and Storage Instructions (WHC-IP-0728), section 4.1.3 Lifting and Handling Requirements for Box Containers, section 4.1.4 Lifting and Handling Requirements for Other Types of Containers and section 5. Transportation.

10.12 Centralized Waste Container Storage Area

10.12.1 Contained waste will be transported by D&D from the test pit area to the Centralized Waste Container Storage Area within 90 days of generation. A minimum of 30" aisle space will be provided between rows of drums to facilitate drum movement and inspection. Drums will be elevated on pallets and otherwise protected from contact with accumulated liquids. Tape, pallets, and salvage drums will be available at the Centralized Waste Container Storage Area.

10.12.2 Solid Waste Storage: The solid waste storage area will be located within the Centralized Waste Container Storage Area. The FTL will have signs posted on two sides and a barrier surrounding the active portion of the facility. Only solid waste (soils and debris) will be stored in the solid waste storage area. Any free liquids resulting from settling slurries shall be absorbed using an absorbent or decanted, as directed by the FTL, prior to transfer to the Centralized Waste Container Storage Area.

10.12.3 Liquid Waste Storage: Liquid wastes will be stored in the Centralized Waste Container Storage Area separate from solid wastes. The FTL will have sign posted on two sides and a barrier surrounding the active portion of the facility. All drums of liquid will be over-packed with DOT approved, 95-gallon, Poly-drums to prevent possible breach of containment during freezing and expansion until shipped for disposal at a RCRA facility. Drums will be banded together for stability. Drums shall not be stored together in groups numbering greater than 12 drums, and groups of drums shall have a minimum of 20 feet clear distance between them (for the purpose of avoiding common mode failure concerns).

10.12.4 Radioactive Waste/Suspected Mixed Waste Storage: In the unlikely event that radioactive contamination is encountered, storage containers of radiological material shall be segregated from containers of nonradiological material. Radioactive/suspected mixed waste drums shall be stored within a radiologically controlled area in accordance with WHC-CM-4-10, Radiation Protection.

10.13 Inspection of Containers

Containers located within the Centralized Waste Container Storage Area will be inspected routinely (weekly for liquid waste/monthly for solid waste) by the Cognizant Facility Generator or his designate. The person performing the inspection will complete the Waste Inspection Log (Form 2) for each Centralized Waste Container Storage Area. Drums showing signs of deterioration will be identified on the drum inspection log and immediately overpacked. A review and evaluation will be performed at this time resulting in a decision, based on best management practices, regarding future storage.

10.14 Records

10.14.1 A controlled logbook will be maintained by the D&D personnel placing material into the waste storage containers for field documentation of container activity.

10.14.2 The Cognizant Facility Generator shall maintain the following documents in record packages, as appropriate.

a. Copy of IC form(s). (Several IC forms may be grouped in one record package when a number of drums are represented by a single set of analyses, or when other related disposal criteria exist.)

b. Copy of the Chemical Waste Disposal Request (CWDR) Form transmitted to Solid Waste Engineering.

c. Chemical Waste Disposal Analyses (CWDA) letter

(original) received from Solid Waste Engineering.

d. Uniform Hazardous Waste Manifest (only applicable for regulated waste removed from the boundary of the operable unit).

e. Correspondence regarding management of drums.

10.14.3 The record packages would be submitted for processing and transmittal for permanent retention by the Field File Custodian in accordance with EII 1.6 when:

a. The original Uniform Hazardous Waste Manifest is received back from the receiving facility's operator or

b. Other waste drums have been properly disposed and documented on the CWDA letter or

c. Waste drums have been properly stored and await disposal action based on the ROD.

10.14.4 Inspection logs for container storage areas would be maintained by the Cognizant Facility Generator and submitted for permanent retention every 6 months or once the inspection area is no longer in use. Copies of the inspection logs will be provided to the regulators at the monthly unit managers meetings.

11.0 CONTINGENCY PROCEDURES

11.1 General

When drums of liquid wastes are encountered, work shall be performed in accordance with this section.

11.2 Uncovering and Examination of Drums of Waste

11.2.1 If the pilot hole excavation encounters drums, the drum top will be exposed by hand excavation using spark-proof shovels or hoes. Soil may be raked or shoveled into the backhoe bucket. After locating the drum, the backhoe may be used cautiously to within 6-inches of the drum.

11.2.2 After the drum has been exposed, the condition of the drum will be evaluated for corrosion and apparent structural strength before attempting to open or disturb the drum.

11.3 Opening Drum for Sampling and Transfer of Liquids

11.3.1 If the drum is not to be opened immediately, cover it back up with enough soil to avoid warming the drum vapor space.

If the drum appears to be made of stainless steel, notify the SSO before proceeding.

11.3.2 A ground cable will be connected to the drum before attempting to open the drum. If the drum appears to be in good condition, and strong enough to withstand removal of the bung cap, a bung opening tool should be used to remotely open the drum. Alternately, a drum punch attached to the backhoe bucket may be used. If the brass drum punch is used, place the tool on the drum top with the backhoe arm, and very carefully puncture the drum by lowering the tool approximately 3-inches. If the drill is to be used, clamp the drill to the drum, fill the lid with water, then remotely energize the drill. In the event drums are encountered that are not standing upright, and have been determined by the SSO to be stable enough to be opened, the drum may be pierced at the highest point possible on the drum. In the event vessels are found other than drums, stop work and consult management. An approved special Procedure Change Authorization (PCA) will be required before work can be performed on other vessels, however, work can continue on drums. If the ambient temperature is above 60° F, check the drum lid temperature. If the drum top temperature is above 60° F, it will be necessary to cool the drum lid with a cup of liquid argon. Minimize lid exposure to direct sunlight. Allow argon to cool drum lid, then re-check temperature to assure it is 60° F or less.

11.3.3 After opening the drum, the SSO shall test the drum vapor space with a combustible gas analyzer and chemical gas analyzer to determine drum vapor conditions. Also, the liquid depth will be checked with a wooden dip stick.

11.3.4 The sampling team will sample the drum content if any liquid is found. Drip pans and extreme caution will be used when sampling to avoid dripping from the sample tubes. The liquid depth and other results will be recorded on the data sheet.

11.3.5 Depending upon the field conditions, scaffolding and/or planking may be used to support personnel when working over drums. The site safety officer and field team leader will jointly verify that planking and/or scaffolding are adequate to support personnel and that there is no risk of cave-ins.

11.4 Drums with Failed Lids

Drums having failed lids and filled or partially filled with soil will be screened for hazardous wastes. If wastes are determined to not be present, the drum and contents will be placed in the spoil pile. If wastes are present, the drum will be removed intact, and placed into an overpack drum.

11.5 Liquid Transfer to New Drums

11.5.1 If the drums contain pumpable liquids, the system shown in Attachment 3 will be used to recover the liquids. The recovered liquids will be stored in DOT 17-E drums placed inside a salvage overpack drum. If liquid depth exceeds 26.4-inches, two receiver drums must be used.

11.5.2 A ground cable must be attached to the drum prior to beginning pumping to prevent sparking from static electricity.

11.5.3 The receiving drum will be treated with 2 cups of argon liquid or 2 cups of crushed dry ice to render the drum inert. At minimum of 5 minutes will allowed for the dry ice to evaporate and render inert the drum vapor space.

11.5.4 After insertion of the dip tub/vent assembly into the drum, the transfer will begin by slowly opening the header valve on one dewar flask and then slowly opening the supply valve on the pump. The pump will be operated at moderate speed (approximately 30 strokes/minute) until the buried drum is empty. When the pump begins to draw vapors, as evidenced by change in pump speed, allow the pump to run at moderate speed for another 2 minutes to complete emptying the transfer hose. When the drum is empty, the suction assemble will be removed from the buried drum and placed in the next drum to be pumped. A steel drip pan containing absorbent material, will be held under the suction assembly as it is moved to prevent dripping and spills.

11.5.4.1 If the pump system should leak or a spill occur, any spilled liquid will be absorbed, and any solvent-soaked soil or absorbent transferred into a waste storage drum. If the drum suction assembly must be stored, place it into a drum designated and marked for that purpose.

11.5.5 Contents from one drum shall not be placed into a common receiver drum with the contents from another drum.

11.5.6 The liquid level in the receiver drum will be measured with a wooden dip stick and the depth recorded on the data sheet.

11.5.6.1 If the liquid depth in the drum exceeds 26.4-inches, transfer enough liquid to another drum to reduce the level to 26.4-inches or less.

11.5.7 Close the receiver drum and seal the overpack drum. When both receiver drums on a pallet are filled, the pallet may be moved to the Centralized Waste Container Storage Area. Drums will be pumped and removed (to provide access to other drums) on a one-at-a-time basis until all drums have been emptied.

11.5.8 The emptied drum will be sealed with a new bung cap (if

bung was used), wooden or rubber plumb, or tape and plastic if a new drum opening was made.

11.6 SAMPLING AND ANALYSIS

Samples from the drum will be tested in accordance with the Sensidyne/Haztech Hazcat Kit so that the nature of the waste can be determined. Sampling of drums will also be in accordance with the sampling plan (see Attachment 4).

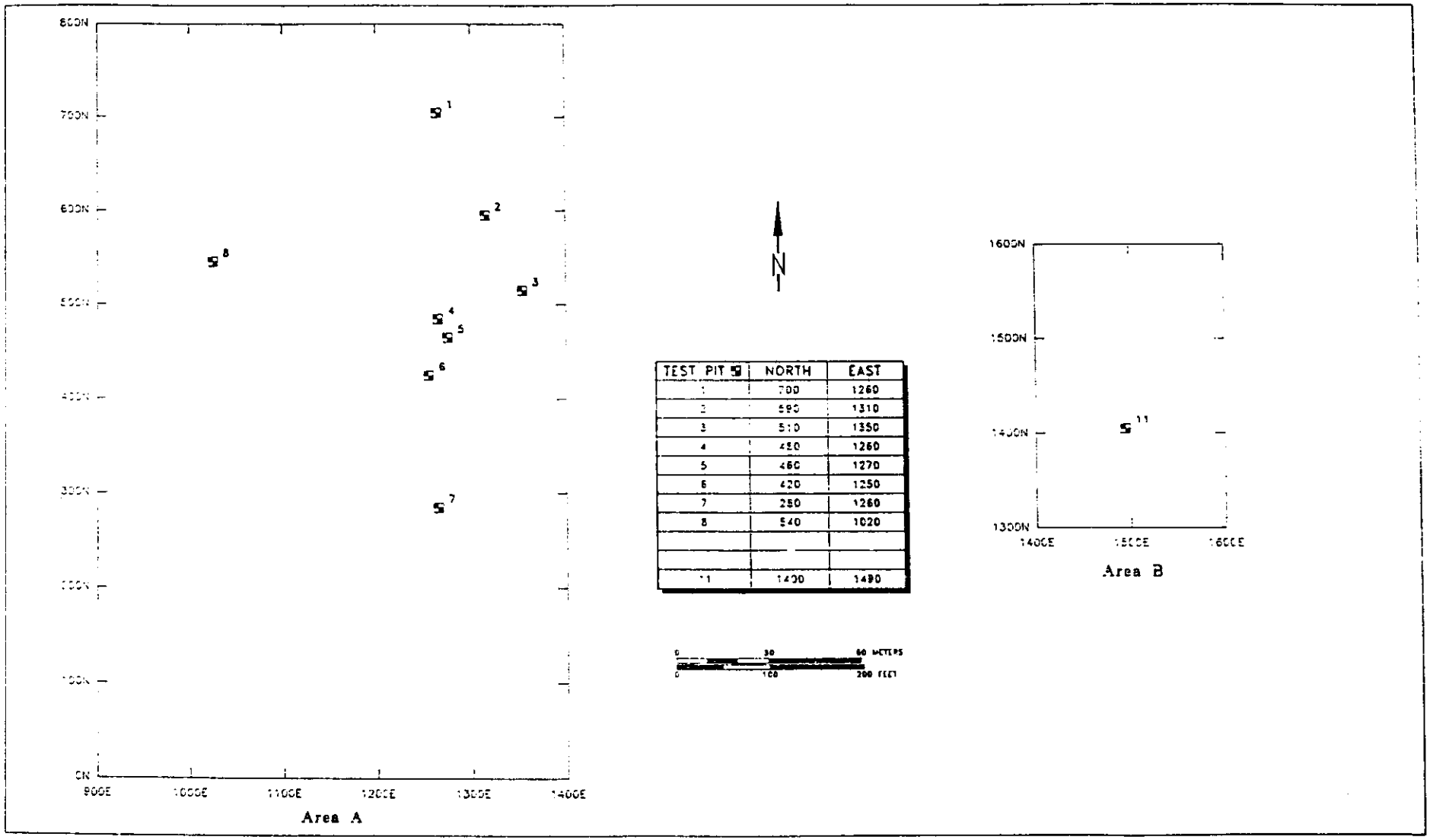
12.0 Response for Emergency Spills

12.1 In the event that liquid wastes are released (such as from drum accidently ruptured by the backhoe, a spill during sampling, or during transfer of liquids from an uncovered drum to a receiver drum), the quantity of waste released will be minimized by adding absorbent to any free liquid on the ground. Liquid remaining in the ruptured container shall be absorbed or removed by pumping to a receiver drum as directed by the FTL.

12.2 The ruptured container shall have a secondary containment (such as a drip pan) will be placed beneath it or it shall be overpacked as directed by the FTL.

12.3 Any saturated soil shall be quickly excavated and placed into drip pans or onto plastic sheeting until containerized. The FTL/SSO will determine whether non sparking tools shall be used for the excavation work.

12.4 Spills or releases will be reported in accordance with WHC-CM-7-5, Part B, "Non-Routine Releases."



8/28/91 063-1248\38022

Figure 6-1. Recommended Test Pit Locations

Attachment 1

CORRESPONDENCE DISTRIBUTION COVERSHEET

Author	Addressee	Correspondence No.
W. E. Taylor	Distribution	9154275

Subject: SAFETY DOCUMENTATION FOR THE CHARACTERIZATION OF THE HORN RAPIDS LANDFILL AT THE HANFORD SITE 1100-EM-1 OPERABLE UNIT

INTERNAL DISTRIBUTION

Approval	Date	Name	Location	w/att
		Correspondence Control	A3-01	X
		M. R. Adams	H4-55	X
		L. C. Brown	H4-51	X
		S. W. Clark	H4-55	X
		J. J. Dorian	B2-16	X
		D. G. Farwick	H4-16	X
		K. D. Gibson	B1-35	X
		W. L. Greenwald	H4-55	X
		D. O. Hess	L6-59	X
		E. G. Hess	R3-09	X
		R. L. Knecht	N1-47	X
		M. J. Lauterback	H4-55	X
		R. D. Lichfield	L6-57	X
		A. R. Schade	B3-72	X
		G. L. Smith	L4-75	X
		T. M. Wintczak	L4-92	X
		EDMC-1100-EM-1 Admin. Rcd	H4-22	X

Attachment 2

14403

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

June 11, 1991

9154275

Distribution:-(See attached list)

SAFETY DOCUMENTATION FOR THE CHARACTERIZATION OF THE HORN RAPIDS LANDFILL AT THE HANFORD SITE 1100-EM-1 OPERABLE UNIT

Reference 1. WHC-SD-GN-ER-301, REV 0, "Implementation Guideline for Hazard Documentation", Regulatory Policy, dated September, 1990.

2. DOE/RL-90-18 "Phase 1 Remedial Investigation Report for the Hanford Site 1100-EM-1 Operable Unit", United States Department of Energy, Richland, Washington, dated June 1990.

3. 903-1221 "Soil Gas Sampling and Analysis at the 1100-EM-1 Operable Unit", Rev. 0, Golder Associates Inc., Redmond, Washington, dated February 28, 1991.

4. DOE/RL-90-37 "Remedial Investigation Phase 2 Supplemental Work Plan for the Hanford Site 1100-EM-1 Operable Unit", United States Department of Energy, Richland, Washington, dated April 1991.

Determination

The excavation activity to characterize several of the Horn Rapids Landfill burial trenches was found to be a General Use activity as described in Reference 1. No additional safety documentation is required beyond that required for occupational safety. One Operational Safety Limit (OSL) has been specified to minimize the potential for the release of fugitive dust from this activity. It is described in detail in Attachment A.

Occupational safety documentation, i.e., RWP, HWOP, etc. will be provided as part of the project work plan normally associated with remedial investigations. The RWP is to provide guidance to the Health Physics staff in the event radioactive material is found.

Assessment

This document provides an assessment of the hazards for the proposed characterization of the trenches in the Horn Rapids Landfill using mechanized earth moving equipment. The excavations will be outside of known hazardous materials trenches such as asbestos, PCB's, etc. Removal of approximately

1200 yd^3 (920 m^3) of soil is expected to result from each excavation. The holes will be approximately 70 ft. (21 m) across by 20 ft. (6 m) deep at each location. A flat area at the bottom of the excavations will be approximately 140 ft^2 (13 m^2). Included in the 1200 yd^3 is that soil disturbed to prepare the backhoe staging area. A graphic's illustration of the proposed excavations and a site map showing trench locations can be found in Attachment B. There is a trench in the landfill identified as the "asbestos trench" that was the designated area to dispose of asbestos. The proposed characterization excavations will not be in or near the trench where asbestos is suspected to be buried. Accordingly, this safety assessment does not apply to any activities in or near the asbestos trench. It is significant that the samples taken at the landfill have not identified asbestos contamination. Reference 4 and the Scope of Work in Attachment B describe the planned excavation activities at the landfill.

Soil and other materials removed during the excavations will be either returned to the hole or if found to be contaminated with hazardous materials, will be packaged and removed from the landfill in accordance with regulations as part of this activity. There will be provisions to sample and remove liquids, in the remote possibility any are encountered.

The Horn Rapids Landfill was operated as a solid waste disposal facility from approximately 1950 to 1970. Materials suspected to have been put into the landfill included waste asbestos, used tires, and construction debris. Various types of debris, such as paint cans, steel cables, sheet metal, concrete rubble and miscellaneous material lie scattered over much of the landfill (Reference 2). A summary description of the potential waste materials in the Horn Rapids Landfill is in Attachment C.

Burning of combustible materials was a common practice for landfills prior to the 1970's. It is expected that much of the material put in this landfill was disposed of by this method. The burning would have consumed most of the combustibles and accelerated degradation of metal cans, barrels, sheets, etc. Also during this period (1950-70), it was common practice in landfills to use heavy earth moving equipment to level and compact the material remaining after burning. Accordingly, metal and glass containers were probably crushed, releasing any contents surviving the fire.

The results of Phase I RI described in References 2 and 3 did not indicate the existence of any imminent or substantial endangerment to site workers, the public or the environment. Phase I investigations identified several soil chemical contaminants in concentrations above background levels. The potential for these hazardous chemical materials to occur in amounts that would present a hazard to site workers, the public or the environment is negligible. Radioactivity was not expected or found in the soil samples taken in the landfill, although it is possible that there may be clock dials and instrument components that contain minute quantities of radioisotopes.

There is one Operational Safety Limit to assure the validity of this safety assessment. It requires that the potential for the release of fugitive dust from this activity be minimized. It is described in detail in Attachment A.

The conclusion leading to the General Use classification, as defined in Reference 1, is based on the small amount of potential contaminant that could be exposed to the environment during this operation. Soil sampling, soil gas surveys, geophysical surveys and surface radiation surveys have been done at the landfill. There have been no radioactive material detected at the landfill. While there are some concentration values of hazardous chemicals that are above background, none would pose a threat to the environment or a non-involved person with the OSL implemented. The small risk to the facility worker will be controlled by the industrial safety requirements for protective clothing, respirators, etc., as specified in Department of Energy/Westinghouse Hanford Company safety criteria.

The impact of naturally occurring events, i.e., floods, seismic, temperature extremes, lightening, and range fires as well as the potential hazards of nearby Hanford Patrol, industrial, and agriculture facilities on this activity were assessed. They did not alter the General Use classification conclusion for this activity.

Very truly yours,

W E Taylor

W. E. Taylor
Principal Engineer
Environmental Project Safety Documentation

bab

Attachments

Concurrence: W E Taylor

N. R. Kerr, Acting Manager
Environmental Project Safety Documentation

M A Adams

M. R. Adams, Manager
Environmental Engineering

R. D. Lichfield

R. D. Lichfield, Manager
HWVP & Environmental Safety Assurance

ATTACHMENT A

CHARACTERIZATION

OF THE

HORN RAPIDS LANDFILL

1100-EM-1 OPERABLE UNIT

OPERATIONAL SAFETY LIMIT

1100-EM-1 OPERABLE UNIT - CHARACTERIZATION OF THE HORN RAPIDS LANDFILL

There is one Operational Safety Limit necessary to assure the validity of the Characterization of the Horn Rapids Landfill safety assessment. It requires that the potential for fugitive dust from this activity be minimized.

Operational Safety Limit

1.0 **Title** - The potential for the release of fugitive dust must be minimized.

1.1 **Applicability** - This limit applies to the investigative excavations in trenches at the Horn Rapids Landfill described in greater detail in the body of this safety assessment.

1.2 **Objective** - To reduce the potential for airborne release of fugitive dusts.

1.3 **Requirements** - The work surfaces that include the excavation area, equipment location area, and spoil pile(s) will be maintained in a moist condition to the extent required to assure the release of fugitive dusts are minimized. Work surfaces will be wetted at the start of the work day, at the end of the work day, and during the work day as required. Precipitation if sufficient, may relieve additional wetting of the work surfaces.

Soil moisture during non-working days, weekends, holidays or any day while the disturbed soil is exposed will also be controlled to assure that the potential of fugitive dust resuspension is minimized. The work surfaces of spoil piles will be wetted twice daily, once during mid morning and once in mid afternoon.

1.4 **Surveillance** - Project documents will specifically require that the landfill surfaces disturbed by this excavation, including any spoil piles, will be maintained moist. Project documents will confirm that the disturbed soil surface moisture condition is periodically assessed.

1.5 **Recovery** - In the event that the requirements of this OSL are not complied with, all operations at the excavation site will cease. Prompt action will be taken to wet the surface of disturbed soil to the satisfaction of the site safety officer. The deficiency will be reviewed with the site safety officer and independent safety who will determine additional recovery actions, if any.

1.6 **Audit Point** - Program work documents and Environmental Engineering site surveillances.

1.7 **Basis** - The reduction of the emission of fugitive dusts from the excavation will reduce the potential for the release of hazardous materials to the environment and people not involved in this project.

ATTACHMENT B

CHARACTERIZATION

OF THE

HORN RAPIDS LANDFILL

1100-EM-1 OPERABLE UNIT

SCOPE OF WORK
LANDFILL PLAN
SKETCH OF EXCAVATION

Scope of Work

Characterization of the Horn Rapids Landfill Burial Trenches
1100-EM-1 Operable Unit

1.0 Objectives and Scope

1.1 Objectives of Activity

This Scope of Work describes characterization activities planned to determine the contents of burial trenches in the Horn Rapids Landfill (HRL) in the 1100-EM-1 Operable Unit. This information is necessary in implementing the CERCLA Phase-2 Remedial Investigation outlined in the Supplemental Work Plan for 1100-EM-1 Operable Unit (DOE/RL-90-37).

The characterization work will take place in the Horn Rapids Landfill at past locations of trenching and disposal of waste materials (burial trenches). The number of test pits and specific locations have not been determined, but it is assumed that there will be from 2 to 5 test pits located within the burial trenches shown on Attachment 1. The specific locations will be determined by 26 June 1991 following completion of geophysical survey reports which will identify areas where significant quantities of metallic materials (potentially drums of contaminants) have been buried. The final locations will be out side of areas of known hazards such as the burial trench containing asbestos material, PCB spill area, and chromium contamination areas.

The test pits will be excavated to identify the types of waste material disposed of in the trench, and substantiate or disprove anecdotal information alluding to the disposal of significant quantities of solvents and other hazardous materials. Handling and containerizing of contaminated material encountered during the excavation of the test pit will be required.

1.2 Scope of Work

The test pit and sampling will be conducted in accordance with EII 5.2 Appendix F, Surface Sampling Method (Test Pits/Trenches). The depth of the test pit excavation will be to the bottom of the burial trench (up to 20 feet deep) and the lateral extent of the excavation will be sufficient to achieve the required depth (see Attachment 2 for assumed plan and section for excavation).

Containers or articles suspected of being contaminated and soils with visual indications of contamination will be sampled and containerized as directed by the field coordinator.

WHC has completed radiation and monitoring activities and the site has been released. All work shall be carried out in

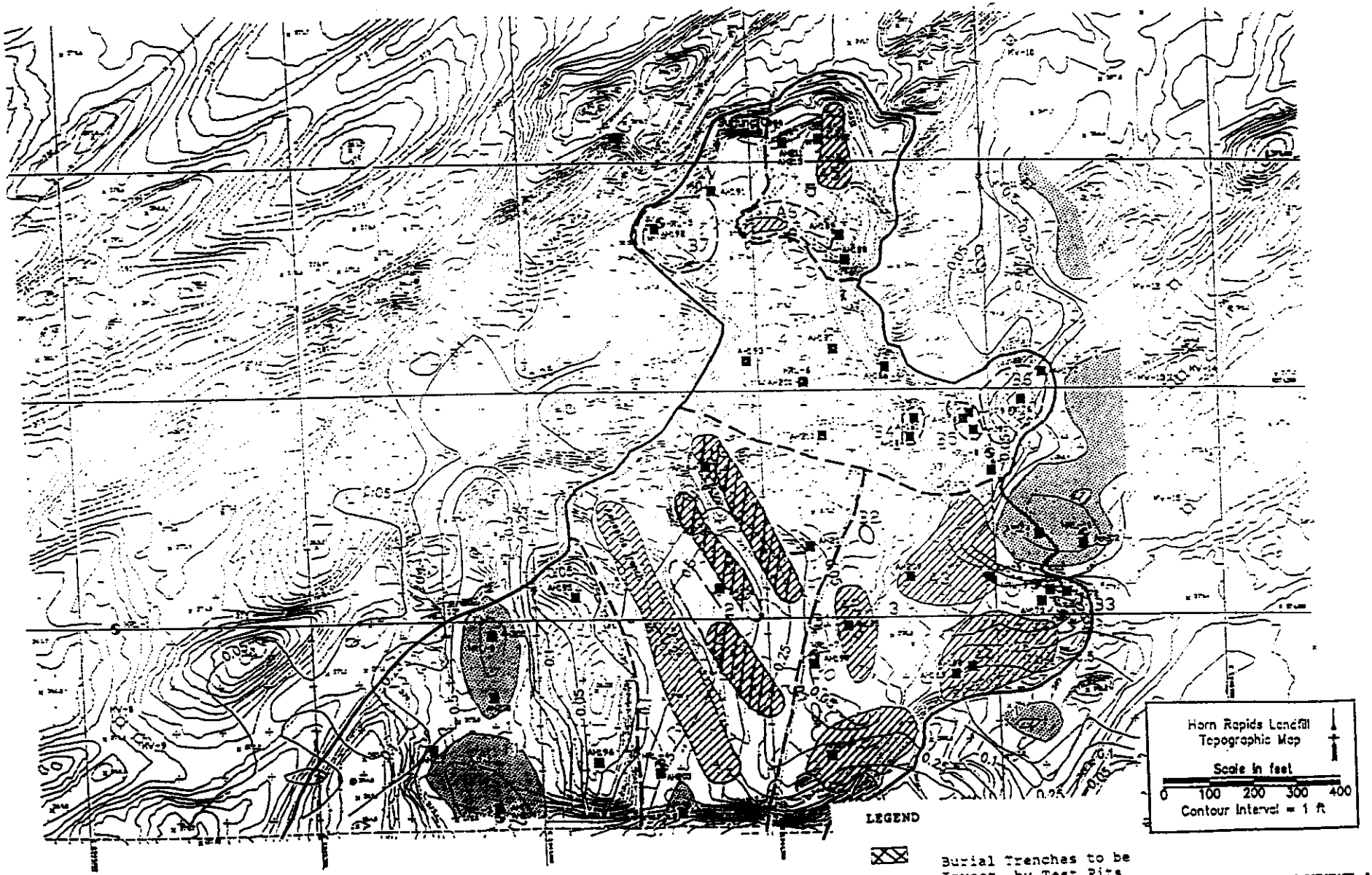
accordance with a pre-job safety plan as described in EII 2.1 of WHC-CM-7-7.

2. Task Descriptions

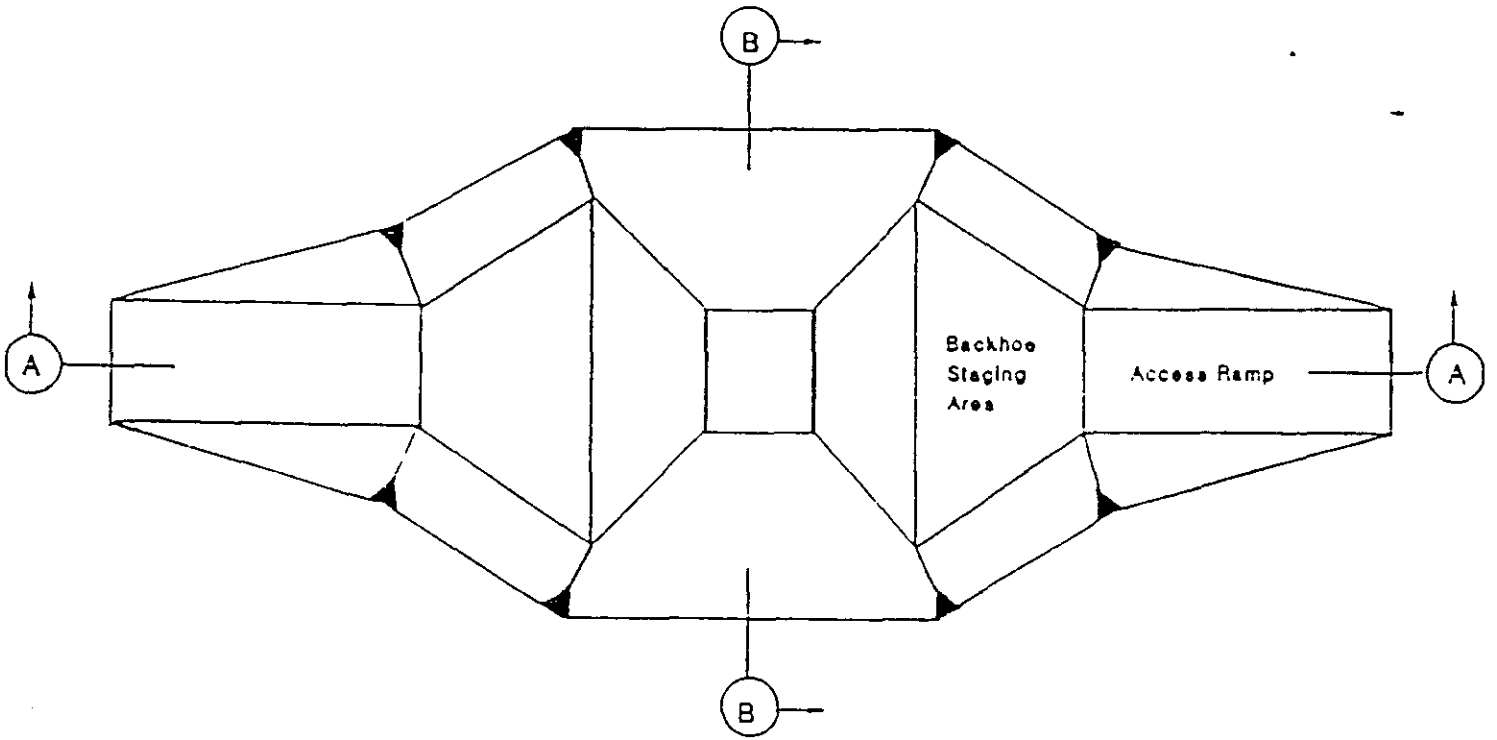
It is anticipated that backhoes and crawler tractors (dozers) will be used to remove the zone of material which overlies the suspected waste materials (identified by the geophysical surveys). As the excavation nears the zone containing the suspected waste material, the excavation will be more cautious and will principally be by backhoe. Site specific geophysical surveys conducted prior to beginning the excavation will provide guidance as to the location and depth of suspected wastes.

All excavated material will be field screened, and identified as suspected or hazardous materials and will be containerized as quickly as practicable. Hazardous material will not be stockpiled in any significant quantity and in a manner which would permit exposure to the workers or environment. Non hazardous wastes, such as wood, construction debris and soil material which are determined to not be contaminated with hazardous materials will be stockpiled (spoil stockpile) adjacent to the test pit. Water shall be sprayed over the surface of the pit and the spoil stockpile as necessary to prevent problems with blowing dust.

Contingency procedures shall be developed to deal with unexpected situations, such as significant quantities of contaminated soil or containers of liquid contaminants. These contingency procedures will be consistent with the safety assessment for this work.



ATTACHMENT 1

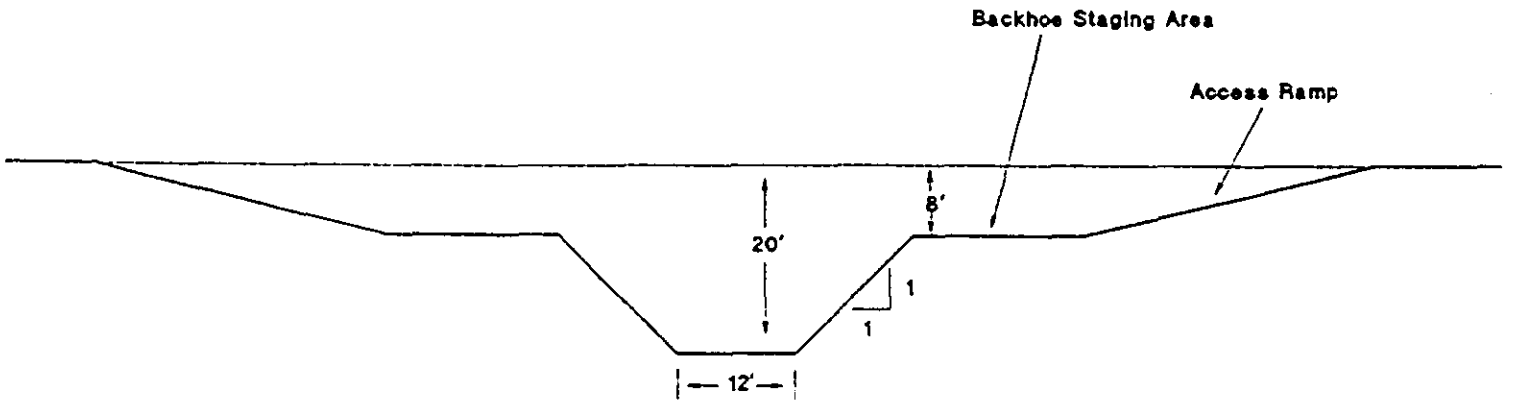


PLAN OF EXCAVATION

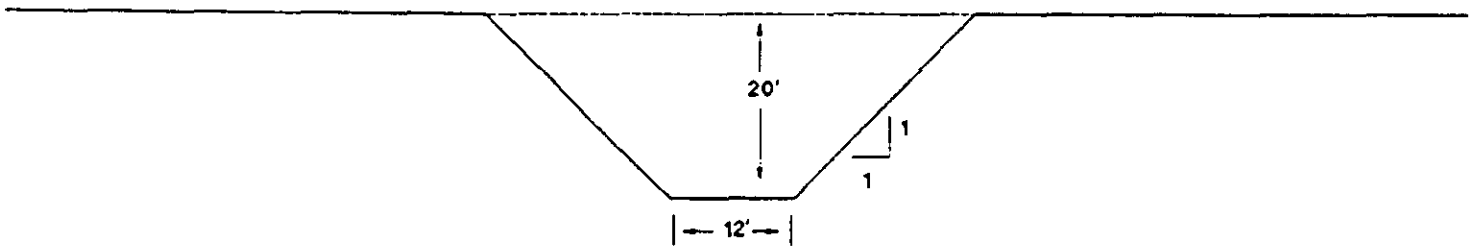
Excavation Volume = 1,200 cy

Surface Area = 5,800 sf

ATTACHMENT 2



SECTION A

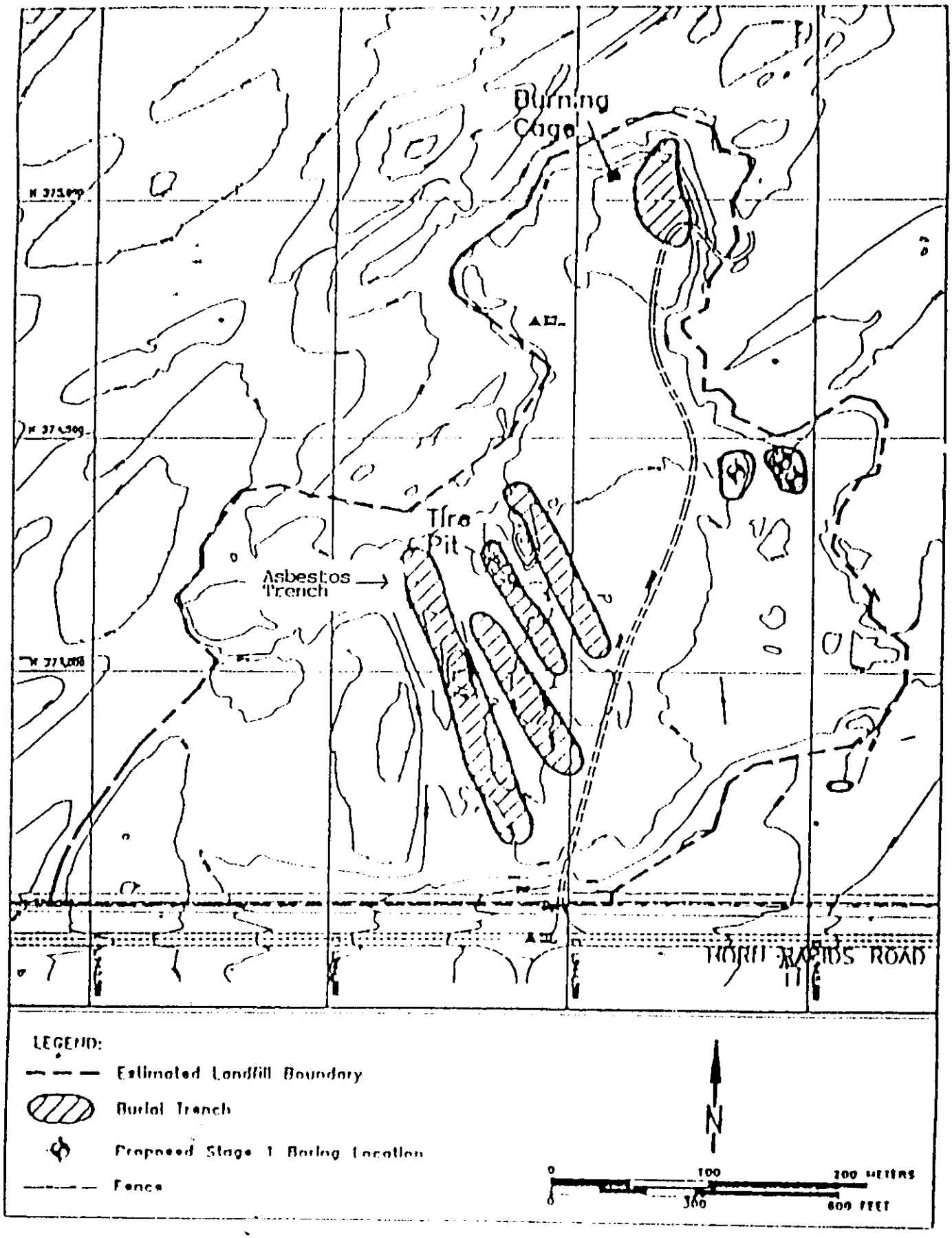


SECTION B

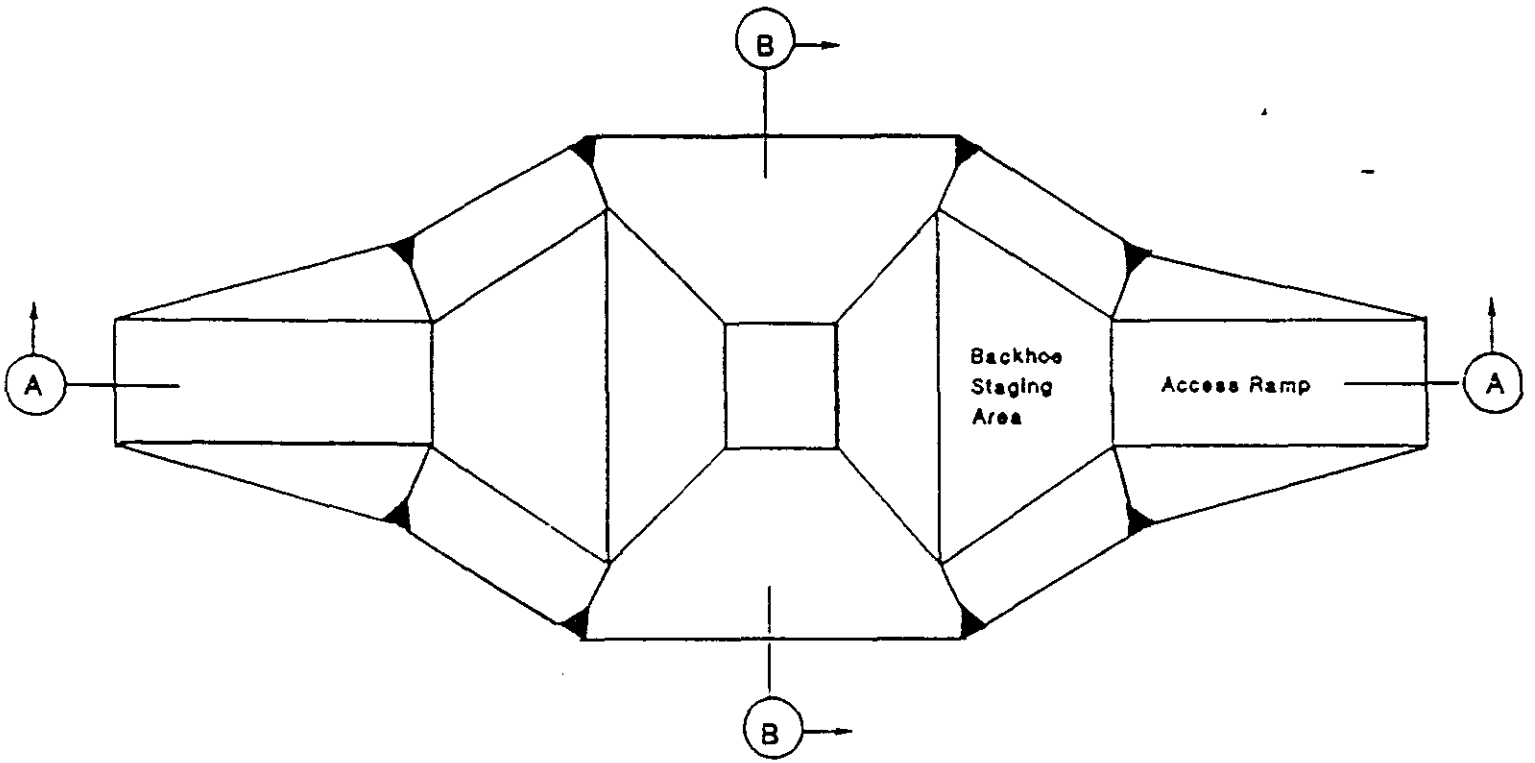
HORN RAPID LANDFILL INVESTIGATIVE REPORT

HRLndFil

LANDFILL PLAN



9031215\30754

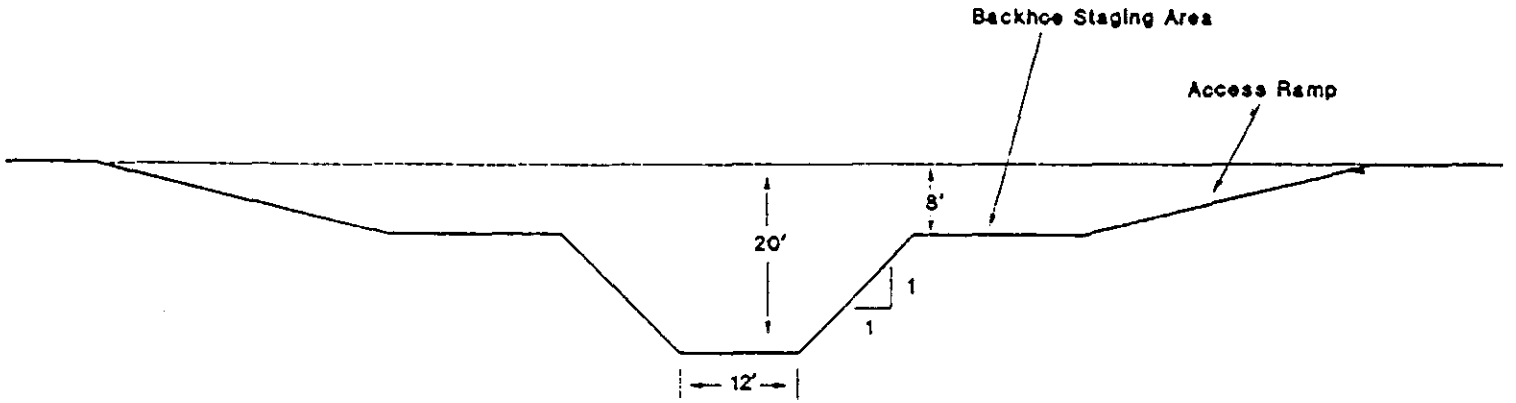


PLAN OF EXCAVATION

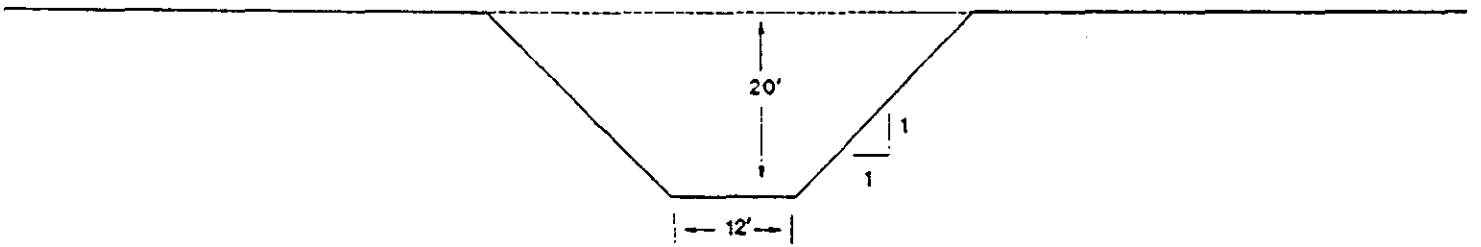
Excavation Volume = 1,200 cy

Surface Area = 5,800 sf

hrexplan



SECTION A



SECTION B

HORN RAPID LANDFILL INVESTIGATIVE REPORT

HRLndFil

9154275

9154275

ATTACHMENT C

CHARACTERIZATION

OF THE

HORN RAPIDS LANDFILL

1100-EM-1 OPERABLE UNIT

SUMMARY INVENTORY INFORMATION

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

DATE: June 10, 1991

TO: W. E. Taylor WHC

FROM: S. W. Clark WHC
W. R. Greenwald USACE

Telephone: 6-9698

cc: M. J. Lauterbach WHC

SUBJECT: WASTE MATERIAL DISPOSED OF AT THE HORN RAPIDS LANDFILL

As requested, a discussion of the Horn Rapids Landfill (HRL) waste materials is provided for your use in preparing safety documentation for test pit work at the HRL.

The majority of the waste materials disposed of in the HRL were construction and demolition debris from the 1100 area. Burning of combustible materials was a common practice for landfills prior to the 1970's and much of the wastes at the HRL may have been disposed of in this manner. Additionally, the waste material was probably spread in layers over the bottom of the trench using a dozer which would tend to crush containers and compact the material. Some other materials from the 1100, 300, and other units were also disposed of in the landfill. Until the 1970's, all types of wastes were disposed of in the landfill. In the early 1970's, DOE directed that hazardous materials should be disposed of in a 200 area landfill and not in landfills such as the HRL.

Wastes are observed to be sparsely scattered over the surface of the landfill and consist of paint cans, steel cables, sheet metal, concrete rubble, and sewage sludge. Anecdotal information indicates past disposal of waste liquids, slurried fly ash, possibly 200 drums of carbon tetrachloride and small amounts of explosive compounds (picric acid and ethers). Soil gas surveys at the HRL detected measurable concentrations of trichloroethene, tetrachloroethane, and 1,1,1 trichloroethane. These contaminants appear to be carried into the ground water from a release on the property of Advanced Nuclear Fuels Corp.

Soil gas surveys conducted at the HRL by Golder Associates Inc. (GAI) indicate that significant quantities of contaminants, such as carbon tetrachloride, do not exist. Carbon tetrachloride was detected in only one sample location and the concentration was very low (26 ppbv). PCE was detected in only 5 sample locations and at low concentrations varying from 5 to 28 ppbv. TCE was detected at low concentrations varying from 2 to 255 ppbv over the HRL. GAI has stated that if free liquids did exist, the concentrations measured in the soil gas would be several orders of magnitude higher than those observed at the HRL.

Based upon process knowledge of the operations conducted in the vicinity of the HRL, small quantities of the following wastes could have been disposed of in the landfill. However, there is no information to indicate that such disposal occurred:

antifreeze

automotive cleaners

battery acid

contact cement

degreasers

gasoline

hydraulic oils

industrial lubricants

lacquer thinners

metal cleaners

paint, latex

paints, oil based

paints, other

paint removers

paint thinners

penetrating oils

roof patching sealant

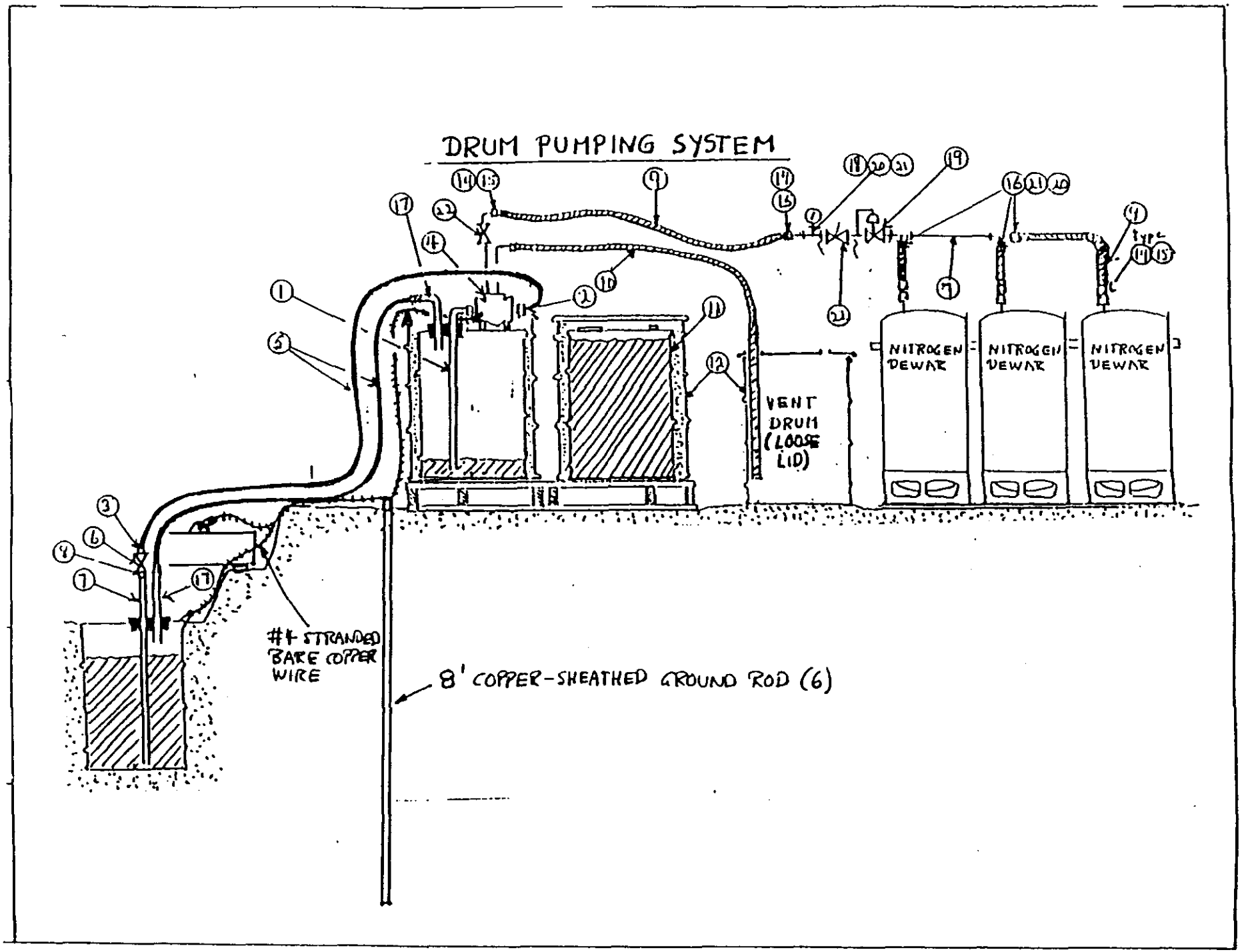
solvents

stains

undercoating material

vinyl adhesives

waste oil



Attachment 3

PUMPING SYSTEM COMPONENTS

ITEM	QTY	DESCRIPTION		IMP LEVEL
1	AR	Pipe, CS, 3/4 in. Sch 40	(45-6996-190)	3
2	1	Bushing, 1 X 3/4	(45-0810-237)	3
3	2	Connector, Male, 3/4 T X 3/4 P	(50-1161-325)	3
4	1	Pump Air Operated, Wilder Pump Model No. M-2/BT or Equal		3
5	AR	Tubing, teflon, 3/4 O.D X 0.062 W, Fluoroware Pt. No. ET750-062L		3
6	1	Valve, Ball Miser, 3/4 inch	(50-8902-190)	3
7	AR	Pipe, CS, 1/2 in. Sch 80	(44-6500-170)	3
8	1	Bushing, 3/4 X 1/2	(45-0810-227)	3
9	AR	Hose, Air, Braided, 3/8 ID	(33-3410-100)	4
10	AR	Hose, Air, Braided 1 ID	(33-3410-304)	4
11	50	Drum, Steel, 55 gal, DOT 17E	(97-0397-397)	3
12	50	Drum, Steel, 85 gal "Overpack"	(97-0399-399)	3
13	2	Stopper, Rubber		4
14	8	Coupling, Push-tite Sockets, 3/8 ID X 3/4 OD	(33-1397-100)	4
15	8	Coupling, Push-tite, Male, 1/4 inch	(33-1396-150)	4
16	3	Clamp, Hose, Brass 3/8 ID X 3/4 OD	(33-1260-145)	4
17	AR	Tubing, Copper, 5/8 ODT	(45-8652-181)	4
18	1	Gauge, Pressure, 0-60 psi, 1/4 NPT	(19-1375-155)	4
19	1	Regulator, 1/2 inch	(33-3445-250)	4
20	3	Tee, 1/2 inch	(45-8420-170)	4
21	6	Bushing, 1/2 X 1/4	(45-0810-214)	4
22	2	Valve, Ball, 1/2 inch	(50-8902-170)	4

Attachment 3

SAMPLING PLAN FOR
CHARACTERIZATION OF WASTE ENCOUNTERED DURING EXCAVATION
AT HORN RAPIDS LANDFILL BURIAL TRENCHES

Activity Objective:

The purpose of this activity is to identify the chemical composition of waste material encountered during excavation of test pits in the Horn Rapids Landfill (HRL) burial trenches and delineate the lateral and vertical (to a maximum depth of 4 ft.) extent of PCB contamination in the vicinity of bore hole HRL-4 and identify and determine concentrations of pesticides present at pits B-4 and B-5. The objectives of the test pit sampling are broader in scope than the PCB delineation or pesticide analysis and include determination of waste types, waste characteristics and contaminant concentration.

Background:

Phase I RI sampling at the HRL detected PCB, arsenic, and chromium at levels of potential concern in the surface and near surface soils (the concentrations were 65.29 mg/kg for PCB's, 6.60 mg/kg for arsenic and 1,250.00 mg/kg for total chromium). Both surface and subsurface soils were sampled and analyzed, but the subsurface sampling intentionally avoided areas of known and suspected waste deposition (burial trenches). TCE was commonly detected, PCE and TCA were less commonly detected and carbon tetrachloride was detected in one probe location (at low concentrations) in soil gas samples collected at HRL. Ground water samples showed elevated levels of nitrate, TCE, and radioactivity. These contaminants are associated with a release from Advanced Nuclear Fuels and not attributed to the HRL.

Scope:

The scope of this sampling activity is to collect surface and subsurface hand-augered boring samples from the four locations shown on Attachment 1, surface and sub-surface hand-augered boring samples from three locations at B-4 and B-5 (see attachment 2) and grab samples collected during excavation of nine test pits in the HRL burial trenches (see Attachment 3 for location of test pits). Grab samples will be collected from the backhoe bucket as the test pits are excavated. In the event that drums of liquid wastes are encountered, representative samples will be collected from each drum and analyzed.

Activity Description:

General: Sampling will be conducted according to the procedures contained in the Environmental Investigation and Site Characterization Manual, (WHC-CM-7-7); in particular EII 5.2, Soil and Sediment Sampling, (see Table 2, pg. A-9 to A-13, from the QAPP of the Supplemental Work Plan). Drums of decontamination fluid and, in the remote event that drums or containers of liquid wastes are encountered, EII 5.13, Drum Sampling will be followed. Samples will be placed in appropriate containers, sealed, and labeled for the analyses specified in the Analysis section. Sample identification will be as described in EII 5.10 "Sample Identification and Data Entry into HEIS Database" which is in preparation. Sample preparation will meet CLP protocols according to the User's Guide to the Contract Laboratory Program, (9240,01). Logbook documentation will be as described in EII 1.5 Logbooks, (WHC-CM-7-7). Chain-of-custody procedures will follow EII 5.1, Chain of Custody, (WHC-CM-7-7). Packaging and shipping of samples will be in accordance with EII 5.11, Sample Packaging and Shipping, (WHC-CM-7-7).

Samples from Test Pits: Samples shall be collected at approximately 5 foot intervals during excavation, provided that the materials at these depths can be reasonably sampled (based upon the judgement of the Field Team Leader). Additional samples will be collected from selected locations within the test pits based upon observed soil staining, results of field monitoring, odor, and proximity to drums or other containers. In the remote event that drums or containers of liquid wastes are encountered, representative samples of the contents of each container will be collected.

PCB Samples: Delineation of the potential extent of PCB contamination will be determined at four locations with surface and sub-surface samples. The subsurface hand-augered borings for PCB's will be completed to a depth of 1.2 M (4 ft) and intermediate samples will be taken at depths of 0.3, 0.6m (1 and 2 ft) below the surface. The PCB sample borings will be collected from an auger which is 12 inches in length.

Pesticide Samples: Pesticide sampling will be accomplished with three surface and sub-surface samples. The subsurface hand-augered borings for pesticides will be completed to a depth of 1.2 M (4 ft) and intermediate samples will be taken at depths of 0.3, 0.6m (1 and 2 ft) below the surface. The pesticide sample borings will be collected from an auger which is 12 inches in length.

Analysis:

All samples will be analyzed according to the analytical procedures specified in Table 1 from the QAPP of the Remedial Investigation Phase II Supplemental Work Plan for the Hanford Site 1100-EM-1 Operable Unit, (DOE/RL-90-37, April, 1991) with the exception that the analysis for gross-alpha, gross-beta, and gross-gamma radiation will not be performed. The test pit samples will be analyzed for volatile organics, semivolatile organics, pesticides (and PCB's), and inorganics. Prior to beginning sampling, the samplers shall contact the Office of Sample Management which will provide the sample holding times, sample quantity requirements, and identify the methods to be used in the sample analysis.

Field Quality Control:

Detailed information on Quality Assurance/Quality Control is contained in Appendix A of the Remedial Investigation Phase II Supplemental Work Plan for the Hanford Site 1100-EM-1 Operable Unit, (DOE/RL-90-37, April, 1991). Quality control sampling is summarized below:

- **Field Replicate Sample:** minimum of 1 per 10 samples
- **Field Blank and Equipment Blank:** minimum of 1 per 10 samples
- **Trip Blanks:** not required for soil samples
- **Interlaboratory Split Sample:** minimum of 1 per 10 samples

Decontamination:

The backhoe bucket, used for collection of grab samples, shall be decontaminated in accordance with EII 5.4, Field Decontamination of Drilling, Well Development and Sampling Equipment. Other sampling equipment shall be decontaminated in accordance with EII 5.5, 1706 KE Laboratory Decontamination of RCRA/CERCLA Sampling Equipment.

Potential Hazards:

All work will be conducted in accordance with an HWOP. Personnel involved in collecting samples within the exclusion zone will be trained to the requirements specified in EII 1.7, Indoctrination, Training and Qualification, (WHC-CM-7-7). Pre-

job safety meetings will be held regularly with the field crew prior to sampling efforts. Surface radiation surveys have been completed at the Horn Rapids Landfill and no radiological contamination was found.

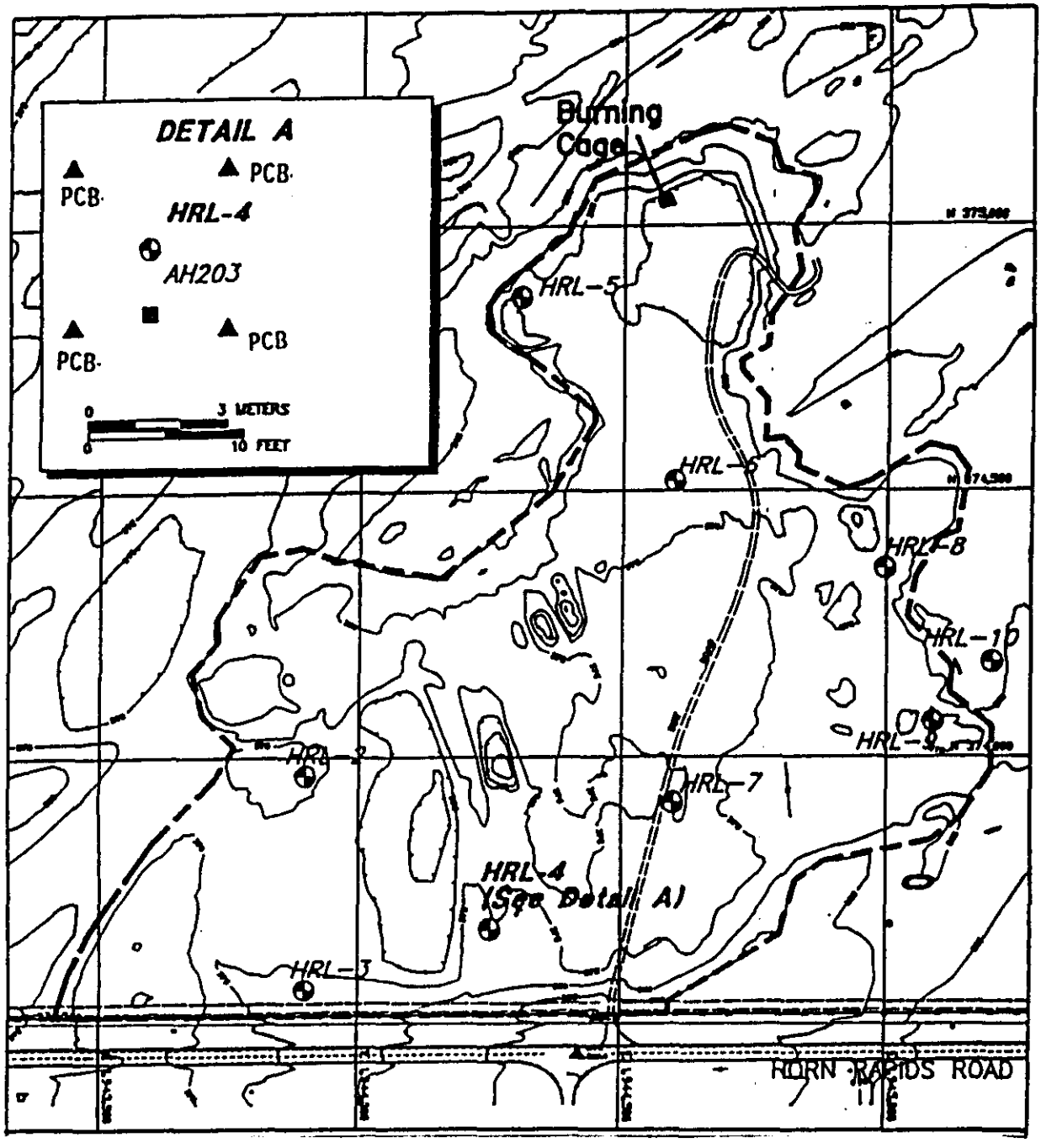
Sample Point Marking:

A stable, long term marker shall be installed at each location from which a PCB and pesticide sample is collected. PCB's and pesticide sample location identifiers will be permanently marked on a metal tag or cap and affixed to the marker.

Table 1 Required Sampling

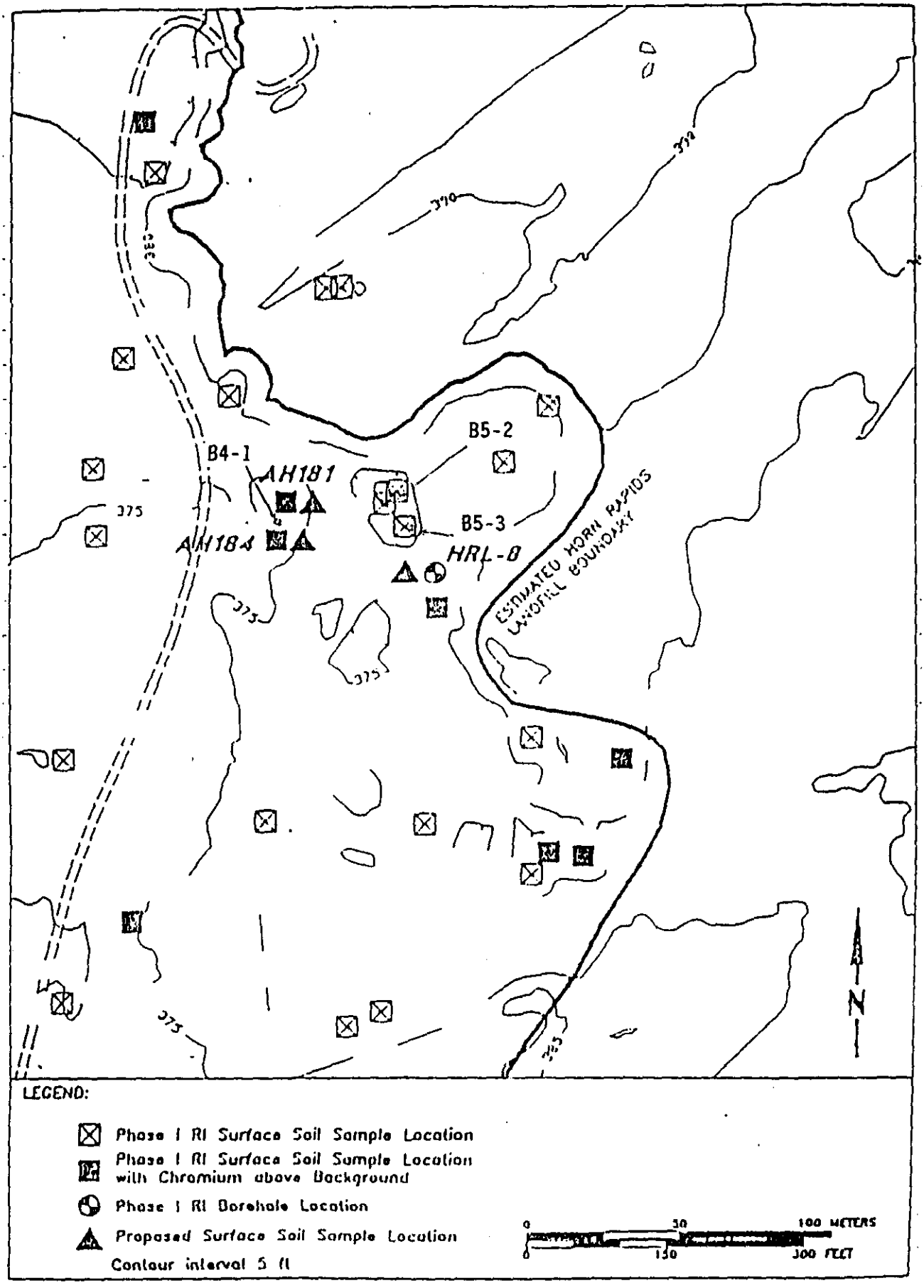
Site	Surface Number	Subsurface Number
PCB's	4	12
Pesticide	3	9
Test Pits	----------	
# 1		2
# 2		2
# 3		4
# 4		2
# 5		1
# 6		4
# 7		2
# 8		1
#11		2
Drum Samples (each)	1 Representative	

Note: The above Summary does not include QA/QC Samples.



PCB Sample Locations

Attachment 1



Pesticide Sample Locations

Attachment 2

1100-EM-1 Unit Managers Meeting
September 18, 1991

Distribution:

Chuck Cline, WDOE
Ward Staubitz, USGS
Mike Thompson, DOE-RL (A6-95)
Mary Harmon, DOE-HQ, (EM-442)

John Stewart, ACE
Linda Powers, WHC (B2-35)
Tom Wintczak, WHC (B2-15)
Mel Adams, WHC (H4-55)
Steven Clark, WHC (H4-55)
Brian Sprouse, WHC (H4-22)
Diane Clark, DOE-RL (A5-55)
Bill Price, WHC (SO-03)
Don Kane, Battelle EMO (K1-74)
Donna Lacombe, PRC
Jim Patterson, WHC
Michael Beavers, WHC (G1-66)
Earl Oxford, WHC (G4-11)

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
TPA Proj. Mgr.
Richard D. Wojtasek (B2-15)
Prgm. Mgr. WHC

Judi I. Daugherty, WHC (H4-18)
Dave Einan, EPA (B5-01)

Chuck Malody, ANF
Don Praast, GAO (A1-80)

ADMINISTRATIVE RECORD: 1100-EM-1; Care of Susan Wray, WHC (H4-51C)

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

Change Number	FEDERAL FACILITY AGREEMENT AND CONSENT ORDER CHANGE CONTROL FORM	Date
M-15-91-2	Do not use blue ink. Type, or print using black ink. AUG 30 1991	8/11/91

Originator: John T. Stewart

Phone: 376-9101

Class of Change

☐ I – Signatories (Section 13.0) ☒ II – Project Manager ☐ III – Unit Manager

Change Title

REVISION TO MILESTONES M-15-01B AND M-15-01C

Description/Justification of Change

Change Interim Milestone M-15-01B due date from Nov. 1991 to Dec. 1992.

Change Interim Milestone M-15-01C due date from Apr. 1992 to Dec. 1992.

Consolidate Interim Milestones M-15-01B and M-15-01C into Interim Milestone M-15-01B/C.

(See Page 2 for Justification of Change)

Impact of Change

Deferral of Interim Milestones M-15-01B and M-15-01C.

Affected Documents

The Hanford Federal Facility Agreement and Consent Order, Volume 2 dated March 1990, Appendix D, Table D-2 and Figure D-1.

Approvals ☒ Approved ☐ Disapproved

DOE — Date 8/29/91

EPA — Date 8/29/91

Ecology (Acting) — Date 9/3/91

Hanford Project Office

SEP 6 1991

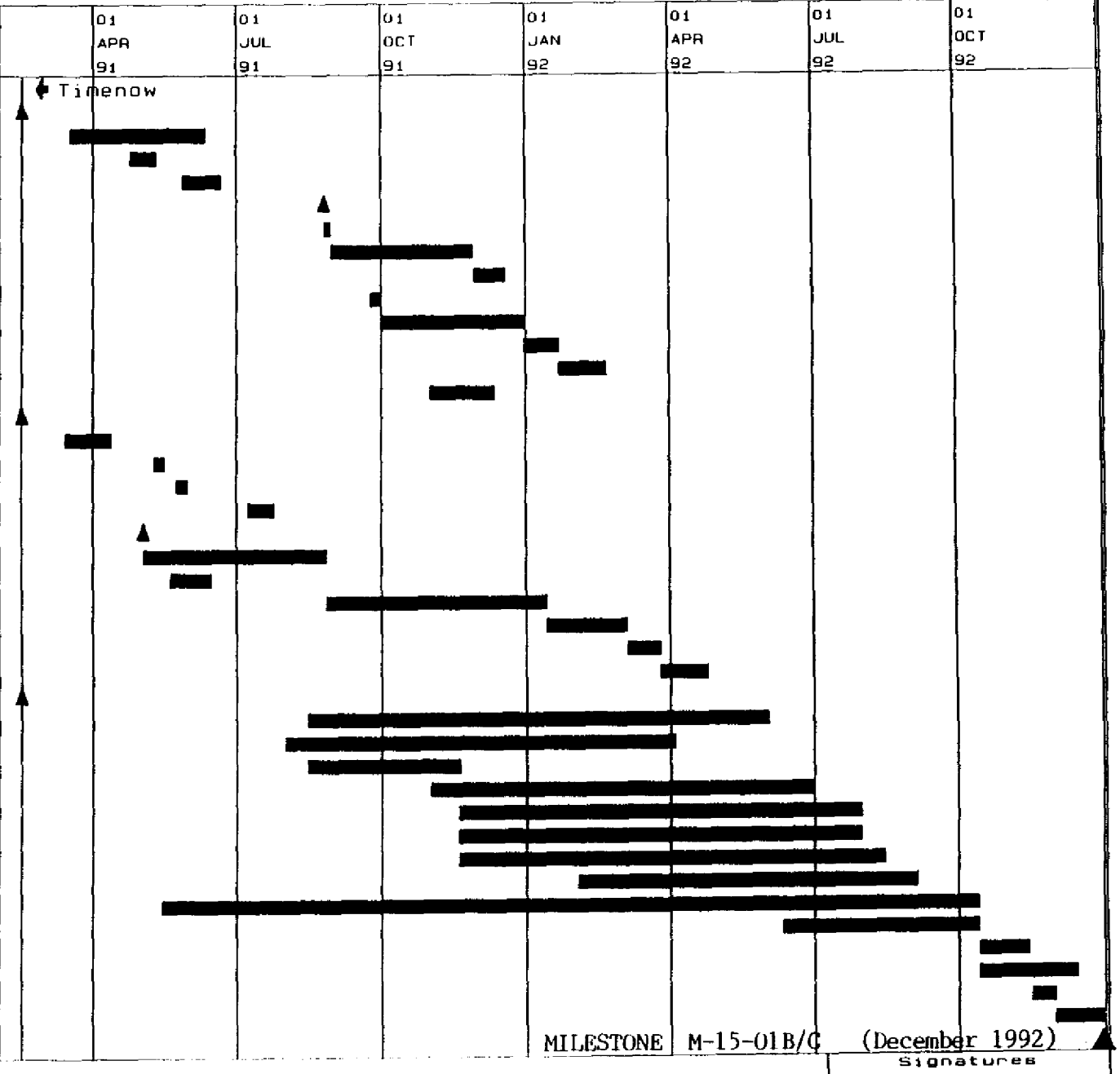
Environmental Protection Agency

OPEN PLAN (tm)
Report: GRAFBAR5
Project: 1100EM1
Time Now: 15FEB91
Date: 11AUG91
Time: 15:49:02
Page: 1

1100-EM-1 Operable Unit Final RI/FS Rpt

COE Walla Walla District

Activity	Description	Start	Finish	Dur
GW01	MONITORING WELL INSTALLATION			0
GW02	Coordinate Drilling	18MAR91	10JUN91	60
GW03	Install FF-5 Wells No. 7 & 8	25APR91	10MAY91	12
GW04	Install MW-19 thru MW-22	28MAY91	20JUN91	18
GW05	GROUNDWATER SAMPLING			0
GW06	August Sampling	26AUG91	29AUG91	4
GW07	Sample Analysis - August	30AUG91	27NOV91	61
GW08	Sample Validation - August	29NOV91	18DEC91	14
GW09	September Sampling	24SEP91	30SEP91	5
GW10	Sample Analysis - September	01OCT91	30DEC91	61
GW11	Sample Validation - September	31DEC91	21JAN92	14
GW12	Summary and PARCC Evaluation	22JAN92	20FEB92	21
GW13	COMPILE & QUALIFY ANF GW DATA	01NOV91	11DEC91	27
VZ01	GEOPHYSICAL INVESTIGATION			0
VZ02	Safety Documentation	15MAR91	12APR91	21
VZ03	Field Work	10MAY91	16MAY91	5
VZ04	Preliminary Report	24MAY91	30MAY91	4
VZ05	Review Draft Report	08JUL91	24JUL91	13
VZ06	BURIED TRENCH INVESTIGATIONS			0
VZ07	Preparation for Field Work	03MAY91	26AUG91	80
VZ08	Safety Documentation	20MAY91	14JUN91	19
VZ09	Field Work	27AUG91	13JAN92	94
VZ10	Sample Analysis	14JAN92	04MAR92	35
VZ11	Sample Validation	05MAR92	25MAR92	15
VZ12	Report	26MAR92	24APR92	22
RPT01	FINAL RI/FS REPORT			0
RPT03	Dev Vadose Zone Concept Model	15AUG91	01JUN92	199
RPT05	Dev GW Conceptual Model	01AUG91	03APR92	169
RPT06	Resolve Land Use Dispute	15AUG91	19NOV91	66
RPT07	Fate and Transport Analysis	01NOV91	30JUN92	166
RPT08	Risk Assessment (???)	19NOV91	30JUL92	176
RPT09	Develop Contaminants of Concrn	19NOV91	30JUL92	176
RPT10	Develop Remedial Action Object	19NOV91	14AUG92	187
RPT11	Dev, Screen, & Evaluate Alts	03FEB92	04SEP92	152
RPT12	Write Final RI/FS Report	15MAY91	13OCT92	356
RPT13	Proposed Plan	11JUN92	13OCT92	86
RPT14	CERPM Review and Cmt Resolutn	14OCT92	13NOV92	22
RPT15	CERPD Review and Cmt Resolutn	14OCT92	14DEC92	42
RPT16	Document Clearance	16NOV92	30NOV92	10
RPT17	DOE-HQ Review and Cmt Resolutn	01DEC92	30DEC92	21
RPT18	SUBMITTAL TO REGULATORS/DOE-RL	31DEC92		0



Legend
-In progress
-Planned
-Critical

Bar Chart Key:
All characters represent 9 time unit(s)

Signatures
Prep: _____
Appv: _____

1100-EM-1 Unit Managers Meeting
September 18, 1991

Distribution:

Chuck Cline, WDOE
Ward Staubitz, USGS
Mike Thompson, DOE-RL (A6-95)
Mary Harmon, DOE-HQ, (EM-442)

John Stewart, ACE
Linda Powers, WHC (B2-35)
Tom Wintczak, WHC (B2-15)
Mel Adams, WHC (H4-55)
Steven Clark, WHC (H4-55)
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
Michael Beavers, WHC (G1-66)
Earl Oxford, WHC (G4-11)

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
TPA Proj. Mgr.
Richard D. Wojtasek (B2-15)
Prgm. Mgr. WHC

Judi I. Daugherty, WHC (H4-18)
Dave Einan, EPA (B5-01)

Chuck Malody, ANF
Don Praast, GAO (A1-80)

ADMINISTRATIVE RECORD: 1100-EM-1; Care of Susan Wray, WHC (H4-51C)

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