U-004-303.16

5202

OPERABLE UNIT 2 WORK PLAN ADDENDUM SAMPLING AND ANALYSIS PLAN FOR BORING/MONITORING WELL 1433 IN THE SOUTH FIELD MAY 1992

05/01/92

DOE-FN/EPA
7636
ADDENDUM
OU2

5202

OPERABLE UNIT 2

WORK PLAN ADDENDUM

SAMPLING AND ANALYSIS PLAN FOR BORING/MONITORING WELL 1433

IN THE SOUTH FIELD

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

FERNALD, OHIO

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

May 1992

1.0 INTRODUCTION

This Work Plan Addendum describes additional sampling and analysis which is required for the characterization of the northwest portion of the South Field, just east of the Inactive Flyash Pile. Installation and sampling of Monitoring Well 1433, near Boring 1401, is necessary to further characterize the fill/soil material and perched groundwater/leachate that are present at the location shown in Figure 1. The additional activities are necessary to provide uranium contamination source information for Monitoring Well 2046 and fate and transport modeling data to assist in the choice of treatment alternatives, which will enhance the validity of the RI/FS for Operable Unit 2.

2.0 BACKGROUND

Samples from Well 2046 have shown the highest concentrations of uranium (232 µg/l to 907 µg/l) of all the 2000-series wells installed to date. The high concentrations coupled with erratic fluctuations in the concentration values necessitated the installation of two additional wells (2401 and 2402) up gradient of Monitoring Well 2046. The purpose of the additional wells was to provide needed sample points to determine the possible source of the uranium present in Monitoring Well 2046. The Operable Unit 5 RI/FS Work Plan Addendum for Additional Monitoring Wells, October, 1991, Document Change Request 71, provides a more detailed discussion of the purpose of Wells 2401 and 2402.

During December 1991, an attempt was made to install a 2000-series well at Location 0401. Fill materials consisting of soil, concrete and radioactively contaminated wood fragments were encountered in Boring 1401 at a depth of 6 feet. A layer of silty gray clay from a depth of 12 to 15 feet separated the contaminated fill from the unsaturated aquifer sands. A perched water-bearing zone with a thickness of 4.5 feet was observed on top of the silty-clay layer. The attempt to drill and install the well was abandoned and the boring was plugged in order to eliminate a conduit through which the potentially contaminated perched groundwater could leach into the regional aquifer. Well 2401 was subsequently installed to the north of the plugged boring at a location which contained no fill material. Figure 1 shows the location of all the RI/FS borings/wells in the South Field/Inactive Flyash Disposal areas.

3.0 PROGRAM JUSTIFICATION/OBJECTIVES

As part of the Operable Unit 2 RI/FS characterization during 1991, Monitoring Well 1711 was installed in the Inactive Flyash Pile. However, the water yields in that well have been insufficient to permit development and sampling. Due to the condition present at Well 1711, no samples of perched water or leachate from within or below the fill have been analyzed. The discovery of perched water in Boring 1401 provides an opportunity to obtain leachate samples from the area near the boundary of the Inactive Flyash Pile and the South Field.

The proposed installation and sampling of Monitoring Well 1433, near Boring 1401, will provide an opportunity for additional visual characterization as well as the collection and analysis of the perched water/leachate encountered at the location. The proposed installation of a well near Boring 1401 will assist in determining the source of uranium contamination in Monitor Well 2046.

Analysis of the perched water/leachate samples that will be collected from the well will serve to provide a more comprehensive data set for Operable Unit 2. The data obtained from the perched water samples will provide a comparison for the assumptions made during the geochemical fate and transport modeling of the baseline risk assessment and refine any source parameters to be used during the FS. Table 1 summarizes the data quality objectives for this work plan addendum.

The data collected during this addendum will not be available for inclusion in the Operable Unit 2 RI. However, it will be available for consideration and inclusion in the FS.

4.0 INSTALLATION/SAMPLING METHODS

All boring and well installation/sampling protocols will be as specified in the RI/FS QAPP unless specifically altered in this addendum. Monitoring Well 1433 will be installed near Boring 1401 in the South Field, as shown on Figure 1, using the hollow-stem augering technique. The bottom of the well screen will be installed to a depth of 12 feet or to the top of the silty gray clay layer. The well will be cased down to 7 feet using 4 inch (ID) 316 stainless steel. The screen will be set at the bottom of the well and will be a 5-foot 40/60, 8 slot Channel Pack(TM) screen made of 316 stainless steel. The Channel Pack screen will provide better sampling conditions and sample quality through its capacity to produce higher yield in low producing wells while at the same time reducing turbidity in the sample. The well will be backfilled and finished in accordance with the design and installation specifications stated in the RI/FS QAPP, Section 5.0.

The boring will be sampled continuously as stated in the RI/FS QAPP, Section 6.0. Fill/soil samples will be field screened using HNu and GM pancake beta/gamma meters. Additionally the soil samples will be screened for radioactivity with a SPA-3. The soil sample displaying the highest radiological screening from the unsaturated material above the perched water zone will be analyzed for full radiological parameters as shown on Table 2, TAL 20.03.04 A. Soil samples not submitted for analysis will be archived at a secure on-site location. Archived samples will be handled per the RI/FS chain of custody protocols.

Upon completion of the drilling, a composite sample of the drum cuttings will be taken and submitted for total uranium, total thorium and/or toxicity characteristic leaching procedure analysis, as required for the disposition of the wastes.

For development, five well volumes will be purged from the well. If recharge is extremely slow, then development/purging will comprise bailing the well dry on two separate occasions not more than 24 hours apart. Samples of the groundwater/leachate will be collected with a teflon bailer in accordance with the procedure stated in the RI/FS QAPP, Section 6.0. Groundwater/leachate will be analyzed for the full HSL, full radiological, and general groundwater quality parameters listed in Table 3, TAL 20.03.04 B. Only one round of water/leachate samples will be collected from Monitoring Well 1433 for the RI/FS. After sampling is complete, the well will be transferred to the long-term site monitoring program.

5.0 REPORT

A report will be prepared by the field geologist upon completion of the installation and sampling activities. The report will include boring logs, well installation details, requests for analysis and chain of custody forms, and the geologist's interpretations.

IT Corporation - FEMP RI/FS (Contract No. 866A21602-02) - CAPS

Task No. 01.20.03.04 - Sampling and Analysis of MW 1433
Estimate of Direct Costs

		FY92 Total	FY93 Total	FY94 Total	TASK TOTAL
Direct Labor Hours		105	0	0	105
Direct Labor		$1,963	$0	$0	$1,963
Overhead	130.00%	$2,552	$0	$0	$2,552
Total Labor Cost		$4,515	$0	$0	$4,515
Other Direct Costs					
Total Travel Costs		$0	$0	$0	$0
Relocation		$0	$0	$0	$0
Special Equipment		$0	$0	$0	$0
On-Site Support		$0	$0	$0	$0
Other Purchased Service		$0	$0	$0	$0
Data Management		$0	$0	$0	$0
Health & Safety		$0	$0	$0	$0
Total ODC's		$0	$0	$0	$0
Total Direct Costs		$4,515	$0	$0	$4,515
General & Adm	14.50%	$655	$0	$0	$655
Subtotal		$5,170	$0	$0	$5,170
Fee	8.00%	$413	$0	$0	$413
Total		$5,583	$0	$0	$5,583
IT Laboratory		$0	$0	$0	$0
IT Equipment		$0	$0	$0	$0
IT Materials		$0	$0	$0	$0
Total IT		$5,583	$0	$0	$5,583
Rounding Errors		$0	$0	$0	$0

5

17-Jun-92

Task No. 01.20.03.04 - Sampling and Analysis of MW 1433
Estimate of Other Direct Costs - FY92

Travel From	To	# of Trips	Air-fare	Length of Stay (Nights)	Per day: Per Diem	Per day: Rental Car	Per day: Hotel	Per day: Misc.*	TOTALS: Airfare	TOTALS: Per Diem	TOTALS: Rental Car	TOTALS: Misc.	TOTALS: Hotel
Pittsburgh	Cincinnati	0	$342	3	$26	$42	$54	$0	$0	$0	$0	$0	$0
Pittsburgh	Cincinnati	0	$342	5	$26	$42	$54	$0	$0	$0	$0	$0	$0
Cincinnati	Pittsburgh	0	$342	3	$26	$42	$66	$0	$0	$0	$0	$0	$0
Pittsburgh	Knoxville	0	$718	3	$26	$29	$52	$0	$0	$0	$0	$0	$0
Albuquerque	Knoxville	0	$1,122	3	$26	$39	$52	$0	$0	$0	$0	$0	$0
Knoxville	Cincinnati	0	$636	2	$26	$42	$54	$0	$0	$0	$0	$0	$0
Pittsburgh	Albuquerque	0	$1,122	3	$26	$46	$59	$0	$0	$0	$0	$0	$0
							Travel Subtotals		$0	$0	$0	$0	$0
							TDY Subtotal		$0	$0			

TDY	# of People	Travel Allow.	Total # of Mos.	TDY Amt Per Mo.								
Total # of Mos. = All TDY	0	$300	0	$1,200	Travel Totals	$0	$0	$0	$0	$0

* Miscellaneous Costs =
$18.00 Mileage
$6.00 Parking

Total Travel Costs	$0
Relocation	$0
Special Equipment	$0
On-Site Support	$0
Other Purchased Service	$0
Data Management	$0
Health & Safety Eqiup.	$0
Total Other Direct Costs	$0
IT Laboratory	$0
IT Equipment	$0 Computer and WP Equipment
IT Materials	$0
Total Other IT	$0

<----------
For each itemized cost provide written documentation confirming estimate, i.e., prior invoice, catalog price list, written vendor quote.
<----------

IT Corporation - FEMP RI/FS (Contract No. 866A21602-02) - CAPS

Task No. 01.20.03.04 - Sampling and Analysis of MW 1433
Direct Labor Cost Calculation

Position Title	E-/N-Grade	August 1991 Hourly Rate	Escalation % = FY92 Escal. Hourly Rate	Total FY92 Hours	0.442% Total FY92 Direct Labor	Escalation % = FY93 Escalated Hourly Rate	Total FY93 Hours	3.6500% Total FY93 Direct Labor	Escalation % = FY94 Escalated Hourly Rate	Total FY94 Hours	5.725% Total FY94 Direct Labor	Total Task Direct Labor
Proj. Director	E-13	43.4491	$44.7100	0	$0	$43.6410	0	$0	$46.1394	0	$0	$0
Proj. Mgr. III	E-12	37.0286	$38.7900	0	$0	$37.1921	0	$0	$39.3213	0	$0	$0
Proj. Mgr. II	E-11	32.4766	$33.2600	0	$0	$32.6200	0	$0	$34.4875	0	$0	$0
Proj. Manager I	E-10	27.8404	$28.6500	0	$0	$27.9634	0	$0	$29.5643	0	$0	$0
Staff Consult	E-09	24.6313	$25.2500	0	$0	$24.7401	0	$0	$26.1565	0	$0	$0
Managing Eng/Sc	E-08	22.6519	$23.3100	0	$0	$22.7519	0	$0	$24.0544	0	$0	$0
Eng/Sci V	E-07	20.5863	$21.1400	63	$1,332	$20.6772	0	$0	$21.8610	0	$0	$1,332
Eng/Sci IV	E-06	18.8836	$19.4200	0	$0	$18.9670	0	$0	$20.0529	0	$0	$0
Eng/Sci III	E-05	16.8441	$17.4000	0	$0	$16.9185	0	$0	$17.8871	0	$0	$0
Eng/Sci II	E-04	15.2209	$15.5600	34	$529	$15.2881	0	$0	$16.1633	0	$0	$529
Eng/Sci I	E-03	13.4951	$13.8700	0	$0	$13.5547	0	$0	$14.3307	0	$0	$0
Asst Eng/Sci	E-02	12.0752	$12.4400	5	$62	$12.1265	0	$0	$12.8207	0	$0	$62
Sec/Tech IV	N-12	13.3736	$13.7200	3	$41	$13.4327	0	$0	$14.2017	0	$0	$41
Sec/Tech III	N-11	12.0503	$12.5000	0	$0	$12.1035	0	$0	$12.7964	0	$0	$0
Sec/Tech II	N-09	11.1667	$11.4200	0	$0	$11.2160	0	$0	$11.8581	0	$0	$0
Sec/Tech I	N-08	10.2094	$10.5700	0	$0	$10.2545	0	$0	$10.8416	0	$0	$0
Clerical	N-06	8.9477	$9.1900	0	$0	$8.9872	0	$0	$9.5017	0	$0	$0
Total			FY92	105	$1,964	FY93	0	$0	FY94	0	$0	$1,964
			Rounding Adjust		($1)	Rounding Adjust		$0	Rounding Adjust		$0	($1)
Total Estimated Direct Labor					$1,963			$0			$0	$1,963

17-Jun-92

5202

IT Corporation - FEMP RI/FS (Contract No. 866A21602-02) - CAPS

Task No. 01.20.03.04 - Sampling and Analysis of MW 1433
Estimate of Hours by Month - FY92 (October, 1991 to September, 1992)

Position Title	E-/N-Grade	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Proj. Director	E-13													0
Proj. Mgr. III	E-12													0
Proj. Mgr. II	E-11													0
Proj. Manager I	E-10													0
Staff Consult	E-09													0
Managing Eng/Sc	E-08													0
Eng/Sci V	E-07									60	3			63
Eng/Sci IV	E-06													0
Eng/Sci III	E-05													0
Eng/Sci II	E-04									4	30			34
Eng/Sci I	E-03													0
Asst Eng/Sci	E-02										5			5
Sec/Tech IV	N-12										3			3
Sec/Tech III	N-11													0
Sec/Tech II	N-09													0
Sec/Tech I	N-08													0
Clerical	N-06													0
FY92 Labor Hours		0	0	0	0	0	0	0	0	64	41	0	0	105

IT Corporation - FEMP RI/FS (Contract No. 866A21602-02) - CAPS

Task No. 01.20.03.04 - Sampling and Analysis of MW 1433
Summary of Estimated Total Direct Cost by Month - FY92

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Labor Hours		0	0	0	0	0	0	0	0	64	41	0	0	105
Direct Labor		$0	$0	$0	$0	$0	$0	$0	$0	$1,330	$633	$0	$0	$1,963
Overhead	130.00%	$0	$0	$0	$0	$0	$0	$0	$0	$1,729	$823	$0	$0	$2,552
Total Labor Cost		$0	$0	$0	$0	$0	$0	$0	$0	$3,059	$1,456	$0	$0	$4,515
Other Direct Costs														
Total Travel Costs		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other ODC		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total ODC's		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Direct Costs		$0	$0	$0	$0	$0	$0	$0	$0	$3,059	$1,456	$0	$0	$4,515
General & Admin	14.50%	$0	$0	$0	$0	$0	$0	$0	$0	$444	$211	$0	$0	$655
Subtotal		$0	$0	$0	$0	$0	$0	$0	$0	$3,503	$1,667	$0	$0	$5,170
Fee	8.00%	$0	$0	$0	$0	$0	$0	$0	$0	$280	$133	$0	$0	$413
Total		$0	$0	$0	$0	$0	$0	$0	$0	$3,783	$1,800	$0	$0	$5,583
IT Laboratory		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
IT Equipment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
IT Materials		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FY92 Total IT		$0	$0	$0	$0	$0	$0	$0	$0	$3,783	$1,800	$0	$0	$5,583

9

17-Jun-92

5202

SAMPLING AND ANALYSIS OF MONITORING WELL 1433

SCHEDULE

SECTION II

TABLE 1

DATA QUALITY OBJECTIVES FOR THE SAMPLING AND ANALYSIS PLAN FOR A 1000-SERIES BORING/MONITORING WELL IN THE SOUTH FIELD, OPERABLE UNIT 2

Activity	Install a 1000-series boring/monitoring well in the South Field near Boring 1401 and visually characterize the fill/soils.	Collect samples of the perched groundwater/leachate and analyze for Full HSL, Full Radiological and General Groundwater Quality.
Objectives	Provide additional visual characterization of the fill/soils and determine the location and extent of perched water-bearing zones in the South Field.	Characterize the perched water/leachate. Provide data for comparison with assumptions made during the geochemical fate and transport modeling of the baseline risk assessment and refine source-term parameters to be used during the FS.
Prioritized data uses	Characterization of fill materials.	The priority data use is site characterization. Additionally the data will be compared to values used for geochemical fate and transport modeling in support of the risk assessment.
Appropriate analytical level	Visual characterization, and field screening: Level I; Full HSL: Level IV; Full Radiological: Level V; General Groundwater Quality: Level III.	
Constituents of concern	In soil/ fill: Full Radiological (Table 2, TAL 20.03.04 A) In perched water/leachate: Full HSL, Full Radiological, and General Groundwater Quality (Table 3, TAL 20.03.04 B).	
Level of concern	See Appendix A Preliminary Remediation Goals for Perched Water Zones.	
Required detection limits	Specified in the RI/FS QAPP, dated March, 1988, Section 4.0.	
Critical samples	Perched groundwater/leachate samples are considered necessary to provide a comparison for the geochemical fate and transport model of the baseline risk assessment and refinement of source-term parameters for the FS. Soil samples are not critical.	

TABLE 2

SAMPLING AND ANALYSIS PLAN FOR BORING/MONITORING WELL 1433 IN THE SOUTHFIELD - TARGET ANALYTE LIST FOR SOIL SAMPLES

TAL 20.03.04 A

RADIOLOGICAL PARAMETERS

FEMP RI/FS - FULL RADIOLOGICAL - ANALYTICAL PARAMETERS

1	Cesium 137
2	Gross alpha
3	Gross beta
4	Neptunium 237
5	Plutonium 238
6	Plutonium 239/240
7	Radium 226
8	Radium 228
9	Ruthenium 106
10	Strontium 90
11	Technetium 99
12	Thorium 228
13	Thorium 230
14	Thorium 232
15	Total Thorium
16	Total Uranium
17	Uranium 234
18	Uranium 235/236
19	Uranium 238

TABLE 2-3
PRELIMINARY REMEDIATION GOALS - PERCHED WATER ZONES

Site: Fernald Environmental Management Project
Location: Fernald, Ohio
Medium: Perched Water

Land Use: Resident Farmer
Transport Routes: Leaching to Groundwater

Chemical	Risk-Based PRGs Based on Regulating as Leachate[a]			ARAR-Based PRGs Based on Regulating as Leachate[a]		Other Considerations	
	HI=0.20 RfD-Based PRG[b]	10-5 CSF-Based PRG[c]	10-6 CSF-Based PRG[c]	MCL-Based Limit[d]	TCLP Regulatory Limit[e]	Background Concentration[f]	Contract Required Detection Limit[g]
RADIONUCLIDES (pCi/L)							
Ac-227		60	6				
Cs-137		700	70	10200			102
Pb-210		30	3	100			
Np-237		80	8	100			1
Pa-231		110	11				
Pu-238		70	7	200			2
Pu-239		70	7	200			
Pu-240		70	7	200			
Pu-239/240		70	7	200			2
Ra-226		200	20				5
Ra-228		200	20			5.2 (max)	5
Rn-220		300	30				
Rn-222		2000	200	30000			
Sr-90		100	10	800			8
Tc-99		16000	1600	91400			914

5209

TABLE 2-3
(Continued)

Chemical	Risk-Based PRGs Based on Regulating as Leachate[a]			ARAR-Based PRGs Based on Regulating as Leachate[a]		Other Considerations	
	HI=0.20 RfD-Based PRG[b]	10-5 CSF-Based PRG[c]	10-6 CSF-Based PRG[c]	MCL-Based Limit[d]	TCLP Regulatory Limit[e]	Background Concentration[f]	Contract Required Detection Limit[g]
Th-228		300	30	1400		1.24	14
Th-230		900	90	1000		2.5	10
Th-232		900	90	200			2
U-234		100	10			2.89	
U-235		200	20				
U-238		200	20	700		2.04	
INORGANICS (mg/L)							
Aluminum						0.18(*)	0.2
Antimony	0.3						0.06
Arsenic	0.7			5	5	0.003 (max)	0.01
Barium	37			200	100	0.132	0.2
Beryllium	4	0.01	0.00			0.001(*)	0.005
Boron	66						
Cadmium	0.4			0.50	1	0.003(*)	0.005
Chromium	3.7			10	5	0.076	0.01
Cobalt	1.9						0.05
Copper						0.046	0.025

TABLE 2-3
(Continued)

Chemical	Risk-Based PRGs Based on Regulating as Leachate[a]			ARAR-Based PRGs Based on Regulating as Leachate[a]		Other Considerations	
	HI=0.20 RfD-Based PRG[b]	10-5 CSF-Based PRG[c]	10-6 CSF-Based PRG[c]	MCL-Based Limit[d]	TCLP Regulatory Limit[e]	Background Concentration[f]	Contract Required Detection Limit[g]
Iron						1.8	0.1
Lead	0.5			0.50	5	0.005(*)	0.005
Magnesium						56.8	5
Manganese	73.0					0.2	0.015
Mercury	0.2			0.20	0.2		0.0002
Molybdenum	3						
Nickel	15					0.103	0.04
Selenium	4			5	1		0.005
Silver	2			5	5	0.05	0.01
Thallium	0.1						0.01
Uranium	2			2		0.0061	
Vanadium	5					0.023(*)	0.05
Zinc	150					0.039(*)	0.02
Cyanide	15						0.01
ORGANICS (mg/L)							
1,1,2-Trichloro-1,2,2-trifluoroethane					2190.0		
1,1,2,2-Tetrachloroethane		0.18	0.02				0.005

92092

TABLE 2-3
(Continued)

Chemical	Risk-Based PRGs Based on Regulating as Leachate[a]			ARAR-Based PRGs Based on Regulating as Leachate[a]		Other Considerations	
	HI=0.20 RfD-Based PRG[b]	10-5 CSF-Based PRG[c]	10-6 CSF-Based PRG[c]	MCL-Based Limit[d]	TCLP Regulatory Limit[e]	Background Concentration[f]	Contract Required Detection Limit[g]
1,1,1-Trichloroethane	66			20			0.005
1,1-Dichloroethane	73						0.005
1,1-Dichloroethene	7	0.06	0.01	0.70	0.7		0.005
1,2-Dichloroethane		0.40	0.04	0.50	0.5		0.005
1,2-cis-Dichloroethene	7.3			7			
1,2-trans-Dichloroethene	15			10			0.005
2,4-Dimethylphenol	15						0.01
2-Butanone	37				200		0.01
2-Methylnaphthalene							0.01
2-Methylphenol							0.01
4-Methyl-2-pentanone	37						0.01
4-Methylphenol							0.01
Acenaphthene	44						0.01
Acetone	73					0.13	0.01
Anthracene	219						0.01
Aroclor-1242		0.005	0.0005	0.05			0.0005
Aroclor-1248		0.005	0.0005	0.05			0.0005
Aroclor-1254		0.005	0.0005	0.05			0.001

TABLE 2-3
(Continued)

Chemical	Risk-Based PRGs Based on Regulating as Leachate[a]			ARAR-Based PRGs Based on Regulating as Leachate[a]		Other Considerations	
	HI=0.20 RfD-Based PRG[b]	10-5 CSF-Based PRG[c]	10-6 CSF-Based PRG[c]	MCL-Based Limit[d]	TCLP Regulatory Limit[e]	Background Concentration[f]	Contract Required Detection Limit[g]
Aroclor-1260		0.005	0.0005	0.05			0.001
Benzene		1.26	0.13	0.50			0.005
Benzo(a)anthracene[h]							0.01
Benzo(a)pyrene		0.003	0.0003				0.01
Benzo(b)fluoranthene[h]							0.01
Benzo(g,h,i)perylene[h]							0.01
Benzo(k)fluoranthene[h]							0.01
Benzoic Acid	2900						0.05
Benzyl Alcohol	220						0.01
Bis(2-ethylhexyl)phthalate	15	2.61	0.26				0.01
Butyl benzyl phthalate	150						0.01
Carbon Disulfide	73.0						0.005
Carbon Tetrachloride	0.5	0.28	0.03	0.50	0.5		0.005
Chlordane	0.0	0.03	0.003	0.20	0.03		0.0005
Chlorobenzene	15				100		0.005
Chloroethane							0.01
Chloroform	7	5.98	0.60	10	6		0.005
Chrysene[h]							0.01

TABLE 2-3
(Continued)

Chemical	Risk-Based PRGs Based on Regulating as Leachate[a]			ARAR-Based PRGs Based on Regulating as Leachate[a]		Other Considerations	
	HI=0.20 RfD-Based PRG[b]	10-5 CSF-Based PRG[c]	10-6 CSF-Based PRG[c]	MCL-Based Limit[d]	TCLP Regulatory Limit[e]	Background Concentration[f]	Contract Required Detection Limit[g]
DDT	0.4	0.11	0.01				0.0001
Di-n-butyl Phthalate	73.0						0.01
Di-n-octyl Phthalate	15						0.01
Dibenzo(a,h)anthracene[h]							0.01
Dibenzofuran							0.01
Ethyl Parathion							0.0001
Ethylbenzene	7			70			0.005
Fluoranthene	29						0.01
Fluorene	29						0.01
beta-Hexachlorocyclohexane		0.02	0.002				0.00005
Indeno(1,2,3-cd)pyrene[h]							0.01
Methyl Parathion	2						
Methylene Chloride	44	5	0.5			0.041	0.005
N-nitrosodiphenylamine		7	0.7				0.01
Naphthalene	3						0.01
Pentachlorophenol	22	0.30	0.03	0.10	100		0.05
Phenanthrene							0.01
Phenol	440						0.01

TABLE 2-3
(Continued)

Chemical	Risk-Based PRGs Based on Regulating as Leachate[a]			ARAR-Based PRGs Based on Regulating as Leachate[a]		Other Considerations	
	HI=0.20 RfD-Based PRG[b]	10-5 CSF-Based PRG[c]	10-6 CSF-Based PRG[c]	MCL-Based Limit[d]	TCLP Regulatory Limit[e]	Background Concentration[f]	Contract Required Detection Limit[g]
Pyrene	22						0.01
Tetrachloroethene	7	0.7	0.07	0.50	0.7		0.005
Toluene	150			100			0.005
Trichloroethene		3.3	0.3	0.50			0.005
Vinyl Chloride		0.02	0.002	0.20	0.2		0.01
Xylenes (total)	1500			1000			0.005

(a) In the shallow water-bearing zones, PRGs are developed based on the potential for chemicals in those zones to leach into the bedrock aquifer or a receiving surface water body, thus equating water in the shallow zones to "leachate." Leachate is regulated by the U.S. EPA under 40CFR261 with the use of the toxicity characteristic leaching procedure (TCLP). TCLP regulatory levels are based on the acceptable drinking water concentrations multiplied by a dilution attenuation factor (DAF), which accounts for the degree of attenuation and dilution that a compound is expected to undergo during transport to the drinking water aquifer or receiving stream (U.S. EPA 1986c; 51FR21650).
(b) Based on HI-based groundwater PRG and a DAF of 100.
(c) Based on cancer risk-based groundwater PRG and a DAF of 100.
(d) Based on MCL times DAF of 100.
(e) From 40CFR261, 55FR11798.
(f) In most cases, concentrations represent upper 95% tolerance interval from USGS (Shacklett 1984) and Myrick et al. (1983). In cases where data were not available to calculate UTL, mean value is reported.
(g) From CLP Statement of Work, U.S. EPA OLM01.08.
(h) Risk-based level developed using cancer slope factor for benzo(a)pyrene.

5202

TABLE 3

SAMPLING AND ANALYSIS PLAN FOR BORING/MONITORING WELL 1433 IN THE SOUTHFIELD - TARGET ANALYTE LIST FOR GROUNDWATER/LEACHATE

TAL 20.03.04 B

FEMP RI/FS - FULL HSL - ANALYTICAL PARAMETERS

INORGANICS

1	Aluminum
2	Antimony
3	Arsenic
4	Barium
5	Beryllium
6	Cadmium
7	Calcium
8	Chromium (Total)
9	Cobalt
10	Copper
11	Cyanide
12	Iron
13	Lead
14	Magnesium
15	Manganese
16	Mercury
17	Molybdenum
18	Nickel
19	Potassium
20	Selenium
21	Silicon
22	Silver
23	Sodium
24	Thallium
25	Vanadium
26	Zinc

VOLATILE ORGANICS

1	1,1-Dichloroethane
2	1,1-Dichloroethene
3	1,1,1-Trichloroethane
4	1,1,2-Trichloroethane
5	1,1,2,2-Tetrachloroethane
6	1,2-Dichloroethane
7	1,2-Dichloroethene (total)
8	1,2-Dichloroethylene
9	1,2-Dichloropropane
10	2-Butanone
11	2-Hexanone
12	4-Methyl-2-pentanone
13	Acetone
14	Benzene
15	Bromodichloromethane
16	Bromoform
17	Bromomethane
18	Carbon disulfide
19	Carbon tetrachloride
20	Chlorobenzene
21	Chloroethane
22	Chloroform
23	Chloromethane
24	cis-1,3-Dichloropropene
25	Dibromochloromethane
26	Ethylbenzene
27	Methylene chloride
28	Styrene
29	Tetrachloroethene
30	Toluene
31	Total xylenes
32	trans-1,3-Dichloropropene
33	Trichloroethene
34	Vinyl acetate
35	Vinyl chloride

SEMIVOLATILE ORGANICS

1	1,2-Dichlorobenzene
2	1,2,4-Trichlorobenzene
3	1,3-Dichlorobenzene
4	1,4-Dichlorobenzene
5	2-Chloronaphthalene
6	2-Chlorophenol
7	2-Methylnaphthalene
8	2-Methylphenol
9	2-Nitroaniline
10	2-Nitrophenol
11	2,4-Dichlorophenol
12	2,4-Dimethylphenol
13	2,4-Dinitrophenol
14	2,4-Dinitrotoluene
15	2,4,5-Trichlorophenol
16	2,4,6-Trichlorophenol
17	2,6-Dinitrotoluene
18	3-Nitroaniline
19	3,3'-Dichlorobenzidine
20	4-Bromophenyl phenylether
21	4-Chloro-3-methylphenol
22	4-Chloroaniline
23	4-Chlorophenyl-phenyl ether
24	4-Methylphenol
25	4-Nitroaniline
26	4-Nitrophenol
27	4,6-Dinitro-2-methylphenol
28	Acenaphthene
29	Acenaphthylene
30	Anthracene
31	Benzoic acid
32	Benzo(a)anthracene
33	Benzo(a)pyrene
34	Benzo(b)fluoranthene
35	Benzo(g,h,i)perylene
36	Benzo(k)fluoranthene
37	Benzyl alcohol
38	bis(2-Chloroethoxy)methane
39	bis(2-Chloroethyl)ether
40	bis(2-Chloroisopropyl) ether
41	bis(2-Ethylhexyl)phthalate
42	Butyl benzyl phthalate
43	Carbazole
44	Chrysene
45	Dibenzofuran
46	Dibenzo(a,h)anthracene
47	Diethylphthalate
48	Dimethylphthalate
49	Di-n-butyl phthalate
50	Di-n-octyl phthalate
51	Fluoranthene
52	Fluorene
53	Hexachlorobenzene
54	Hexachlorobutadiene
55	Hexachlorocyclopentadiene
56	Hexachloroethane
57	Indeno(1,2,3-cd)pyrene
58	Isophorone
59	Naphthalene
60	Nitrobenzene
61	N-Nitroso-di-n-propylamine
62	N-Nitrosodiphenylamine
63	Pentachlorophenol
64	Phenanthrene
65	Phenol
66	Pyrene

PESTICIDES / PCBs

1	4,4'-DDD
2	4,4'-DDE
3	4,4'-DDT
4	Aldrin
5	alpha-BHC
6	alpha-Chlordane
7	Aroclor 1016
8	Aroclor 1221
9	Aroclor 1232
10	Aroclor 1242
11	Aroclor 1248
12	Aroclor 1254
13	Aroclor 1260
14	beta-BHC
15	delta-BHC
16	Dieldrin
17	Endosulfan sulfate
18	Endosulfan-I
19	Endosulfan-II
20	Endrin
21	Endrin aldehyde
22	Endrin ketone
23	gamma-BHC
24	gamma-Chlordane
25	Heptachlor
26	Heptachlor epoxide
27	Methoxychlor
28	Toxaphene

FEMP RI/FS - GENERAL GROUNDWATER QUALITY - ANALYTICAL PARAMETERS

MISCELLANEOUS

1	Ammonia
2	Chloride
3	Fluoride
4	Nitrate
5	Phenols
6	Phosphorus (total)
7	Sulfate
8	Sulfide
9	Total Organic Carbon (TOC)
10	Total Organic Halogens (TOX)
11	Total Organic Nitrogen (TON)

FEMP RI/FS - FULL RADIOLOGICAL - ANALYTICAL PARAMETERS

1	Cesium 137
2	Gross alpha
3	Gross beta
4	Neptunium 237
5	Plutonium 238
6	Plutonium 239/240
7	Radium 226
8	Radium 228
9	Ruthenium 106
10	Strontium 90
11	Technetium 99
12	Thorium 228
13	Thorium 230
14	Thorium 232
15	Total Thorium
16	Total Uranium
17	Uranium 234
18	Uranium 235/236
19	Uranium 238

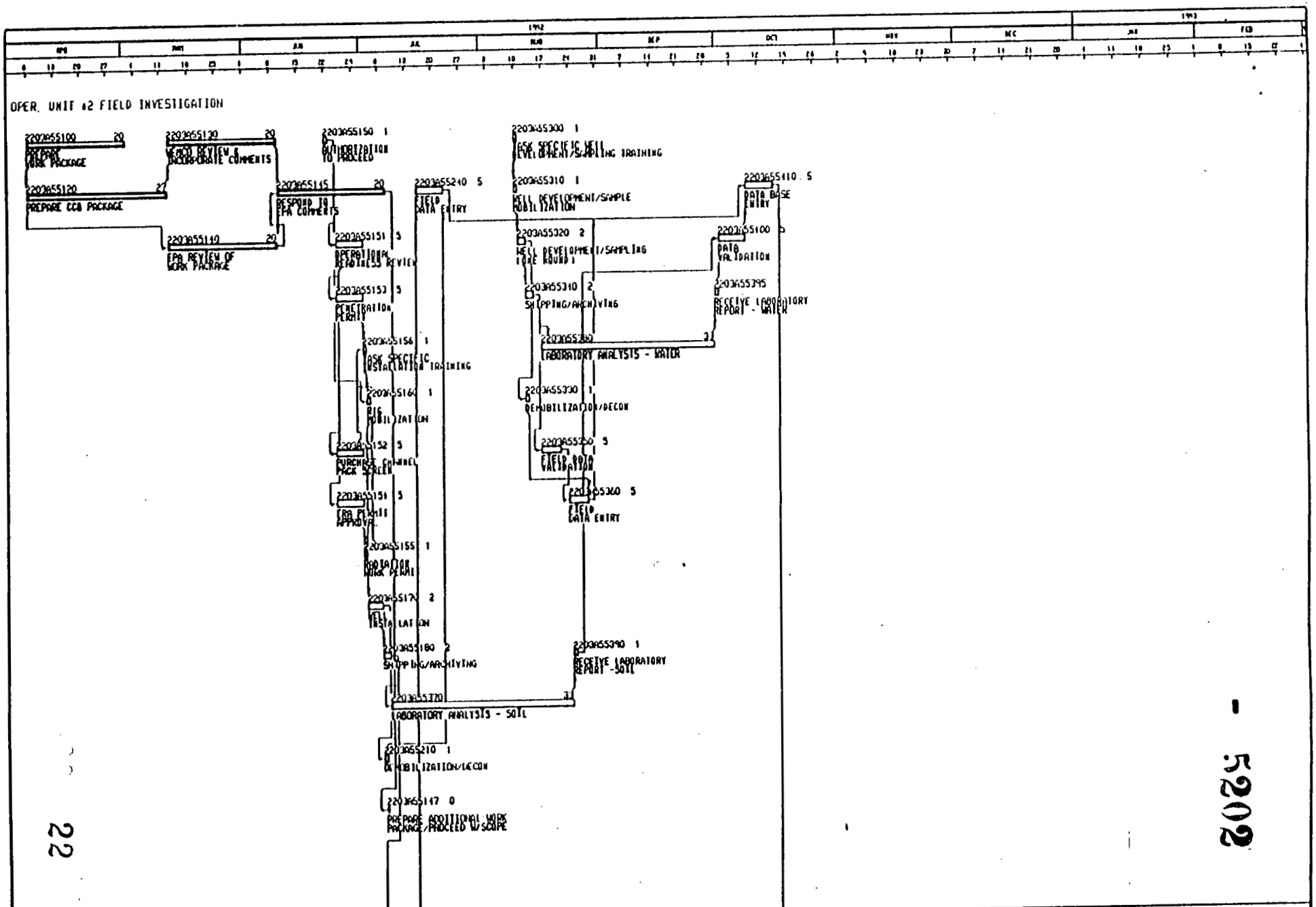
20

SAMPLING AND ANALYSIS OF MONITORING WELL 1433

MANPOWER BREAKDOWN BY ACTIVITY

SECTION III

OPER. UNIT #2 FIELD INVESTIGATION



Activity Bar/Early Date

Critical Activity

RI/FS TARGET WITH MON. WELL 1433 CCB
FERNALD ENVIRONMENTAL MGMT. PROJECT
OU2 BORING/MONITORING WELL 1433

Project Start : 10CT90

Sheet 1 of 2

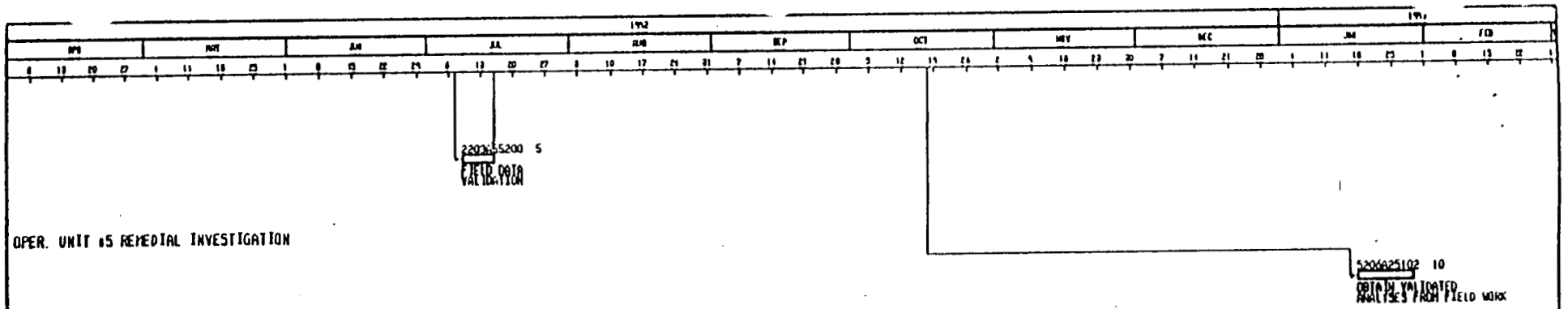
Data Date: 10CT90

Prepared by MB/R Corp.

Date	Revision	Checked	Approved

22

- 5202



OPER. UNIT #5 REMEDIAL INVESTIGATION

23

5208

Activity Bar/Early Dates

Critical Activity

Project Start : 10CT90
Project Finish: 23JUL98

RI/FS TARGET WITH MON. WELL 1433 CCB
FERNALD ENVIRONMENTAL MGMT. PROJECT
OU2 BORING/MONITORING WELL 1433

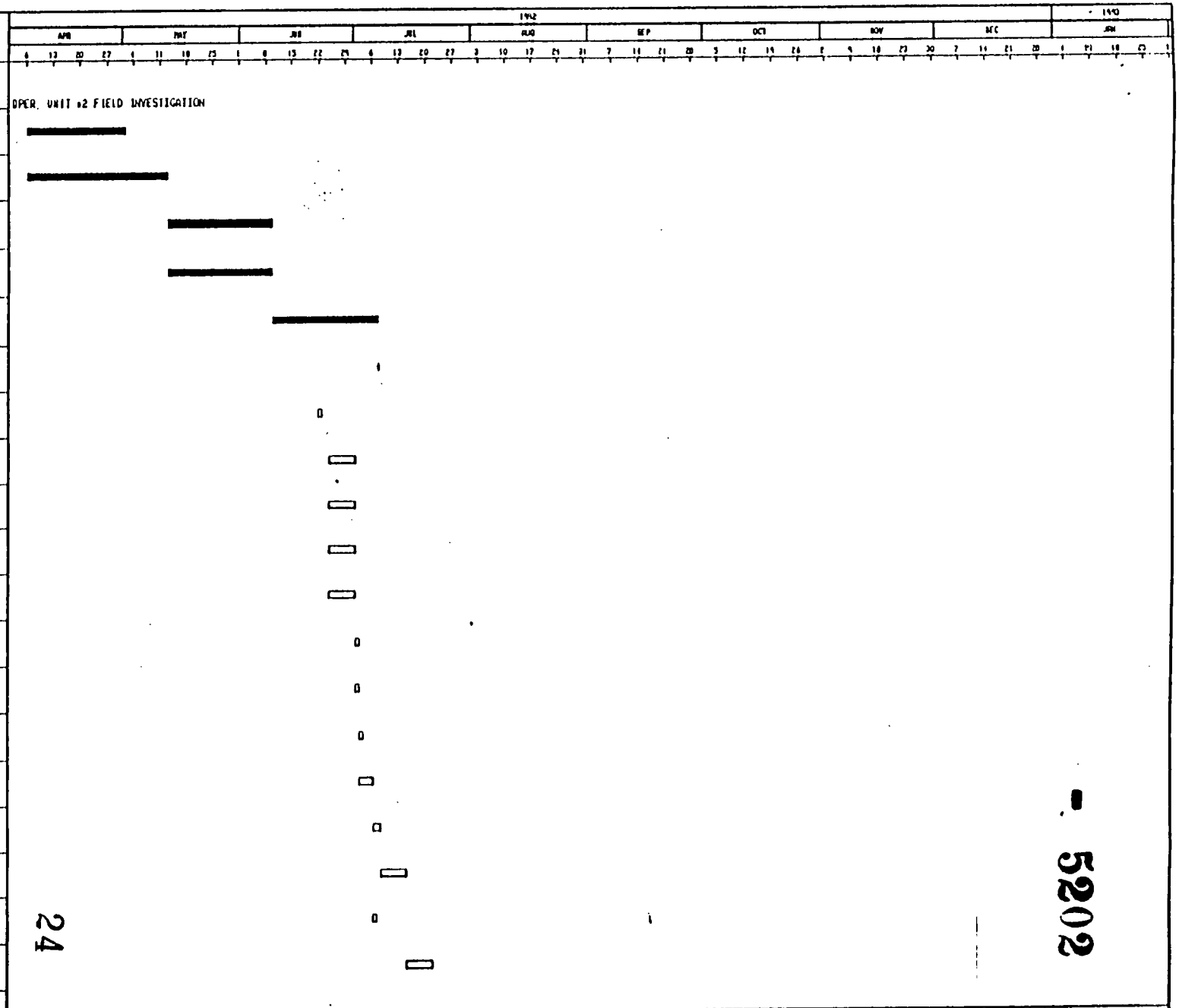
Sheet 2 of 2

Data Date: 10CT90
Plot Date: 18JUN92

Prepared by MK-Ferguson Corp.

Date	Revision	Checked	Approved

PREPARE WORK PACKAGE 2203A55100	OD 20	RD 20	ES 6APR92	EF 1MAY92
PREPARE CCB PACKAGE 2203A55120	OD 27	RD 27	ES 6APR92	EF 12MAY92
WEMCO REVIEW & INCORPORATE COMMENTS 2203A55130	OD 20	RD 20	ES 13MAY92	EF 9JUN92
EPA REVIEW OF WORK PACKAGE 2203A55140	OD 20	RD 20	ES 13MAY92	EF 9JUN92
RESPOND TO EPA COMMENTS 2203A55145	OD 20	RD 20	ES 10JUN92	EF 7JUL92
PREPARE ADDITIONAL WORK PACKAGE/PROCEED W/SCOPE 2203A55147	OD 0	RD 0	ES 8JUL92	EF 7JUL92
AUTHORIZATION TO PROCEED 2203A55150	OD 1	RD 1	ES 22JUN92	EF 22JUN92
OPERATIONAL READINESS REVIEW 2203A55151	OD 5	RD 5	ES 25JUN92	EF 1JUL92
PURCHASE CHANNEL PACK SCREEN 2203A55152	OD 5	RD 5	ES 25JUN92	EF 1JUL92
PENETRATION PERMIT 2203A55153	OD 5	RD 5	ES 25JUN92	EF 1JUL92
ERA PERMIT APPROVAL 2203A55154	OD 5	RD 5	ES 25JUN92	EF 1JUL92
RADIATION WORK PERMIT 2203A55155	OD 1	RD 1	ES 2JUL92	EF 2JUL92
TASK SPECIFIC INSTALLATION TRAINING 2203A55156	OD 1	RD 1	ES 2JUL92	EF 2JUL92
RIG MOBILIZATION 2203A55160	OD 1	RD 1	ES 3JUL92	EF 3JUL92
WELL INSTALLATION 2203A55170	OD 2	RD 2	ES 3JUL92	EF 6JUL92
SHIPPING/ARCHIVING 2203A55180	OD 2	RD 2	ES 7JUL92	EF 8JUL92
FIELD DATA VALIDATION 2203A55200	OD 5	RD 5	ES 9JUL92	EF 15JUL92
DEMOBILIZATION/DECON 2203A55210	OD 1	RD 1	ES 7JUL92	EF 7JUL92
FIELD DATA ENTRY 2203A55240	OD 5	RD 5	ES 16JUL92	EF 22JUL92



24

5202

Activity Bar/Early Dates
Critical Activity
Progress Bar

RI/FS TARGET WITH MON. WELL 1433 CCB
FERNALD ENVIRONMENTAL MGMT. PROJECT
OU2 BORING/MONITORING WELL 1433

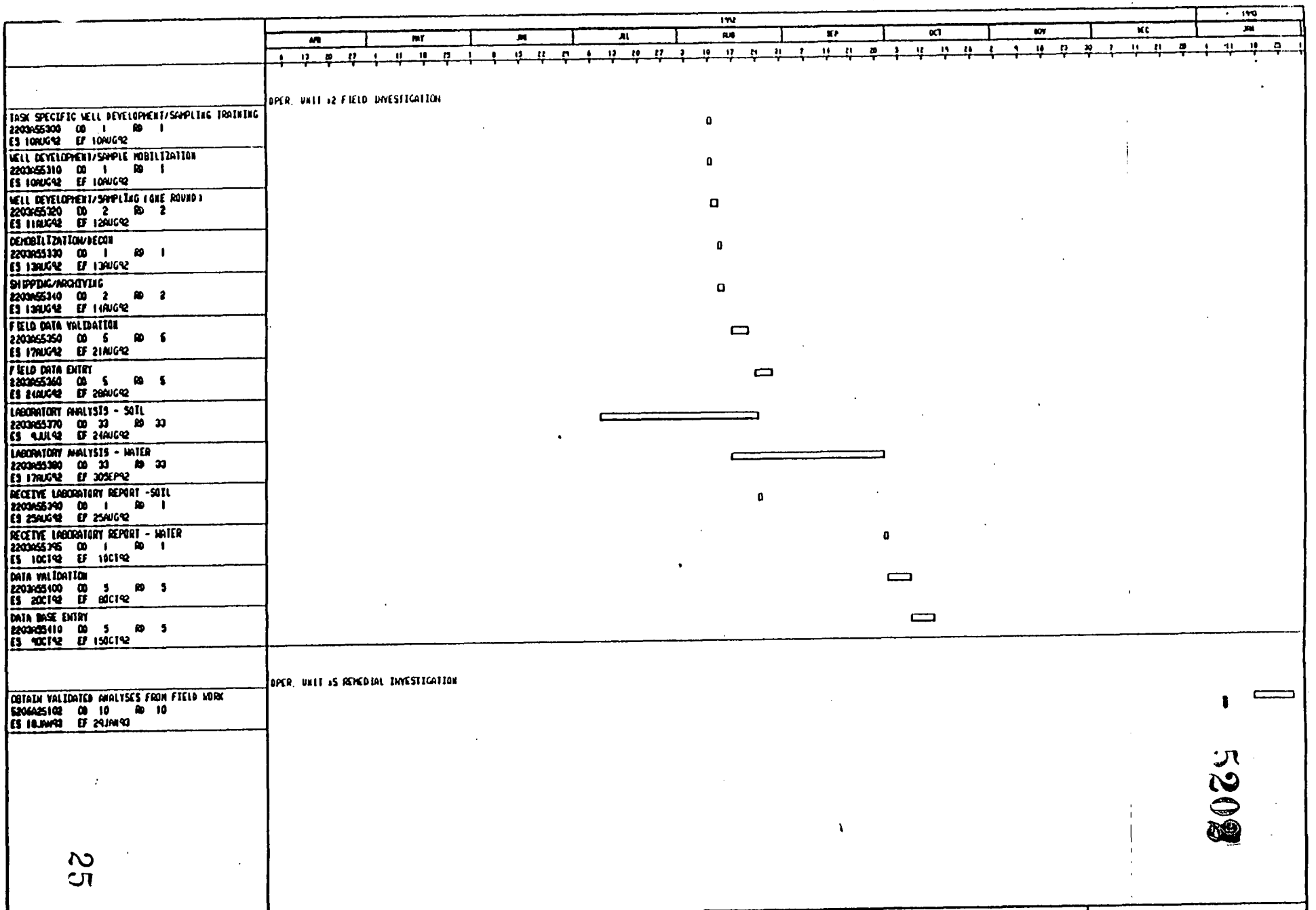
Sheet 1 of 2

Project Start : 10CT90

Date Date: 10CT90
Plot Date: 18JUN92

Prepared by ASI/IT Corp.

Date	Revision	Checked	Approved



Activity Bar/Early Dates
Critical Activity
Progress Bar

Project Start : 1OCT90

RI/FS TARGET WITH MON. WELL 1433 CCB
FERNALD ENVIRONMENTAL MGMT. PROJECT
OU2 BORING/MONITORING WELL 1433

Sheet 2 of 2

Data Date: 1OCT90

Prepared by ASI/IT Corp.

Date	Revision	Checked	Approved

SAMPLING AND ANALYSIS OF MONITORING WELL 1433

COST ACCOUNT PLAN

SECTION IV

01.20.03.04 – SAMPLING AND ANALYSIS OF MW 1433 MANHOUR BREAKDOWN

GRADE LEVEL	WP/CCB PREP.	SCHEDULE	MOBILIZATION	DRILL/SAMPL.	FIELD SUPPOR	SURVEYING	DATA VALID.	DATA ENTRY	ASI HOURS
A-28	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
C-25	0.0	8.0	0.0	0.0	30.0	0.0	0.0	0.0	38.0
C-24	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	15.0
C-23	60.0	0.0	8.0	30.0	10.0	0.0	0.0	0.0	108.0
C-21	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
C-19	0.0	0.0	8.0	70.0	0.0	0.0	0.0	0.0	78.0
C-15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	8.0
TOTAL HOURS	74.0	8.0	16.0	100.0	40.0	0.0	15.0	8.0	261.0

GRADE LEVEL	WP/CCB PREP.	SCHEDULE	MOBILIZATION	DRILL/SAMPL.	FIELD SUPPOR	SURVEYING	DATA VALID.	DATA ENTRY	IT HOURS
E-02	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	5.0
E-04	4.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0	34.0
E-07	60.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	63.0
E-10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
N-12	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0
TOTAL HOURS	64.0	0.0	0.0	5.0	30.0	6.0	0.0	0.0	105.0

ACTIVITY	ASI	IT	TOTAL HOURS
WP/CCB PREP.	74.0	64.0	138.0
TRAINING	8.0	0.0	8.0
QA/QC	16.0	0.0	16.0
FIELD SUPPOR	100.0	5.0	105.0
H&S	40.0	30.0	70.0
SAMPLING	0.0	6.0	6.0
SAMPLE MGMT	15.0	0.0	15.0
DATA ENTRY	8.0	0.0	8.0
TOTAL HOURS	261.0	105.0	366.0

27

5208

TDM

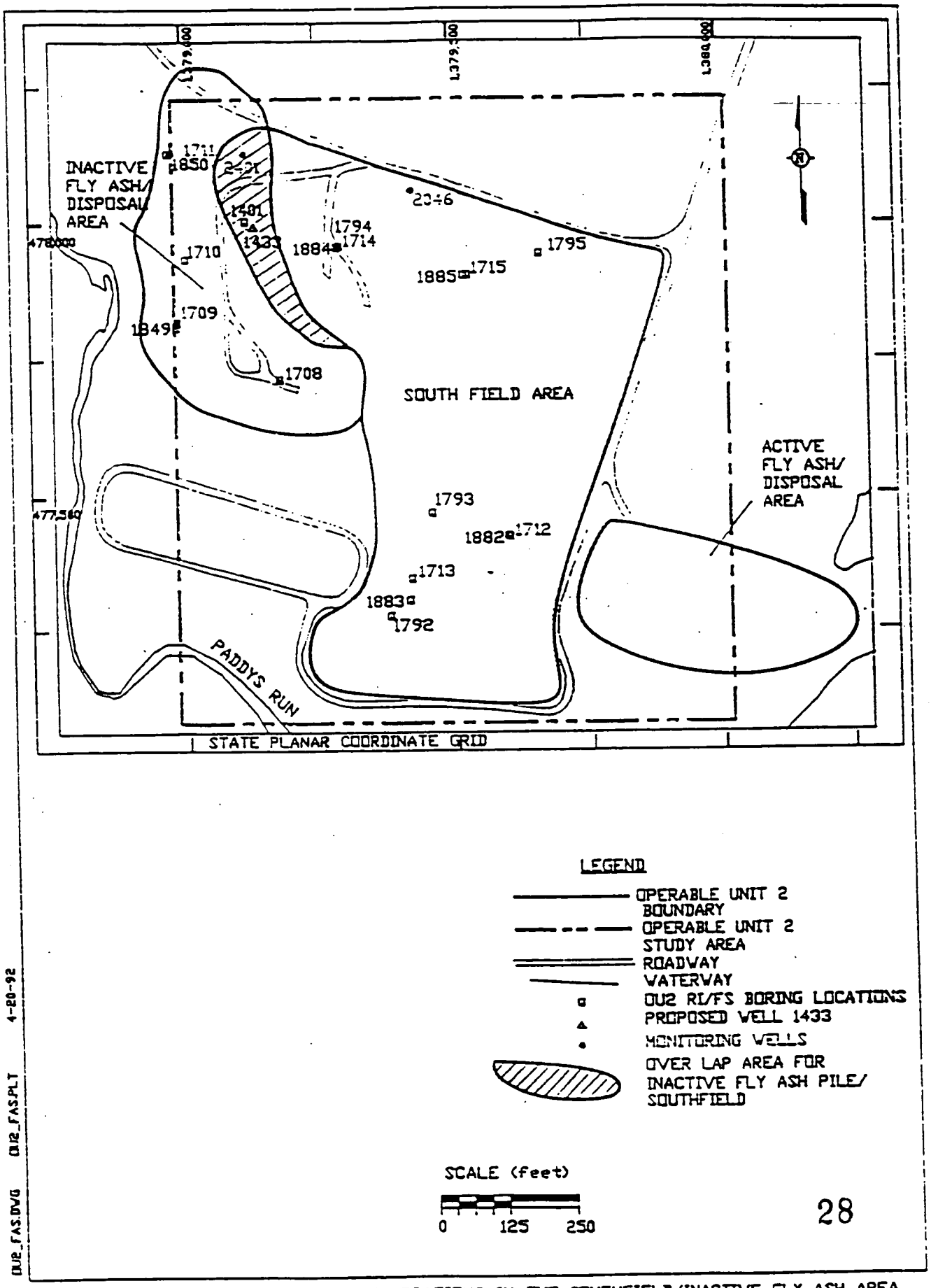


FIGURE 1. RI/FS WELL/BORING LOCATIONS IN THE SOUTHFIELD/INACTIVE FLY ASH AREA

07-May-92

WBS TASK: 01.20.03.04 - OU2 SAMPLING AND ANALYSIS AT MW 1433

Costs associated with the effort to support the sampling and analysis at MW 1433.

DESCRIPTION	QUANTITY	PRICE	AMOUNT
Channel Pack Screen 5'4', 316SS	1	$648.00	$648.00

05/07/92
SAMPLING AND ANALYSIS OF MW1433
ASK 20.03.04

ANALYSIS	QUANTITY CATEGORY I	CATEGORY I PRICE PER	QUANTITY CATEGORY II	CATEGORY II PRICE PER	SUBTOTALS
GENERAL GROUNDWATER QUALITY SAMPLES 1 FIELD DUPLICATES 1 LAB QC 1 RINSATE 0	3	$1,059.00	0	$1,129.00	$3,177.00
FULL RADIOLOGICAL (AQUEOUS) SAMPLES 1 FIELD DUPLICATES 1 LAB QC 1 RINSATE 0	3	$1,207.00	0	$1,207.00	$3,621.00
FULL HSL (AQUEOUS) SAMPLES 1 FIELD DUPLICATES 1 LAB QC 1 RINSATE 0	3	$2,005.00	0	$2,176.00	$6,015.00
CLP DATA PKG 2	2	$182.00	0	$182.00	$364.00
HSL VOC (TRIP BLANK)	1	$425.70	0	$580.50	$425.70
FULL RADIOLOGICAL (SOLID) SAMPLE 1 LAB QC 0	0	$1,130.00	1	$1,130.00	$1,130.00
TOTAL URANIUM (SOLID) SAMPLE 1 LAB QC 0	1	$99.00	0	$99.00	$99.00
TOTAL THORIUM (SOLID) SAMPLE 1 LAB QC 0	1	$280.00	0	$420.00	$280.00
TCLP SAMPLE 1 LAB QC 1	2	$1,925.00	0	$2,625.00	$3,850.00

TOTAL $18,961.70

SAMPLING AND ANALYSIS OF MONITORING WELL 1433

COST ACCOUNT PLAN BACK-UP

SECTION V

TASK TITLE: Sampling and Analysis of MW 1433
CONTRACT NUMBER: DE-AC05-86OR21659

ADVANCED SCIENCES, INCORPORATED
WBS TASK: 01.20.03.04
Summarized Estimate of Direct Costs:

	FY92 Total	FY93 Total	Task Total
Direct Labor Hours	261	0	261
Direct Labor	4,329	0	4,329
Overhead	3,311	0	3,311
Total Direct Labor Costs	7,640	0	7,640
Other Direct Costs			
Data Processing/Statis.	0	0	0
Field Office	0	0	0
Expend. Field Supplies	0	0	0
IT Engineering Services	5,583	0	5,583
IT Analytical Services	12,000	6,962	18,962
Penn Drill	9,885	0	9,885
Onsite Support	648	0	648
Special Testing/Equip.	0	0	0
Other Subcontractors	0	0	0
Travel	0	0	0
Employee Relocation	0	0	0
Total Other Direct Costs	28,116	6,962	35,078
General & Administration	3,791	738	4,529
Total Contract Costs	39,547	7,700	47,247
Fee	2,322	452	2,774
Total Contract Value	41,869	8,152	50,021

COST ACCOUNT PLAN

WBS TASK: 01.20.03.04
FISCAL YEAR: 1993

TASK TITLE: Sampling and Analysis of MW 1433
CONTRACT NUMBER: DE-AC05-86OR21659

OTHER DIRECT COST DESCRIPTION	COST ELEMENT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	$
Data Processing/Statis.	DPS	0	0	0	0	0	0	0	0	0	0	0	0	0
Field Office	FLD	0	0	0	0	0	0	0	0	0	0	0	0	0
Expend. Field Supplies	ESF	0	0	0	0	0	0	0	0	0	0	0	0	0
IT Engineering Services	ITC	0	0	0	0	0	0	0	0	0	0	0	0	0
IT Analytical Services	LAB	6962	0	0	0	0	0	0	0	0	0	0	0	6962
Penn Drill	MWD	0	0	0	0	0	0	0	0	0	0	0	0	0
Onsite Support	OSS	0	0	0	0	0	0	0	0	0	0	0	0	0
Special Testing/Equip.	XST	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Subcontractors	SUB	0	0	0	0	0	0	0	0	0	0	0	0	0
Travel	TRA	0	0	0	0	0	0	0	0	0	0	0	0	0
Employee Relocation	EMR	0	0	0	0	0	0	0	0	0	0	0	0	0
														0
														0
														0
														0
														0
TOTAL OTHER DIRECT COSTS		6962	0	0	0	0	0	0	0	0	0	0	0	6962

TASK DESCRIPTION:

COST ACCOUNT PLAN

CONTRACT NUMBER: 602
WBS TASK: 01.20.03.04
FISCAL YEAR: 1993

TITLE: FEMP REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
TASK TITLE: Sampling and Analysis of MW 1433
CONTRACT NUMBER: DE-AC05-86OR21659

CLIENT: DOE
PROJECT DIRECTOR: J. D. WOOD
TASK LEADER: D. M. HARMEL

LABOR DESCRIPTION	COST ELEMENT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	HOURS	$
ASI ONSITE:															
Project Director	A01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Manager	A03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	A04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	A05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Engineer/Scientist	A06	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Junior Eng./Sci.	A08	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Technician	A010	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secretary	A011	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLIENT ONSITE:															
Project Director	C01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Manager	C03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	C04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	C05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Engineer/Scientist	C06	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Junior Eng./Sci.	C08	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Technician	C010	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secretary	C011	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL LABOR HOURS		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Labor Dollars		0	0	0	0	0	0	0	0	0	0	0	0		0
Fringe OH at 34.00%		0	0	0	0	0	0	0	0	0	0	0	0		0
ASI Onsite OH at 65.00%		0	0	0	0	0	0	0	0	0	0	0	0		0
Client Onsite OH at 31.00%		0	0	0	0	0	0	0	0	0	0	0	0		0
TOTAL LABOR COSTS		0	0	0	0	0	0	0	0	0	0	0	0		0
ODC TOTAL (Page 2)		6,962	0	0	0	0	0	0	0	0	0	0	0		6,962
TOTAL COSTS		6,962	0	0	0	0	0	0	0	0	0	0	0		6,962
G&A AT 10.60%		738	0	0	0	0	0	0	0	0	0	0	0		738
FEE AT 5.87%		452	0	0	0	0	0	0	0	0	0	0	0		452
TOTAL COSTS AND FEE		8,152	0	0	0	0	0	0	0	0	0	0	0		8,152

MS #	MILESTONE DESCRIPTION	DUE DATE

COST ACCOUNT PLAN

WBS TASK: 01.20.03.04
FISCAL YEAR: 1992

TASK TITLE: Sampling and Analysis of MW 1433
CONTRACT NUMBER: DE-AC05-86OR21659

OTHER DIRECT COST DESCRIPTION	COST ELEMENT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	$
Data Processing/Statis.	DPS	0	0	0	0	0	0	0	0	0	0	0	0	0
Field Office	FLD	0	0	0	0	0	0	0	0	0	0	0	0	0
Expend. Field Supplies	ESF	0	0	0	0	0	0	0	0	0	0	0	0	0
IT Engineering Services	ITC	0	0	0	0	0	0	0	0	3783	1800	0	0	5583
IT Analytical Services	LAB	0	0	0	0	0	0	0	0	0	2000	4500	5500	12000
Penn Drill	MWD	0	0	0	0	0	0	0	0	0	4943	4943	0	9885
Onsite Support	OSS	0	0	0	0	0	0	0	0	648	0	0	0	648
Special Testing/Equip.	XST	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Subcontractors	SUB	0	0	0	0	0	0	0	0	0	0	0	0	0
Travel	TRA	0	0	0	0	0	0	0	0	0	0	0	0	0
Employee Relocation	EMR	0	0	0	0	0	0	0	0	0	0	0	0	0
														0
														0
														0
														0
														0
TOTAL OTHER DIRECT COSTS		0	0	0	0	0	0	0	0	4431	8743	9443	5500	28116

TASK DESCRIPTION:

COST ACCOUNT PLAN

CONTRACT NUMBER: 602
WBS TASK: 01.20.03.04
FISCAL YEAR: 1992

TITLE: FEMP REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
TASK TITLE: Sampling and Analysis of MW 1433
CONTRACT NUMBER: DE-AC05-86OR21659

CLIENT: DOE
PROJECT DIRECTOR: J. D. WOOD
TASK LEADER: D. M. HARMEL

LABOR DESCRIPTION	COST ELEMENT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	HOURS	$
ASI ONSITE:															
Project Director	A01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Manager	A03	0	0	0	0	0	0	0	0	3	0	0	0	3	89
Senior Eng./Sci.	A04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	A05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Engineer/Scientist	A06	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Junior Eng./Sci.	A08	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Technician	A010	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secretary	A011	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLIENT ONSITE:															
Project Director	C01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Manager	C03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	C04	0	0	0	0	0	0	0	0	8	10	20	0	38	885
Senior Eng./Sci.	C05	0	0	0	0	0	0	0	0	0	5	5	5	15	300
Engineer/Scientist	C06	0	0	0	0	0	0	0	0	60	12	36	0	108	1,860
Junior Eng./Sci.	C08	0	0	0	0	0	0	0	0	11	0	0	0	11	132
Senior Technician	C010	0	0	0	0	0	0	0	0	0	25	53	0	78	983
Secretary	C011	0	0	0	0	0	0	0	0	2	2	2	2	8	80
TOTAL LABOR HOURS		0	0	0	0	0	0	0	0	84	54	116	7	261	4,329
Labor Dollars		0	0	0	0	0	0	0	0	1,460	875	1,874	120		4,329
Fringe OH at 34.00%		0	0	0	0	0	0	0	0	496	298	637	41		1,472
ASI Onsite OH at 65.00%		0	0	0	0	0	0	0	0	78	0	0	0		78
Client Onsite OH at 31.00%		0	0	0	0	0	0	0	0	570	363	778	50		1,761
TOTAL LABOR COSTS		0	0	0	0	0	0	0	0	2,604	1,536	3,289	211		7,640
ODC TOTAL (Page 2)		0	0	0	0	0	0	0	0	4,431	8,743	9,443	5,500		28,116
TOTAL COSTS		0	0	0	0	0	0	0	0	7,035	10,279	12,732	5,711		35,756
G&A AT 10.60%		0	0	0	0	0	0	0	0	746	1,090	1,350	605		3,791
FEE AT 5.87%		0	0	0	0	0	0	0	0	457	667	827	371		2,322
TOTAL COSTS AND FEE		0	0	0	0	0	0	0	0	8,238	12,036	14,909	6,687		41,869

MS #	MILESTONE DESCRIPTION	DUE DATE

36

5208