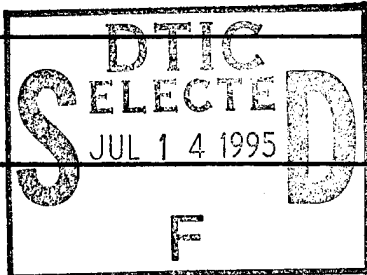


REPORT DOCUMENTATION PAGE

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1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE JUNE 1995		3. REPORT TYPE AND DATES COVERED Final Remedial Investigation	
4. TITLE AND SUBTITLE Installation Restoration Program Remedial Investigation Report Vol. III Alpena Combat Readiness Training Center Alpena MI				5. FUNDING NUMBERS PRTDVG957097	
6. AUTHOR(S) N/A					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) EARTH TECH Oak Ridge TN				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Hazardous Waste Remedial Actions Program Martin Marietta Energy Systems, Inc. Oak Ridge, TN 37831				10. SPONSORING / MONITORING AGENCY REPORT NUMBER RG-07-159-0370	
11. SUPPLEMENTARY NOTES					
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited					
12b. DISTRIBUTION CODE					
13. ABSTRACT (Maximum 200 words) Remedial Investigation Report of Sites 1-9 at Alpena CRTC, Alpena MI. Volume III Appendices A-I. A remedial investigation was performed on 9 sites at the Alpena CRTC to determine the extent of contamination at the sites. The sites involved in this investigation include: Site 1 POL Storage Area; Site 2 Motor Pool Area; Site 3 Former Garage; Site 4 Third Fire Training Area; Site 5 Second Fire Training Area; Site 6 Former Landfill; Site 7 First Fire Training Area; Site 8 Former Hanger 9; Site 10 Hazardous Waste Storage Area. Soil and groundwater contamination above state action levels was found at the sites. An FS has been initiated.					
DTIC QUALITY INSPECTED 5					
14. SUBJECT TERMS Installation Restoration Program; Air National Guard; Remedial Investigation; Alpena CRTC; Alpena MI, ANG				15. NUMBER OF PAGES 290	
				16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT UNCL.	18. SECURITY CLASSIFICATION OF THIS PAGE UNCL.	19. SECURITY CLASSIFICATION OF ABSTRACT UNCL.	20. LIMITATION OF ABSTRACT NONE		

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C - Contract	PR - Project
G - Grant	TA - Task
PE - Program Element	WU - Work Unit Accession No.

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Block 8. Performing Organization Report Number. Enter the unique alphanumeric report number(s) assigned by the organization performing the report.

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Block 10. Sponsoring/Monitoring Agency Report Number. (If known)

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Block 14. Subject Terms. Keywords or phrases identifying major subjects in the report.

Block 15. Number of Pages. Enter the total number of pages.

Block 16. Price Code. Enter appropriate price code (*NTIS only*).

Blocks 17. - 19. Security Classifications. Self-explanatory. Enter U.S. Security Classification in accordance with U.S. Security Regulations (i.e., UNCLASSIFIED). If form contains classified information, stamp classification on the top and bottom of the page.

Block 20. Limitation of Abstract. This block must be completed to assign a limitation to the abstract. Enter either UL (unlimited) or SAR (same as report). An entry in this block is necessary if the abstract is to be limited. If blank, the abstract is assumed to be unlimited.

INSTALLATION RESTORATION PROGRAM

FINAL REMEDIAL INVESTIGATION REPORT

VOLUME III: APPENDICES A - I

ALPENA COMBAT READINESS TRAINING CENTER
ALPENA COUNTY REGIONAL AIRPORT, MICHIGAN AIR NATIONAL GUARD
ALPENA, MICHIGAN

JUNE 1995



450 01105661

HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
Environmental Restoration and Waste Management Programs
Oak Ridge, Tennessee 37831-7606
managed by MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY under contract DE-AC05-84OR21400



**REMEDIAL INVESTIGATION REPORT
ALPENA COMBAT READINESS TRAINING CENTER
MICHIGAN AIR NATIONAL GUARD
ALPENA, MICHIGAN**

Volume III

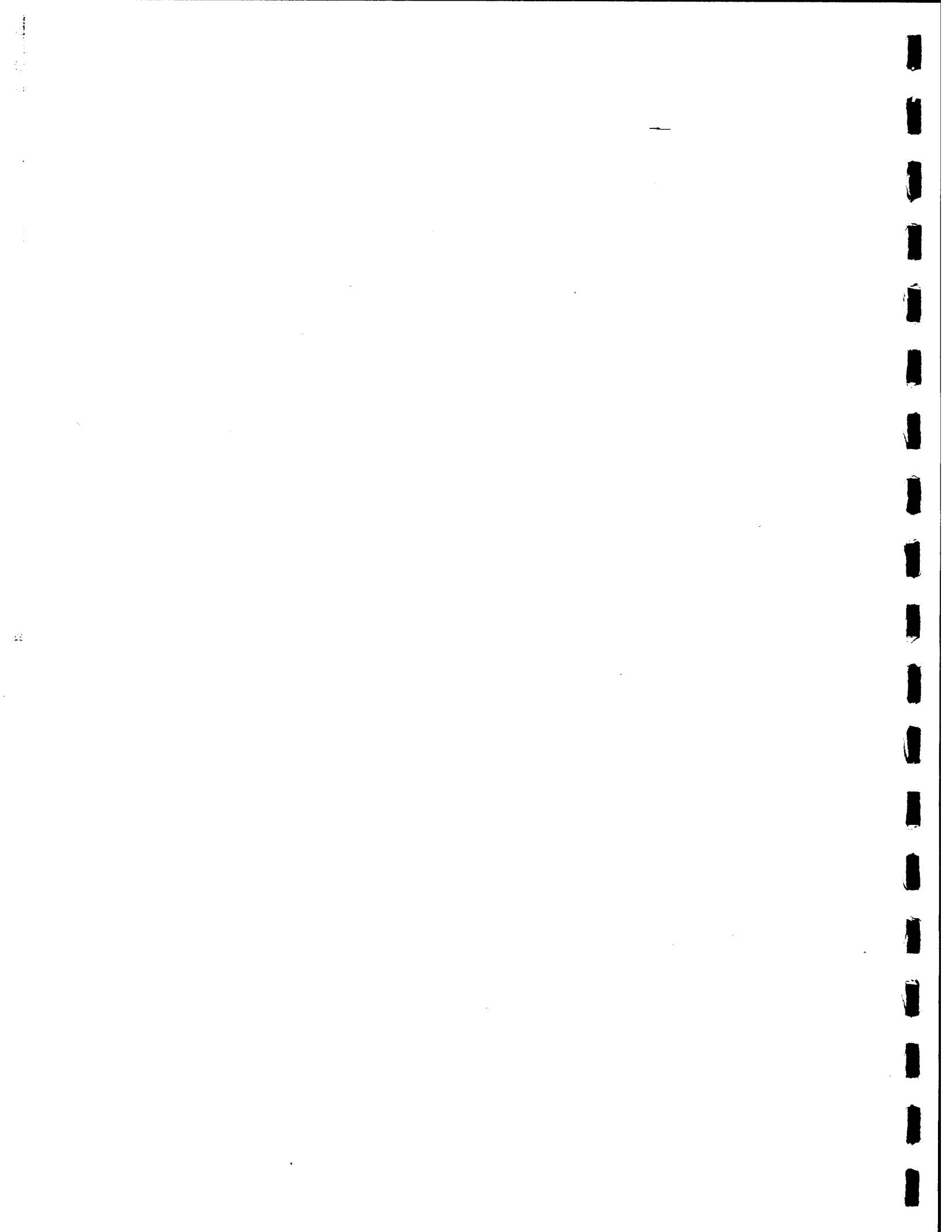
Appendix

- A Field Change Request Forms
- B Aquifer Testing Results
- C Soil Boring Log; Monitoring Well Construction Forms and Technical Results
- D Analytical Results; Initial Site Screening
- E Analytical Results; On-site Screening
- F Surface Water and Sediment Sampling Forms
- G Monitoring Well Development and Sampling Forms
- H Surveying Data
- I Analytical Results; Investigation Derived Wastes - Decontamination Water and Soil Cuttings

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Justification _____	
By _____	
Distribution / _____	
Availability Codes	
Dist	Avail and/or Special
A-1	



Appendix A: Field Change Request Forms



FIELD CHANGE REQUEST FORM

Field Change No. 1Page 1 of 1PROJECT Phelps Collins ANG RI, Alpena, MichPROJECT NO. 931800-12APPLICABLE DOCUMENT: Final RI SAP

DESCRIPTION:

page 2-29 of SAP states "shoreline sampling will be cored using a minuteman portable drill apparatus" field team suggests using a sediment/sludge sampling hand auger.

REASON:

uncompacted, saturated sediments in the bottom of the sinkhole will not allow for a borehole to stay open; using a minuteman would not allow for sampling

RECOMMENDED DISPOSITION:

Use hand auger with sediment catcher attachment; samples will be collected in 5.5 steel liners if possible; Placed into jars if sleeves will not work

IMPACT ON PRESENT AND COMPLETED WORK:

no cost change; however, deeper sample collection (3 to 5 feet) will not be practical if the holes will not stay open

FINAL DISPOSITION:

REQUESTED BY:
FIELD / PROJECT MANAGER:J. Buegel 7/29/93APPROVALS:
HAZWRAP PROJECT MANAGER:

Field Change Request

Project name <u>Phelps Collins AWG</u>	Project Number <u>931800</u>
Applicable Document <u>RI SAP Final</u>	Date <u>8/11/93</u>

Description: where possible
Surface soil samples will be collected
using the drill rig, 3", 2-foot long split spoons
equipped w/ stainless steel liners; SAP says we will use
a hand auger

Minor change ☒ Major change ☐ Major project impact ☐

Requested by: Jack S Briegel

Reason for change:
All soil samples will be collected with the
same methods; same rinsates, etc. Samples
will be obtained from the first foot.

Recommended disposition:
Approve as recommended

Impact on present and completed work:
no impact - samples will still be representative
of surface conditions and volatile compounds
will be better retained.

Accepted ☒	Rejected ☐	Signature <u>Jean E McKee</u>	Date <u>8-24-93</u>
		Project Manager	
Accepted ☐	Rejected ☐	Signature _____	Date _____
		Project QA/QC Officer	

(Required prior to Implementation of major changes)

Accepted ☐	Rejected ☐	Signature _____	Date _____
		Program Manager	
Accepted ☐	Rejected ☐	Signature _____	Date _____
		Program QA/QC Officer	

(Required prior to implementation of changes with major project impact)

Approved ☐	Rejected ☐	Signature _____	Date _____
		CLIENT Project Manager	

Final Disposition _____

Signature _____ Date _____

Field Change Request

Project name <u>Phelps Collins ANGR</u>	Project Number <u>931800-12</u>
Applicable Document <u>Final SAP Dec. 1992</u>	Date <u>Aug 24, 1993</u>

Description: Page 2-72 PSP: "newly constructed wells will be allowed to stabilize approximately one week after well development and prior to sampling". Wells will be allowed to stabilize approx 48 hr after development prior to sampling.

Minor change ☒ Major change ☐ Major project impact ☐

Requested by: Jack Briegel

Reason for change:

150 IF monitoring wells are allowed to stabilize one week after development and additional mobilization will be necessary prior to sampling these wells. 48 hrs should be sufficient time for stabilization

Recommended disposition:

Approved Recommended

Impact on present and completed work:

No impact

Accepted ☒

Rejected ☐

Signature Jean E. McKee

Project Manager

Date 8-25-93

Accepted ☐

Rejected ☐

Signature _____

Project QA/QC Officer

Date _____

(Required prior to implementation of major changes)

Accepted ☐

Rejected ☐

Signature _____

Program Manager

Date _____

Accepted ☐

Rejected ☐

Signature _____

Program QA/QC Officer

Date _____

(Required prior to implementation of changes with major project impact)

Approved ☐

Rejected ☐

Signature _____

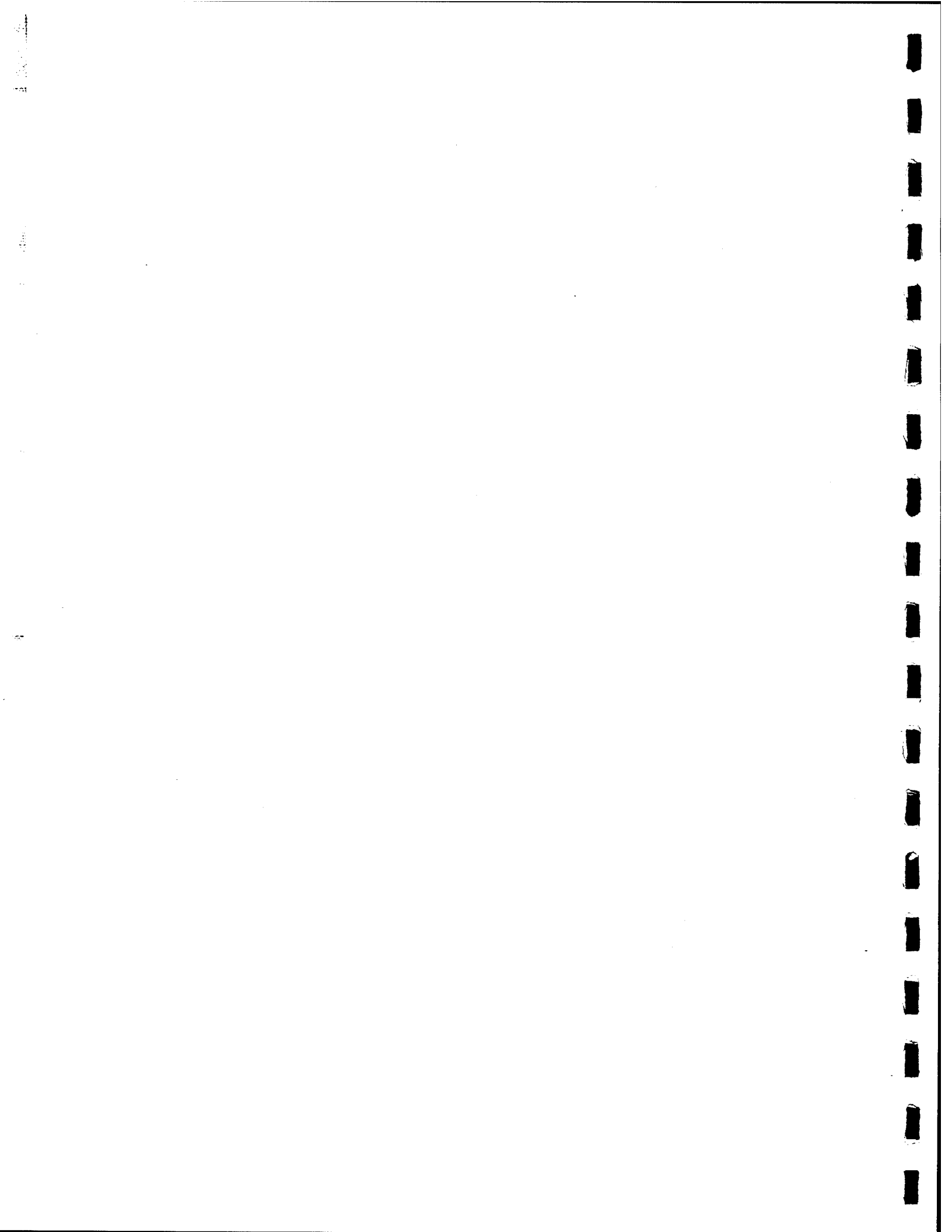
CLIENT Project Manager

Date _____

Final Disposition _____

Signature _____

Date _____



**Appendix B: Groundwater and Surface Water Elevation
Measurements and Aquifer Testing Results**



LOCATION	ID NUMBER	DATE	ELEVATION OF REFERENCE POINT		DEPTH TO GRNDWT	GROUNDWATER ELEVATION
			TOP OF PRO CASING	TOP OF PVC RISER		
SITE 1	S1MW1	SEPT. 12, 1993		678.23	1.64	676.59
	S1MW2	SEPT. 12, 1993		681.16	3.77	677.39
	S1MW3	SEPT. 12, 1993		680.55	3.4	677.15
	S1MW4	SEPT. 12, 1993		678.94	2.74	676.2
	S1MW6	SEPT. 12, 1993		680.66	4.46	676.2
	S1MW11	SEPT. 12, 1993		679.28	3.56	675.72
	S1MW12	SEPT. 12, 1993		677.74	3.19	674.55
	S1MW13	SEPT. 12, 1993		680.2	4.99	675.21
	S1MW14	SEPT. 12, 1993		680.27	6.35	673.92
SITE 2	MP2MW1	SEPT. 12, 1993		682.62	5.93	676.69
	MP2MW2	SEPT. 12, 1993	683.87	683.78	8.3	675.57
	MP2MW3	SEPT. 12, 1993	683.43	683.28	7.92	675.51
	MP2MW4	SEPT. 12, 1993	683.59	683.44	8.31	675.28
	MP2MW5	SEPT. 12, 1993	683.47	683.39	8.07	675.4
	MP2MW6	SEPT. 12, 1993		682.85	7.99	674.86
	MP2MW7	SEPT. 12, 1993		682.78	6.72	676.06
SITE 3	CG3PZ1	SEPT. 12, 1993		691.73	15.11	676.62
	CG3MW1	SEPT. 12, 1993	687.96	687.87	10.58	677.38
	CG3MW2	SEPT. 12, 1993	694.41	694.3	18.12	676.29
	CG3MW3	SEPT. 12, 1993	690.01	689.8	13.51	676.5
	CG3MW4	SEPT. 12, 1993	694.13	694	17.71	676.42
	CG3MW5	SEPT. 12, 1993	694.26	694.09	17.86	676.4
	CG3MW6	SEPT. 12, 1993		691.29	14.77	676.52
	CG3MW7	SEPT. 12, 1993		690.14	14.5	675.64
SITE 4	TF4MW1	SEPT. 12, 1993	690.24	684.75	23.01	667.23
	TF4MW2	SEPT. 12, 1993	688.63	685.91	29.02	659.61
	TF4MW3	SEPT. 12, 1993	685	688.41	26.94	658.06
	TF4MW4	SEPT. 12, 1993	686.14	690.05	27.78	658.36
SITE 5	SF5MW1	SEPT. 12, 1993	681.03	680.93	6.88	674.15
	SF5MW2	SEPT. 12, 1993	681.29	680.21	5.97	675.32
	SF5MW3	SEPT. 12, 1993	682.27	682.14	7.67	674.6
	SF5MW4	SEPT. 12, 1993	681.97	681.78	7.65	674.32
	SF5MW5	SEPT. 12, 1993		680.59	6.21	674.38
	SF5MW6	SEPT. 12, 1993		680.52	6.26	674.26
	SF5MW7	SEPT. 12, 1993		681.26	7.06	674.2
	SF5MW8	SEPT. 12, 1993		681.12	7.05	674.07
	SF5MW9	SEPT. 12, 1993		681.24	7.3	673.94
SITE 6	LF6MW1	SEPT. 12, 1993	690.54	690.38	18.44	672.1
	LF6MW2	SEPT. 12, 1993	685.01	684.86	12.33	672.68
	LF6MW3	SEPT. 12, 1993	687.14	686.97	15.21	671.93
	LF6MW4	SEPT. 12, 1993		684.59	11.84	672.75
	LF6MW5	SEPT. 12, 1993		683.71	10.64	673.07
	LF6MW6	SEPT. 12, 1993		687.18	16.01	671.17
	LF6MW8	SEPT. 12, 1993		685.01	11.89	673.12
	LF6MW9	SEPT. 12, 1993		684.21	10.87	673.34
	LF6MW10	SEPT. 12, 1993		682.7	11	671.7
	LF6MW11	SEPT. 12, 1993		687.11	10.19	676.96
SITE 8	HN8MW1	SEPT. 12, 1993	687.15	692.91	17.69	675.31
	HN8MW2	SEPT. 12, 1993	693	693.47	17.62	676.03
	HN8MW3	SEPT. 12, 1993	693.65	693.84	17.75	676
	HN8MW4	SEPT. 12, 1993	693.75	687.49	11.37	676.12
	HN8MW5	SEPT. 12, 1993		690.79	17.94	673.06
SITE 9	RT9MW1	SEPT. 12, 1993	691	692.63	24.64	668.21
	RT9MW2	SEPT. 12, 1993	692.85	685.22	14.78	670.72
	RT9MW3	SEPT. 12, 1993	685.5	687.52	20.6	667.17
	RT9MW4	SEPT. 12, 1993	687.77	687.61	21.08	666.77
	RT9MW5	SEPT. 12, 1993	687.85	685	14.42	670.58
SITE 10	RT9MW6	SEPT. 12, 1993		685	14.42	670.58
	RT9MW7	SEPT. 12, 1993		685	14.42	670.58
LOCATION	ID	DATE	BENCH MARK		MEASUREMENT	SURFACE WATER ELEVATION
SINKHOLE	SPRING 1	SEPT. 13, 1993		651.31		651.2
SINKHOLE	SPRING 2	SEPT. 13, 1993		651.31		651.1
SINKHOLE	SPRING 3	SEPT. 13, 1993		651.31		648.7
SINKHOLE	SPRING 4	SEPT. 13, 1993		651.31		651.5
SINKHOLE	SPRING 5	SEPT. 13, 1993		651.31		652.5
SINKHOLE	SPRING 6	SEPT. 13, 1993		651.31		649.7
XTRM NORTH	Gauge 3	AUG. 1993		674.18	2.58	671.6
NORTH	Gauge 2	AUG. 1993		676.14	4.58	671.56
LANDFILL 6	Gauge 4	AUG. 1993		675.04	3.57	671.47
BY SITE 1	Gauge 5	AUG. 1993		674.72	3.3	671.42
SINKHOLE	Gauge 1	AUG. 1993		649.95	3.25	646.7

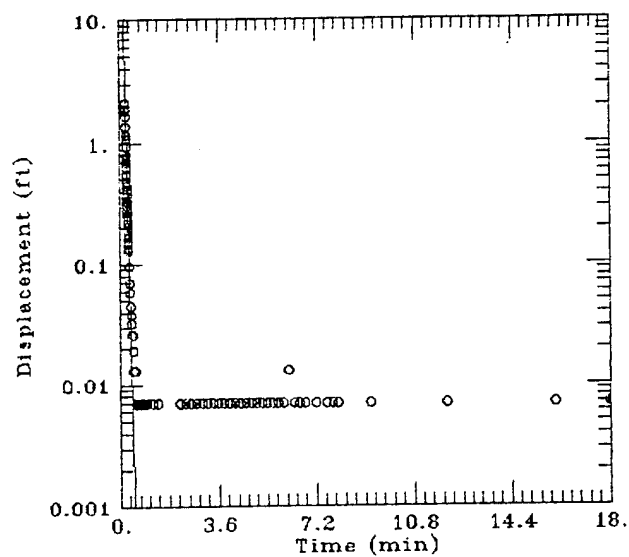
Note: TOP OF PRO CASING is from November 1987 survey data.
TOP OF PVC RISER is from August 1993 survey data.



Aquifer Testing Results



2mw6 / Alpena, MI



DATA SET:

2mw6.dat
10/13/93

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Huwer-Hice

ESTIMATED PARAMETERS:

K = 0.01472 ft/min
y0 = 427.2 ft

TEST DATA:

H0 = 1.9 ft
rc = 0.083 ft
rw = 0.343 ft
L = 15. ft
b = 30. ft
H = 19. ft

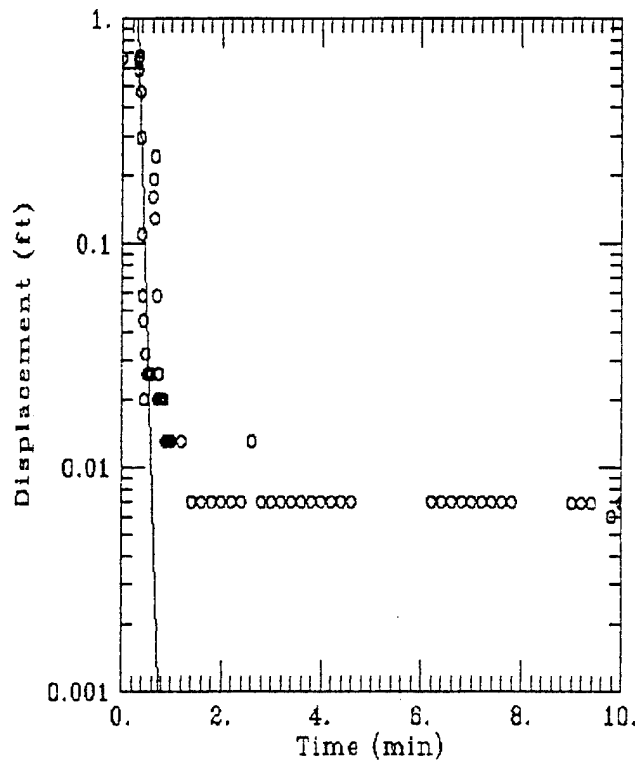
SITE 2 MONITORING WELL #6 (SLUG IN)

TIME (Min)	DRAWDOWN (ft)	WEIGHT
0.2233	2.118	1
0.2266	1.87	1
0.23	1.659	1
0.2333	1.366	1
0.25	1.168	1
0.2533	1.085	1
0.2566	0.944	1
0.26	0.804001	1
0.2633	0.771999	1
0.2666	0.696001	1
0.27	0.625	1
0.2733	0.549	1
0.2766	0.485	1
0.28	0.447	1
0.2833	0.408001	1
0.2866	0.370001	1
0.29	0.332001	1
0.2933	0.306	1
0.2966	0.281	1
0.3	0.254999	1
0.3033	0.236	1
0.3066	0.217001	1
0.31	0.204	1
0.3133	0.191999	1
0.3166	0.179001	1
0.32	0.166	1
0.3233	0.153	1
0.3266	0.146999	1
0.33	0.134001	1
0.3333	0.128	1
0.35	0.0960006	1
0.3666	0.0699996	1
0.3833	0.0580005	1
0.4	0.045	1
0.4166	0.038	1
0.4333	0.0319995	1
0.45	0.0260009	1
0.4666	0.0260009	1
0.4833	0.0190009	1
0.5	0.0190009	1
0.5166	0.0130004	1
0.5333	0.0130004	1
0.55	0.0130004	1
0.5666	0.0130004	1
0.5833	0.00699986	1
0.6	0.00699986	1
0.6166	0.00699986	1
0.6333	0.00699986	1
0.65	0.00699986	1
0.6666	0.00699986	1
0.6833	0.00699986	1
0.7	0.00699986	1

SITE 2 MONITORING WELL #6 (SLUG IN)

TIME (Min)	DRAWDOWN (ft)	WEIGHT
0.7166	0.00699986	1
0.7333	0.00699986	1
0.75	0.00699986	1
0.7666	0.00699986	1
0.7833	0.00699986	1
0.8	0.00699986	1
0.8166	0.00699986	1
0.8333	0.00699986	1
0.85	0.00699986	1
0.8666	0.00699986	1
0.8833	0.00699986	1
0.9	0.00699986	1
0.9166	0.00699986	1
0.9333	0.00699986	1
0.95	0.00699986	1
0.9666	0.00699986	1
0.9833	0.00699986	1
1	0.00699986	1
1.2	0.00699986	1
1.4	0.00699986	1
2.2	0.00699986	1
2.4	0.00699986	1
2.6	0.00699986	1
2.8	0.00699986	1
3	0.00699986	1
3.2	0.00699986	1
3.4	0.00699986	1
3.6	0.00699986	1
3.8	0.00699986	1
4	0.00699986	1
4.2	0.00699986	1
4.4	0.00699986	1
4.6	0.00699986	1
4.8	0.00699986	1
5	0.00699986	1
5.2	0.00699986	1
5.4	0.00699986	1
5.6	0.00699986	1
5.8	0.00699986	1
6	0.00699986	1
6.2	0.0130004	1
6.4	0.00699986	1
6.6	0.00699986	1
6.8	0.00699986	1
7.2	0.00699986	1
7.6	0.00699986	1
7.8	0.00699986	1
8	0.00699986	1
9.2	0.00699986	1
12	0.00699986	1
16	0.00699986	1
18	0.00699986	1

2mw6a / Alpena, MI



DATA SET:

2mw6a.dat
10/13/93

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bower-Rice

ESTIMATED PARAMETERS:

$K = 0.01021$ ft/min
 $y_0 = 147.2$ ft

TEST DATA:

$H_0 = 0.664$ ft
 $r_c = 0.083$ ft
 $r_w = 0.343$ ft
 $L = 15.$ ft
 $b = 30.$ ft
 $H = 21.$ ft

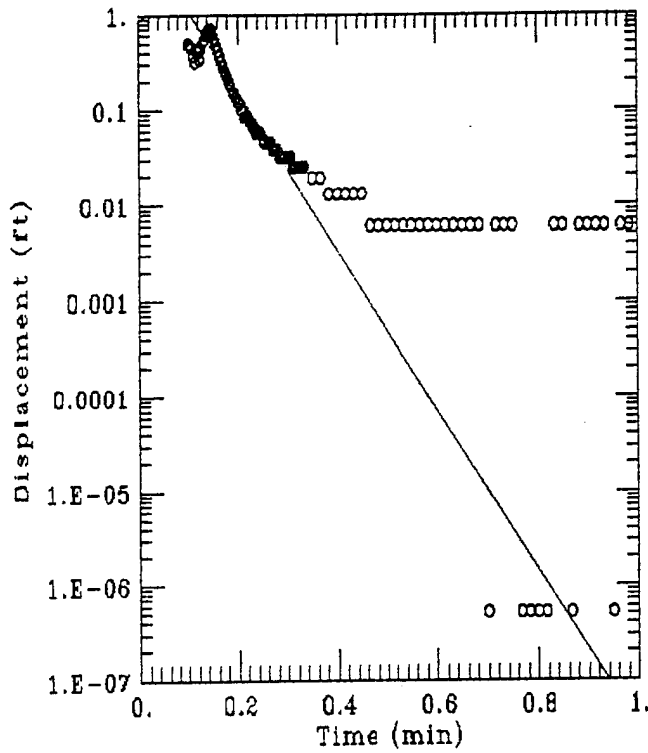
SITE 2 MONITORING WELL #6 (SLUG IN)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.3266	0.664	1
0.33	0.638	1
0.3333	0.587	1
0.35	0.677	1
0.3666	0.473	1
0.3833	0.294001	1
0.4	0.108999	1
0.4166	0.0580006	1
0.4333	0.0450001	1
0.45	0.0200005	1
0.4666	0.0319996	1
0.4833	0.0319996	1
0.5	0.0259991	1
0.5166	0.0259991	1
0.5333	0.0259991	1
0.55	0.0259991	1
0.5666	0.0259991	1
0.5833	0.0259991	1
0.6	0.0259991	1
0.6166	0.16	1
0.6333	0.191999	1
0.65	0.128	1
0.6666	0.243	1
0.6833	-0.0310001	1
0.7	0.0580006	1
0.7166	0.0200005	1
0.7333	0.0259991	1
0.75	0.0259991	1
0.7666	0.0200005	1
0.7833	0.0200005	1
0.8	0.0200005	1
0.8166	0.0200005	1
0.8333	0.0200005	1
0.85	0.0200005	1
0.8666	0.0130005	1
0.8833	0.0130005	1
0.9	0.0130005	1
0.9166	0.0130005	1
0.9333	0.0130005	1
0.95	0.0130005	1
0.9666	0.0130005	1
0.9833	0.0130005	1
1	0.0130005	1
1.2	0.0130005	1
1.4	0.00699997	1
1.6	0.00699997	1
1.8	0.00699997	1
2	0.00699997	1
2.2	0.00699997	1
2.4	0.00699997	1
2.6	0.0130005	1
2.8	0.00699997	1

SITE 2 MONITORING WELL #6 (SLUG IN)

TIME (Min)	DRAWDOWN (ft)	WEIGHT
3	0.00699997	1
3.2	0.00699997	1
3.4	0.00699997	1
3.6	0.00699997	1
3.8	0.00699997	1
4	0.00699997	1
4.2	0.00699997	1
4.4	0.00699997	1
4.6	0.00699997	1
6.2	0.00699997	1
6.4	0.00699997	1
6.6	0.00699997	1
6.8	0.00699997	1
7	0.00699997	1
7.2	0.00699997	1
7.4	0.00699997	1
7.6	0.00699997	1
7.8	0.00699997	1
9	0.00699997	1
9.2	0.00699997	1
9.4	0.00699997	1
9.8	0.00699997	1
10	0.00699997	1

2mw6b / Alpena, MI



DATA SET:

2mw6b.dat

10/13/93

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bowser-Rice

ESTIMATED PARAMETERS:

$K = 0.01179$ ft/min

$yD = 7.499$ ft

TEST DATA:

$HU = 1.$ ft

$rc = 0.083$ ft

$rw = 0.343$ ft

$L = 15.$ ft

$b = 30.$ ft

$H = 19.$ ft

SITE 2 MONITORING WELL #6 (SLUG OUT)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.1	0.484999	1
0.1033	0.472001	1
0.1066	0.446999	1
0.11	0.376	1
0.1133	0.319001	1
0.1166	0.427001	1
0.12	0.402001	1
0.1233	0.338	1
0.1266	0.434001	1
0.13	0.510001	1
0.1333	0.542	1
0.1366	0.612	1
0.14	0.644	1
0.1433	0.689	1
0.1466	0.689	1
0.15	0.644	1
0.1533	0.560999	1
0.1566	0.484999	1
0.16	0.415	1
0.1633	0.364001	1
0.1666	0.319001	1
0.17	0.286999	1
0.1733	0.255	1
0.1766	0.23	1
0.18	0.210999	1
0.1833	0.191001	1
0.1866	0.171999	1
0.19	0.153	1
0.1933	0.147	1
0.1966	0.133999	1
0.2	0.121001	1
0.2033	0.115	1
0.2066	0.102	1
0.21	0.0959993	1
0.2133	0.0830007	1
0.2166	0.0830007	1
0.22	0.0830007	1
0.2233	0.0760007	1
0.2266	0.0700002	1
0.23	0.0700002	1
0.2333	0.0639997	1
0.2366	0.0569997	1
0.24	0.0569997	1
0.2433	0.0569997	1
0.2466	0.0569997	1
0.25	0.0509992	1
0.2533	0.0450006	1
0.2566	0.0450006	1
0.26	0.0450006	1
0.2633	0.0450006	1
0.2666	0.0450006	1
0.27	0.0380006	1

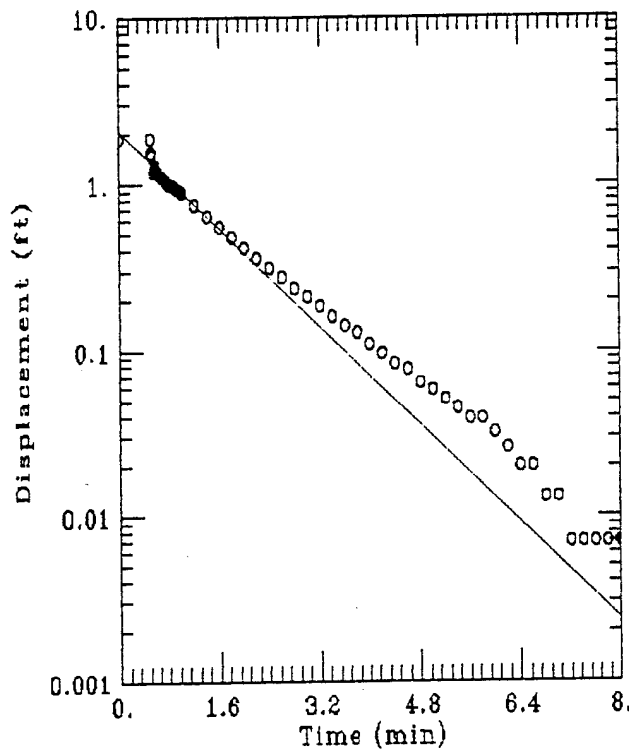
SITE 2 MONITORING WELL #6 (SLUG OUT)

TIME (Min)	DRAWDOWN (ft)	WEIGHT
0.2733	0.0380006	1
0.2766	0.0380006	1
0.28	0.0380006	1
0.2833	0.0320001	1
0.2866	0.0320001	1
0.29	0.0320001	1
0.2933	0.0320001	1
0.2966	0.0320001	1
0.3	0.0320001	1
0.3033	0.0320001	1
0.3066	0.0320001	1
0.31	0.0250001	1
0.3133	0.0250001	1
0.3166	0.0250001	1
0.32	0.0250001	1
0.3233	0.0250001	1
0.3266	0.0250001	1
0.33	0.0250001	1
0.3333	0.0250001	1
0.35	0.0189996	1
0.3666	0.0189996	1
0.3833	0.0129991	1
0.4	0.0129991	1
0.4166	0.0129991	1
0.4333	0.0129991	1
0.45	0.0129991	1
0.4666	0.00599913	1
0.4833	0.00599913	1
0.5	0.00599913	1
0.5166	0.00599913	1
0.5333	0.00599913	1
0.55	0.00599913	1
0.5666	0.00599913	1
0.5833	0.00599913	1
0.6	0.00599913	1
0.6166	0.00599913	1
0.6333	0.00599913	1
0.65	0.00599913	1
0.6666	0.00599913	1
0.6833	0.00599913	1
0.7166	0.00599913	1
0.7333	0.00599913	1
0.75	0.00599913	1
0.8333	0.00599913	1
0.85	0.00599913	1
0.8833	0.00599913	1
0.9	0.00599913	1
0.9166	0.00599913	1
0.9333	0.00599913	1
0.9666	0.00599913	1
0.9833	0.00599913	1
1	0.00599913	1

SITE 2 MONITORING WELL #6 (SLUG OUT)

TIME (min)	DRAWDOWN (ft)	WEIGHT
2	-0.006	1
2.2	-0.006	1
2.4	-0.006	1
2.6	-0.006	1
2.8	-0.006	1
3	-0.006	1
3.2	-0.006	1
3.4	-0.006	1
3.6	-0.006	1
3.8	-0.006	1
4	-0.006	1
4.2	-0.006	1
4.4	-0.006	1
4.6	-0.006	1
4.8	-0.006	1
5	-0.006	1
5.2	-0.006	1
5.4	-0.006	1
5.6	-0.006	1
5.8	-0.006	1
6	-0.006	1
6.6	-0.006	1
6.8	-0.006	1
7	-0.006	1

6mw6in / Alpena, MI



DATA SET:

6mw6in.dat

10/13/93

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bowser Rice

ESTIMATED PARAMETERS:

$K = 0.0005844 \text{ ft/min}$

$yD = 2.878 \text{ ft}$

TEST DATA:

$HU = 1.8 \text{ ft}$

$rc = 0.083 \text{ ft}$

$rw = 0.343 \text{ ft}$

$L = 10. \text{ ft}$

$b = 33. \text{ ft}$

$II = 15. \text{ ft}$

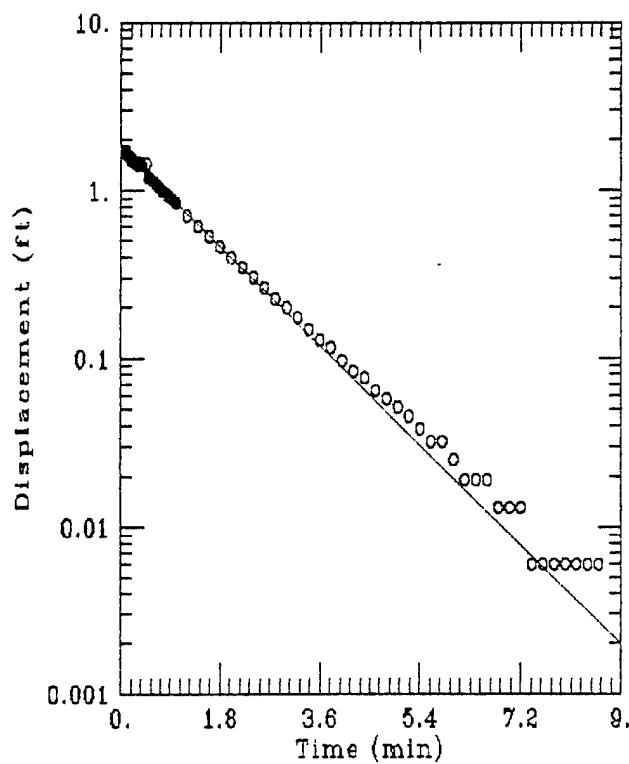
SITE 6 MONITORING WELL #6 (SLUG IN)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.5	1.87	1
0.5166	1.544	1
0.5333	1.474	1
0.55	1.193	1
0.5666	1.225	1
0.5833	1.276	1
0.6	1.213	1
0.6166	1.181	1
0.6333	1.162	1
0.65	1.136	1
0.6666	1.123	1
0.6833	1.104	1
0.7	1.091	1
0.7166	1.079	1
0.7333	1.059	1
0.75	1.04	1
0.7666	1.021	1
0.7833	1.002	1
0.8	0.989	1
0.8166	0.989	1
0.8333	0.983	1
0.85	0.983	1
0.8666	0.969999	1
0.8833	0.964001	1
0.9	0.951	1
0.9166	0.938	1
0.9333	0.924999	1
0.95	0.919001	1
0.9666	0.906	1
0.9833	0.893999	1
1	0.881001	1
1.2	0.747	1
1.4	0.638	1
1.6	0.549	1
1.8	0.479	1
2	0.415001	1
2.2	0.358	1
2.4	0.313	1
2.6	0.275	1
2.8	0.236	1
3	0.211	1
3.2	0.184999	1
3.4	0.16	1
3.6	0.141001	1
3.8	0.128	1
4	0.108999	1
4.2	0.0960007	1
4.4	0.0830002	1
4.6	0.0769997	1
4.8	0.0639992	1
5	0.0580006	1
5.2	0.0510006	1

SITE 6 MONITORING WELL #6 (SLUG IN)

TIME (min)	DRAWDOWN (ft)	WEIGHT
5.4	0.0450001	1
5.6	0.0389996	1
5.8	0.0389996	1
6	0.0319996	1
6.2	0.0259991	1
6.4	0.0200005	1
6.6	0.0200005	1
6.8	0.0130005	1
7	0.0130005	1
7.2	0.00699997	1
7.4	0.00699997	1
7.6	0.00699997	1
7.8	0.00699997	1
8	0.00699997	1

6mw6out / Alpena, MI



DATA SET:

6mw6out.dat
10/13/93

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bowser-Rice

ESTIMATED PARAMETERS:

$K = 0.0006085$ ft/min
 $rD = 1.78$ ft

TEST DATA:

$HU = 1.703$ ft
 $rc = 0.083$ ft
 $rw = 0.343$ ft
 $L = 10.$ ft
 $b = 33.$ ft
 $H = 15.$ ft

SITE 6 MONITORING WELL #6 (SLUG OUT)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.1	1.703	1
0.1033	1.652	1
0.1066	1.652	1
0.11	1.652	1
0.1133	1.639	1
0.1166	1.627	1
0.12	1.627	1
0.1233	1.62	1
0.1266	1.614	1
0.13	1.607	1
0.1333	1.601	1
0.1366	1.595	1
0.14	1.588	1
0.1433	1.588	1
0.1466	1.588	1
0.15	1.582	1
0.1533	1.582	1
0.1566	1.582	1
0.16	1.569	1
0.1633	1.576	1
0.1666	1.576	1
0.17	1.576	1
0.1733	1.525	1
0.1766	1.531	1
0.18	1.518	1
0.1833	1.505	1
0.1866	1.525	1
0.19	1.531	1
0.1933	1.531	1
0.1966	1.525	1
0.2	1.531	1
0.2033	1.531	1
0.2066	1.512	1
0.21	1.512	1
0.2133	1.518	1
0.2166	1.512	1
0.22	1.512	1
0.2233	1.512	1
0.2266	1.499	1
0.23	1.486	1
0.2333	1.48	1
0.2366	1.48	1
0.24	1.473	1
0.2433	1.467	1
0.2466	1.461	1
0.25	1.467	1
0.2533	1.461	1
0.2566	1.454	1
0.26	1.454	1
0.2633	1.448	1
0.2666	1.448	1
0.27	1.442	1

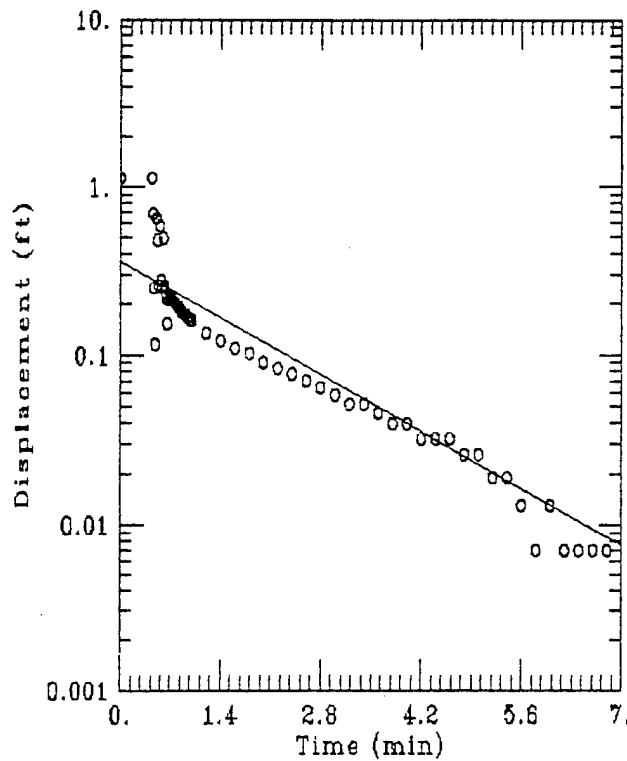
SITE 6 MONITORING WELL #6 (SLUG OUT)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.2733	1.442	1
0.2766	1.435	1
0.28	1.435	1
0.2833	1.435	1
0.2866	1.429	1
0.29	1.429	1
0.2933	1.429	1
0.2966	1.429	1
0.3	1.429	1
0.3033	1.422	1
0.3066	1.41	1
0.31	1.435	1
0.3133	1.422	1
0.3166	1.422	1
0.32	1.429	1
0.3233	1.422	1
0.3266	1.435	1
0.33	1.435	1
0.3333	1.448	1
0.35	1.422	1
0.3666	1.422	1
0.3833	1.416	1
0.4666	1.435	1
0.4833	1.199	1
0.5	1.193	1
0.5166	1.18	1
0.5333	1.167	1
0.55	1.148	1
0.5666	1.135	1
0.5833	1.123	1
0.6	1.11	1
0.6166	1.097	1
0.6333	1.084	1
0.65	1.072	1
0.6666	1.059	1
0.6833	1.046	1
0.7	1.033	1
0.7166	1.021	1
0.7333	1.008	1
0.75	0.995	1
0.7666	0.989	1
0.7833	0.976	1
0.8	0.963	1
0.8166	0.95	1
0.8333	0.944	1
0.85	0.931	1
0.8666	0.918	1
0.8833	0.912	1
0.9	0.899	1
0.9166	0.887	1
0.9333	0.88	1
0.95	0.867	1

SITE 6 MONITORING WELL #6 (SLUG OUT)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.9666	0.855	1
0.9833	0.848	1
1	0.842	1
1.2	0.702	1
1.4	0.606	1
1.6	0.529	1
1.8	0.459	1
2	0.395	1
2.2	0.344	1
2.4	0.3	1
2.6	0.261	1
2.8	0.223	1
3	0.198	1
3.2	0.172	1
3.4	0.147	1
3.6	0.127	1
3.8	0.115	1
4	0.0960002	1
4.2	0.0829997	1
4.4	0.0759997	1
4.6	0.0639996	1
4.8	0.0569997	1
5	0.0510001	1
5.2	0.0449996	1
5.4	0.0379996	1
5.6	0.032	1
5.8	0.032	1
6	0.0250001	1
6.2	0.0189996	1
6.4	0.0189996	1
6.6	0.0189996	1
6.8	0.013	1
7	0.013	1
7.2	0.013	1
7.4	0.00600002	1
7.6	0.00600002	1
7.8	0.00600002	1
8	0.00600002	1
8.2	0.00600002	1
8.4	0.00600002	1
8.6	0.00600002	1

6mw4 / Alpena, MI



DATA SET:

6mw4.dat
10/13/93

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bowyer-Rice

ESTIMATED PARAMETERS:

$K = 0.0003813$ ft/min
 $y_0 = 0.3565$ ft

TEST DATA:

$HU = 1.129$ ft
 $rc = 0.083$ ft
 $rw = 0.343$ ft
 $L = 10$ ft
 $b = 20$ ft
 $H = 7$ ft

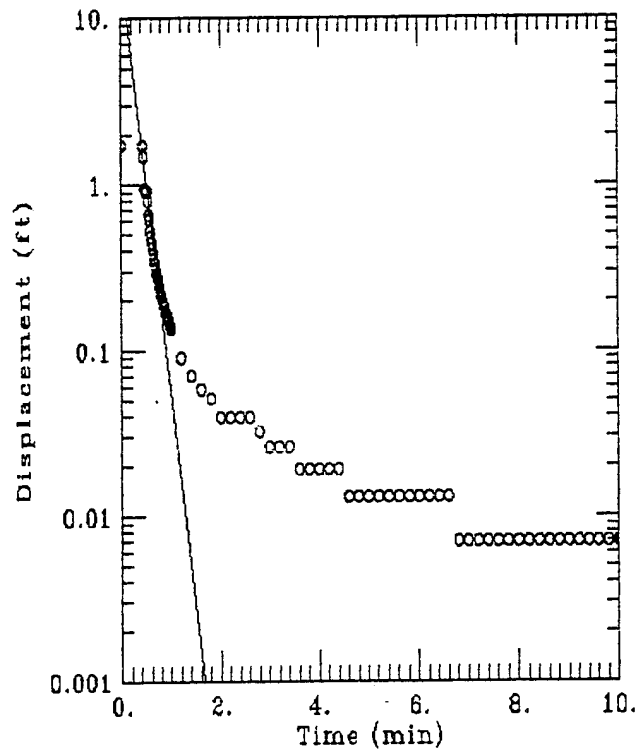
SITE 6 MONITORING WELL #4 (SLUG IN)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.4333	1.129	1
0.45	0.689	1
0.4666	0.249	1
0.4833	0.115001	1
0.5	0.644999	1
0.5166	0.478999	1
0.5333	0.255	1
0.55	0.581	1
0.5666	0.275001	1
0.5833	0.249	1
0.6	0.492	1
0.6166	0.255	1
0.6333	0.217	1
0.65	0.153001	1
0.6666	0.210999	1
0.6833	0.224	1
0.7	0.217	1
0.7166	0.210999	1
0.7333	0.210999	1
0.75	0.203999	1
0.7666	0.198001	1
0.7833	0.198001	1
0.8	0.192	1
0.8166	0.192	1
0.8333	0.185	1
0.85	0.179	1
0.8666	0.179	1
0.8833	0.172999	1
0.9	0.172999	1
0.9166	0.172999	1
0.9333	0.165999	1
0.95	0.165999	1
0.9666	0.160001	1
0.9833	0.160001	1
1	0.160001	1
1.2	0.134	1
1.4	0.120999	1
1.6	0.109	1
1.8	0.102	1
2	0.0899991	1
2.2	0.0829992	1
2.4	0.0770006	1
2.6	0.0700006	1
2.8	0.0640001	1
3	0.0579996	1
3.2	0.0509996	1
3.4	0.0509996	1
3.6	0.0449991	1
3.8	0.0390005	1
4	0.0390005	1
4.2	0.0320005	1
4.4	0.0320005	1

SITE 6 MONITORING WELL #4 (SLUG IN)

TIME (min)	DRAWDOWN (ft)	WEIGHT
4.6	0.0320005	1
4.8	0.026	1
5	0.026	1
5.2	0.019	1
5.4	0.019	1
5.6	0.0129995	1
5.8	0.00700087	1
6	0.0129995	1
6.2	0.00700087	1
6.4	0.00700087	1
6.6	0.00700087	1
6.8	0.00700087	1

5mw5 / Alpena, MI



DATA SET:

5mw5.dat
10/13/93

AQUIFER TYPE:

Unconfined

SOLUTION METHOD:

Bowser Rice

ESTIMATED PARAMETERS:

$K = 0.004464 \text{ ft/min}$
 $y_0 = 19.39 \text{ ft}$

TEST DATA:

$H_0 = 1.723 \text{ ft}$
 $r_c = 0.083 \text{ ft}$
 $r_w = 0.343 \text{ ft}$
 $L = 10. \text{ ft}$
 $b = 15. \text{ ft}$
 $H = 9. \text{ ft}$

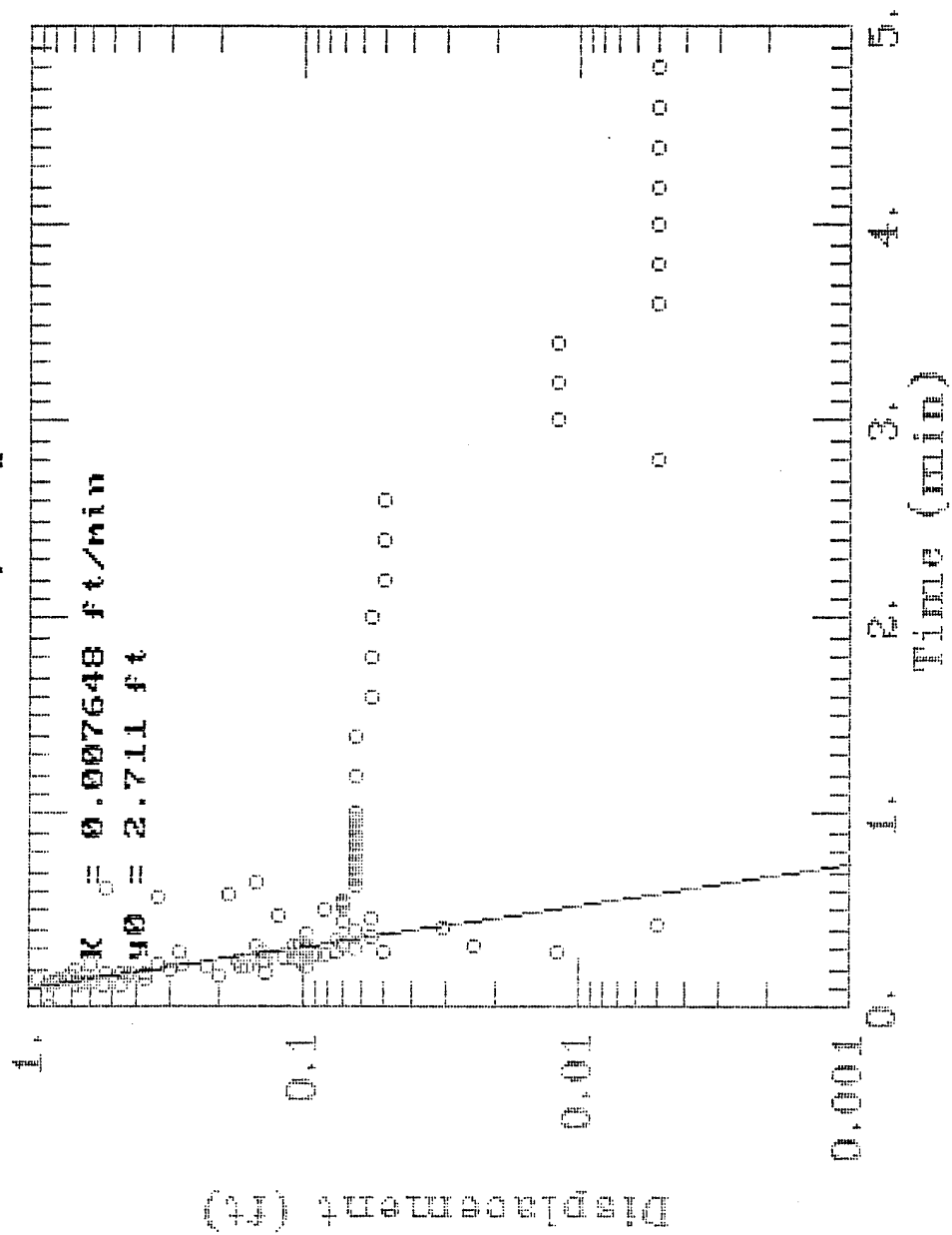
SITE 5 MONITORING WELL #5 (SLUG IN)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.4333	1.723	1
0.45	1.48	1
0.4666	0.944	1
0.5	0.9	1
0.5166	0.919	1
0.5333	0.798	1
0.55	0.657	1
0.5666	0.619	1
0.5833	0.523	1
0.6	0.485	1
0.6166	0.447	1
0.6333	0.415	1
0.65	0.383	1
0.6666	0.358	1
0.6833	0.332	1
0.7	0.307	1
0.7166	0.287	1
0.7333	0.275	1
0.75	0.256	1
0.7666	0.243	1
0.7833	0.23	1
0.8	0.217	1
0.8166	0.211	1
0.8333	0.198	1
0.85	0.192	1
0.8666	0.185	1
0.8833	0.173	1
0.9	0.166	1
0.9166	0.16	1
0.9333	0.16	1
0.95	0.153	1
0.9666	0.147	1
0.9833	0.141	1
1	0.134	1
1.2	0.0900001	1
1.4	0.0699996	1
1.6	0.0579996	1
1.8	0.0509996	1
2	0.0390005	1
2.2	0.0390005	1
2.4	0.0390005	1
2.6	0.0390005	1
2.8	0.0319995	1
3	0.026	1
3.2	0.026	1
3.4	0.026	1
3.6	0.019	1
3.8	0.019	1
4	0.019	1
4.2	0.019	1
4.4	0.019	1
4.6	0.0130004	1

SITE 5 MONITORING WELL #5 (SLUG IN)

TIME (min)	DRAWDOWN (ft)	WEIGHT
4.8	0.0130004	1
5	0.0130004	1
5.2	0.0130004	1
5.4	0.0130004	1
5.6	0.0130004	1
5.8	0.0130004	1
6	0.0130004	1
6.2	0.0130004	1
6.4	0.0130004	1
6.6	0.0130004	1
6.8	0.00699992	1
7	0.00699992	1
7.2	0.00699992	1
7.4	0.00699992	1
7.6	0.00699992	1
7.8	0.00699992	1
8	0.00699992	1
8.2	0.00699992	1
8.4	0.00699992	1
8.6	0.00699992	1
8.8	0.00699992	1
9	0.00699992	1
9.2	0.00699992	1
9.4	0.00699992	1
9.6	0.00699992	1
9.8	0.00699992	1
10	0.00699992	1

1mw3in / Alpena, MI



SITE 1 MONITORING WELL #3 (SLUG IN)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.1133	0.836	1
0.1166	0.65	1
0.12	0.453	1
0.1233	0.529	1
0.1266	0.644	1
0.13	0.784	1
0.1333	0.816	1
0.1366	0.631	1
0.14	0.58	1
0.1433	0.721	1
0.1466	0.925	1
0.15	0.759	1
0.1533	0.37	1
0.1566	0.708	1
0.16	0.619	1
0.1633	0.434	1
0.1666	0.198	1
0.17	0.689	1
0.1733	0.427	1
0.1766	0.517	1
0.18	0.453	1
0.1833	0.134	1
0.1866	0.376	1
0.19	0.67	1
0.1933	-0.0700003	1
0.1966	-0.192	1
0.2	0.306	1
0.2033	0.223	1
0.2066	-0.504	1
0.21	0.166	1
0.2133	0.096	1
0.2166	0.159	1
0.22	0.338	1
0.2233	0.599	1
0.2266	0.274	1
0.23	-0.0379998	1
0.2333	-0.0069996	1
0.2366	0.14	1
0.24	0.172	1
0.2433	0.134	1
0.2466	0.102	1
0.25	0.108	1
0.2533	0.115	1
0.2566	0.108	1
0.26	0.102	1
0.2633	0.096	1
0.2666	0.0890001	1
0.27	0.096	1
0.2733	0.096	1
0.2766	0.0829996	1
0.28	0.0829996	1
0.2833	0.14	1

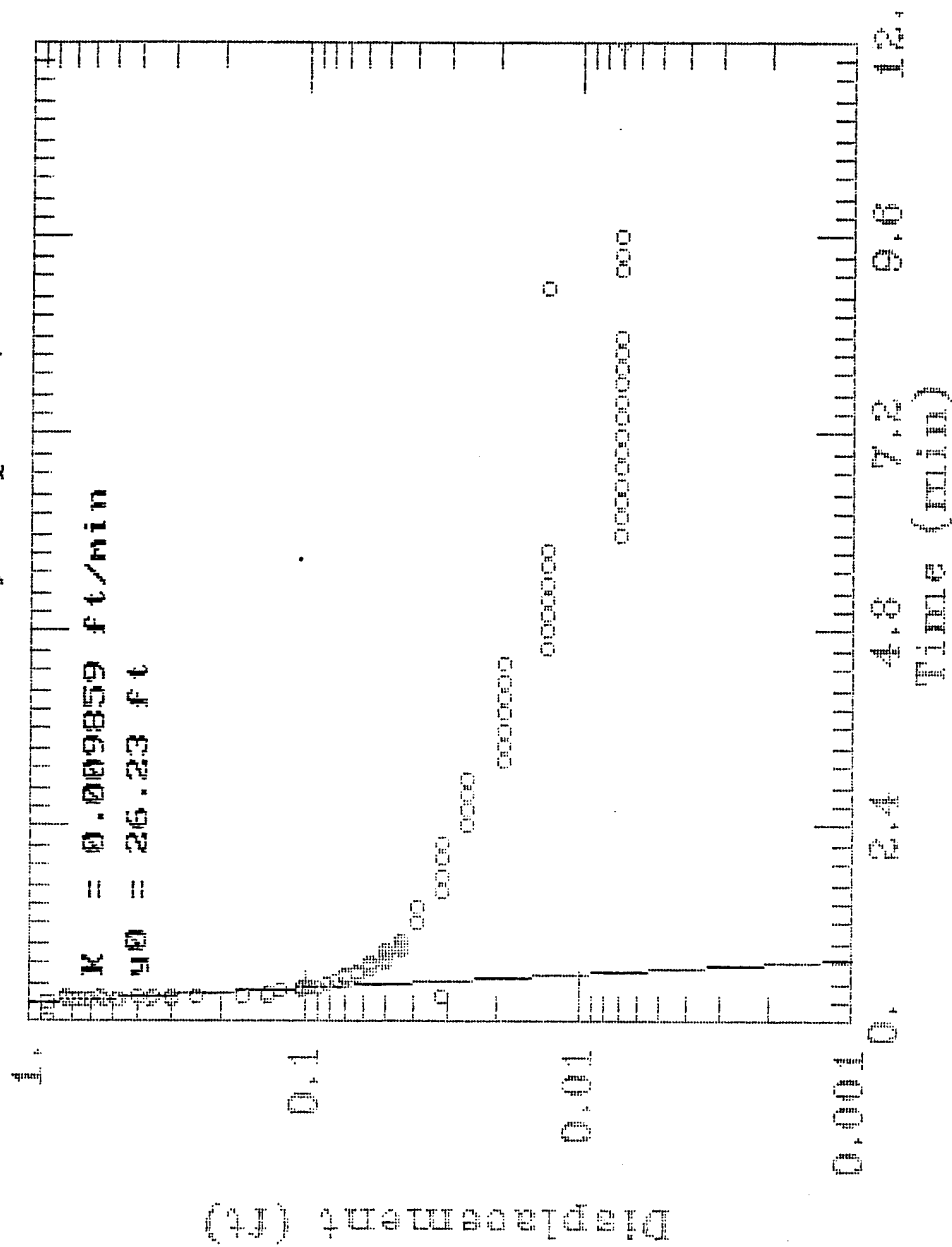
SITE 1 MONITORING WELL #3 (SLUG IN)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.2866	0.281	1
0.29	0.051	1
0.2933	0.0759996	1
0.2966	0.0129999	1
0.3	0.0640005	1
0.3033	0.096	1
0.3066	0.0640005	1
0.31	0.096	1
0.3133	0.102	1
0.3166	0.07	1
0.32	0.147	1
0.3233	0.108	1
0.3266	0.0249999	1
0.33	0.07	1
0.3333	0.096	1
0.35	0.0759996	1
0.3666	0.0569995	1
0.3833	0.096	1
0.4	0.0640005	1
0.4166	0.0319999	1
0.4333	0.00599989	1
0.45	0.07	1
0.4666	0.0569995	1
0.4833	0.121	1
0.5	0.0829996	1
0.5166	0.0759996	1
0.5333	0.07	1
0.55	0.07	1
0.5666	0.338	1
0.5833	0.185	1
0.6	-0.115	1
0.6166	0.523	1
0.6333	0.0640005	1
0.65	0.147	1
0.6666	0.0640005	1
0.6833	0.0640005	1
0.7	0.0640005	1
0.7166	0.0640005	1
0.7333	0.0640005	1
0.75	0.0640005	1
0.7666	0.0640005	1
0.7833	0.0640005	1
0.8	0.0640005	1
0.8166	0.0640005	1
0.8333	0.0640005	1
0.85	0.0640005	1
0.8666	0.0640005	1
0.8833	0.0640005	1
0.9	0.0640005	1
0.9166	0.0640005	1
0.9333	0.0640005	1
0.95	0.0640005	1

SITE 1 MONITORING WELL #3 (SLUG IN)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.9666	0.0640005	1
0.9833	0.0640005	1
1	0.0640005	1
1.2	0.0640005	1
1.4	0.0640005	1
1.6	0.0569995	1
1.8	0.0569995	1
2	0.0569995	1
2.2	0.051	1
2.4	0.051	1
2.6	0.051	1
2.8	0.00599989	1
3	0.0129999	1
3.2	0.0129999	1
3.4	0.0129999	1
3.6	0.00599989	1
3.8	0.00599989	1
4	0.00599989	1
4.2	0.00599989	1
4.4	0.00599989	1
4.6	0.00599989	1
4.8	0.00599989	1
6.2	-0.0059996	1
6.4	-0.0069996	1
6.6	-0.0069996	1
6.8	-0.0069996	1
7	-0.0069996	1
7.2	-0.0069996	1
7.4	-0.0069996	1
7.6	-0.0069996	1
7.8	-0.0069996	1
8	-0.0069996	1
8.2	-0.0069996	1

1mw2in / Alpena, MI



SITE 1 MONITORING WELL #2 (SLUG IN)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.26	0.849	1
0.2633	0.728	1
0.2666	0.472	1
0.27	0.594	1
0.2733	0.632	1
0.2766	0.728	1
0.28	0.651	1
0.2833	0.696	1
0.2866	0.536	1
0.29	0.364	1
0.2933	0.479	1
0.2966	0.3	1
0.3	0.555	1
0.3033	-0.166	1
0.3066	0.249	1
0.31	0.0319995	1
0.3133	0.134	1
0.3166	0.351	1
0.32	0.3	1
0.3233	0.721	1
0.3266	0.402	1
0.33	-0.108	1
0.3333	0.166	1
0.35	-0.0889998	1
0.3666	0.134	1
0.3833	0.121	1
0.4	0.102	1
0.4166	0.102	1
0.4333	0.0959997	1
0.45	0.0900001	1
0.4666	0.0830001	1
0.4833	0.0830001	1
0.5	0.0769996	1
0.5166	0.0769996	1
0.5333	0.0699996	1
0.55	0.0699996	1
0.5666	0.0699996	1
0.5833	0.0640001	1
0.6	0.0640001	1
0.6166	0.0640001	1
0.6333	0.0640001	1
0.65	0.0579996	1
0.6666	0.0579996	1
0.6833	0.0579996	1
0.7	0.0579996	1
0.7166	0.0579996	1
0.7333	0.0579996	1
0.75	0.0509996	1
0.7666	0.0509996	1
0.7833	0.0509996	1
0.8	0.0509996	1
0.8166	0.0509996	1

SITE 1 MONITORING WELL #2 (SLUG IN)

TIME (min)	DRAWDOWN (ft)	WEIGHT
0.8333	0.0509996	1
0.85	0.0509996	1
0.8666	0.045	1
0.8833	0.0509996	1
0.9	0.045	1
0.9166	0.045	1
0.9333	0.045	1
0.95	0.045	1
0.9666	0.045	1
0.9833	0.045	1
1	0.045	1
1.2	0.0390005	1
1.4	0.0390005	1
1.6	0.0319995	1
1.8	0.0319995	1
2	0.0319995	1
2.2	0.0319995	1
2.4	0.026	1
2.6	0.026	1
2.8	0.026	1
3	0.026	1
3.2	0.019	1
3.4	0.019	1
3.6	0.019	1
3.8	0.019	1
4	0.019	1
4.2	0.019	1
4.4	0.019	1
4.6	0.0130004	1
4.8	0.0130004	1
5	0.0130004	1
5.2	0.0130004	1
5.4	0.0130004	1
5.6	0.0130004	1
5.8	0.0130004	1
6	0.00699992	1
6.2	0.00699992	1
6.4	0.00699992	1
6.6	0.00699992	1
6.8	0.00699992	1
7	0.00699992	1
7.2	0.00699992	1
7.4	0.00699992	1
7.6	0.00699992	1
7.8	0.00699992	1
8	0.00699992	1
8.2	0.00699992	1
8.4	0.00699992	1
9	0.0130004	1
9.2	0.00699992	1
9.4	0.00699992	1
9.6	0.00699992	1

SITE 1 MONITORING WELL #2 (SLUG IN)

TIME (Min)	DRAWDOWN (ft)	WEIGHT
12	0.00699992	1



**Appendix C: Soil Boring Logs, Monitoring Well
Construction Forms and Geotechnical Results**



Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: PBG1

Sheet 1 of 1

Borehole Location: Background--north side.		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/9/93		Date Completed: 8/9/93	
Drilling Equipment: CME 750		Total: 12.0		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples: 4	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 11.0		Water Depth Elev. (ft):	
Completion Information: This is a background borehole. Borehole abandoned with Hole Plug.		Logged By: J Briegel		Checked By: P Lay	

[illegible]

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

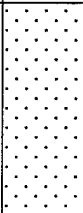
Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **BG2**

Sheet **1** of **1**

Borehole Location: Background		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/15/93	Date Completed: 8/15/93		
Drilling Equipment: CME 750		Total: Depth (ft) 4.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: 2	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 2.5		Water Depth Elev. (ft):	
Completion Information: Grouted to surface with cement/bentonite slurry.		Logged By: J Briegel		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
			13	0758	0/0			SP	SAND; dark brown; organic rich; with fumes. Grading to brown; to medium to coarse, well sorted qtz/RF sand.	Continuous split spoon samples. WET at 2.5'. No hydrocarbon odors noted.
			28	0803	0/0					
5										TD = 4'.
10										
15										
20										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

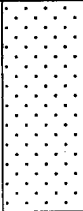
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1SB4

Sheet 1 of 1

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/24/93	Date Completed: 8/24/93		
Drilling Equipment: CME 750		Total: Depth (ft) 4.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 2.5	Water Depth Elev. (ft):		
Completion Information: Borehole was abandoned with Hole Plug after sampling was complete.		Logged By: D Jayne		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
			19	0809	0/0			SP	Topsoil for surfical 6 inches. SAND; orangeish brown; medium grained sand.	Collected double water sample volume for duplicate.
			32	0813					Grading to brown.	Collected double water sample volume for MS/MSD.
5										TD = 4'.
10										
15										
20										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

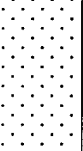
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1SB5

Sheet 1 of 1

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels		Date Started: 8/24/93	Date Completed: 8/24/93	
Drilling Equipment: CME 750			Total: Depth (ft) 4.0	Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers			Number of Samples:	Dist.: NA	Undist.: NA Core: NA
Borehole Size (inches): 8.25"			Water Depth (ft bgs):		Water Depth Elev. (ft):
Completion Information: Borehole abandoned with Hole Plug.			Logged By: D Jayne		Checked By: J Briegel

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol			USCS
			46	0833	0/0			AF	Artificial fill; grey sand with gravel.	Uppermost foot is artificial fill.
			40	0836	0/0			SP	SAND; brownish orange; mostly medium grained sand. Grading to light grey. Grading to orangeish brown.	
5										TD = 4'.
10										
15										
20										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

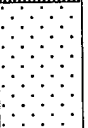
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1SB6

Sheet 1 **of** 1

Borehole Location: Site 1		Elevation and Datum (ft): Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/24/93	Date Completed: 8/24/93
Drilling Equipment: CME 750		Total Depth (ft): 4.0	Depth to Bedrock (ft): NA
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 3.0	Water Depth Elev. (ft):
Completion Information: Borehole abandoned with Hole Plug.		Logged By: D Jayne	Checked By: J Briegel

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
			38	0848				AF	Artificial fill; grey sand with gravel.	
			64	0854				SP	SAND; light grey; medium grained sand. Grading to light brown to grey.	
5										TD = 4'.
10										
15										
			</							

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

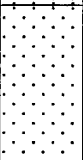
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1SB7

Sheet 1 **of** 1

Borehole Location: <u>Site 1</u>		Elevation and Datum (ft): <u>Ground:</u>	
Drilling Agency: <u>Stearns</u>		Driller: <u>D. Giffels</u>	Top of Casing:
Drilling Equipment: <u>CME 750</u>		Date Started: <u>8/24/93</u>	Date Completed: <u>8/24/93</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Total: Depth (ft) <u>4.0</u>	Depth to Bedrock (ft): <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Number of Samples:	Dist.: <u>NA</u>
Completion Information: <u>Borehole abandoned with Hole Plug.</u>		Undist.: <u>NA</u>	Core: <u>NA</u>
		Water Depth (ft bgs): <u>3.0</u>	Water Depth Elev. (ft):
		Logged By:	Checked By:
		D Jayne	J Briegel

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol			USCS
			31	0905				AF	Artificial fill; grey sand with gravel.	Wet at 3'. TD = 4'.
			48	0908				SP	SAND; light grey; medium grained.	
5										
10										
15										
20										

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

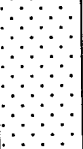
Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **S1SB8**

Sheet **1** of **1**

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/24/93		Date Completed: 8/24/93	
Drilling Equipment: CME 750		Total: Depth (ft) 4.0		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 3.0		Water Depth Elev. (ft):	
Completion Information: Borehole abandoned with Hole Plug.		Logged By: D Jayne		Checked By: J Briegel	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
			18	0933				AF	Artificial fill; Dark brown topsoil.	Wet at about 3'. TD = 4'.
			34	0935				SP	SAND; light brown; medium grained sand. Grading to reddish brown.	
5										
10										
15										
20										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

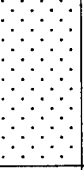
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1SB9

Sheet 1 of 1

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/24/93		Date Completed: 8/24/93	
Drilling Equipment: CME 750		Total: 4.0		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs):		Water Depth Elev. (ft):	
Completion Information: Borehole abandoned with Hole Plug.		Logged By: D Jayne		Checked By: J Briegel	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
			32	0946	0/0			AF	Artificial fill.	No water level data collected.
			54	0952				SP	SAND; light brown; medium grained, well-sorted sand. Grading to light grey with thin clay layers.	
5										TD = 4'.
10										
15										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1SB10

Sheet 1 **of** 1

Borehole Location: Site 1		Elevation and Datum (ft): Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/24/93	Date Completed: 8/24/93
Drilling Equipment: CME 750		Total Depth (ft): 4.0	Depth to Bedrock (ft): NA
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 3.0	Water Depth Elev. (ft):
Completion Information: Borehole abandoned with Hole Plug.		Logged By: D Jayne	Checked By: J Briegel

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
			20	1005	0/0			AF	Artificial fill; topsoil.	No field screen samples collected.
			36	1008				SP	SAND; greyish brown; medium grained sand.	
									Grading to light brown.	Wet at about 3'.
5										TD = 4'.
10										
15										
20										

No field screen samples collected.

Wet at about 3'.

TD = 4'.

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1SB11

Sheet 1 of 1

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/24/93	Date Completed: 8/24/93		
Drilling Equipment: CME 750		Total: Depth (ft) 4.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 3.0		Water Depth Elev. (ft):	
Completion Information: Borehole abandoned with Hole Plug.		Logged By: D Jayne		Checked By: J Briegel	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol	USCS		
62		1034				AF	Asphalt; 6 inches thick at surface. Artificial fill beneath asphalt. SAND; brown; medium grained sand. Grading to greyish. Grading back to brown sand.	No field screen. Wet at about 3'.
63		1038				SP		
5								TD = 4'.
10								
15								
20								



BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1SB12

Sheet 1 of 1

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/24/93		Date Completed: 8/24/93	
Drilling Equipment: CME 750		Total: Depth (ft) 4.0		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 1.5		Water Depth Elev. (ft):	
Completion Information: Borehole abandoned with Hole Plug.		Logged By: D Jayne		Checked By: J Briegel	

[illegible]

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

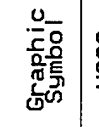
Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **S1PZ1**

Sheet **1** of **1**

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/23/93		Date Completed: 8/23/93	
Drilling Equipment: CME 750		Total: Depth (ft) 8.0		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples: 0	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 4.0		Water Depth Elev. (ft):	
Completion Information: Completed as a piezometer. Abandoned 9/12/93 with Hole Plug. See piezometer construction log.		Logged By: D Jayne		Checked By: J Briegel	

Depth (feet)	Samples				Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol	USCS		
5					80/0			SP	SAND; light brown; medium grained; moist. Same as above.	Not sampled with split spoon. Auger cuttings noted to have hydrocarbon odor. PID reads 80ppm. Screened from 3' to 8'. Applied filter pack from 2' to 8'.
10										TD = 8'.
15										
20										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1PZ2

Sheet 1 **of** 1

Borehole Location: <u>Site 1</u>		Elevation and Datum (ft): <u>Ground:</u>	
Drilling Agency: <u>Stearns</u>		Top of Casing:	
Driller: <u>D. Giffels</u>		Date Started: <u>8/23/93</u>	Date Completed: <u>8/23/93</u>
Drilling Equipment: <u>CME 750</u>		Total Depth (ft): <u>8.0</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Number of Samples: <u>0</u>	Dist.: <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Water Depth (ft bgs):	Water Depth Elev. (ft):
Completion Information: <u>Completed as a piezometer. Abandoned 9/12/93 with Hole Plug. See piezometer construction log.</u>		Logged By: <u>D Jayne</u>	Checked By: <u>J Briegel</u>

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	Blow Count	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol	USCS		
5				60/0			SP	SAND; light brown; medium grained.	Not sampled with split spoons. Hydrocarbon odors noted on cuttings. PID reads 60 ppm.
10									
15									
20									TD = 8'.

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

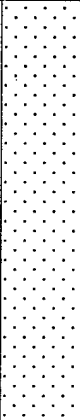
Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **S1PZ3**

Sheet **1** of **1**

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/23/93	Date Completed: 8/23/93		
Drilling Equipment: CME 750		Total: Depth (ft) 8.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs):		Water Depth Elev. (ft):	
Completion Information: Completed as a piezometer. Abandoned 12 Sep 93 with Hole Plug. See piezometer construction log.		Logged By: D Jayne		Checked By: J Briegel	

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol		
5								SP	Asphalt pavement at surface; 6" thick. SAND; light brown; medium grained.

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1MW1

Sheet 1 of 2

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/24/93	Date Completed: 8/24/93		
Drilling Equipment: CME 750		Total Depth (ft): 40	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 2.5	Water Depth Elev.(ft):		
Completion Information: This borehole was completed as a monitoring well, with 2" casing. See monitoring well construction log.		Logged By: D Jayne		Checked By: J Briegel	

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS		
	7		1353		.5/0					
	20		1357		0/01					
5	9		1401		0/0			SP		
			1420							
	8		1422		.5/0					
10	10		1425		.7/0			CL		
	4		1429		.1/0			SP		
	4		1433		0/0			CL		
15			1435		0/0					
	14		1455		0/0			SC		
20	9		1459		0/0					
	31		1503		0/0					
25	29		1511		0/0			SP		
	46		1515		0/0					
	51		1518		0/0					

BORING LOG

Project Name: MI ANG, Alpena CRTIC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1MW1

Sheet 2 of 2

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS		
				1523				Grading to fine to medium sand; to reddish brown from greyish; with some fine gravel.		
	108		1550							Hydropunch sample taken from 30'-32' level.
35	56		1606					SAND; greyish brown with some reddish layers; fine to coarse sand; with fine gravel; stiff.		
	20		1612					Grading with more gravel and gravelly layers.		Wanted to sample with Shelby tube at 38', but no clay layer.
	15		1620					CLAYEY SAND/SANDY CLAY; grey.		
40										Hydropunch sample taken from 38'-40' level.
										TD = 40.2'; limestone bedrock at bottom of borehole.
45										
50										
55										
60										
65										
70										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1MW2

Sheet 1 **of** 1

Borehole Location: <u>Site 1</u>		Elevation and Datum (ft): <u>Ground:</u> <u>Top of Casing:</u>	
Drilling Agency: <u>Stearns</u>	Driller: <u>D. Giffels</u>	Date Started: <u>8/26/93</u>	Date Completed: <u>8/27/93</u>
Drilling Equipment: <u>CME 750</u>		Total Depth (ft): <u>13</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Number of Samples: <u>NA</u>	Dist.: <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Water Depth: (ft bgs): <u>7.0</u>	Water Depth Elev. (ft):
Completion Information: <u>This borehole was completed as a monitoring well, with 2" casing. See monitoring well construction log.</u>		Logged By: <u>M Stoker</u>	Checked By: <u>J Briegel</u>

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*			
			22	1615	0/0				
5				1634					
			4	1637	0/0				
10									
15									
20									
25									
30									

30

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1MW3

Sheet 1 **of** 1

Borehole Location: <u>Site 1</u>		Elevation and Datum (ft): <u>Ground:</u>	
		Top of Casing:	
Drilling Agency: <u>Stearns</u>	Driller: <u>D. Giffels</u>	Date Started: <u>8/26/93</u>	Date Completed: <u>8/27/93</u>
Drilling Equipment: <u>CME 750</u>		Total: Depth (ft) <u>13</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Number of Samples: <u>NA</u>	Dist.: <u>NA</u>
		Undist.: <u>NA</u>	Core: <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Water Depth: (ft bgs) <u>6.0</u>	Water Depth Elev.(ft):
Completion Information: <u>This borehole was completed as a monitoring well, with 2" casing. See monitoring well construction log.</u>		Logged By: <u>M Stoker</u>	Checked By: <u>J Briegel</u>

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS	
15	15		1653		0/0			GP	GRAVEL; Artificial fill at surface for 1 foot.
5									SAND.
10								SP	SAND.
	6		1740		0/0			CL	SAND.
									CLAY/SILTY CLAY; grey; plastic.
15									
20									
25									
30									

Hydropunch sample at 7'.

TD = 13'.



BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800Name of Borehole or Well: S1MW4

Sheet 1 of 1

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/27/93		Date Completed: 8/27/93	
Drilling Equipment: CME 750		Total: Depth (ft) 13		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 3.0		Water Depth Elev. (ft):	
Completion Information: Borehole was completed as a monitoring well, with 2" casing. See monitoring well construction log.		Logged By: D Jayne		Checked By: J Briegel	

[illegible]

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1MW5

Sheet 1 **of** 1

Borehole Location: <u>Site 1</u>		Elevation and Datum (ft): <u>Ground:</u>	
		Top of Casing:	
Drilling Agency: <u>Stearns</u>	Driller: <u>D. Giffels</u>	Date Started: <u>8/28/93</u>	Date Completed: <u>8/28/93</u>
Drilling Equipment: <u>CME 750</u>		Total Depth (ft): <u>3</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Number of Samples: <u>NA</u>	Dist.: <u>NA</u>
		Undist.: <u>NA</u>	Core: <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Water Depth: (ft bgs): <u>2.5</u>	Water Depth Elev. (ft):
Completion Information: <u>This borehole was abandoned. No Monitoring Well was installed.</u>		Logged By: <u>J Briegel</u>	Checked By: <u>J Briegel</u>

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS	
			7	0829	0/0			SP	SAND; dark brown; medium to coarse grained quartzose sand; well sorted.
5									Augered from surface to 1'.
									Wet at 2.5'.
									TD = 3'. Did not drill/drive past 3'.
									Hydropunch sample taken between 3'-7'.
10									
15									
20									
25									
30									

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1MW6

Sheet 1 of 1

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/28/93	Date Completed: 8/28/93		
Drilling Equipment: CME 750		Total: Depth (ft) 13	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 2.0		Water Depth Elev.(ft):	
Completion Information: Borehole was completed as a monitoring well, with 2" casing. See monitoring well construction log.		Logged By: J Briegel		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS	
5	17		1043		0/0			SP	
			1100						
10	7		1645					CL	
15									
20									
25									
30									

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1MW7

Sheet 1 **of** 1

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/28/93	Date Completed: 8/28/93		
Drilling Equipment: CME 750		Total: Depth (ft) 3	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA 2	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 1.5		Water Depth Elev.(ft):	
Completion Information: Borehole was abandoned with Hole Plug and cuttings.		Logged By: J Briegel		Checked By: P Lay	

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS			
			15 1112	0/0			SP	SAND; brown; coarse grained sand.		Wet at 1.5'. TD = 3'. No augering/driving split spoon past 3'. Hydropunch sample taken at 3'-7' level.
5										
10										
15										
20										
25										
30										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1MW8

Sheet 1 of 1

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/28/93	Date Completed: 8/29/93		
Drilling Equipment: CME 750		Total: Depth (ft) 13	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 2.0		Water Depth Elev. (ft):	
Completion Information: Borehole abandoned after caving in, filled with Hole Plug to surface.		Logged By: D Jayne		Checked By: J Briegel	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS	
5				1318				SP	SAND; brown. Very moist to wet.
6	6			1632				CH/	CLAYEY SAND/SANDY CLAY; grey; with fine to medium grained sand; moderately stiff to stiff; moist; slight odor.
10	4			1634				SC	
	4			1637				CH	CLAY; grey; with 15% sand; stiff; slight odor; moist to slightly moist.
15									
20									
25									
30									

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1MW9

Sheet 1 **of** 1

Borehole Location: <u>Site 1</u>		Elevation and Datum (ft): <u>Ground:</u>	
Drilling Agency: <u>Stearns</u>		Driller: <u>D. Giffels</u>	Top of Casing:
Drilling Equipment: <u>CME 750</u>		Date Started: <u>8/28/93</u>	Date Completed: <u>8/28/93</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Total Depth (ft): <u>13</u>	Depth to Bedrock (ft): <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Number of Samples: <u>2</u> Dist.: <u>NA</u>	Undist.: <u>NA</u> Core: <u>NA</u>
Completion Information: <u>Completed as a monitoring well. Well was abandoned soon after sampling. See monitoring well construction log.</u>		Water Depth (ft bgs): <u>2.0</u>	Water Depth Elev.(ft):
		Logged By: <u>J Briegel</u>	Checked By: <u>J Briegel</u>

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS	
5				1350				SP	
				1407					
10				1612				CH	
15									
20									
25									
30									

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1MW10

Sheet 1 of 1

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/29/93	Date Completed: 8/29/93		
Drilling Equipment: CME 750		Total: 17	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 1.5		Water Depth Elev.(ft):	
Completion Information: Borehole completed as monitoring well. Casing pulled and hole grouted on 9/12/93 to surface. See monitoring well construction log.		Logged By: J Briegel/D Jayne		Checked By: J Briegel	

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS			
			1342				SP	SAND.		Located in woods 90' west of S1MW6.
5			5 1402	0/0			SC	CLAYEY SAND/SANDY CLAY; grey to greyish brown; no hydrocarbon odor.		Wet at about 1.5'.
			4 1418	0/0			SC/CL	CLAY; with sand and silt; with minor sand seams.		Drove hydropunch sampler from surface to 4'; collected water.
			3 1425				SP	SAND; greyish brown; coarse grained quartz sand; with hydrocarbon odor; wet.		Has strong hydrocarbon odor at about 9'.
10			1 1435	0/0			CL	SANDY CLAY; greyish brown.		
			1 1445				CH	CLAY; highly plastic.		
15			1 1510				SP	SAND.		
			1527							TD = 17'.
20										Drove hydropunch sampler from 17'-21'; collected water sample. Water is clear to slightly turbid; no hydrocarbon odor.
25										
30										

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **S1MW11**

Sheet **1** of **1**

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/29/93	Date Completed: 8/29/93		
Drilling Equipment: CME 750		Total Depth (ft): 15	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 2.0	Water Depth Elev. (ft):		
Completion Information: Borehole completed as a monitoring well, with 2" casing. See monitoring well construction log.		Logged By: P Lay		Checked By: D Jayne	

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol				USCS
5			7	1705				OH	CLAY; organic clay of medium to high plasticity.		Wet at about 2'. Augered from 3'-7' without recording lithology. Hydropunch sample taken from 12'-16'. TD = 15'.
								SP	SAND; light brown; fine to medium grained sand; very moist to wet.		
			2	1710				SC	CLAYEY SAND; grey; with 2"-3" sand stringer; moist.		
			5	1712					Grading to CLAYEY SAND/SANDY CLAY;		
				1715				CH	CLAY; grey; with trace of sand; slightly moist to moist.		
10				1720					CLAY; grey; with trace of sand; slightly moist to moist.		
15									Grading with silt and trace of fine sand.		
20											
25											
30											

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1MW12

Sheet 1 of 1

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 9/8/93		Date Completed: 9/8/93	
Drilling Equipment: CME 750		Total: Depth (ft) 15		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 5.0		Water Depth Elev.(ft):	
Completion Information: Completed as a monitoring well, with 2" casing. See monitoring well construction log.		Logged By: P Lay/D Jayne		Checked By: J Briegel	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS	
				1050					
5	4		1100					SP	
	6		1105						
10	4		1110						
	4		1112					CH	
	4		1120						
15									TD = 15'.
20									
25									
30									

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **S1MW13**

Sheet **1** of **1**

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 9/8/93	Date Completed: 9/10/93		
Drilling Equipment: CME 750		Total Depth (ft): 15	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 5.0	Water Depth Elev. (ft):		
Completion Information: Completed as a monitoring well, with 2" casing. See monitoring well construction log.		Logged By: D Jayne		Checked By: J Briegel	

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol			
				1515						
5								SAND; reddish brown; medium grained.		Drove hydropunch from surface to 6'; collected water sample.
								SP		Wet at about 5'.
								Same as above.		
10										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: S1MW14

Sheet 1 **of** 1

Borehole Location: <u>Site 1</u>		Elevation and Datum (ft): <u>Ground: Top of Casing:</u>	
Drilling Agency: <u>Stearns</u>	Driller: <u>D. Giffels</u>	Date Started: <u>9/11/93</u>	Date Completed: <u>9/12/93</u>
Drilling Equipment: <u>CME 750</u>		Total Depth (ft): <u>30</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Number of Samples: <u>NA</u>	Dist.: <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Water Depth: (ft bgs)	Water Depth Elev. (ft):
Completion Information: <u>Installed a 30' deep monitoring well, with 2" casing. See monitoring well construction log.</u>		Logged By: <u>D Jayne</u>	Checked By: <u>J Briegel</u>

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS		
5								SP		See log of S1MW6 for detailed description of shallow lithology.
10								CH		
15								SP		Augered from surface to 14.5' with 14.25" augers, then continued with 8.25" augers to TD at 30'.
20										
25				0825				SP?		Drove hydropunch from 20'-26'; collected water sample. May have hit sand at 23 feet, according to driller's remarks.
30										

TD = 30'.

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

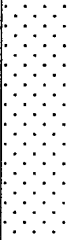
Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **S1MW15**

Sheet **1** of **1**

Borehole Location: Site 1		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 9/11/93	Date Completed: 9/11/93		
Drilling Equipment: CME 750		Total: Depth (ft) 7	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs)		Water Depth Elev.(ft):	
Completion Information: Completed as a monitoring well, with 2" casing. See monitoring well construction log.		Logged By: J Briegel		Checked By: J Briegel	

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol			
5			4	1413	0/0			SP?	Soil not described 0'-5'. SAND; brown; medium to coarse grained, well-sorted, quartzose sand; wet.	Augered from surface to 5 feet deep without recording lithology. TD = 7'. Drove hydropunch down from 7'-10' and collected water.
								SP		
10										
15										
20										
25										
30										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

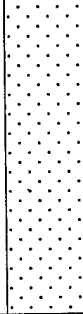
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2SB2-A

Sheet 1 **of** 1

Borehole Location: <u>Site 2 (Motor Pool)</u>		Elevation and Datum (ft): <u>Ground:</u>	
Drilling Agency: <u>Stearns</u>		Driller: <u>D. Giffels</u>	Date Started: <u>8/14/93</u>
Drilling Equipment: <u>CME 750</u>		Total Depth (ft): <u>8.0</u>	Date Completed: <u>8/14/93</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Number of Samples: <u> </u>	Depth to Bedrock (ft): <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Dist.: <u>NA</u>	Undist.: <u>NA</u>
Completion Information: <u>First of two boreholes named MP2SB2. Grouted to surface with bentonite.</u>		Water Depth (ft bgs): <u> </u>	Water Depth Elev. (ft): <u> </u>
Logged By: <u>J Briegel</u>		Checked By: <u>P Lay</u>	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
5			54	0736	.5/0			AF	Asphalt topping 6" thick. Artificial fill: brown; sand with gravel.	Asphalt at the surface, underlain by sand/gravel subbase.
			33	0743	.5/0			SP	SAND; mottled brown and orange brown; medium to coarse sand; with trace of fines; loose; slightly moist. Grading to with coarser, subrounded to subangular, quartzose sand; brown.	Hydrocarbon odors not detected.
			25	0748	.2/0					
			26	0755	.1/0					
10										Duplicate soil sample collected.
15										TD = 8'.

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2SB2-B

Sheet 1 **of** 1

Borehole Location: <u>Site 2 (Motor Pool)</u>		Elevation and Datum (ft): <u>Ground: Top of Casing:</u>	
Drilling Agency: <u>Stearns</u>	Driller: <u>D. Giffels</u>	Date Started: <u>8/17/93</u>	Date Completed: <u>8/17/93</u>
Drilling Equipment: <u>CME 750</u>		Total: Depth (ft) <u>5.0</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Number of Samples: <u>NA</u>	Undist.: NA Core: NA
Borehole Size (inches): <u>8.25"</u>		Water Depth (ft bgs):	Water Depth Elev. (ft):
Completion Information: <u>Second of two boreholes named MP2SB2. Grouted to surface.</u>		Logged By: <u>D Jayne</u>	Checked By: <u>P Lay</u>

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
			55	1634	.4/0			AF	Artificial fill; sand with gravel.	Re-drill of earlier borehole (MP2SB2-A).
			40	1641				SP	SAND; brown to dark brown. Grading to grey. SAND; brownish orange; medium grained sand.	
5										TD = 5'.
10										
15										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2SB3

Sheet 1 of 1

Borehole Location: Site 2		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/14/93		Date Completed: 8/14/93	
Drilling Equipment: CME 750		Total: Depth (ft) 8.0		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 6.5		Water Depth Elev. (ft):	
Completion Information: Grouted to surface after sampling accomplished.		Logged By: D Jayne		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	TD (ppm)	FID (ppm) S/J/B*			Graphic Symbol	USCS
5			27	0825				AF	6" of asphalt at surface. Artificial fill; light grey, medium grained sand.	6" of asphalt at surface. SAND; light grey; medium grained sand. PO2B30103 collected as duplicate. Wet at 6.5'. No fixed base sample collected.
			28	0830	.5/0			SP	SAND; light grey; medium grained sand.	
			28	0835	.5/0				Grading to light brown.	
			15	0845	.1/0				Grading to with clay; moist.	
10									TD = 8'.	
15										
20										

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **MP2SB4-A**

Sheet **1** of **1**

Borehole Location: Site 2		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/14/93	Date Completed: 8/14/93		
Drilling Equipment: CME 750		Total: Depth (ft) 8.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 6.5		Water Depth Elev. (ft):	
Completion Information: Grouted to surface after sampling done. Hole was re-drilled later.		Logged By: J Briegel		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
5			25	0909	.5/0			AF	Asphalt pavement at surface for 6".	No sample had noticeable hydrocarbon odors. Water at 6.5'. Field screen only run on water.
			34	0913	4.7/0				SAND; brown to orange brown; medium to coarse grained, well-sorted, sand; slightly moist.	
			22	0919	.5/0			SP	Color change to light brown.	
			18	0923	.1/0				Grading to coarse to very coarse sand.	
10									TD = 8'.	
15										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2SB4-B

Sheet 1 **of** 1

Borehole Location: Site 2		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/17/93	Date Completed: 8/17/93		
Drilling Equipment: CME 750		Total: Depth (ft) 5.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs):		Water Depth Elev. (ft):	
Completion Information: Grouted to surface after sampling done. Hole was re-drill from earlier one.		Logged By: D Jayne		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
			46	1725	0/0				Artificial fill; sand with gravel.	This is a re-drill of MP2SB4-A.
			30	1733	0/0				SAND; orange brown; medium grained, quartzose sand.	
									Grading to light brown.	No water encountered; no hydrocarbon odors detected.
5										TD = 5'.
10										
15										
20										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

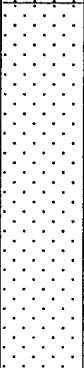
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2SB5-A

Sheet 1 **of** 1

Borehole Location: <u>Site 2</u>		Elevation and Datum (ft): <u>Ground:</u>	
		Top of Casing:	
Drilling Agency: <u>Stearns</u>	Driller: <u>D. Giffels</u>	Date Started: <u>8/14/93</u>	Date Completed: <u>8/14/93</u>
Drilling Equipment: <u>CME 750</u>		Total Depth (ft): <u>8.0</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Number of Samples:	Dist.: <u>NA</u>
		Undist.: <u>NA</u>	Core: <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Water Depth (ft bgs): <u>6.5</u>	Water Depth Elev. (ft):
Completion Information: <u>Grouted to surface after sampling done. Hole was re-drilled later.</u>		Logged By: <u>J Briegel</u>	Checked By: <u>P Lay</u>

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol			USCS
5			39	0950	0/0			AF	Asphalt at surface; underlain by sandy gravel base.	No sample had noticable hydrocarbon odors.
			32	0955	0/0				SAND; dark brown/orange; with clay layer; moist.	
			34	1000	0/0			SP	Grading to light grey.	
			13	1005	0/0				Grading slightly finer grained.	
10									Water at 6.5'. Field screen only run on water.	
15									TD = 8'.	

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

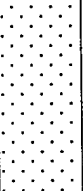
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2SB5-B

Sheet 1 of 1

Borehole Location: Site 2		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/17/93		Date Completed: 8/17/93	
Drilling Equipment: CME 750		Total: Depth (ft) 5.0		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs):		Water Depth Elev. (ft):	
Completion Information: Grouted to surface after sampling done. Hole was re-drill from earlier one.		Logged By: D Jayne		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
			40	1657	.3/0			AF	Artificial fill; sand with gravel.	This is a re-drill of MP2SB5-A.
			25	1702	0/0			SP	SAND; brownish orange; medium grained sand.	
5										No water encountered; no hydrocarbon odors detected.
										TD = 5'.
10										
15										

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

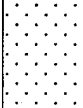
Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **MP2SB6**

Sheet **1** of **1**

Borehole Location: Site 2		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/15/93	Date Completed: 8/15/93		
Drilling Equipment: CME 750		Total: Depth (ft) 6.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 5.5		Water Depth Elev. (ft):	
Completion Information: Grouted to surface with cement/bentonite mixture.		Logged By: J Briegel		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
5			49	1019	0/0			AF	Artificial fill; 2.5 feet of topsoil and fill; brown; sand and gravel; with organic debris; loose; dry.	No field screen done on samples.
	32		1026	0/0					SAND; light brown to orange brown; medium to coarse grained, quartz sand; loose; slightly moist.	Base of fill at 2.5'.
	31		1033	0/0			SP			No hydrocarbon odors detected while drilling/sampling. Wet at 5.5'.
10										TD = 6'.
15										
20										
25										
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										
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95										
100										

20

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

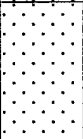
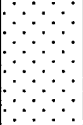
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2SB7

Sheet 1 **of** 1

Borehole Location: <u>Site 2</u>		Elevation and Datum (ft): <u>Ground:</u>	
Drilling Agency: <u>Stearns</u>		Driller: <u>D. Giffels</u>	Date Completed: <u>8/15/93</u>
Drilling Equipment: <u>CME 750</u>		Date Started: <u>8/15/93</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Total Depth (ft): <u>6.0</u>	Number of Samples: <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Dist.: NA	Undist.: NA
Completion Information: <u>Grouted to surface with cement/bentonite mixture.</u>		Water Depth (ft bgs): <u>6.0</u>	Core: NA
		Water Depth Elev. (ft):	
		Logged By: <u>J Briegel</u>	Checked By: <u>P Lay</u>

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol			USCS
5			22	1056				AF	Artificial fill; topsoil covering gravelly sand.	Wet at about 6'. TD = 6'.
			32	1101					SAND; mottled orange brown and brown; medium to coarse sand; loose; moist.	
			24	1106				SP	Grading to light brown; to mostly fine to medium grained sand.	
10										
15										

Wet at about 6'.

TD = 6'.



BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2SB8

Sheet 1 of 3

Borehole Location: Site 2		Elevation and Datum (ft): Ground: Top of Casing:			
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/15/93		Date Completed: 8/15/93	
Drilling Equipment: CME 750		Total: Depth (ft) 58.0		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 6.0		Water Depth Elev. (ft):	
Completion Information: Grouted to surface with cement/bentonite slurry.		Logged By: D Jayne		Checked By: P Lay	

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks			
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol			USCS		
5			20	1246	0/0			AF	Artificial fill; topsoil and gravelly sand from surface to 1 foot deep.	No field screen. Field screen done on 2'-4' sample. Field screen done on 4'-6' sample.		
			19	1254	0/0			SP	SAND; orange brown; medium grained, quartzose sand.			
			25	1259	0/0				Grading to light brown.			
10									SAND.	Augered without sampling from 6' to 54'.		
15									SAND; light brown; medium grained, quartzose sand.			
20												

BORING LOG

Project Name: MI ANG, Alpena CRTS - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2SB8

Sheet 2 of 3

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol		
25								SP	Same as above.
30								SP	Same as above.
35								SP	Same as above.
40									
45									Same as above.



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BORING LOG

Project Name: MI ANG, Alpena CRTS - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2SB8

Sheet 3 of 3

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol	USCS	
50									
52	52		1321					SP	
55			1405						
								CH	
60									
65									
70									

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

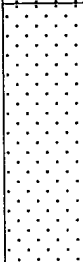
Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **MP2SB9**

Sheet **1** of **1**

Borehole Location: Site 2		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/16/93	Date Completed: 8/16/93		
Drilling Equipment: CME 750		Total: Depth (ft) 6.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs):		Water Depth Elev. (ft):	
Completion Information: Grouted to surface with cement/bentonite slurry.		Logged By: P Lay		Checked By: D Jayne	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
5			31	1510	.4/0			AF	Asphalt 2" thick; underlain by gravel with sand to depth of 1 foot.	GC sample collected. Soil sample (and duplicate) collected.
			34	1517	.2/0			SP	SAND; brownish yellow (10YR 6/6); sand fine grained; no odor; slightly moist.	
			26	1524	.1/0					
10										TD = 6'.
15										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2MW6

Sheet 1 of 2

Borehole Location: Site 2		Elevation and Datum (ft):				Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/16/93		Date Completed: 8/16/93			
Drilling Equipment: CME 750		Total: Depth (ft) 42		Depth to Bedrock (ft): NA			
Method of Drilling: Hollow Stem Augers		Number of Samples: NA		Dist.: NA		Undist.: NA Core: NA	
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 9.0		Water Depth Elev.(ft):			
Completion Information: Completed as a monitoring well, with 2" casing. See monitoring well construction log.		Logged By: D Jayne		Checked By: P Lay			

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*				Graphic Symbol
			10	0827				AF	Artificial fill; dark brown; organic-rich topsoil.	Collected soil samples and water samples periodically.
									SAND; olive yellow (2.5Y 6/8); medium grained, quartz-rich, sand.	
5			8	0833				SP	Grading to pale yellow (2.5Y 7/4).	
									Grading to gray.	
10								SC	CLAY.	Hydropunch sample taken between 9'-14'.
			28	0915					With CLAYEY SAND lenses.	
15								GW	GRAVEL; well-graded gravel; with sand.	Field screen sample only.
20			54	0921				SP	Coarse sand.	Field screen sample only.
25										
20									SAND.	Hydropunch sample taken between 24'-28'.

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2MW6

Sheet 2 of 2

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PTD (ppm) S/B*	FTD (ppm) S/B*			
35									
40			42	1007					
45									
50									
55									
60									
65									
70									

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **MP2MW7**

Sheet **1** of **1**

Borehole Location: Site 2		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/17/93	Date Completed: 8/17/93		
Drilling Equipment: CME 750		Total: Depth (ft) 15	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 7.0		Water Depth Elev.(ft):	
Completion Information: Completed as a monitoring well, with 2" casing. See monitoring well construction log.		Logged By: D Jayne		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS			
34	1742	0/0				AF	Artificial fill; SAND with gravel.		Field screen sample.
14	1746	0/0					SAND; orange-brown; medium grained.		Field screen sample.
5						SP	Same as above.		Wet at about 7'.
15									TD = 15'.

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

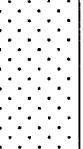
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: MP2SB10

Sheet 1 of 1

Borehole Location: Site 2		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: NA	Driller: D. Jayne	Date Started: 9/13/93	Date Completed: 9/13/93		
Drilling Equipment: AMS Soil Auger		Total: Depth (ft) 4.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hand Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 3"		Water Depth (ft bgs):		Water Depth Elev. (ft):	
Completion Information: Grouted to surface.		Logged By: D Jayne		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis	Log		Lithologic Description	Remarks			
	Number	Type		Blow Count	Drilling Time			PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol
				0917				AF	Artificial fill; gravelly sand/sandy gravel.	This is a hand auger borehole.
				0935				SP	SAND; orange brown; medium grained, well sorted, sand; no odor.	Collected 2 fixed base soil samples and 2 QA/QC samples.
5										TD = 4'.
10										
15										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

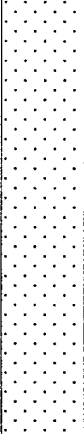
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: CG3SB12

Sheet 1 **of** 1

Borehole Location: Site 3		Elevation and Datum (ft): Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/26/93	Date Completed: 8/26/93
Drilling Equipment: CME 750		Total Depth (ft): 12.0	Depth to Bedrock (ft): NA
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA Undist.: NA Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs):	Water Depth Elev. (ft):
Completion Information: Grouted to surface with cement/bentonite slurry.		Logged By: M Stoker	Checked By: P Lay

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
5			18	0850	0/0			AF	Topsoil; dark brown; grass and roots; 4" thick.	Thin layer of topsoil present.
									SAND; orange-brown; fine sand; moist.	Gas chromatograph sample (P3SB12A).
			23	0855	0/0			SP		
										Grading to greyish brown; to fine to medium grained sand.
10			20	0900				SP		Gas chromatograph sample (P3SB12C).
			31	0905					Same as above, but dense; very moist.	Gas chromatograph sample (P3SB12D).
15										TD = 15'.

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: CG3SB13

Sheet 1 **of** 3

Borehole Location: Site 3		Elevation and Datum (ft): Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/26/93	Date Completed: 8/26/93
Drilling Equipment: CME 750		Total Depth (ft): 55.0	Depth to Bedrock (ft): NA
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 13.5	Water Depth Elev. (ft):
Completion Information: Installed a temporary piezometer (CG3PZ2), which was pulled out 9/12/93 and grouted with Hole Plug. See piezometer construction log.		Logged By: M Stoker	Checked By: P Lay

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
5			20	1110	0/0			AF	Topsoil; dark brown; with grass and roots; 6" deep.	Gas chromatograph sample (P3SB13A).
									SAND; orange brown; fine to medium sand; moist.	
			24	1115	0/0			SP	SAND; orange brown; fine, rounded sand; moist.	Gas chromatograph sample (P3SB13B).
			19	1119	0/0				Same as above.	Gas chromatograph sample (P3SB13C).
			18		0/0					Gas chromatograph sample (P3SB13D).
			79		0/0				Grading to with trace of fine gravel; wet.	Gas chromatograph sample (P3SB13E).
								SP		
										Collect hydropunched sample at 17'.
									Same as above.	
	20									

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: CG3SB13

Sheet 2 of 3

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol	USCS	
25								SP	Same as above.
30									Same as above.
35								SP	Same as above.
40									Same as above.
45								SP	

BORING LOG

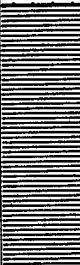
Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: CG3SB13

Sheet 3 of 3

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks	
	Number	Type	Blow Count	Drilling Time	PTD (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol
50			29	1205	0/0				SAND; same as above. Grading to greyish brown; to fine to medium sand. SILTY CLAY; grey; plastic. CL Shelby Tube sample from 53' to 55'; stiff grey clay.
			10	1218	0/0				
				1225					
55									TD = 55'.
60									
65									
70									



BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: CG3PZ1

Sheet 1 of 2

Borehole Location: Site 3		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/25/93		Date Completed: 8/25/93	
Drilling Equipment: CME 750		Total: Depth (ft) 20.0		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs) 13.5		Water Depth Elev. (ft):	
Completion Information: Completed as a piezometer, with 2" casing. See piezometer construction log.		Logged By: J Briegel		Checked By: P Lay	

[illegible]



BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: CG3PZ1

Sheet 2 of 2

[illegible]

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: CG3MW6

Sheet 1 of 2

Borehole Location: Site 3		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/25/93	Date Completed: 8/30/93		
Drilling Equipment: CME 750		Total: Depth (ft) 33	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 15.0		Water Depth Elev.(ft):	
Completion Information: Completed as a monitoring well, with 2" casing. See monitoring well construction log.		Logged By: J Briegel		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*				Graphic Symbol
			15	1444	.1/0					
5										
			42	1452	0/0					
10										
			42	1456	0/0					
15										
20										
25										
30										



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BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: CG3MW6

Sheet 2 of 2

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol			
35										
40										
45										
50										
55										
60										
65										
70										

TD = 33'.

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: CG3MW7

Sheet 1 of 2

Borehole Location: Site 3		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/30/93	Date Completed: 8/30/93		
Drilling Equipment: CME 750		Total: Depth (ft): 35	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 14.0		Water Depth Elev.(ft):	
Completion Information: Completed as a monitoring well, with 2" casing. See monitoring well construction log.		Logged By: P Lay		Checked By: J Briegel	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*				Graphic Symbol
								AF	Topsoil; to 1' deep.	
									SAND; light brown; fine to medium; no odor; dry to slightly moist.	
5			10	1352	0/0			SP		
			37	1358	0/0				SAND; light olive brown; no odor; with trace of fine, rounded qtz gravel.	
10										
			21	1401	0/0					
15								SP	SAND; light brown; medium to coarse, subangular sand; with trace of fine, rounded gravel.	Wet at about 14'. Hydropunch sample at 14'.
20										
25										
30										Hydropunch sample at

Wet at about 14'.
Hydropunch sample at 14'.

Hydropunch sample at

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: CG3MW7

Sheet 2 of 2

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS			
29'							SP			
35			1520							TD = 35'. Hydropunch sample at 35'-39'.
40										
45										
50										
55										
60										
65										
70										

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **TF4SB15**

Sheet **1** of **2**

Borehole Location: Site 4		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/11/93	Date Completed: 8/11/93		
Drilling Equipment: CME 750		Total: Depth (ft) 43.5	Depth to Bedrock (ft): NA 43		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 26.0		Water Depth Elev. (ft):	
Completion Information: Borehole was grouted with cement/bentonite slurry after sampling finished.		Logged By: J Briegel/M Stoker		Checked By: J Briegel	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol
			27	0850	0/0			AF	Artificial fill; grassy topsoil with gravel at surface.
									SAND; brown to light brown; medium grained, well-sorted, well-rounded, sand; no odor.
5			24	0900	0/0				
									Grading to with trace of gravel.
								SP	
			86	0909	0/0				Grading to GRAVELLY SAND.
10									SAND; light brown to brown; medium to coarse grained quartz sand; with minor gravel.
			106	0918	0/0			SW	Same as above, but with angular to subangular RF gravel.
15									
								SP	
			104	0927	0/0				
20									

BORING LOG

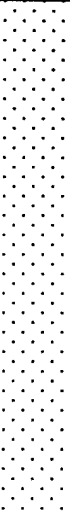
Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: TF4SB15

Sheet 2 of 2

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
								SP	SAND; light brown; well-sorted quartz sand.	Wet at about 26'.

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

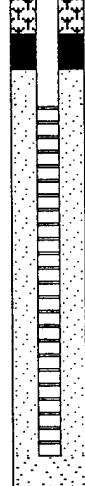
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: SF5MW5

Sheet 1 **of** 1

Borehole Location: <u>Site 5</u>		Elevation and Datum (ft): <u>Ground: Top of Casing:</u>	
Drilling Agency: <u>Stearns</u>	Driller: <u>D. Giffels</u>	Date Started: <u>8/12/93</u>	Date Completed: <u>8/12/93</u>
Drilling Equipment: <u>CME 750</u>		Total Depth (ft): <u>14</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Number of Samples: <u>NA</u>	Dist.: <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Water Depth: (ft bgs): <u>5.0</u>	Water Depth Elev.(ft):
Completion Information: <u>Installed a 2" diameter monitoring well. See monitoring well construction log.</u>		Logged By: D Jayne	Checked By: J Briegel

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*				Graphic Symbol	USCS
			12	0835				AF	Artificial fill; dark brown; topsoil with grass roots, etc.		Wet at about 5'.
								SP	SAND; orange brown; medium grained sand.		
5			1	0842					Grading to light brown.		
								CL	SANDY CLAY; light brown; moist.		
			1	0850				SP	SAND; orange brown; medium grained sand.		
10								CL	SANDY CLAY; light grey; moist.		
											
								SP	SAND.		
15											TD = 14'.
20											
25											
30											

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **SF5MW6**

Sheet **1** of **1**

Borehole Location: Site 5		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/12/93	Date Completed: 8/12/93		
Drilling Equipment: CME 750		Total Depth (ft): 21	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 5.0	Water Depth Elev.(ft):		
Completion Information: Completed as a monitoring well; with 2" casing. See monitoring well construction log.		Logged By: D Jayne		Checked By: J Briegel	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*				Graphic Symbol
			8	1340	0/0			AF	Artificial fill; dark brown; sand with roots, etc.	
								SP	SAND; light brown; medium grained sand.	Field screen spoon sample.
5			4	1350	0/0				SANDY CLAY; light grey; moist.	Wet at about 5'.
10			4	1355	0/0			CL	CLAY; light grey; clay with sand; saturated.	Sample not analyzed.
									SAND; light grey; sand with clay.	Lithology not described between 10' and 19'; assumed to be mostly sand.
15								SC		
20			15	1400	4/0				SAND; light grey; sand with clay.	
								SW	SAND; with clay and limestone gravel; very well-graded.	TD = 21'; limestone bedrock at bottom of borehole.
25										

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **SF5MW7**

Sheet **1** of **1**

Borehole Location: Site 5		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/12/93	Date Completed: 8/12/93		
Drilling Equipment: CME 750		Total: Depth (ft) 20	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: 6.0 (ft bgs)		Water Depth Elev.(ft):	
Completion Information: Completed as a monitoring well; with 2" casing. See monitoring well construction log.		Logged By: J Briegel		Checked By: D Jayne	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PTD (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS	
			9	1552	1.3/0			AF	Artificial fill; dark brown; sand with grass roots.
			10	1555	.9/0			SP	SAND; light brown mottled orange; medium to coarse grained quartz sand.
5			35	1602	.5/0			SP	Grading to light brown.
10								SP	Grading to brown; wet.
15								SP	Grades to greyish brown, mostly coarse sand.
				1625	.5/0			CL	Sand grading much coarser, with much gravel.
20								CL	SANDY CLAY; grey to greyish brown; soft, plastic clay with 40% sand.
25									
30									

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **SF5MW8**

Sheet **1** of **1**

Borehole Location: Site 5		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/31/93	Date Completed: 8/31/93		
Drilling Equipment: CME 750		Total Depth (ft): 20	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs)		Water Depth Elev.(ft):	
Completion Information: Installed monitoring well, with 2" casing. See monitoring well construction log.		Logged By: J Briegel/D Jayne		Checked By: D Jayne	

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS			
5							SP	SAND.		No other descriptions recorded.
10							SP	SAND.		
15							SP	SAND.		Drive hydropunch sampler to 19'; collect sample for field screen.
20			1015							
25										TD = 20'.
30										

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **SF5MW9**

Sheet **1** of **1**

Borehole Location: Site 5				Elevation and Datum (ft): Ground: Top of Casing:			
Drilling Agency: Stearns		Driller: D. Giffels		Date Started: 9/9/93		Date Completed: 9/10/93	
Drilling Equipment: CME 750				Total: Depth (ft) 19		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers				Number of Samples: NA		Dist.: NA	
Borehole Size (inches): 8.25"				Water Depth: (ft bgs) 8.0		Water Depth Elev. (ft):	
Completion Information: Completed as a temporary monitoring well; with 2" casing. See monitoring well construction log.				Logged By: J Briegel/D Jayne		Checked By: D Jayne	

Depth (feet)	Samples		Field Analysis	Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type		PID (ppm) S/B*	FID (ppm) S/B*			
5								
10								
15								
20								
25								
30								

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: SF5TW10

Sheet 1 of 1

Borehole Location: Site 5		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 9/10/93	Date Completed: 9/10/93		
Drilling Equipment: CME 750		Total: Depth (ft) 15.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 5.0	Water Depth Elev. (ft):		
Completion Information: Grouted to surface with cement/bentonite.		Logged By: J Briegel		Checked By: D Jayne	

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol		
5									For detailed lithologic description, see log for SF5MW6.
10									
15									TD = 15'.
									Hydropunched for water sample between 15' and 17'.

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: LF6MW4

Sheet 1 of 1

Borehole Location: Site 6		Elevation and Datum (ft): Ground:	
		Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/11/93	Date Completed: 8/11/93
Drilling Equipment: CME 750		Total: 20	Depth to Bedrock (ft): NA
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA
		Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 9.0	Water Depth Elev. (ft):
Completion Information: Completed as a monitoring well; with 2" diameter casing. Located at the landfill. See monitoring well construction log.		Logged By: J Briegel	Checked By: J Briegel

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*				Graphic Symbol	USCS
			8	1518	8/0			AF	Artificial fill; dark brown, organic-rich sand and gravel as topsoil.		HNu readings taken in headspace jars.
									SAND; light brown to orange brown mottled; fine to medium, well-sorted quartz sand.		
5			7	1525	0/0			SP	Grading to light brown to brown.		
									Grading to light brown.		
			9	1532	0/0						
10								CL	CLAY; brown; with minor silt and sand; plastic; saturated.		Wet at about 9 feet.
									SAND; brown; medium to coarse sand.		
								SP			
									CLAYEY SAND.		
15											
								SC	CLAYEY SAND.		
20											
25											
30											

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

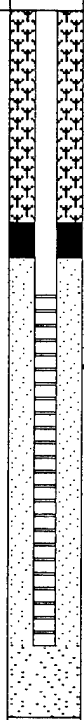
Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **LF6MW5**

Sheet **1** of **1**

Borehole Location: Site 6		Elevation and Datum (ft): Ground:	
		Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/11/93	Date Completed: 8/11/93
Drilling Equipment: CME 750		Total: Depth (ft) 20	Depth to Bedrock (ft): NA
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA
		Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 15.0	Water Depth Elev.(ft):
Completion Information: Completed as a monitoring well; with 2" casing. See monitoring well construction log.		Logged By: J Briegel	Checked By: J Briegel

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS			
	14	1702	0/0			AF	Topsoil; dark brown; sand with organic matter to depth of 6".		Field screen sample only.
5		1709	0/0			SP	SAND; orange brown; medium grained.		Field screen sample not analyzed.
10		1716				SC/ CL	Grading to light brown to brown; medium to coarse, well-sorted, quartz sand; loose.		Duplicate sample collected.
15							CLAYEY SAND/SANDY CLAY; light brown to grey; with strong fuel odor.		
20							Same as above.		
25									TD = 20'.
30									

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: LF6MW6

Sheet 1 **of** 2

Borehole Location: <u>Site 6</u>		Elevation and Datum (ft): <u>Ground:</u>	
		Top of Casing:	
Drilling Agency: <u>Stearns</u>	Driller: <u>D. Giffels</u>	Date Started: <u>8/14/93</u>	Date Completed: <u>8/14/93</u>
Drilling Equipment: <u>CME 750</u>		Total Depth (ft): <u>42</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Number of Samples: <u>NA</u>	Dist.: <u>NA</u>
		Undist.: <u>NA</u>	Core: <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Water Depth: (ft bgs) <u>14.0</u>	Water Depth Elev. (ft):
Completion Information: <u>Completed as a monitoring well; with 2" casing. See monitoring well construction log.</u>		Logged By: <u>D Jayne/J Briegel</u>	Checked By: <u>J Briegel</u>

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS	
5	8		1410					SP	SAND; light brown; medium grained.
									Same as above.
10	11		1415						Same as above.
									Same as above.
15	9		1420					CL	SANDY CLAY.
									CLAYEY SAND; moist.
20								SC	Same as above.
									Same as above.
25								SC	Same as above.
									Same as above.
30									



BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: LF6MW6

Sheet 2 of 2

[illegible]

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: LF6MW7

Sheet 1 of 1

Borehole Location: Site 6		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/15/93		Date Completed: 8/15/93	
Drilling Equipment: CME 750		Total: Depth (ft) 18		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 8.7		Water Depth Elev.(ft):	
Completion Information: Completed as monitoring well; with 2" casing. Pulled and grouted 10 Sept 93. See monitoring well construction log		Logged By: D Jayne		Checked By: J Briegel	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS	
			8	1655	0/0			AF	Artificial fill; dark brown; sandy topsoil.
									SAND; light brown; medium grained.
5								SP	
			10	1702	.1/0				Grading to orange brown; to moist.
			7	1707				CL	SANDY CLAY; moist.
10			5	1710				CH	CLAY; with some sand; medium stiff.
			9	1713				SP	SAND; very coarse grained.
								CH	CLAY; medium stiff.
15			7	1718	0.0			CL	SANDY CLAY.
								CH	CLAY; medium stiff; high plasticity.
				1734					
20									
25									
30									

Field screen only.

Wet at about 8.7'.

Shelby Tube sample at 17'-18'.

TD = 18'.

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **LF6MW8**

Sheet **1** of **1**

Borehole Location: Site 6		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/27/93		Date Completed: 8/27/93	
Drilling Equipment: CME 750		Total: Depth (ft) 15		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 9.0		Water Depth Elev. (ft):	
Completion Information: Completed as a monitoring well; with 2" casing. See monitoring well construction log.		Logged By: J Briegel/M Stoker		Checked By: J Briegel	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS	
	13		1530						
5									
	6		1534						
10					85/0				
	5		1542						
			1546						
15									
20									
25									
30									

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: LF6MW9

Sheet 1 **of** 1

Borehole Location: <u>Site 6</u>		Elevation and Datum (ft): <u>Ground:</u>	
		<u>Top of Casing:</u>	
Drilling Agency: <u>Stearns</u>	Driller: <u>D. Giffels</u>	Date Started: <u>8/27/93</u>	Date Completed: <u>8/27/93</u>
Drilling Equipment: <u>CME 750</u>		Total Depth (ft): <u>14</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Number of Samples: <u>NA</u>	Dist.: <u>NA</u>
		Undist.: <u>NA</u>	Core: <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Water Depth (ft bgs):	
		Water Depth Elev. (ft):	
Completion Information: <u>Completed as a monitoring well; with 2" casing. See monitoring well construction log.</u>		Logged By: <u>M Stoker</u>	Checked By: <u>J Briegel</u>

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol	USCS	
			6	1650	0/0				
			13	1654	0/0				
5			13	1659	0/0				
10			6	1705	0/0				
15									
20									
25									
30									

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **LF6MW10**

Sheet **1** of **1**

Borehole Location: Site 6		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 9/12/93		Date Completed: 9/12/93	
Drilling Equipment: CME 750		Total: Depth (ft) 13		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 9.0		Water Depth Elev.(ft):	
Completion Information: Completed as a monitoring well; with 2" casing. See monitoring well construction log.		Logged By: D Jayne/J Briegel		Checked By: P Lay	

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*	Graphic Symbol			
5				1134				AF	Artificial fill; GRAVEL, with sand.	
10				1139				SP	SAND; medium grained sand; with organic-rich zone containing wood fragments.	Wet at 9 feet.
15										TD = 13'; possibly augered down to boulders or bedrock refusal.
20										Collected P6TW10 with hydropunch from 10' to 13'.
25										
30										



BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: HN8SB2

Sheet 1 of 3

Borehole Location: Site 8		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/13/93		Date Completed: 8/13/93	
Drilling Equipment: CME 750		Total: Depth (ft) 59.0		Depth to Bedrock (ft): NA 59	
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 11.5		Water Depth Elev. (ft):	
Completion Information: Borehole grouted to surface with cement/bentonite slurry.		Logged By: J Briegel		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol	USCS		
							Concrete pavement 8" thick.	
	26	0930	0/0			AF	Artificial fill; gravel with sand to 3'.	
5	25	0939	0/0			SP	SAND; brown; medium to coarse grained, quartz/Rf sand; loose; slightly moist.	
10	24	0948	0/0				Grading to light brown with brown.	
	58	1002	0/0				Grading to light brown to greyish brown; with a thin gravel layer 12'-12.5'.	Wet at 11.5'.
15						SP		Augered from 13' to 54' without recording lithology.



BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: HN8SB2

Sheet 2 of 3

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Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: HN8SB2

Sheet 3 of 3

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BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: HN8SB3

Sheet 1 of 1

Borehole Location: Site 8		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/13/93		Date Completed: 8/13/93	
Drilling Equipment: CME 750		Total: Depth (ft) 11.0		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs):		Water Depth Elev. (ft):	
Completion Information: Borehole was grouted to surface with cement/bentonite.		Logged By: D Jayne		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*		
5								
10								
15								
20								

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: HN8SB4

Sheet 1 of 1

Borehole Location: Site 8		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/13/93		Date Completed: 8/13/93	
Drilling Equipment: CME 750		Total: Depth (ft) 14.0		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 13.8		Water Depth Elev. (ft):	
Completion Information: Borehole was grouted to surface with cement/bentonite.		Logged By: D Jayne		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol
			32	1540	1.3/0			AF	Artificial fill; 12" of black, organic-rich topsoil.
									SAND; light brown; medium grained sand.
5			27	1545	4.3/0			SP	Same as above.
			41	1550	.1/0				Grading to light grey.
10								SP	
			55	1605	.1/0				Same as above, but moist.
									Water at about 13.8'.
15									TD = 14'.
20									

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

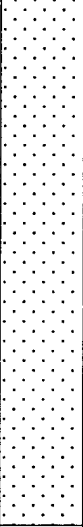
Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **HN8SB5**

Sheet **1** of **1**

Borehole Location: Site 8		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/13/93		Date Completed: 8/13/93	
Drilling Equipment: CME 750		Total: Depth (ft) 11.0		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs):		Water Depth Elev. (ft):	
Completion Information: Borehole was grouted to surface with cement/bentonite.		Logged By: D Jayne		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks				
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS		
5			52	1645	0/0			AF	Concrete; pavement 8" thick, underlain by gravel base.	Large cobble plugged the sampler; no sample caught.		
	21		1650								SP	SAND; light brown; medium grained sand.
10			35	1700				SP	Same as above.	Collected MS/MSD sample for lab.		
									Same as above, but moist.			
15										TD = 11'.		
20												

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

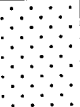
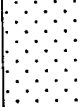
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: HN8SB6

Sheet 1 of 1

Borehole Location: Site 8		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/15/93	Date Completed: 8/15/93		
Drilling Equipment: CME 750		Total: Depth (ft) 14.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): NA		Water Depth Elev. (ft):	
Completion Information: Borehole was grouted to surface with cement/bentonite.		Logged By: J Briegel		Checked By: P Lay	

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol			USCS
			24	0844	0/0			GW	Artificial fill; dark grey; gravelly sand with roots; to a depth of 2'.	Grassy area at surface.
								SP	SAND; light brown to brown; medium to coarse, quartz sand; with trace of gravel; loose; slightly moist.	
5			30	0849	0/0				Same as above.	
			36	0856	.1/0			SP	Same as above, but light brown.	
10			59	0903	0/0				SAND; light brown; fine to medium grained quartz sand; with trace of fine gravel; slightly moist.	No odors detected in sampling. No water at bottom of borehole.
15										TD = 14'.
20										

TD = 14'.

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

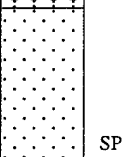
Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **HN8SB7**

Sheet **1** of **1**

Borehole Location: Site 8		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/15/93	Date Completed: 8/15/93		
Drilling Equipment: CME 750		Total: Depth (ft) 14.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 13.0	Water Depth Elev. (ft):		
Completion Information: Borehole was grouted to surface with cement/bentonite.		Logged By: D Jayne		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks			
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS	
			35	0930	0/0			AF	Artificial fill; brown; organic-rich topsoil.	No field screen.	
								SP	SAND; orange brown; medium grained quartz-rich sand.		
5			21	0933	0/0				Grading to light brown.		Field screen (PO8SB7B).
			27	0938	0/0				Same as above.		Field screen (PO8SB7C).
10			91	0946	0/0				Grading to with trace of gravel; saturated.	Field screen (PO8SB7D). Water came up to about 13'.	
15										TD = 14'.	
20											

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

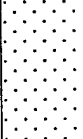
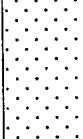
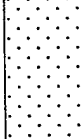
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: HN8SB8

Sheet 1 of 1

Borehole Location: Site 8		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/17/93	Date Completed: 8/17/93		
Drilling Equipment: CME 750		Total Depth (ft): 11.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): NA		Water Depth Elev. (ft):	
Completion Information: Borehole was grouted to surface with cement/bentonite slurry.		Logged By: J Briegel		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks		
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol	USCS
			26	0849	0/0			AF	Concrete 8" thick at the surface; underlain by gravel and sand to 2.5'.	No fuel odors detected. Thin layer of fine grained gravel from 10'-10.5'. TD = 11'; not to water table.
5				0853	0/0			SP	SAND; orange brown to brown; medium to coarse grained quartz sand; well-sorted.	
								SP	Grading to light brown to greyish brown; to with fine gravel; loose; moist.	
10			54	0904	0/0				Grading to greyish brown.	
15										
20										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: HN8MW5

Sheet 1 **of** 1

Borehole Location: <u>Site 8</u>		Elevation and Datum (ft): <u>Ground: 9999.99'</u> <u>Top of Casing:</u>	
Drilling Agency: <u>Stearns</u>	Driller: <u>D. Giffels</u>	Date Started: <u>9/11/93</u>	Date Completed: <u>9/11/93</u>
Drilling Equipment: <u>CME 750</u>		Total: Depth (ft) <u>20</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Number of Samples: <u>NA</u>	Dist.: <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Water Depth: (ft bgs) <u>12.8</u>	Water Depth Elev. (ft):
Completion Information: <u>Completed as a monitoring well; with 2" casing. See monitoring well construction log.</u>		Logged By: <u>J Briegel</u>	Checked By: <u>P Lay</u>

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Well Construction Diagram	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/B*	FID (ppm) S/B*			
5									

BORING LOG

Project Name: **MI ANG, Alpena CRTC - Alpena, MI**

Client: **HAZWRAP**

Project Number: **931800**

Name of Borehole or Well: **RT9SB13**

Sheet **1** of **3**

Borehole Location: Site 9		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/29/93	Date Completed: 8/29/93		
Drilling Equipment: CME 750		Total: Depth (ft) 61.0	Depth to Bedrock (ft): NA		
Method of Drilling: Hollow Stem Augers		Number of Samples:	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth (ft bgs): 16.0	Water Depth Elev. (ft):		
Completion Information: Grouted to surface with cement/bentonite slurry after drilling completed.		Logged By: D Jayne		Checked By: P Lay	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol
5			8	0834	0/0			SP	
10			48	0838	0/0				
15			27	0841	0/0			SP	
20									



BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: RT9SB13

Sheet 2 of 3

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol		
									SAND; same as above.
25								SP	Same as above.
30									SAND; light brown; medium grained sand.
35								SP	Same as above.
40									Same as above.
45								SP	Same as above.
	25		0904		0/0				

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

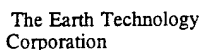
Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: RT9SB13

Sheet 3 of 3

Depth (feet)	Samples			Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol	USCS	
								CL	SANDY CLAY.
			54	0911	0/0				SAND; light brown; medium grained sand; with trace of clay.
50			40	0916	0/0			SP	Grading to coarser-grained.
			90	0929	0/0				SAND; same as above.
			61	0935	0/0				Same as above.
55			102	0948	0/0			SP	SAND; coarse to very coarse grained.
			76	0956	0/0				Grading to very coarse grained sand.
60			1015		0/0			CL	CLAY; grey; with sand and dark grey RF (calcareous shale).
									Clay and rock on tip of sampler; may be close to bedrock contact.
									TD = 61'.
65									
70									



BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800Name of Borehole or Well: RT9MW6

Sheet 1 of 1

Borehole Location: Site 9		Elevation and Datum (ft):		Ground: Top of Casing:	
Drilling Agency: Stearns	Driller: D. Giffels	Date Started: 8/30/93		Date Completed: 8/30/93	
Drilling Equipment: CME 750		Total: Depth (ft) 23		Depth to Bedrock (ft): NA	
Method of Drilling: Hollow Stem Augers		Number of Samples: NA	Dist.: NA	Undist.: NA	Core: NA
Borehole Size (inches): 8.25"		Water Depth: (ft bgs) 15.0		Water Depth Elev.(ft):	
Completion Information: Completed as a flush-mounted monitoring well; with 2" casing. See monitoring well construction log.		Logged By: P Lay		Checked By: D Jayne	

[illegible]

BORING LOG

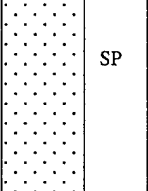
Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: RT9TW7

Sheet 2 of 2

Depth (feet)	Samples				Field Analysis		Log		Lithologic Description	Remarks
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*	Graphic Symbol	USCS		
25								SP	SAND.	Collected hydropunch water sample (P9TW7AW) at 21'.
30									SAND.	TD = 28'; collected hydropunch water sample (P9TW7BW) at 31'.
35										
40										
45										

BORING LOG

Project Name: MI ANG, Alpena CRTC - Alpena, MI

Client: HAZWRAP

Project Number: 931800

Name of Borehole or Well: RT9TW8

Sheet 1 **of** 1

Borehole Location: <u>Site 9</u>		Elevation and Datum (ft): <u>Ground:</u>	
Drilling Agency: <u>Stearns</u>		Driller: <u>D. Giffels</u>	Date Started: <u>9/9/93</u>
Drilling Equipment: <u>CME 750</u>		Date Completed: <u>9/9/93</u>	Depth to Bedrock (ft): <u>NA</u>
Method of Drilling: <u>Hollow Stem Augers</u>		Total Depth (ft): <u>19.0</u>	Number of Samples: <u>NA</u>
Borehole Size (inches): <u>8.25"</u>		Dist.: <u>NA</u>	Undist.: <u>NA</u>
Completion Information: <u>Temporary monitoring well with 2" casing; pulled and grouted after sampling complete. See monitoring well construction log.</u>		Water Depth (ft bgs): <u>7.0</u>	Core: <u>NA</u>
Logged By: <u>D Jayne</u>		Checked By: <u>P Lay</u>	

Depth (feet)	Samples		Field Analysis		Log		Lithologic Description	Remarks	
	Number	Type	Blow Count	Drilling Time	PID (ppm) S/J/B*	FID (ppm) S/J/B*			Graphic Symbol
			</						

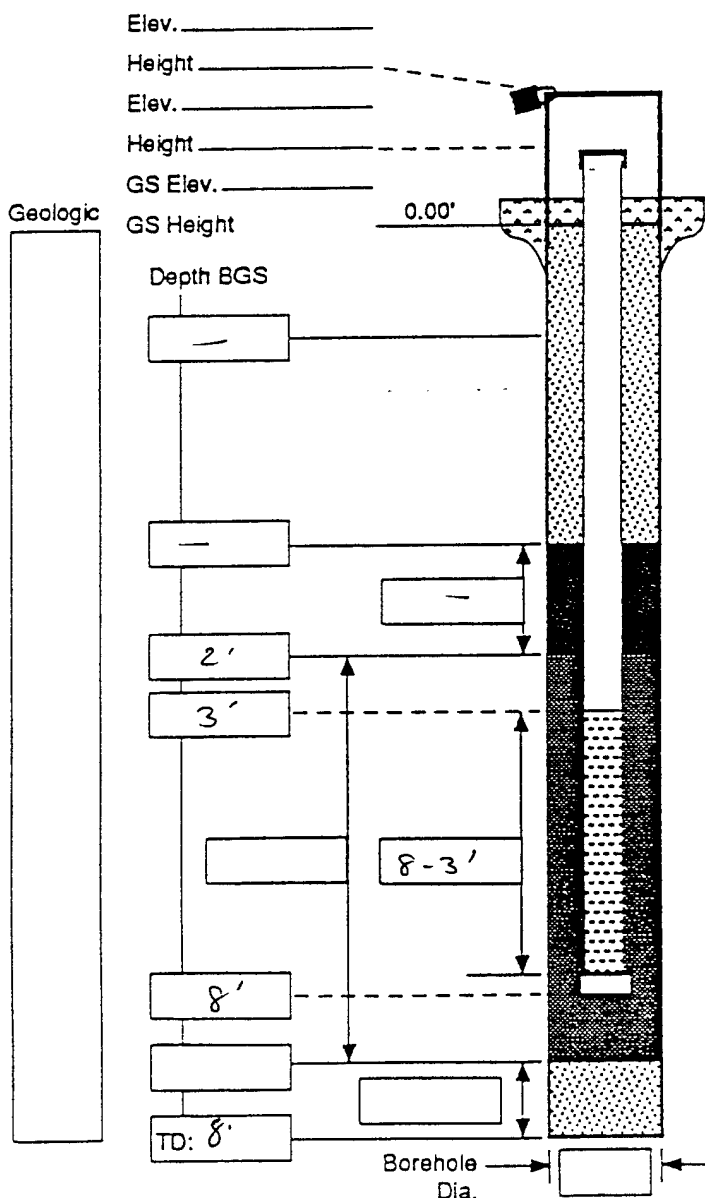


Monitoring Well Construction Forms



Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>9/21/93</u>
Well: <u>SIP21</u>	Well ID: <u>SIP21</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>8'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/23/93</u>	Depth to Water (ft): <u>~2</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>9/12/93</u>	Elevation and Datum: <u>—</u>
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>JSB/megal</u>	Checked by: <u>JSB</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>—</u>	Date: <u>—</u>



PROTECTIVE CSG

Material / Type: JSB
 Diameter: 7/21/93
 Depth BGS: 7/21/93 Weep Hole (Y/N)

GUARD POSTS (Y/N)

No.: — Type: —

SURFACE PAD

Composition and Size: —

RISER PIPE

Type: Schedule 40 PVC
 Diameter: 2"
 Total Length (TOC to TOS): 3'-0"
 Ventilated Cap (Y/N) —

GROUT

Composition and Proportions: —

Tremied (Y/N) —

Interval BGS: —

CENTRALIZERS

Depth(s): —

SEAL

Type: —
 Source: —
 Setup / Hydration Time: — Vol. Fluid Added: —

Tremied (Y/N) —

FILTER PACK

Type: Global #7
 Amt. Used: 3 bags (50#) each
 Tremied (Y/N) — 8'-2' BGS
 Source: Global Drilling Supplies

Gr. Size Dist: —

SCREEN

Type: Schedule 40 PVC
 Diameter: 2"
 Slot Size and Type: 0.010
 Interval BGS: 8-3'

WELL FOOT (Y/N)

Interval BGS: — Length: —

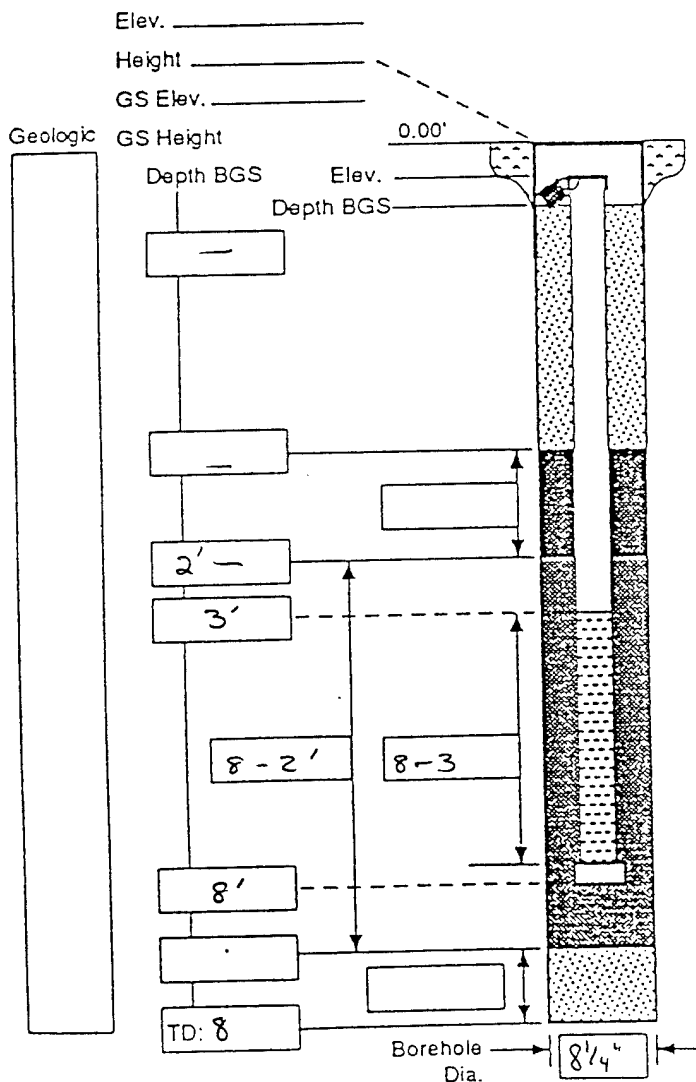
Bottom Cap (Y/N) —

BACKFILL PLUG

Material: JSB 9/21/93
 Setup / Hydration Time: —
 Tremied (Y/N) —

Monitoring Well Construction Log - Flush Mount

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/23/93</u>
Well: <u>SIP22</u>	Well ID: <u>PSIP22</u>	Sheet: <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>8'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/23/93</u>	Depth to Water (ft): <u>—</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>9/12/93</u>	Elevation and Datum:
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>DP Payne</u>	Checked by: <u>J Smeyel</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>—</u>	Date: <u>—</u>



PROTECTIVE CSO

Material / Type: JSB

Diameter: _____

Depth BGS: 7/21/93 Weep Hole (Y/N) _____

GUARD POSTS (Y/N) _____

No. _____ Type: _____

SURFACE PAD

Composition and Size: _____

RISER PIPE

Type: Schedule 40 PVC

Diameter: 2"

Total Length (TOC to TOS): 3'-0"

Ventilated Cap (Y/N) _____

GROUT

Composition and Proportions: _____

Tremied (Y/N) _____

Interval BGS: _____

CENTRALIZERS

Depth(s): _____

SEAL

Type: _____

Source: _____

Setup / Hydration Time: _____ Vol. Fluid Added _____

Tremied (Y/N) _____

FILTER PACK

Type: Global Drilling Supplies

AML Used: 3 50 lb bags

Tremied (Y/N) (M)

Source: 8'-2' BGS; Global #7

Gr. Size Dist: _____

SCREEN

Type: Schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 8'-3'

WELL FOOT (Y/N)

Interval BGS: _____ Length _____

Bottom Cap (Y/N) _____

BACKFILL PLUG

Material: JSB 7/21/93

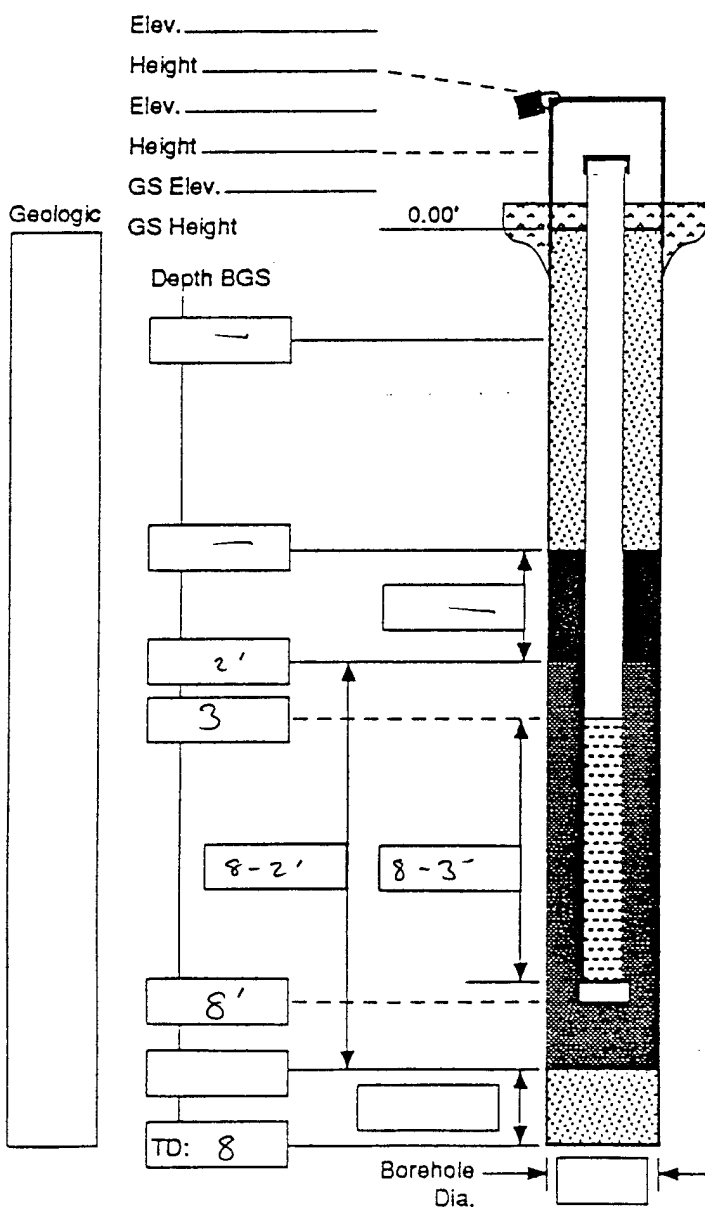
Setup / Hydration Time: _____

Tremied (Y/N) _____

Form F-1025

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>9/21/93</u>
Well: <u>SIPZ3</u>	Well ID: <u>SIPZ3</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>8'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/23/93</u>	Depth to Water (ft): <u>~2'</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>9/12/93</u>	Elevation and Datum: <u>-</u>
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>JSB/meg</u>	Checked by: <u>JSB</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>-</u>	Date: <u>-</u>



PROTECTIVE CSG

Material / Type: JSB

Diameter: _____

Depth BGS: 9/21/93 Weep Hole (Y/N) _____

GUARD POSTS (Y/N)

No.: _____ Type: _____

SURFACE PAD

Composition and Size: _____

RISER PIPE

Type: Schedule 40 PVC

Diameter: 2"

Total Length (TOC to TOS): 3' to ~0'

Ventilated Cap (Y/N) _____

GROUT

Composition and Proportions: _____

Tremied (Y/N) JSB

Interval BGS: _____

CENTRALIZERS

Depth(s): 9/21/93

SEAL

Type: _____

Source: _____

Setup / Hydration Time: _____ Vol. Fluid Added: _____

Tremied (Y/N) _____

FILTER PACK

Type: Global #7

Amt. Used: 3-50# bags

Tremied (Y/N) 8'-2' BGS

Source: Global Drilling Supplies

Gr. Size Dist: _____

SCREEN

Type: Schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 8'-3' BGS

WELL FOOT (Y/N)

Interval BGS: _____ Length: _____

Bottom Cap (Y/N) _____

BACKFILL PLUG

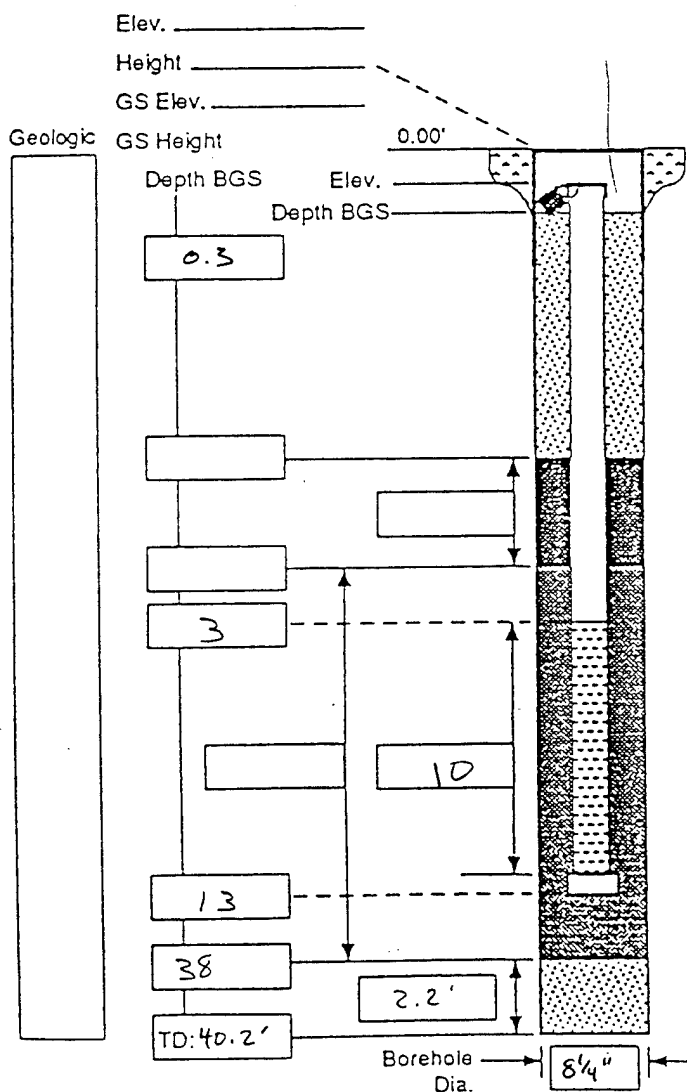
Material: JSB

Setup / Hydration Time: 9/21/93

Tremied (Y/N) _____

Monitoring Well Construction Log - Flush Mount

Project Name: <u>Phelps Collins Ave</u>	Project Number: <u>931800</u>	Date: <u>8/24/93</u>
Well: <u>SIMWI</u>	Well ID: <u>SIMWI</u>	Sheet: <u>1 of 1</u>
Driller: <u>D. Griffiths</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>40.5</u>
Drilling Agency: <u>Stearns Drilling</u>	Date Started: <u>8/24/93</u>	Depth to Water (ft): <u>3</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/24/93</u>	Elevation and Datum: <u>—</u>
Drilling Method: <u>hollow stem auger</u>	Logged by: <u>ME Stoker</u>	Checked by: <u>JS Bruegel</u>
Drilling Fluid: <u>none</u>	Number of Samples: <u>—</u>	Date: <u>—</u>



PROTECTIVE CSO

Material / Type: N/A

Diameter: —

Depth BGS: — Weep Hole (Y/N) —

GUARD POSTS (Y/N) (N)

No. —

Type: —

SURFACE PAD

Composition and Size: Concrete 2' x 2'

RISER PIPE

Type: Schedule 40 PVC

Diameter: 2"

Total Length (TOC to TOS): ~ 3'

Ventilated Cap (Y/N) (N)

GROUT

Composition and Proportions: cement/bentonite mixture
~ 13 - 1'

Tremied (Y/N) (N)

Interval BGS: ~ 13 - 1'

CENTRALIZERS

Depth(s): N/A

SEAL

Type: bentonite pellets

Source: Baroid

Setup / Hydration Time: — Vol. Fluid Added: 5 gallons

Tremied (Y/N) (N)

FILTER PACK

Type: Global Drilling Supplies #7

AML Used: 7 - 50 lb bags

Tremied (Y/N) (N)

Source: Global drilling supplies

Gr. Size Dist:

SCREEN

Type: PVC Schedule 40

Diameter: 2"

Slot Size and Type: 0.010

Interval BGS: 3 - 13'

WELL FOOT (Y/N)

Interval BGS: —

Length: —

Bottom Cap (Y/N) (N)

BACKFILL PLUG

Material: hole plug 40.5 - 38 ; collapse 38 - 20

Setup / Hydration Time: —

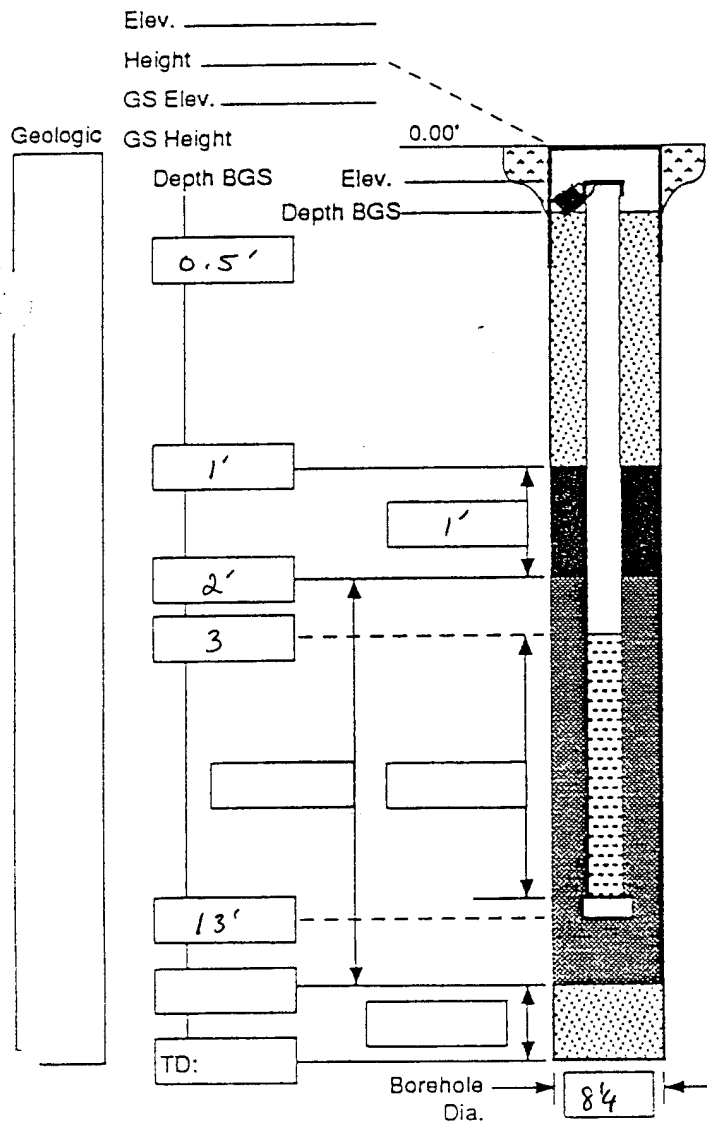
Tremied (Y/N) (N)

hole plug 20 - 15'

Form F-1025

Monitoring Well Construction Log - Flush Mount

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/27/93</u>
Well: <u>SIMW2</u>	Well ID: <u>SIMW2</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>13'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/26/93</u>	Depth to Water (ft): <u>~3</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/27/93</u>	Elevation and Datum: <u>—</u>
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>MES</u>	Checked by: <u>J. Sniegel</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>—</u>	Date: <u>—</u>



PROTECTIVE CSG

Material / Type: JSS 7/21/93
 Diameter: —
 Depth BGS: — Weep Hole (Y/N) —

GUARD POSTS (Y/N)

No.: — Type: —

SURFACE PAD

Composition and Size: concrete 2' x 2'

RISER PIPE

Type: Schedule 40 PVC
 Diameter: 2"
 Total Length (TOC to TOS): ~3'

Ventilated Cap (Y/N) (N)

GROUT

Composition and Proportions: hole plug 1'-6"

Tremied (Y/N) (N)

Interval BGS: 1' - 0.5'

CENTRALIZERS

Depth(s): N/A

SEAL

Type: bentonite pellets 2'-1' BGS
 Source: Boroid

Setup / Hydration Time: — Vol. Fluid Added: 5 gallo

Tremied (Y/N) (N)

FILTER PACK

Type: Global Drilling Supplies #7
 Amt. Used: ~7-50 # bags

Tremied (Y/N) (N) 13-2'

Source: Global Drilling

Gr. Size Dist: —

SCREEN

Type: Schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 3-13'

WELL FOOT (Y/N) (N)

Interval BGS: — Length: —

Bottom Cap (Y/N) (Y)

BACKFILL PLUG

Material: N/A

Setup / Hydration Time: —

Tremied (Y/N) (N)

Monitoring Well Construction Log - Flush Mount

Project Name: <u>phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/27/93</u>
Well: <u>SIMW3</u>	Well ID: <u>SIMW3</u>	Sheet: <u>1</u> of <u>1</u>
Driller: <u>D. Gaffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>13'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/27/93</u>	Depth to Water (ft): <u>~3'</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/27/93</u>	Elevation and Datum: <u>-</u>
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>DEJyne</u>	Checked by: <u>J. S. Bruer</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>-</u>	Date: <u>-</u>

PROTECTIVE CSO

Material / Type: JSB 9/21/93
 Diameter: _____
 Depth BGS: _____ Weep Hole (Y/N) _____

GUARD POSTS (Y/N) _____
 No.: _____ Type: _____

SURFACE PAD
 Composition and Size: concrete 2' x 2'

RISER PIPE
 Type: Schedule 40 PVC
 Diameter: 2"

Total Length (TOC to TOS): 10' JSB 2/21/93 ~3'
 Ventilated Cap (Y/N) _____

GROUT
 Composition and Proportions: hole plug

Tremied (Y/N) _____
 Interval BGS: ~1' - 0.5'

CENTRALIZERS
 Depth(s): N/A

SEAL
 Type: Hole plug - bentonite pellets 2'-1'
 Source: Baroid

Setup / Hydration Time: _____ Vol. Fluid Added: 5 gallons

Tremied (Y/N) _____

FILTER PACK
 Type: Global Filter Pack #7
 Amt. Used: 7-50 lb bags

Tremied (Y/N) _____
 Source: Global Drilling Supplies
 Gr. Size Dist: 13'-2' Bgs

SCREEN
 Type: schedule 40 PVC

Diameter: 8" O.D. 2"

Slot Size and Type: 0.010"

Interval BGS: 13'-3'

WELL FOOT (Y/N) _____

Interval BGS: _____ Length: _____

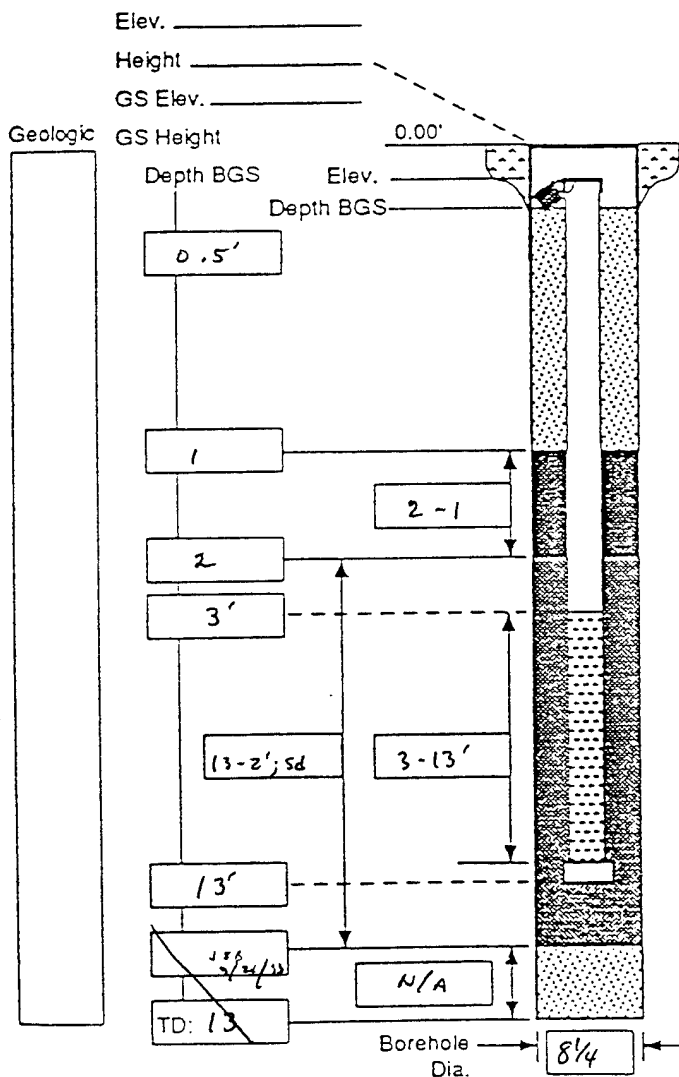
Bottom Cap (Y/N) _____

BACKFILL PLUG
 Material: N/A

Setup / Hydration Time: _____

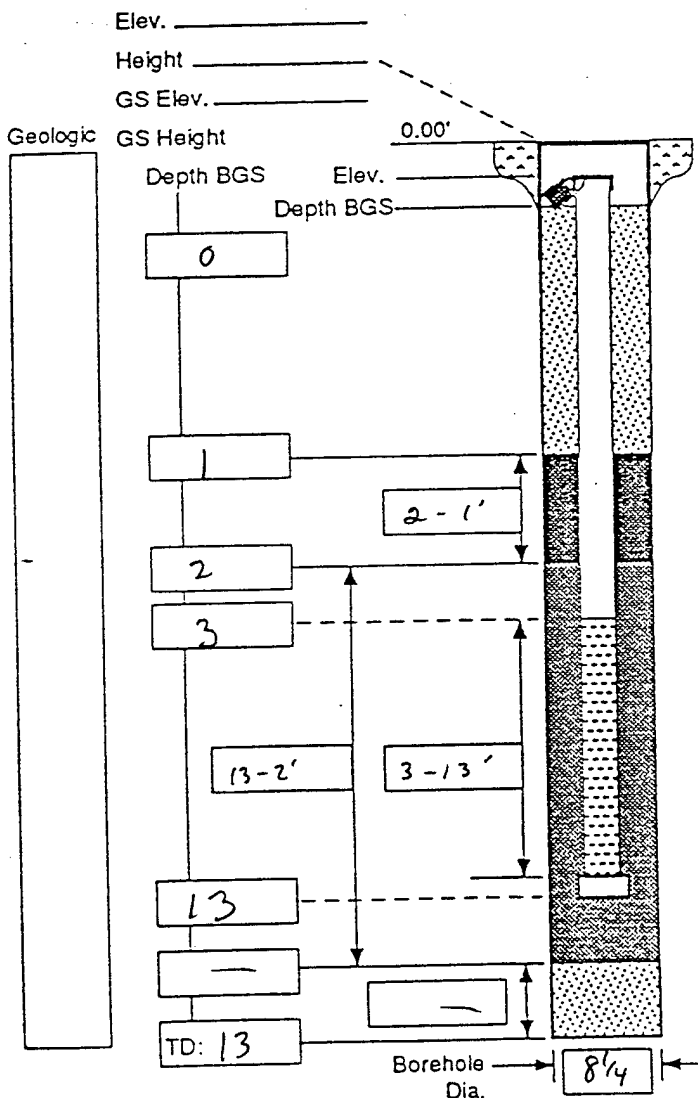
Tremied (Y/N) _____

Form F-1025



Monitoring Well Construction Log - Flush Mount

Project Name: Phelps Collins	Project Number: 931800	Date: 08/27/93
Well: .S1mw4	Well ID: 91mw4	Sheet: 1 of 1
Driller: D. Giffels	Borehole Diameter (in): 8 1/4 OD	Total Depth (ft): 13'
Drilling Agency: Stearns	Date Started: 08/27/93	Depth to Water (ft): ~3
Drilling Equipment: CME 750	Date Finished: 08/27/93	Elevation and Datum: -
Drilling Method: HS	Logged by: M. Stoker	Checked by: JSB/meg
Drilling Fluid: None	Number of Samples: -	Date: -



~~PROTECTIVE CSG~~

Material / Type: **JSB 9/21/93**

Diameter: **-**

Depth BGS: **-** Weep Hole (Y/N) **-**

~~GUARD POSTS (Y/N)~~

No.: **-** Type: **-**

~~SURFACE PAD~~

Composition and Size: **concrete 2' x 2'**

~~RISER PIPE~~

Type: **Schedule 40 PVC**

Diameter: **2"**

Total Length (TOC to TOS): **~3'**

Ventilated Cap (Y/N) **(Y)**

~~GROUT~~

Composition and Proportions: **hole plug ~1'-0.5'**

~~Tremied (Y/N)~~ **(Y)** **~1'-0.5'**

~~Interval BGS:~~

~~CENTRALIZERS~~

Depth(s): **N/A**

~~SEAL~~

Type: **benonite pellets ~2'-1'**

Source: **Baroid**

Setup / Hydration Time: **-** Vol. Fluid Added: **5 gallons**

~~Tremied (Y/N)~~ **(Y)**

~~FILTER PACK~~

Type: **Global Drilling Supplies #7**

Am't Used: **7-50# bags**

~~Tremied (Y/N)~~ **(Y)** **13'-2'**

Source: **Global Drilling**

Gr. Size Dist: **-**

~~SCREEN~~

Type: **Schedule 40 PVC**

Diameter: **2"**

Slot Size and Type: **0.010"**

Interval BGS: **3-13**

~~WELL FOOT (Y/N)~~ **(Y)**

Interval BGS: **-** Length: **-**

~~Bottom Cap (Y/N)~~ **(Y)**

~~BACKFILL PLUG~~

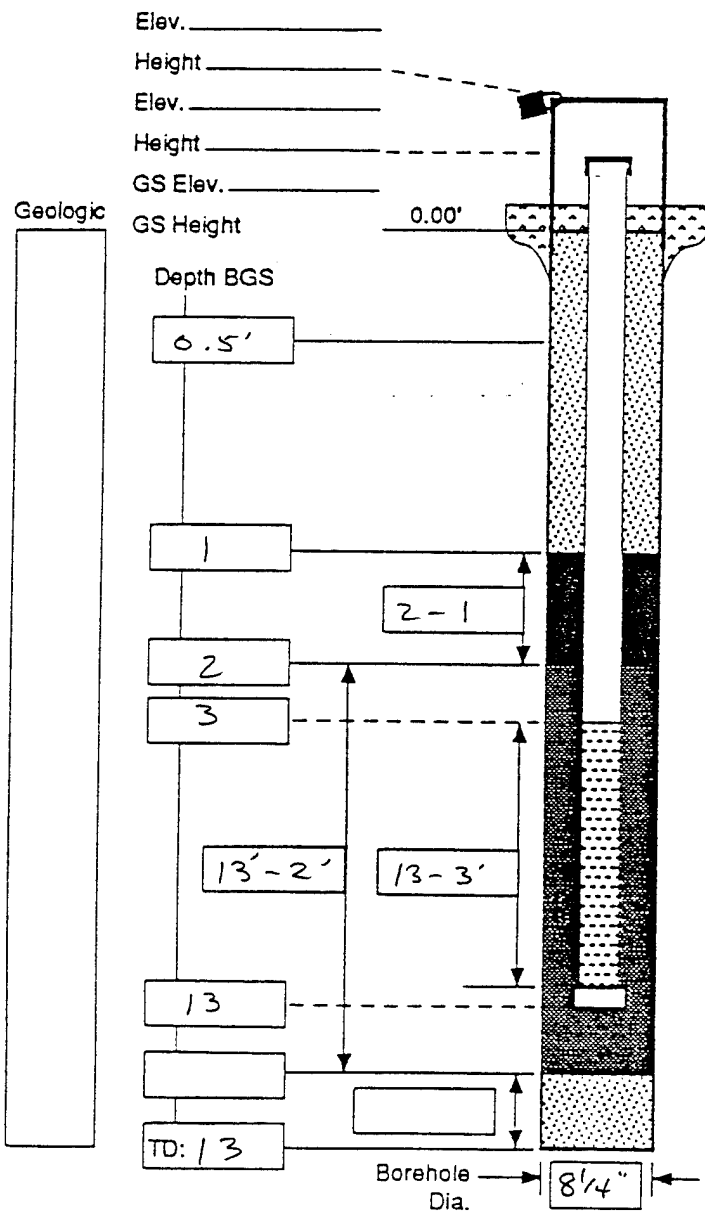
Material: **JSB 9/21/93**

Setup / Hydration Time: **-**

~~Tremied (Y/N)~~ **(Y)**

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/28/93</u>
Well: <u>SIMW6</u>	Well ID: <u>SIMW6</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>13</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/28/93</u>	Depth to Water (ft): <u>~3</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/28/93</u>	Elevation and Datum: <u>—</u>
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>JSB 9/21/93 JSBnezel</u>	Checked by: <u>JSB</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>—</u>	Date: <u>—</u>



PROTECTIVE CSG

Material / Type: Steel casing

Diameter: 4"

Depth BGS: — Weep Hole (Y/N) —

GUARD POSTS (Y/N)

No.: 3 Type: Cedar

SURFACE PAD

Composition and Size: Concrete 2' x 2'

RISER PIPE

Type: Schedule 40 PVC

Diameter: 2"

Total Length (TOC to TOS): 3' + 2' 5'

Ventilated Cap (Y/N) —

GROUT

Composition and Proportions: hole plug 1' - 0.5'

Tremied (Y/N) —

Interval BGS: 1 - 0.5'

CENTRALIZERS

Depth(s): N/A

SEAL

Type: bentonite pellets ~ 2' - 1'

Source: Baroid

Setup / Hydration Time: — Vol. Fluid Added 5 gallon

Tremied (Y/N) —

FILTER PACK

Type: Global Drilling Supplies #7

Amt. Used: 7 - 50# bags

Tremied (Y/N) — 13 - 2'

Source: Global Drilling

Gr. Size Dist: —

SCREEN

Type: Schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 3 - 13'

WELL FOOT (Y/N)

Interval BGS: — Length: —

Bottom Cap (Y/N) —

BACKFILL PLUG

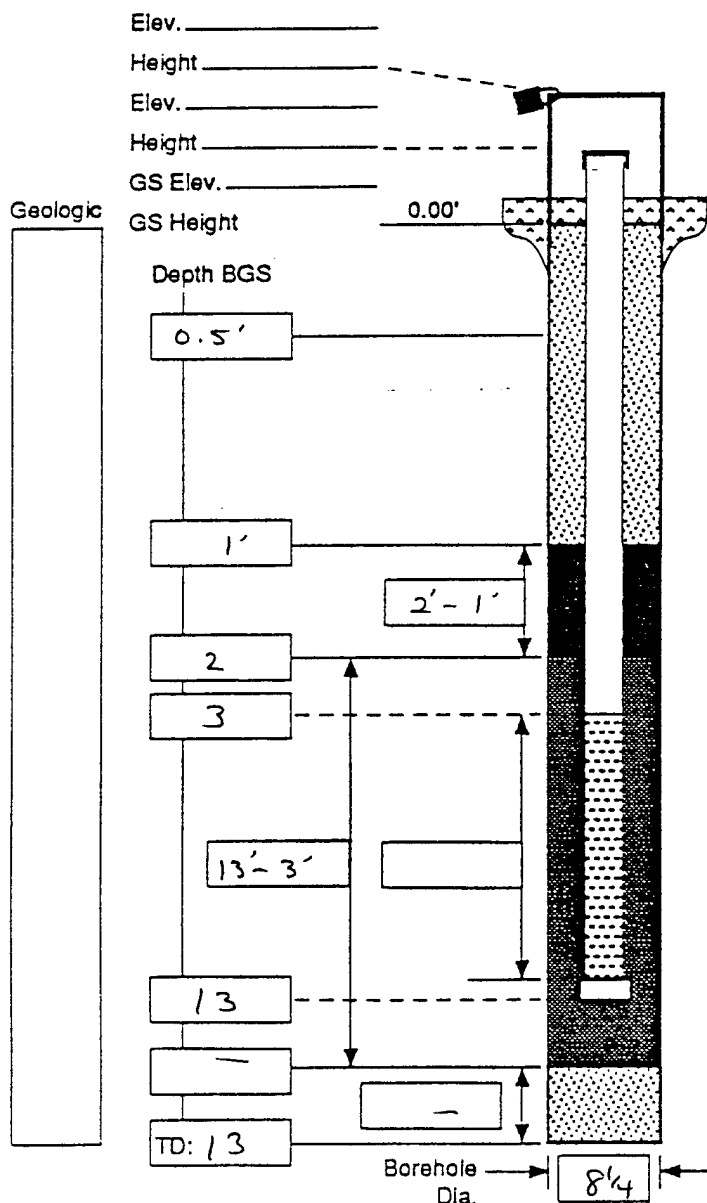
Material: JSB 9/21/93

Setup / Hydration Time: —

Tremied (Y/N) —

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/28/93</u>
Well: <u>SITW9 (SIMW9)</u>	Well ID: <u>SITW9</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft):
Drilling Agency: <u>Stearns</u>	Date Started:	Depth to Water (ft):
Drilling Equipment: <u>CME 750</u>	Date Finished:	Elevation and Datum:
Drilling Method: <u>Hollow stem Auger</u>	Logged by: <u>JSB</u>	Checked by: <u>PHC</u>
Drilling Fluid: <u>None</u>	Number of Samples:	Date: <u>9/22/93</u>



PROTECTIVE CSG

Material / Type: JSB 9/21/93
 Diameter: _____
 Depth BGS: _____ Weep Hole (Y/N) _____
 GUARD POSTS (Y/N) _____
 No.: _____ Type: _____

SURFACE PAD

Composition and Size: _____

RISER PIPE

Type: Schedule 40 PVC
 Diameter: 2"
 Total Length (TOC to TOS): -3' to +2'
 Ventilated Cap (Y/N) (Y) N

GROUT

Composition and Proportions: none

Tremied (Y/N)

Interval BGS: _____

CENTRALIZERS

Depth(s): N/A

SEAL

Type: hole plug - bentonite
 Source: Baroid ~ 2'-1'
 Setup / Hydration Time: _____ Vol. Fluid Added 5 gal

Tremied (Y/N)

FILTER PACK

Type: Global Drilling #7 - 13'-2' BGS
 Amt. Used: 7 - 50 # bags

Tremied (Y/N)

Source: Global Drilling supplies

Gr. Size Dist.

SCREEN

Type: Schedule 40 PVC
 Diameter: 2"
 Slot Size and Type: 0.010
 Interval BGS: 3 - 13'

WELL FOOT (Y/N)

Interval BGS: _____ Length: _____

Bottom Cap (Y/N)

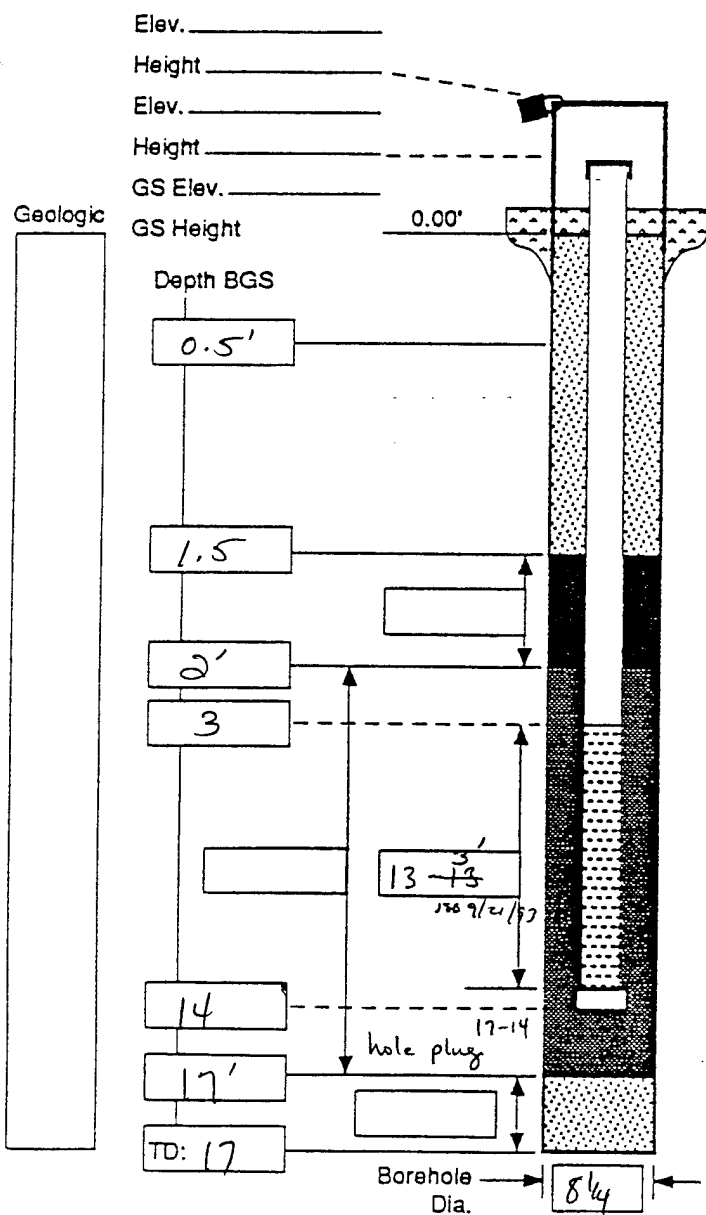
BACKFILL PLUG

Material: JSB 9/21/93
 Setup / Hydration Time: _____
 Tremied (Y/N) _____

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>93/800</u>	Date: _____
Well: <u>SiMW10 (temporary well)</u>	Well ID: <u>SiMW10</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>17</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/29/93</u>	Depth to Water (ft): <u>~3'</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>9/12/93</u>	Elevation and Datum: _____
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>JSBriegel</u>	Checked by: <u>JSB</u>
Drilling Fluid: <u>None</u>	Number of Samples: _____	Date: _____

pulled 9/12/93



PROTECTIVE CSG
Material / Type: _____
Diameter: _____
Depth BGS: _____
Weep Hole (Y/N): _____

GUARD POSTS (Y/N)
No.: _____ Type: _____

SURFACE PAD
Composition and Size: _____

RISER PIPE
Type: Schedule 40 PVC
Diameter: 2"
Total Length (TOC to TOS): -3' to +2' (~5')
Ventilated Cap (Y/N): _____

GROUT
Composition and Proportions: hole plug
1.5 - 0.5'

Tremied (Y/N) _____
Interval BGS: 1.5 - 0.5'

CENTRALIZERS N/A
Depth(s): _____

SEAL
Type: pellets - bentonite
Source: Burroid
Setup / Hydration Time: _____ Vol. Fluid Added: 5 gal

Tremied (Y/N) _____
FILTER PACK
Type: Global Drilling Supplies #7
Amt. Used: 7 - 50 # bags
Tremied (Y/N) _____
Interval BGS: 2 - 14' BGS
Source: Global #7

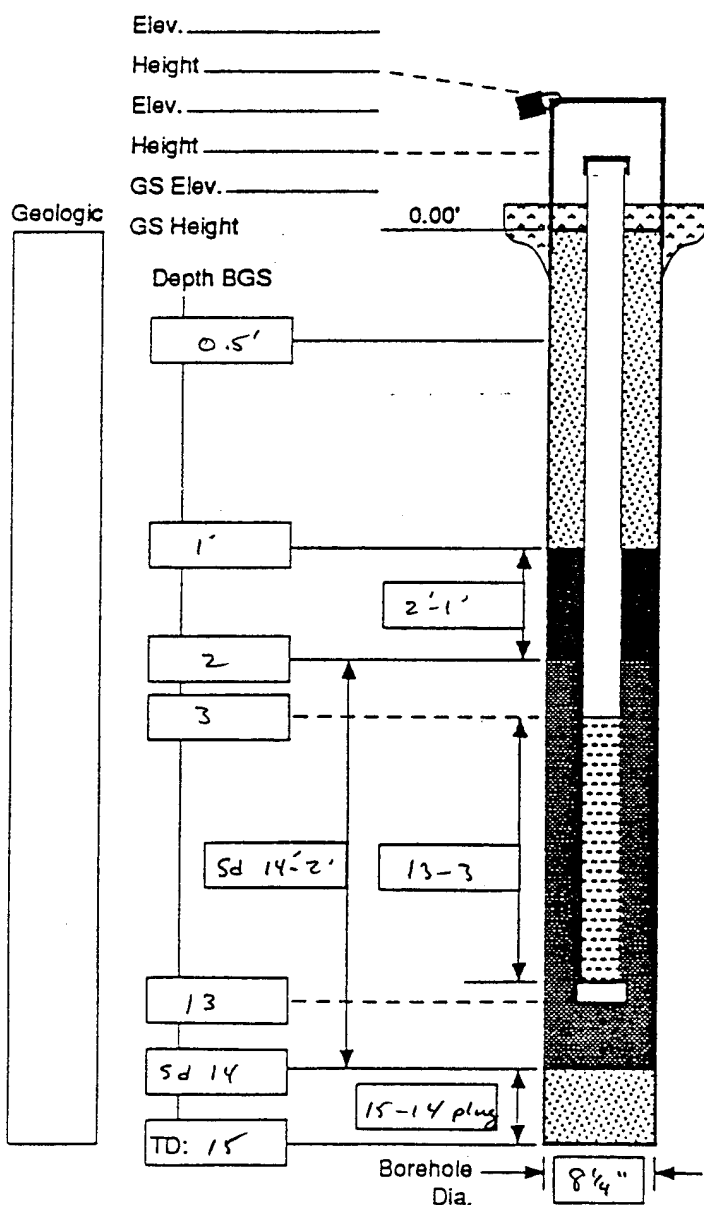
Gr. Size Dist: _____
SCREEN
Type: PVC Schedule 40
Diameter: 2"
Slot Size and Type: 0.010"
Interval BGS: 3 - 13

WELL FOOT (Y/N) _____
Interval BGS: _____ Length: _____

Bottom Cap (Y/N) _____
BACKFILL PLUG
Material: hole plug
Setup / Hydration Time: 14 - 17
Tremied (Y/N) through auger

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/29/93</u>
Well: <u>SIMW11</u>	Well ID: <u>SIMW11</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (In): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>13</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/29/93</u>	Depth to Water (ft): <u>~3</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/29/93</u>	Elevation and Datum: <u>-</u>
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>JSM</u>	Checked by: <u>PHL</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>-</u>	Date: <u>-</u>



PROTECTIVE CSG

Material / Type: Steel casing
Diameter: 4"
Depth BGS: -1 to +2.5' Weep Hole (Y/N) (N)
GUARD POSTS (Y/N) (N)
No.: _____ Type: _____

SURFACE PAD

Composition and Size: concrete 2' x 2'

RISER PIPE

Type: Schedule 40 PVC
Diameter: 2"
Total Length (TOC to TOS): -3' to +2' (5')
Ventilated Cap (Y/N) (N)

GROUT

Composition and Proportions: hole plug
1' - 0.5'
Tremied (Y/N) (N)
Interval BGS: 1' - 0.5'

CENTRALIZERS

Depth(s): N/A

SEAL

Type: Bentonite pellets
Source: Baroid 2'-1'
Setup / Hydration Time: - Vol. Fluid Added 5 galls

FILTER PACK

Type: Global #7
Amt. Used: 7 - 50# bags
Tremied (Y/N) (N) 7/21/93 2'-14' BGS
Source: Global Drilling Supplies

Gr. Size Dist:

SCREEN

Type: Schedule 40 PVC
Diameter: 2"
Slot Size and Type: 0.010"
Interval BGS: 3 - 13'

WELL FOOT (Y/N)

Interval BGS: _____ Length: _____

Bottom Cap (Y/N)

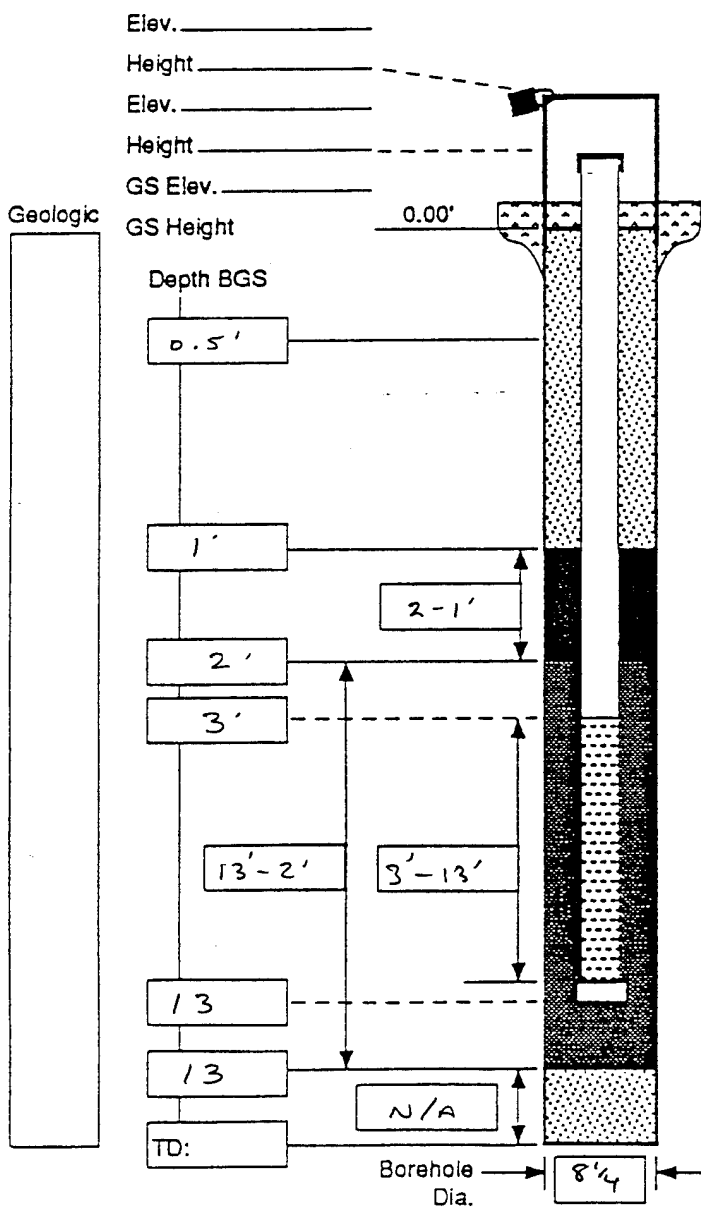
BACKFILL PLUG
Material: JSS 9/21/93

Setup / Hydration Time: _____
Tremied (Y/N) (N)

Note: hole plug ± 15'-14' BGS

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>9/8/93</u>
Well: <u>SMW12</u>	Well ID: <u>SMW12</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Griffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>13</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>9/8/93</u>	Depth to Water (ft): <u>~3'</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>9/8/93</u>	Elevation and Datum:
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>JSB</u>	Checked by: <u>Phly</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>—</u>	Date: <u>9/22/93</u>



PROTECTIVE CSQ

Material / Type: Steel Casing

Diameter: 4"

Depth BGS: +2' - -2' Weep Hole (Y/N) (N)

GUARD POSTS (Y/N)

No. _____ Type: _____

SURFACE PAD

Composition and Size: concrete 2' x 2'

RISER PIPE

Type: Schedule 40 PVC

Diameter: 2"

Total Length (TOC to TOS): -3 to +2'

Ventilated Cap (Y/N) (N)

GROUT

Composition and Proportions: hole plug

1' - 0.5'

Tremied (Y/N) (N)

Interval BGS: 1' - 0.5'

CENTRALIZERS

Depth(s): N/A

SEAL

Type: ben-tonite pellets

Source: Baroid 2' - 1'

Setup / Hydration Time: _____ Vol. Fluid Added: 5

Tremied (Y/N) (N) gallons

FILTER PACK

Type: Global #7

Amt. Used: 6 - 50# bags

Tremied (Y/N) (N) 13 - 2

Source: Global Drilling Supplies

Gr. Size Dist:

SCREEN

Type: Schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 3 - 13'

WELL FOOT (Y/N)

Interval BGS: _____ Length: _____

Bottom Cap (Y/N) (N)

BACKFILL PLUG

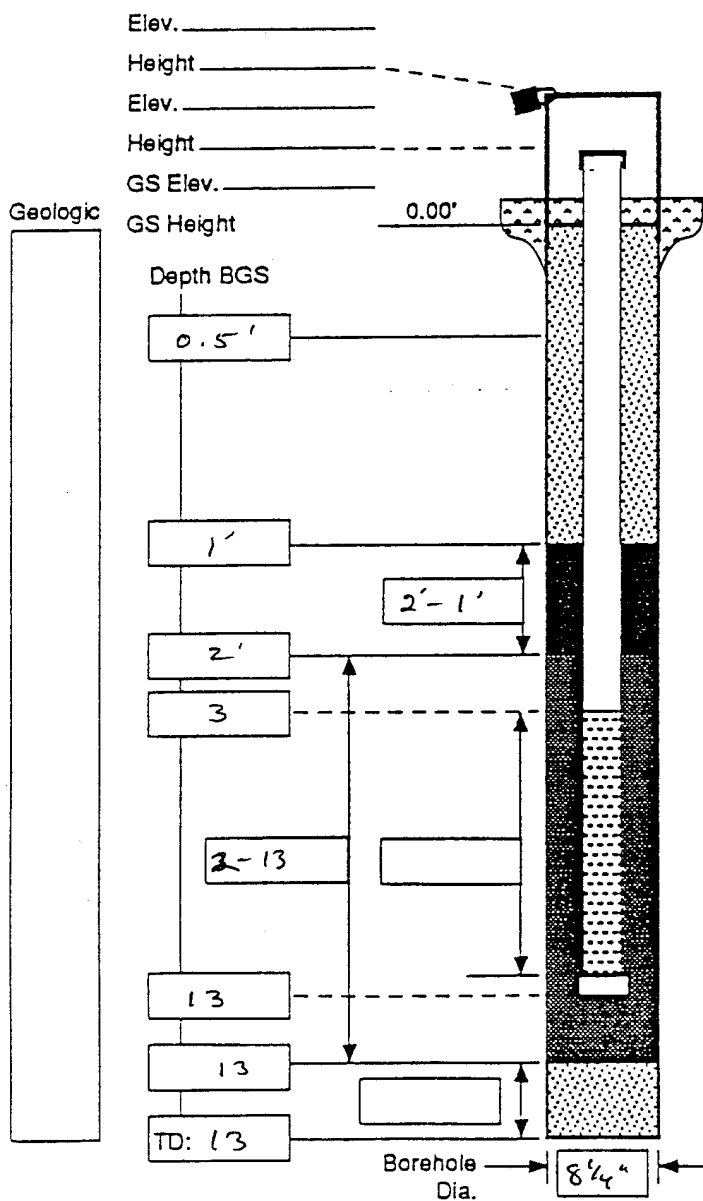
Material: JSB 9/21/93

Setup / Hydration Time: _____

Tremied (Y/N) _____

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>9/21/93</u>
Well: <u>SIMW13</u>	Well ID: <u>SIMW13</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>13'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>9/8/93</u>	Depth to Water (ft): <u>~3'</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>9/10/93</u>	Elevation and Datum: <u>—</u>
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>DRS/JSB</u>	Checked by: <u>JSB</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>—</u>	Date: <u>—</u>



PROTECTIVE CSG

Material / Type: Steel Casing
 Diameter: 4"
 Depth BGS: +2' - -3' BGS Weep Hole (Y/N) (N)
 GUARD POSTS (Y/N) (N)
 No.: — Type: —

SURFACE PAD

Composition and Size: concrete 2' x 2'

RISER PIPE

Type: Schedule 40 PVC
 Diameter: 2"
 Total Length (TOC to TOS): +2' - -3' BGS
 Ventilated Cap (Y/N) (N)

GROUT

Composition and Proportions: hole plug 0.5'-1'

Tremied (Y/N)

Interval BGS: 0.5'-1'

CENTRALIZERS

Depth(s): N/A

SEAL

Type: bariumite pellets
 Source: Baroid 2'-1'
 Setup / Hydration Time: — Vol. Fluid Added: 5 gallon

Tremied (Y/N)

Interval BGS: —

FILTER PACK

Type: Global Drilling #7

Amt. Used: 6 - 50# bags

Tremied (Y/N) (N)

Source: Global Drilling Supplies

Gr. Size Dist.:

SCREEN

Type: Schedule 40 PVC
 Diameter: 2"
 Slot Size and Type: 0.010"
 Interval BGS: 3 - 13

WELL FOOT (Y/N)

Interval BGS: — Length: —

Bottom Cap (Y/N)

BACKFILL PLUG

Material: JSB 9/21/93

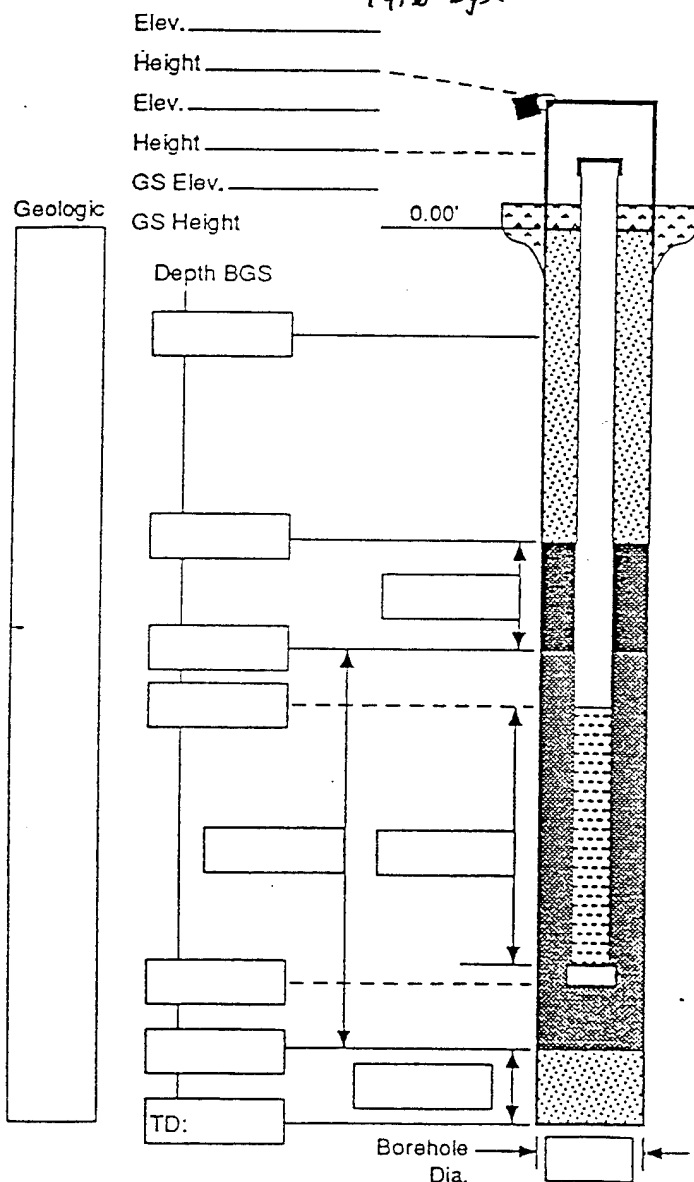
Setup / Hydration Time: —

Tremied (Y/N) (N)

Monitoring Well Construction Log - Above Ground

Project Name: Phelps Collins ANG	Project Number: 95800	Date: 9/11/93
Well: SIMW14	Well ID: SIMW14	Sheet: 1 of 1
Driller: D. Giffels	Borehole 14 1/4" O.D. to 14.0695 Diameter (in): 8 1/4" O.D. to 30'	Total Depth (ft): 30'
Drilling Agency: Stearns	Date Started: 9/10/93	Depth to Water (ft): ~ 3
Drilling Equipment: CME 750	Date Finished: 9/11/93	Elevation and Datum:
Drilling Method: Hollow Stem Auger	Logged by: D. Payne	Checked by: J. S. Smey
Drilling Fluid: None	Number of Samples: 1	Date: -

Note: set surface casing of 10 1/4" I.D. PVC from 1.5' above ground to 14.0' BGS.



borehole 0-14' BGS 10 1/4" I.D.
surface casing

PROTECTIVE CSG

Material / Type: **Steel Casing**

Diameter: **4"**

Depth BGS: **+2' - -2' BGS**

Weep Hole (Y/N) **(Y)**

GUARD POSTS (Y/N)

No.: **3** Type: **Galvan**

SURFACE PAD

Composition and Size: **2x2 Cement Pad**

RISER PIPE

Type: **Schedule 40 PVC** **SPJ**

Diameter: **2"**

Total Length (TOC to TOS): **10'**

Ventilated Cap (Y/N)

GROUT

Composition and Proportions: **Cement (Type 1) / bentonite 16 - 0.5' BGS**

Tremied (Y/N) **(Y)**

Interval BGS: **16 - 0.5'**

CENTRALIZERS

Depth(s): **N/A**

SEAL

Type: **Baroid Bentonite Seal - liquid ***

Source: **18 - 16' BGS**

Setup / Hydration Time:

Vol. Fluid Added:

Tremied (Y/N) **(Y)** **SPJ**

FILTER PACK

Type: **Global Filter Pack #7**

Am't Used: **6 / 50 lb bags**

Tremied (Y/N) **(Y)** **30 - 18**

Source: **Global Drilling supplies**

Gr. Size Dist:

SCREEN

Type: **Schedule 40 PVC**

Diameter: **2"**

Slot Size and Type: **0.010"**

Interval BGS: **30' - 20'**

WELL FOOT (Y/N)

Interval BGS: Length:

Bottom Cap (Y/N)

BACKFILL PLUG

Material: **JSG 9/21/93**

Setup / Hydration Time:

Tremied (Y/N)

Form F-1024

Filter pack from 30' - 18.5' BGS

* Note: Drillers could not get pellets to sink even using tremie pipe + spotting on top of sand pack. They mixed a thick, liquid benton. seal.

Monitoring Well Construction Log - Flush Mount

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/16/93</u>
Well: _____	Well ID: <u>MP3MWB</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>42'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/16/93</u>	Depth to Water (ft): _____
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/16/93</u>	Elevation and Datum: _____
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>DFJ</u>	Checked by: <u>PHCag</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>-</u>	Date: <u>9/22/93</u>

PROTECTIVE CSG

Material / Type: DFJ
 Diameter: _____
 Depth BGS: _____ Weep Hole (Y / N)
 GUARD POSTS (Y / N) Type: _____

SURFACE PAD

Composition and Size: concrete 2'x2'

RISER PIPE

Type: Schedule 40 PVC
 Diameter: 2"
 Total Length (TOC to TOS): _____
 Ventilated Cap (Y / N)

GRGUT

Composition and Proportions: _____

Tremied (Y / N)

Interval BGS: _____

CENTRALIZERS

Depth(s): _____

SEAL

Type: _____

Source: _____

Setup / Hydration Time: _____ Vol. Fluid Added: _____

Tremied (Y / N)

FILTER PACK

Type: Global #7

Amt. Used: 7 / 50 lbs bags

Tremied (Y / N) _____

Source: Global Drilling Supplies

Gr. Size Dist: _____

SCREEN

Type: schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 12'-27'

WELL FOOT (Y / N)

Interval BGS: _____ Length: _____

Bottom Cap (Y / N)

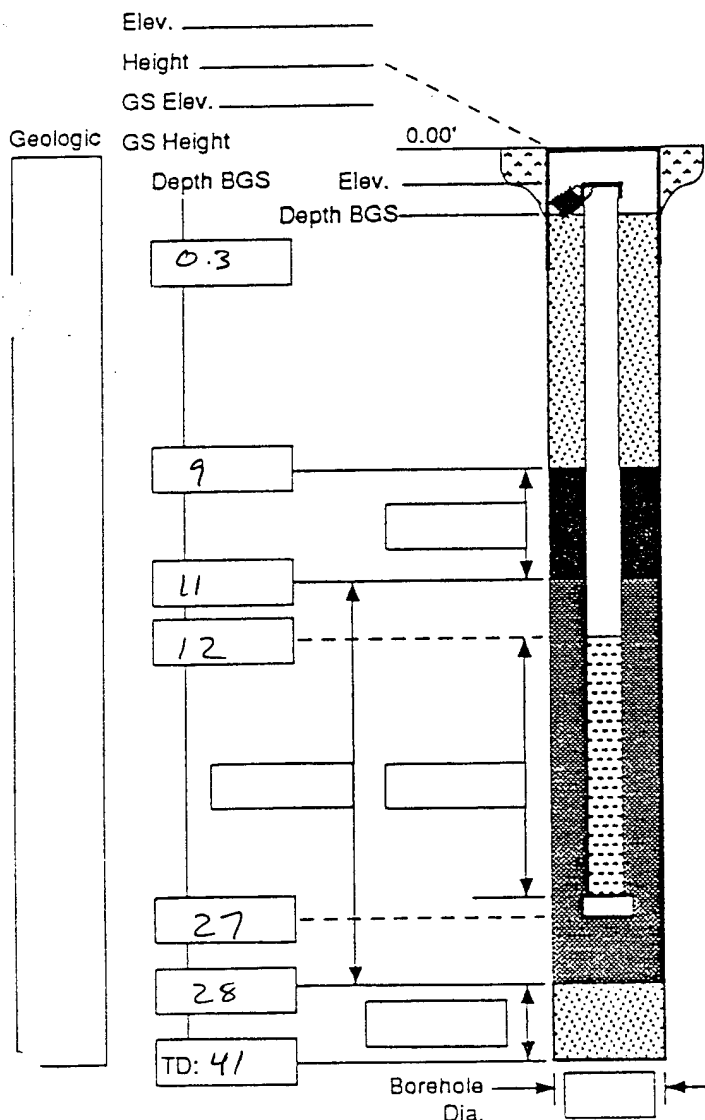
BACKFILL PLUG

Material: Hole Plug 28'-27'

Setup / Hydration Time: _____

Tremied (Y / N) _____

Form F-1023
9/1/91



Monitoring Well Construction Log - Flush Mount

Project Name: <u>Phelps Collins AN6</u>	Project Number: <u>931800</u>	Date: <u>8/17/93</u>
Well	Well ID: <u>MP2 MW7</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>15</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/17/93</u>	Depth to Water (ft):
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/17/93</u>	Elevation and Datum: <u>PH/Lay</u>
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>DFJ</u>	Checked by:
Drilling Fluid: <u>None</u>	Number of Samples:	Date:

PROTECTIVE CSG

Material / Type: DFJ
Diameter: 2"
Depth BGS: 7/22/93 Weep Hole (Y / N)
GUARD POSTS (Y/N) (Y) Type: _____

SURFACE PAD

Composition and Size: Concrete 2' x 2'

RISER PIPE

Type: schedule 40 PVC
Diameter: 2"
Total Length (TOG to TOS): 5'
Ventilated Cap (Y) (N)

GROUT

Composition and Proportions: Grout/cement-bentonite mixture

Tremied (Y / N) (Y)

Interval BGS: _____

CENTRALIZERS

Depth(s): DFJ 7/21/93

SEAL

Type: DFJ
Source: 8/21/93
Setup / Hydration Time: _____ Vol. Fluid Added: _____

Tremied (Y / N)

FILTER PACK

Type: Global #7
Amt. Used: 7 - 50 lb bags
Tremied (Y / N) (Y)
Source: Global Drilling Supplies

Gr. Size Dist: _____

SCREEN

Type: schedule 40 PVC
Diameter: 2"
Slot Size and Type: 0.010"
Interval BGS: 5'-15' BGS

WELL FOOT (Y/N)

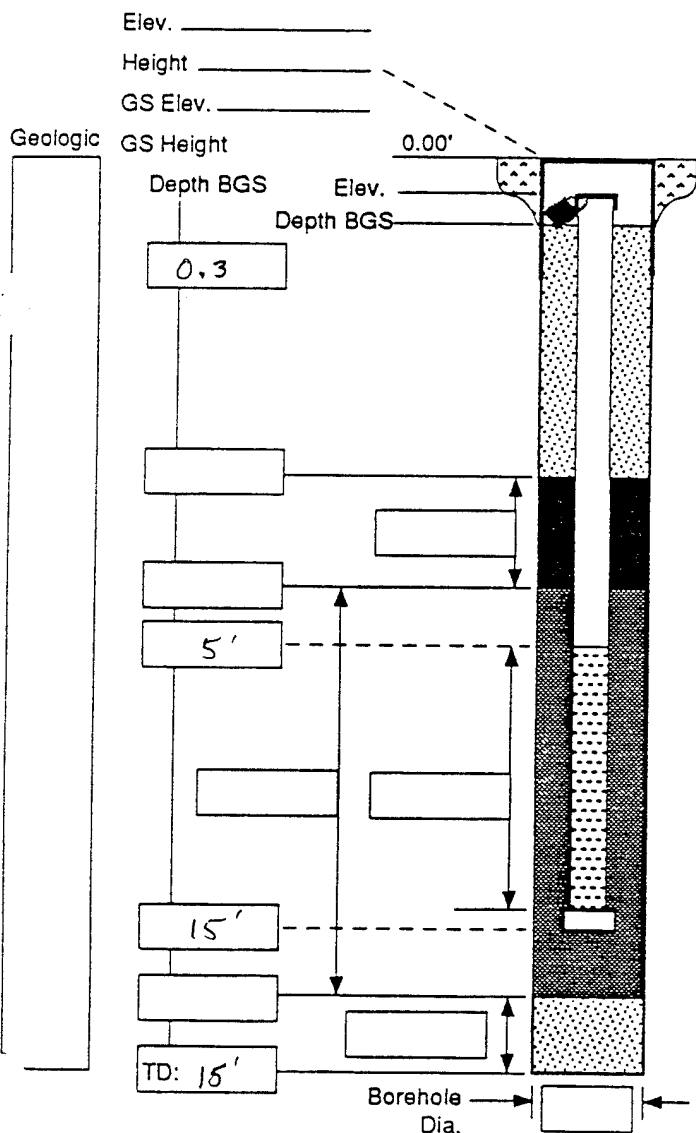
Interval BGS: _____ Length: _____

Bottom Cap (Y / N)

BACKFILL PLUG

Material: DFJ
Setup / Hydration Time: _____
Tremied (Y / N) (Y)

Form F-1023
9/1/91



Monitoring Well Construction Log - Flush Mount

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/25/93</u>
Well: <u>CG3 MW6</u>	Well ID: <u>CG3 MW6</u>	Sheet <u> </u> of <u> </u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4"</u>	Total Depth (ft): <u> </u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/25/93</u>	Depth to Water (ft): <u>-15</u>
Drilling Equipment: <u>CMG 750</u>	Date Finished: <u>8/30/93</u>	Elevation and Datum: <u> </u>
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>JSB</u>	Checked by: <u>PHL</u>
Drilling Fluid: <u>none</u>	Number of Samples: <u> </u>	Date: <u>9/22/93</u>

PROTECTIVE CSG

Material / Type: JSB 8/25/93
 Diameter:
 Depth BGS: Weep Hole (Y/N)
 GUARD POSTS (Y/N)
 No.: Type:

SURFACE PAD

Composition and Size:
 RISER PIPE Schedule 40 PVC
 Type:
 Diameter: 2"
 Total Length (TOC to TOS): 23-0'
 Ventilated Cap (Y/N)
 GROUT
 Composition and Proportions:

Tremied (Y/N)
 Interval BGS:

CENTRALIZERS none
 Depth(s):

SEAL
 Type:

Source: Vol. Fluid Added:
 Setup / Hydration Time:

Tremied (Y/N)
 FILTER PACK Global Drilling Supplies #7

Type:
 Amt. Used:

Tremied (Y/N) Global Drilling Supplies #7
 Source:

Gr. Size Disl:
 SCREEN Schedule 40 PVC

Type:
 Diameter: 2"

Slot Size and Type: 0.010
 Interval BGS: 23-23-33

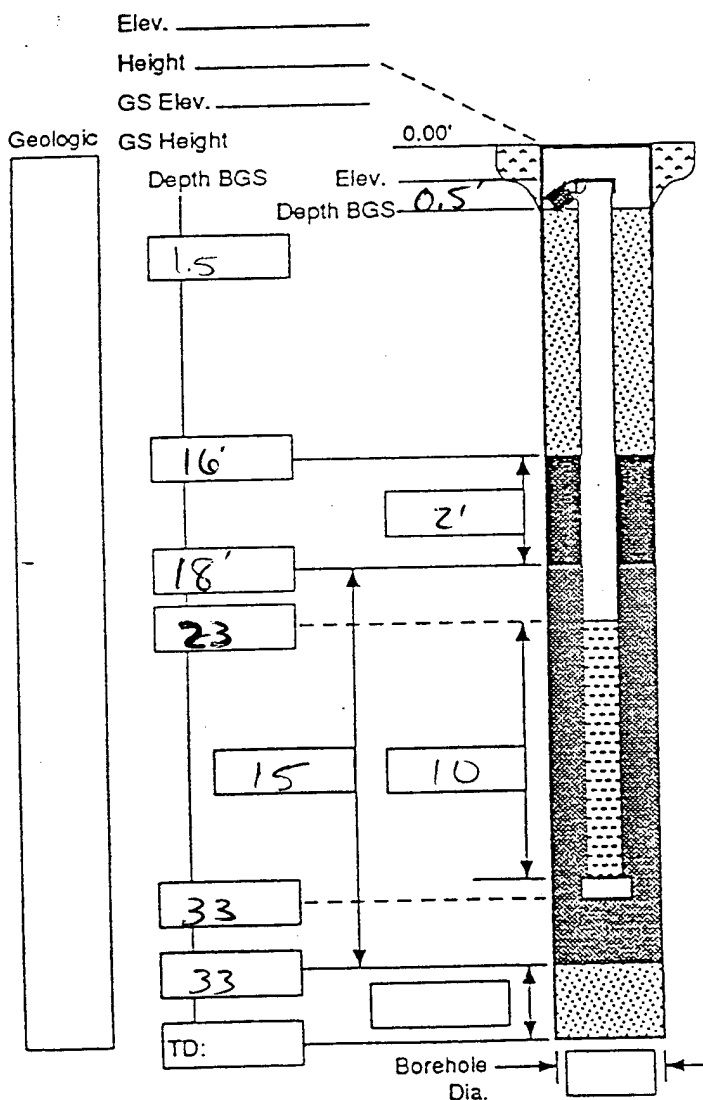
WELL FOOT (Y/N)
 Interval BGS: Length:

Bottom Cap (Y/N)
 BACKFILL PLUG

Material: none
 Setup / Hydration Time:

Tremied (Y/N)

Form F-1025



Monitoring Well Construction Log - Flush Mount

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/30/93</u>
Well	Well ID: <u>CG3mw7</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (In): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>35'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/30/93</u>	Depth to Water (ft): <u>14'</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/31/93</u>	Elevation and Datum:
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>PHL</u>	Checked by: <u>JSR</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>0</u>	Date: <u>9/22/93</u>

PROTECTIVE CSO

Material / Type: N/A

Diameter: N/A

Depth BGS: _____ Weep Hole (Y / N)

GUARD POSTS (Y / N)

No.: _____ Type: _____

SURFACE PAD

Composition and Size: 2'x2' concrete pad

RISER PIPE

Type: PVC Sched 40

Diameter: 2" ID

Total Length (TOC to TOS): 0.3' to 12'

Ventilated Cap ☒ Y ☐ N

GROUT

Composition and Proportions: _____

Tremied (Y / N) ☒ Y ☐ N

Interval BGS: 0.3 to 8'

CENTRALIZERS

Depth(s) N/A

SEAL

Type: Bentonite pellets

Source: Global Drilling Supplies

Setup / Hydration Time: 30 minutes Vol. Fluid Added: Scal

Tremied (Y / N) ☐ Y ☒ N

FILTER PACK

Type: Global #7 silica sand

Amt. Used: 5 - 50# Bags

Tremied (Y / N) ☒ Y ☐ N

Source: Global Drilling Supplier

Gr. Size Dist: #7

SCREEN

Type: PVC Schedule 40

Diameter: 2" ID

Slot Size and Type: 0.010"

Interval BGS: 12-22'

WELL FOOT (Y / N)

Interval BGS: N/A Length: _____

Bottom Cap (Y / N)

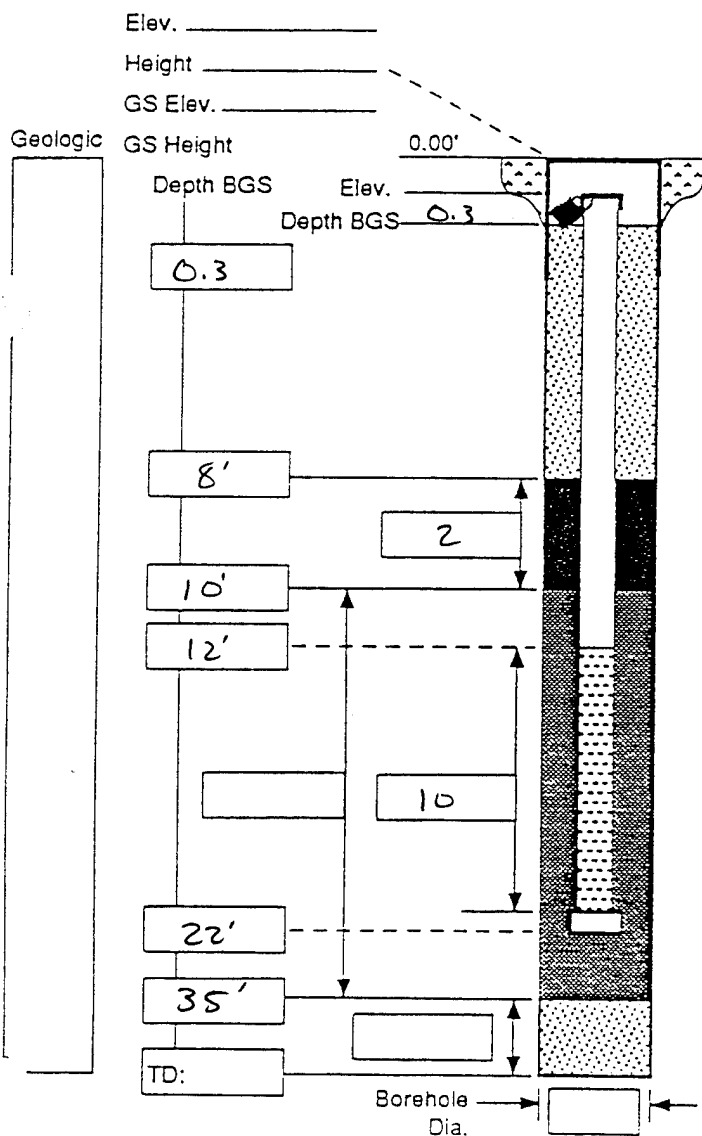
BACKFILL PLUG

Material: cuttings / hole plug

Setup / Hydration Time: 30 minutes

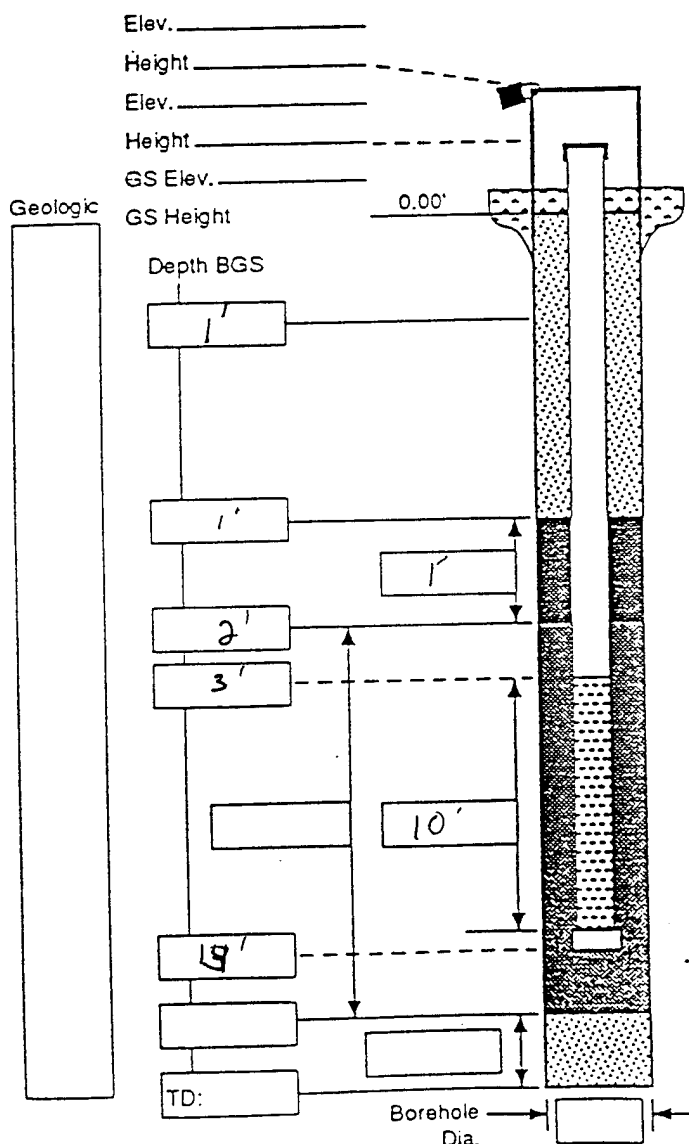
Tremied (Y / N)

Form F-1023
9/1/91



Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins AN6</u>	Project Number: <u>931800</u>	Date: <u>8/12/93</u>
Well:	Well ID: <u>SF-5 MW5</u>	Sheet: <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>4 1/4"</u>	Total Depth (ft):
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/12/93</u>	Depth to Water (ft):
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/12/93</u>	Elevation and Datum:
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>DF Sample</u>	Checked by: <u>SSD</u>
Drilling Fluid: <u>None</u>	Number of Samples:	Date: <u>9/22/93</u>



PROTECTIVE CSG

Material / Type: 4"
 Diameter: 2"
 Depth BGS: 2' Weep Hole ☒ (N)

GUARD POSTS ☒ (N)
 No.: 4 Type: Steel

SURFACE PAD
 Composition and Size: Concrete 2' x 2'

RISER PIPE
 Type: Schedule 40 2" PVC
 Diameter: 2"

Total Length (TOC to TOS): 10'
 Ventilated Cap ☒ (N) J plug installed

GROUT
 Composition and Proportions: hole plug DES
Bentonite Pellets

Tremied (Y / N)
 Interval BGS:

CENTRALIZERS N/A
 Depth(s):

SEAL Bentonite Pellets DES - Grout
 Type:

Source: Vol. Fluid Added 1 gallon

Setup / Hydration Time:

Tremied (Y / N)
 FILTER PACK

Type: Global Drilling Supplies

AML Used: 8 50lb bags

Tremied (Y / N)

Source:

Gr. Size Dist:

SCREEN

Type: Schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 3'-14'

WELL FOOT (Y / N)

Interval BGS: Length

Bottom Cap ☒ (N)

BACKFILL PLUG

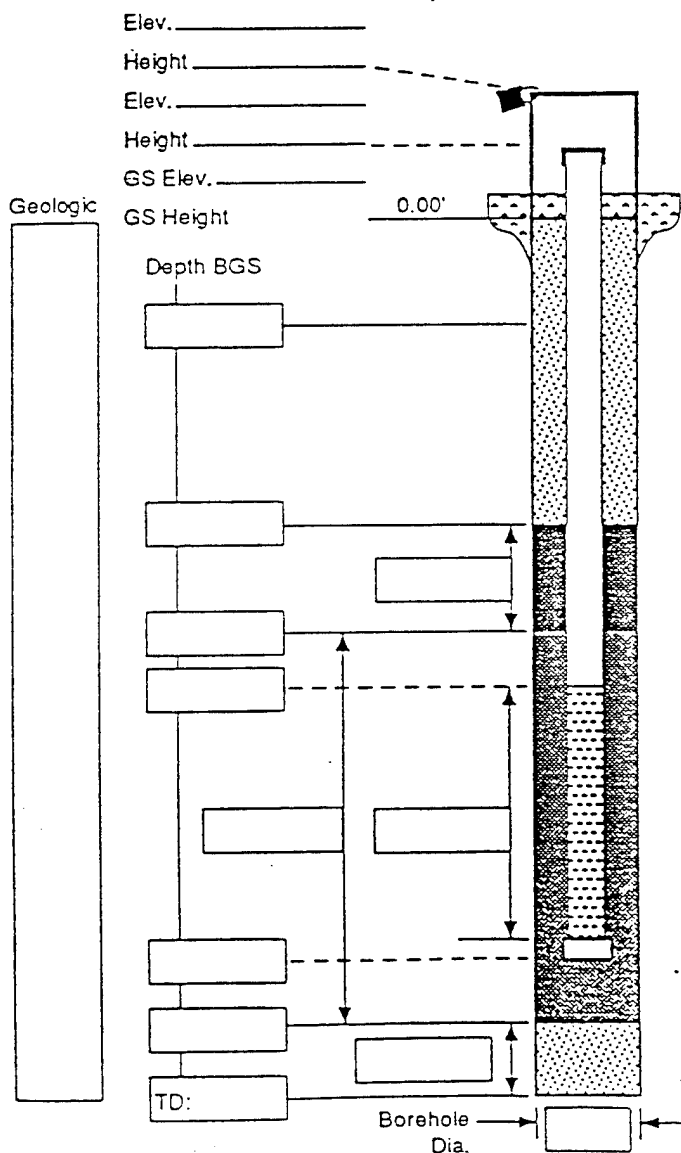
Material:

Setup / Hydration Time:

Tremied (Y / N)

Monitoring Well Construction Log - Above Ground

Project Name: Phelps Collins ANG	Project Number: 931800	Date: 8/12/93
Well:	Well ID: SF5MW6	Sheet: 1 of 1
Driller: DFJ Stearns D. Giffels	Borehole Diameter (in):	Total Depth (m): 21'
Drilling Agency: Stearns	Date Started: 8/12/93	Depth to Water (m): ± 5'
Drilling Equipment: CME 750	Date Finished: 8/12/93	Elevation and Datum:
Drilling Method: Hollow Stem Auger	Logged by: DF Jayne	Checked by:
Drilling Fluid: None	Number of Samples:	Date:



PROTECTIVE CSG

Material / Type:

Diameter:

Depth BGS: Weep Hole (Y / N)

GUARD POSTS (Y / N)

No. Type:

SURFACE PAD

Composition and Size:

RISER PIPE

Type: **schedule 40 2" PVC**

Diameter:

Total Length (TOC to TOS):

Ventilated Cap (Y / N)

GROUT

Composition and Proportions:

Tremied (Y / N)

Interval BGS:

CENTRALIZERS

Depth(s) **None**

SEAL

Type: **Bentonite Pellets**

Source:

Setup / Hydration Time: Vol. Fluid Added

Tremied (Y / N)

FILTER PACK

Type: **Global Drilling Supplies**

AML Used: **9 50/lb bags**

Tremied (Y / N)

Source:

Gr. Size Dist:

SCREEN

Type: **schedule 40 PVC**

Diameter: **2"**

Slot Size and Type: **0.010"**

Interval BGS:

WELL FOOT (Y / N)

Interval BGS: Length

Bottom Cap (Y / N)

BACKFILL PLUG

Material:

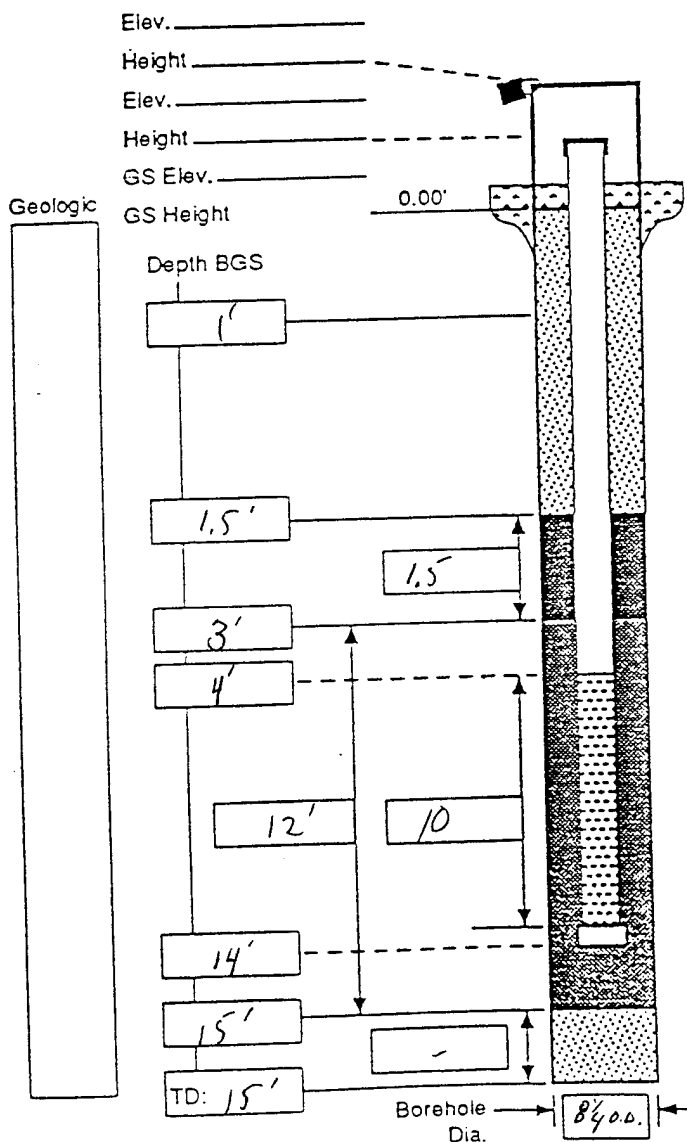
Setup / Hydration Time:

Tremied (Y / N)

Form F-1024

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/12/93</u>
Well: _____	Well ID: <u>SFS-MW-7</u>	Sheet: <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>7 1/4" p.d.</u>	Total Depth (ft): <u>15</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/12/93</u>	Depth to Water (ft): _____
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/12/93</u>	Elevation and Datum: _____
Drilling Method: <u>Hollow stem Auger</u>	Logged by: <u>JSBriegel</u>	Checked by: <u>DEF</u>
Drilling Fluid: <u>None</u>	Number of Samples: _____	Date: <u>9/22/93</u>



PROTECTIVE CSG
Material / Type: _____
Diameter: 4"
Depth BGS: 2' Weep Hole (Y/N) _____

GUARD POSTS (BIN)
No. 4 Type: Steel

SURFACE PAD
Composition and Size: Concrete 2'x2'

RISER PIPE
Type: Schedule 40 PVC
Diameter: 2"
Total Length (TOC to TOS): 10'
Ventilated Cap (Y/N) _____

GROUT
Composition and Proportions: Cement/bentonite

Tremied (Y/N) _____
Interval BGS: _____

CENTRALIZERS
Depth(s) None

SEAL DIS
Type: Bentonite Holeplug 2'-15' (2 50lb bags)

Setup / Hydration Time: _____ Vol. Fluid Added: _____

Tremied (Y/N) _____
FILTER PACK

Type: Global Drilling Supplies #7

AmL Used: 7 50lb bags

Tremied (Y/N) _____

Source: 15'-3'

Gr. Size Dist.: _____

SCREEN Schedule 40 PVC

Type: 2"

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 14'-4'

WELL FOOT (Y/N) _____

Interval BGS: _____ Length: _____

Bottom Cap (Y/N) _____

BACKFILL PLUG DEF

Material: _____

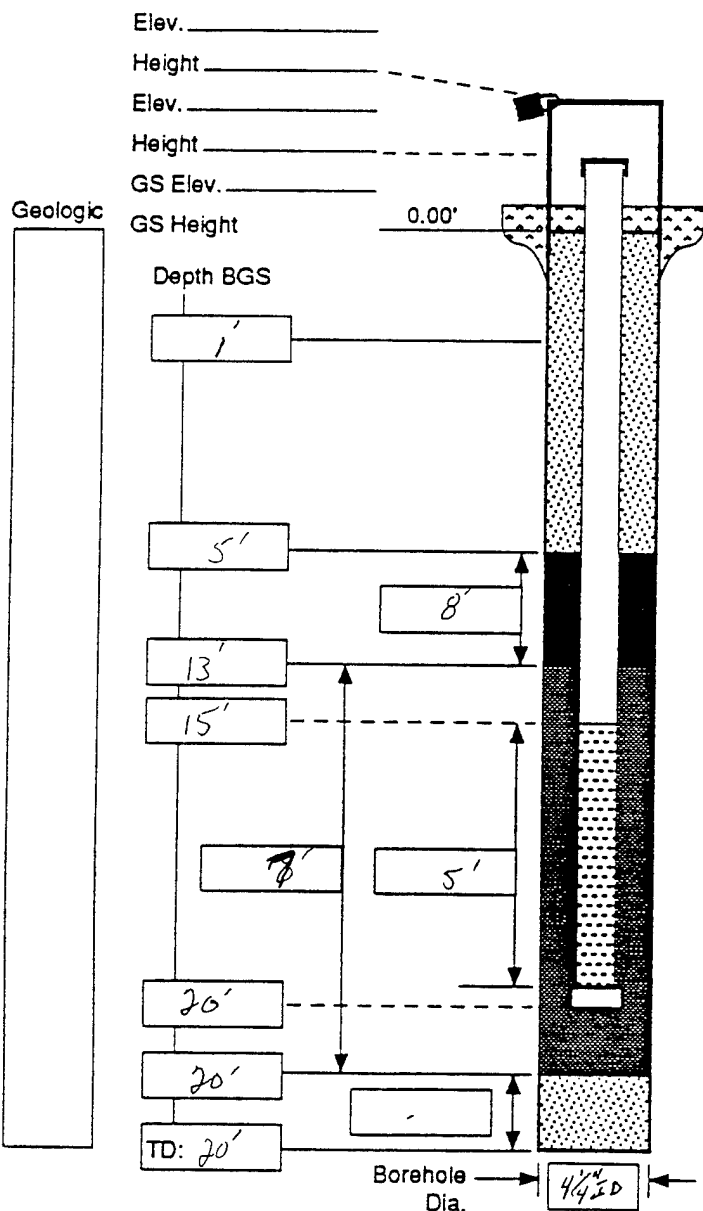
Setup / Hydration Time: 9/22/93

Tremied (Y/N) _____

3'-1 1/2' Bentonite pellets

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/31/93</u>
Well	Well ID: <u>DEF</u> <u>LFGMW8 SFSMW8</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. G. ffels</u>	Borehole Diameter (in): <u>8 1/4" O.P.</u>	Total Depth (ft): <u>20'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/31/93</u>	Depth to Water (ft):
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/31/93</u>	Elevation and Datum:
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>JS Brige</u>	Checked by: <u>DKJ</u>
Drilling Fluid: <u>None</u>	Number of Samples:	Date: <u>9/22/93</u>



PROTECTIVE CSG

Material / Type: 4"
Diameter: _____
Depth BGS: 2' Weep Hole (Y/N) (Y)
GUARD POSTS (Y/N) (Y)
No.: 4 Type: Steel

SURFACE PAD

Composition and Size: Concrete 2' x 2'

RISER PIPE

Type: Schedule 40 PVC
Diameter: 2"
Total Length (TOG to TOS): 17'
Ventilated Cap (Y/N) (Y)

GROUT

Composition and Proportions: Bentonite

Tremied (Y/N)

Interval BGS: 0-5'

CENTRALIZERS

Depth(s): _____

SEAL

Type: Bentonite pellets

Source: _____

Setup / Hydration Time: _____ Vol. Fluid Added: _____

Tremied (Y/N)

FILTER PACK

Type: Global #7

Amt. Used: 3/50lb bags

Tremied (Y/N) (Y)

Source: Global Drilling Supplies

Gr. Size Dist:

SCREEN

Type: Schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.075"

Interval BGS: 15'-20' BGS

WELL FOOT (Y/N)

Interval BGS: _____ Length: _____

Bottom Cap (Y/N)

BACKFILL PLUG

Material: _____

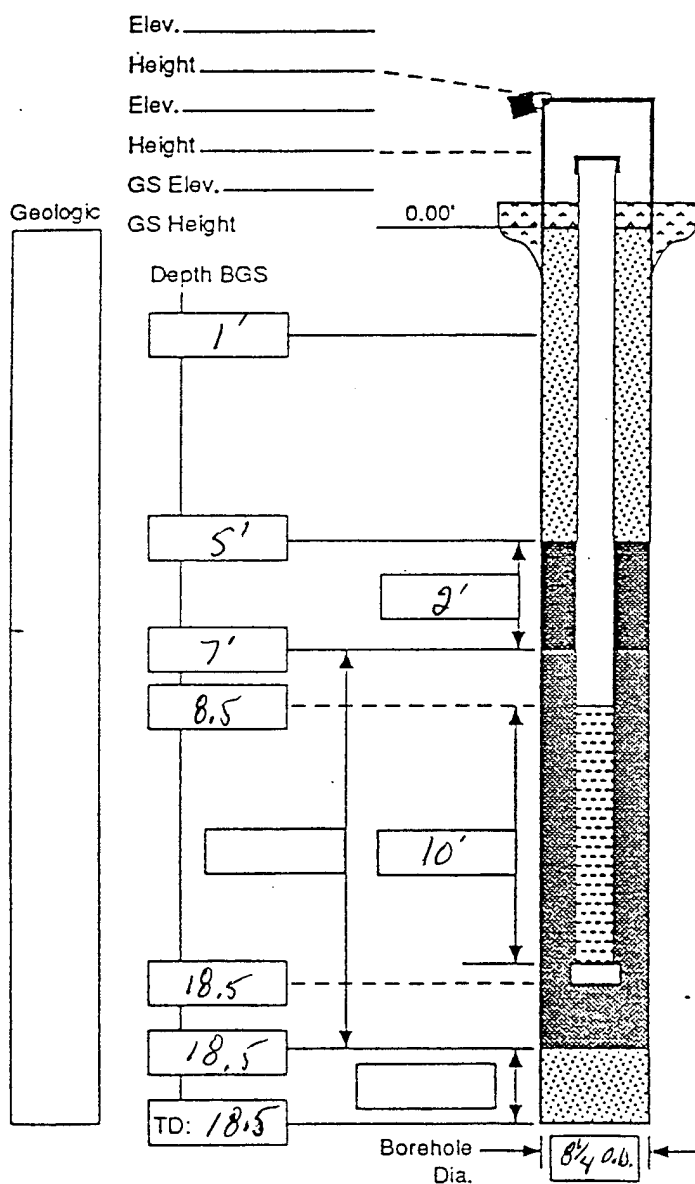
Setup / Hydration Time: _____

Tremied (Y/N) (Y)

9/22/93

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins AWC</u>	Project Number: <u>931800</u>	Date: <u>9/10/93</u>
Well: <u>SF5MW9 (SF5TW9)</u>	Well ID: <u>SF5MW9</u>	Sheet: <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4</u>	Total Depth (ft): <u>18.5</u>
Drilling Agency: <u>Stearns Drilling</u>	Date Started: <u>9/9/93</u>	Depth to Water (ft): <u>~8</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>9/10/93</u>	Elevation and Datum:
Drilling Method: <u>hollow stem auger</u>	Logged by: <u>DJS/JSB</u>	Checked by: <u>DJS</u>
Drilling Fluid: <u>none</u>	Number of Samples: <u>—</u>	Date: <u>9/22/93</u>



PROTECTIVE CSG
Material / Type: Steel
Diameter: 4"
Depth BGS: _____ Weep Hole (Y/N) _____

GUARD POSTS (Y/N)
No. _____ Type: _____

SURFACE PAD
Composition and Size: _____

RISER PIPE Schedule 40 PVC
Type: _____
Diameter: 2"
Total Length (TOC to TOS): 8.5'
Ventilated Cap (Y/N) (Y)

GROUT
Composition and Proportions: hole plug

Tremied (Y/N) (N)
Interval BGS: _____

CENTRALIZERS
Depth(s) N/A

SEAL bentonite pellets
Type: _____
Source: _____
Setup / Hydration Time: _____ Vol. Fluid Added: _____

Tremied (Y/N) (N)
FILTER PACK Global drilling supplies #7
Type: _____
AML Used: _____

Tremied (Y/N) (N) Global drilling supplies
Source: _____
Gr. Size Dist: _____

SCREEN Schedule 40 PVC
Type: _____
Diameter: 2"
Slot Size and Type: 0.010
Interval BGS: 18.5' - 8.5'

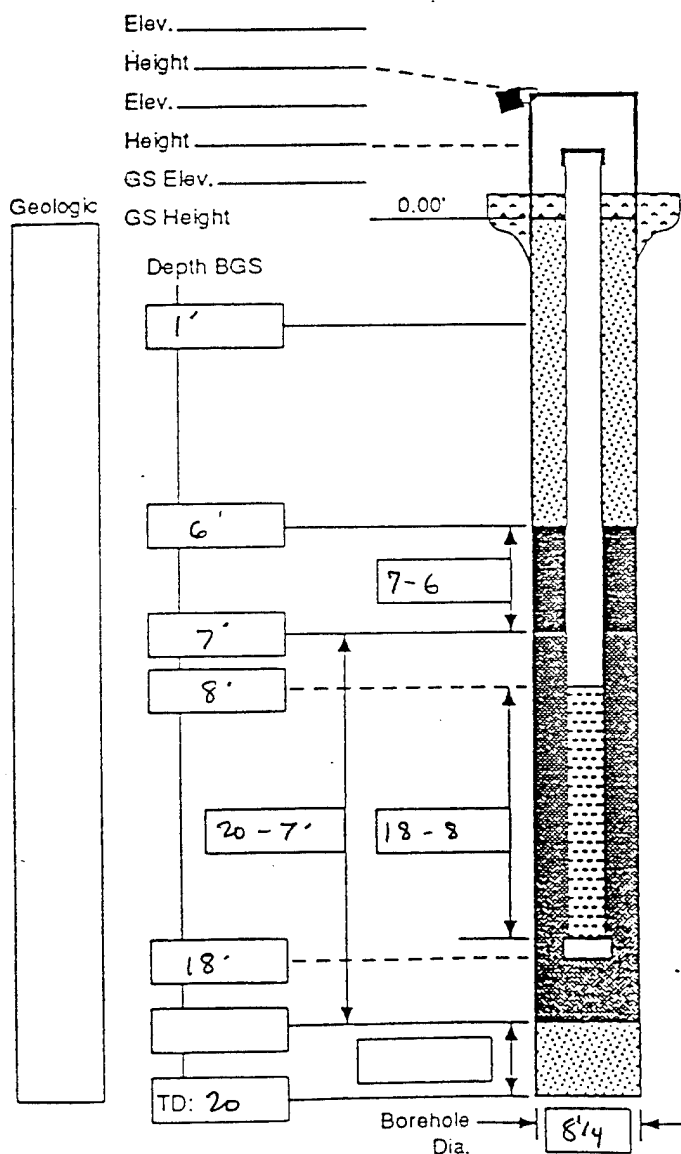
WELL FOOT (Y/N) (N)
Interval BGS: _____ Length: _____

Bottom Cap (Y/N) (Y)
BACKFILL PLUG N/A
Material: _____
Setup / Hydration Time: _____

Tremied (Y/N) _____

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/11/93</u>
Well: <u>LF6MW4</u>	Well ID: <u>LF6MW4</u>	Sheet: <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>4 1/4"</u>	Total Depth (ft): <u>20'</u>
Drilling Agency: <u>Stearns Drilling</u>	Date Started: <u>8/11/93</u>	Depth to Water (ft): <u>~9.5'</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/11/93</u>	Elevation and Datum: <u>—</u>
Drilling Method: <u>hollow stem auger</u>	Logged by: <u>JS Bruegel</u>	Checked by: <u>JSB.</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>—</u>	Date: <u>—</u>



PROTECTIVE CSG

Material / Type: Steel Casing
 Diameter: 4"
 Depth BGS: +2 - -2' Weep Hole (Y/N) (Y)

GUARD POSTS (Y/N)

No. 4 Type: steel/concrete

SURFACE PAD

Composition and Size: concrete 2' x 2'

RISER PIPE

Type: Schedule 40 2" PVC

Diameter: 2"

Total Length (TOC to TOS): 10' (#8' - +2')

Ventilated Cap (Y/N) (Y)

GROUT

Composition and Proportions: hole plug -

200 lb - Baroid

Tremied (Y/N) JS 9/22/93
7-6' 6'-1.0'

Interval BGS: —

CENTRALIZERS

Depth(s) N/A

SEAL

Type: Bentonite pellets - GEOSTORE

Source: Baroid - 141 man 7'-6'

Setup / Hydration Time: — Vol. Fluid Added 5 gallon

Tremied (Y/N) (Y)

FILTER PACK

Type: Global Drilling Supplies #7

AML Used: 7 50# bags

Tremied (Y/N) (Y) 20'-7'

Source: Global Drilling Supplies

Gr. Size Dist: —

SCREEN

Type: Schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 18'-8'

WELL FOOT (Y/N) (Y)

Interval BGS: — Length —

Bottom Cap (Y/N) (Y)

BACKFILL PLUG

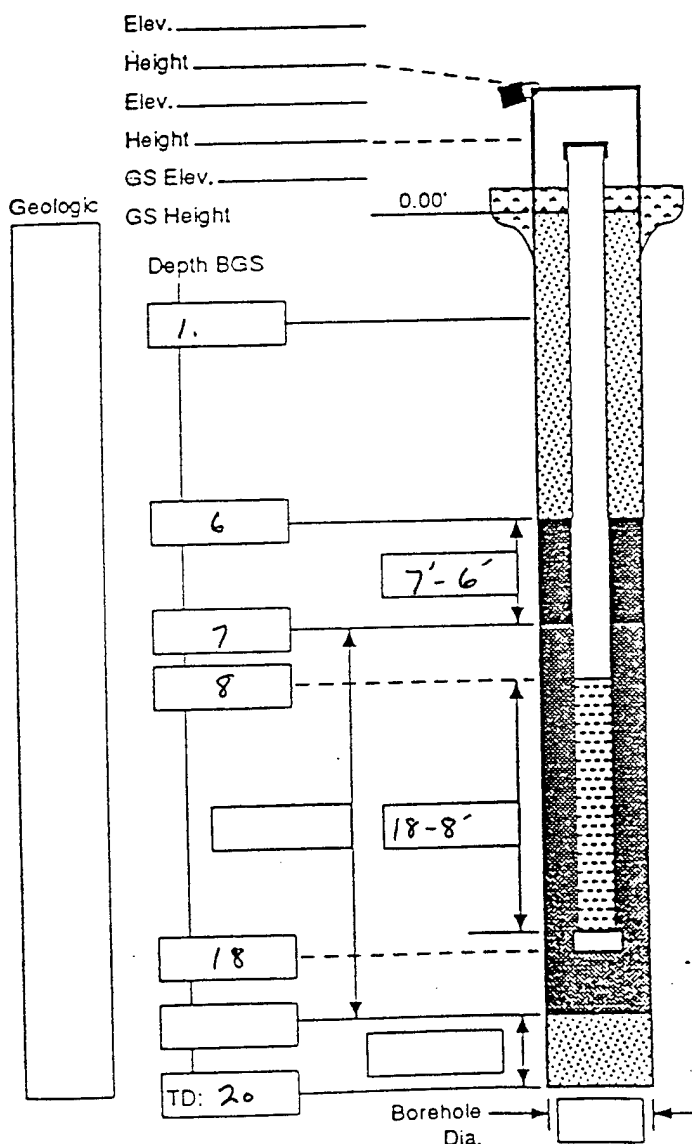
Material: —

Setup / Hydration Time: —

Tremied (Y/N) (Y)

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/11/93</u>
Well: <u>LF6MW5</u>	Well ID: <u>LF6MW5</u>	Sheet: <u> </u> of <u> </u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>4 1/4 I.D.</u>	Total Depth (ft): <u>20'</u>
Drilling Agency: <u>Stearns Drilling</u>	Date Started: <u>8/11/93</u>	Depth to Water (ft): <u> </u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/11/93</u>	Elevation and Datum: <u> </u>
Drilling Method: <u>Stearns Drilling</u>	Logged by: <u>JS/Smayel</u>	Checked by: <u> </u>
Drilling Fluid: <u>none</u>	Number of Samples: <u> </u>	Date: <u> </u>



PROTECTIVE CSG
Material / Type: Steel casing
Diameter: 4"
Depth BGS: -2' - +2' Weep Hole (Y/N)

GUARD POSTS (Y/N)
No.: 4 Type: steel / concrete - filled

SURFACE PAD
Composition and Size: 2' x 2' concrete

RISER PIPE Schedule 40 PVC
Type:
Diameter: 2"
Total Length (TOC to TOS): +2 to 8'
Ventilated Cap (Y/N)

GROUT
Composition and Proportions: hole plug

Tremied (Y/N) 6'-1'
Interval BGS:

CENTRALIZERS N/A
Depth(s):

SEAL
Type: pancrete pellets - Geostore
Source: Brainerd K. Luman 7'-6'
Setup / Hydration Time: Vol. Fluid Added: 5
Tremied (Y/N) 16 gallons

FILTER PACK Global Drilling Supplies #7
Type: 7-50 # bags
AML Used: 20'-7'
Tremied (Y/N) Global Drilling Supplies
Source:

Gr. Size Dist:

SCREEN
Type: Schedule 40 PVC
Diameter: 2"
Slot Size and Type: 0.010"
Interval BGS: 8-18'

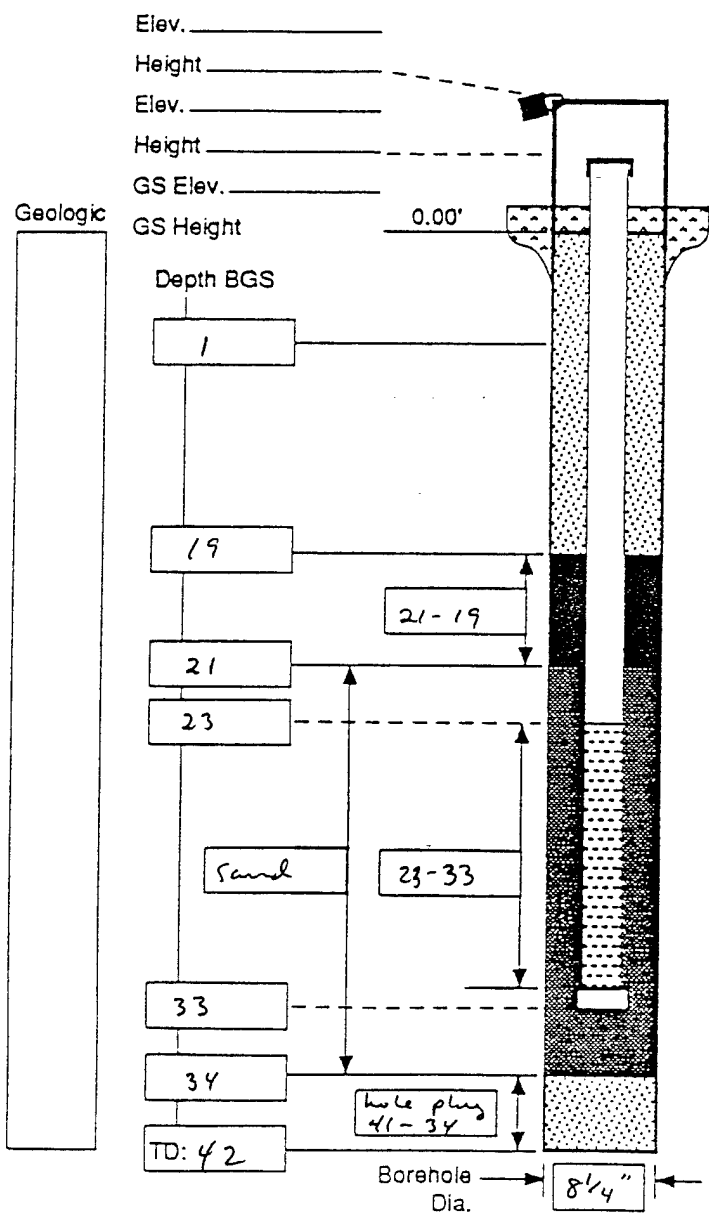
WELL FOOT (Y/N)
Interval BGS: Length:

Bottom Cap (Y/N)

BACKFILL PLUG
Material: N/A
Setup / Hydration Time:
Tremied (Y/N)

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>9/22/93</u>
Well: <u>LF6 MW6</u>	Well ID: <u>LF6 MW6</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>42'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/14/93</u>	Depth to Water (ft): <u>~14</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/14/93</u>	Elevation and Datum: <u>-</u>
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>DFS</u>	Checked by: <u>JSB</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>-</u>	Date: <u>-</u>



PROTECTIVE CSG

Material / Type: Steel Casing

Diameter: 4"

Depth BGS: -2 to +2'

Weep Hole (Y/N) (N)

GUARD POSTS (Y/N)

No.: 4

Type: steel/concrete-fill

SURFACE PAD

Composition and Size: concrete 2' x 2'

RISER PIPE

Type: Schedule 40 PVC

Diameter: 2"

Total Length (TOC to TOS): -23 to +2'

Ventilated Cap (Y/N) (N)

GROUT

Composition and Proportions: bentonite 19-1'

Tremied (Y/N) (N)

Interval BGS: 19-1'

CENTRALIZERS

Depth(s): N/A

SEAL

Type: Bentonite pellets 21-19'

Source: Baroid (GEOSTORE)

Setup / Hydration Time: 5 Vol. Fluid Added

Tremied (Y/N) (N)

FILTER PACK

Type: Global #7

AML Used: 9 bags (50#)

Tremied (Y/N) (N) 34-21' BGS

Source: Global Drilling Supplies

Gr. Size Dist:

SCREEN

Type: Schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010

Interval BGS: 23-33' BGS

WELL FOOT (Y/N)

Interval BGS: Length

Bottom Cap (Y/N) (N)

BACKFILL PLUG

Material: bentonite (hole plug)

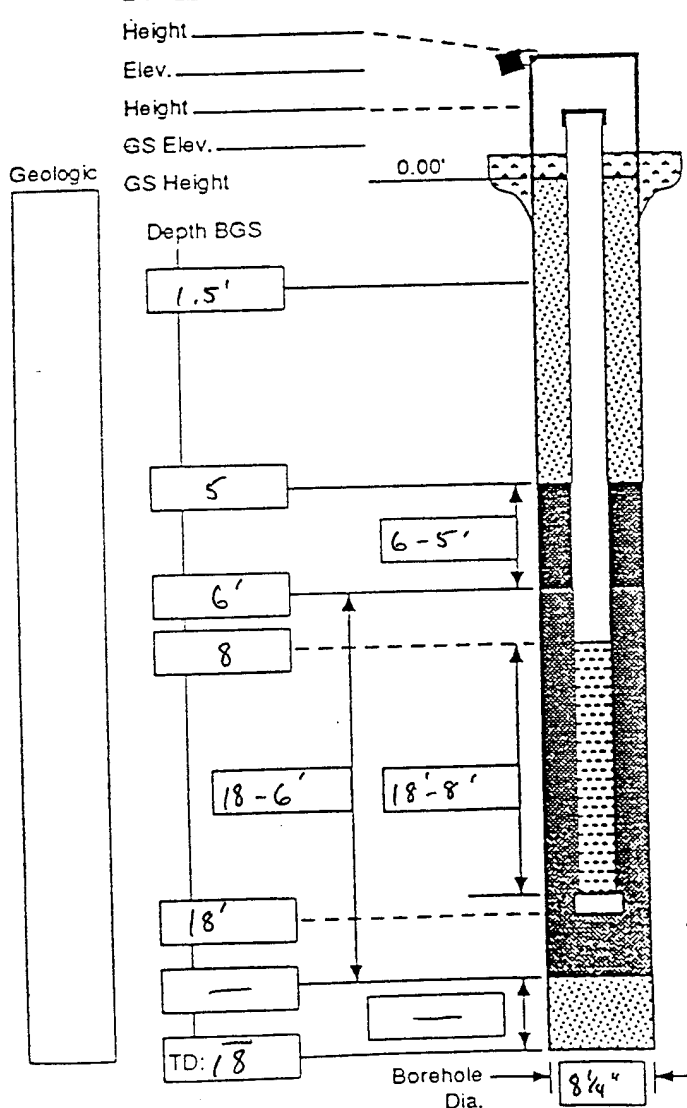
Setup / Hydration Time: 41-34'

Tremied (Y/N) (N) (through augers)

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>8/15/93</u>
Well: <u>LFGMW7</u>	Well ID: <u>LFGMW7</u>	Sheet: <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>4 1/4" I.D.</u>	Total Depth (ft): <u>18'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/15/93</u>	Depth to Water (ft): <u>8.7</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/15/93</u>	Elevation and Datum: <u>—</u>
Drilling Method: <u>Hand/Stem Auger</u>	Logged by: <u>DP Sayne</u>	Checked by: <u>JSB</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>—</u>	Date: <u>—</u>

Abandoned 9/9/93 - ~4' to surface filled w/ hole plug



PROTECTIVE CSG

Material/Type: Steel Casing

Diameter: 4"

Depth BGS: ~2 - +2'

Weep Hole ☒ (Y/N)

GUARD POSTS ☒ (Y/N)

No.: 4

Type: steel/concrete filled

SURFACE PAD

Composition and Size: concrete 2' x 2'

RISER PIPE

Type: Schedule 40 PVC

Diameter: 2"

Total Length (TOG to TOS): -8 - +2'

Ventilated Cap ☒ (Y/N)

GROUT

Composition and Proportions: grout/cement/bentonite

Tremied ☒ (Y/N)

Interval BGS: 5 - 1.5'

CENTRALIZERS

Depth(s): N/A

SEAL

Type: Holeplug/pellets 6' - 5'

Source: Baroid

Setup / Hydration Time: — Vol. Fluid Added: 5 gallons

Tremied ☒ (Y/N)

FILTER PACK

Type: Global Filter pack

AML Used: 9 50lb bags interval 18' - 6' BGS

Tremied ☒ (Y/N)

Source: Global Drilling Supplies

Gr. Size Dist: #7

SCREEN

Type: Schedule 40

Diameter: 8" O.D. 4" I.D. 2"

Slot Size and Type: 0.010"

Interval BGS: 18' - 8'

WELL FOOT ☒ (Y/N)

Interval BGS: — Length: —

Bottom Cap ☒ (Y/N)

BACKFILL PLUG

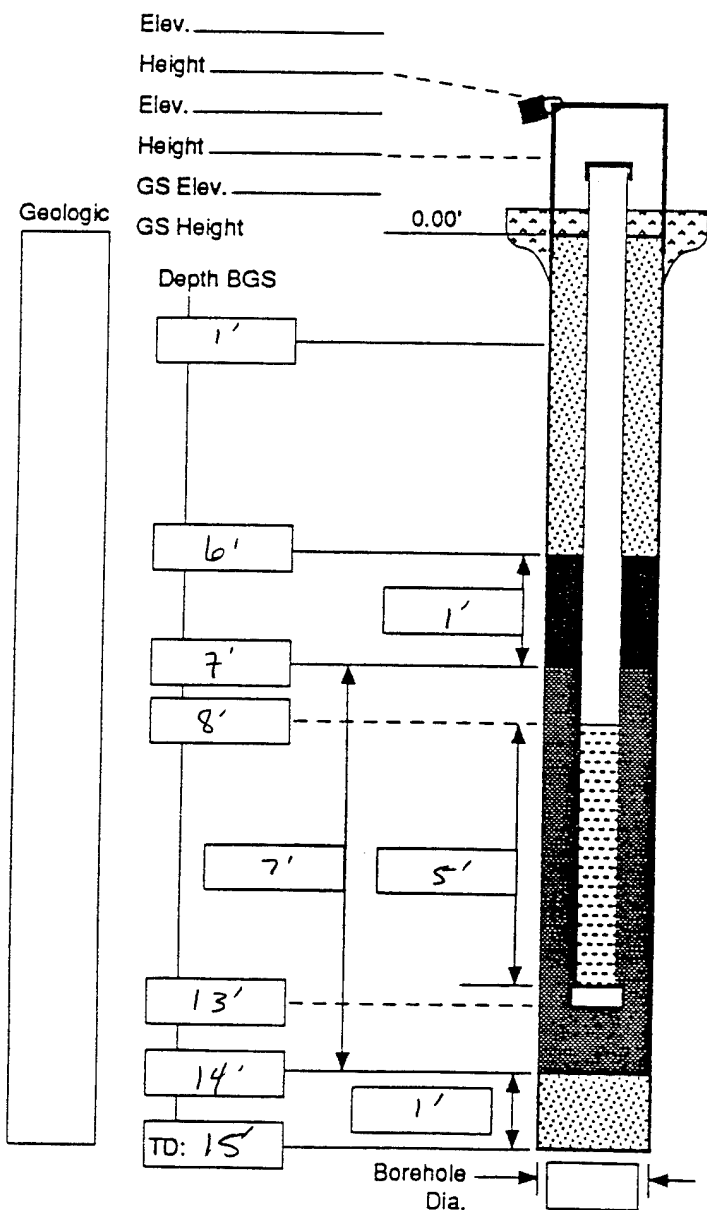
Material: 2 50lb 11/11/93

Setup / Hydration Time: —

Tremied ☒ (Y/N)

Monitoring Well Construction Log - Above Ground

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>9/22/93</u>
Well: <u>LFGMW8</u>	Well ID: <u>LFGMW8</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>15'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/27/93</u>	Depth to Water (ft): <u>~9</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/27/93</u>	Elevation and Datum: <u>-</u>
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>JSB/MCS</u>	Checked by: <u>JSB</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>-</u>	Date: <u>-</u>



PROTECTIVE CSQ

Material / Type: steel casing

Diameter: 4"

Depth BGS: -2' to +2' Weep Hole (Y/N) (N)

GUARD POSTS (Y/N)

No.: 4 Type: concrete filled steel

SURFACE PAD

Composition and Size: concrete 2' x 2'

RISER PIPE

Type: Schedule 40 PVC

Diameter: 2"

Total Length (TOC to TOS): -8' to +2'

Ventilated Cap (Y/N) (N)

GROUT

Composition and Proportions: Bentonite

Tremied (Y/N) (N)

Interval BGS: 6'-1'

CENTRALIZERS

Depth(s): N/A

SEAL

Type: Bentonite pellets

Source: Baroid 7'-6'

Setup / Hydration Time: _____ Vol. Fluid Added: 5 gallons

Tremied (Y/N) (N)

FILTER PACK

Type: Global #7

Amt. Used: 4 - 50 # bags

Tremied (Y/N) (N)

Source: Global Drilling Supplies

Gr. Size Dist.

SCREEN

Type: Schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 13'-8'

WELL FOOT (Y/N)

Interval BGS: _____ Length _____

Bottom Cap (Y/N)

BACKFILL PLUG

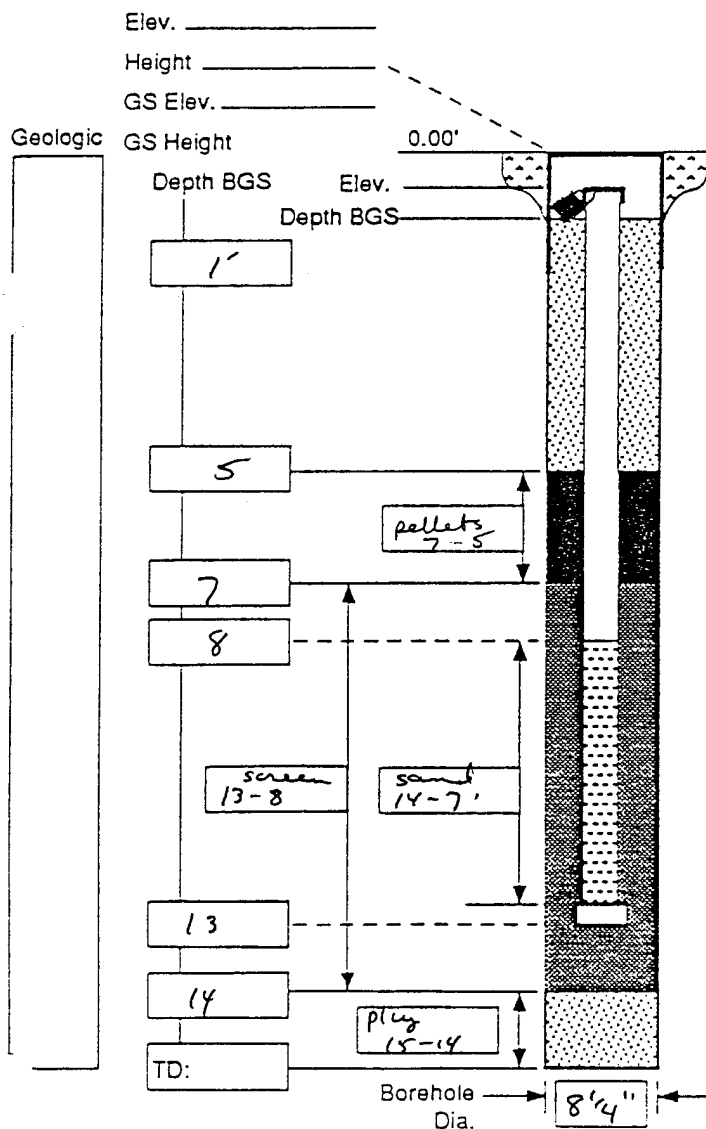
Material: hole plug (bentonite) 15'-14'

Setup / Hydration Time: _____

Tremied (Y/N) (N) through auger

Monitoring Well Construction Log - Flush Mount

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: _____
Well: <u>LF6MW9</u>	Well ID: <u>LF6MW9</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>16'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/27/93</u>	Depth to Water (ft): <u>~10'</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>8/28/93</u>	Elevation and Datum: _____
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>MES</u>	Checked by: <u>JSB</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>—</u>	Date: _____



PROTECTIVE CSG

Material / Type: Steel Casing
 Diameter: 4"
 Depth BGS: -2 to +2' Weep Hole (Y/N) Y

GUARD POSTS (Y/N)

No.: 2 Type: concrete/steel
 Date: 5/22/93

SURFACE PAD

Composition and Size: concrete 2' x 2'

RISER PIPE

Type: Schedule 40 PVC
 Diameter: 2"
 Total Length (TOC to TOS): +2' to -8'
 Ventilated Cap (Y/N) Y

GROUT

Composition and Proportions: bentonite
-8' to -1' AGS

Tremied (Y/N)

Interval BGS: 5' to 1'
12/15

CENTRALIZERS

Depth(s): NA

SEAL

Type: Bentonite pellets
 Source: Bowditch 7-5'
 Setup / Hydration Time: _____ Vol. Fluid Added 5 gallons

Tremied (Y/N)

Interval BGS: 14-7'

FILTER PACK

Type: Global #7
 Amt. Used: 4 50# bags
 Tremied (Y/N) Y
 Source: Global Drilling Supplies

Gr. Size Dist.

SCREEN Schedule 40 PVC
 Type: Schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 13-8'

WELL FOOT (Y/N) Y

Interval BGS: _____ Length: _____

Bottom Cap (Y/N)

BACKFILL PLUG

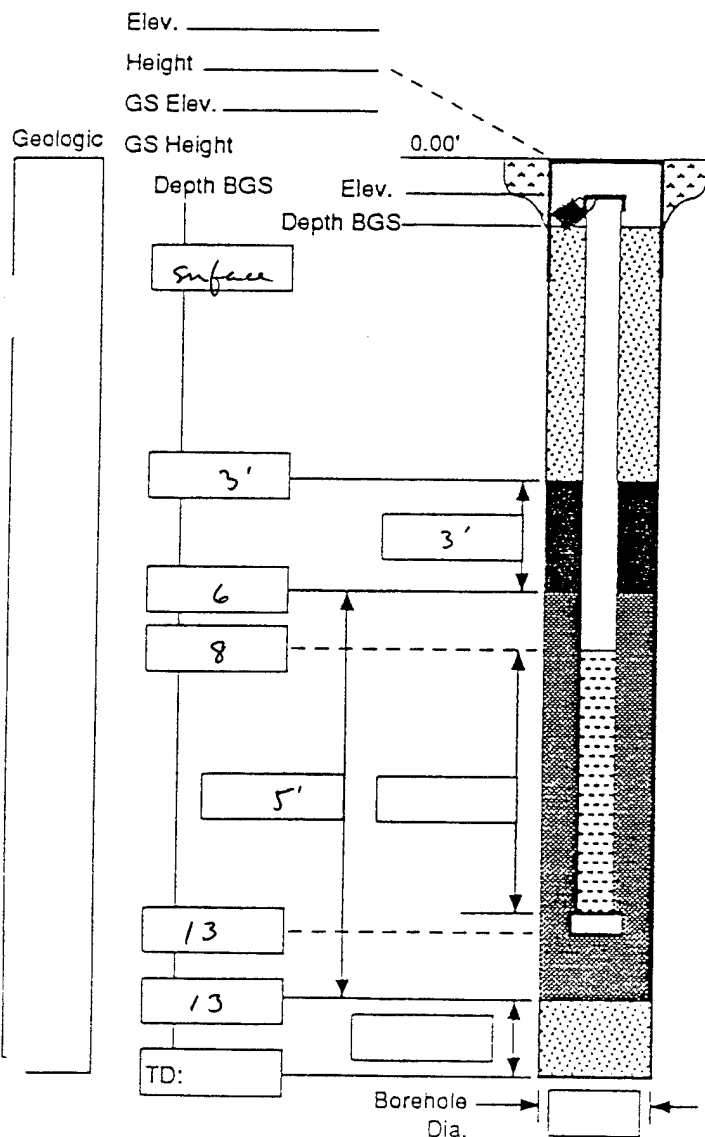
Material: hole plug 15-14'

Setup / Hydration Time: _____

Tremied (Y/N) _____

Monitoring Well Construction Log - Flush Mount

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>9/22/93</u>
Well: <u>LFGMW10</u>	Well ID: <u>LFGMW10</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>13'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>9/12/93</u>	Depth to Water (ft): <u>~9'</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>9/13/93</u>	Elevation and Datum: <u>-</u>
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>JSB/DFS</u>	Checked by: <u>JSB</u>
Drilling Fluid: <u>None</u>	Number of Samples: <u>-</u>	Date: <u>-</u>



PROTECTIVE CSG

Material / Type: Steel Casing

Diameter: 4"

Depth BGS: -2' to +2'

Weep Hole (Y/N) (Y)

GUARD POSTS (Y/N)

No.: - Type: -

SURFACE PAD

Composition and Size: concrete 2' x 2'

RISER PIPE

Type: Schedule 40 PVC

Diameter: 2"

Total Length (TOC to TOS): -8' to +2'

Ventilated Cap (Y/N) (Y)

GROUT

Composition and Proportions: JSB 9/22/93 hole plug concrete 3' - surface

Tremied (Y/N) (N)

Interval BGS: _____

CENTRALIZERS

Depth(s): NA

SEAL

Type: bentonite 6' - 3'

Source: Buroid

Setup / Hydration Time: - Vol. Fluid Added: 15

Tremied (Y/N) (N) gallons

FILTER PACK

Type: Global #7

Amt. Used: 4 - 50 lb bags

Tremied (Y/N) (N) 13 - 6'

Source: Global Drilling supplies

Gr. Size Dist: _____

SCREEN

Type: Schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 13' - 8'

WELL FOOT (Y/N)

Interval BGS: _____ Length: _____

Bottom Cap (Y/N) (Y)

BACKFILL PLUG

Material: _____

Setup / Hydration Time: JSB 9/22/93

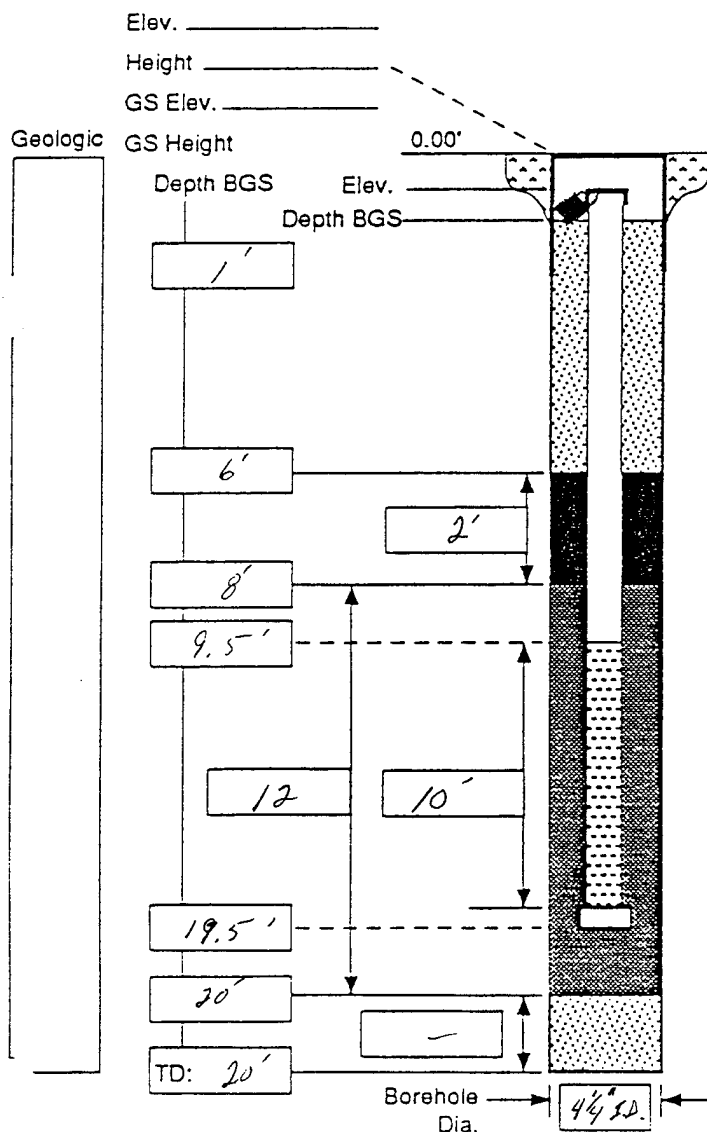
Tremied (Y/N) (N)

Form F-1023

9/1/91

Monitoring Well Construction Log - Flush Mount

Project Name: <u>Phelps Collins ANG</u>	Project Number: <u>931800</u>	Date: <u>9/11/93</u>
Well: <u>MWS</u>	Well ID: <u>HNBMWS</u>	Sheet <u>1</u> of <u>1</u>
Driller: <u>D. Giffels</u>	Borehole Diameter (in): <u>8 1/4" O.D.</u>	Total Depth (ft): <u>20'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>9/11/93</u>	Depth to Water (ft): <u>13'</u>
Drilling Equipment: <u>CME 750</u>	Date Finished: <u>9/11/93</u>	Elevation and Datum:
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>DSayne</u>	Checked by: <u>Patricia</u>
Drilling Fluid: <u>None</u>	Number of Samples:	Date: <u>9/22/93</u>



PROTECTIVE CSQ

Material / Type:

Diameter:

Depth BGS: DF Weep Hole (Y / N)

GUARD POSTS (Y / N)

No.: 7/21/93 Type:

SURFACE PAD

Composition and Size: Concrete 2' x 2'

RISER PIPE

Type: schedule 40 PVC

Diameter: 2"

Total Length (TOC to TOS): 10'

Ventilated Cap (Y / N)

GROUT

Composition and Proportions: Bentonite 6' surface

Tremied (Y / N)

Interval BGS:

CENTRALIZERS

Depth(s):

SEAL

Type: bentonite 8'-6' BGS

Source:

Setup / Hydration Time: Vol. Fluid Added 10 gallons

Tremied (Y / N)

FILTER PACK

Type: Global #1.7 silica SAND

Amt. Used: 7/5016 bags

Tremied (Y / N)

Source: Global Drilling Supplies 20'-8' BGS

Gr. Size Dist:

SCREEN

Type: schedule 40 PVC

Diameter: 2"

Slot Size and Type: 0.010"

Interval BGS: 9.5'-19.5' BGS

WELL FOOT (Y / N)

Interval BGS: Length:

Bottom Cap (Y / N)

BACKFILL PLUG

Material:

Setup / Hydration Time:

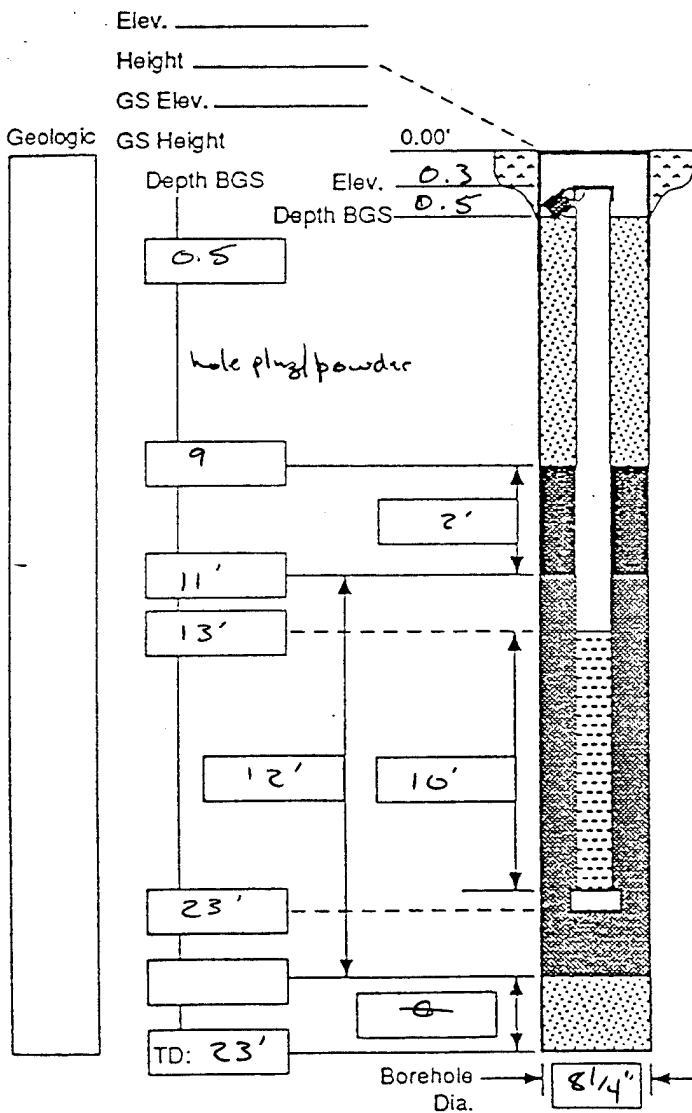
Tremied (Y / N)

Form F-1023

9/1/91

Monitoring Well Construction Log - Flush Mount

Project Name: <u>Phelps Collins ANG RI</u>	Project Number: <u>931800</u>	Date: <u>8/30/93</u>
Well location: <u>Site 9 Radar Tower</u>	Well ID: <u>MW6</u>	Sheet: <u>1 of 1</u>
Driller: <u>Dennis G. Ffels</u>	Borehole Diameter (in): <u>8 1/4"</u>	Total Depth (ft): <u>23'</u>
Drilling Agency: <u>Stearns</u>	Date Started: <u>8/30/93</u>	Depth to Water (ft): <u>~ 16.3'</u>
Drilling Equipment: <u>CME 750</u>	Date Finished:	Elevation and Datum:
Drilling Method: <u>Hollow Stem Auger</u>	Logged by: <u>P. H. Lag</u>	Checked by:
Drilling Fluid: <u>none</u>	Number of Samples: <u>—</u>	Date:



PROTECTIVE CSG

Material / Type: Flushmount Steel

Diameter: _____

Depth BGS: _____ Weep Hole (Y/N) _____

GUARD POSTS (Y/N)

No.: _____ Type: _____

SURFACE PAD

Composition and Size: 2x2' concrete

RISER PIPE

Type: PVC Schedule 40

Diameter: 2" ID

Total Length (TOC to TOS): _____

Ventilated Cap (Y/N) (N)

GROUT

Composition and Proportions: Portland Type I cement

Tremied (Y/N) (N)

Interval BGS: _____

CENTRALIZERS

Depth(s): none

SEAL

Type: Bentonite pellets / powder / hole plug

Source: _____

Setup / Hydration Time: _____ Vol. Fluid Added: 5 gal

Tremied (Y/N) _____

FILTER PACK

Type: Silica Sand

AML Used: 7 bags

Tremied (Y/N) (N)

Source: Global Drilling Supplies

Gr. Size Dist: _____

SCREEN

Type: PVC Schedule 40

Diameter: 2" ID

Slot Size and Type: 1/8" slot 0.010"

Interval BGS: 13-23'

WELL FOOT (Y/N) (N)

Interval BGS: _____ Length: _____

Bottom Cap (Y/N) (N)

BACKFILL PLUG

Material: n/a

Setup / Hydration Time: _____

Tremied (Y/N) _____

Geotechnical Results



SUMMARY OF LABORATORY TEST RESULTS

Sample ID		Depth (ft)	Natural Moisture (%)	UNIT WEIGHT (PCF)		SPECIFIC GRAVITY	ATTERBERG LIMITS		Unified Soil Classification	Other Test **	Soil Description
				Wet	Dry		Liquid Limit (%)	Plasticity Index (%)			
P1 MW 10/ST-5		14.0 - 16.0	18.5	120.8	102.0	2.62	16	7	SM-SC	S,K	SAND, silty, clayey, brown
POS MW7/ST-3		18.0 - 20.0	14.1	138.9	121.8	2.76	12	6	SW	S,K	SAND, clayey, light brown with rock fragments
P3 B13/ST-1		53.0 - 55.0	19.7	108.7	90.8	2.75	21	11	CL	S,K	CLAY, silty, brown
LF6 MW7/ST-6		17.0 - 19.0	21.2	123.0	101.5	2.70	12	6	ML-CL	S,K	SILT, clayey, brown
P4 B15/ST-4		42.0 - 43.0	18.9			2.67	14	4	SM-SC	S	SAND, silty, clayey, brown Note: not enough sample for permeability
*P4 B15/ST-4		42.0 - 43.0	20.6	131.9	109.4	2.65	16	4	SM-SC	S,K	SAND, silty, clayey, brown
POZ B8/ST-2		55.0 - 56.0	17.8	137.9	117.1	2.70	30	16	CL	S,K	CLAY, silty, slightly sandy brown
*This is second attempt Shelby Tube Sample											

*ST-SHELBY TUBE SAMPLE, SS-SPLIT SPOON SAMPLE, C-COMPOSITE SPLIT SPOON
 **TEST RESULTS REPORTED ON OTHER SHEETS:

K-PERMEABILITY
 S-SIEVE OR GRAIN SIZE ANALYSIS
 U-UNCONFINED COMPRESSION TEST

P-PROCTOR TEST

D-DIRECT SHEAR TEST
 T-TRIAXIAL TEST

DATA CHECKED BY

GA Technical Services

SUMMARY OF CONSTANT HEAD PERMEABILITY METHOD ASTM D5084-90

Project : Earth Tech Lab Testing
Client : Earth Technology Corporation
Project No. : 3-4424-0000
Date : October 12, 1993

SAMPLE ID	SAMPLE LENGTH. in.	SAMPLE DIAMETER. in.	SAMPLE AREA. sq. ft.	DRY UNIT WT PCF	% MOISTURE	COEFFICIENT OF PERMEABILITY, cm/sec
P1MW10/ST-5 D14. - 16.	2.72	2.80	0.04276	102.0	18.5	1.8×10^{-4}
POSMW7/ST-3 D18. - 20.	4.28	2.80	0.04276	121.8	14.1	3.5×10^{-5}
P3 B13/ST-1 D53. - 55.	4.22	2.80	0.04276	90.8	19.7	2.1×10^{-6}
LF6 MW7/ST-6 D17. - 19.	4.34	2.80	0.04276	101.5	21.2	8.2×10^{-6}
*P4 B15/ST-4 D42. - 43.	3.41	2.80	0.04276	109.4	20.6	1.4×10^{-5}
POZ B8/ST-2 D55. - 56.	4.16	2.80	0.04276	117.1	17.8	1.2×10^{-7}

*This is second attempt Shelby Tube Sample

SUMMARY OF CATION EXCHANGE CAPACITY
METHOD EPA 9080

Project : Earth Tech Lab Testing
Client : Earth Technology Corporation
Project No. : 3-4424-0000
Date : October 11, 1992

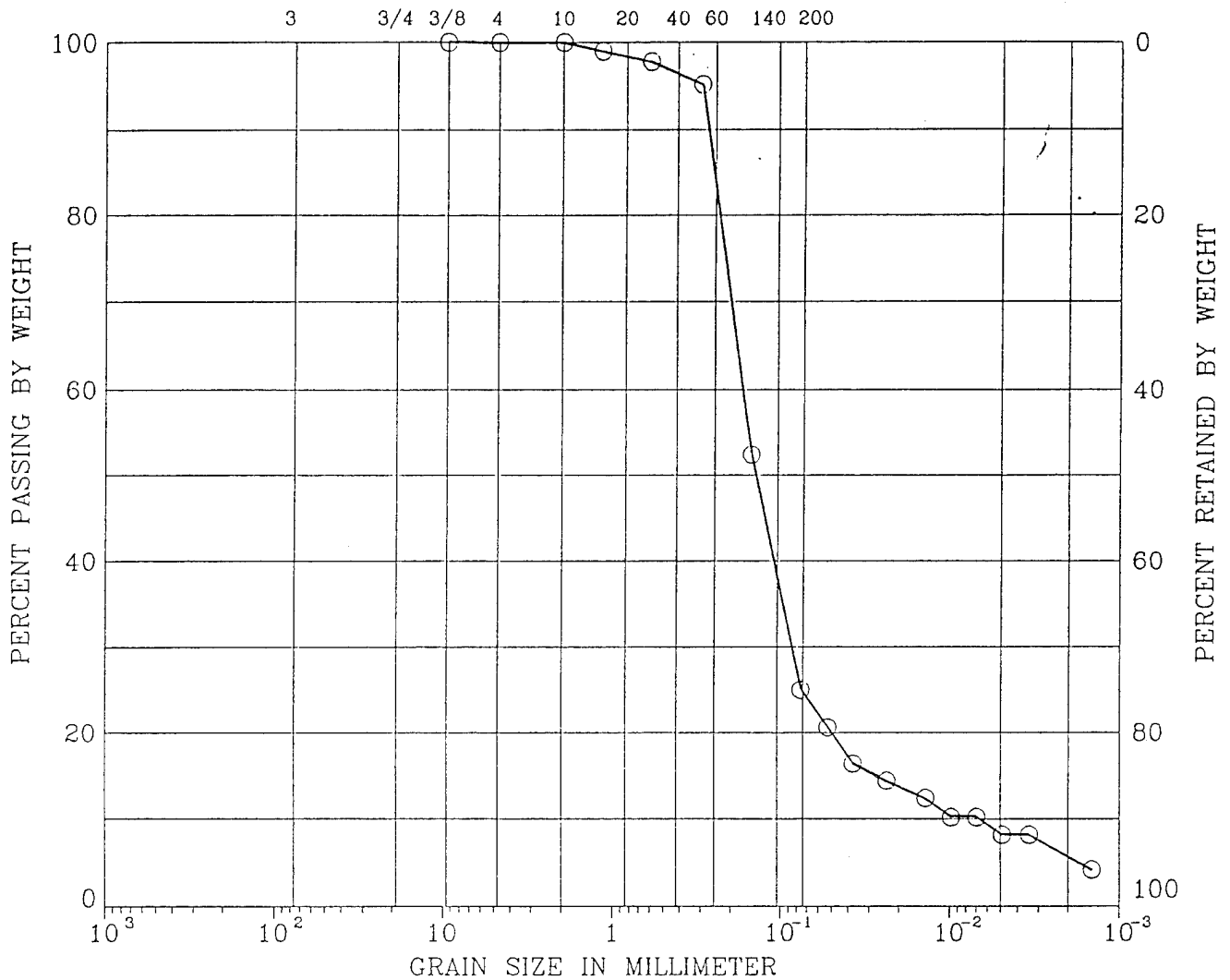
SAMPLE ID	TOTAL CATION EXCHANGE CAPACITY me/100g
P1MW10/ST-5 - D14. - 16.	40.9
POS MW7/ST-3 - D18. - 20.	15.6
P3 B13/ST-1-D 53. - 55.	24.2
LF6 MW7/ST-6-D17. - 19.	7.4
P4 B15/ST-4-D42.0 - 43.0	3.8
P4 B15/ST-4-D42.0 - 43.0	13.5
POZ B8/ST-2-D55. - 56.	29.2

*This is second attempt Shelby Tube Sample

CHP/jh
[3442400.sce]

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	
U.S. SIEVE SIZE IN INCHES			U.S. STANDARD SIEVE No.			HYDROMETER



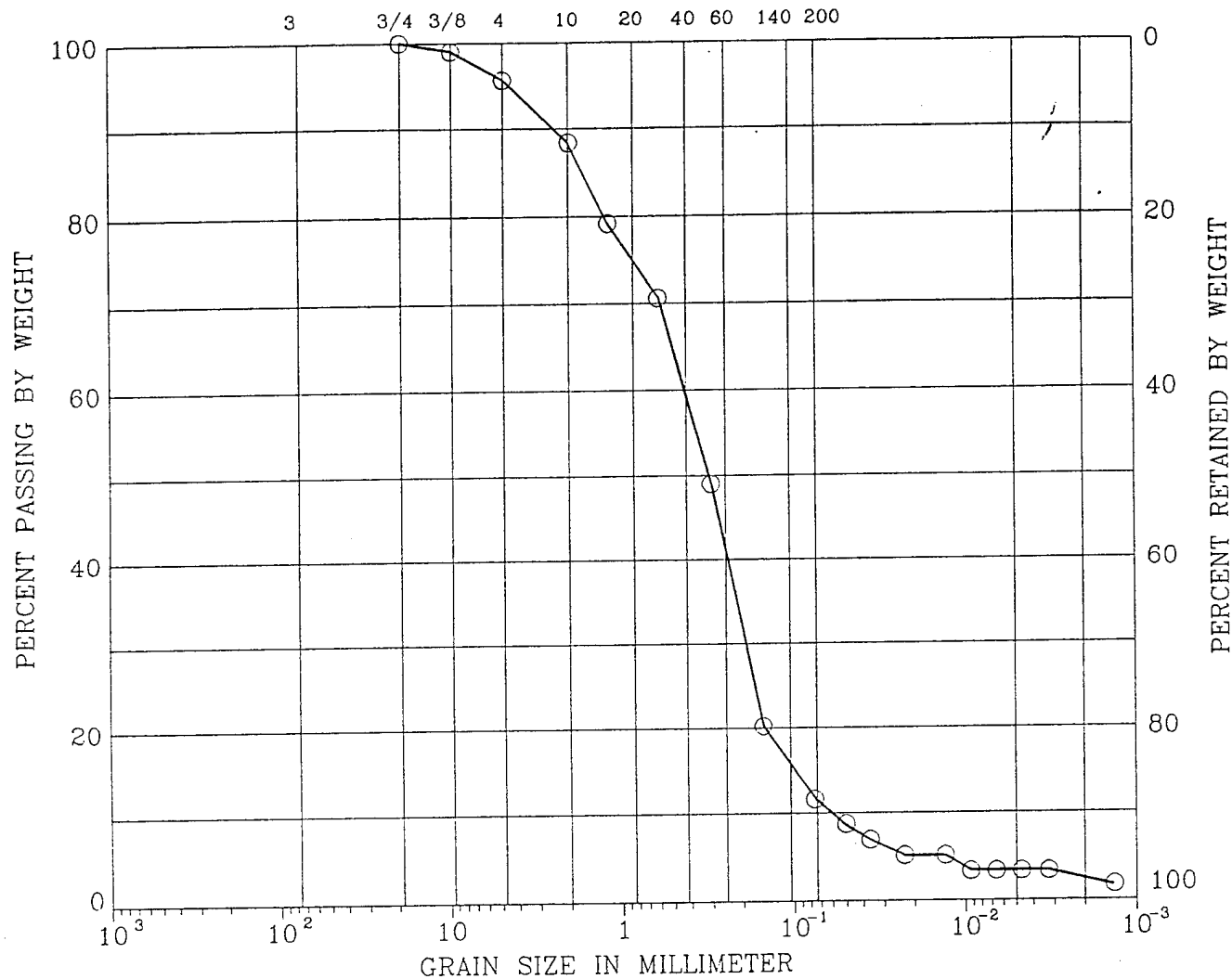
SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION	USC
○	P1MW10T5	14.-16.	16	7	SAND, silty, clayey, brown	USC=SM-SC

Remark : Earth Technology Corporation

Project No.3-4424	Earth Tech Lab Testing
G.A. TECHNICAL SERVICES	GRAIN SIZE DISTRIBUTION Sept. 23, 1993

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	
U.S. SIEVE SIZE IN INCHES			U.S. STANDARD SIEVE No.			HYDROMETER



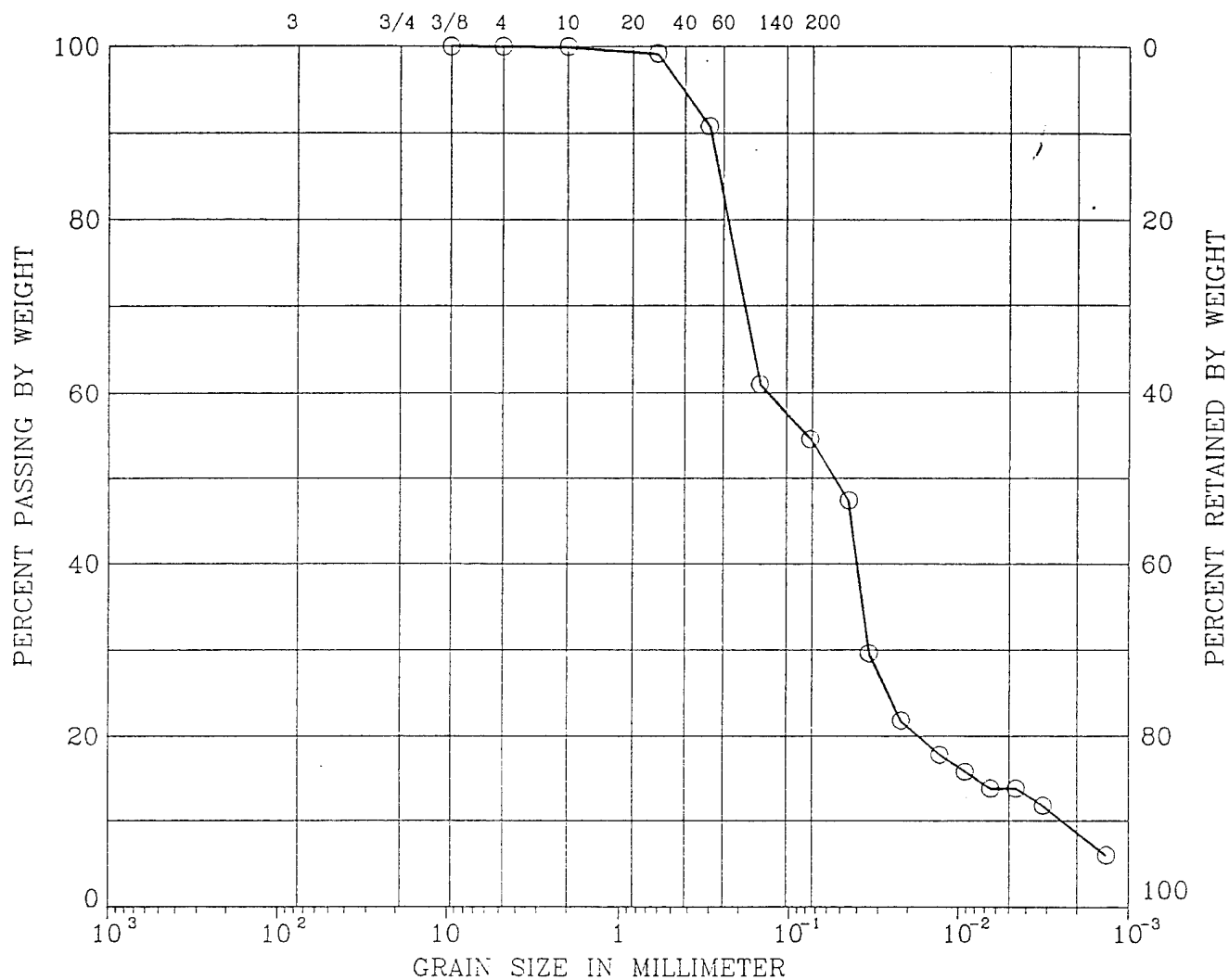
SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	POSMW7T3	18.-20.	12	6	SAND, cloyey, light brown w/rock fragments USC=SW

Remark : Earth Technology Corporation

Project No.3-4424	Earth Tech Lab Testing
G.A. TECHNICAL SERVICES	GRAIN SIZE DISTRIBUTION Sept. 23, 1993

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT OR CLAY,
	COARSE	FINE	COARSE	MEDIUM	FINE	
U.S. SIEVE SIZE IN INCHES			U.S. STANDARD SIEVE No.			HYDROMETER



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION	
○	P3B13/T1	53.-55.	21	11	CLAY, silty, brown	USC=CL

Remark : Earth Technology Corporation

Project No.3-4424

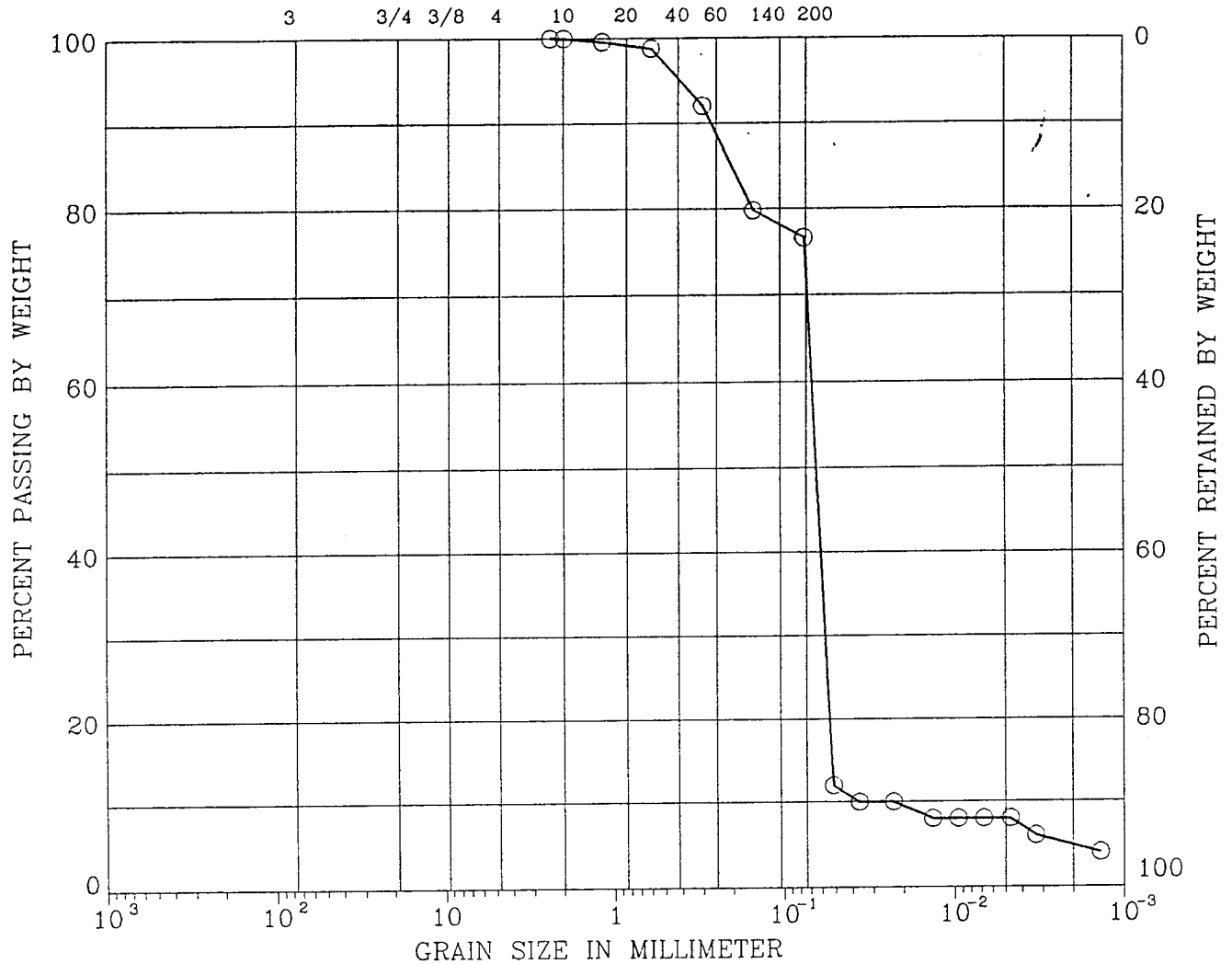
Earth Tech Lab Testing

G.A.
TECHNICAL SERVICES

GRAIN SIZE DISTRIBUTION Sept. 23, 1993

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	
U.S. SIEVE SIZE IN INCHES			U.S. STANDARD SIEVE No.			HYDROMETER



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION	
○	LF6MW7T6	17.-19.	12	6	SILT, clayey, brown	USC=ML-CL

Remark : Earth Technology Corporation

Project No.3-4424

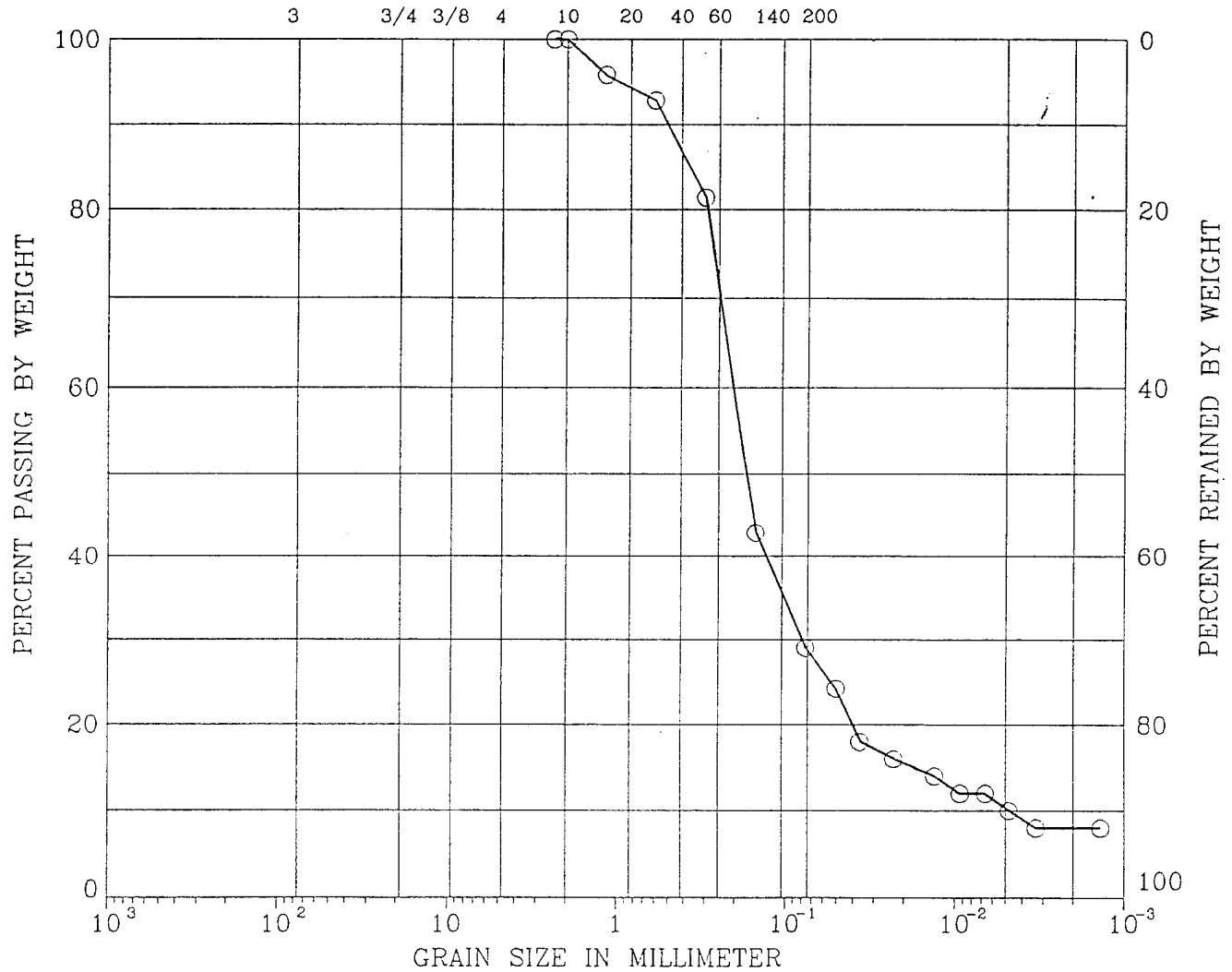
Earth Tech Lab Testing

G.A.
TECHNICAL SERVICES

GRAIN SIZE DISTRIBUTION Sept. 23, 1993

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	
U.S. SIEVE SIZE IN INCHES			U.S. STANDARD SIEVE No.			HYDROMETER



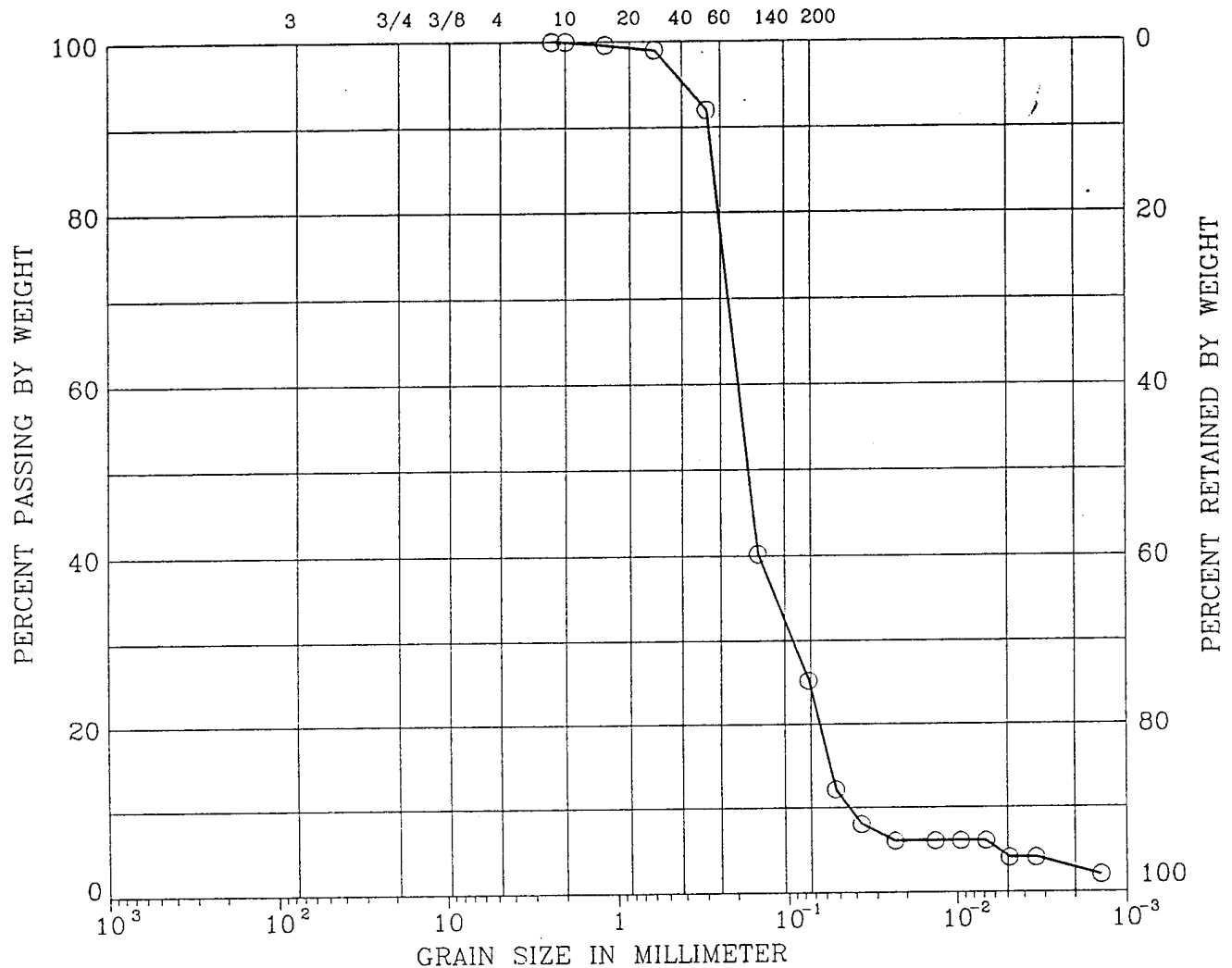
SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION	
○	P4B15/T4	42.-43.	14	4	SAND, clayey, silty, brown	USC=SM-SC

Remark : Earth Technology Corporation

Project No.3-4424	Earth Tech Lab Testing
G.A. TECHNICAL SERVICES	GRAIN SIZE DISTRIBUTION Sept. 23, 1993

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	
U.S. SIEVE SIZE IN INCHES			U.S. STANDARD SIEVE No.			HYDROMETER



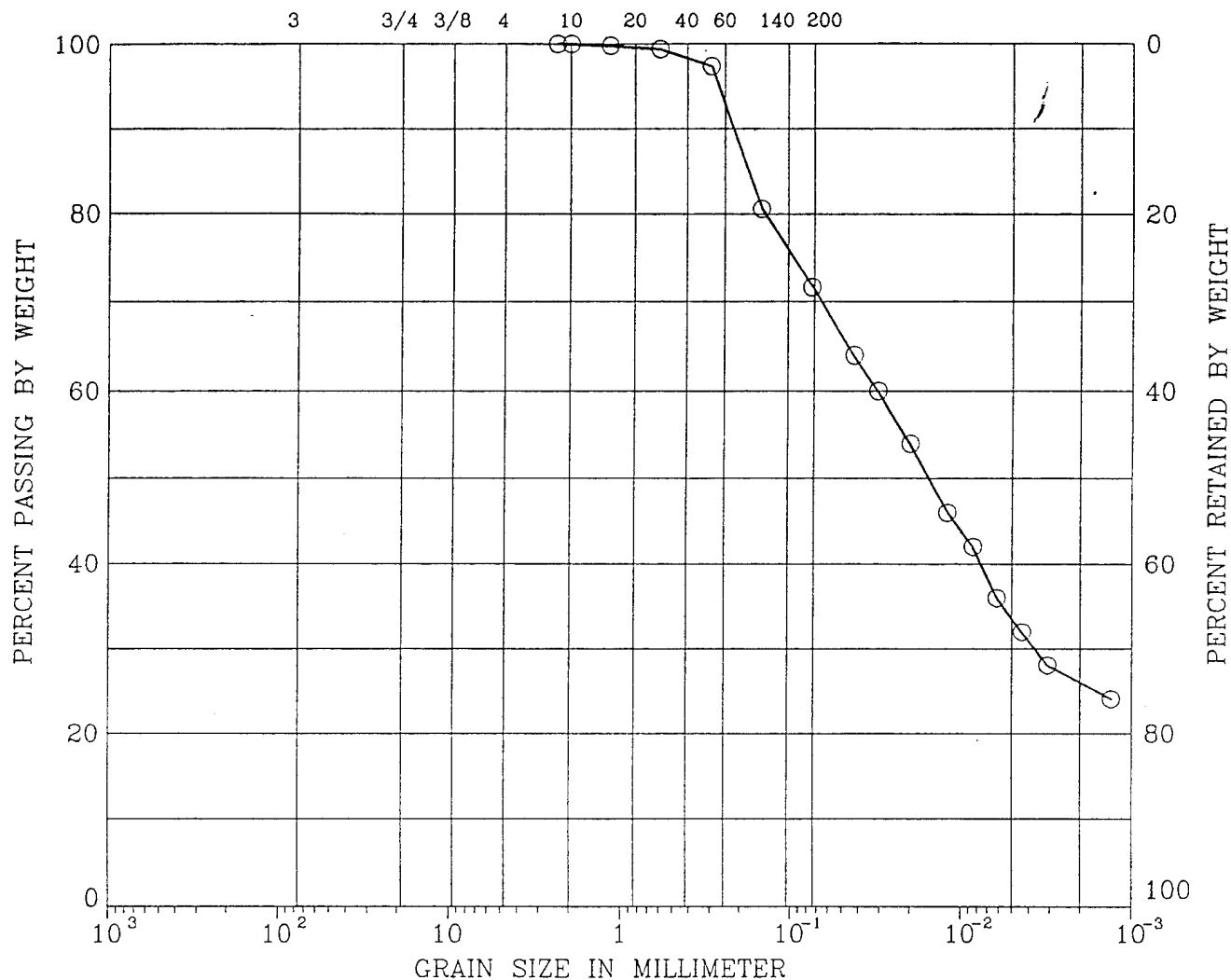
SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION
○	P4B15/T4	42.-43.	16	4	SAND, slty, cly, br USC=SM-SC (2nd attempmt sample)

Remark : Earth Technology Corporation

Project No.3-4424	Earth Tech Lab Testing
G.A. TECHNICAL SERVICES	GRAIN SIZE DISTRIBUTION Sept. 23, 1993

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	
U.S. Sieve Size in Inches			U.S. Standard Sieve No.			Hydrometer



SYMBOL	BORING	DEPTH (ft)	LL (%)	PI (%)	DESCRIPTION	USC
○	POZB8/T2	55.-56.	30	16	CLAY, silty, slightly sandy, brown	USC=CL

Remark : Earth Technology Corporation

Project No.3-4424

Earth Tech Lab Testing

G.A.
TECHNICAL SERVICES

GRAIN SIZE DISTRIBUTION Sept. 23, 1993

Appendix D: Analytical Results; Initial Site Screening

Explanation

JP-4	Jet Petroleum No.4
1,1-DCE	1,1-Dichloroethene
t-1,2-DCE	trans-1,2-Dichloroethene
c-1,2-DCE	cis-1,2-Dichloroethene
1,1,1-TCA	1,1,1-Trichloroethane
TCE	Trichloroethene
PCE	Tetrachloroethene
Total Xylenes	Summation of Meta-, Para-, and Ortho-Xylene

The term "trace" indicates the compound was detected below the reportable quantitation limit. Quantitation limits are presented below.

COMPOUND

QUANTITATION LIMITS

	<u>Soil-Gas</u>	<u>Water</u>
• 1,1-Dichloroethene (DCE)	0.5 ppb	0.5 ppb
• trans-1,2-DCE	0.5 ppb	0.5 ppb
• cis-1,2-DCE	0.5 ppb	1.0 ppb
• 1,1,1-Trichloroethane (TCA)	0.05 ppb	0.05 ppb
• Trichloroethene (TCE)	0.05 ppb	0.05 ppb
• Tetrachloroethene (PCE)	0.05 ppb	0.05 ppb
• Benzene	50 ppb	5.0 ppb
• Toluene	50 ppb	5.0 ppb
• Ethylbenzene	50 ppb	5.0 ppb
• Total Xylenes	50 ppb	5.0 ppb
• Total Volatiles as JP4	20 ppm	22 ppb

Table 1. Sample Results (JP-4)

Sample results from November 1992 survey

Sample I.D.	Depth, ft.	JP-4 (ppm)
1SG-1	3	< 10
1SG-2	6	69
1SG-3	5	32
1SG-4	3	26
1SG-5	5	12000
1SG-6	5	18
1SG-7	5	62000
1SG-8	5	43
1SG-9	3	55000
1SG-10	3	14
1SG-11	5	130
1SG-12	5	43
1SG-13	5	45
1SG-14	3	< 10
1SG-15	5	12000
1SG-16	5	36
1SG-17	3	19
1SG-18	3	28
1SG-18 Dup.	3	14
1SG-19	5	< 10
1SG-20	3	10
1SG-21	5	12
1SG-22	5	< 10
1SG-23	5	53
1SG-23 Dup.	5	38
1SG-24	4	230
1SG-25	5	180
1SG-26	3	59
1SG-27	3	38
1SG-28	6	53
1SG-29	6	12000
1SG-30	3	100
1SG-31	9	67
1SG-32	6	< 10
1SG-33	6	< 10
1SG-34	3	9100
1SG-35	6	13000
1SG-36	6	7100
1SG-36 Dup.	6	3200
1SG-37	6	1700
16SG-1	3	17

Table 1. Sample Results, Con'd.

Sample results from November 1992 survey

Sample I.D.	Depth, ft.	JP-4 (ppm)
16SG-1	6	19
16SG-1	9	< 10
16SG-2	9	11
16SG-3	9	< 10
16SG-4	9	< 10
16SG-5	6	< 10
16SG-6	6	13
16SG-7	6	< 10
16SG-8	6	< 10
16SG-9	6	10
16SG-10	6	< 10
16SG-11	6	< 10
16SG-12	6	< 10
9SG-13	9	< 10
9SG-14	9	< 10
9SG-20	9	< 10
9SG-21	9	< 10
9SG-25	9	< 10

Results are in ppb

D-4

Table 1. JP-4 Data

Sample results from January 1993 survey

Sample I.D.	Depth, ft.	JP-4, ppm
Soil Gas		
8SG-1	3	32
8SG-1	6	< 20
8SG-1	9	24
8SG-2	3	21
8SG-3	6	< 20
8SG-4	9	< 20
8SG-5	9	< 20
8SG-6	3	< 20
8SG-6	6	< 20
8SG-6	9	< 20
8SG-7	6	< 20
8SG-8	6	< 20
8SG-9	6	30
8SG-10	6	< 20
8SG-11	6	< 20
8SG-12	6	24
8SG-13	6	< 20
8SG-14	6	< 20
8SG-15	6	< 20
8SG-16	6	< 20
8SG-17	6	< 20
8SG-17	12	< 20
8SG-18	6	< 20
8SG-19	6	< 20
* 1SG-1	6	19000
** 1SG-2	6	84000
2SG-1	6	< 20
2SG-2	6	< 20
2SG-3	6	25
2SG-4	6	< 20
2SG-5	6	24
2SG-5Dup.	6	21
2SG-6	6	20
2SG-7	6	< 20
2SG-8	3	< 20
2SG-8	5	< 20
2SG-9	5	< 20
2SG-10	5	< 20
2SG-11	5	< 20
2SG-12	5	< 20
2SG-13	5	22

* taken in the area of 1SG-29 (November 1992) as a QC check

** taken in the area of 1SG-36 (November 1992) as a QC check

Table 1. JP-4 Data (Con't)

Sample results from January 1993 survey

Sample I.D.	Depth, ft.	JP-4, ppm
2SG-14	5	47
2SG-15	5	< 20
2SG-16	5	< 20
2SG-17	5	24
2SG-18	5	< 20
2SG-19	5	< 20
2SG-20	5	26
2SG-21	5	< 20
2SG-22	5	< 20
2SG-23	5	< 20
2SG-24	2.5	< 20
2SG-24	5.5	< 20
2SG-25	5	< 20
2SG-26	5	< 20
2SG-27	5	< 20
2SG-28	5	< 20

Water μg/L (ppb)

1GW-1	6-9	< 22
1GW-2	6-9	69
1GW-3	6-9	< 22
1GW-4	6-9	< 22
1GW-5	6-9	64
1GW-6	6-9	< 22
1GW-7	6-9	< 22
1GW-8	6-9	< 22
1GW-9	6-9	23
2GW-1	7-10	69
2GW-2	8-11	24
2GW-3	8-11	22
2GW-4	9-12	< 22
2GW-4 Dup.	9-12	< 22
2GW-5	9-12	< 22
2GW-6	9-12	22
2GW-6	18-21	22
2GW-6 Dup.	18-21	22
2GW-7	8-11	22
2GW-8	8-11	< 22
2GW-9	8-11	< 22
2GW-10	8-11	< 22
2GW-11	8-11	22
2GW-12	8-11	< 22

Table 1. JP-4 Data (Con't)

Sample results from January 1993 survey

Sample I.D.	Depth, ft.	JP-4, ppb
2GW-12 Dup.	8-11	< 22
5GW-1	6-9	< 22
5GW-2	-- 6-9	< 22
5GW-3	5-8	< 22
5GW-4	5-8	< 22
5GW-5	8-11	39
5GW-6	8-11	< 22
5GW-7	8-11	< 22
5GW-8	8-11	< 22
5GW-9	8-11	22
5GW-10	9-12	< 22
5GW-11	8-11	< 22
5GW-12	6-9	< 22
5GW-12 Dup.	6-9	< 22
5GW-13	6-9	< 22
5GW-14	6-9	< 22
5GW-15	6-9	22
5GW-16	6-9	25000
6GW-1	112-15	4400
6GW-2	15-18	22
6GW-2 Dup.	15-18	< 22
6GW-3	15-18	25
6GW-4	15-18	110
6GW-5	17-20	27
6GW-6	11-14	65
6GW-6 Dup.	11-14	110
6GW-7	8-11	< 22
6GW-8	14-17	< 22
6GW-8 Dup.	14-17	< 22
8GW-1	11-14	< 22
8GW-1	20-23	22
8GW-2	14-17	< 22
8GW-3	14-17	< 22
8GW-3	26-29	< 22
8GW-4	14-17	< 22
8GW-5	17-20	< 22
8GW-6	14-17	< 22
8GW-6 Dup.	14-17	< 22
8GW-7	14-17	< 22
8GW-8	18-21	< 22
8GW-9	17-20	< 22
8GW-9	26-29	23

Table 1. JP-4 Data (Con't)

Sample results from January 1993 survey

Sample I.D.	Depth, ft.	JP-4, ppb
9GW-1	18-21	< 22
9GW-1 Dup.	18-21	< 22
9GW-2	18-21	< 22
9GW-3	18-21	< 22
9GW-3 Dup.	18-21	< 22
9GW-4	18-21	< 22
9GW-5	15-21	< 22
9GW-6	18-21	23
9GW-6 Dup.	18-21	22
9GW-7	15-21	< 22
9GW-8	21-24	< 22
9GW-9	18-21	< 22
9GW-10	18-21	< 22
9GW-11	18-21	< 22
9GW-12	18-21	< 22
9GW-13	21-24	57
9GW-14	18-21	< 22
9GW-14 Dup.	18-21	< 22
9GW-15	21-24	< 22

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Table 2. Target VOC Data
Sample result from January 1993 survey

Sample No.	Results are in ppb						Benzene	Toluene	Ethylbenzene	Total Xylenes
	1,1-DCE	t-1,2-DCE	c-1,2-DCE	1,1,1-TCA	TCE	PCE				
8SG-1-3'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-1-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-1-9'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-2-3'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-3-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-4-9'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-5-9'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-6-3'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-6-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-6-9'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-7-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-8-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-9-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-10-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-11-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-12-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-13-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-14-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-15-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-16-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-17-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-17-12'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
8SG-18-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
1SG-1-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	75000	8800	24000	5200
1SG-2-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	11000	7100	9500	1100
2SG-1-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-2-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-3-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-4-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-5-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-2 Dup-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-6-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-7-6'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-8-3'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50

Table 2. Target VOC Data (Con't.)
Sample result from January 1993 survey
Results are in ppb

Sample No.	1,1-DCE	t-1,2-DCE	c-1,2-DCE	1,1,1-TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes
2SG-8-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-9-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-10-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-11-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-12-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-13-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-14-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-15-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-16-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-17-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-18-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-19-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-20-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-21-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-22-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-23-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-24-2.5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-24-5.5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-25-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-26-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-27-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
2SG-28-5'	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	0.21	< 50	< 50	< 50	< 50
Water										
1GW-1-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
1GW-2-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
1GW-3-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
1GW-4-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
1GW-5-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
1GW-6-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
1GW-7-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
1GW-8-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
1GW-9-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-1-7-10'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0

Table 2. Target VOC Data (Con't.)
Sample result from January 1993 survey

Results are in ppb

Sample No.	1,1-DCE	t-1,2-DCE	c-1,2-DCE	1,1,1-TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes
2GW-2-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-3-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-4-9-12'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-4 Dup.-9-12'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-5-9-12'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-6-9-12'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-6-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-6 Dup.-18-2	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-7-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-8-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	0.15	< 5.0	< 5.0	< 5.0	< 5.0
2GW-9-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-10-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-11-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-12-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-12 Dup.-8-1	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-1-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-2-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-3-5-8'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-4-5-8'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-5-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-6-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-7-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-8-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-9-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-10-9-12'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-11-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-12-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-12 Dup.-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-13-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-14-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-15-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
5GW-16-6-9'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
6GW-1-12-15'	< 0.5	< 0.5	< 1.0	< 0.05	0.02	0.15	1400	480	370	280
6GW-2-15-18'	< 0.5	< 0.5	< 1.0	< 0.05	1.30	< 0.05	270	120	110	27
	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0

Table 2. Target VOC Data (Con't.)
Sample result from January 1993 survey

Results are in ppb

Sample No.	1,1-DCE	t-1,2-DCE	c-1,2-DCE	1,1,1-TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes
6GW-2 Dup.-15-1	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
6GW-3-15-18'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
6GW-4-15-18'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
6GW-5-17-20'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
6GW-6-11-14'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
6GW-6 Dup.-11-1	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
6GW-7-8-11'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
6GW-8-14-17'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
6GW-8 Dup.-14-1	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-1-11-14'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-1-20-23'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-2-14-17'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-3-14-17'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-3-26-29'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-4-14-17'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	0.07	< 5.0	< 5.0	< 5.0	< 5.0
8GW-5-17-20'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-6-14-17'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-6 Dup.-14-1	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-7-14-17'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-8-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-9-17-20'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-9-26-29'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-1-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-1 Dup.-18-2	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-2-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-3-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-3 Dup.-18-2	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-4-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-5-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-6-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-6 Dup.-18-2	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-7-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-8-21-24'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-9-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	0.08	< 5.0	< 5.0	< 5.0	< 5.0

Table 2. Target VOC Data (Con't.)
Sample result from January 1993 survey

Results are in ppb

Sample No.	1,1-DCE	t-1,2-DCE	c-1,2-DCE	1,1,1-TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes
9GW-10-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-11-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	0.07	< 5.0	< 5.0	< 5.0	< 5.0
9GW-12-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-13-21-24'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-14-18-21'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-14 Dup.-18-	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-15-21-24'	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0

Table 3. Laboratory Duplicates
Sample results from November 1992 survey

Sample I.D.	JP-4, ppm	Results are in ppb									
		1,1-DCE	t-1,2-DCE	c-1,2-DCE	1,1,1-TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes
1SG-17	19										
Lab Duplicate	13										
RPD	38%										
1SG-22	< 10										
Lab Duplicate	< 10										
RPD	0										
16SG-4	< 10										
Lab Duplicate	< 10										
RPD	0										
1SG-36	7100										
Lab Duplicate	7300										
RPD	3%										
9SG-7		< 0.50	< 0.50	< 0.50	< 0.050	< 0.050	< 0.030	< 50	< 50	< 200	< 200
Lab Duplicate		< 0.50	< 0.50	< 0.50	< 0.050	< 0.050	< 0.030	< 50	< 50	< 200	< 200
RPD		0	0	0	0	0	0	0	0	0	0
9SG-26		< 0.50	< 0.50	< 0.50	< 0.050	< 0.050	< 0.030	< 50	< 50	< 200	< 200
Lab Duplicate		< 0.50	< 0.50	< 0.50	< 0.050	< 0.050	< 0.030	< 50	< 50	< 200	< 200
RPD		0	0	0	0	0	0	0	0	0	0

Table 3. QA/QC Data
Sample results from January 1993 survey

		Results are in ppb									
Soil-Gas Lab Duplicates		1,1-DCE	t-1,2-DCE	c-1,2-DCE	1,1,1-TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes
Sample No.											
2SG-27-5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
Lab Duplicate	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
RPD	0	0	0	0	0	0	0	0	0	0	0
2SG-28-5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	0.20	< 50	< 50	< 50	< 50
Lab Duplicate	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	0.20	< 50	< 50	< 50	< 50
RPD	0	0	0	0	0	0	0	0	0	0	0
8SG-19	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
Lab Duplicate	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
RPD	0	0	0	0	0	0	0	0	0	0	0
8SG-1-3'	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
Lab Duplicate	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
RPD	0	0	0	0	0	0	0	0	0	0	0
2SG-2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
Lab Duplicate	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
RPD	0	0	0	0	0	0	0	0	0	0	0
2SG-22	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
Lab Duplicate	< 0.5	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	< 0.05	< 50	< 50	< 50	< 50
RPD	0	0	0	0	0	0	0	0	0	0	0
Water Lab Duplicates											
5GW-9	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
Lab Duplicate	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
RPD	0	0	0	0	0	0	0	0	0	0	0

Table 3. QA/QC Data (Con't.)

Sample results from January 1993 survey

Sample No.	Results are in ppb										Ethylbenzene	Toluene	Benzene	PCE	TCE	1,1,1-TCA	c-1,2-DCE	t-1,2-DCE	1,1-DCE
	1,1-DCE	t-1,2-DCE	c-1,2-DCE	1,1,1-TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes									
1GW-2	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
Lab Duplicate	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
RPD	0	0	0	0	0	0	0	0	0	0									
1GW-3	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
Lab Duplicate	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
RPD	0	0	0	0	0	0	0	0	0	0									
1GW-8	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
Lab Duplicate	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
RPD	0	0	0	0	0	0	0	0	0	0									
2GW-1	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
Lab Duplicate	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
RPD	0	0	0	0	0	0	0	0	0	0									
2GW-4	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
Lab Duplicate	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
RPD	0	0	0	0	0	0	0	0	0	0									
2GW-6	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
Lab Duplicate	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
RPD	0	0	0	0	0	0	0	0	0	0									
9GW-1	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
Lab Duplicate	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
RPD	0	0	0	0	0	0	0	0	0	0									
9GW-2	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
Lab Duplicate	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0									
RPD	0	0	0	0	0	0	0	0	0	0									

Table 3. QA/QC Data (Con't.)

Sample results from January 1993 survey

Results are in ppb

Sample No.	1,1-DCE	t-1,2-DCE	c-1,2-DCE	1,1,1-TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes
9GW-4	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
Lab Duplicate	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
RPD	0	0	0	0	0	0	0	0	0	0
Water Matrix Spikes										
2GW-7	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-7 spike	1.8	2.3	2.7	0.11	0.22	0.14	6.8	6.2	4.7	5.4
Amount Added	1.9	1.9	1.9	0.19	0.19	0.19	9.5	9.5	9.5	9.5
% Recovery	96	123	144	58	116	74	71	65	49	57
8GW-3	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-3 Spike	2.1	2.7	3.0	0.13	0.25	0.17	8.0	7.3	5.2	6.4
Amount Added	1.9	1.9	1.9	0.19	0.19	0.19	9.5	9.5	9.5	9.5
% Recovery	111	142	158	68	132	89	84	77	55	67
8GW-6	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
8GW-6 Spike	1.8	2.3	2.8	0.10	0.22	0.12	7.0	6.3	4.6	5.6
Amount Added	1.9	1.9	1.9	0.19	0.19	0.19	9.5	9.5	9.5	9.5
% Recovery	95	121	147	53	116	63	74	66	48	59
2GW-5	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
2GW-5 Spike	1.8	2.3	2.8	0.10	0.22	0.13	6.8	6.2	4.6	5.4
Amount Added	1.9	1.9	1.9	0.19	0.19	0.19	9.5	9.5	9.5	9.5
% Recovery	95	121	147	53	116	68	71	65	48	57
9GW-3	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-3 Spike	1.3	1.7	2.4	0.09	0.25	0.11	7.3	6.4	4.2	5.0
Amount Added	1.9	1.9	1.9	0.19	0.19	0.19	9.5	9.5	9.5	9.5
% Recovery	68	89	126	47	132	58	77	67	44	53

Table 3. QA/QC Data (Con't.)

Sample results from January 1993 survey

Results are in ppb

Sample No.	1,1-DCE	t-1,2-DCE	c-1,2-DCE	1,1,1-TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes
9GW-11	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-11 Spike	1.2	1.3	2.0	0.07	0.22	0.14	6.0	5.3	4.0	4.4
Amount Added	1.9	1.9	1.9	0.19	0.19	0.19	9.5	9.5	9.5	9.5
% Recovery	63	68	105	37	116	74	63	56	42	46
9GW-12	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
9GW-12 Spike	1.2	1.5	2.2	0.08	0.23	0.11	6.8	5.8	4.1	4.7
Amount Added	1.9	1.9	1.9	0.19	0.19	0.19	9.5	9.5	9.5	9.5
% Recovery	63	79	116	42	121	58	71	61	43	49
Equipment Rinseate Blanks										
EB-1	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
EB-2	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
EB-3	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
EB-4	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0
EB-5	< 0.5	< 0.5	< 1.0	< 0.05	< 0.05	< 0.05	< 5.0	< 5.0	< 5.0	< 5.0

Laboratory Blanks

All instrument, syringe, vial and syringe blanks were below reporting limits.

Appendix E: Analytical Results; Onsite Screening

Explanation

t-1,2-DCE	trans-1,2-Dichloroethene
c-1,2-DCE	cis-1,2-Dichloroethene
TCE	Trichloroethene
PCE	Tetrachloroethene
EB	Ethylbenzene
M/P-Xylene	Summation of Meta- and Para-Xylene
O-Xylene	Ortho-Xylene

Samples in this Appendix are to be denoted as follows;

Suffix-Sample ID ending	Meaning
A,B,C, ect.	indicate a soil sample
AW,BW,CW, etc. and H1,H2,H3, etc.	indicate groundwater samples collected utilizing a Hydro-punch
AA,BB,CC, etc.	indicate groundwater samples collected after development and purge utilizing a bailer.
AHA,AHB,AHC, etc.	indicate a sediment sample collected utilizing a hand auger

Note: QA and ER samples correspond to sampling activities on that date and are site specific.

Analytical Results from On-Site Field GC
Alpena CRTC, Alpena MI
UNITS ppb

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SAMPLE ID	t-1,2-DCE	c-1,2-DCE	Benzene	TCE	Toluene	PCE	EB	m/p-Xylene	o-Xylene	Depth	Matrix	Date
P1B12A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/26/93
P1B13A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/26/93
P1B13B	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/26/93
P1B4A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/25/93
P1B5A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/25/93
P1B5A LABDUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/25/93
P1B5B	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/25/93
P1B6A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/25/93
P1B6B	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/25/93
P1B7A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/25/93
P1B7B	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/25/93
P1B8A	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/25/93
P1B9A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/25/93
P1B9B	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/25/93
P1MW10A	BM	ND	BMDL	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/29/93
P1MW10AA LAB DUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	SOIL	09/09/93
P1MW10AA LAB DUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	SOIL	09/09/93
P1MW10AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	WATER	08/29/93
P1MW10B	2	ND	304	ND	ND	ND	ND	ND	ND	6-8	SOIL	08/29/93
P1MW10BB	ND	ND	ND	ND	ND	ND	ND	ND	ND	4	WATER	08/29/93
P1MW10BB FIELD DUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	4	WATER	08/29/93
P1MW10BW	ND	ND	ND	ND	ND	ND	ND	ND	ND	20	WATER	08/30/93
P1MW10C	BM	ND	472	ND	ND	ND	ND	ND	ND	8-10	SOIL	08/29/93
P1MW10C FIELDDDUP	2	ND	518	ND	ND	ND	ND	ND	ND	8-10	SOIL	08/29/93
P1MW10D	ND	ND	ND	ND	ND	ND	ND	ND	ND	10-12	SOIL	08/29/93
P1MW11A	ND	ND	ND	ND	ND	ND	ND	ND	ND	1-3	SOIL	08/30/93
P1MW11AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	15	WATER	08/30/93
P1MW11B	ND	ND	ND	ND	ND	ND	ND	ND	ND	7-9	SOIL	08/30/93
P1MW11BB	ND	ND	ND	ND	ND	ND	ND	ND	ND	4	WATER	09/08/93
P1MW11C	ND	ND	ND	ND	ND	ND	ND	ND	ND	9-11	SOIL	08/30/93
P1MW11D	ND	ND	ND	ND	ND	ND	ND	ND	ND	11-13	SOIL	08/30/93
P1MW12A	ND	ND	ND	ND	ND	ND	ND	ND	ND	5-7	SOIL	09/08/93
P1MW12B	ND	ND	ND	ND	ND	ND	ND	ND	ND	7-9	SOIL	09/08/93

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SAMPLE ID	t-1,2-DCE	c-1,2-DCE	Benzene	TCE	Toluene	PCE	EB	m/p-Xylene	o-Xylene	Depth	Matrix	Date
P1MW12C	ND	ND	ND	ND	ND	ND	ND	ND	ND	9-11	SOIL	09/08/93
P1MW12D	ND	ND	ND	ND	ND	ND	ND	ND	ND	11-13	SOIL	09/08/93
P1MW12D LAB DUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	11-13	SOIL	09/08/93
P1MW12E	ND	ND	ND	ND	ND	ND	ND	ND	ND	13-15	SOIL	09/08/93
P1MW13A	ND	ND	ND	ND	ND	ND	ND	ND	ND	7-9	SOIL	09/09/93
P1MW13AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	WATER	09/08/93
P1MW13B	ND	ND	ND	ND	ND	ND	ND	ND	ND	9-11	SOIL	09/09/93
P1MW13C	ND	ND	ND	ND	ND	ND	ND	ND	ND	11-13	SOIL	09/09/93
P1MW13D	ND	ND	ND	ND	ND	ND	ND	ND	ND	13-15	SOIL	09/09/93
P1MW13D LAB DUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	13-15	SOIL	09/09/93
P1MW13ER1	ND	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	09/09/93
P1MW13ERZ	ND	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	09/09/93
P1MW14AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	25	WATER	09/11/93
P1MW14AW FIELDUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	25	WATER	09/11/93
P1MW14AW LABDUP.	ND	ND	ND	ND	ND	ND	ND	ND	ND	25	WATER	09/11/93
P1MW1AW	17	2	44	77	4	28	103	348	ND	7	WATER	08/24/93
P1MW1BW	ND	ND	ND	ND	ND	ND	ND	ND	ND	17	WATER	08/24/93
P1MW1BW FIELDUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	17	WATER	08/24/93
P1MW1BW LABDUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	17	WATER	08/24/93
P1MW1CW	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	31	WATER	08/24/93
P1MW1ER	ND	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	08/24/93
P1MW2A	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	SOIL	09/08/93
P1MW2AA	2	ND	ND	BMDL	6	ND	ND	ND	ND	4	WATER	08/30/93
P1MW2AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	WATER	08/26/93
P1MW2AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	WATER	09/08/93
P1MW3AW	ND	ND	ND	16	56	ND	ND	ND	ND	7	WATER	08/26/93
P1MW4AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	WATER	08/30/93
P1MW4AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	WATER	08/27/93
P1MW4AW LABDUP.	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	WATER	08/27/93
P1MW5A	ND	ND	ND	ND	ND	ND	ND	ND	ND	1-3	SOIL	08/28/93
P1MW5AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	WATER	08/28/93
P1MW5AW LABDUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	WATER	08/28/93
P1MW6A	ND	ND	ND	ND	ND	ND	ND	ND	ND	1-3	SOIL	08/28/93

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SAMPLE ID	t-1,2-DCE	c-1,2-DCE	Benzene	TCE	Toluene	PCE	EB	m/p-Xylene	o-Xylene	Depth	Matrix	Date
P1MW6A LABDUP.	ND	ND	ND	ND	ND	ND	ND	ND	ND	1-3	SOIL	08/28/93
P1MW6AA	ND	31	54	46	ND	20	199	437	ND	4	WATER	08/30/93
P1MW6AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	WATER	08/28/93
P1MW6B	ND	14	882	144	ND	ND	1776	4436	ND	9-11	SOIL	08/29/93
P1MW7A	ND	ND	ND	ND	ND	ND	ND	ND	ND	1-3	SOIL	08/28/93
P1MW7AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	WATER	08/28/93
P1MW8A	ND	ND	ND	ND	ND	ND	ND	ND	ND	1-3	SOIL	08/29/93
P1MW8A	ND	20	328	ND	ND	ND	372	1160	ND	1-3	SOIL	08/30/93
P1MW8AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	WATER	08/28/93
P1MW8C	10	ND	774	ND	ND	ND	ND	ND	ND	9-11	SOIL	08/30/93
P1MW8D	ND	ND	798	ND	ND	ND	ND	ND	ND	12	SOIL	08/30/93
P1MW8D LABDUP	ND	ND	812	ND	ND	ND	ND	ND	ND	12	SOIL	08/30/93
P1MW9A	ND	ND	ND	ND	ND	ND	ND	ND	ND	1-3	SOIL	08/29/93
P1MW9AA	2	10	4	12	ND	8	BMDL	14	8	5	WATER	08/29/93
P1MW9AW	ND	3	BMDL	ND	14	6	ND	ND	ND	6	WATER	08/28/93
P1PZ3	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	WATER	08/24/93
P1SB4B	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/25/93
P1TW15A	ND	ND	ND	ND	ND	ND	ND	ND	ND	5-7	SOIL	09/12/93
P1TW15AW	2	ND	ND	1	ND	BMDL	ND	4	ND	9	WATER	09/12/93
S1MW11A FIELDUP.	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	SOIL	08/31/93
S1MW11A LAB DUP	ND	ND	166	ND	ND	ND	ND	ND	ND	3	SOIL	08/31/93
S1MW11AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	WATER	08/31/93
P2MW6A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/16/93
P2MW6AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	8	WATER	08/24/93
P2MW6BB	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	WATER	09/09/93
P2MW6C	ND	ND	ND	ND	ND	ND	ND	ND	ND	14-16	SOIL	08/16/93
P2MW6C	ND	ND	ND	1	ND	ND	ND	ND	ND	14-16	SOIL	08/17/93
P2MW6D	ND	ND	ND	ND	ND	ND	ND	ND	ND	18	SOIL	08/17/93
P2MW6H1	ND	ND	1	BMDL	BMDL	ND	ND	ND	ND	12	WATER	08/16/93
P2MW6H2	EM	3	BMDL	ND	ND	ND	ND	ND	ND	27	WATER	08/16/93
P2MW6H3	ND	ND	ND	ND	ND	ND	ND	ND	ND	42	WATER	08/16/93
P2MW7A	ND	ND	ND	ND	ND	BMDL	ND	ND	ND	0-2	SOIL	08/18/93

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SAMPLE ID	t-1,2-DCE	c-1,2-DCE	Benzene	TCE	Toluene	PCE	EB	m/p-Xylene	o-Xylene	Depth	Matrix	Date
P2MW7A LAB DUP	ND	ND	ND	ND	ND	BMDL	ND	ND	ND	0-2	SOIL	08/18/93
P2MW7AA	ND	ND	1	ND	ND	9	ND	ND	ND	7	WATER	08/24/93
P2MW7B	ND	ND	ND	ND	ND	BMDL	ND	ND	ND	4-6	SOIL	08/18/93
P2SB2A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/14/93
P2SB2B	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/14/93
P2SB2C	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/14/93
P2SB2D	ND	ND	ND	ND	ND	ND	ND	ND	ND	6-8	SOIL	08/14/93
P2SB3A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/14/93
P2SB3B	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/14/93
P2SB3C	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/14/93
P2SB3D	ND	ND	ND	ND	ND	ND	ND	ND	ND	6-8	SOIL	08/14/93
P2SB4A	ND	BM	ND	ND	ND	4	ND	ND	ND	0-2	SOIL	08/14/93
P2SB4B	ND	BM	ND	ND	ND	3	ND	ND	ND	0-2	SOIL	08/14/93
P2SB4C	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/14/93
P2SB4D	ND	ND	ND	ND	ND	BMDL	ND	ND	ND	4-6	SOIL	08/14/93
P2SB5A	ND	BM	ND	ND	ND	1	ND	ND	ND	6-8	SOIL	08/14/93
P2SB5B	ND	BM	ND	ND	ND	13	ND	ND	ND	0-2	SOIL	08/14/93
P2SB5C	ND	ND	ND	ND	ND	2	ND	ND	ND	2-4	SOIL	08/14/93
P2SB5D	ND	ND	ND	ND	ND	BMDL	ND	ND	ND	4-6	SOIL	08/14/93
P2SB6A	ND	ND	ND	ND	ND	2	ND	ND	ND	6-8	SOIL	08/14/93
P2SB6B	ND	ND	ND	ND	ND	BMDL	ND	ND	ND	2-4	SOIL	08/15/93
P2SB7A	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/15/93
P2SB7B	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/15/93
P2SB7C	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/15/93
P2SB8A	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/15/93
P2SB8B	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/15/93
P2SB8C	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/15/93
P2SB9A	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/15/93
P2SB9B	ND	ND	ND	ND	ND	1	ND	ND	ND	54-56	SOIL	08/16/93
P2SB9C	ND	ND	ND	ND	ND	1	ND	ND	ND	0-2	SOIL	08/17/93
P2SB9D	ND	ND	ND	ND	ND	1	ND	ND	ND	0-2	SOIL	08/17/93
P2SB9E	ND	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/17/93
P3MW6AA	ND	ND	ND	ND	ND	ND	ND	3	ND	14	WATER	08/30/93

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SAMPLE ID	t-1,2-DCE	c-1,2-DCE	Benzene	TCE	Toluene	PCE	EB	m/p-Xylene	o-Xylene	Depth	Matrix	Date
P3MW6AW	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	17	WATER	08/25/93
P3MW6BW	2	16	2	3	BMDL	ND	ND	ND	ND	27	WATER	08/26/93
P3MW6C	ND	ND	ND	ND	ND	ND	ND	ND	ND	13-15	SOIL	08/25/93
P3MW6C LABDUP.	ND	ND	ND	ND	ND	ND	ND	ND	ND	13-15	SOIL	08/25/93
P3MW7A	ND	ND	ND	ND	ND	ND	ND	ND	ND	3-5	SOIL	08/31/93
P3MW7AW	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	19	WATER	08/30/93
P3MW7B	ND	ND	ND	ND	ND	ND	ND	ND	ND	8-10	SOIL	08/31/93
P3MW7BW	ND	ND	ND	ND	ND	ND	ND	ND	ND	29	WATER	08/30/93
P3MW7C	ND	ND	ND	ND	ND	ND	ND	ND	ND	13-15	SOIL	08/31/93
P3MW7CW	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	39	WATER	08/30/93
P3P21A	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	SOIL	08/25/93
P3P21AA	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	3	WATER	08/30/93
P3P21B	ND	ND	ND	ND	ND	ND	ND	ND	ND	9-11	SOIL	08/25/93
P3P21B LAB DUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	SOIL	08/25/93
P3P21C	ND	ND	ND	ND	ND	ND	ND	34	116	18	SOIL	08/25/93
P3P22AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	WATER	08/29/93
P3P26A	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	SOIL	08/25/93
P3SB11A	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/26/93
P3SB11A LABDUP.	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/26/93
P3SB11B	ND	ND	ND	ND	ND	ND	ND	ND	ND	8-10	SOIL	08/26/93
P3SB11C	ND	ND	ND	ND	ND	ND	ND	ND	ND	10-12	SOIL	08/26/93
P3SB12A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/26/93
P3SB12B	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/26/93
P3SB12C	ND	ND	ND	ND	ND	ND	ND	ND	ND	8-10	SOIL	08/26/93
P3SB12D	ND	ND	ND	ND	ND	ND	ND	ND	ND	10-12	SOIL	08/26/93
P3SB12D LABDUP.	ND	ND	ND	ND	ND	ND	ND	ND	ND	10-12	SOIL	08/26/93
P3SB13A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/26/93
P3SB13B	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/26/93
P3SB13C	ND	ND	ND	ND	ND	ND	ND	ND	ND	8-10	SOIL	08/26/93
P3SB13D	ND	ND	ND	ND	ND	ND	ND	ND	ND	10-12	SOIL	08/26/93
P3SB13HF1	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	17	WATER	08/26/93
P4B15A	ND	ND	BMDL	BMDL	ND	BMDL	ND	ND	ND	0-2	SOIL	08/11/93

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SAMPLE ID	t-1,2-DCE	c-1,2-DCE	Benzene	TCE	Toluene	PCE	EB	m/p-Xylene	o-Xylene	Depth	Matrix	Date
P4B15B	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/11/93
P4B15C	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	9-11	SOIL	08/11/93
P4B15D	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	14-16	SOIL	08/11/93
P4B15E	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	19-21	SOIL	08/11/93
P4B15E DUP.	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	19-21	SOIL	08/11/93
P05MW5AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	WATER	08/24/93
P05MW6AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	WATER	08/24/93
P05MW7AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	WATER	08/24/93
P5MW5A	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/12/93
P5MW5B	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/12/93
P5MW5C	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	8-10	SOIL	08/12/93
P5MW6A	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/12/93
P5MW6B	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/12/93
P5MW6B LAB DUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/12/93
P5MW6D	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	19.5	SOIL	08/12/93
P5MW6E	9	24	12	5	19	6	12	12	12	21	SOIL	08/12/93
P5MW7A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/12/93
P5MW7A LAB DUP	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/12/93
P5MW7B	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/12/93
P5MW7C	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	9	SOIL	08/12/93
P5MW7D	ND	ND	4	ND	ND	ND	ND	ND	ND	20	SOIL	08/12/93
P5MW7D DUP	ND	ND	3	ND	ND	ND	ND	ND	ND	20	SOIL	08/12/93
P5TW10AW	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	20	WATER	09/10/93
P5TW8AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	WATER	09/08/93
P5TW8AW	ND	8	30	BMDL	ND	ND	ND	ND	ND	19	WATER	08/31/93
P5TW8AW FIELDUP.	ND	8	34	ND	ND	ND	ND	ND	ND	19	WATER	08/31/93
P5TW8AW LABDUP.	ND	8	30	2	ND	ND	ND	ND	ND	9	SOIL	09/09/93
P5TW9AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	WATER	09/09/93
P5TW9BW	ND	ND	ND	ND	ND	ND	ND	ND	ND	18	WATER	09/09/93
P5TW9CW	ND	ND	ND	ND	ND	ND	ND	ND	ND	18	WATER	09/09/93
P5TW9CW	ND	ND	ND	ND	ND	ND	ND	ND	ND	18	WATER	09/09/93

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SAMPLE ID	t-1,2-DCE	c-1,2-DCE	Benzene	TCE	Toluene	PCE	EB	m/p-Xylene	o-Xylene	Depth	Matrix	Date
LF6AHA	ND	ND	BMDL	ND	BMDL	ND	ND	ND	ND	1	SOIL	09/11/93
LF6AHB	ND	ND	BMDL	ND	BMDL	ND	ND	ND	ND	1	SOIL	09/11/93
LF6AHC	ND	ND	ND	4	ND	ND	14	ND	ND	1	SOIL	09/11/93
LF6AHC LABDUP.	ND	ND	BMDL	4	ND	2	12	ND	ND	1	SOIL	09/11/93
LF6ER	ND	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	09/11/93
P06MW4AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	12	WATER	08/24/93
P06MW5AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	WATER	08/24/93
P6MW4A	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/11/93
P6MW4B	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/11/93
P6MW4B SPIKE	67	82	91	100	166	112	160	159	143	QA	SOIL	08/11/93
P6MW4C	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	8-10	SOIL	08/11/93
P6MW4C SPIKE	59	77	78	87	146	96	140	140	124	QA	SOIL	08/11/93
P6MW5A	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	1	SOIL	08/11/93
P6MW5C	4	18	ND	18	38	64	82	44	34	10	SOIL	08/11/93
P6MW5C LAB DUP	5	21	ND	20	44	72	87	41	38	10	SOIL	08/11/93
P6MW5D	6	16	ND	22	40	49	98	44	51	10	SOIL	08/11/93
P6MW5E	ND	43	ND	64	78	122	478	160	875	8	SOIL	08/11/93
P6MW6A	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/14/93
P6MW6AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	16	WATER	08/11/93
P6MW6B	ND	ND	ND	ND	ND	ND	ND	ND	ND	9-11	SOIL	08/14/93
P6MW6C	ND	ND	ND	ND	ND	ND	ND	ND	ND	14-16	SOIL	08/14/93
P6MW6D	ND	ND	ND	ND	ND	ND	ND	ND	ND	38-40	SOIL	08/14/93
P6MW7A	ND	ND	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/16/93
P6MW7AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	WATER	08/24/93
P6MW7B	ND	ND	ND	ND	ND	ND	ND	ND	ND	7-9	SOIL	08/16/93
P6MW7C	BM	ND	ND	BMDL	BMDL	ND	ND	ND	ND	14	SOIL	08/16/93
P6MW7D	ND	ND	ND	ND	ND	ND	ND	ND	ND	13-15	SOIL	08/16/93
P6MW8A	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	SOIL	08/27/93
P6MW8AA	BM	6	24	9	ND	4	23	22	ND	12	WATER	08/29/93
P6MW8AA LABDUP	1	7	24	9	ND	4	20	17	ND	12	WATER	08/29/93
P6MW8AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	12	WATER	08/27/93
P6MW8AW FIELD DUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	12	WATER	08/27/93
P6MW8B	ND	ND	ND	ND	ND	ND	ND	ND	ND	7-9	SOIL	08/27/93

Analytical Results from On-Site Field GC
Alpena CRTC, Alpena MI
UNITS ppb

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SAMPLE ID	t-1,2-DCE	c-1,2-DCE	Benzene	TCE	Toluene	PCE	EB	m/p-Xylene	o-Xylene	Depth	Matrix	Date
P6MW8C	60	82	ND*	5724	408	3752	6318	3028	6958	9-11	SOIL	08/27/93
P6MW8D	ND	ND	ND	ND	ND	ND	ND	ND	ND	11-13	SOIL	08/27/93
P6MW8E	2	12	8	12	ND	10	16	ND	ND	13-15	SOIL	08/27/93
P6MW8E LABDUP	2	14	8	14	ND	10	10	ND	ND	13-15	SOIL	08/27/93
P6MW9AA	ND	ND	ND	ND	ND	ND	ND	ND	ND	11	WATER	08/29/93
P6MW9AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	16	WATER	08/28/93
P6MW9AW LABDUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	16	WATER	08/28/93
P6TW10A	ND	ND	ND	ND	ND	ND	ND	ND	ND	5-7	SOIL	09/12/93
P6TW10AW	ND	ND	ND	ND	ND	ND	ND	ND	ND	13	WATER	09/12/93
P6TW10B	ND	ND	ND	ND	ND	4	ND	ND	ND	7-9	SOIL	09/12/93
P8MW5A	ND	ND	ND	ND	ND	ND	ND	ND	ND	13-15	SOIL	09/12/93
P8SB2A	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	1-3	SOIL	08/13/93
P8SB2B	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	5-7	SOIL	08/13/93
P8SB2C	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	9-11	SOIL	08/13/93
P8SB2D	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	11-13	SOIL	08/13/93
P8SB2E	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	56-58	SOIL	08/13/93
P8SB3A	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	1-3	SOIL	08/13/93
P8SB3B	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	5-7	SOIL	08/13/93
P8SB3C	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	9-11	SOIL	08/13/93
P8SB4A	ND	BM	ND	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/13/93
P8SB4B	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/13/93
P8SB4C	ND	ND	ND	ND	ND	ND	ND	ND	ND	8-10	SOIL	08/13/93
P8SB4D	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	0-2	SOIL	08/13/93
P8SB5C	ND	ND	BMDL	ND	ND	ND	ND	ND	ND	9-11	SOIL	08/13/93
P8SB6B	ND	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/15/93
P8SB6C	ND	ND	ND	ND	ND	ND	ND	ND	ND	8-10	SOIL	08/15/93
P8SB6D	ND	ND	ND	ND	ND	ND	ND	ND	ND	12-14	SOIL	08/15/93
P8SB7B	ND	BM	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/15/93
P8SB7C	ND	ND	ND	ND	ND	ND	ND	ND	ND	8-10	SOIL	08/15/93
P8SB7D	ND	ND	ND	ND	ND	ND	ND	ND	ND	12-14	SOIL	08/15/93
P8SB8A	ND	ND	ND	ND	ND	ND	ND	ND	ND	1-3	SOIL	08/17/93
P8SB8B LAB DUF	ND	ND	ND	ND	ND	ND	ND	ND	ND	5-7	SOIL	08/17/93

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Analytical Results from On-Site Field GC

Alpena CRTC, Alpena MI

UNITS ppb

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SAMPLE ID	t-1,2-DCE c-1,2-DCE	Benzene	TCE	Toluene	PCE	EB	m/p-Xylene	o-Xylene	Depth	Matrix	Date
P8SB8C	ND	ND	ND	ND	ND	ND	ND	ND	9-11	SOIL	08/17/93
P8SB8D	ND	ND	ND	ND	ND	ND	ND	ND	13-15	SOIL	08/17/93
P9MW4BB	ND	ND	ND	ND	6	ND	ND	ND	20	WATER	09/12/93
P9MW5BB	ND	ND	ND	ND	ND	ND	ND	ND	21	WATER	09/12/93
P9MW6A	ND	ND	ND	ND	ND	ND	ND	ND	3-5	SOIL	08/31/93
P9MW6B	ND	ND	ND	ND	ND	ND	ND	ND	8-10	SOIL	08/31/93
P9MW6C	ND	ND	ND	ND	4	ND	ND	ND	13-15	SOIL	08/31/93
P9SB13A	ND	ND	ND	ND	ND	ND	ND	ND	4-6	SOIL	08/29/93
P9SB13B	ND	ND	ND	ND	ND	ND	ND	ND	14-16	SOIL	08/29/93
P9SB13C	ND	ND	ND	ND	ND	ND	ND	ND	56-58	SOIL	08/29/93
P9TW7AW	ND	101	22	95	24	ND	1068	881	21	WATER	09/10/93
P9TW7BW	4	16	2	BMDL	1	ND	19	11	31	WATER	09/10/93
P9TW7BW LABDUP.	4	18	2	BMDL	1	ND	18	10	31	WATER	09/10/93
P9TW8AW	3	ND	ND	BMDL	ND	ND	ND	ND	9	WATER	09/12/93
P9TW8AW LABDUP.	ND	ND	ND	BMDL	ND	ND	ND	ND	9	WATER	09/12/93
RT9MW6AA	ND	907	536	3770	298	ND	10920	6910	19	WATER	08/31/93
DECONH20	ND	ND	ND	ND	ND	ND	ND	ND	0	SOIL	08/11/93
PBG1A	ND	ND	BMDL	ND	ND	ND	ND	ND	0-2	SOIL	08/10/93
PBG1B	ND	ND	BMDL	ND	ND	ND	ND	ND	2-4	SOIL	08/10/93
PBG1C	ND	ND	BMDL	ND	ND	ND	ND	ND	4-6	SOIL	08/10/93
PBG1D	ND	ND	BMDL	ND	ND	ND	ND	ND	8-10	SOIL	08/10/93
PBG2A	ND	ND	ND	ND	BMDL	ND	ND	ND	0-2	SOIL	08/15/93
PBG2B	ND	ND	ND	ND	ND	ND	ND	ND	2-4	SOIL	08/15/93
PERA	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	08/11/93
PERAA	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	08/29/93
PERAB	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	08/29/93
PERAC	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	08/30/93
PERAD	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	08/31/93
PERB	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	08/16/93
PERB	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	08/16/93
PERBB	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	09/10/93

Analytical Results from On-Site Field GC
 Alpena CRTC, Alpena MI
 UNITS ppb

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SAMPLE ID	t-1,2-DCE	c-1,2-DCE	Benzene	TCE	Toluene	PCE	EB	m/p-Xylene	o-Xylene	Depth	Matrix	Date
PERC	ND	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	08/17/93
PERD	ND	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	08/25/93
PERE	ND	ND	ND	ND	ND	ND	ND	ND	ND	QA	WATER	08/26/93

**Appendix F: Surface Water and Sediment
Sampling Forms**

Surface Water Sampling Record

Project Name Alpena CRTC, MIANG

Project Number 931800-12

Location Sinkhole, Southwest of Site 4

Sample Number P04W001(E)

Site 4 - Surface drainage at Seep on South Side

Duplicate Number

Recorded By PH Lay

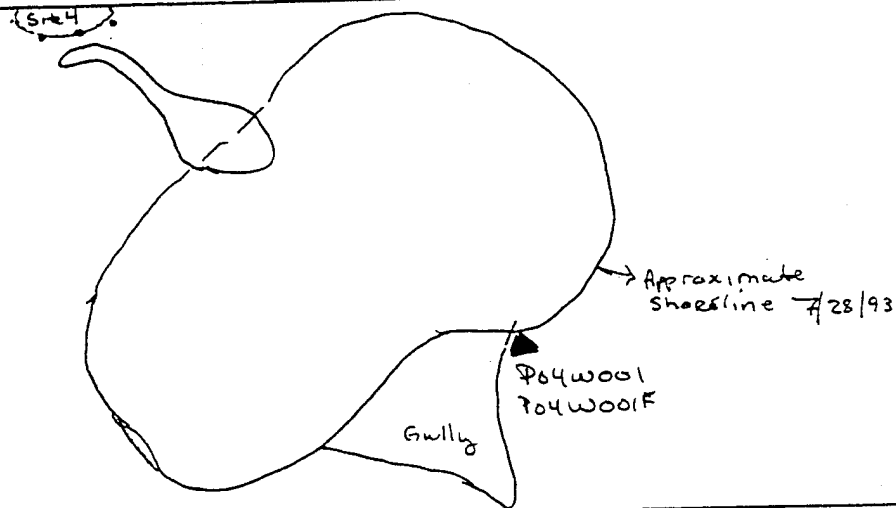
Date 7/28/93

Checked By

Date

Sampling Point Location (sketch)

← North



*not to scale

Water Parameters

Before Sampling: pH EC Temperature

After Sampling: pH 7.6 EC 298 μ ms Temperature 60.2°F

Sampling Information

Analytical Parameter	Sampling Depth	✓ If Field Filtered	Preservation Method	Volume Required	Sample Bottle I.D.s
VOCs	Surface		HCL, 4°C	4 x 40mL glass	P04W001
SVOCs	Surface		, 4°C	2 x 1 Liter glass	P04W001
TPH	Surface		HCL, 4°C	1 x 1 Liter glass	P04W001
PP metals	Surface		HNO ₃ , 4°C	1 x 1 Liter plastic	P04W001
PP metals	Surface	✓	HNO ₃ , 4°C	1 x 1 Liter plastic	P04W001F

Surface Water Sampling Record

Project Name Alpena CRTC, MIANG
 Location Sinkhole, southwest of Site 4
 Site 4 - surface drainage -
 Recorded By PH Lay
 Checked By _____

Project Number 931800-12
 Sample Number P04W002 (F)
 Duplicate Number _____
 Date 7/28/93
 Date _____

Sampling Point Location (sketch)

← North

(Site 4)

▲ P04W002
P04W002F

→ Approximate
Shoreline 7/28/93

Gully

*not to scale

Water Parameters

Before Sampling: pH _____ EC _____ Temperature _____
 After Sampling: pH 7.44 EC 273 μ S/cm Temperature 60.1°F

Sampling Information

Analytical Parameter	Sampling Depth	✓ If Field Filtered	Preservation Method	Volume Required	Sample Bottle I.D.s
VOCS	Surface		HCL, 4°C	4 x 40mL glass	P04W002
SVOCs	Surface		, 4°C	2 x 1 Liter glass	P04W002
TPH	Surface		HCL, 4°C	1 x 1 Liter glass	P04W002
PP metals	Surface		HNO ₃ , 4°C	1 x 1 Liter plastic	P04W002
PP metals	Surface	✓	HNO ₃ , 4°C	1 x 1 Liter plastic	P04W002

Surface Water Sampling Record

Project Name Alpena CRTC, MIANG
 Location Sinkhole, southwest of Site 4
 Site 4 - surface drainage - SE part of Sinkhole
 Recorded By PH Lay
 Checked By _____

Project Number 931800-12
 Sample Number P04W003(F)
 Duplicate Number _____
 Date 7/28/93
 Date _____

Sampling Point Location (sketch)

← North

(Site 4)

▲ P04W003
P04W003F

→ Approximate
Shoreline 7/28/93

Gully

*not to scale

Water Parameters

Before Sampling: pH _____ EC _____ Temperature _____
 After Sampling: pH 7.42 EC 285 μ S/cm Temperature 65.3°F

Sampling Information

Analytical Parameter	Sampling Depth	✓ If Field Filtered	Preservation Method	Volume Required	Sample Bottle I.D.s
VOCs	Surface		HCL, 4°C	4 x 40mL glass	P04W003
SVOCs	Surface		, 4°C	2 x 1 Liter glass	P04W003
TPH	Surface		HCL, 4°C	1 x 1 Liter glass	P04W003
PP metals	Surface		HNO ₃ , 4°C	1 x 1 Liter plastic	P04W003
PP metals	Surface	✓	HNO ₃ , 4°C	1 x 1 Liter plastic	P04W003F

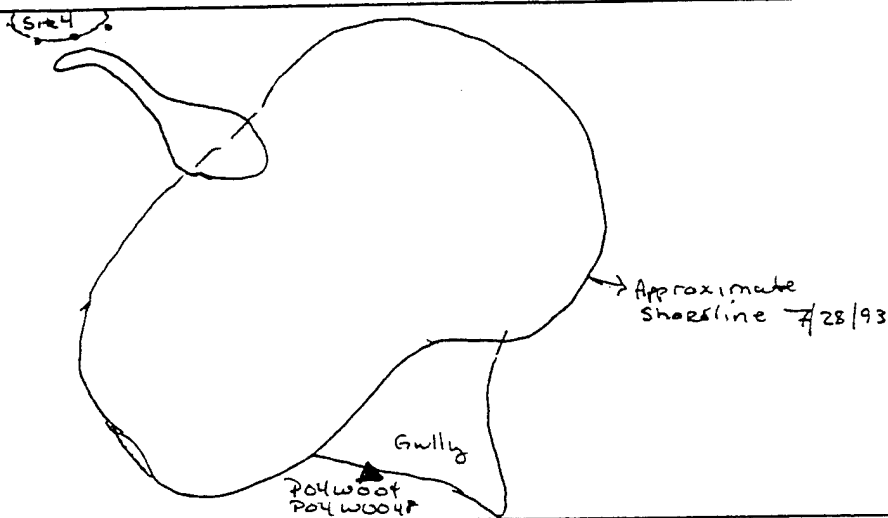
Surface Water Sampling Record

Project Name Alpena CRTC, MIANG
 Location Sinkhole, southwest of Site 4
 Site 4 - surface drainage - seep SW of Site 4
 Recorded By PH Lay
 Checked By _____

Project Number 931800-12
 Sample Number P04W004(F)
 Duplicate Number _____
 Date 7/28/93
 Date _____

Sampling Point Location (sketch)

← North



not to scale

Water Parameters

Before Sampling: pH _____ EC _____ Temperature _____
 After Sampling: pH 7.43 EC 303 μ S/cm Temperature 62.6 °F

Sampling Information

Analytical Parameter	Sampling Depth	✓ If Field Filtered	Preservation Method	Volume Required	Sample Bottle I.D.s
VOCs	Surface		HCl, 4°C	4 x 40mL glass	P04W004
SVOCs	Surface		, 4°C	2 x 1 Liter glass	P04W004
TPH	Surface		HCl, 4°C	1 x 1 Liter glass	P04W004
PP metals	Surface		HNO ₃ , 4°C	1 x 1 Liter plastic	P04W004
PP metals	Surface	✓	HNO ₃ , 4°C	1 x 1 Liter plastic	P04W004F

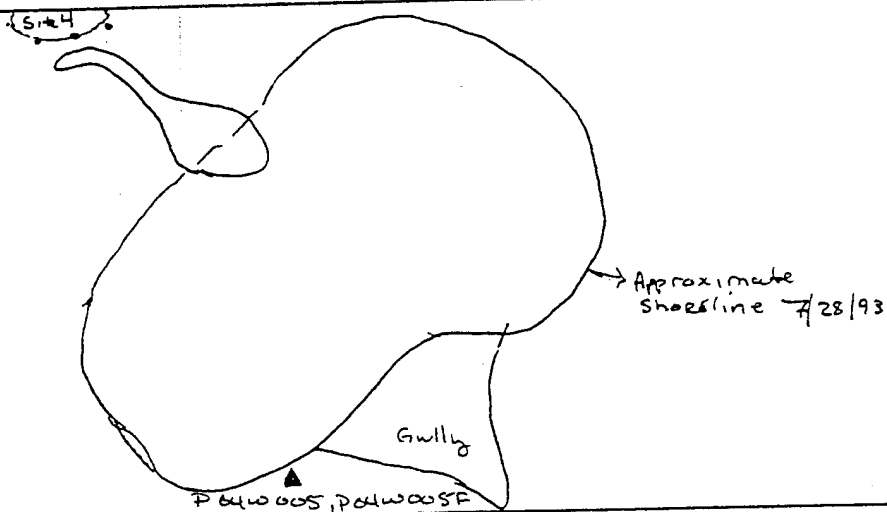
Surface Water Sampling Record

Project Name Alpena CRTC, MIANG
 Location Sinkhole, southwest of Site 4
 Site 4 - surface drainage
 Recorded By PH Lay
 Checked By _____

Project Number 931800-12
 Sample Number P04W005 (F)
 Duplicate Number _____
 Date 7/30/93
 Date _____

Sampling Point Location (sketch)

← North



Water Parameters

Before Sampling: pH _____ EC _____ Temperature _____
 After Sampling: pH 8.05 EC 291 μ S/cm Temperature 58°F

Sampling Information

Analytical Parameter	Sampling Depth	✓ If Field Filtered	Preservation Method	Volume Required	Sample Bottle I.D.s
VOCs	Surface		HCl, 4°C	4 x 40mL glass	P04W005
SVOCs	Surface		, 4°C	2 x 1 Liter glass	P04W005
TPH	Surface		HCl, 4°C	1 x 1 Liter glass	P04W005
PP metals	Surface		HNO ₃ , 4°C	1 x 1 Liter plastic	P04W005
PP metals	Surface	✓	HNO ₃ , 4°C	1 x 1 Liter plastic	P04W005F

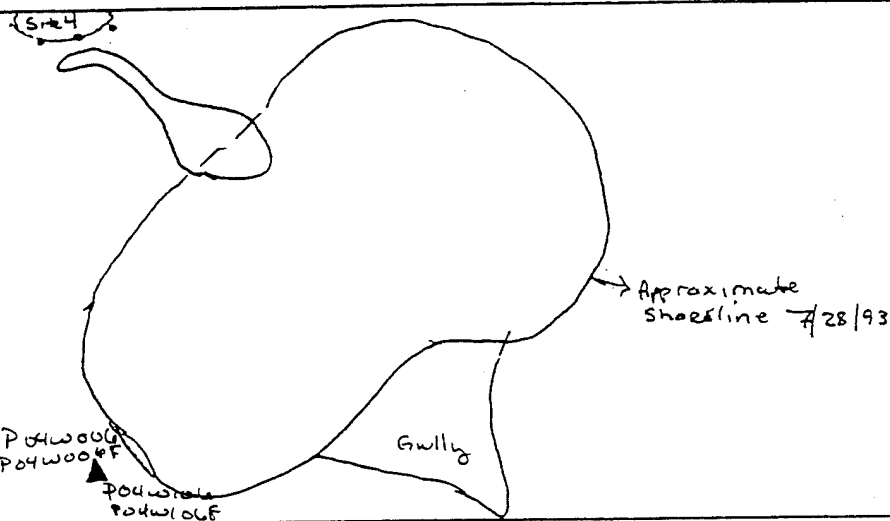
Surface Water Sampling Record

Project Name Alpena CRTC, MIANG
 Location Sinkhole, southwest of Site 4
 Site 4 - surface drainage
 Recorded By PH Lay
 Checked By _____

Project Number 931800-12
 Sample Number P04W006(F)
 Duplicate Number P04W106(F)
 Date 7/30/93
 Date _____

Sampling Point Location (sketch)

← North



*not to scale

Water Parameters

Before Sampling: pH _____ EC _____ Temperature _____
 After Sampling: pH 7.87 EC 406 μ S/cm Temperature 57.8°F

Sampling Information

Analytical Parameter	Sampling Depth	√ If Field Filtered	Preservation Method	Volume Required	Sample Bottle I.D.s
VOCs	Surface		HCL, 4°C	4 x 40mL glass	P04W006
SVOCs	Surface		, 4°C	2 x 1 Liter glass	P04W006
TPH	Surface		HCL, 4°C	1 x 1 Liter glass	P04W006
PP metals	Surface		HNO ₃ , 4°C	1 x 1 Liter plastic	P04W006
PP metals	Surface	✓	HNO ₃ , 4°C	1 x 1 Liter plastic	P04W006F
VOCs	Surface		HCL, 4°C	4 x 40mL glass	P04W106
SVOCs	Surface		4°C	2 x 1 Liter glass	P04W106
TPH	Surface		HCL, 4°C	1 x 1 Liter glass	P04W106
PP metals	Surface		HNO ₃ , 4°C	1 x 1 Liter plastic	P04W106
PP metals	Surface	✓	HNO ₃ , 4°C	1 x 1 Liter plastic	P04W106F

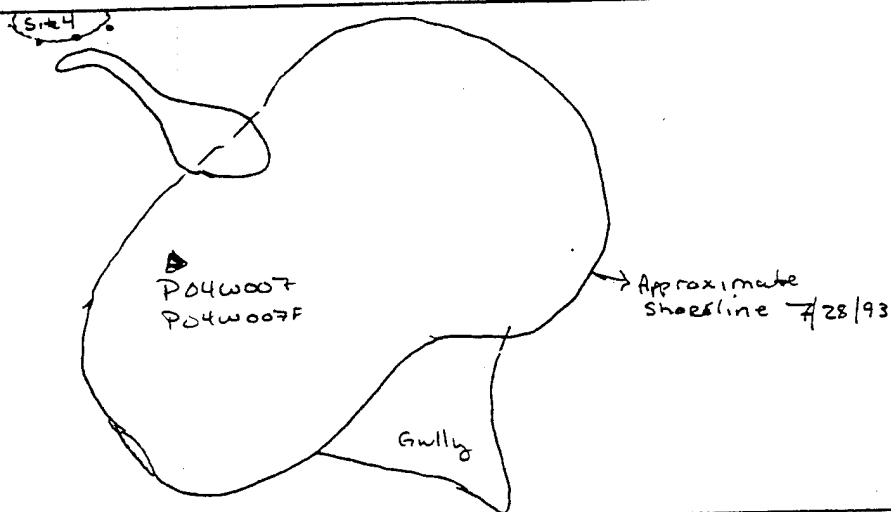
Surface Water Sampling Record

Project Name Alpena CRTC, MIANG
 Location Sinkhole, southwest of Site 4
 Site 4 - surface drainage
 Recorded By PH Lay
 Checked By _____

Project Number 931800-12
 Sample Number P04W007 (F)
 Duplicate Number -
 Date 7/30/93
 Date _____

Sampling Point Location (sketch)

← North



*not to scale

Water Parameters

Before Sampling: pH _____ EC _____ Temperature _____
 After Sampling: pH 7.33 EC 336 μ S/cm Temperature 78.7 °F

Sampling Information

Analytical Parameter	Sampling Depth	✓ If Field Filtered	Preservation Method	Volume Required	Sample Bottle I.D.s
VOCs	surface		HCl, 4°C	4 x 40mL glass	P04W007
SVOCs	surface		, 4°C	2 x 1 Liter glass	P04W007
TPH	surface		HCl, 4°C	1 x 1 Liter glass	P04W007
PP metals	surface		HNO ₃ , 4°C	1 x 1 Liter plastic	P04W007
PP metals	surface	✓	HNO ₃ , 4°C	1 x 1 Liter plastic	P04W007F

Surface Water Sampling Record

Project Name <u>Alpena CRTC, MIANG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, southwest of Site 4</u>	Sample Number <u>P04W008 (F)</u>
Site <u>4 - surface drainage</u>	Duplicate Number <u>—</u>
Recorded By <u>PH Lay</u>	Date <u>7/30/93</u>
Checked By <u>—</u>	Date <u>—</u>

Sampling Point Location (sketch)

North

P04W008

Approximate shoreline 7/28/93

Gully

not to scale

Water Parameters

Before Sampling: pH <u>—</u>	EC <u>—</u>	Temperature <u>—</u>
After Sampling: pH <u>7.78</u>	EC <u>314 μS/cm</u>	Temperature <u>76.9°F</u>

Sampling Information

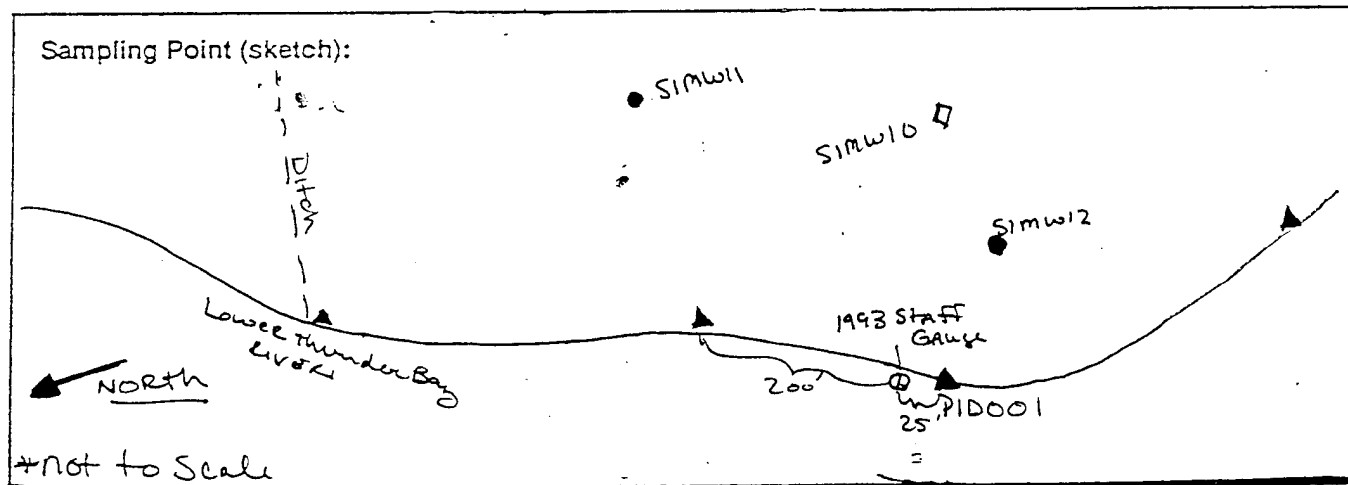
Analytical Parameter	Sampling Depth	✓ If Field Filtered	Preservation Method	Volume Required	Sample Bottle I.D.s
VOCs	Surface		HCl, 4°C	4 x 40mL glass	P04W008
SVOCs	Surface		4°C	2 x 1 Liter glass	P04W008
TPH	Surface		HCl, 4°C	1 x 1 Liter glass	P04W008
PP metals	Surface		HNO ₃ , 4°C	1 x 1 Liter plastic	P04W008
PP metals	Surface	✓	HNO ₃ , 4°C	1 x 1 Liter plastic	P04W008F

Sediment Sampling Forms

Soil/Sediment Sampling Record

Project Name <u>Alpena CRTC, MIANG</u>	Project Number <u>931500-12</u>
Location <u>Phelps Collon ANG SW side of Base</u>	Sample Number <u>P1D001</u>
Recorded By <u>P#Lg</u>	Duplicate Number <u>—</u>
Date <u>9/13/93</u>	Checked By <u>—</u>
Site <u>1-POL Storage area</u>	Date <u>—</u>

Sampling Equipment <u>HAND Auger, Stainless Steel Spools, auger handle w/ extensions</u>	
Sample Type	Soil ☐ <u>Sediment</u> ☒ Rock ☐
Sample Type Description	
USCS Soil Type <u>Sp w/ organics</u>	
Color <u>none</u>	
Odor <u>Drk Brown</u>	
Depth <u>0-1'</u>	
Number of Samples <u>1</u>	
Comments <u>1</u>	



Decontamination	
Equipment: ☒ Hand auger	Decontamination Fluids: <u>—</u>
Type <u>AMS</u>	☐ Steam/Hot Water
☐ Trowel	☒ Detergent/water
☐ Other <u>—</u>	☒ Potable Water
	☒ Deionized Water
	☒ Methanol
	☐ Hexane
	☐ HNO ₃ : dilution
	☐ Other <u>—</u>

Form F102

Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MIANG</u>	Project Number <u>931800-12</u>
Location <u>Phelpsding ANG SW Part of Bas</u>	Sample Number <u>P1D002</u>
Recorded By <u>JAL</u>	Duplicate Number <u>P1D004</u>
Date <u>8 9/13/93</u>	Checked By _____
Site <u>1-POL Storage area</u>	Date _____

Sampling Equipment HAND Auger, Stainless Steel Spools, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type Sp

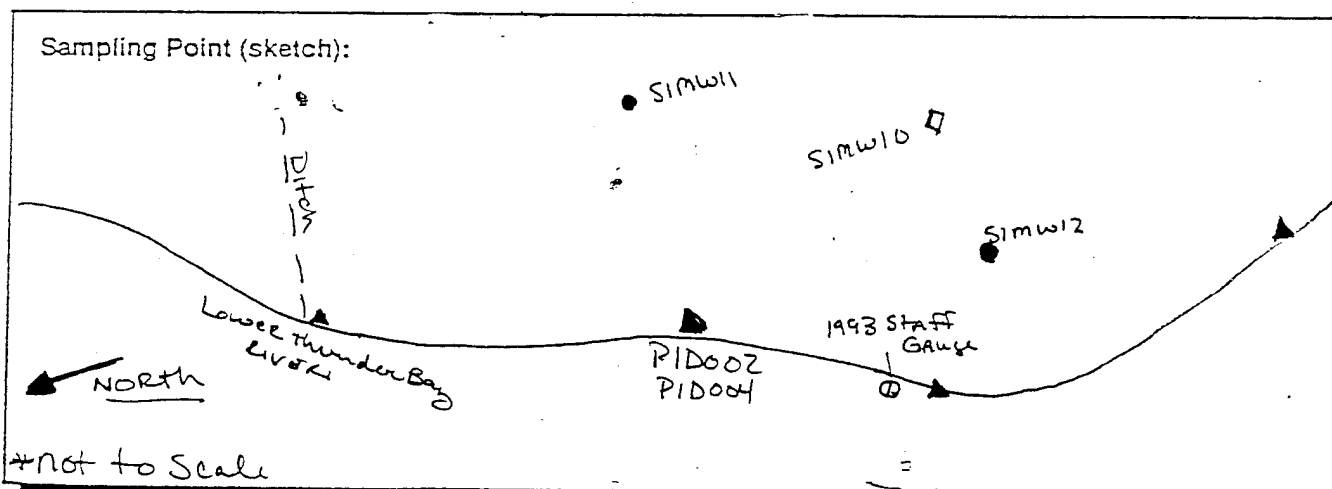
Color Dark Brown - Brown

Odor none

Depth 0-1'

Number of Samples 2

Comments _____



Decontamination		Decontamination Fluids: _____	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other _____		☒ Potable Water	☐ HNO ₃ : dilution
		☒ Deionized Water	☐ Other _____

Soil/Sediment Sampling Record

Project Name <u>Alpena CRTIC MIAWG</u>	Project Number <u>931500-12</u>
Location <u>Phelps Collins ANG - SW Port of Base</u>	Sample Number <u>PID003</u>
Recorded By <u>J. L. G.</u>	Duplicate Number <u> </u>
Date <u>9/13/93</u>	Checked By <u> </u>
Site <u>1 - POL Storage Area</u>	Date <u> </u>

Sampling Equipment Hand Auger, Stainless Steel Spears, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type SP

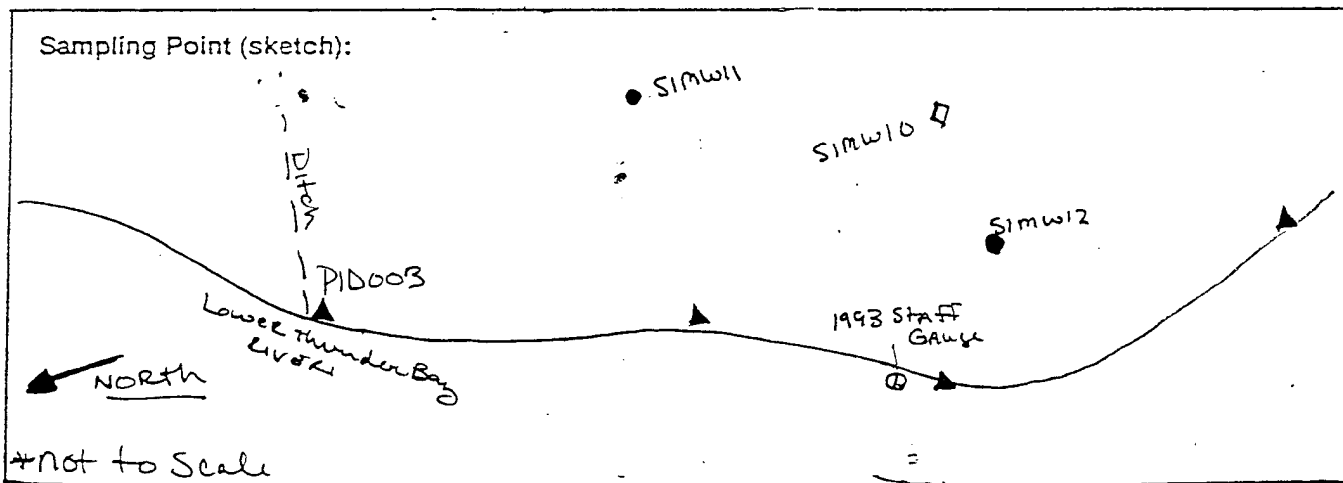
Color Dark Brown

Odor none

Depth 0-1'

Number of Samples 1

Comments



Decontamination		Decontamination Fluids: <u> </u>	
Equipment: ☒ Hand auger		☐ Steam/Hot Water	☒ Methanol
Type <u>AMS</u>		☒ Detergent/water	☐ Hexane
☐ Trowel		☒ Potable Water	☐ HNO ₃ ; dilution
☐ Other <u> </u>		☒ Deionized Water	☐ Other <u> </u>

Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MIAUG</u>	Project Number <u>931800-12</u>
Location <u>Phelps Collins ANG. Surface of Base</u>	Sample Number <u>P1D005</u>
Recorded By <u>JH Lay</u>	Duplicate Number <u> </u>
Date <u>9/13/93</u>	Checked By <u> </u>
Site <u>1- POL Storage area</u>	Date <u> </u>

Sampling Equipment Hand Auger, Stainless Steel Spools, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type Sp

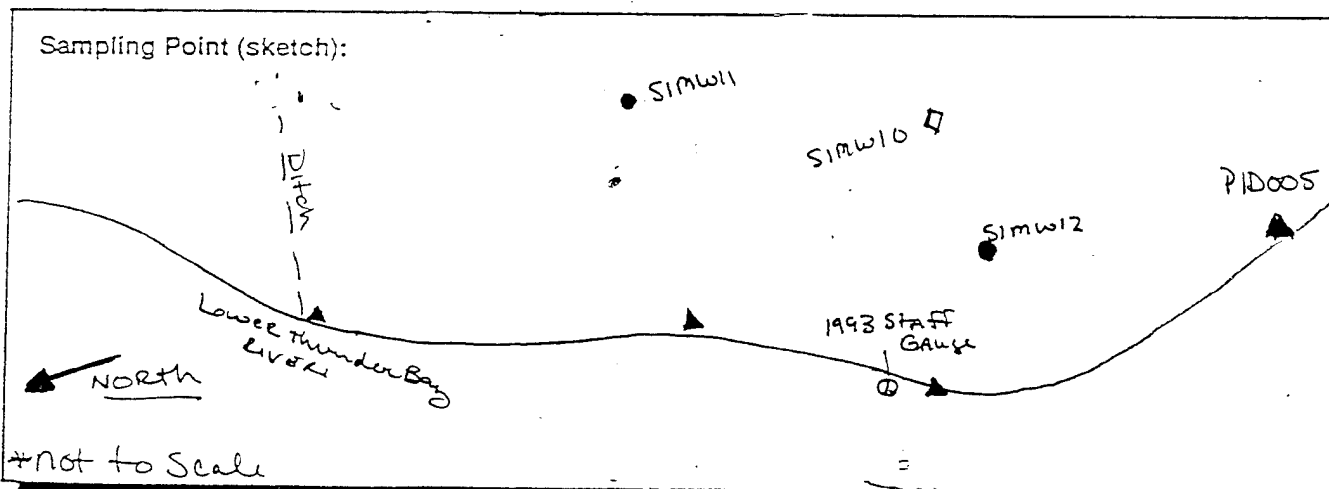
Color Dark Brown

Odor None

Depth 0-1'

Number of Samples 1

Comments



Decontamination		Decontamination Fluids:	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other <u> </u>		☒ Potable Water	☐ HNO ₃ : dilution
		☒ Deionized Water	☐ Other <u> </u>

Soil/Sediment Sampling Record

Project Name <u>Alpena CRIC, MIANG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P01DD01A</u>
Recorded By <u>P. Lag</u>	Duplicate Number <u>—</u>
Date <u>7/29/93</u>	Checked By <u>7</u>
Site <u>4 drawing of surface water</u>	Date <u>—</u>

Sampling Equipment <u>HAND Auger, STAINLESS Steel Spools, auger handle w/ extensions</u>
Sample Type Soil <u>Sediment</u> Rock
Sample Type Description
USCS Soil Type <u>Sp w/ organics - sticks, leaves</u>
Color <u>Brown</u>
Odor <u>none</u>
Depth <u>0-1'</u>
Number of Samples <u>1</u>
Comments <u>staken at mouth of seep</u> <u>P01</u> <u>7/29/93</u>

Sampling Point (sketch):

*not to scale

Decontamination	
Equipment: ☒ Hand auger	Decontamination Fluids: <u>—</u>
Type <u>AMS</u>	☐ Steam/Hot Water ☒ Methanol
☐ Trowel	☒ Detergent/water ☐ Hexane
☐ Other <u>—</u>	☒ Potable Water ☐ HNO ₃ : dilution
	☒ Deionized Water ☐ Other <u>—</u>

Soil/Sediment Sampling Record

Project Name Alpena CRTC, MIANG Project Number 931800-12
Location Sinkhole, SW of Site 4 Sample Number P04D001
Recorded By PALag Duplicate Number —
Date 7/29/93 Checked By —
Site 4 drawing of surface water Date —

Sampling Equipment HAND Auger, Stainless Steel spoons, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type SP w/ organic materials

Color Lt Brown to Brown

Odor none

Depth 0-1'

Number of Samples 1

Comments Sample collected 25' down from mouth of seep, PO4 wood, PO4 wood

Sampling Point (sketch):

← North

Approximate Shoreline 7/28/93

P046001

Gully

*not to scale

The sketch shows a large, irregularly shaped lake. A dashed line represents the shoreline. A point on the shoreline is marked with a small square and labeled 'P046001'. A line points from the text 'Approximate Shoreline 7/28/93' to this point. Another line points from the text 'Gully' to a small inlet at the bottom right of the lake. A north arrow points to the left, labeled 'North'. The text 'Sampling Point (sketch):' is at the top left. The text '*not to scale' is at the bottom left. A small area at the top left is labeled 'Site 4' with a dashed line.

Decontamination

Equipment: ☒ Hand auger
Type Am S

☐ Trowel
☐ Other _____

Decontamination Fluids: _____

☐ Steam/Hot Water	☒ Methanol
☒ Detergent/water	☐ Hexane
☒ Potable Water	☐ HNO ₃ ; dilution
☒ Deionized Water	☐ Other _____

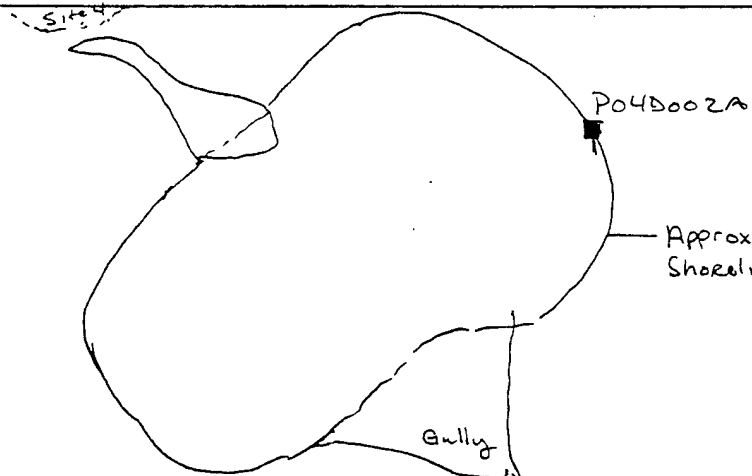
Soil/Sediment Sampling Record

Project Name <u>Alpena CRTC, MIAWG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D002A</u>
Recorded By <u>JAL</u>	Duplicate Number _____
Date <u>7/29/93</u>	Checked By _____
Site <u>4 drawing of surface water</u>	Date _____

Sampling Equipment <u>HAND Auger, Stainless Steel Spools, auger handle w/ extensions</u>	
Sample Type	Soil Sediment Rock
Sample Type Description	
USCS Soil Type <u>Sp w/ organic rich (sticks, leaves, grass)</u>	
Color <u>dk brown-brown</u>	
Odor <u>none</u>	
Depth <u>0-1'</u>	
Number of Samples <u>1</u>	
Comments <u>Sample collected</u>	

Sampling Point (sketch):

← North



*Not to Scale

Decontamination	
Equipment: ☒ Hand auger Type <u>AMS</u> ☐ Trowel ☐ Other _____	Decontamination Fluids: _____ ☐ Steam/Hot Water ☒ Methanol ☒ Detergent/water ☐ Hexane ☒ Potable Water ☐ HNO ₃ ; dilution ☒ Deionized Water ☐ Other _____

Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MICHIGAN</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D002B</u>
Recorded By <u>JAL</u>	Duplicate Number <u>—</u>
Date <u>7/29/93</u>	Checked By <u>—</u>
Site <u>4 drawing of surface water</u>	Date <u>—</u>

Sampling Equipment HAND Auger, Stainless Steel Spoons, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type Sp w/ organics

Color Brown

Odor NONE

Depth 0-1'

Number of Samples 1

Comments taken at Potw002, north of seep being.

Sampling Point (sketch):

*Not to Scale

Decontamination		Decontamination Fluids: <u>—</u>	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other <u>—</u>		☒ Potable Water	☐ HNO ₃ ; dilution
		☒ Deionized Water	☐ Other <u>—</u>

Soil/Sediment Sampling Record

Project Name <u>Alpena CRTIC, MIANG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>~~P04~~ P04D003</u>
Recorded By <u>PALag</u>	Duplicate Number <u>7</u>
Date <u>7-29-93</u>	Checked By _____
Site <u>4 drawing of surface water</u>	Date _____

Sampling Equipment <u>HAND Auger, Stainless Steel Spoons, auger handle w/ extensions</u>	
Sample Type	Soil ☐ <u>Sediment</u> ☒ Rock ☐
Sample Type Description	
USCS Soil Type <u>Sp w/organics</u>	
Color <u>Brn - Dk Brn</u>	
Odor <u>none</u>	
Depth <u>0-1'</u>	
Number of Samples _____	
Comments <u>at location P04D003</u>	

Sampling Point (sketch):

*Not to Scale

Decontamination	
Equipment: ☒ Hand auger	Decontamination Fluids: _____
Type <u>AMS</u>	☐ Steam/Hot Water
☐ Trowel	☒ Detergent/water
☐ Other _____	☒ Potable Water
	☒ Deionized Water
	☒ Methanol
	☐ Hexane
	☐ HNO ₃ : dilution
	☐ Other _____

Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MIAWG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D004A</u>
Recorded By <u>PALay</u>	Duplicate Number <u> </u>
Date <u>7/30/93</u>	Checked By <u> </u>
Site <u>4 drawing of surface water</u>	Date <u> </u>

Sampling Equipment Hand Auger, Stainless Steel spoons, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type Sp

Color Lt Brown

Odor None

Depth 0-1'

Number of Samples 1

Comments collected down from seep at P04D004B
and P04W004(F)

Sampling Point (sketch):

*Not to Scale

Decontamination		Decontamination Fluids: <u> </u>	
Equipment: ☒ Hand auger		☐ Steam/Hot Water	☒ Methanol
Type <u> </u>		☒ Detergent/water	☐ Hexane
☐ Trowel		☒ Potable Water	☐ HNO ₃ ; dilution
☐ Other <u> </u>		☒ Deionized Water	☐ Other <u> </u>

Soil/Sediment Sampling Record

Project Name <u>Alpena CRIC, MIAWG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D004B</u>
Recorded By <u>PLA</u>	Duplicate Number <u>P04D104B</u>
Date <u>7-30-93</u>	Checked By _____
Site <u>4 drawing of surface water</u>	Date _____

Sampling Equipment <u>HAND Auger, Stainless Steel Spoons, auger handle w/ extensions</u>	
Sample Type	Soil ☐ <u>Sediment</u> ☒ Rock ☐
Sample Type Description	
USCS Soil Type <u>SP w/ organics</u>	
Color <u>Bm-Lt Bm</u>	
Odor <u>none</u>	
Depth <u>0-1'</u>	
Number of Samples <u>2</u>	
Comments <u>at deep mouth p04 w004</u>	

Sampling Point (sketch):

North

Approximate Shoreline 7/28/93

P04D004B Gully

Not to Scale

Decontamination	
Equipment: ☒ Hand auger	Decontamination Fluids: _____
Type <u>AMS</u>	☐ Steam/Hot Water ☒ Methanol
☐ Trowel	☒ Detergent/water ☐ Hexane
☐ Other _____	☒ Potable Water ☐ HNO ₃ : dilution
	☒ Deionized Water ☐ Other _____

Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MIANG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D005A</u>
Recorded By <u>P. L. L.</u>	Duplicate Number <u>—</u>
Date <u>7/30/93</u>	Checked By <u>—</u>
Site <u>4 drawing of surface water</u>	Date <u>—</u>

Sampling Equipment HAND Auger, Stainless Steel Spoons, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type SP w/some organics

Color Lt Brown

Odor none

Depth 0-1'

Number of Samples 1

Comments taken down from P04D005B, P04W005

Sampling Point (sketch):

← North

*not to scale

Decontamination		Decontamination Fluids: _____	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other _____		☒ Potable Water	☐ HNO ₃ : dilution
		☒ Deionized Water	☐ Other _____

Soil/Sediment Sampling Record

Project Name <u>Alpena CRTIC, MIANG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D0053</u>
Recorded By <u>P. L. Lag</u>	Duplicate Number <u>—</u>
Date <u>7/30/93</u>	Checked By <u>—</u>
Site <u>4 drawing of surface water</u>	Date <u>—</u>

Sampling Equipment <u>HAND Auger, Stainless Steel Spoons, auger handle w/ extensions</u>	
Sample Type	Soil ☐ <u>Sediment</u> ☒ Rock ☐
Sample Type Description	
USCS Soil Type <u>Sp w/organics</u>	
Color <u>Lt Brown - Brown</u>	
Odor <u>none</u>	
Depth <u>0-1'</u>	
Number of Samples <u>1</u>	
Comments <u>taken at mouth of seep P04D005</u>	

Sampling Point (sketch):

*not to scale

Decontamination	
Equipment: ☒ Hand auger	Decontamination Fluids: <u>—</u>
Type <u>AMS</u>	☐ Steam/Hot Water
☐ Trowel	☒ Detergent/water
☐ Other <u>—</u>	☒ Potable Water
	☒ Deionized Water
	☒ Methanol
	☐ Hexane
	☐ HNO ₃ : dilution
	☐ Other <u>—</u>

Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MICHIGAN</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D006A</u>
Recorded By <u>PAL</u>	Duplicate Number <u>-</u>
Date <u>7/30/93</u>	Checked By <u>-</u>
Site <u>4 drawing of surface water</u>	Date <u>-</u>

Sampling Equipment HAND AUGER, STAINLESS STEEL SPOONS, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type SP w/pebbles

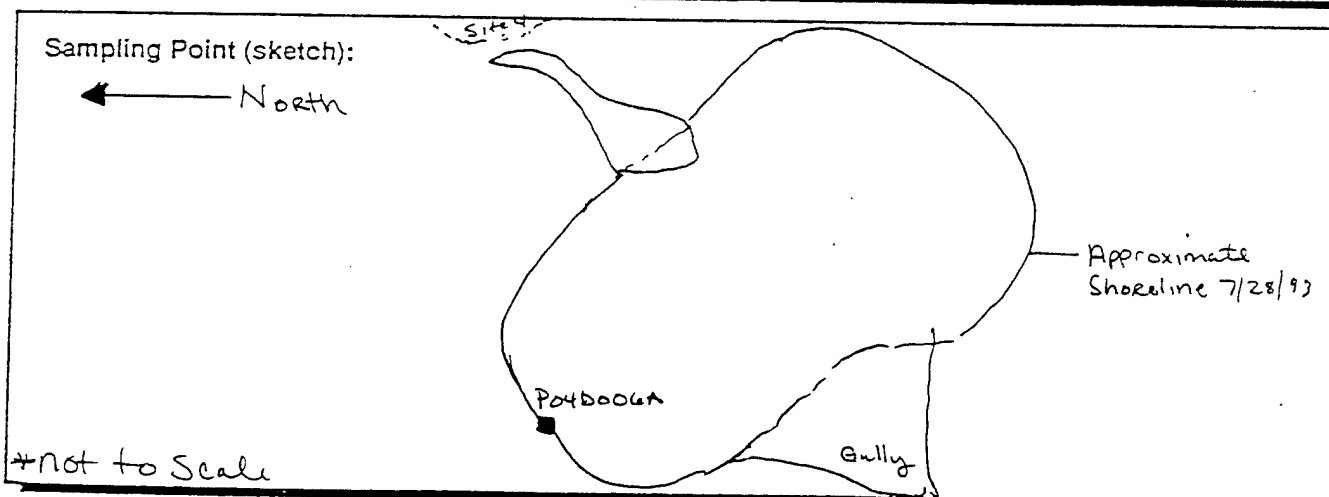
Color Brown

Odor "rotten egg" small amount sulfur

Depth 0-1'

Number of Samples 1

Comments taken down from P04D006B, P04W006



Decontamination		Decontamination Fluids:	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other		☒ Potable Water	☐ HNO ₃ : dilution
		☒ Deionized Water	☐ Other

Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MIAWG</u>	Project Number <u>931500-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D006B</u>
Recorded By <u>PALay</u>	Duplicate Number <u>P04D106B</u>
Date <u>7/30/93</u>	Checked By _____
Site <u>4 drawing of surface water</u>	Date _____

Sampling Equipment HAND AUGER, STAINLESS STEEL SPEARS, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type Sp. w/ organic

Color Brown

Odor Slight Sulfide odor - "rotten eggs"

Depth 0.1'

Number of Samples 2

Comments taken at mouth of seep P04D006B.

Sampling Point (sketch):

*not to scale

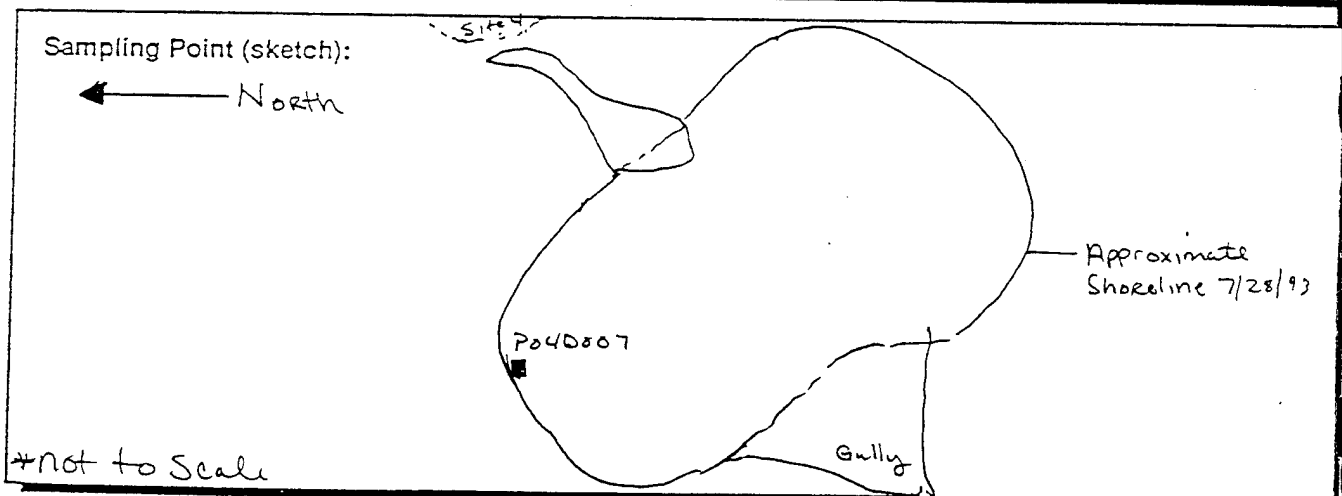
Decontamination		Decontamination Fluids: _____	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other _____		☒ Potable Water	☐ HNO ₃ ; dilution
		☒ Deionized Water	☐ Other _____

Form F1025

Soil/Sediment Sampling Record

Project Name <u>Alpena CRTC, MIAWA</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P040007</u>
Recorded By <u>PLA</u>	Duplicate Number <u>—</u>
Date <u>7/3/93</u>	Checked By <u>—</u>
Site <u>4 drawing of surface water</u>	Date <u>—</u>

Sampling Equipment <u>Hand Auger, Stainless Steel Spoons, auger handle w/ extensions</u>	
Sample Type	Soil Sediment Rock
Sample Type Description	
USCS Soil Type <u>Sp</u>	
Color <u>Light Brown to Brown</u>	
Odor <u>none</u>	
Depth <u>0-1'</u>	
Number of Samples <u>1</u>	
Comments <u>took at a sand Boil assoc. w/ seep.</u>	



Decontamination	
Equipment: ☒ Hand auger Type <u>AMS</u> ☐ Trowel ☐ Other <u>—</u>	Decontamination Fluids: <u>—</u> ☐ Steam/Hot Water ☒ Methanol ☒ Detergent/water ☐ Hexane ☒ Potable Water ☐ HNO ₃ ; dilution ☒ Deionized Water ☐ Other <u>—</u>

Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MICHIGAN</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D008</u>
Recorded By <u>P. L. L.</u>	Duplicate Number <u>—</u>
Date <u>7/31/93</u>	Checked By <u>—</u>
Site <u>4 drawing of surface water</u>	Date <u>—</u>

Sampling Equipment <u>HAND AUGER, STAINLESS STEEL SPOONS, auger handle w/ extensions</u>	
Sample Type	☐ Soil ☒ <u>Sediment</u> ☐ Rock
Sample Type Description	
USCS Soil Type <u>Sp</u>	
Color <u>lt. Brown</u>	
Odor <u>none</u>	
Depth <u>0-1'</u>	
Number of Samples <u>1</u>	
Comments <u>—</u>	

Sampling Point (sketch):

*not to scale

Decontamination	
Equipment: ☒ Hand auger	Decontamination Fluids: <u>—</u>
Type <u>AMS</u>	☐ Steam/Hot Water
☐ Trowel	☒ Detergent/water
☐ Other <u>—</u>	☒ Potable Water
	☒ Deionized Water
	☒ Methanol
	☐ Hexane
	☐ HNO ₃ ; dilution
	☐ Other <u>—</u>

Soil/Sediment Sampling Record

Project Name <u>Alpena CRIC, MIANG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D009</u>
Recorded By <u>P. Lag</u>	Duplicate Number _____
Date <u>7/31/93</u>	Checked By _____
Site <u>4 drawing of surface water</u>	Date _____

Sampling Equipment HAND Auger, Stainless Steel Spools, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type SP

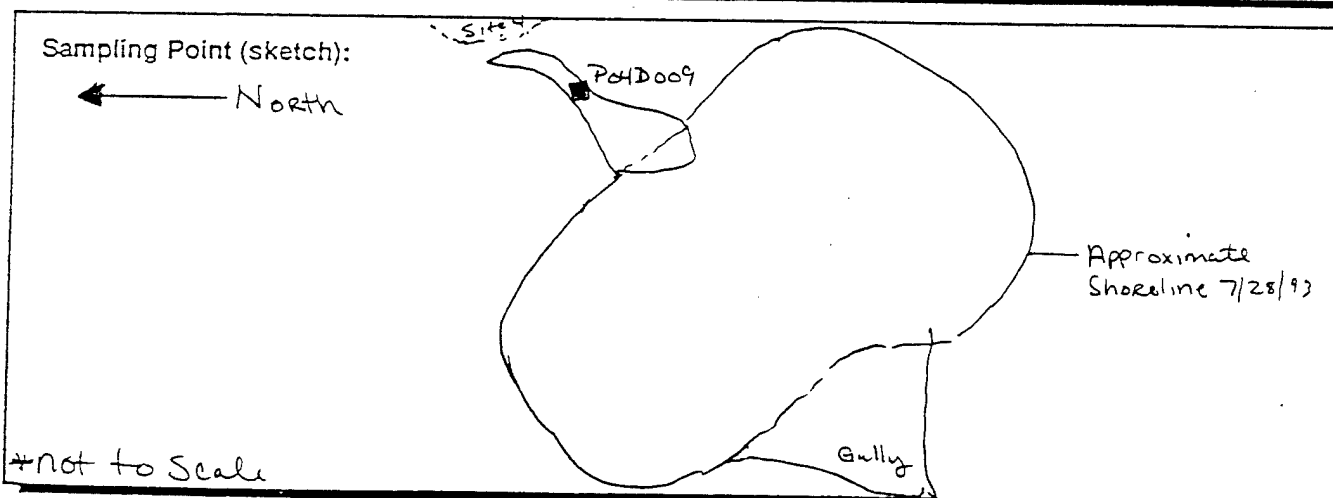
Color Lt. Brown - Brown

Odor none

Depth 0-1' - A sample, ~3' B sample

Number of Samples 2

Comments P04D009A collected at 0-1' and P04D009B collected @ 3'



Decontamination		Decontamination Fluids: _____	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other _____		☒ Potable Water	☐ HNO ₃ : dilution
		☒ Deionized Water	☐ Other _____

Soil/Sediment Sampling Record

Project Name <u>Alpena CRTC, MIANG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D010 (and B)</u>
Recorded By <u>P. Lag</u>	Duplicate Number <u>—</u>
Date <u>7/31/93</u>	Checked By <u>—</u>
Site <u>4 drawing of surface water</u>	Date <u>—</u>

Sampling Equipment <u>HAND Auger, Stainless Steel Spools, auger handle w/ extensions</u>	
Sample Type	Soil <u>Sediment</u> Rock
Sample Type Description	<u>0-1'</u> <u>3.5-4'</u>
USCS Soil Type	<u>SP</u> <u>SP</u>
Color	<u>Lt Brown - Brown</u> <u>Gray Brown</u>
Odor	<u>none</u> <u>none</u>
Depth	<u>0-1'</u> <u>3.5-4'</u>
Number of Samples	<u>1</u> <u>1</u>
Comments	<u>P04D010A</u> <u>P04D010B</u>

Sampling Point (sketch):

*Not to Scale

Decontamination	
Equipment: ☒ Hand auger	Decontamination Fluids: <u>—</u>
Type <u>—</u>	☐ Steam/Hot Water ☒ Methanol
☐ Trowel	☒ Detergent/water ☐ Hexane
☐ Other <u>—</u>	☒ Potable Water ☐ HNO ₃ : dilution
	☒ Deionized Water ☐ Other <u>—</u>

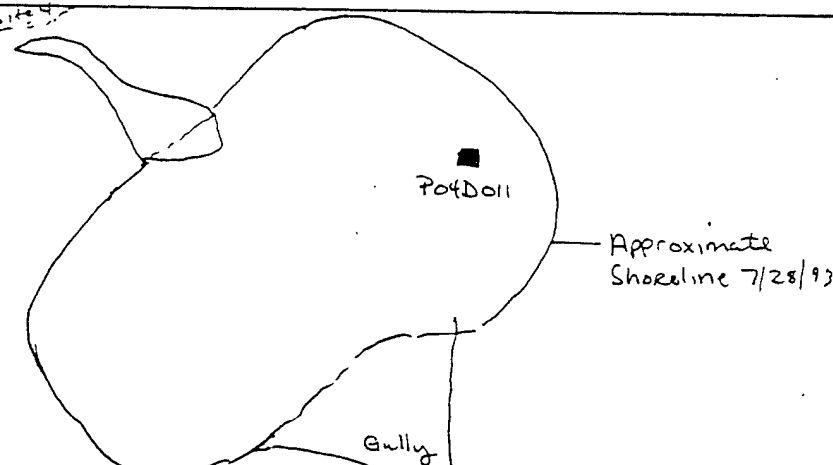
Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MIAWG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D011</u>
Recorded By <u>P. Lay</u>	Duplicate Number <u>-</u>
Date <u>8/1/93</u>	Checked By <u>-</u>
Site <u>4 drawing of surface water</u>	Date <u>-</u>

Sampling Equipment <u>Hand Auger, Stainless Steel Spoons, auger handle w/ extensions</u>	
Sample Type	Soil Sediment Rock
Sample Type Description	
USCS Soil Type <u>SP</u>	
Color <u>Gry Brown - Brown</u>	
Odor <u>none</u>	
Depth <u>in @ 5' of water 1' from bottom sed</u>	
Number of Samples <u>1</u>	
Comments <u>-</u>	

Sampling Point (sketch):

← North



*Not to Scale

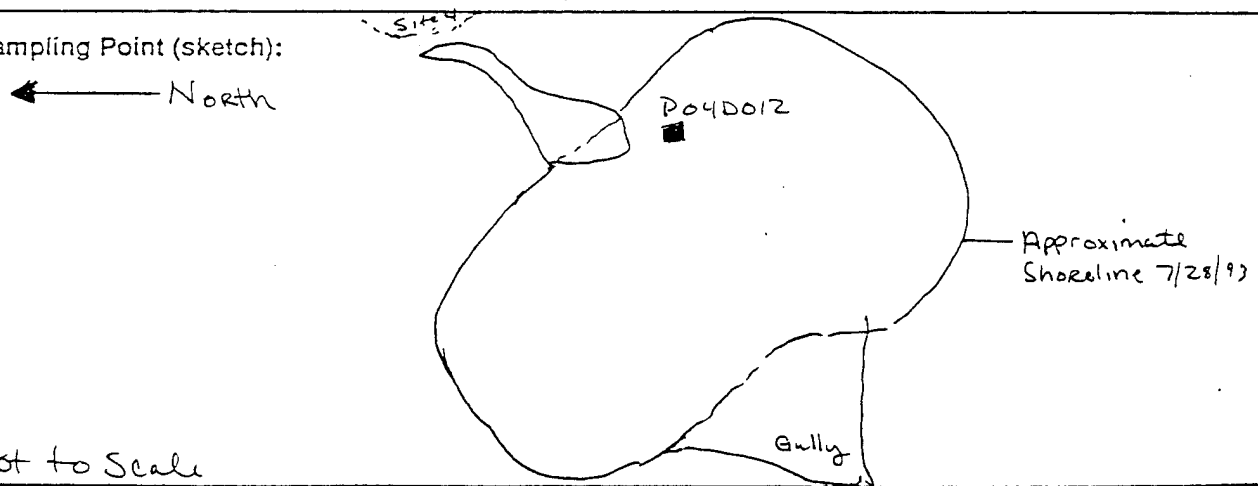
Decontamination	
Equipment: ☒ Hand auger Type <u>AMS</u> ☐ Trowel ☐ Other <u>-</u>	Decontamination Fluids: <u>-</u> ☐ Steam/Hot Water ☒ Detergent/water ☒ Potable Water ☒ Deionized Water ☒ Methanol ☐ Hexane ☐ HNO₃ ; dilution ☐ Other <u>-</u>

Soil/Sediment Sampling Record

Project Name <u>Alpena CRIC, MIAUG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D012</u>
Recorded By <u>P. Lay</u>	Duplicate Number <u>—</u>
Date <u>8/1/93</u>	Checked By <u>—</u>
Site <u>4 drawing of surface water</u>	Date <u>—</u>

Sampling Equipment <u>HAND Auger, STAINLESS Steel SPOONS, auger handle w/ extensions</u>			
Sample Type	Soil	<u>Sediment</u>	Rock
Sample Type Description			
USCS Soil Type <u>Sp</u>			
Color <u>Grey Brown/Drum</u>			
Odor <u>None</u>			
Depth <u>~5' of water 1' of Bottom sed</u>			
Number of Samples <u>1</u>			
Comments <u>—</u>			

Sampling Point (sketch):



*Not to Scale

Decontamination	
Equipment: ☒ Hand auger Type <u>—</u> ☐ Trowel ☐ Other <u>—</u>	Decontamination Fluids: <u>—</u> ☐ Steam/Hot Water ☒ Methanol ☒ Detergent/water ☐ Hexane ☒ Potable Water ☐ HNO ₃ ; dilution ☒ Deionized Water ☐ Other <u>—</u>

Soil/Sediment Sampling Record

Project Name <u>Alpena CRTC, MIANIG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D013</u>
Recorded By <u>PAL</u>	Duplicate Number <u>—</u>
Date <u>8/1/93</u>	Checked By <u>—</u>
Site <u>4 drawing of surface water</u>	Date <u>—</u>

Sampling Equipment HAND AUGER, STAINLESS STEEL SPOONS, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type SP

Color Brown

Odor none

Depth at bottom of sinkhole ~1' of sed.

Number of Samples 1

Comments —

Sampling Point (sketch):

← North

not to scale

Decontamination		Decontamination Fluids: <u>—</u>	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other <u>—</u>		☒ Potable Water	☐ HNO ₃ : dilution
		☒ Deionized Water	☐ Other <u>—</u>

Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, M1ANG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D014</u>
Recorded By <u>PALay</u>	Duplicate Number <u>—</u>
Date <u>8/1/93</u>	Checked By <u>—</u>
Site <u>4 drawing of surface water</u>	Date <u>—</u>

Sampling Equipment <u>HAND Auger, Stainless Steel spoons, auger handle w/ extensions</u>	
Sample Type	Soil ☐ <u>Sediment</u> ☒ Rock ☐
Sample Type Description	
USCS Soil Type <u>Sp</u>	
Color <u>Brown</u>	
Odor <u>none</u>	
Depth <u>1' of sediment</u>	
Number of Samples <u>1</u>	
Comments <u>—</u>	

Sampling Point (sketch):

*not to scale

Decontamination	
Equipment: ☒ Hand auger	Decontamination Fluids: <u>—</u>
Type <u>AMS</u>	☐ Steam/Hot Water
☐ Trowel	☒ Detergent/water
☐ Other <u>—</u>	☒ Potable Water
	☒ Deionized Water
	☒ Methanol
	☐ Hexane
	☐ HNO ₃ : dilution
	☐ Other <u>—</u>

Soil/Sediment Sampling Record

Project Name <u>Alpena CRTC, MIAUG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D015</u>
Recorded By <u>PAL</u>	Duplicate Number <u>P04D115</u>
Date <u>8/1/93</u>	Checked By _____
Site <u>4 drawing of surface water</u>	Date _____

Sampling Equipment HAND AUGER, STAINLESS STEEL SPEEDS, AUGER HANDLE w/ EXTENSIONS

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type Sp w/ organics

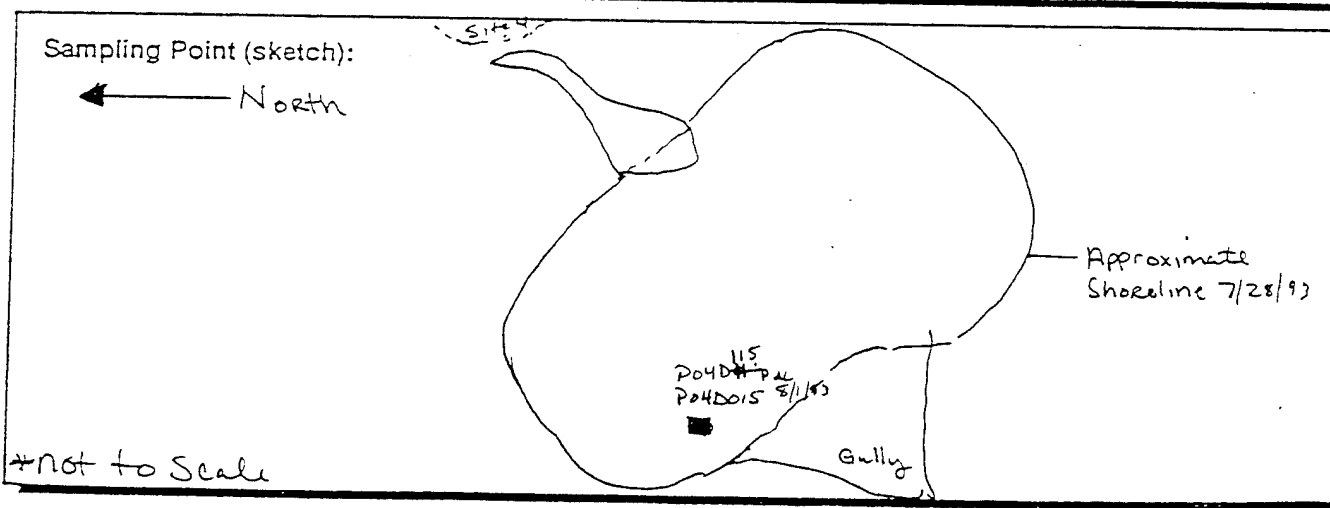
Color Brown

Odor _____

Depth water depth ~ 3.5' - 1' of sediment

Number of Samples 2

Comments _____



Decontamination		Decontamination Fluids: _____	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other _____		☒ Potable Water	☐ HNO ₃ : dilution
		☒ Deionized Water	☐ Other _____

Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MIANG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>PO4D016</u>
Recorded By <u>P. Lay</u>	Duplicate Number <u>-</u>
Date <u>8/1/93</u>	Checked By <u>-</u>
Site <u>4 drawing of surface water</u>	Date <u>-</u>

Sampling Equipment <u>HAND AUGER, STAINLESS STEEL SPEARS, AUGER HANDLE w/ EXTENSIONS</u>			
Sample Type	Soil	<u>Sediment</u>	Rock
Sample Type Description			
USCS Soil Type <u>Sp</u>			
Color <u>dark gray</u>			
Odor <u>strong, faded odor - sewage-like</u>			
Depth <u>9' of water</u> <u>1' of sed.</u>			
Number of Samples <u>1</u>			
Comments <u>-</u>			

Sampling Point (sketch):

← North

PO4D016

Approximate Shoreline 7/28/93

Gully

*not to scale

Decontamination		Decontamination Fluids: _____	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other _____		☒ Potable Water	☐ HNO ₃ : dilution
		☒ Deionized Water	☐ Other _____

Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MIAWG</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P04D017</u>
Recorded By <u>PAL</u>	Duplicate Number <u> </u>
Date <u>8/1/93</u>	Checked By <u> </u>
Site <u>4 drawing of surface water</u>	Date <u> </u>

Sampling Equipment Hand Auger, Stainless Steel Spoons, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type SC w/ organics

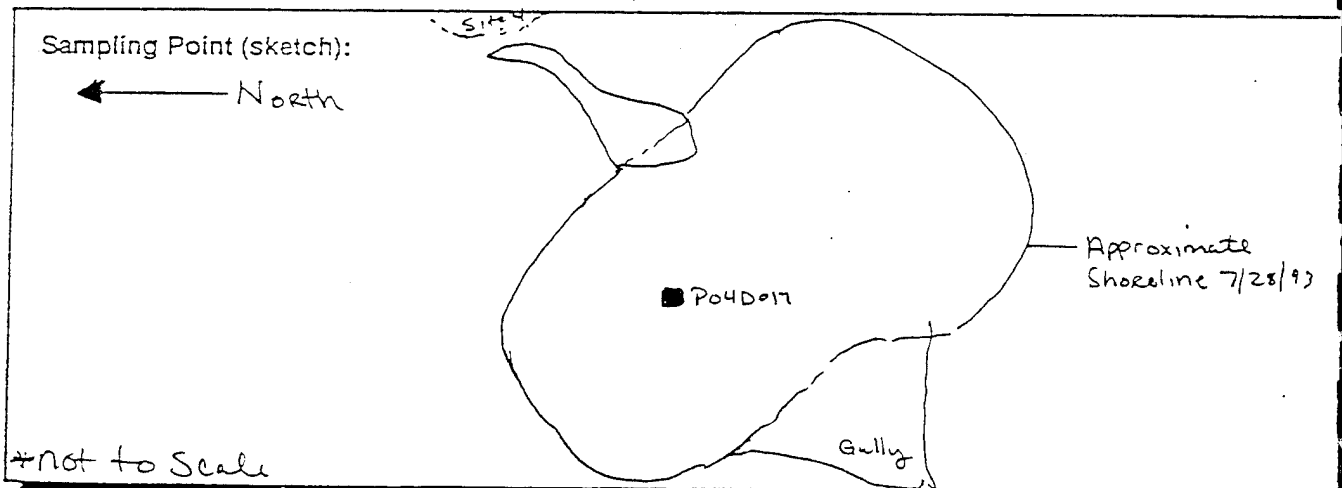
Color Gry-Brown

Odor Fetid odor - sewage smell

Depth 13' of water 2.8' of sed.

Number of Samples 1

Comments



Decontamination		Decontamination Fluids: <u> </u>	
Equipment: ☒ Hand auger		☐ Steam/Hot Water	☒ Methanol
Type <u>AMS</u>		☒ Detergent/water	☐ Hexane
☐ Trowel		☒ Potable Water	☐ HNO ₃ : dilution
☐ Other <u> </u>		☒ Deionized Water	☐ Other <u> </u>

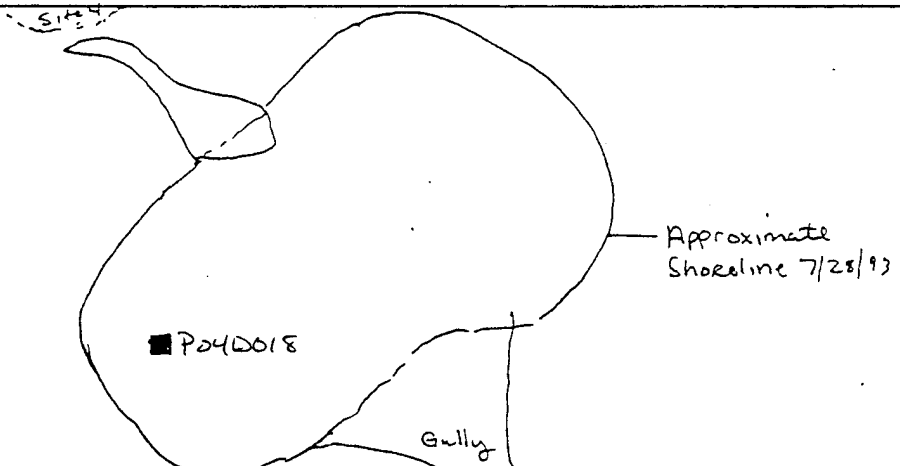
Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MICHIGAN</u>	Project Number <u>931800-12</u>
Location <u>Sinkhole, SW of Site 4</u>	Sample Number <u>P040018</u>
Recorded By <u>PAL</u>	Duplicate Number <u> </u>
Date <u>8/1/93</u>	Checked By <u> </u>
Site <u>4 drawing of surface water</u>	Date <u> </u>

Sampling Equipment <u>HAND AUGER, STAINLESS STEEL SPOOLS, auger handle w/ extensions</u>			
Sample Type	Soil	<u>Sediment</u>	Rock
Sample Type Description			
USCS Soil Type <u>SC w/ organics</u>			
Color <u>dark grey</u>			
Odor <u>Slight hydrocarbon odor</u>			
Depth <u>19' of water</u>			
Number of Samples <u>1</u>			
Comments <u> </u>			

Sampling Point (sketch):

← North



*Not to Scale

Decontamination		Decontamination Fluids: <u> </u>	
Equipment: ☒ Hand auger Type <u>AMS</u> ☐ Trowel ☐ Other <u> </u>	☐ Steam/Hot Water ☒ Detergent/water ☒ Potable Water ☒ Deionized Water	☒ Methanol ☐ Hexane ☐ HNO ₃ : dilution ☐ Other <u> </u>	

Soil/Sediment Sampling Record

Project Name <u>Alpena CRTC MIANG</u>	Project Number <u>931500-12</u>
Location <u>Phelps Collins ANG - Landfill</u>	Sample Number <u>P06D01</u>
Recorded By <u>PHL</u>	Duplicate Number _____
Date <u>8/17/93</u>	Checked By _____
Site <u>LF 6</u>	Date _____

Sampling Equipment HAND Auger, Stainless Steel Spools, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type Sand and organic muck

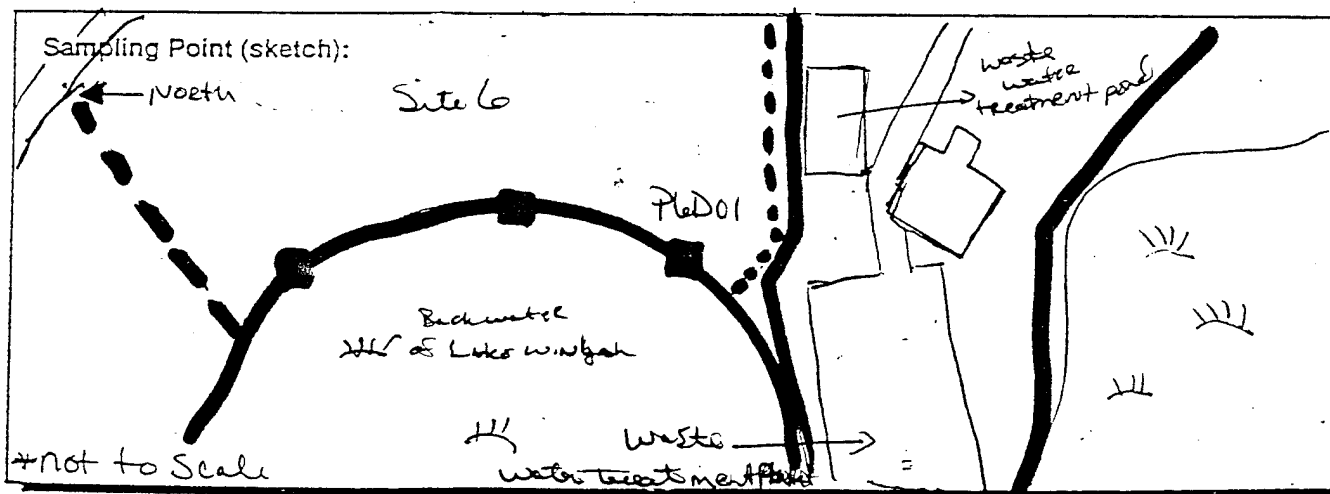
Color Black

Odor Fetid - sewage

Depth 0-1'

Number of Samples 1

Comments _____



Decontamination		Decontamination Fluids: _____	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other _____		☒ Potable Water	☐ HNO ₃ ; dilution
		☒ Deionized Water	☐ Other _____

Soil/Sediment Sampling Record

Project Name <u>Alpena CRTIC MIAWG</u>	Project Number <u>931800-12</u>
Location <u>Phelps Collins ANG - Landfill</u>	Sample Number <u>P6D02</u> <u>8/17/93</u>
Recorded By <u>PH Lay</u>	Duplicate Number _____
Date <u>8/17/93</u>	Checked By _____
Site <u>LF 6</u>	Date _____

Sampling Equipment HAND Auger, Stainless Steel Spools, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type SC w/ asphalt and other fill material

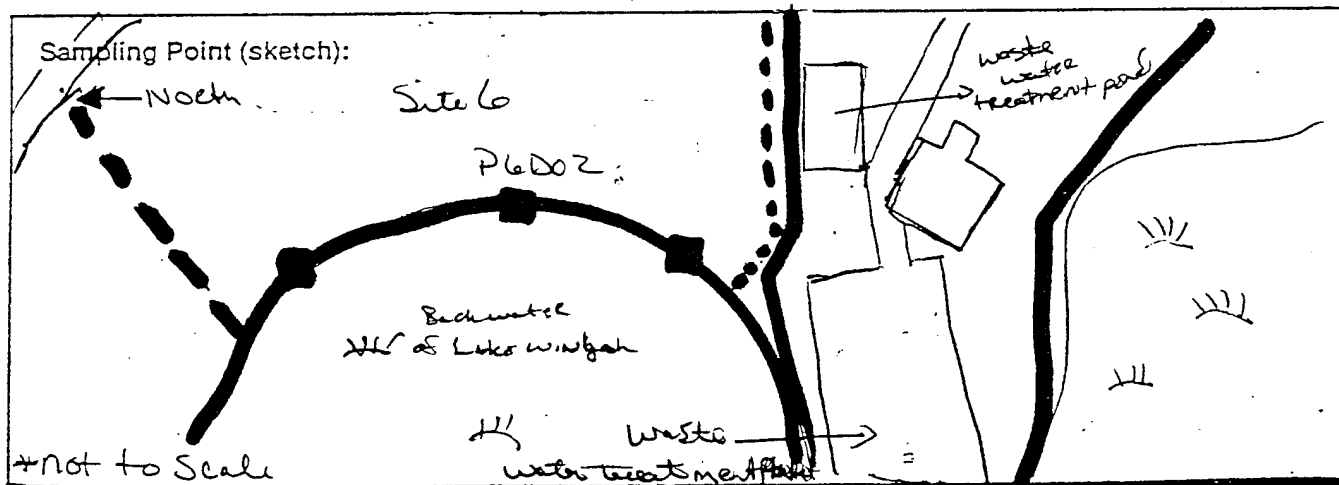
Color Blk

Odor Sated

Depth 0-1'

Number of Samples 1

Comments _____



Decontamination		Decontamination Fluids: _____	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other _____		☒ Potable Water	☐ HNO ₃ ; dilution
		☒ Deionized Water	☐ Other _____

Soil/Sediment Sampling Record

Project Name <u>Alpena LRTC, MIA NG</u>	Project Number <u>931800-12</u>
Location <u>Phelps Collins ANG - Land fill</u>	Sample Number <u>P6D03</u>
Recorded By <u>P+Lay</u>	Duplicate Number <u>P6D04</u>
Date <u>9/17/93</u>	Checked By _____
Site <u>LF 6</u>	Date _____

Sampling Equipment HAND Auger, Stainless Steel Spools, auger handle w/ extensions

Sample Type Soil Sediment Rock

Sample Type Description

USCS Soil Type Sand and clay w/ organics

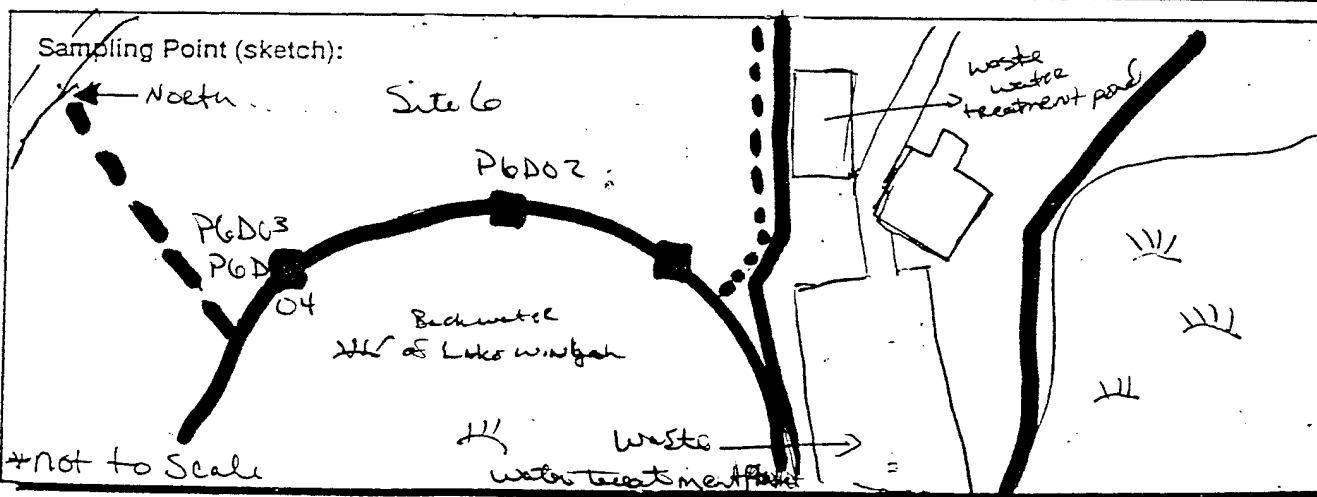
Color BLK

Odor Fetid

Depth 0-1'

Number of Samples 2

Comments _____



Decontamination		Decontamination Fluids: _____	
Equipment: ☒ Hand auger	Type <u>AMS</u>	☐ Steam/Hot Water	☒ Methanol
☐ Trowel		☒ Detergent/water	☐ Hexane
☐ Other _____		☒ Potable Water	☐ HNO ₃ : dilution
		☒ Deionized Water	☐ Other _____

**Appendix G: Monitoring Well Development
and Sampling Forms**

Well Development/Purge Log

1 ft length of 4" = 0.087 ft ³ or 0.65 gal	Recorded By <u>DF Jayne</u> Checked By <u>PLC</u>	Date <u>8/28/93</u> Date <u>9/22/93</u>	Form F-1003 9/1/91
1 ft length of 2" = 0.022 ft ³ or 0.16 gal			

1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 gal

Pump Bore

Pump Bore

Project Name	Phelps Collins ANG		Project No.	931500	
PID/FID Readings	— (Ambient)		— (Well Mouth)		
Static Levels	— (Product)		4.14' (Water)		
Pump ☒ / Bail ☐ Rate	—		Total Gal. Extracted		20 gals
Water Column Length	8.86'		Well Volumes Extracted		20.14
Disposition of Discharge Water	Containerized		and sampled for disposal		11/14/2003
Specific Capacity	—		(gpm/ft. drawdown) After		— Hrs.

[illegible]

Radius 1 ft length of $\Delta^* = 0.087 \text{ ft}^3$ or 0.65 gal

1 ft length of 2" = 0.022 ft³ or 0.16 gal

Recorded By DFJaww

Checked By FLC

Date _____ Form F-1003

15/191

Well Development/Purge Log

Equipment Information

Bailer No. _____

Pump No. _____

Interface Probe No. _____

Sounder No. _____

pH Meter No. HAZCO # 2015

Conductivity Meter No. ET

Thermometer No. HAZCO # 2015

Well Information	
Number	S1 mw 3
Location	Silver
Datum	Tec/actch
Elev. Datum Point	
Ground Elev.	3.79'
Well Diameter	3"
Well Depth	13.18'
Well Material	PVC

Project Name Phelps Collins Ave Project No. 931800
 PFI/FID Readings — (Ambient) — (Well Mouth)
 Static Levels — (Product) 3.79' (Water)
 Pump ☒ / Bail ☐ Rate — Total Gal. Extracted 18
 Water Column Length 9.39' Well Volumes Extracted 12
 Disposition of Discharge Water Contained and Sampled For disposal
 Specific Capacity — (gpm/ft. drawdown) After — Hrs. —

[illegible]

Notes: 1 ft length of 4" = 0.087 lb3 or 0.65 gal
1 ft length of 2" = 0.022 lb3 or 0.16 gal

Recorded By DP Jayne Date 8/28/93 Form F. 1003
Checked By PLCag Date 9/22/93 9/1/91

Well Development/Purge Log

Project Name Phelps Collins Ave Project No. _____
 PIP/FID Readings _____ (Ambient) _____ (Well Mouth)
 Static Levels _____ (Product) 2.34' _____ (Water)
 Pump ☐ / Bail ☒ Rate _____ Total Gal. Extracted 20
 Water Column Length 10.9 Well Volumes Extracted 11.5
 Disposition of Discharge Water containerized and sampled for disposal
 Specific Capacity _____ (gpm/ft. drawdown) After _____ Hrs. _____

Factors: 1 ft length of 4" = 0.087 fl.3 or 0.65 gal
1 ft length of 2" = 0.022 fl.3 or 0.16 gal

Equipment Information

Bailer No. _____

Pump No. _____

Interface Probe No. _____

Sounder No. _____

pH Meter No. _____

Conductivity Meter No. _____

Thermometer No. _____

Well Information	
Number	511106
Location	Site 1
Datum	T.O.C.
Elev. Datum Point	417'
Ground Elev.	2"
Well Diameter	14.9'
Well Depth	
Well Material	

Project Name Philips Collins AN6 Project No. 93/800-12
 PID/FID Readings _____ (Ambient) _____ (Well Mouth)
 Static Levels _____ (Product) 4.17 _____ (Water)
 Pump ☒ / Bail ☐ Rate Enter sampler Total Gal. Extracted 21
 Water Column Length _____ Well Volumes Extracted 12
 Disposition of Discharge Water Contained in 55 gallon drum
 Specific Capacity _____ (gpm/ft. drawdown) After _____ Hrs.

[illegible]

Radius	1 ft length of 4" = 0.087 lb3	or 0.65 gal	note: water had noticeable hydrocarbon odor
	1 ft length of 2" = 0.022 lb3	or 0.16 gal	

Recorded By DPayne Date 9/10/93
Checked By Peterch Lay Date 9/22/93

[illegible]

1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 gal

Recorded By DFayn Date 9/10/93
Checked By HL

Well Development/Purge Log

[illegible]

Note: we are in well next to this is 4.42.

1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 galForm F-1003
9/1/91

Date 9/12/93

Date 9/22/93

Well Development/Purge Log

Equipment Information

Bailer No. _____

Pump No. _____

Interface Probe No. _____

Sounder No. _____

pH Meter No. ^{DP-3} ~~HOZE~~ # 2015

Conductivity Meter No. ET

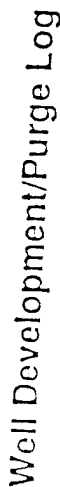
Thermometer No. 2015 ANZCO

[illegible]

Notes. 1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 gal

Recorded By DF Jayne
Checked By FA Long

Date 6/28/93

[illegible]

Notes: 1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 gal

Equipment Information

Bailer No. _____

Pump No. _____

Interface Probe No. _____

Sounder No. HAZCO # 0555

pH Meter No. TCTC

Conductivity Meter No. TCTC

Thermometer No. TCTC

Well Information

Number	CE3 MW7
Location	County Garage
Datum	TOC
Elev. Datum Point	14.51'
Ground Elev.	2"
Well Diameter	22.60'
Well Depth	
Well Material	

Project Name Phelps Collins AN6 Project No. 931800-12
 PID/FID Readings — (Ambient) — (Well Mouth)
 Static Levels — (Product) 14.5' (Water)
 Pump ☒ / Bail ☐ Rate GroundFus Total Gal. Extracted 215
 Water Column Length 8.09' Well Volumes Extracted —
 Disposition of Discharge Water Containerized in 55 gallon drum
 Specific Capacity — (gpm/ft. drawdown) After — Hrs. —

[illegible]

Notes: 1 ft length of 4" = 0.087 fl3 or 0.65 gal
1 ft length of 2" = 0.022 fl3 or 0.16 gal

Recorded By DR Payne Date 9/16/93 Form F: 1003
Checked By _____ Date _____ 9/1/91

[illegible]

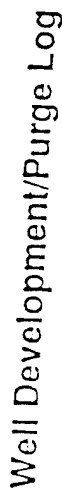
Notes: 1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 gal

Well Development/Purge Log

Project Name Phelps Collins ANG Project Number 14200#3083 Page 1 of 1
 Well No. SFS MW 6 Datum Point Static Water Level 6.78 Date 8/25/93
 Location GroundFuss Pump Elevation of Datum Point 2" Recorded By JSJ
 Dev/Purge Method GroundFuss Pump Static Water Level 6.78 Thermometer Number 2" Checked By JSJ
 Equipment 15.4 Well Depth 15.4 Casing Diameter 2" Date 8/25/93
 Water Column 15.4 Average Discharge Rate 2"
 Disposition of Discharge Water Well Volumes
 Specific Capacity gpm/ft. of draw down after hours

Time (24 hr.)	Flow Rate	Water Temp. In C°	pH	Cond. µmhos/cm	Turbidity NTU	Gallons Dev./Purge Before Meas.	Water Level (feet)	Remarks (e.g. clarity)
1040	~3gpm	28.7	7.58	0.322	4000		—	muddy
1045	1.5gpm	30.2	7.62	0.290	+1000	-15	—	muddy
1049	1.5gpm	26.5	7.52	0.316	+1000	-18	—	muddy
1054	1.5gpm	27.73	7.57	0.309	+1000	25.5	—	muddy
1058	1.5gpm	27.2	7.6	0.318	+1000	28.0	—	muddy
1102	1.5gpm	29.8	7.45	0.343	+1000	31	—	slightly clear
1105	1.5gpm	25.1	7.61	0.330	1000	35.5	—	slightly clear
1112	1.5gpm	25.4	7.52	0.354	549	46	—	clear
1114							7.36'	
1115							7.10'	
1116							7.06'	
1117							7.02'	

Notes: 1 ft length of 4" = 0.087 ft³ or 0.65 gal
 1 ft length of 2" = 0.022 ft³ or 0.16 gal

[illegible]

Notes: 1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 gal

Well Development/Purge Log

Project Name	pelps Collins A16		Project No	93/800-12	
PID/FID Readings	(Ambient)		(Well Mouth)		
Static Levels	(Product)		(Water)		
Pump ☒ /Ball ☐ Rate	Groundfos		Total Gal. Extracted	22.5	
Water Column Length			Well Volumes Extracted		
Disposition of Discharge Water	Contingurized in a 55 gallon drum				
Specific Capacity	(gpm/ft. drawdown) After		Hrs.		

[illegible]

1 ft length of 4" = 0.087 lb3 or 0.65 gal
 1 ft length of 2" = 0.022 lb3 or 0.16 gal

Recorded By DFG Date 9/13/93

Checked By PHC Date 9/22/93

Form F-1003 9/1/91

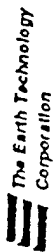
Well Development/Purge Log

[illegible]

Factor: 1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 gal

Recorded By DFJ/ene Date 9/12/93 Form F-1003 9/1/91

Checked By PHC/ky Date 9/21/93



Well Development/Purge Log

Project Name Phelps Collins AN6 Project Number 931800 Page 1 of 1
 Well No. LFE mw 4 Date 8/25/93
 Location Landfill 6 pH Meter Number Harco # 3083
 Dev/Purge Method 2" Grundfos Rediflow Conductivity Meter Number " Recorded By DFE
 Equipment 3/4" pipe Thermometer Number " Checked By "
 Water Column 7.76' Casing Diameter 2" Date "
 Disposition of Discharge Water " Average Discharge Rate 1.5 gal/min
 Specific Capacity " Well Volumes "

Time (24 hr.)	Flow Rate	Water Temp. In C°	pH	Cond. µmhos/cm	Turbidity NTU	Gallons Dev/Purge Before Meas.	Water Level (feet)	Remarks (e.g. clarity)
1414	~1.5g	24.5°C	7.30	.289	+1000	0	12.24	Muddy
1419	1.5g	26.7°C	7.22	.275	+1000	8g	—	AS
1424	1.5g	27.3°C	7.22	.274	+1000	15g	—	AS
1429	1.5g	26.7°C	7.21	.272	+1000	23g	—	AS
1434	1.5g	26.8°C	7.21	.273	+1000	30g	—	Sl. less muddy
1439	1.5g	26.7°C	7.21	.272	398	38g	—	less turb.
1444	1.5g	26.6°C	7.22	.274	176	45g	—	less turb.
1447								13.12' H ₂ O level
1448								12.96' H ₂ O lev.
1449								12.80' H ₂ O lev.

Notes: 1 ft length of 4" = 0.087 ft³ or 0.65 gal
 1 ft length of 2" = 0.022 ft³ or 0.16 gal

7.76 x .16 =

Project Name Phelps Collins AN6 Project No. 931800
 PID/FID Readings — (Ambient) — (Well Mouth)
 Static Levels — (Product) 11.17' (Water)
 Pump ☒ Ball ☐ Rate 600 gpd Total Gal. Extracted 35
 Water Column Length _____ Well Volumes Extracted _____
 Disposition of Discharge Water Contained in poly tank
 Specific Capacity _____ (gpm/ft. drawdown) After _____ Hrs. _____

[illegible]

Notes: 1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 gal

Recorded By Dr. Jayal
Checked By _____

Date 8/25/93 Form F-1003
Date _____ 3/15/92



Small

DO NOT WRITE IN THESE SPACES

Well Volumes

Date _____

[illegible]

Notes: 1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 gal

[illegible]

Figure 3-1

[illegible]

Notes: 1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 gal



Flow rate not constant.

- water temp high due to water circulating through the pump.

Notes: 1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 gal

Well Development/Purge Log

Project Name Phelps Collins AN6 Project No. 931800

PID/FID Readings _____ (Ambient) _____ (Well Mouth)

Static Levels _____ (Product) 11' (Water)

Pump ☒ / Ball ☐ Rate 1 Liter/minute Total Gal. Extracted 15

Water Column Length 4' Well Volumes Extracted 23.5

Disposition of Discharge Water Contained in poly tank

Specific Capacity _____ (gpm/ft. drawdown) After _____ Hrs. _____

Well Information

Number	LF6 MW 10
Location	site 6
Datum	TAC
Elev. Datum Point	
Ground Elev.	11'
Well Diameter	2"
Well Depth	15'
Well Material	PVC

Equipment Information

Bailer No. _____

Pump No. _____

Interface Probe No. _____

Sounder No. _____

pH Meter No. _____

Conductivity Meter No. _____

Thermometer No. _____

[illegible]

Notes: 1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft³ of 2" = 0.022 ft³ or 0.16 gal

Recorded By MSeyne
Checked By PHCay

Date 9/14/93
Date 9/22/93

Form F-1003
3/15/92

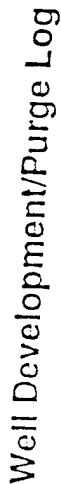
Well Development/Purge Log

[illegible]

1 ft length of 4" = 0.087 ft³ or 0.65 gal
 1 ft length of 2" = 0.022 ft³ or 0.16 gal

Recorded By Dr. Jayne Date 7/10/93
Checked By Phyllis Date 9/22/93

Form F-1003
2/1/91



Page _____ of _____

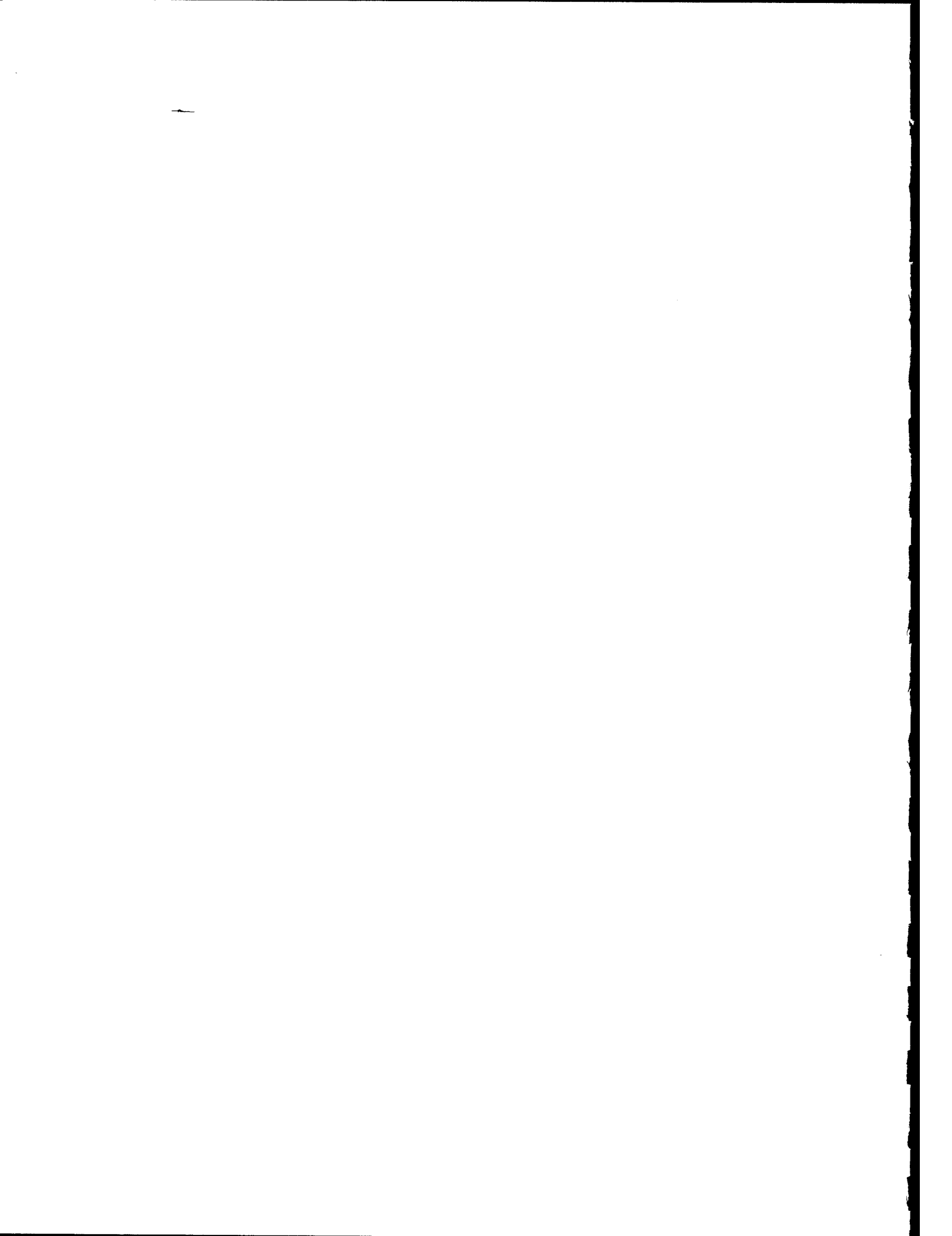
pH Meter Number HW250 # 2015
 Conductivity Meter Number FEIC
 Thermometer Number HW250 # 201
 Casing Diameter 2'
 Average Discharge Rate _____
 Well Volumes _____

Project Number 931800
 Datum Point TCC
 Elevation of Datum Point _____
 Static Water Level 14.6
 Well Depth 23.5
 Total Gallons Extracted 35
 down after _____ hours

Specific Capacity _____ gpm/ft. of draw down after _____ hours

[illegible]

Notes: 1 ft length of 4" = 0.087 ft³ or 0.65 gal
1 ft length of 2" = 0.022 ft³ or 0.16 gal



Monitoring Well Sampling Forms

GROUNDWATER SAMPLING

Sample ID: P1mw1gw4

PROJECT NAME Phelps Collins ANG RT JOB NO: 931800-12 DATE: 9/14/93
 WELL NO. MW1 LOCATION Site 1 Old P6L
 WEATHER CONDITIONS Cool, Rainy AMBIENT TEMP: _____
 PERSONNEL PHCag, JF DF Jayne
 REVIEWED BY: DEF

EQUIPMENT USED: Bailer, rope, hand pump assembly, filter

PURGING DEVICE

Type Device? Bailer
 How was the device decontaminated? Alconox+DI, DI Rinse
 How was the line decontaminated? dedicated
 Which well was previously purged? P9mw6

SAMPLING DEVICE

Type Device? Bailer
 How was the device decontaminated? Alconox+DI, DI Rinse
 How was the line decontaminated? dedicated
 Which well was previously sampled? P9mw6

INITIAL WELL VOLUME

Well diameter (in.) 2"
 Stickup (ft.) - 0.3
 Depth to bottom of well (ft.) 12.85'
 Depth to water surface (ft.) 1.65'
 Length of water (ft.) 11.2'
 Volume of water (ft³) 0.2464
 (gal.) 1.8
 Amount of sediment at bottom of well (ft.) -
 LNAPL (ft.) - DNAPL (ft.) -

PURGING

Time started 2120 Finished 2140
 Volume purged 10
 Comments on Well Recovery immediate
 Additional Comments -
 Samples Collected: Start 1415 Finish 1430

IN-SITU TESTING

Date:	9/14/93	9/14/93	9/14/93				
Time:	2120	2130	2140				
Water Level	1.65	-	1.66				
Well Volume Purged (gal.)	0	5	10				
Turbidity	SI	mod	mod				
Odor	SI.	SI.	SI				
Organic Vapor (ppm)	-	-	-				
pH (units)	unable to calibrate						
Conductivity (μ mhos)	PH and conductivity						
Water Temperature (°C)	62.5	63.4	62.8				

Notes:

1 ft. length of 4"

= 0.087 ft³ or 0.65 gal.

1 ft. length 2" = 0.022 ft³ or 0.16 gal

Turbidity choices:

clear, turbid, opaque

Revision Date: 2-8-91

GROUNDWATER SAMPLING

Sample ID: P1mw2Gw4

PROJECT NAME Phelps Collins ANG RI JOB NO: 931800-12 DATE: 9/2/93
 WELL NO. MW2 LOCATION Site 1
 WEATHER CONDITIONS Sunny, windy AMBIENT TEMP: ~68°F
 PERSONNEL Phelps, J. B. Norton
 REVIEWED BY: DPJ

EQUIPMENT USED: Pump, Bailer, hose, Rope

PURGING DEVICE

Type Device? Pump
 How was the device decontaminated? See logbook
 How was the ^{ROSA} ~~line~~ decontaminated? Alconox + DI wash to rinse
 Which well was previously purged? P2mw7

SAMPLING DEVICE

Type Device? Bailer
 How was the device decontaminated? Alconox + DI wash to rinse
 How was the line decontaminated? dedicated
 Which well was previously sampled? P2mw7

INITIAL WELL VOLUME

Well diameter (in.) 2"
 Stickup (ft.) -0.3'
 Depth to bottom of well (ft.) 12.92
 Depth to water surface (ft.) 3.72
 Length of water (ft.) 9.2
 Volume of water (ft³) 0.2024
 (gal.) ~1.47
 Amount of sediment at bottom of well (ft.) -
 LNAPL (ft.) - DNAPL (ft.) -

PURGING

Time started 1505 Finished 1536
 Volume purged 7.5 gallons
 Comments on Well Recovery Immediate
 Additional Comments -
 Samples Collected: Start 1540
 Finish 1600

IN-SITU TESTING	Date:	9/5/93	9/9/93	9/9/93	9/9/93	9/9/93	9/9/93	9/9/93
	Time:	1505	1509	1516	1522	1530	1536	1600
Water Level		3.72'						3.74'
Well Volume Purged (gal.)		initial	1	2.5	4.5	6	7.5	-
Turbidity		SI.	SI	SI	SI.	SI.	SI	SI
Odor		none	none	none	none	none	none	none
Organic Vapor (ppm)		-	-	-	-	-	-	-
pH (units)		6.63	7.04	7.53	7.76	7.79	7.55	7.58
Conductivity (μ mhos)		349	373	429	430	421	404	401
Water Temperature (°C)		67.9	65.2	65.3	65.2	64.7	64.8	64.2

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

GROUNDWATER SAMPLING

Sample ID: P1mw36w4

PROJECT NAME Phillips Collins ANG RT JOB NO: 931800-12 DATE: 9/10/93
 WELL NO. mw3 LOCATION Site 1
 WEATHER CONDITIONS Sunny, Windy AMBIENT TEMP: ~58°F
 PERSONNEL PKLay and BF Norton
 REVIEWED BY: DFT

EQUIPMENT USED: Pump, Bailor, Rope, hose

PURGING DEVICE	SAMPLING DEVICE
Type Device? <u>Pump</u>	Type Device? <u>Bailor</u>
How was the device decontaminated? <u>See logbook</u>	How was the device decontaminated? <u>see logbook</u>
How was the line decontaminated? <u>See logbook</u>	How was the line decontaminated? <u>dedicated</u>
Which well was previously purged? <u>P3mw4</u>	Which well was previously sampled? <u>P1mw4</u>

INITIAL WELL VOLUME	PURGING
Well diameter (in.) <u>2"</u>	Time started <u>1448</u> Finished <u>1518</u>
Stickup (ft.) <u>-0.3</u>	Volume purged <u>8.5 gals</u>
Depth to bottom of well (ft.) <u>13'</u>	Comments on Well Recovery <u>immediate</u>
Depth to water surface (ft.) <u>3.36'</u>	Additional Comments <u>—</u>
Length of water (ft.) <u>9.64</u>	
Volume of water (ft ³) <u>6.212</u>	
(gal.) <u>~1.54</u>	
Amount of sediment at bottom of well (ft.) <u>—</u>	Samples Collected: Start <u>1520</u>
LNAPL (ft.) <u>—</u> DNAPL (ft.) <u>—</u>	Finish <u>1530</u>

IN-SITU TESTING	Date: <u>9/10/93</u>	<u>9/10/93</u>	<u>9/10/93</u>	<u>9/10/93</u>	<u>9/10/93</u>		
	Time: <u>1448</u>	<u>1454</u>	<u>1504</u>	<u>1510</u>	<u>1518</u>		
Water Level	<u>3.36</u>				<u>3.37</u>		
Well Volume Purged (gal.)	<u>initial</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>		
Turbidity	<u>none</u>	<u>sl.</u>	<u>sl</u>	<u>sl</u>	<u>sl</u>		
Odor	<u>none</u>	<u>sl</u>	<u>sl</u>	<u>sl</u>	<u>noticeable</u>		
Organic Vapor (ppm)	<u>—</u>						
pH (units)	<u>8.65</u>	<u>7.16</u>	<u>7.77</u>	<u>7.38</u>	<u>7.33</u>		
Conductivity (μ mhos)	<u>962</u>	<u>976</u>	<u>992</u>	<u>979</u>	<u>977</u>		
Water Temperature (°C)	<u>61.3</u>	<u>62.3</u>	<u>60.9</u>	<u>60.6</u>	<u>60.4</u>		

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

GROUNDWATER SAMPLING

Sample ID: P1mw46w4

PROJECT NAME <u>Phelps Collins ANG RT</u>		JOB NO: <u>931800-12</u>	DATE: <u>9/10/93</u>
WELL NO. <u>MW4</u>		LOCATION <u>S+E 1</u>	
WEATHER CONDITIONS <u>Cool, Rainy (Light)</u>		AMBIENT TEMP: <u>~55°F</u>	
PERSONNEL <u>P.H. Lay EBF. Norton</u>			
REVIEWED BY: <u>DFT</u>			
EQUIPMENT USED: <u>Bailer, rope, pump assembly, GAO filter</u>			

PURGING DEVICE	SAMPLING DEVICE
Type Device? <u>Bailer</u>	Type Device? <u>Bailer</u>
How was the device decontaminated? <u>See logbook</u>	How was the device decontaminated? <u>See logbook</u>
How was the line decontaminated? <u>dedicated</u>	How was the line decontaminated? <u>dedicated</u>
Which well was previously purged? <u>FLMWA</u>	Which well was previously sampled? <u>FLMW9</u>

INITIAL WELL VOLUME	PURGING
Weil diameter (in.) <u>2"</u>	Time started <u>1105</u> Finished <u>1125</u>
Stickup (ft.) <u>- 0.3</u>	Volume purged <u>8</u>
Depth to bottom of well (ft.) <u>13.2'</u>	Comments on Well Recovery <u>Immediate</u>
Depth to water surface (ft.) <u>12.54'</u>	
Length of water (ft.) <u>10.66</u>	Additional Comments _____
Volume of water (ft ³) <u>0.23</u>	
(gal.) <u>~ 1.7</u>	
Amount of sediment at bottom of well (ft.) _____	Sample Collected: Start <u>1235</u>
LNAFL (ft.) _____ DNAPL (ft.) _____	Finish <u>1245</u>

IN-SITU TESTING	Date: <u>9/10/92</u>	<u>9/10/93</u>	<u>9/10/93</u>	<u>9/10/93</u>	<u>9/10/93</u>		
Time:	<u>1105</u>	<u>1110</u>	<u>1115</u>	<u>1120</u>	<u>1125</u>		
Water Level	<u>2.54'</u>				<u>2.55</u>		
Well Volume Purged (gal.)	<u>initial</u>	<u>3</u>	<u>5</u>	<u>6.5</u>	<u>8</u>		
Turbidity	<u>SI.</u>	<u>mod</u>	<u>mod</u>	<u>mod</u>	<u>mod</u>		
Odor	<u>sl.</u>	<u>SI.</u>	<u>SI.</u>	<u>2.</u>	<u>SI</u>		
Organic Vapor (ppm)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>		
pH (units)	<u>7.29</u>	<u>7.25</u>	<u>7.19</u>	<u>7.33</u>	<u>7.13</u>		
Conductivity (μ mhos)	<u>271</u>	<u>324</u>	<u>321</u>	<u>299</u>	<u>303</u>		
Water Temperature (°C)	<u>61.0</u>	<u>63.0</u>	<u>63.2</u>	<u>62.3</u>	<u>61.6</u>		

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal 1 ft. length 2" = 0.022 ft³ or 0.16 gal

Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

GROUNDWATER SAMPLING

Sample ID: P1mw06w4

PROJECT NAME Phelps Collins ANG RI JOB NO: 931800-12 DATE: 9/15/93
 WELL NO. m06 LOCATION Site 1
 WEATHER CONDITIONS Rainy, cool AMBIENT TEMP: -50°
 PERSONNEL P. Hays and D. Jagne
 REVIEWED BY: DJT

EQUIPMENT USED: Bailer, rope, pump assembly, Filter

PURGING DEVICE

Type Device? Bailer
 How was the device decontaminated? See logbook
 How was the line decontaminated? dedicated
 Which well was previously purged? Simw1

SAMPLING DEVICE

Type Device? Bailer
 How was the device decontaminated? See logbook
 How was the line decontaminated? dedicated
 Which well was previously sampled? P1mw1

INITIAL WELL VOLUME

Well diameter (in.) 2"
 Stickup (ft.) -2
 Depth to bottom of well (ft.) 14.95
 Depth to water surface (ft.) 4.31
 Length of water (ft.) 10.64'
 Volume of water (ft³) 0.234
 (gal.) 1.7 gals
 Amount of sediment at bottom of well (ft.) -
 LNAPL (ft.) - DNAPL (ft.) -

PURGING

Time started 0940 Finished 1000
 Volume purged 8
 Comments on Well Recovery immediate
 Additional Comments -
 Samples Collected: Start 1952 Finish 2010

IN-SITU TESTING

Date:	9/15/93	9/15/93	9/15/93				
Time:	0940	0950	1000				
Water Level	4.31		4.34				
Well Volume Purged (gal.)	-	4	8				
Turbidity	sl.	mod	very				
Odor	sl.	mod	strong				
Organic Vapor (ppm)	-	-	-				
pH (units)	instrument erratic - unable to calibrate						
Conductivity (μ mhos)	PH and conductivity						
Water Temperature (°C)	62.4	62.1	62.5				

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

GROUNDWATER SAMPLING

Sample ID: Sim116w4
PAC

PROJECT NAME Phelps Collins ANG RT JOB NO: 931800-12 DATE: 9/14/93
WELL NO. MW 11 LOCATION Site 1 Old POL
WEATHER CONDITIONS cool AMBIENT TEMP: PAC 50°F
PERSONNEL PAL & DET
REVIEWED BY: DET

EQUIPMENT USED: Bailer, rope, hand pump assembly, filter

PURGING DEVICE	SAMPLING DEVICE
Type Device? <u>Bailer</u>	Type Device? <u>Bailer</u>
How was the device decontaminated? <u>ALCONDS + DI, DIENSA</u>	How was the device decontaminated? <u>Dedicated from purge</u>
How was the line decontaminated? <u>dedicated</u>	How was the line decontaminated? <u>dedicated</u>
Which well was previously purged? <u>P1MW12</u>	Which well was previously sampled? _____

INITIAL WELL VOLUME	PURGING
Well diameter (in.) <u>2"</u>	Time started <u>0930</u> Finished <u>0950</u>
Stickup (ft.) <u>-2'</u>	Volume purged <u>9.5</u>
Depth to bottom of well (ft.) <u>15'</u>	Comments on Well Recovery <u>immediate</u>
Depth to water surface (ft.) <u>3.58</u>	Additional Comments _____
Length of water (ft.) <u>11.42</u>	_____
Volume of water (ft ³) <u>0.25</u>	_____
(gal.) <u>1.8</u>	_____
Amount of sediment at bottom of well (ft.) <u>-</u>	Samples Collected: Start <u>1452</u>
LNAPL (ft.) <u>-</u> DNAPL (ft.) <u>-</u>	Finish <u>1500</u>

IN-SITU TESTING	Date: <u>9/14/93</u>	<u>9/14/93</u>	<u>9/14/93</u>	_____	_____	_____	_____
	Time: <u>0930</u>	<u>0940</u>	<u>0950</u>	_____	_____	_____	_____
Water Level	<u>3.58</u>	<u>3.59</u>	<u>3.59</u>	_____	_____	_____	_____
Well Volume Purged (gal.)	<u>-</u>	<u>4.5</u>	<u>9.5</u>	_____	_____	_____	_____
Turbidity	<u>none</u>	<u>mod</u>	<u>mod</u>	_____	_____	_____	_____
Odor	<u>none</u>	<u>S1</u>	<u>S1</u>	_____	_____	_____	_____
Organic Vapor (ppm)	<u>-</u>	<u>-</u>	<u>-</u>	_____	_____	_____	_____
pH (units)	<u>4.89</u>	<u>3.54</u>	<u>2.85</u>	<u>obviously is off line</u>	_____	_____	_____
Conductivity (μ mhos)	<u>unable to calibrate for conductivity</u>	_____	_____	_____	_____	_____	_____
Water Temperature (°C)	<u>61.4</u>	<u>62.1</u>	<u>61.6</u>	_____	_____	_____	_____

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

GROUNDWATER SAMPLING

Sample ID: PM12GW4

PROJECT NAME Phelps Collins ANG RT JOB NO: 931800-12 DATE: 9/13/93
 WELL NO. MW12 LOCATION Site 1 old POL
 WEATHER CONDITIONS Cool, rain AMBIENT TEMP: ~52°F
 PERSONNEL PHL
 REVIEWED BY: DEF

EQUIPMENT USED: Bailer, rope, filter, hand pump assembly

PURGING DEVICE

Type Device? Bailer
 How was the device decontaminated? Alconox+DI, DI Rinse
 How was the line decontaminated? dedicated
 Which well was previously purged? P8MW5

SAMPLING DEVICE

Type Device? Bailer
 How was the device decontaminated? Alconox+DI, DI Rinse
 How was the line decontaminated? dedicated
 Which well was previously sampled?

INITIAL WELL VOLUME

Well diameter (in.) 2"
 Stickup (ft.) ~2'
 Depth to bottom of well (ft.) 15
 Depth to water surface (ft.) 3.27'
 Length of water (ft.) 11.73
 Volume of water (ft³) 0.258
 (gal.) 1.9
 Amount of sediment at bottom of well (ft.) -
 LNAPL (ft.) - DNAPL (ft.) -

PURGING

Time started: 1849 Finished 1908
 Volume purged 10
 Comments on Well Recovery immediate
 Additional Comments
 Samples Collected: Start 1430 Finish 1440

IN-SITU TESTING	Date:	9/13/93	9/13/93	9/13/93				
	Time:	1849	1858	1908				
Water Level		3.27	-	3.29				
Well Volume Purged (gal.)		-	5	10				
Turbidity		sl	mod	mod				
Odor		sl.	sl.	sl.				
Organic Vapor (ppm)		-	-	-				
pH (units)		unable to calibrate pH and cond.						
Conductivity (µ mhos)								
Water Temperature (°C)		60.2	60.8	61.4				

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

GROUNDWATER SAMPLING

Sample ID: P1M13Gw4

PROJECT NAME <u>Phelps Collins AUG RT</u>		JOB NO: <u>931800-12</u>		DATE: <u>9/14/93</u>	
WELL NO. <u>MW13</u>		LOCATION <u>Site 1</u>			
WEATHER CONDITIONS <u>cool, Rainy</u>		AMBIENT TEMP: <u>~60°</u>			
PERSONNEL <u>PHLag & DF Jagan</u>					
REVIEWED BY: <u>DEF</u>					
EQUIPMENT USED: <u>Bailer, hand pump assembly, filter</u>					
PURGING DEVICE			SAMPLING DEVICE		
Type Device? <u>Bailer</u>			Type Device? <u>Bailer</u>		
How was the device decontaminated? <u>Alconox + DI, DI Rinse</u>			How was the device decontaminated? <u>Alconox + DI, DI Rinse</u>		
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>		
Which well was previously purged? <u>P1MW11</u>			Which well was previously sampled? <u>P1MW11</u>		
INITIAL WELL VOLUME			PURGING		
Well diameter (in.) <u>2"</u>			Time started <u>1410</u> Finished <u>1422</u>		
Stickup (ft.) <u>~2'</u>			Volume purged <u>8</u>		
Depth to bottom of well (ft.) <u>15.35</u>			Comments on Well Recovery <u>immediate</u>		
Depth to water surface (ft.) <u>5.07</u>			Additional Comments _____		
Length of water (ft.) <u>10.28</u>			_____		
Volume of water (ft ³) <u>0.226</u>			_____		
(gal.) <u>1.6</u>			_____		
Amount of sediment at bottom of well (ft.) <u>-</u>			Samples Collected: Start <u>1545</u>		
LNAPL (ft.) <u>-</u> DNAPL (ft.) <u>-</u>			Finish <u>1600</u>		
IN-SITU TESTING					
Date:	<u>9/14/93</u>	<u>9/14/93</u>	<u>9/14/93</u>	_____	_____
Time:	<u>1410</u>	<u>1416</u>	<u>1422</u>	_____	_____
Water Level	_____	_____	_____	_____	_____
Well Volume Purged (gal.)	<u>-</u>	<u>4</u>	<u>8</u>	_____	_____
Turbidity	<u>SI</u>	<u>SI</u>	<u>mod</u>	_____	_____
Odor	<u>none</u>	<u>SI</u>	<u>SI</u>	_____	_____
Organic Vapor (ppm)	<u>-</u>	<u>-</u>	<u>-</u>	_____	_____
pH (units)	<u>unable to calibrate PA and</u>			_____	_____
Conductivity (μ mhos)	<u>conductivity</u>			_____	_____
Water Temperature (°C)	<u>66.4°</u>	<u>64.4</u>	<u>62.8</u>	_____	_____
Notes: 1 ft. length of 2" = 0.087 m ³ or 0.65 gal. 1 ft. length 2" = 0.022 m ³ or 0.16 gal. Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91					

GROUNDWATER SAMPLING

Sample ID: P1m146W4

PROJECT NAME Phelps Collins AUG RT JOB NO: 931800-12 DATE: 9/15/93
 WELL NO. MW14 LOCATION Site 1 old POL Storage area
 WEATHER CONDITIONS cool, Raining AMBIENT TEMP: ~50°F
 PERSONNEL PHLay and DFJayne
 REVIEWED BY: DFJ

EQUIPMENT USED: Pump, Bailer, hose

PURGING DEVICE

Type Device? Pump
 How was the device decontaminated? Alconox+DI, DI Rinse
 How was the line decontaminated? dedicated
 Which well was previously purged? P1mW1

SAMPLING DEVICE

Type Device? Bailer
 How was the device decontaminated? Alconox+DI, DI Rinse
 How was the line decontaminated? dedicated
 Which well was previously sampled? P1m13

INITIAL WELL VOLUME

Well diameter (in.) 2"
 Stickup (ft.) ~2'
 Depth to bottom of well (ft.) 32.21
 Depth to water surface (ft.) 6.42
 Length of water (ft.) 25.79
 Volume of water (ft³) ~0.57
 (gal.) ~4.12
 Amount of sediment at bottom of well (ft.) —
 LNAPL (ft.) — DNAPL (ft.) —

PURGING

Time started: 0930 Finished 1050
 Volume purged 22
 Comments on Well Recovery Immediate
 Additional Comments —
 Samples Collected: Start 1050
 Finish 1100

IN-SITU TESTING	Date: <u>9/15/93</u>	<u>9/15/93</u>	<u>9/15/93</u>	<u>9/15/93</u>			
Time:	<u>0930</u>	<u>0955</u>	<u>1025</u>	<u>1050</u>			
Water Level	<u>6.42</u>	<u>—</u>	<u>—</u>	<u>6.45</u>			
Well Volume Purged (gal.)	<u>—</u>	<u>7</u>	<u>15</u>	<u>22</u>			
Turbidity	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>			
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>			
Organic Vapor (ppm)	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>			
pH (units)	<u>unable to calibrate</u>						
Conductivity (µ mhos)	<u>pH and conductivity</u>						
Water Temperature (°C)	<u>61.4</u>	<u>61.2</u>	<u>60.8</u>	<u>61.3</u>			

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

32mw1 Gw4
P02
5/24/13 (F)
Sample ID: 102 Gm01

PROJECT NAME <u>Phelps Collins AND RT</u>		JOB NO: _____		DATE: <u>Aug 16, 1993</u>	
WELL NO. <u>MP2 mw1</u>		LOCATION <u>Site 2 motor pool</u>			
WEATHER CONDITIONS <u>warm-humid, hazy</u>		AMBIENT TEMP: <u>~85°</u>			
PERSONNEL <u>PH La. + MS. Stoker</u>					
REVIEWED BY: <u>DRJ</u>					
EQUIPMENT USED: <u>Bailer, Rope, pump assembly, filter</u>					
PURGING DEVICE			SAMPLING DEVICE		
Type Device? <u>Bailer</u>			Type Device? <u>Bailer</u>		
How was the device decontaminated? <u>Per logbook</u>			How was the device decontaminated? <u>per logbook</u>		
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>		
Which well was previously purged? <u>none</u>			Which well was previously sampled? <u>none</u>		
INITIAL WELL VOLUME			PURGING		
Well diameter (in.) <u>2"</u>			Time started <u>1455</u> Finished <u>1514</u>		
Stickup (ft.) <u>2'</u>			Volume purged <u>7.5 gal</u>		
Depth to bottom of well (ft.) <u>22'</u>			Comments on Well Recovery <u>Immediate</u>		
Depth to water surface (ft.) <u>8.48'</u>			Additional Comments _____		
Length of water (ft.) <u>13.52'</u>			_____		
Volume of water (ft ³) _____			Samples Collected: Start <u>1522</u>		
(gal.) <u>~2.2</u>			Finish <u>1537</u>		
Amount of sediment at bottom of well (ft.) _____			_____		
LNAPL (ft.) _____ DNAPL (ft.) _____			_____		
IN-SITU TESTING					
Date:	<u>8-10-93</u>	<u>8-16-93</u>	<u>8-16-93</u>	<u>8-16-93</u>	<u>8-10-93</u>
Time:	<u>1455</u>	<u>1502</u>	<u>1505</u>	<u>1514</u>	<u>1537</u>
Water Level	<u>8.48'</u>	_____	_____	<u>8.48</u>	_____
Well Volume Purged (gal.)	<u>0-</u>	<u>2.5 gal</u>	<u>5</u>	<u>7.5</u>	_____
Turbidity	<u>sl. + none</u>	<u>sl.</u>	<u>sl.</u>	<u>sl.</u>	<u>sl</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>non</u>	<u>non</u>
Organic Vapor (ppm)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	_____
pH (units)	<u>7.79</u>	<u>8.16</u>	<u>7.95</u>	<u>7.97</u>	<u>7.96</u>
Conductivity (μ mhos)	<u>346</u>	<u>287</u>	<u>286</u>	<u>279</u>	<u>258</u>
Water Temperature (°C)	<u>70.6</u>	<u>68.0</u>	<u>65.1</u>	<u>67.5</u>	<u>67.6</u>
Notes: 1 ft. length of 4" = 0.087 ft ³ or 0.65 gal 1 ft. length 2" = 0.022 ft ³ or 0.16 gal Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91					

GROUNDWATER SAMPLING

Sample ID: P2mw2GW4

PROJECT NAME <u>Phelps Collins RT</u>		JOB NO: <u>931800</u>	DATE: <u>8-16-93</u>																																																																						
WELL NO. <u>MW2</u>	LOCATION <u>Site 2 MW2</u>																																																																								
WEATHER CONDITIONS <u>Cloudy</u>		AMBIENT TEMP: <u>~70°F</u>																																																																							
PERSONNEL <u>Mark Stokes & Mike Blizzard</u>																																																																									
REVIEWED BY: <u>PHL</u>																																																																									
EQUIPMENT USED: <u>pump, hose, hauler, filter</u>																																																																									
PURGING DEVICE Type Device? <u>pump</u> How was the device decontaminated? <u>see log book</u> How was the line decontaminated? <u>dedicated</u> Which well was previously purged? <u>PSmw1</u>		SAMPLING DEVICE Type Device? <u>hauler</u> How was the device decontaminated? <u>see log book</u> How was the line decontaminated? <u>dedicated</u> Which well was previously sampled? <u>PSmw1</u>																																																																							
INITIAL WELL VOLUME Well diameter (in.) <u>2"</u> Stickup (ft.) <u>2.3'</u> Depth to bottom of well (ft.) <u>18.20</u> Depth to water surface (ft.) <u>8.90</u> Length of water (ft.) <u>9.30</u> Volume of water (ft ³) <u>1.488 gal</u> (gal.) <u>4 = 5.952</u> Amount of sediment at bottom of well (ft.) _____ LNAPL (ft.) _____ DNAPL (ft.) _____		PURGING Time started <u>0845</u> Finished <u>0912</u> Volume purged <u>73</u> Comments on Well Recovery <u>immediate</u> Additional Comments <u>Collected Dup 2</u> <u>MSDS also. - well water</u> <u>is red w/ iron.</u> Samples Collected: Start <u>0915</u> Finish <u>0944</u>																																																																							
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>IN-SITU TESTING</th> <th>Date: <u>8-16-93</u></th> <th><u>8-16-93</u></th> <th><u>08-16-93</u></th> <th><u>08-16-93</u></th> <th><u>08-16-93</u></th> <th><u>08-16-93</u></th> </tr> </thead> <tbody> <tr> <td>Time:</td> <td><u>0845</u></td> <td><u>08:52</u></td> <td><u>08:59</u></td> <td><u>09:07</u></td> <td><u>09:12</u></td> <td><u>09:15</u></td> </tr> <tr> <td>Water Level</td> <td><u>8.90</u></td> <td></td> <td></td> <td></td> <td></td> <td><u>8.95</u></td> </tr> <tr> <td>Well Volume Purged (gal.)</td> <td><u>8</u></td> <td><u>2</u></td> <td><u>4</u></td> <td><u>6</u></td> <td><u>7</u></td> <td></td> </tr> <tr> <td>Turbidity</td> <td><u>51</u></td> <td><u>None</u></td> <td><u>None</u></td> <td><u>None</u></td> <td><u>None</u></td> <td><u>None</u></td> </tr> <tr> <td>Odor</td> <td><u>-0-</u></td> <td><u>None</u></td> <td><u>None</u></td> <td><u>None</u></td> <td><u>None</u></td> <td><u>None</u></td> </tr> <tr> <td>Organic Vapor (ppm)</td> <td><u>-0-</u></td> <td><u>-0-</u></td> <td><u>-0-</u></td> <td><u>-0-</u></td> <td><u>-0-</u></td> <td><u>-0-</u></td> </tr> <tr> <td>pH (units)</td> <td><u>7.68</u></td> <td><u>6.98</u></td> <td><u>7.42</u></td> <td><u>7.29</u></td> <td><u>7.36</u></td> <td><u>7.41</u></td> </tr> <tr> <td>Conductivity (μ mhos)</td> <td><u>192</u></td> <td><u>190</u></td> <td><u>216</u></td> <td><u>246</u></td> <td><u>238</u></td> <td><u>241</u></td> </tr> <tr> <td>Water Temperature (°C)</td> <td><u>63.2</u></td> <td><u>60.0</u></td> <td><u>59.2</u></td> <td><u>59.3</u></td> <td><u>59.1</u></td> <td><u>59.3</u></td> </tr> </tbody> </table>				IN-SITU TESTING	Date: <u>8-16-93</u>	<u>8-16-93</u>	<u>08-16-93</u>	<u>08-16-93</u>	<u>08-16-93</u>	<u>08-16-93</u>	Time:	<u>0845</u>	<u>08:52</u>	<u>08:59</u>	<u>09:07</u>	<u>09:12</u>	<u>09:15</u>	Water Level	<u>8.90</u>					<u>8.95</u>	Well Volume Purged (gal.)	<u>8</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>7</u>		Turbidity	<u>51</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	Odor	<u>-0-</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	Organic Vapor (ppm)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	pH (units)	<u>7.68</u>	<u>6.98</u>	<u>7.42</u>	<u>7.29</u>	<u>7.36</u>	<u>7.41</u>	Conductivity (μ mhos)	<u>192</u>	<u>190</u>	<u>216</u>	<u>246</u>	<u>238</u>	<u>241</u>	Water Temperature (°C)	<u>63.2</u>	<u>60.0</u>	<u>59.2</u>	<u>59.3</u>	<u>59.1</u>	<u>59.3</u>
IN-SITU TESTING	Date: <u>8-16-93</u>	<u>8-16-93</u>	<u>08-16-93</u>	<u>08-16-93</u>	<u>08-16-93</u>	<u>08-16-93</u>																																																																			
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Water Temperature (°C)	<u>63.2</u>	<u>60.0</u>	<u>59.2</u>	<u>59.3</u>	<u>59.1</u>	<u>59.3</u>																																																																			
Notes: 1 ft. length of 4" = 0.087 ft ³ or 0.65 gal Turbidity choices: clear, turbid, opaque 1 ft. length 2" = 0.022 ft ³ or 0.16 gal Revision Date: 2-8-91																																																																									

TETC-134

GROUNDWATER SAMPLING

Sample ID: P2mw36v4

PROJECT NAME Phelps Collins RI JOB NO: 931800 DATE: 8-16-93
 WELL NO. mw3 LOCATION Site 2
 WEATHER CONDITIONS Cloudy AMBIENT TEMP: 27.2°F
 PERSONNEL Mark Stokes & Mike Blizzard
 REVIEWED BY: PLC

EQUIPMENT USED: pump, hose, bailer, filter

PURGING DEVICE	SAMPLING DEVICE
Type Device? <u>pump</u>	Type Device? <u>bailer</u>
How was the device decontaminated? <u>see log book</u>	How was the device decontaminated? <u>see log book</u>
How was the line decontaminated? <u>dedicated</u>	How was the line decontaminated? <u>dedicated</u>
Which well was previously purged? <u>2mw2</u>	Which well was previously sampled? <u>2mw2</u>

INITIAL WELL VOLUME	PURGING
Well diameter (in.) <u>2"</u>	Time started <u>10:20</u> Finished <u>11:00</u>
Slickup (ft.) <u>2.2'</u>	Volume purged <u>10 g</u>
Depth to bottom of well (ft.) <u>21.95</u>	Comments on Well Recovery _____
Depth to water surface (ft.) <u>8.45</u>	Additional Comments _____
Length of water (ft.) <u>13.50</u>	
Volume of water (ft ³) <u>2.16</u>	
(gal.) <u>8.64</u>	
Amount of sediment at bottom of well (ft.) <u>-</u>	Sample Collected: Start <u>11:05</u>
LNAPL (ft.) <u>-</u> DNAPL (ft.) <u>-</u>	Finish <u>11:17</u>

IN-SITU TESTING	Date: <u>08-16-93</u>	<u>08/16/93</u>	<u>8/16/93</u>	<u>8/16/93</u>	<u>8/16/93</u>	<u>08-16-93</u>
	Time: <u>10:20</u>	<u>10:30</u>	<u>10:40</u>	<u>10:50</u>	<u>10:55</u>	<u>11:05</u>
Water Level	<u>8.45</u>					<u>8.49</u>
Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>10</u>
Turbidity	<u>51</u>					
Odor	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
Organic Vapor (ppm)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
pH (units)	<u>7.37</u>	<u>7.47</u>	<u>7.46</u>	<u>7.39</u>	<u>7.45</u>	<u>7.44</u>
Conductivity (µ mhos)	<u>39</u>	<u>39</u>	<u>1.34</u>	<u>1.38</u>	<u>1.76</u>	<u>1.75</u>
Water Temperature (°C)	<u>61.7</u>	<u>61.7</u>	<u>62.3</u>	<u>60.8</u>	<u>59.9</u>	<u>59.3</u>

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC154

GROUNDWATER SAMPLING

Sample ID: P2mw46w4

PROJECT NAME <u>Phelps Collins RI</u>		JOB NO: <u>931800</u>		DATE: <u>8-12-93</u>																																																																							
WELL NO. <u>mw4</u>		LOCATION <u>Motor Pool Site 2</u>																																																																									
WEATHER CONDITIONS <u>Warm, Sunny</u>		AMBIENT TEMP: <u>~68°F</u>																																																																									
PERSONNEL <u>PH Lay, ME Stoker</u>																																																																											
REVIEWED BY: <u>DFT</u>																																																																											
EQUIPMENT USED: <u>Bailer, rope, hand pump assembly, filter</u>																																																																											
PURGING DEVICE Type Device? <u>Bailer</u> How was the device decontaminated? <u>See logbook</u> How was the line decontaminated? <u>dedicated</u> Which well was previously purged? <u>P06mw1</u>			SAMPLING DEVICE Type Device? <u>Bailer</u> How was the device decontaminated? <u>See logbook</u> How was the line decontaminated? <u>dedicated</u> Which well was previously sampled? <u>P06mw1</u>																																																																								
INITIAL WELL VOLUME Well diameter (in.) <u>2"</u> Stickup (ft.) <u>~2'</u> Depth to bottom of well (ft.) <u>22.2' BTOC</u> Depth to water surface (ft.) <u>8.78' + 4.42' BTOC</u> Length of water (ft.) <u>13.42' + 4.42' = 17.84'</u> Volume of water (ft ³) <u>~0.3</u> (gal.) <u>~2.2</u> Amount of sediment at bottom of well (ft.) <u>-</u> LNAPL (ft.) <u>-</u> DNAPL (ft.) <u>-</u>			PURGING Time started <u>0730</u> Finished <u>0951</u> Volume purged <u>~11 gal/s</u> Comments on Well Recovery <u>immediate</u> Additional Comments <u>-</u> Samples Collected: Start <u>0928</u> Finish <u>1044</u>																																																																								
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>IN-SITU TESTING</th> <th>Date: <u>8-12-93</u></th> <th><u>8-12-93</u></th> <th><u>8-12-93</u></th> <th><u>8-12-93</u></th> <th><u>8-12-93</u></th> <th><u>8-12-93</u></th> </tr> </thead> <tbody> <tr> <td>Time:</td> <td><u>930</u></td> <td><u>934</u></td> <td><u>937</u></td> <td><u>941</u></td> <td><u>945</u></td> <td><u>1044</u></td> </tr> <tr> <td>Water Level</td> <td><u>8.78'</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>8.79</u></td> <td><u>8.79</u></td> </tr> <tr> <td>Well Volume Purged (gal.)</td> <td><u>-0-</u></td> <td><u>2g</u></td> <td><u>4g</u></td> <td><u>6g</u></td> <td><u>8g</u></td> <td><u>10g</u></td> </tr> <tr> <td>Turbidity</td> <td><u>sl</u></td> <td><u>sl</u></td> <td><u>sl</u></td> <td><u>sl</u></td> <td><u>sl</u></td> <td><u>sl</u></td> </tr> <tr> <td>Odor</td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> </tr> <tr> <td>Organic Vapor (ppm)</td> <td><u>-0-</u></td> <td><u>-0-</u></td> <td><u>-0-</u></td> <td><u>-0-</u></td> <td><u>-0-</u></td> <td><u>-0-</u></td> </tr> <tr> <td>pH (units)</td> <td><u>8.24</u></td> <td><u>8.06</u></td> <td><u>8.12</u></td> <td><u>8.06</u></td> <td><u>8.10</u></td> <td><u>8.10</u></td> </tr> <tr> <td>Conductivity (µ mhos)</td> <td><u>934</u></td> <td><u>942</u></td> <td><u>938</u></td> <td><u>898</u></td> <td><u>394</u></td> <td><u>358</u></td> </tr> <tr> <td>Water Temperature (°C)</td> <td><u>60.3</u></td> <td><u>58.9</u></td> <td><u>57.8</u></td> <td><u>56.9</u></td> <td><u>56.7</u></td> <td><u>57.2</u></td> </tr> </tbody> </table>						IN-SITU TESTING	Date: <u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>	Time:	<u>930</u>	<u>934</u>	<u>937</u>	<u>941</u>	<u>945</u>	<u>1044</u>	Water Level	<u>8.78'</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>8.79</u>	<u>8.79</u>	Well Volume Purged (gal.)	<u>-0-</u>	<u>2g</u>	<u>4g</u>	<u>6g</u>	<u>8g</u>	<u>10g</u>	Turbidity	<u>sl</u>	<u>sl</u>	<u>sl</u>	<u>sl</u>	<u>sl</u>	<u>sl</u>	Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	Organic Vapor (ppm)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	pH (units)	<u>8.24</u>	<u>8.06</u>	<u>8.12</u>	<u>8.06</u>	<u>8.10</u>	<u>8.10</u>	Conductivity (µ mhos)	<u>934</u>	<u>942</u>	<u>938</u>	<u>898</u>	<u>394</u>	<u>358</u>	Water Temperature (°C)	<u>60.3</u>	<u>58.9</u>	<u>57.8</u>	<u>56.9</u>	<u>56.7</u>	<u>57.2</u>
IN-SITU TESTING	Date: <u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>																																																																					
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Turbidity	<u>sl</u>	<u>sl</u>	<u>sl</u>	<u>sl</u>	<u>sl</u>	<u>sl</u>																																																																					
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>																																																																					
Organic Vapor (ppm)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>																																																																					
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TETC-154

GROUNDWATER SAMPLING

Sample ID: P2mw4gw4

Revised

PROJECT NAME Phelps Collins RF JOB NO: 931800 DATE: 8-16-93
 WELL NO. mw4 LOCATION Site 2
 WEATHER CONDITIONS cloudy AMBIENT TEMP: ~75°F
 PERSONNEL Mark Stotter & Mike Blizzard
 REVIEWED BY: Pl-Lag

EQUIPMENT USED: peristaltic pump, teflon bailer, and metals filter

PURGING DEVICE	SAMPLING DEVICE
Type Device? <u>Pump</u>	Type Device? <u>bailer</u>
How was the device decontaminated? <u>see log book</u>	How was the device decontaminated? <u>see log</u>
How was the line decontaminated? <u>dedicated</u>	How was the line decontaminated? <u>dedicated</u>
Which well was previously purged? <u>2mw3</u>	Which well was previously sampled? <u>2mw3</u>

INITIAL WELL VOLUME	PURGING
Well diameter (in.) <u>2"</u>	Time started <u>1415</u> Finished <u>1455</u>
Stickup (ft.) <u>22</u>	Volume purged <u>8.62</u>
Depth to bottom of well (ft.) <u>22.33</u>	Comments on Well Recovery <u>Recovery</u>
Depth to water surface (ft.) <u>8.85</u>	<u>Very good water at 8.9' after well</u>
Length of water (ft.) <u>13.48</u>	Additional Comments
Volume of water (ft ³) <u>2.15</u>	
(gal.) <u>2.15 gal</u>	
Amount of sediment at bottom of well (ft.)	Samples Collected: Start <u>1500</u>
LNAPL (ft.) DNAPL (ft.)	Finish <u>2510</u>

IN-SITU TESTING	Date: <u>8-16</u>						
	Time: <u>1415</u>	<u>1420</u>	<u>1430</u>	<u>1440</u>	<u>1450</u>		
Water Level							
Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>		
Turbidity							
Odor	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>			
Organic Vapor (ppm)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>			
pH (units)	<u>8.41</u>	<u>8.34</u>	<u>8.11</u>	<u>8.2</u>	<u>8.11</u>		
Conductivity (µ mhos)	<u>222</u>	<u>278</u>	<u>271</u>	<u>269</u>	<u>268</u>		
Water Temperature (°C)	<u>65.5</u>	<u>60.1</u>	<u>60</u>	<u>60</u>	<u>60.1</u>		

Notes: 1 ft. length of 4" = 0.087 m³ or 0.65 gal. 1 ft. length 2" = 0.022 m³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC154

GROUNDWATER SAMPLING

Sample ID: P2mws6w4

PROJECT NAME <u>Phelps Collins RI</u>		JOB NO: <u>931800</u>		DATE: <u>8-12-93</u>		
WELL NO. <u>MWS</u>		LOCATION <u>Motor Pool Site 2</u>				
WEATHER CONDITIONS <u>Warm, Sunny</u>		AMBIENT TEMP: <u>68°F</u>				
PERSONNEL <u>PH Lay M & Stoker</u>						
REVIEWED BY: <u>DEF</u>						
EQUIPMENT USED: <u>Pump, hose, Bailer, pump assembly w/ Filter</u>						
PURGING DEVICE			SAMPLING DEVICE			
Type Device? <u>Pump (650 pump)</u>			Type Device? <u>Bailer</u>			
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>See logbook</u>			
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>			
Which well was previously purged? <u>Polemw1</u>			Which well was previously sampled? <u>Polemw1</u>			
INITIAL WELL VOLUME			PURGING			
Well diameter (in.) <u>2"</u>			Time started <u>6:17</u> Finished <u>11:15</u>			
Stickup (ft.) <u>-2'</u>			Volume purged <u>27 gal</u>			
Depth to bottom of well (ft.) <u>57' BTOC</u>			Comments on Well Recovery <u>Immediate</u>			
Depth to water surface (ft.) <u>8.63' BTOC</u>			Additional Comments <u>-</u>			
Length of water (ft.) <u>48.37</u>			Samples Collected: Start <u>11:20</u>			
Volume of water (ft ³) <u>1.064</u>			Finish <u>11:59</u>			
(gal.) <u>~7.75</u>						
Amount of sediment at bottom of well (ft.) <u>-</u>						
LNAPL (ft.) <u>-</u> DNAPL (ft.) <u>-</u>						
IN-SITU TESTING	Date:	<u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>
	Time:	<u>09:20</u>	<u>09:38</u>	<u>10:02</u>	<u>10:28</u>	<u>10:50</u>
Water Level		<u>8.63'</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Well Volume Purged (gal.)		<u>-0-</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>
Turbidity		<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Odor		<u>none</u>	<u>none</u>	<u>PORE</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)		<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>none</u>
pH (units)		<u>8.40</u>	<u>8.26</u>	<u>8.12</u>	<u>8.24</u>	<u>8.18</u>
Conductivity (µ mhos)		<u>1164</u>	<u>1132</u>	<u>1134</u>	<u>1132</u>	<u>1136</u>
Water Temperature (°C)		<u>61.2</u>	<u>57.2</u>	<u>59.1</u>	<u>60.8</u>	<u>61.0</u>
Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal 1 ft. length 2" = 0.022 ft³ or 0.16 gal Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91						

TETC154

GROUNDWATER SAMPLING

Sample ID: P2MW5GW4 *Resample*

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8/30/93
 WELL NO. NW5 LOCATION Site 2
 WEATHER CONDITIONS cloudy, breezy, humid AMBIENT TEMP: 70 °F
 PERSONNEL J. Smith M. Stoken
 REVIEWED BY: PHLg

EQUIPMENT USED: Peristaltic Pump & disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE
 Type Device? Peristaltic Pump
 How was the device decontaminated? See logbook
 How was the line decontaminated? See logbook
 Which well was previously purged? Site 6 MW6

SAMPLING DEVICE for metals → peristaltic pump
 Type Device? teflon bailer for VOCs, SVOCs, TPH
 How was the device decontaminated? DI water → methanol; air dry
 How was the line decontaminated? disposable new nylon cord used each time
 Which well was previously sampled? P6 MW6 GW4

INITIAL WELL VOLUME
 Well diameter (in.) 2"
 Stickup (ft.) ~2'
 Depth to bottom of well (ft.) BDC ~57
 Depth to water surface (ft.) BDC 8.25'
 Length of water (ft.) 48.75'
 Volume of water (ft³) 1.1
 (gal.) 7.8
 Amount of sediment at bottom of well (ft.) NM
 LNAPL (ft.) NM DNAPL (ft.) NM

PURGING
 Time started 1344 Finished 1420
 Volume purged 25 gallons
 Comments on Well Recovery _____
 Additional Comments Sample for VOCs only due to Chempack's missed holding time
 Samples Collected: Start 1420
1430 sample time Finish 1430

23.4
gallon
minimum

IN-SITU TESTING	Date: <u>8/30/93</u>						
	Time: <u>1344</u>	<u>1350</u>	<u>1355</u>	<u>1408</u>	<u>1414</u>	<u>1420</u>	
Water Level ft BDC	<u>8.24</u>	<u>8.27</u>	<u>8.28</u>	<u>8.31</u>	<u>8.30</u>	<u>8.30</u>	
Well Volume Purged (gal.)	<u>0</u>	<u>15</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	
Turbidity	<u>clear</u>	<u>cl</u>	<u>cl</u>	<u>cl</u>	<u>cl</u>	<u>cl</u>	
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	
pH (units)	<u>*</u>						
Conductivity (µ mhos)	<u>4560</u>	<u>780</u>	<u>869</u>	<u>1097</u>	<u>1097</u>	<u>1116</u>	
Water Temperature (°F)	<u>63.9</u>	<u>59.2</u>	<u>59.5</u>	<u>60.0</u>	<u>64.3</u>	<u>54.5</u>	

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

NM = Not Measured
 BDC = Below Top of Outer Steel Casing
 * pH meter expired
 * conductivity meter may be broken
 G-43
 (Casina)

GROUNDWATER SAMPLING

Sample ID: P2mw66w4

PROJECT NAME <u>Phelps Collins ANG RF</u>		JOB NO: <u>931800-12</u>		DATE: <u>9/9/93</u>																																																																																		
WELL NO. <u>mw6</u>		LOCATION <u>Site 2 motor pool</u>																																																																																				
WEATHER CONDITIONS <u>Cool, rainy</u>		AMBIENT TEMP: <u>~60°</u>																																																																																				
PERSONNEL <u>Ph Lay & RF Nolet</u>																																																																																						
REVIEWED BY: <u>DET</u>																																																																																						
EQUIPMENT USED: <u>Pump, hose, Bailer, rope</u>																																																																																						
PURGING DEVICE			SAMPLING DEVICE																																																																																			
Type Device? <u>Peristaltic pump</u>			Type Device? <u>Bailer</u>																																																																																			
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>See logbook</u>																																																																																			
How was the line decontaminated? <u>See logbook</u>			How was the line decontaminated? <u>dedicated</u>																																																																																			
Which well was previously purged? <u>P6mw9</u>			Which well was previously sampled? <u>P6mw9</u>																																																																																			
INITIAL WELL VOLUME			PURGING																																																																																			
Well diameter (in.) <u>2"</u>			Time started <u>0810</u> Finished <u>0912</u>																																																																																			
Stickup (ft.) <u>-0.3</u>			Volume purged <u>15 galls.</u>																																																																																			
Depth to bottom of well (ft.) <u>26.62</u>			Comments on Well Recovery <u>Immediate</u>																																																																																			
Depth to water surface (ft.) <u>7.93</u>			Additional Comments _____																																																																																			
Length of water (ft.) <u>18.69</u>			_____																																																																																			
Volume of water (ft ³) _____			_____																																																																																			
(gal.) <u>~2.99 or 3</u>			_____																																																																																			
Amount of sediment at bottom of well (ft.) _____			Samples Collected: Start <u>0925</u>																																																																																			
LNAPL (ft.) _____ DNAPL (ft.) _____			Finish <u>0935</u>																																																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>IN-SITU TESTING</th> <th>Date: <u>9/9/93</u></th> <th><u>9/9/93</u></th> <th><u>9/9/93</u></th> <th><u>9/9/93</u></th> <th><u>9/9/93</u></th> <th><u>9/9/93</u></th> <th><u>9/9/93</u></th> </tr> <tr> <th></th> <th>Time: <u>0810</u></th> <th><u>0820</u></th> <th><u>0830</u></th> <th><u>0842</u></th> <th><u>0858</u></th> <th><u>0912</u></th> <th><u>0925</u></th> </tr> </thead> <tbody> <tr> <td>Water Level</td> <td><u>7.93</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>7.96</u></td> </tr> <tr> <td>Well Volume Purged (gal.)</td> <td><u>-</u></td> <td><u>3</u></td> <td><u>6</u></td> <td><u>9</u></td> <td><u>12</u></td> <td><u>15</u></td> <td><u>-</u></td> </tr> <tr> <td>Turbidity</td> <td><u>none</u></td> <td><u>-</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>SL</u></td> <td><u>mod</u></td> </tr> <tr> <td>Odor</td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>SL</u></td> <td><u>SL</u></td> <td><u>mod.</u></td> </tr> <tr> <td>Organic Vapor (ppm)</td> <td><u>0</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> </tr> <tr> <td>pH (units)</td> <td><u>8.73</u></td> <td><u>7.91</u></td> <td><u>7.94</u></td> <td><u>7.68</u></td> <td><u>7.88</u></td> <td><u>7.68</u></td> <td><u>7.76</u></td> </tr> <tr> <td>Conductivity (µ mhos)</td> <td><u>319</u></td> <td><u>332</u></td> <td><u>319</u></td> <td><u>326</u></td> <td><u>930</u></td> <td><u>921</u></td> <td><u>889</u></td> </tr> <tr> <td>Water Temperature (°C)</td> <td><u>52.3</u></td> <td><u>55.7</u></td> <td><u>55.3</u></td> <td><u>55.2</u></td> <td><u>55.1</u></td> <td><u>55.5</u></td> <td><u>55.4</u></td> </tr> </tbody> </table>							IN-SITU TESTING	Date: <u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>		Time: <u>0810</u>	<u>0820</u>	<u>0830</u>	<u>0842</u>	<u>0858</u>	<u>0912</u>	<u>0925</u>	Water Level	<u>7.93</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>7.96</u>	Well Volume Purged (gal.)	<u>-</u>	<u>3</u>	<u>6</u>	<u>9</u>	<u>12</u>	<u>15</u>	<u>-</u>	Turbidity	<u>none</u>	<u>-</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>SL</u>	<u>mod</u>	Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>SL</u>	<u>SL</u>	<u>mod.</u>	Organic Vapor (ppm)	<u>0</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	pH (units)	<u>8.73</u>	<u>7.91</u>	<u>7.94</u>	<u>7.68</u>	<u>7.88</u>	<u>7.68</u>	<u>7.76</u>	Conductivity (µ mhos)	<u>319</u>	<u>332</u>	<u>319</u>	<u>326</u>	<u>930</u>	<u>921</u>	<u>889</u>	Water Temperature (°C)	<u>52.3</u>	<u>55.7</u>	<u>55.3</u>	<u>55.2</u>	<u>55.1</u>	<u>55.5</u>	<u>55.4</u>
IN-SITU TESTING	Date: <u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>																																																																															
	Time: <u>0810</u>	<u>0820</u>	<u>0830</u>	<u>0842</u>	<u>0858</u>	<u>0912</u>	<u>0925</u>																																																																															
Water Level	<u>7.93</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>7.96</u>																																																																															
Well Volume Purged (gal.)	<u>-</u>	<u>3</u>	<u>6</u>	<u>9</u>	<u>12</u>	<u>15</u>	<u>-</u>																																																																															
Turbidity	<u>none</u>	<u>-</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>SL</u>	<u>mod</u>																																																																															
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>SL</u>	<u>SL</u>	<u>mod.</u>																																																																															
Organic Vapor (ppm)	<u>0</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>																																																																															
pH (units)	<u>8.73</u>	<u>7.91</u>	<u>7.94</u>	<u>7.68</u>	<u>7.88</u>	<u>7.68</u>	<u>7.76</u>																																																																															
Conductivity (µ mhos)	<u>319</u>	<u>332</u>	<u>319</u>	<u>326</u>	<u>930</u>	<u>921</u>	<u>889</u>																																																																															
Water Temperature (°C)	<u>52.3</u>	<u>55.7</u>	<u>55.3</u>	<u>55.2</u>	<u>55.1</u>	<u>55.5</u>	<u>55.4</u>																																																																															
Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91																																																																																						

TETC134

GROUNDWATER SAMPLING

Sample ID: P2mus7Gws4

PROJECT NAME _____		JOB NO: _____		DATE: <u>9/9/93</u>	
WELL NO. <u>MW7</u>		LOCATION <u>Motae Pool Site 2</u>			
WEATHER CONDITIONS <u>Cool, Rainy</u>		AMBIENT TEMP: <u>~62°F</u>			
PERSONNEL <u>JH Lay and RF Norton</u>					
REVIEWED BY: <u>DJ</u>					
EQUIPMENT USED: _____					

PURGING DEVICE	SAMPLING DEVICE
Type Device? <u>Pump</u>	Type Device? <u>Bailer</u>
How was the device decontaminated? <u>See logbook</u>	How was the device decontaminated? <u>See logbook</u>
How was the line decontaminated? <u>See logbook</u>	How was the line decontaminated? <u>dedicated</u>
Which well was previously purged? <u>P2mw6</u>	Which well was previously sampled? <u>P2mw6</u>

INITIAL WELL VOLUME	PURGING
Well diameter (in.) <u>2"</u>	Time started <u>1338</u> Finished <u>1410</u>
Stickup (ft.) <u>-0.3</u>	Volume purged <u>.7</u>
Depth to bottom of well (ft.) <u>14.8</u>	Comments on Well Recovery <u>Immediate</u>
Depth to water surface (ft.) <u>6.64</u>	Additional Comments _____
Length of water (ft.) <u>8.16</u>	_____
Volume of water (ft ³) <u>~0.18</u>	_____
(gal.) <u>~1.3</u>	_____
Amount of sediment at bottom of well (ft.) _____	Samples Collected: Start <u>1412</u>
LNAPL (ft.) _____ DNAPL (ft.) _____	Finish <u>1425</u>

IN-SITU TESTING	Date: <u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>	<u>9/9/93</u>
Time:	<u>1338</u>	<u>1344</u>	<u>1351</u>	<u>1358</u>	<u>1401</u>	<u>1425</u>
Water Level	<u>6.64</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>6.68</u>
Well Volume Purged (gal.)	<u>initial</u>	<u>1.5</u>	<u>3</u>	<u>4.5</u>	<u>6</u>	<u>-</u>
Turbidity	<u>mod</u>	<u>mod.</u>	<u>sl.</u>	<u>sl</u>	<u>none</u>	<u>Mod</u>
Odor	<u>sl.</u>	<u>mod</u>	<u>sl.</u>	<u>sl.</u>	<u>sl.</u>	<u>mod.</u>
Organic Vapor (ppm)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
pH (units)	<u>8.16</u>	<u>8.05</u>	<u>8.03</u>	<u>8.07</u>	<u>7.89</u>	<u>7.88</u>
Conductivity (μ mhos)	<u>548</u>	<u>524</u>	<u>506</u>	<u>507</u>	<u>478</u>	<u>479</u>
Water Temperature (°C)	<u>62.1</u>	<u>63.4</u>	<u>63.5</u>	<u>65.6</u>	<u>63.7</u>	<u>63.8</u>

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal 1 ft. length 2" = 0.022 ft³ or 0.16 gal

Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

GROUNDWATER SAMPLING

Sample ID: P3MW6GW4

PROJECT NAME Phelps Collins #1 G JOB NO: 931800-12 DATE: 9/10/93
 WELL NO. M06 LOCATION Site 3
 WEATHER CONDITIONS Cool, Raining AMBIENT TEMP: ~58°F
 PERSONNEL Phleg and BFN Oertel
 REVIEWED BY: DE Jager

EQUIPMENT USED: Bailer, Rope, pump assembly, filter

PURGING DEVICE

Type Device? Bailer
 How was the device decontaminated? See logbook
 How was the line decontaminated? dedicated
 Which well was previously purged? Simms 4

SAMPLING DEVICE

Type Device? Bailer
 How was the device decontaminated? See logbook
 How was the line decontaminated? dedicated
 Which well was previously sampled? Simms

INITIAL WELL VOLUME

Well diameter (in.) 2"
 Stickup (ft.) ~0.3
 Depth to bottom of well (ft.) 29.8'
 Depth to water surface (ft.) 14.77'
 Length of water (ft.) 13.03'
 Volume of water (ft³) 0.2867
 (gal.) ~21
 Amount of sediment at bottom of well (ft.) —
 LNAPL (ft.) — DNAPL (ft.) —

PURGING

Time started 1345 Finished 1407
 Volume purged 10 gal
 Comments on Well Recovery moderate to immediate
 Additional Comments —
 Samples Collected: Start 1555 Finish 1620

IN-SITU TESTING	Date:	9/10/93	9/10/93	9/10/93	9/10/93	9/10/93		
	Time:	1345	1351	1359	1403	1407		
Water Level		14.77						
Well Volume Purged (gal.)		initial	2.5	5	7.5	10		
Turbidity		SI	mod	mod	mod	mod		
Odor		SI	SI	mod	mod	mod		
Organic Vapor (ppm)		—	—	—	—	—		
pH (units)		7.89	7.94	7.78	7.58	7.66		
Conductivity (µ mhos)		952	991	502	506	928		
Water Temperature (°C)		55.7	56.2	55.4	52.9	53.1		

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.18 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

GROUNDWATER SAMPLING

Sample ID: P3mw7Gw4

PROJECT NAME Phelps Collins AVG RT JOB NO: 931800-12 DATE: 9/13/93
 WELL NO. MW7 LOCATION Site 3
 WEATHER CONDITIONS Sunny Windy AMBIENT TEMP: ~65°F
 PERSONNEL PHL and BCN
 REVIEWED BY: DF Tague

EQUIPMENT USED: Pump (peristaltic) hose, Barker, rope,

PURGING DEVICE

Type Device? Pump

How was the device decontaminated? See logbook

How was the line decontaminated? dedicated

Which well was previously purged? P6mw6Gw4
Re-purged

SAMPLING DEVICE

Type Device? Barker

How was the device decontaminated? See logbook

How was the line decontaminated? dedicated

Which well was previously sampled? P6mw6Gw4
Re-sampled

INITIAL WELL VOLUME

Well diameter (in.) 2"

Stickup (ft.) -0.3

Depth to bottom of well (ft.) 22' BTOC at mark

Depth to water surface (ft.) 14.5'

Length of water (ft.) 7.5'

Volume of water (ft³) 0.165

(gal.) 1.2

Amount of sediment at bottom of well (ft.)

LNAPL (ft.) DNAPL (ft.)

PURGING

Time started 0925 Finished 1010

Volume purged 6.5 gals

Comments on Well Recovery Immediate

Additional Comments

Samples Collected: Start 1015

Finish 1025

IN-SITU TESTING	Date: <u>9/13/93</u>	<u>9/13/93</u>	<u>9/13/93</u>	<u>9/13/93</u>	<u>9/13/93</u>		
	Time: <u>0925</u>	<u>0940</u>	<u>0953</u>	<u>1008</u>	<u>1025</u>		
Water Level	<u>14.50</u>	<u>14.52</u>		<u>14.53</u>	<u>14.52</u>		
Well Volume Purged (gal.)	<u>initial</u>	<u>2 gal</u>	<u>4</u>	<u>6</u>	<u>-</u>		
Turbidity	<u>51</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>-</u>		
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>-</u>		
Organic Vapor (ppm)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>		
pH (units)	<u>8.07</u>	<u>8.34</u>	<u>8.46</u>	<u>8.39</u>	<u>8.25</u>		
Conductivity (µ mhos)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>		
Water Temperature (°C)	<u>66.7</u>	<u>62.5</u>	<u>62.3</u>	<u>62.4</u>	<u>62.7</u>		

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal 1 ft. length 2" = 0.022 ft³ or 0.16 gal
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

GROUNDWATER SAMPLING

Sample ID: P3mw16w4

PROJECT NAME <u>Phelps Collins RI</u>		JOB NO: <u>931800-12</u>		DATE: <u>8-15-93</u>																																																																								
WELL NO. <u>MW1</u>		LOCATION <u>County Garage Site 3</u>																																																																										
WEATHER CONDITIONS <u>cool, cloudy</u>		AMBIENT TEMP: <u>65°F</u>																																																																										
PERSONNEL <u>Phelan, M. S. Stoker.</u>																																																																												
REVIEWED BY: <u>DJS</u>																																																																												
EQUIPMENT USED: <u>Pump/hose, bailer, rope</u>																																																																												
PURGING DEVICE			SAMPLING DEVICE																																																																									
Type Device? <u>Pump</u>			Type Device? <u>Bailer</u>																																																																									
How was the device decontaminated? <u>see logbook</u>			How was the device decontaminated? <u>see logbook</u>																																																																									
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>																																																																									
Which well was previously purged? <u>D4mw1</u>			Which well was previously sampled? <u>P4 mw1</u>																																																																									
INITIAL WELL VOLUME			PURGING																																																																									
Well diameter (in.) <u>2"</u>			Time started <u>0932</u> Finished <u>1015</u> <u>DJS</u> <u>PHL 8-15-93</u>																																																																									
Stickup (ft.) <u>-2'</u>			Volume purged <u>9 gallons</u>																																																																									
Depth to bottom of well (ft.) <u>22.2</u>			Comments on Well Recovery <u>Immediate</u>																																																																									
Depth to water surface (ft.) <u>11.3' BTOC</u>			Additional Comments _____																																																																									
Length of water (ft.) <u>PHL 8-15-93 22.2 - 10.9' = 11.3'</u>			_____																																																																									
Volume of water (ft ³) <u>PHL 8-15-93 10.9' ~ 0.24 ft³</u>			_____																																																																									
(gal.) <u>~ 1.75'</u>			_____																																																																									
Amount of sediment at bottom of well (ft.) _____			Samples Collected: Start <u>1014</u>																																																																									
LNAPL (ft.) _____ DNAPL (ft.) _____			Finish <u>1020</u>																																																																									
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>IN-SITU TESTING</th> <th>Date: <u>8-15-93</u></th> <th><u>8-15-93</u></th> <th><u>8-15-93</u></th> <th><u>8-15-93</u></th> <th><u>8-15-93</u></th> <th><u>8-15-93</u></th> </tr> </thead> <tbody> <tr> <td>Time:</td> <td><u>0933</u></td> <td><u>0943</u></td> <td><u>0953</u></td> <td><u>1003</u></td> <td><u>1013</u></td> <td><u>1030</u></td> </tr> <tr> <td>Water Level</td> <td><u>11.3'</u></td> <td></td> <td></td> <td></td> <td></td> <td><u>11.3'</u></td> </tr> <tr> <td>Well Volume Purged (gal.)</td> <td><u>0</u></td> <td><u>2</u></td> <td><u>4</u></td> <td><u>6</u></td> <td><u>8</u></td> <td><u>-</u></td> </tr> <tr> <td>Turbidity</td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>-</u></td> </tr> <tr> <td>Odor</td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>-</u></td> </tr> <tr> <td>Organic Vapor (ppm)</td> <td><u>0</u></td> <td><u>0</u></td> <td><u>0</u></td> <td><u>0</u></td> <td><u>0</u></td> <td><u>-</u></td> </tr> <tr> <td>pH (units)</td> <td><u>7.85</u></td> <td><u>8.17</u></td> <td><u>8.13</u></td> <td><u>8.20</u></td> <td><u>8.18</u></td> <td><u>8.20</u></td> </tr> <tr> <td>Conductivity (µmhos)</td> <td><u>283</u></td> <td><u>262</u></td> <td><u>260</u></td> <td><u>258</u></td> <td><u>241</u></td> <td><u>263</u></td> </tr> <tr> <td>Water Temperature (°C)</td> <td><u>64.2</u></td> <td><u>61.5</u></td> <td><u>61.2</u></td> <td><u>60.8</u></td> <td><u>60.6</u></td> <td><u>61.2</u></td> </tr> </tbody> </table>							IN-SITU TESTING	Date: <u>8-15-93</u>	<u>8-15-93</u>	<u>8-15-93</u>	<u>8-15-93</u>	<u>8-15-93</u>	<u>8-15-93</u>	Time:	<u>0933</u>	<u>0943</u>	<u>0953</u>	<u>1003</u>	<u>1013</u>	<u>1030</u>	Water Level	<u>11.3'</u>					<u>11.3'</u>	Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>-</u>	Turbidity	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>-</u>	Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>-</u>	Organic Vapor (ppm)	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>-</u>	pH (units)	<u>7.85</u>	<u>8.17</u>	<u>8.13</u>	<u>8.20</u>	<u>8.18</u>	<u>8.20</u>	Conductivity (µmhos)	<u>283</u>	<u>262</u>	<u>260</u>	<u>258</u>	<u>241</u>	<u>263</u>	Water Temperature (°C)	<u>64.2</u>	<u>61.5</u>	<u>61.2</u>	<u>60.8</u>	<u>60.6</u>	<u>61.2</u>
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Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>-</u>																																																																						
Turbidity	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>-</u>																																																																						
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>-</u>																																																																						
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Notes: 1 ft. length of 4" = 0.057 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal. Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91																																																																												

TETC154

GROUNDWATER SAMPLING

Sample ID: P03MW29W4

PROJECT NAME Phelps Collins R1 JOB NO: 931800-12 DATE: 8/25/93
 WELL NO. MW2 LOCATION Site 3
 WEATHER CONDITIONS Hot, sunny, strong breeze AMBIENT TEMP: 95°F
 PERSONNEL Play & J. Smith
 REVIEWED BY: DPJ

EQUIPMENT USED: Peristaltic Pump & disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE	SAMPLING DEVICE
Type Device? <u>Peristaltic Pump</u>	Type Device? <u>metals → peristaltic pump</u>
How was the device decontaminated? <u>see logbook</u>	How was the device decontaminated? <u>DI water → methanol; air dry</u>
How was the line decontaminated? <u>see logbook</u>	How was the line decontaminated? <u>disposable new nylon cord used each time</u>
Which well was previously purged? <u>Site 3 MW3</u>	Which well was previously sampled? <u>P03MW34W4</u>

INITIAL WELL VOLUME	PURGING
Well diameter (in.) <u>2"</u>	Time started <u>1504</u> Finished <u>1538</u>
Stickup (ft.) <u>22'</u>	Volume purged <u>gallons</u>
Depth to bottom of well (ft.) <u>BTOC 32.21</u>	Comments on Well Recovery <u>none</u>
Depth to water surface (ft.) <u>BTOC 18.75</u>	Additional Comments <u>well had some fibers (from rope?) in it.</u>
Length of water (ft.) <u>13.46</u>	
Volume of water (ft ³) <u>0.3</u>	
(gal.) <u>2.2</u>	
Amount of sediment at bottom of well (ft.) <u>~0.1' NM</u>	Sample Collected: Start <u>1539</u>
LNAPL (ft.) <u>NM</u> DNAPL (ft.) <u>NM</u>	Finish <u>1555</u>

IN-SITU TESTING Date: 8/25/93

	Time: <u>1504</u>	<u>1515</u>	<u>1523</u>	<u>1532</u>	<u>1538</u>	<u>1555</u>
Water Level # <u>BTOC</u>	<u>18.77</u>	<u>18.77</u>	<u>18.77</u>	<u>18.78</u>	<u>18.76</u>	<u>18.55</u>
Well Volume Purged (gal.)	<u>0</u>	<u>2.5</u>	<u>5</u>	<u>7</u>	<u>8</u>	<u>8-25-93</u>
Turbidity	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>BL</u>
Odor	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)	<u>7.67</u>	<u>7.55</u>	<u>7.50</u>	<u>7.52</u>	<u>7.85</u>	<u>7.85</u>
Conductivity (µ mhos)	<u>532</u>	<u>507</u>	<u>5.20</u>	<u>4.88</u>	<u>559</u>	<u>559</u>
Water Temperature (°F)	<u>76.9</u>	<u>63.8</u>	<u>62.0</u>	<u>61.4</u>	<u>63.9</u>	<u>63.9</u>

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal 1 ft. length 2" = 0.022 ft³ or 0.16 gal
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC134

NM = Not Measured

G-49

BTOC = Below Top of (outer steel) casing

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: P03 MW3 GW4

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8/25/93
 WELL NO. MW3 LOCATION Sik 3
 WEATHER CONDITIONS Sunny, clear, sl. breezy AMBIENT TEMP: ~75°F
 PERSONNEL J. Smith & P. Lay
 REVIEWED BY: DFS

EQUIPMENT USED: Peristaltic Pump & disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE
 Type Device? Peristaltic Pump
 How was the device decontaminated? see logbook
 How was the line decontaminated? see logbook
 Which well was previously purged? Sik 5 MW2

SAMPLING DEVICE for metals → peristaltic pump
 Type Device? teflon bailer for VOCs, SVOCs, TPH
 How was the device decontaminated? DI water → methanol; air dry
 How was the line decontaminated? disposable new nylon cord used each time
 Which well was previously sampled? P05 MW2 GW4

INITIAL WELL VOLUME
 Well diameter (in.) 2"
 Stickup (ft.) ~2'
 Depth to bottom of well (ft.) BTOC 24.95
 Depth to water surface (ft.) BTOC 14.08
 Length of water (ft.) 10.87
 Volume of water (ft³) 0.24
 (gal.) 1.7
 Amount of sediment at bottom of well (ft.) NM
 LNAPL (ft.) NM DNAPL (ft.) NM

PURGING
 Time started 0951 Finished 1014
 Volume purged gallons
 Comments on Well Recovery none
 Additional Comments none
 Samples Collected: Start 1014
 Sample time 1030 Finish 1030

IN-SITU TESTING	Date: <u>8/25/93</u>					
	Time: <u>0951</u>	<u>1000</u>	<u>10:06</u>	<u>1013</u>	<u>1021</u>	<u>1030</u>
Water Level if BTOC	<u>14.12</u>	<u>14.12</u>	<u>14.12</u>	<u>14.12</u>	<u>14.07</u>	<u>14.07</u>
Well Volume Purged (gal.)	<u>0</u>	<u>2.5</u>	<u>4.5</u>	<u>6.0</u>	<u>6.5</u>	<u>6.5</u>
Turbidity	<u>sl. cloudy</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>
Odor	<u>None</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)	<u>7.46</u>	<u>7.60</u>	<u>7.63</u>	<u>7.65</u>	<u>7.82</u>	<u>7.82</u>
Conductivity (µmhos)	<u>472</u>	<u>425</u>	<u>420</u>	<u>430</u>	<u>492</u>	<u>492</u>
Water Temperature (°F)	<u>64.6</u>	<u>59.0</u>	<u>57.9</u>	<u>56.7</u>	<u>60.3</u>	<u>60.3</u>

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC134

NM = Not Measured

G-50

BTOC = Below Top of (Outer steel) Casing

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: P03MW4GW4

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8/25/93
 WELL NO. MW4 LOCATION Site 3
 WEATHER CONDITIONS Sunny, clear, sl. breezy AMBIENT TEMP: ~80°F
 PERSONNEL J. Smith, P. Lays
 REVIEWED BY: DF Jager

EQUIPMENT USED: Peristaltic Pump + disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE Type Device? <u>Peristaltic Pump</u> How was the device decontaminated? <u>see logbook</u> How was the line decontaminated? <u>see logbook</u> Which well was previously purged? <u>Site 3 MW3</u>	SAMPLING DEVICE <u>for metals → peristaltic pump</u> Type Device? <u>stainless steel teflon bailer for VOCs, SVOCs, TPH</u> How was the device decontaminated? <u>JOS 8/25/93 Duster 8/25/93 DI water → possible alconox → DI water → methanol; airdry</u> How was the line decontaminated? <u>disposable new nylon cord used each time</u> Which well was previously sampled? <u>P03 MW3 GW4</u>

INITIAL WELL VOLUME

Well diameter (in.) 2"
 Stickup (ft.) 22'
 Depth to bottom of well (ft.) BTOC 32.00
 Depth to water surface (ft.) BTOC 18.32
 Length of water (ft.) 32.00 - 18.32 = 13.68
 Volume of water (ft³) 0.39 0.30
 (gal.) 27 2.18

Amount of sediment at bottom of well (ft.) NM

LNAPL (ft.) NM DNAPL (ft.) NM

PURGING

Time started 1049 Finished 1119
 Volume purged ~8 gallons
 Comments on Well Recovery none

Additional Comments none

Sample Collected: Start 1120
 Sample time: Finish 1140

IN-SITU TESTING	Date: 8/25/93						
	Time: 1049	1101	1108	1119	1124	1135	
Water Level # BTOC	18.37	18.35	18.35	18.38	18.32	NM	
Well Volume Purged (gal.)	0	2.5	5	7.5			
Turbidity	clear	clear	clear	clear		cloudy	
Odor	None	None	None	None		None	
Organic Vapor (ppm)	NM	NM	NM	NM		NM	
pH (units)	7.82	7.77	7.73	7.75		7.78	
Conductivity (µ mhos)	6.93	4.74	4.63	5.38		6.20	
Water Temperature (°F) of 8/25/93	72.5	64.1	63.2	64.3		67.6	
Notes:	1 ft. length of 4"	= 0.087 m ³ or 0.65 gal.		1 ft. length 2" = 0.022 m ³ or 0.16 gal			
Turbidity choices:	clear, turbid, opaque						
	Revision Date: 2-8-91						

2.7
x 3
8.1 gal
in 3 well
Vols.

2.2
3
6.6 gal
in 3 well
Vols.

TETC134

NM = Not Measured

G-51

BTOC = Below Top of (Outer steel) Casing

after sampling

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: ~~P3MWS~~ P3MW9GW4

and blind dupe
P3MW9GW4
(1200)

(double
volume
for MSM
11:30

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8/26/93
WELL NO. MWS LOCATION Sik 3
WEATHER CONDITIONS sunny, humid, calm AMBIENT TEMP: ~80 °F
PERSONNEL P. Lag + J. Smith
REVIEWED BY: DFS

EQUIPMENT USED: Peristaltic Pump + disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE
Type Device? Peristaltic Pump
How was the device decontaminated? see logbook
How was the line decontaminated? see logbook
Which well was previously purged? Sik 3 MW2

SAMPLING DEVICE metals → peristaltic pump
Type Device? teflon bailer for VOCs, SVOCs, TPH
How was the device decontaminated? DI water → potable + alconox → DI water → methanol; air dry
How was the line decontaminated? disposable new nylon cord used each time
Which well was previously sampled?

INITIAL WELL VOLUME
Well diameter (in.) 2"
Stickup (ft.) ~2'
Depth to bottom of well (ft.) BTOC 57.54'
Depth to water surface (ft.) BTOC 18.50'
Length of water (ft.) 39.04'
Volume of water (ft³) 0.86
(gal.) 6.2
Amount of sediment at bottom of well (ft.) NM
LNAPL (ft.) NM DNAPL (ft.) NM

PURGING
Time started 0942 Finished 1110
Volume purged ~22 gallons
Comments on Well Recovery none
Additional Comments none
Samples Collected: Start 1111
1130 time sample / MSMSD Finish 1138
1200 time endupe

IN-SITU TESTING	Date: <u>8/24/93</u>						
	Time: <u>0943</u>	<u>1002</u>	<u>1021</u>	<u>1040</u>	<u>1101</u>	<u>1112</u>	<u>1138</u>
Water Level if BTOC	<u>1857</u>	<u>1858</u>	<u>1858</u>	<u>1858</u>	<u>1857</u>	<u>1847</u>	<u>NM</u>
Well Volume Purged (gal.)	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>		<u>~22</u>
Turbidity	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)	<u>7.17</u>	<u>7.92</u>	<u>8.18</u>	<u>8.03</u>	<u>8.11</u>	<u>8.81</u>	<u>8.81</u>
Conductivity (µ mhos)	<u>292</u>	<u>323</u>	<u>432</u>	<u>340</u>	<u>335</u>	<u>332</u>	<u>332</u>
Water Temperature (°F)	<u>70.5</u>	<u>61.7</u>	<u>64.2</u>	<u>66.4</u>	<u>63.7</u>	<u>65.5</u>	<u>65.5</u>

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal 1 ft. length 2" = 0.022 ft³ or 0.16 gal
Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC154

NM = Not Measured

G-52

BTOC = Below Top of (Outer steel) casing

FIGURE 3-2

GROUNDWATER SAMPLING

TF4MW1

Sample ID: P4mw1Gw4

PROJECT NAME <u>Phelps Collins</u>		JOB NO: <u>931800</u>		DATE: <u>8-14-93</u>		
WELL NO. <u>MW1</u>		LOCATION <u>Site 4</u>				
WEATHER CONDITIONS <u>Sunny, warm</u>		AMBIENT TEMP: <u>76°F</u>				
PERSONNEL <u>PH Lay, m0 stoker</u>						
REVIEWED BY: <u>JSBmege 9/21/93</u> *samples unusable - arrived warm						
EQUIPMENT USED: <u>Bailer, rope, pump assembly, filter</u>						
PURGING DEVICE			SAMPLING DEVICE			
Type Device? <u>Bailer</u>			Type Device? <u>Bailer</u>			
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>See logbook</u>			
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>			
Which well was previously purged? <u>PS MW 2</u>			Which well was previously sampled? <u>PS MW 2</u>			
INITIAL WELL VOLUME			PURGING			
Well diameter (in.) <u>2"</u>			Time started <u>0926</u> Finished <u>0945</u>			
Stickup (ft.) <u>2'</u>			Volume purged <u>9 gals</u>			
Depth to bottom of well (ft.) <u>36.0'</u>			Comments on Well Recovery <u>immediate</u>			
Depth to water surface (ft.) <u>23.2'</u>			Additional Comments <u>—</u>			
Length of water (ft.) <u>12.8</u>						
Volume of water (ft ³) <u>0.28</u>						
(gal.) <u>~2</u>						
Amount of sediment at bottom of well (ft.) <u>—</u>			Samples Collected: Start <u>1016</u>			
LNAPL (ft.) <u>—</u> DNAPL (ft.) <u>—</u>			Finish <u>1050</u>			
IN-SITU TESTING	Date: <u>08/14/93</u>	<u>8/14/93</u>	<u>8-14-93</u>	<u>8-14-93</u>	<u>8-14-93</u>	<u>8-14-93</u>
	Time: <u>0926</u>	<u>0930</u>	<u>0935</u>	<u>0940</u>	<u>0945</u>	<u>1015</u>
Water Level	<u>23.2'</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>23.2</u>	<u>23.2</u>
Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>—</u>
Turbidity	<u>None</u>	<u>SI. PAL</u>	<u>SI. PAL</u>	<u>SI. PAL</u>	<u>SI. PAL</u>	<u>SI. PAL</u>
Odor	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>
Organic Vapor (ppm)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
pH (units)	<u>8.16</u>	<u>8.34</u>	<u>8.38</u>	<u>8.36</u>	<u>8.38</u>	<u>8.55</u>
Conductivity (µ mhos)	<u>314</u>	<u>268</u>	<u>272</u>	<u>268</u>	<u>264</u>	<u>266</u>
Water Temperature (°C)	<u>60.8</u>	<u>57.7</u>	<u>56.5</u>	<u>56.4</u>	<u>56.8</u>	<u>56.7</u>
Notes: 1 ft. length of 4" = 0.087 ft ³ or 0.65 gal 1 ft. length 2" = 0.022 ft ³ or 0.16 gal Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91						

TETC154

GROUNDWATER SAMPLING

TF4MW1 Resample

Sample ID: P4 MW16W4

PROJECT NAME <u>Phelps Collins</u>		JOB NO: <u>931800-12</u>		DATE: <u>8-17-93</u>		
WELL NO. <u>MW1</u>		LOCATION <u>Site 4 Third fire training area</u>				
WEATHER CONDITIONS <u>Hot, Hazy</u>		AMBIENT TEMP: <u>-85°F</u>				
PERSONNEL <u>Phelan & M. Stoker</u>						
REVIEWED BY: <u>JS Bruegel</u> <u>9/21/93</u> * well resampled - samples arrived at lab warm						
EQUIPMENT USED: <u>Bailer, rope, pump assembly, filter</u>						
PURGING DEVICE			SAMPLING DEVICE			
Type Device? <u>Bailer</u>			Type Device? <u>Bailer</u>			
How was the device decontaminated? <u>see logbook</u>			How was the device decontaminated? <u>See logbook</u>			
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>			
Which well was previously purged? _____			Which well was previously sampled? _____			
INITIAL WELL VOLUME			PURGING			
Well diameter (in.) <u>2"</u>			Time started <u>1442</u> Finished <u>1503</u>			
Stickup (ft.) <u>~2</u>			Volume purged <u>10 gals</u>			
Depth to bottom of well (ft.) <u>36'</u>			Comments on Well Recovery <u>immediate</u>			
Depth to water surface (ft.) <u>23.21</u>			Additional Comments _____			
Length of water (ft.) <u>12.79</u>			_____			
Volume of water (ft ³) <u>0.28</u>			_____			
(gal.) <u>~2</u>			_____			
Amount of sediment at bottom of well (ft.) _____			Samples Collected: Start <u>1523</u>			
LNAPL (ft.) _____ DNAPL (ft.) _____			Finish <u>1550</u>			
IN-SITU TESTING						
Date:	<u>8-17-93</u>					
Time:	<u>14:46</u>	<u>14:49</u>	<u>14:51</u>	<u>14:53</u>	<u>14:57</u>	<u>1501</u>
Water Level	<u>23.21</u>					<u>23.25</u>
Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>10</u>
Turbidity	<u>sl</u>	<u>sl</u>	<u>mod</u>	<u>mod</u>	<u>mod</u>	<u>mod</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
pH (units)	<u>7.75</u>	<u>7.64</u>	<u>7.70</u>	<u>7.67</u>	<u>7.68</u>	<u>7.65</u>
Conductivity (µ mhos)	<u>314</u>	<u>297</u>	<u>258</u>	<u>248</u>	<u>242</u>	<u>245</u>
Water Temperature (°C)	<u>64.0</u>	<u>60.2</u>	<u>59.9</u>	<u>56.8</u>	<u>56.7</u>	<u>56.7</u>
Notes: 1 ft. length of 4" = 0.087 m ³ or 0.65 gal. 1 ft. length 2" = 0.022 m ³ or 0.16 gal. Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91						

TETC154

TF4 MW 2

The Earth Technology Corporation

GROUNDWATER SAMPLING

Sample ID: P046MW42

PROJECT NAME <u>Phelps Collins RT</u>		JOB NO: <u>931800-12</u>		DATE: <u>8-11-93</u>		
WELL NO. <u>P046 MW 2</u>		LOCATION <u>Site 4, Third Fire Training area</u>				
WEATHER CONDITIONS <u>cool Sunny</u>		AMBIENT TEMP: <u>~72°F</u>				
PERSONNEL <u>P.H. Lay, M.C. Stoker</u>						
REVIEWED BY: <u>JSBriegel 9/21/93</u>						
EQUIPMENT USED: <u>Bailer, rope, pump assembly + fittings, Filter</u>						
PURGING DEVICE			SAMPLING DEVICE			
Type Device? <u>Bailer</u>			Type Device? <u>Bailer</u>			
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>See logbook</u>			
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>			
Which well was previously purged? <u>P046 MW 3</u>			Which well was previously sampled? <u>P4 MW 3</u>			
INITIAL WELL VOLUME			PURGING			
Well diameter (in.) <u>2"</u>			Time started <u>1009</u> Finished <u>1021</u>			
Stickup (ft.) <u>2'</u>			Volume purged <u>5 gallons</u>			
Depth to bottom of well (ft.) <u>37.2' BTOC</u>			Comments on Well Recovery <u>immediate</u>			
Depth to water surface (ft.) <u>29' BTOC</u>			Additional Comments <u>-</u>			
Length of water (ft.) <u>8.2'</u>						
Volume of water (ft ³) <u>0.18</u>						
(gal.) <u>~1.3</u>						
Amount of sediment at bottom of well (ft.) <u>-</u>			Samples Collected: Start <u>1025</u>			
LNAPL (ft.) <u>-</u> DNAPL (ft.) <u>-</u>			Finish <u>1034</u>			
IN-SITU TESTING		Date: <u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>
Time: <u>1009</u>		<u>1013</u>	<u>1017</u>	<u>1021</u>	<u>1034</u>	
Water Level		<u>29'</u>	<u>-</u>	<u>-</u>	<u>29.03'</u>	
Well Volume Purged (gal.)		<u>-0-</u>	<u>2</u>	<u>4</u>	<u>5</u>	
Turbidity		<u>sl</u>	<u>sl</u>	<u>sl</u>	<u>sl</u>	
Odor		<u>none</u>	<u>non</u>	<u>non</u>	<u>non</u>	
Organic Vapor (ppm)		<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>0</u>	
pH (units)		<u>8.21</u>	<u>7.97</u>	<u>7.92</u>	<u>7.69</u>	<u>7.58</u>
Conductivity (μ mhos)		<u>299</u>	<u>271</u>	<u>369</u>	<u>310</u>	<u>320</u>
Water Temperature (°C)		<u>60.1</u>	<u>58.1</u>	<u>56.8</u>	<u>56.5</u>	<u>56.7</u>
Notes: 1 ft. length of 4" = 0.087 ft ³ or 0.65 gal Turbidity choices: clear, turbid, opaque 1 ft. length 2" = 0.022 ft ³ or 0.16 gal Revision Date: 2-8-91						

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GROUNDWATER SAMPLING

TF4 MW3

Sample ID: P046MW3

PROJECT NAME <u>Phelps Collins RT</u>		JOB NO: <u>931800-12</u>	DATE: <u>8-11-93</u>			
WELL NO. <u>MW3</u>	LOCATION <u>Site 4 Third Fire training area</u>					
WEATHER CONDITIONS <u>cool -70°</u>	AMBIENT TEMP: <u>-70°</u>					
PERSONNEL <u>P. A. Lay, M. E. Stoker</u>						
REVIEWED BY: <u>J. S. Biegel 9/21/93</u>						
EQUIPMENT USED: <u>Bailer, pump assembly, fittings, filter, rope</u>						
PURGING DEVICE		SAMPLING DEVICE				
Type Device? <u>Bailer</u>		Type Device? <u>Bailer</u>				
How was the device decontaminated? <u>see logbook</u>		How was the device decontaminated? <u>see logbook</u>				
How was the line decontaminated? <u>dedicated</u>		How was the line decontaminated? <u>dedicated</u>				
Which well was previously purged? <u>none</u>		Which well was previously sampled? <u>none</u>				
INITIAL WELL VOLUME		PURGING				
Well diameter (in.) <u>2"</u>		Time started <u>0858</u> Finished <u>0920</u>				
Stickup (ft.) <u>2'</u>		Volume purged <u>7.5 gal</u>				
Depth to bottom of well (ft.) <u>36.7 BTOC</u>		Comments on Well Recovery <u>immediate</u>				
Depth to water surface (ft.) <u>26.85 BTOC</u>		Additional Comments _____				
Length of water (ft.) <u>10.05</u>		_____				
Volume of water (ft ³) <u>2.49-11-93</u>		Samples Collected: Start <u>0925</u>				
(gal.) <u>1.6 gal</u>		Finish <u>0940</u>				
Amount of sediment at bottom of well (ft.) <u>—</u>		_____				
LNAPL (ft.) <u>—</u> DNAPL (ft.) <u>—</u>		_____				
IN-SITU TESTING	Date: <u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>
	Time: <u>0858</u>	<u>0906</u>	<u>0912</u>	<u>0918</u>	<u>0920</u>	<u>0940</u>
Water Level	<u>26.85</u>				<u>26.94</u>	<u>26.95</u>
Well Volume Purged (gal.)	<u>in. final</u>	<u>2 gal</u>	<u>3.5</u>	<u>5 gal</u>	<u>7 gal</u>	<u>—</u>
Turbidity	<u>SI</u>	<u>SI</u>	<u>SI</u>	<u>SI</u>	<u>SI</u>	<u>SI</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
pH (units)	<u>8.22</u>	<u>7.71</u>	<u>8.30</u>	<u>8.37</u>	<u>8.26</u>	<u>8.30</u>
Conductivity (µ mhos)	<u>477</u>	<u>424</u>	<u>431</u>	<u>424</u>	<u>414</u>	<u>450</u>
Water Temperature (°F)	<u>60.2</u>	<u>58.8</u>	<u>58.4</u>	<u>58.6</u>	<u>58.4</u>	<u>58.5</u>
Notes: 1 ft. length of 4" = 0.087 ft ³ or 0.65 gal 1 ft. length 2" = 0.022 ft ³ or 0.16 gal Turbidity choices: clear, turbid, opaque Revision Date: 2-6-91						

TETC154

GROUNDWATER SAMPLING

TF4MW4

Sample ID: P046MW4

PROJECT NAME <u>Phelps Collins RI</u>		JOB NO: <u>931500-12</u>		DATE: <u>8-12-93</u>	
WELL NO. <u>mw4</u>		LOCATION <u>Site 4 Third Free Training Area</u>			
WEATHER CONDITIONS <u>Sunny, hot, hazy</u>		AMBIENT TEMP: <u>85°F</u>			
PERSONNEL <u>PH. L., M. S. Stoker</u>					
REVIEWED BY: <u>J. Brugel 9/2/93</u>					
EQUIPMENT USED: <u>Bailer, Pump 8-2-93, pump assembly</u>					
PURGING DEVICE			SAMPLING DEVICE		
Type Device? <u>Bailer</u>			Type Device? <u>Bailer</u>		
How was the device decontaminated? <u>See Logbook</u>			How was the device decontaminated? <u>See Logbook</u>		
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>		
Which well was previously purged? <u>P02mw5</u>			Which well was previously sampled? <u>P02mw5</u>		
INITIAL WELL VOLUME			PURGING		
Well diameter (in.) <u>2"</u>			Time started <u>1454</u> Finished <u>1513</u>		
Stickup (ft.) <u>~2'</u>			Volume purged <u>7.5 gal.</u>		
Depth to bottom of well (ft.) <u>36.4' BTOC</u>			Comments on Well Recovery <u>moderate</u>		
Depth to water surface (ft.) <u>27.56' BTOC</u>			Additional Comments <u>—</u>		
Length of water (ft.) <u>8.84'</u>			Samples Collected: Start <u>1545</u>		
Volume of water (ft ³) <u>0.194</u>			Finish <u>1615</u>		
(gal.) <u>~1.4</u>					
Amount of sediment at bottom of well (ft.) <u>—</u>					
LNAPL (ft.) <u>—</u> DNAPL (ft.) <u>—</u>					
IN-SITU TESTING					
Date:	<u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>	<u>8-12-93</u>
Time:	<u>1454</u>	<u>1458</u>	<u>1503</u>	<u>1506</u>	<u>1545</u>
Water Level	<u>27.56</u>			<u>33.35'</u>	<u>27.67</u>
Well Volume Purged (gal.)	<u>~0-</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>~</u>
Turbidity	<u>clear</u>	<u>sl</u>	<u>sl</u>	<u>sl</u>	<u>sl.</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>~0-</u>	<u>~0-</u>	<u>~0-</u>	<u>~0-</u>	<u>~0-</u>
pH (units)	<u>8.26</u>	<u>8.20</u>	<u>8.28</u>	<u>8.32</u>	<u>8.46</u>
Conductivity (µ mhos)	<u>437</u>	<u>314</u>	<u>326</u>	<u>414</u>	<u>110</u>
Water Temperature (°C)	<u>61.7</u>	<u>59.6</u>	<u>60.4</u>	<u>60.1</u>	<u>60.2</u>
Notes: 1 ft. length of 4" = 0.087 ft ³ or 0.65 gal 1 ft. length 2" = 0.022 ft ³ or 0.16 gal					
Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91					

TETC154

GROUNDWATER SAMPLING

Sample ID: PSMW1GWS4

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8-15-93
WELL NO. MW1 LOCATION Site S old 6th 2nd Fire training area
WEATHER CONDITIONS Cool windy cloudy AMBIENT TEMP: ~72°F
PERSONNEL M. Stoker & P. H. Lay
REVIEWED BY: DKJ

EQUIPMENT USED: Pump, hose, Bailor, filter

PURGING DEVICE

Type Device? Pump
How was the device decontaminated? See logbook
How was the line decontaminated? ded. catel
Which well was previously purged? P8mw1

SAMPLING DEVICE

Type Device? Bailor
How was the device decontaminated? See logbook
How was the line decontaminated? ded. catel
Which well was previously sampled? P8mw1

INITIAL WELL VOLUME

Well diameter (in.) 2"
Stickup (ft.) ~2'
Depth to bottom of well (ft.) 22.33'
Depth to water surface (ft.) 7.29
Length of water (ft.) 15.04
Volume of water (ft³) 0.33
(gal.) 2.4
Amount of sediment at bottom of well (ft.) _____
LNAPL (ft.) _____ DNAPL (ft.) _____

PURGING

Time started 1423 Finished 1515
Volume purged 13.5 gals
Comments on Well Recovery immediate
Additional Comments _____
Samples Collected: Start 1530
Finish 1550

IN-SITU TESTING

	Date: <u>8-15-93</u>	<u>8-15-93</u>	<u>8-15-93</u>	<u>8-15-93</u>	<u>8-15-93</u>	<u>8-15-93</u>	<u>8-15-93</u>
Time:	<u>1423</u>	<u>1433</u>	<u>1439</u>	<u>1450</u>	<u>1458</u>	<u>1512</u>	<u>1530</u>
Water Level	<u>7.29'</u>						<u>7.35</u>
Well Volume Purged (gal.)	<u>-0-</u>	<u>2.5</u>	<u>5</u>	<u>7.5</u>	<u>10</u>	<u>13</u>	<u>15</u>
Turbidity	<u>SI.</u>	<u>SI.</u>	<u>SI.</u>	<u>SI.</u>	<u>SI.</u>	<u>SI.</u>	<u>SI.</u>
Odor	<u>SI. organic</u>	<u>SI.</u>	<u>SI.</u>	<u>SI.</u>	<u>SI.</u>	<u>SI.</u>	<u>SI.</u>
Organic Vapor (ppm)	<u>-0-</u>						
pH (units)	<u>6.94</u>	<u>6.61</u>	<u>6.15</u>	<u>6.17</u>	<u>6.50</u>	<u>6.90</u>	<u>6.78</u>
Conductivity (µ mhos)	<u>517</u>	<u>445</u>	<u>454</u>	<u>438</u>	<u>451</u>	<u>474</u>	<u>468</u>
Water Temperature (°C)	<u>65.8</u>	<u>64.7</u>	<u>62.9</u>	<u>63.5</u>	<u>62.8</u>	<u>61.7</u>	<u>62.3</u>

Notes:

1 ft. length of 4"

Turbidity choices:

= 0.087 m³ or 0.65 gal.

clear, turbid, opaque

1 ft. length 2" = 0.022 m³ or 0.16 gal

Revision Date: 2-8-91

TETC154

GROUNDWATER SAMPLING

Sample ID: PSMW26W4

PROJECT NAME <u>Phelps Collins RI</u>		JOB NO: <u>931800-12</u>		DATE: <u>8-13-93</u>																																																																								
WELL NO. <u>MW2</u>		LOCATION <u>Site 5</u>																																																																										
WEATHER CONDITIONS <u>Sunny, hot, hazy</u>		AMBIENT TEMP: <u>82°F</u>																																																																										
PERSONNEL <u>Phelan, MS Blizard</u>																																																																												
REVIEWED BY: <u>DFJ</u>																																																																												
EQUIPMENT USED: <u>Bailer, Pump Assembly, Filter</u>																																																																												
PURGING DEVICE			SAMPLING DEVICE																																																																									
Type Device? <u>Bailer</u>			Type Device? <u>Bailer</u>																																																																									
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>See logbook</u>																																																																									
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>																																																																									
Which well was previously purged? <u>PSMW4</u>			Which well was previously sampled? <u>PSMW4</u>																																																																									
INITIAL WELL VOLUME			PURGING																																																																									
Well diameter (in.) <u>2"</u>			Time started <u>1750</u> Finished <u>1800</u>																																																																									
Stickup (ft.) <u>1'</u>			Volume purged <u>10 gals</u>																																																																									
Depth to bottom of well (ft.) <u>21.2' BTOC</u>			Comments on Well Recovery <u>Immediate</u>																																																																									
Depth to water surface (ft.) <u>6.4' BTOC</u>			Additional Comments _____																																																																									
Length of water (ft.) <u>14.8'</u>			_____																																																																									
Volume of water (ft ³) _____			Samples Collected: Start <u>1812</u> <u>1835</u>																																																																									
(gal.) <u>~2.4</u>			PHL 8-13-93 <u>1825</u> <u>1845</u>																																																																									
Amount of sediment at bottom of well (ft.) _____			Finish _____																																																																									
LNAPL (ft.) _____ DNAPL (ft.) _____			_____																																																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>IN-SITU TESTING</th> <th>Date: <u>8-13-93</u></th> <th><u>8-13-93</u></th> <th><u>8-13-93</u></th> <th><u>8-13-93</u></th> <th><u>8-13-93</u></th> <th><u>8-13-93</u></th> </tr> </thead> <tbody> <tr> <td>Time:</td> <td><u>1750</u></td> <td><u>1752</u></td> <td><u>1754</u></td> <td><u>1757</u></td> <td><u>1800</u></td> <td><u>1835</u></td> </tr> <tr> <td>Water Level</td> <td><u>6.4'</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>6.65</u></td> <td><u>6.45</u></td> </tr> <tr> <td>Well Volume Purged (gal.)</td> <td><u>~0</u></td> <td><u>2.5</u></td> <td><u>5</u></td> <td><u>7.5</u></td> <td><u>10</u></td> <td><u>-</u></td> </tr> <tr> <td>Turbidity</td> <td><u>none</u></td> <td><u>sl.</u></td> <td><u>mod</u></td> <td><u>mod</u></td> <td><u>mod</u></td> <td><u>mod</u></td> </tr> <tr> <td>Odor</td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> <td><u>none</u></td> </tr> <tr> <td>Organic Vapor (ppm)</td> <td><u>-0-</u></td> <td><u>-0-</u></td> <td><u>-0-</u></td> <td><u>-0-</u></td> <td><u>-0-</u></td> <td><u>-0-</u></td> </tr> <tr> <td>pH (units)</td> <td><u>7.69</u></td> <td><u>7.90</u></td> <td><u>7.69</u></td> <td><u>7.55</u></td> <td><u>7.54</u></td> <td><u>7.79</u></td> </tr> <tr> <td>Conductivity (µ mhos)</td> <td><u>149</u></td> <td><u>198</u></td> <td><u>197</u></td> <td><u>203</u></td> <td><u>193</u></td> <td><u>210</u></td> </tr> <tr> <td>Water Temperature (°C)</td> <td><u>20.1</u></td> <td><u>46.7</u></td> <td><u>65.4</u></td> <td><u>64.9</u></td> <td><u>64.6</u></td> <td><u>67.6</u></td> </tr> </tbody> </table>							IN-SITU TESTING	Date: <u>8-13-93</u>	<u>8-13-93</u>	<u>8-13-93</u>	<u>8-13-93</u>	<u>8-13-93</u>	<u>8-13-93</u>	Time:	<u>1750</u>	<u>1752</u>	<u>1754</u>	<u>1757</u>	<u>1800</u>	<u>1835</u>	Water Level	<u>6.4'</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>6.65</u>	<u>6.45</u>	Well Volume Purged (gal.)	<u>~0</u>	<u>2.5</u>	<u>5</u>	<u>7.5</u>	<u>10</u>	<u>-</u>	Turbidity	<u>none</u>	<u>sl.</u>	<u>mod</u>	<u>mod</u>	<u>mod</u>	<u>mod</u>	Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	Organic Vapor (ppm)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	pH (units)	<u>7.69</u>	<u>7.90</u>	<u>7.69</u>	<u>7.55</u>	<u>7.54</u>	<u>7.79</u>	Conductivity (µ mhos)	<u>149</u>	<u>198</u>	<u>197</u>	<u>203</u>	<u>193</u>	<u>210</u>	Water Temperature (°C)	<u>20.1</u>	<u>46.7</u>	<u>65.4</u>	<u>64.9</u>	<u>64.6</u>	<u>67.6</u>
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Turbidity	<u>none</u>	<u>sl.</u>	<u>mod</u>	<u>mod</u>	<u>mod</u>	<u>mod</u>																																																																						
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>																																																																						
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Notes: 1 ft. length of 4" = 0.057 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91																																																																												

TETC154

GROUNDWATER SAMPLING

Resample

Sample ID: PO5MW24W4

PROJECT NAME <u>Phelps Collins RI</u>		JOB NO: <u>931800-12</u>		DATE: <u>8/24/93</u>	
WELL NO. <u>MW2</u>		LOCATION <u>Site 5</u>			
WEATHER CONDITIONS <u>Sunny, breezy, warm</u>		AMBIENT TEMP: <u>~ 75 °F</u>			
PERSONNEL <u>P. Lay + J Smith</u>					
REVIEWED BY: <u>DFT</u>					
EQUIPMENT USED: <u>Pump & hose, teflon bailer</u>					
PURGING DEVICE			SAMPLING DEVICE		
Type Device? <u>peristaltic</u>			Type Device? <u>teflon bailer</u>		
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>See logbook</u>		
How was the line decontaminated? <u>its new</u>			How was the line decontaminated? <u>its new</u>		
Which well was previously purged? <u>Site 5, MW4</u>			Which well was previously sampled? <u>PO5MW46W4</u>		
INITIAL WELL VOLUME			PURGING		
Well diameter (in.) <u>2"</u>			Time started <u>1900</u> Finished <u>1925</u>		
Stickup (ft.) <u>~2 ft</u>			Volume purged <u>7 gal</u>		
Depth to bottom of well (ft.) <u>BTL 21.2</u>			Comments on Well Recovery <u>None</u>		
Depth to water surface (ft.) <u>6.57</u>			Additional Comments <u>None</u>		
Length of water (ft.) <u>14.63</u>			Samples Collected: Start <u>1925</u>		
Volume of water (ft ³) <u>0.32</u>			Finish <u>1930</u>		
(gal.) <u>2.3</u>					
Amount of sediment at bottom of well (ft.) <u>NM</u>					
LNAPL (ft.) <u>NM</u> DNAPL (ft.) <u>NM</u>					
IN-SITU TESTING					
Date:	<u>8/24/93</u>				
Time:	<u>1900</u>	<u>1909</u>	<u>1918</u>	<u>1924</u>	<u>1928</u>
Water Level (ft. BTL)	<u>6.57 / 7.0</u>	<u>6.92</u>	<u>7.07</u>	<u>NM</u>	<u>6.71</u>
Well Volume Purged (gal.)	<u>0 / <1</u>	<u>2.5</u>	<u>5</u>	<u>7</u>	<u>7</u>
Turbidity	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>
Odor	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)	<u>7.40</u>	<u>7.18</u>	<u>7.08</u>	<u>7.08</u>	<u>7.22</u>
Conductivity (µ mhos)	<u>141</u>	<u>145</u>	<u>152</u>	<u>153</u>	<u>149</u>
Water Temperature (°C)	<u>71.1</u>	<u>65.5</u>	<u>64.8</u>	<u>64.2</u>	<u>64.1</u>
Notes: 1 ft. length of 4" = 0.087 ft ³ or 0.65 gal. 1 ft. length 2" = 0.022 ft ³ or 0.16 gal.					
Turbidity choices: clear, turbid, opaque					
Revision Date: 2-8-91					

TETC:54

NM = not measured

G-60

2.3 gal
x 3

6.9 gallons min

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: PSMW36W4

PROJECT NAME <u>Phelps Collins RT</u>		JOB NO: <u>231500-12</u>	DATE: <u>8-13-93</u>
WELL NO. <u>MW3</u>	LOCATION _____		
WEATHER CONDITIONS <u>Sunny, warm, hazy</u>		AMBIENT TEMP: <u>-75°F</u>	
PERSONNEL <u>PHL</u>			
REVIEWED BY: <u>DFJ</u>			
EQUIPMENT USED: <u>Pump, Bailer, hose, filter</u>			
PURGING DEVICE Type Device? <u>600 pump 2</u> How was the device decontaminated? <u>See logbook</u> How was the line decontaminated? <u>See logbook</u> Which well was previously purged? <u>P4 MW5</u>		SAMPLING DEVICE Type Device? <u>Bailer</u> How was the device decontaminated? <u>See logbook</u> How was the line decontaminated? <u>dedicated</u> Which well was previously sampled? <u>P4 MW4</u>	
INITIAL WELL VOLUME Well diameter (in.) <u>2"</u> Stickup (ft.) <u>~2'</u> Depth to bottom of well (ft.) <u>22.47 BTDC</u> Depth to water surface (ft.) <u>8.07 BTDC</u> Length of water (ft.) <u>14.4</u> Volume of water (ft ³) <u>~2.3</u> (gal.) _____ Amount of sediment at bottom of well (ft.) _____ LNAPL (ft.) _____ DNAPL (ft.) _____		PURGING Time started <u>1055</u> Finished <u>1144</u> Volume purged <u>11 gal</u> Comments on Well Recovery <u>Moderate to Immediate</u> Additional Comments _____ _____ _____ Samples Collected: Start <u>1145</u> Finish <u>1152</u>	
IN-SITU TESTING Date: <u>8-12-93</u> <u>8-13-93</u> <u>8-13-93</u> <u>8-13-93</u> <u>8-13-93</u> <u>8-12-93</u> Time: <u>1102</u> <u>1108</u> <u>1115</u> <u>1126</u> <u>1135</u> <u>1145</u> <u>plus 6-15.5y</u> Water Level <u>8.07'</u> _____ Well Volume Purged (gal.) <u>-0-</u> <u>2 1/2 g</u> <u>5g</u> <u>7.5g</u> <u>10g</u> <u>-0-</u> Turbidity <u>none</u> <u>none</u> <u>none</u> <u>none</u> <u>none</u> <u>none</u> Odor <u>none</u> <u>none</u> <u>none</u> <u>none</u> <u>none</u> <u>none</u> Organic Vapor (ppm) <u>-0-</u> <u>-0-</u> <u>-0-</u> <u>-0-</u> <u>-0-</u> <u>-0-</u> pH (units) <u>7.68</u> <u>8.12</u> <u>8.16</u> <u>8.22</u> <u>8.21</u> <u>8.18</u> Conductivity (μ mhos) <u>263</u> <u>272</u> <u>266</u> <u>268</u> <u>259</u> <u>267</u> Water Temperature (°C) <u>72.5</u> <u>68.5</u> <u>65.6</u> <u>66.4</u> <u>66.4</u> <u>66.4</u>			
Notes: 1 ft. length of 4" = 0.087 ft ³ or 0.65 gal. 1 ft. length 2" = 0.022 ft ³ or 0.16 gal. Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91			

TETC154

G-61

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: P5MW4GW4

PROJECT NAME <u>Phelps Collins RT</u>		JOB NO: <u>931800-12</u>		DATE: <u>8-13-93</u>		
WELL NO. <u>MW4</u>		LOCATION <u>Site 5</u>				
WEATHER CONDITIONS <u>Sunny, hot, hazy</u>		AMBIENT TEMP: <u>82°F</u>				
PERSONNEL <u>PHC ag, MS Blizard</u>						
REVIEWED BY: <u>DET</u>						
EQUIPMENT USED: <u>Bailer, pump assembly, Filter</u>						
PURGING DEVICE			SAMPLING DEVICE			
Type Device? <u>Bailer</u>			Type Device? <u>Bailer</u>			
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>See logbook</u>			
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>			
Which well was previously purged? <u>P5MW3GW4</u>			Which well was previously sampled? <u>P5MW3GW4</u>			
INITIAL WELL VOLUME			PURGING			
Well diameter (in.) <u>2"</u>			Time started <u>1708</u> Finished <u>1730</u>			
Stickup (ft.) <u>2'</u>			Volume purged <u>10</u>			
Depth to bottom of well (ft.) <u>23.65' BTOC</u>			Comments on Well Recovery <u>Immediate</u>			
Depth to water surface (ft.) <u>8.1' BTOC</u>			Additional Comments			
Length of water (ft.) <u>15.55'</u>						
Volume of water (ft ³)						
(gal.) <u>~ 2.5</u>						
Amount of sediment at bottom of well (ft.)			Samples Collected: Start <u>1812</u>			
LNAPL (ft.)			Finish <u>1825</u>			
DNAPL (ft.)						
IN-SITU TESTING	Date:	<u>8-13-93</u>	<u>8-13-93</u>	<u>8-13-93</u>	<u>8-13-93</u>	<u>8-13-93</u>
	Time:	<u>1708</u>	<u>1720</u>	<u>1724</u>	<u>1726</u>	<u>1729</u>
Water Level		<u>8.1</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>8.35</u>
Well Volume Purged (gal.)		<u>-0-</u>	<u>2.5</u>	<u>5</u>	<u>7.5</u>	<u>10</u>
Turbidity		<u>none</u>	<u>SL</u>	<u>Moderate</u>	<u>mod</u>	<u>mod</u>
Odor		<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)		<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
pH (units)		<u>7.59</u>	<u>7.65</u>	<u>8.04</u>	<u>7.86</u>	<u>7.75</u>
Conductivity (µ mhos)		<u>173</u>	<u>194</u>	<u>208</u>	<u>208</u>	<u>206</u>
Water Temperature (°C)		<u>22.7</u>	<u>20.3</u>	<u>69.8</u>	<u>67.7</u>	<u>67.5</u>
Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal. Turbidity choices: clear, turbid, opaque. Revision Date: 2-8-91						

TETC:154

GROUNDWATER SAMPLING

Resample

Sample ID: P5MW4GW4

PROJECT NAME <u>Phelps Collins R1</u>		JOB NO: <u>93180012</u>		DATE: <u>8/24/93</u>	
WELL NO. <u>MW4</u>		LOCATION <u>Site 5</u>			
WEATHER CONDITIONS <u>Sunny, breezy, 80°F</u>		AMBIENT TEMP: <u>~80°F</u>			
PERSONNEL <u>P. Lay - J. Smith</u>					
REVIEWED BY: <u>DEFJ</u>					
EQUIPMENT USED: <u>pump, bailer, filter, hose</u>					
PURGING DEVICE			SAMPLING DEVICE		
Type Device? <u>peristaltic</u>			Type Device? <u>bailer (Hogdon)</u>		
How was the device decontaminated? <u>see logbook</u>			How was the device decontaminated? <u>see logbook</u>		
How was the line decontaminated? <u>new</u>			How was the line decontaminated? <u>new</u>		
Which well was previously purged? <u>MW3 Sites</u>			Which well was previously sampled? <u>MW3 Sites</u>		
INITIAL WELL VOLUME			PURGING		
Well diameter (in.) <u>2"</u>			Time started <u>1604</u> Finished <u>1635</u>		
Stickup (ft.) <u>~2'</u>			Volume purged <u>10 gal</u>		
Depth to bottom of well (ft.) BTDC <u>23.65</u>			Comments on Well Recovery <u>NM</u>		
Depth to water surface (ft.) BTDC <u>8.25</u>			Additional Comments <u>none</u>		
Length of water (ft.) <u>15.4</u>			Sample Collected: Start <u>1610</u>		
Volume of water (ft ³) <u>0.3388</u>			Finish <u>1656</u>		
(gal.) <u>2.5 gal</u>					
Amount of sediment at bottom of well (ft.) <u>NM</u>					
LNAPL (ft.) <u>NM</u>					
DNAPL (ft.) <u>NM</u>					
IN-SITU TESTING					
Date:	<u>8/24/93</u>				
Time:	<u>1604</u>	<u>1613</u>	<u>1619</u>	<u>1629</u>	<u>1634</u>
Water Level ft BTDC	<u>8.25</u>	<u>8.46</u>	<u>8.45</u>	<u>8.47</u>	<u>8.46</u>
Well Volume Purged (gal.)	<u>0</u>	<u>25</u>	<u>5</u>	<u>7.5</u>	<u>9</u>
Turbidity	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)	<u>7.61</u>	<u>7.01</u>	<u>7.32</u>	<u>7.14</u>	<u>7.06</u>
Conductivity (µ mhos)	<u>184</u>	<u>167</u>	<u>228</u>	<u>180</u>	<u>181</u>
Water Temperature (°F)	<u>74.6</u>	<u>71.5</u>	<u>70.4</u>	<u>70.5</u>	<u>70.6</u>
Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal. Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91					

TETC154

stop pumping @ 1440 collect metals

G-63

NM = not measured
NA = not applicable
FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: P5MW5GW4

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8/29/93
 WELL NO. 5 LOCATION Sik 5
 WEATHER CONDITIONS cloudy, breezy, dry AMBIENT TEMP: 70°F
 PERSONNEL J. Smith & M. Stoker
 REVIEWED BY: DEF

EQUIPMENT USED: Peristaltic Pump & disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE
 Type Device? Peristaltic Pump
 How was the device decontaminated? See logbook
 How was the line decontaminated? See logbook
 Which well was previously purged? Sik 8 MW4

SAMPLING DEVICE for metals → peristaltic pump
 Type Device? teflon bailer for VOCs, SVOCs, TPH
 How was the device decontaminated? potable + alconox → potable → DI water → methanol; air dry
 How was the line decontaminated? disposable new nylon cord used each time
 Which well was previously sampled? P5MW4GW4

INITIAL WELL VOLUME
 Well diameter (in.) 2"
 Stickup (ft.) ~2'
 Depth to bottom of well (ft.) BTOC 15.5'
 Depth to water surface (ft.) BTOC 6.32
 Length of water (ft.) 9.18
 Volume of water (ft³) 0.2
 (gal.) 1.5
 Amount of sediment at bottom of well (ft.) NM
 LNAPL (ft.) NM DNAPL (ft.) NM

PURGING
 Time started 1348 Finished 1404
 Volume purged 7 gallons
 Comments on Well Recovery none
 Additional Comments none
 Samples Collected: Start 1404
1410 sample time Finish 1416

IN-SITU TESTING	Date:	8/29/93	8/29/93	8/29/93	8/29/93	8/29/93		
	Time:	1348	1353	1358	1403	1416		
Water Level # BTOC		6.57	6.67	6.68	6.68	6.65		
Well Volume Purged (gal.)		0	2	4	6	7		
Turbidity		clear	clear	clear	clear	turbid		
Odor		none	none	none	none	none		
Organic Vapor (ppm)		NM	NA	NA	NA	NA		
pH (units)		7.28	6.70	6.93	6.96	7.13		
Conductivity (μ mhos)		648	712	707	687	688		
Water Temperature (°F)		70.8	68.7	68.9	68.5	68.3		

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC154

NM = Not Measured

G-64

BTOC = Below Top of (PVC) casing
 JSS 8/29/93

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: P5MW6GW4

PROJECT NAME <u>Phelps Collins R1</u>		JOB NO: <u>931800-12</u>		DATE: <u>8/29/93</u>	
WELL NO. <u>MW6</u>		LOCATION <u>Site 5</u>			
WEATHER CONDITIONS <u>cloudy, breezy, dry</u>		AMBIENT TEMP: <u>70°F</u>			
PERSONNEL <u>M. Spiller & J. Smith</u>					
REVIEWED BY: <u>DFJ</u>					
EQUIPMENT USED: <u>Peristaltic Pump & disposable polyethylene hose; teflon bailer with disposable nylon cord</u>					
PURGING DEVICE			SAMPLING DEVICE		
Type Device? <u>Peristaltic Pump</u>			Type Device? <u>metals → peristaltic pump</u> <u>teflon bailer for VOCs, SVOCs, TPH</u>		
How was the device decontaminated? <u>see logbook</u>			How was the device decontaminated? <u>potable + alconox → potable</u> <u>DI water → methanol; air dry</u>		
How was the line decontaminated? <u>see logbook</u>			How was the line decontaminated? <u>disposable new nylon cord used each time</u>		
Which well was previously purged? <u>Site 5 MW7</u>			Which well was previously sampled? <u>P5MW7 GW4</u>		
INITIAL WELL VOLUME			PURGING		
Well diameter (in.) <u>2"</u>			Time started <u>1519</u> Finished <u>1535</u>		
Stickup (ft.) <u>2'</u>			Volume purged <u>7 gallons</u>		
Depth to bottom of well (ft.) BDC <u>15.5</u>			Comments on Well Recovery <u>none</u>		
Depth to water surface (ft.) BDC <u>6.36'</u>			Additional Comments <u>none</u>		
Length of water (ft.) <u>9.14'</u>					
Volume of water (ft ³) <u>0.20</u>					
(gal.) <u>1.5</u>					
Amount of sediment at bottom of well (ft.) <u>NM</u>			Samples Collected: Start <u>1535</u>		
LNAPL (ft.) <u>NM</u> DNAPL (ft.) <u>NM</u>			1540 Finish <u>1540</u>		
IN-SITU TESTING					
Date:	<u>8/29/93</u>				
Time:	<u>1519</u>	<u>1525</u>	<u>1530</u>	<u>1535</u>	<u>1546</u>
Water Level ft BDC	<u>6.75</u>	<u>6.80</u>	<u>6.81</u>	<u>6.83</u>	<u>6.80</u>
Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>7</u>
Turbidity	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>turbid</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)	<u>7.94</u>	<u>7.43</u>	<u>7.58</u>	<u>7.60</u>	<u>7.62</u>
Conductivity (µ mhos)	<u>308</u>	<u>344</u>	<u>357</u>	<u>360</u>	<u>374</u>
Water Temperature (°F)	<u>68.5</u>	<u>65.9</u>	<u>65.7</u>	<u>65.6</u>	<u>65.7</u>
Notes: 1 ft. length of 4" = 0.087 ft ³ or 0.65 gal. 1 ft. length 2" = 0.022 ft ³ or 0.16 gal.					
Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91					

TETC134

NM = Not Measured

G-65

BDC = Below Top of (PVC outer steel) casing
AS of 26/93

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: P5MW7604

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8/29/93
 WELL NO. MW7 LOCATION Site 5
 WEATHER CONDITIONS cloudy, breezy AMBIENT TEMP: 70 °F
 PERSONNEL M. Shih + J. Smith
 REVIEWED BY: PAW

EQUIPMENT USED: Peristaltic Pump + disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE
 Type Device? Peristaltic Pump
 How was the device decontaminated? see logbook
 How was the line decontaminated? see logbook
 Which well was previously purged? Site 5 NWS

SAMPLING DEVICE for metals → peristaltic pump
 Type Device? teflon bailer for VOCs, SVOCs, TPH
 How was the device decontaminated? DI water + alconox → DI water → methanol; air dry
 How was the line decontaminated? disposable new nylon cord used each time
 Which well was previously sampled? P5MW56W4

INITIAL WELL VOLUME
 Well diameter (in.) 2"
 Stickup (ft.) ~2'
 Depth to bottom of well (ft.) BDC 15.5
 Depth to water surface (ft.) BDC 7.24
 Length of water (ft.) 8.26
 Volume of water (ft³) 0.18
 (gal.) 1.3
 Amount of sediment at bottom of well (ft.) NM
 LNAPL (ft.) NM DNAPL (ft.) NM

PURGING
 Time started 1429 Finished 1444
 Volume purged 7 gallons
 Comments on Well Recovery none
 Additional Comments none
 Samples Collected: Start 1444 Finish 1456

1.3
3
3.9 gal
min.

IN-SITU TESTING	Date: <u>8/29/93</u>	<u>8/29/93</u>	<u>9/29/93</u>	<u>9/29/93</u>	<u>8/29/93</u>		
	Time: <u>1429</u>	<u>1435</u>	<u>1440</u>	<u>1444</u>	<u>1456</u>		
Water Level ft BDC	<u>7.33</u>	<u>7.34</u>	<u>7.36</u>	<u>7.36</u>	<u>NM</u>		
Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>7</u>		
Turbidity	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>turbid</u>		
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>		
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>		
pH (units)	<u>7.20</u>	<u>6.95</u>	<u>7.05</u>	<u>7.00</u>	<u>8.06</u>		
Conductivity (µ mhos)	<u>154</u>	<u>171</u>	<u>184</u>	<u>194</u>	<u>249</u>		
Water Temperature (°F)	<u>66.9</u>	<u>64.7</u>	<u>65.6</u>	<u>65.2</u>	<u>65.7</u>		

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC154

NM = Not Measured

G-66

BDC = Below Top of (PVC) casing
 HS 8/29/93

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: P5mw8Gw4

PROJECT NAME <u>phelps Gillies ANG</u>		JOB NO: _____		DATE: <u>9/13/93</u>	
WELL NO. <u>mw8</u>		LOCATION <u>Site 5 2nd FTA</u>			
WEATHER CONDITIONS <u>Windy Sunny</u>		AMBIENT TEMP: <u>~70°F</u>			
PERSONNEL <u>PHL + BEN</u>					
REVIEWED BY: <u>DET</u>					
EQUIPMENT USED: <u>Pump, Bailer, hose rope, Filter</u>					
PURGING DEVICE			SAMPLING DEVICE		
Type Device? <u>Pump</u>			Type Device? <u>Bailer</u>		
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>See logbook</u>		
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>		
Which well was previously purged? <u>P3mw7</u>			Which well was previously sampled? <u>P3mw7</u>		
INITIAL WELL VOLUME			PURGING		
Well diameter (in.) <u>2"</u>			Time started <u>1114</u> Finished <u>1200</u>		
Stickup (ft.) <u>2'</u>			Volume purged <u>12</u>		
Depth to bottom of well (ft.) <u>22' BTOC</u>			Comments on Well Recovery <u>Immediate</u>		
Depth to water surface (ft.) <u>7.1' BTOC</u>			Additional Comments _____		
Length of water (ft.) <u>14.9'</u>			_____		
Volume of water (ft ³) <u>0.327</u>			_____		
(gal.) <u>2.38</u>			_____		
Amount of sediment at bottom of well (ft.) _____			Samples Collected: Start <u>1205</u>		
LNAPL (ft.) _____ DNAPL (ft.) _____			Finish <u>1220</u>		
IN-SITU TESTING					
Date:	<u>9/13/93</u>	_____	_____	_____	_____
Time:	<u>1114</u>	<u>1124</u>	<u>1035</u>	<u>1145</u>	<u>1200</u>
Water Level	<u>7.1</u>	<u>7.33</u>	_____	_____	<u>7.38</u>
Well Volume Purged (gal.)	<u>initial</u>	<u>9</u>	<u>6</u>	<u>9</u>	<u>12</u>
Turbidity	<u>none</u>	<u>SL</u>	<u>SL</u>	<u>SL</u>	<u>SL</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>SL</u>
Organic Vapor (ppm)	_____	_____	_____	_____	_____
pH (units)	<u>9.44</u>	<u>9.84</u>	<u>9.38</u>	<u>10.02</u>	<u>See logbook</u>
Conductivity (µ mhos)	_____	_____	_____	_____	_____
Water Temperature (°C)	<u>66.5</u>	<u>64.2</u>	<u>62.7</u>	<u>62.5</u>	<u>62.4</u>
Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91					

TETC154

GROUNDWATER SAMPLING

Sample ID: PSmw96w4

PROJECT NAME Phelps Collins AWG RT JOB NO: 931800-12 DATE: 9/13/93
 WELL NO. rw9 LOCATION Site 5
 WEATHER CONDITIONS Hazy AMBIENT TEMP: 75°F
 PERSONNEL PHL + DJJ
 REVIEWED BY: DJJ

EQUIPMENT USED: _____

PURGING DEVICE

Type Device? Bailer
 How was the device decontaminated? See logbook
 How was the line decontaminated? dedicated
 Which well was previously purged? PSmw8

SAMPLING DEVICE

Type Device? Baler
 How was the device decontaminated? Dedicated from purg
 How was the line decontaminated? dedicated
 Which well was previously sampled? PSmw5

INITIAL WELL VOLUME

Well diameter (In.) 2"
 Stickup (ft.) 2'
 Depth to bottom of well (ft.) 20.6
 Depth to water surface (ft.) 7.36
 Length of water (ft.) 13.24
 Volume of water (ft³) 0.29
 (gal.) 2.1
 Amount of sediment at bottom of well (ft.) —
 LNAPL (ft.) — DNAPL (ft.) —

PURGING

Time started 1114 Finished 1156
 Volume purged 11
 Comments on Well Recovery Immediate
 Additional Comments _____
 Samples Collected: Start 1550 Finish 1600

IN-SITU TESTING	Date: 9/14/93	9/14/93	9/14/93				
	Time: 1140	1143	1150				
Water Level							
Well Volume Purged (gal.)	Initial	5	10				
Turbidity	SI	SI	SI				
Odor	SI	SI	SI				
Organic Vapor (ppm)	—	—	—				
pH (units)	—	See logbook	unable				
Conductivity (μ mhos)	—	See logbook	to calibrate PH/cond.				
Water Temperature (°C)	64.6	64.5	63.2				

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

GROUNDWATER SAMPLING

LF6MW1

Sample ID: PO6GMW1

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8-11-93
 WELL NO. MW1 LOCATION Site 6/7
 WEATHER CONDITIONS warm hazy humid AMBIENT TEMP: ~82°F
 PERSONNEL PHC and MS Stokes
 REVIEWED BY: JS Bruegel 9/21/93

EQUIPMENT USED: peristaltic pump, bailer, dedicated rope

PURGING DEVICE

Type Device? GEO pump 2
 How was the device decontaminated? See logbook
 How was the line decontaminated? dedicated
 Which well was previously purged? PO6GMW2

SAMPLING DEVICE

Type Device? Pump/Bailer
 How was the device decontaminated? See logbook
 How was the line decontaminated? dedicated
 Which well was previously sampled? _____

INITIAL WELL VOLUME

Well diameter (in.) 2"
 Stickup (ft.) 2'
 Depth to bottom of well (ft.) 36.05 BT0C
 Depth to water surface (ft.) 18.59 BT0C
 Length of water (ft.) 17.46
 Volume of water (ft³) _____
 (gal.) ~2.8
 Amount of sediment at bottom of well (ft.) _____
 LNAPL (ft.) _____ DNAPL (ft.) _____

PURGING

Time started 1900 Finished 1955
PHC 8-11-93
 Volume purged 11 gals.
 Comments on Well Recovery Immediate
 Additional Comments _____
 Samples Collected: Start 2006 Finish 2025

IN-SITU TESTING	Date: <u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>	
	Time: <u>1900</u>	<u>1921</u>	<u>1951</u>	<u>1940</u>	<u>1950</u>	<u>2006</u>	
Water Level	<u>18.49</u>	<u>18.59</u>				<u>18.62</u>	
Well Volume Purged (gal.)	<u>-0-</u>	<u>2.5</u>	<u>5</u>	<u>7.5</u>	<u>10</u>	<u>-</u>	
Turbidity	<u>SL</u>	<u>-</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	
Odor	<u>None</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	
Organic Vapor (ppm)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	
pH (units)	<u>10.52</u>	<u>9.44</u>	<u>9.28</u>	<u>9.43</u>	<u>9.16</u>	<u>9.26</u>	
Conductivity (µ mhos)	<u>185</u>	<u>203</u>	<u>233</u>	<u>235</u>	<u>243</u>	<u>241</u>	
Water Temperature (°C)	<u>60.2</u>	<u>58.1</u>	<u>58.1</u>	<u>57.8</u>	<u>57.9</u>	<u>57.8</u>	

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

GROUNDWATER SAMPLING

LF6MW2

Sample ID: P06Gmw2

PROJECT NAME <u>Phelps Collins</u>		JOB NO: <u>931800-12</u>		DATE: <u>8-11-93</u>		
WELL NO. <u>MW2</u>		LOCATION <u>Site 6</u>				
WEATHER CONDITIONS <u>hazy humid overcast</u> AMBIENT TEMP: <u>78-82°F</u>						
PERSONNEL <u>PA Lay and ME. Stoker</u>						
REVIEWED BY: <u>JS Amegel 9/21/93</u>						
EQUIPMENT USED: <u>Pump, hose, Bailer, pump assembly</u>						
PURGING DEVICE			SAMPLING DEVICE			
Type Device? <u>Bailer Geopung 2</u>			Type Device? <u>Bailer/Pump</u>			
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>See logbook</u>			
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>			
Which well was previously purged? <u>P04GMW2</u>			Which well was previously sampled? <u>P04GMW2</u>			
INITIAL WELL VOLUME			PURGING			
Well diameter (in.) <u>2"</u>			Time started <u>1540</u> Finished <u>1620</u>			
Slackup (ft.) <u>2'</u>			Volume purged <u>~12 gal</u>			
Depth to bottom of well (ft.) <u>28.2' BTOC</u>			Comments on Well Recovery <u>immediat</u>			
Depth to water surface (ft.) <u>12.59' BTOC</u>			Additional Comments			
Length of water (ft.) <u>15.61'</u>						
Volume of water (ft ³)			Samples Collected: Start <u>1620</u>			
(gal.) <u>~2.5</u>			Finish <u>1629</u>			
Amount of sediment at bottom of well (ft.)						
LNAPL (ft.)			DNAPL (ft.)			
IN-SITU TESTING						
Date:	<u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>	<u>8-11-93</u>
Time:	<u>1540</u>	<u>15:50</u>	<u>15:58</u>	<u>16:06</u>	<u>16:12</u>	<u>16:29</u>
Water Level	<u>12.59'</u>					<u>12.62'</u>
Well Volume Purged (gal.)	<u>-0-</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>10</u>
Turbidity	<u>slt none</u>	<u>5/</u>	<u>5/</u>	<u>5/</u>	<u>5/</u>	<u>5/</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
pH (units)	<u>11.87</u>	<u>7.84</u>	<u>8.12</u>	<u>8.36</u>	<u>8.52</u>	<u>8.54</u>
Conductivity (μ mhos)	<u>278</u>	<u>209</u>	<u>294</u>	<u>319</u>	<u>301</u>	<u>308</u>
Water Temperature (°C)	<u>16.8</u>	<u>62.6</u>	<u>59.6</u>	<u>58.9</u>	<u>59.9</u>	<u>59.8</u>
Notes: 1 ft. length of 4" = 0.057 ft ³ or 0.65 gal 1 ft. length 2" = 0.022 ft ³ or 0.16 gal Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91						

TETC154

GROUNDWATER SAMPLING

Sample ID: P6MW3GW4

PROJECT NAME <u>Phelps Collins RI</u>		JOB NO: <u>931800-12</u>		DATE: <u>8/26/93</u>	
WELL NO. <u>MW3</u>		LOCATION <u>Sik 6</u>			
WEATHER CONDITIONS <u>P. cloudy, humid, calm</u>		AMBIENT TEMP: <u>~80°F</u>			
PERSONNEL <u>J. Smith & P. Lay</u>					
REVIEWED BY: <u>J. Smagel 9/21/93</u>					
EQUIPMENT USED: <u>Peristaltic Pump & disposable polyethylene hose; teflon bailer with nylon cord</u>					
PURGING DEVICE			SAMPLING DEVICE		
Type Device? <u>Peristaltic Pump</u>			Type Device? <u>formetals → peristaltic pump</u>		
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>DI water → peristaltic pump</u>		
How was the line decontaminated? <u>See logbook</u>			How was the line decontaminated? <u>DI water → methanol</u>		
Which well was previously purged? <u>Sik 3 MW5</u>			Which well was previously sampled? <u>D3 MW5 GW4 + P3 MW9 GW4</u>		
INITIAL WELL VOLUME			PURGING		
Well diameter (in.) <u>2"</u>			Time started <u>1331</u> Finished <u>1421</u>		
Slickup (ft.) <u>~2'</u>			Volume purged <u>14</u> gallons		
Depth to bottom of well (ft.) <u>BTC 39.95 JSS 12/93</u>			Comments on Well Recovery <u>/</u>		
Depth to water surface (ft.) <u>BTC 15.46</u>			Additional Comments <u>pH meter is drifting; pH reading across sept.</u>		
Length of water (ft.) <u>24.49</u>			Samples Collected: Start <u>1422</u>		
Volume of water (ft ³) <u>7.54</u>			1430 on sample 1432		
(gal.) <u>3.07</u>			Finish <u>1432</u>		
Amount of sediment at bottom of well (ft.) <u>NM</u>			UNAPL (ft.) <u>NM</u> DNAPL (ft.) <u>NM</u>		
IN-SITU TESTING					
Date:	<u>8/1/93</u>	<u>8/1/93</u>	<u>8/1/93</u>	<u>8/1/93</u>	<u>8/1/93</u>
Time:	<u>1331</u>	<u>1345</u>	<u>1400</u>	<u>1416</u>	<u>1421</u>
Water Level	<u>15.97</u>	<u>16.04</u>	<u>16.06</u>	<u>16.04</u>	<u>15.66</u>
Well Volume Purged (gal.)	<u>0</u>	<u>4</u>	<u>12</u>	<u>12</u>	<u>14</u>
Turbidity	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>
Odor	<u>None</u>	<u>None</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)	<u>7.69</u>	<u>9.63</u>	<u>9.56</u>	<u>10.40</u>	<u>11.69</u>
Conductivity (μ mhos)	<u>349</u>	<u>294</u>	<u>3.02</u>	<u>396</u>	<u>362</u>
Water Temperature (°F)	<u>76.3</u>	<u>62.1</u>	<u>59.9</u>	<u>65.2</u>	<u>59.5</u>
Notes: 1 ft. length of 4" = 0.087 m ³ or 0.65 gal. 1 ft. length 2" = 0.022 m ³ or 0.16 gal.					
Turbidity choices: clear, turbid, opaque					
Revision Date: 2-8-91					

TETC 134

NM = Not Measured

G-71

BTOC = Below Top of (Outer steel) casing

FIGURE 3-2

LFLMW4

The Earth Technology Corporation

GROUNDWATER SAMPLING

Sample ID: P6MW4GW4

PROJECT NAME <u>Phelps Collins RI</u>		JOB NO: <u>931800-12</u>		DATE: <u>8/30/93</u>	
WELL NO. <u>MW4</u>		LOCATION <u>Site 6</u>			
WEATHER CONDITIONS <u>cloudy, sl. breezy, abn. rain</u>		AMBIENT TEMP: <u>60 °F</u>			
PERSONNEL <u>Smith & M. Stiles</u>					
REVIEWED BY: <u>J. S. Bonegel 9/21/93</u>					
EQUIPMENT USED: <u>Peristaltic Pump + disposable polyethylene hose; teflon bailer with disposable nylon cord</u>					
PURGING DEVICE			SAMPLING DEVICE		
Type Device? <u>Peristaltic Pump</u>			Type Device? <u>formetals → peristaltic pump</u> <u>teflon bailer for VOCs, SVOCs, TPH</u>		
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>potable + alconox → potable</u> <u>DI water → methanol; air dry</u>		
How was the line decontaminated? <u>See logbook</u>			How was the line decontaminated? <u>disposable new nylon cord used each time</u>		
Which well was previously purged? <u>Site 6 MW5</u>			Which well was previously sampled? <u>P6MW5 GW4</u>		
INITIAL WELL VOLUME			PURGING		
Well diameter (in.) <u>2"</u>			Time started <u>0906</u> Finished <u>0930</u>		
Stickup (ft.) <u>~2'</u>			Volume purged <u>5</u> gallons		
Depth to bottom of well (ft.) <u>BTOC ~20</u>			Comments on Well Recovery		
Depth to water surface (ft.) <u>BTOC 12.05</u>			Additional Comments		
Length of water (ft.) <u>7.95</u>			Sample Collected: Start <u>0930</u>		
Volume of water (ft³) <u>0.17</u>			Finish <u>0935</u>		
(gal.) <u>1.3</u>					
Amount of sediment at bottom of well (ft.) <u>NM</u>					
LNAPL (ft.) <u>NM</u>			DNAPL (ft.) <u>NM</u>		
IN-SITU TESTING					
Date:	<u>8/30/93</u>	<u>09/01/93</u>	<u>09/02/93</u>	<u>09/03/93</u>	<u>09/04/93</u>
Time:	<u>0906</u>	<u>0912</u>	<u>0918</u>	<u>0924</u>	<u>0930</u>
Water Level ft. BTOC	<u>12.28</u>	<u>12.63</u>	<u>12.70</u>	<u>12.71</u>	<u>12.72</u>
Well Volume Purged (gal.)	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Turbidity	<u>clear</u>	<u>cl</u>	<u>cl</u>	<u>cl</u>	<u>cl</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)	<u>8.49</u>	<u>7.98</u>	<u>7.94</u>	<u>7.92</u>	<u>7.93</u>
Conductivity (µmhos)	<u>371</u>	<u>374</u>	<u>378</u>	<u>384</u>	<u>382</u>
Water Temperature (°F)	<u>60.4</u>	<u>59.5</u>	<u>58.9</u>	<u>59.1</u>	<u>59.0</u>
Notes: 1 ft. length of 4" = 0.007 ft³ or 0.05 gal. 1 ft. length 2" = 0.002 ft³ or 0.16 gal.					
Turbidity choices: clear, turbid, opaque. Revision Date: 2-8-91					

TETC154

NM = Not Measured

G-72

BTOC = Below Top of (Outer steel) Casing

FIGURE 3-2

LF6 MW 5

The Earth Technology Corporation

GROUNDWATER SAMPLING

Sample ID: P6MW5GW4

PROJECT NAME	<u>Phelps Collins RI</u>	JOB NO:	<u>931800-12</u>	DATE:	<u>8/30/93</u>
WELL NO.	<u>MW5</u>	LOCATION	<u>Sik 6</u>		
WEATHER CONDITIONS	<u>Cloudy, slightly breezy</u>	AMBIENT TEMP:	<u>65°F</u>		
PERSONNEL	<u>J. Smith</u>	<u>M. Stulen</u>			
REVIEWED BY:	<u>J. P. Megeel 2/21/93</u>				

EQUIPMENT USED: <u>Peristaltic Pump + disposable polyethylene hose; teflon bailer with disposable nylon cord</u>	
PURGING DEVICE	SAMPLING DEVICE <u>for metals → peristaltic pump</u>
Type Device? <u>Peristaltic Pump</u>	Type Device? <u>teflon bailer for VOCs, SVOCs, TPH</u>
How was the device decontaminated? <u>See logbook</u>	How was the device decontaminated? <u>potable + alconox → potable → DI water → methanol; air dry</u>
How was the line decontaminated? <u>See logbook</u>	How was the line decontaminated? <u>disposable new nylon cord used each time</u>
Which well was previously purged? <u>Site 5 MW6</u>	Which well was previously sampled? <u>PS MW6 GW 4</u>

INITIAL WELL VOLUME	PURGING
Well diameter (in.) <u>2"</u>	Time started <u>0816</u> Finished <u>0837</u>
Stickup (ft.) <u>~2'</u>	Volume purged <u>7</u> gallons
Depth to bottom of well (ft.) BDC <u>~20</u>	Comments on Well Recovery <u>Recovery to ~90% within 1 minute</u>
Depth to water surface (ft.) BDC <u>10.82 + 8.5 = 19.32</u>	Additional Comments <u>none</u>
Length of water (ft.) <u>9.18</u>	
Volume of water (ft ³) <u>0.2</u>	
(gal.) <u>1.5</u>	
Amount of sediment at bottom of well (ft.) <u>NM</u>	Samples Collected: Start <u>0837</u>
LNAPL (ft.) <u>NM</u> DNAPL (ft.) <u>NM</u>	840 Sample time Finish <u>0852</u>

IN-SITU TESTING	Date:	8/30/93					
	Time:	0815	0821	0829	0837	0852	
Water Level ft BDC		11.20	11.22	11.26	11.26	10.92	
Well Volume Purged (gal.)		0	2	4	6	7	
Turbidity		clear	clear	clear	clear	slightly turbid	
Odor		NM	none	none	none	none	
Organic Vapor (ppm)		NM	NA	NA	NA	NM	
pH (units)		7.54	7.76	7.36	7.36	8.10	
Conductivity (µ mhos)		232	236	244	238	261	
Water Temperature (°F)		65.5	62.5	62.2	62.4	63.2	

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal 1 ft. length 2" = 0.022 ft³ or 0.16 gal
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC:154

NM = Not Measured

G-73

PVC 1/2" ID
 ARV - 20 ft. 1" ID (After steel casing)

FIGURE 3-2

LF6 MW 6

The Earth Technology Corporation

GROUNDWATER SAMPLING

Sample ID: P6MW6GW4

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8/30/93
 WELL NO. NW6 LOCATION Site 6 in woods
 WEATHER CONDITIONS cloudy, drizzling, humid AMBIENT TEMP: 65°F
 PERSONNEL J. Smith & M. Stokes
 REVIEWED BY: J. Smigel 9/21/93

EQUIPMENT USED: Peristaltic Pump + disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE
 Type Device? Peristaltic Pump
 How was the device decontaminated? see logbook
 How was the line decontaminated? see logbook
 Which well was previously purged? Site 6 MW4

SAMPLING DEVICE for metals → peristaltic pump
 Type Device? teflon bailer for VOCs, SVOCs, TPH
 How was the device decontaminated? potable + alconox → potable → DI water → methanol; air dry
 How was the line decontaminated? disposable new nylon cord used each time
 Which well was previously sampled? P6MW4GW4

INITIAL WELL VOLUME
 Well diameter (in.) 2"
 Stickup (ft.) ~2'
 Depth to bottom of well (ft.) BTOC 34.90'
 Depth to water surface (ft.) BTOC 10.19
 Length of water (ft.) 18.71'
 Volume of water (ft³) 0.41
 (gal.) 3.0
 Amount of sediment at bottom of well (ft.) NM
 LNAPL (ft.) NM DNAPL (ft.) NM

PURGING
 Time started 1134 Finished 1215
 Volume purged 11 gallons
 Comments on Well Recovery none
 Additional Comments none
 Samples Collected: Start 1215
1215 Finish 1229

9 gallons minimum

IN-SITU TESTING	Date: <u>8/30/93</u>						
	Time: <u>1134</u>	<u>1148</u>	<u>1158</u>	<u>1205</u>	<u>1210</u>	<u>1215</u>	<u>1229</u>
Water Level # <u>BTOC</u>	<u>NM</u>	<u>17.54</u>	<u>17.60</u>	<u>17.61</u>	<u>17.61</u>	<u>17.61</u>	<u>47.2</u> <u>NM</u>
Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>10.8</u> <u>8/30/93</u>	<u>11 gal</u>
Turbidity	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>CI</u>	<u>CI</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)	<u>*</u>						
Conductivity (µ mhos)	<u>442</u>	<u>419</u>	<u>419</u>	<u>438</u>	<u>445</u>	<u>434</u>	<u>426</u>
Water Temperature (°F) <u>8/30/93</u>	<u>61.3</u>	<u>55.2</u>	<u>55.3</u>	<u>56.7</u>	<u>55.6</u>	<u>55.8</u>	<u>55.5</u>

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal 1 ft. length 2" = 0.022 ft³ or 0.16 gal
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC154

NM = Not Measured

G-74

+ pH meter is broken.

BTOC = Below Top of ^{PVC} (outer steel) casing

FIGURE 3-2

GROUNDWATER SAMPLING

LF6 MW 8

Sample ID: PL6MW8GW9

PROJECT NAME Phelps Collins ANG RI JOB NO: 931500-12 DATE: 9/8/93
 WELL NO. nw8 LOCATION Site 6 old Land Fill
 WEATHER CONDITIONS cool AMBIENT TEMP: ~68°
 PERSONNEL PHCay and BFNorton
 REVIEWED BY: JSAmegel 9/21/93

EQUIPMENT USED: Bailer, pump assembly, filter

PURGING DEVICE

Type Device? Bailer
 How was the device decontaminated? See logbook
 How was the line decontaminated? dedicated
 Which well was previously purged? P9mw4

SAMPLING DEVICE

Type Device? Bailer
 How was the device decontaminated? See logbook
 How was the line decontaminated? dedicated
 Which well was previously sampled? P9mw4

INITIAL WELL VOLUME

Well diameter (in.) 2"
 Stickup (ft.) 2'
 Depth to bottom of well (ft.) 15' BTOC
 Depth to water surface (ft.) 11.89 BTOC
 Length of water (ft.) 3.11
 Volume of water (ft³) 0.068
 (gal.) 0.5
 Amount of sediment at bottom of well (ft.) —
 LNAPL (ft.) — DNAPL (ft.) —

PURGING

Time started 1313 Finished 1324
 Volume purged 3
 Comments on Well Recovery Slow
 Additional Comments —
 Samples Collected: Start 1410 Finish 1420

IN-SITU TESTING

	Date: <u>9/8/93</u>	<u>9/8/93</u>	<u>9/8/93</u>	<u>9/9/93</u>	<u>9/8/93</u>	<u>9/8/93</u>	
Time:	<u>1313</u>	<u>1316</u>	<u>1320</u>	<u>1322</u>	<u>1324</u>	<u>1420</u>	
Water Level	<u>11.89'</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>11.88</u>	
Well Volume Purged (gal.)	<u>—</u>	<u>1 gal</u>	<u>2</u>	<u>2.5</u>	<u>3</u>	<u>—</u>	
Turbidity	<u>very</u>	<u>very</u>	<u>very</u>	<u>very</u>	<u>mod</u>	<u>mod</u>	
Odor	<u>sl.</u>	<u>sl.</u>	<u>sl.</u>	<u>sl.</u>	<u>mod.</u>	<u>mod</u>	
Organic Vapor (ppm)	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	
pH (units)	<u>6.81</u>	<u>6.97</u>	<u>6.94</u>	<u>7.16</u>	<u>7.10</u>	<u>7.06</u>	
Conductivity (μ mhos)	<u>343</u>	<u>446</u>	<u>493</u>	<u>462</u>	<u>515</u>	<u>486</u>	
Water Temperature (°C)	<u>64.4</u>	<u>60.8</u>	<u>60.7</u>	<u>60.2</u>	<u>59.5</u>	<u>60.4</u>	

Notes:

1 ft. length of 4"

= 0.087 ft³ or 0.65 gal

1 ft. length 2" = 0.022 ft³ or 0.16 gal

Turbidity choices:

clear, turbid, opaque

Revision Date: 2-8-91

GROUNDWATER SAMPLING

LF6MW9

Sample ID: Pl6mw9 gw4

PROJECT NAME <u>Phelps Collins ANG RI</u>		JOB NO: <u>931800-12</u>		DATE: <u>9/8/93</u>		
WELL NO. <u>mw9</u>		LOCATION <u>Site 6 Landfill</u>				
WEATHER CONDITIONS <u>Sunny</u>		AMBIENT TEMP: <u>~70</u>				
PERSONNEL <u>PH Lay and BF Noctor</u>						
REVIEWED BY: <u>JSB megal 9/21/93</u>						
EQUIPMENT USED: <u>Bailer, pump assembly, filter</u>						
PURGING DEVICE			SAMPLING DEVICE			
Type Device? <u>Bailer</u>			Type Device? <u>Bailer</u>			
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>See logbook</u>			
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>			
Which well was previously purged? <u>Pl6mw8</u>			Which well was previously sampled? <u>Pl6mw8</u>			
INITIAL WELL VOLUME			PURGING			
Well diameter (in.) <u>2"</u>			Time started <u>1330</u> Finished <u>1342</u>			
Stickup (ft.) <u>2'</u>			Volume purged <u>3.5</u>			
Depth to bottom of well (ft.) <u>14.8 BTOL</u>			Comments on Well Recovery <u>Slow</u>			
Depth to water surface (ft.) <u>10.79 BTOL</u>			Additional Comments _____			
Length of water (ft.) <u>4.01</u>			_____			
Volume of water (ft ³) <u>0.088</u>			_____			
(gal.) <u>0.65</u>			_____			
Amount of sediment at bottom of well (ft.) <u>—</u>			Samples Collected: Start <u>1440</u>			
LNAPL (ft.) <u>—</u> DNAPL (ft.) <u>—</u>			Finish <u>1450</u>			
IN-SITU TESTING						
Date:	<u>9/8/93</u>	<u>9/9/93</u>	<u>9/8/93</u>	<u>9/6/93</u>	<u>9/8/93</u>	<u>9/8/93</u>
Time:	<u>1330</u>	<u>1334</u>	<u>1337</u>	<u>1340</u>	<u>1342</u>	<u>1450</u>
Water Level	<u>10.79'</u>					<u>10.79</u>
Well Volume Purged (gal.)	<u>—</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>3.5</u>	<u>—</u>
Turbidity	<u>51</u>	<u>mod</u>	<u>mod</u>	<u>mod</u>	<u>mod</u>	<u>mod</u>
Odor	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Organic Vapor (ppm)	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
pH (units)	<u>7.27</u>	<u>7.45</u>	<u>7.51</u>	<u>7.55</u>	<u>7.57</u>	<u>7.49</u>
Conductivity (µ mhos)	<u>447</u>	<u>465</u>	<u>485</u>	<u>459</u>	<u>499</u>	<u>472</u>
Water Temperature (°C)	<u>59.6</u>	<u>58.4</u>	<u>57.3</u>	<u>57.8</u>	<u>57.2</u>	<u>57.8</u>
Notes: 1 ft. length of 4" = 0.087 ft ³ or 0.65 gal. 1 ft. length 2" = 0.022 ft ³ or 0.16 gal. Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91						

TETC:54

GROUNDWATER SAMPLING

Sample ID: 26M106W4

PROJECT NAME Phelps Collins ARG RT JOB NO: 931800-12 DATE: 9/15/13
 WELL NO. MW10 LOCATION Site 6 LF
 WEATHER CONDITIONS Cool windy AMBIENT TEMP: 60°F
 PERSONNEL PHLay & DFT
 REVIEWED BY: LSR

EQUIPMENT USED: Bailer

PURGING DEVICE

Type Device? Bailer
 How was the device decontaminated? See logbook
 How was the line decontaminated? dedicated
 Which well was previously purged? PMW106

SAMPLING DEVICE

Type Device? Bailer
 How was the device decontaminated? Acetone + DI, DI rinse
 How was the line decontaminated? dedicated
 Which well was previously sampled? _____

INITIAL WELL VOLUME

Well diameter (in.) 2"
 Stickup (ft.) ~2'
 Depth to bottom of well (ft.) 15
 Depth to water surface (ft.) 11'
 Length of water (ft.) 4'
 Volume of water (ft³) 0.088
 (gal.) 0.64
 Amount of sediment at bottom of well (ft.) —
 LNAPL (ft.) — DNAPL (ft.) —

PURGING

Time started 2025 Finished 2048
 Volume purged 5 galls
 Comments on Well Recovery moderate
 Additional Comments _____
 Samples Collected: Start 0725
9/16/13 Finish 0730

IN-SITU TESTING

Date:	9/15/13	9/15/13	9/15/13	_____	_____	_____	_____
Time:	2025	2035	2048	_____	_____	_____	_____
Water Level	<u>4'</u>	<u>—</u>	<u>4.2'</u>	_____	_____	_____	_____
Well Volume Purged (gal.)	<u>0</u>	<u>2.5</u>	<u>5</u>	_____	_____	_____	_____
Turbidity	<u>sl.</u>	<u>mod</u>	<u>very</u>	_____	_____	_____	_____
Odor	<u>biological</u>	<u>—</u>	<u>—</u>	_____	_____	_____	_____
Organic Vapor (ppm)	<u>—</u>	<u>—</u>	<u>—</u>	_____	_____	_____	_____
pH (units)	<u>unable to calibrate</u>	<u>—</u>	<u>—</u>	_____	_____	_____	_____
Conductivity (µ mhos)	<u>pH and Cond</u>	<u>—</u>	<u>—</u>	_____	_____	_____	_____
Water Temperature (°C)	<u>14.4</u>	<u>14.8</u>	<u>14.7</u>	_____	_____	_____	_____

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

GROUNDWATER SAMPLING

Sample ID: P3mw16w4

PROJECT NAME <u>Phelps Collins RT</u>		JOB NO: <u>931800-12</u>	DATE: <u>8-15-93</u>
WELL NO. <u>mw1</u>	LOCATION <u>Site 8, Old Hangar 9</u>		
WEATHER CONDITIONS <u>cool cloudy</u>		AMBIENT TEMP: <u>~70°F</u>	
PERSONNEL <u>PHLug, M. E. Stoker</u>			
REVIEWED BY: <u>RFJ</u>			
EQUIPMENT USED: <u>Pump, hose, Bailor, rope, filter</u>			
PURGING DEVICE Type Device? <u>PAL 1.5 Pump</u> How was the device decontaminated? <u>See logbook</u> How was the line decontaminated? <u>dedicated</u> Which well was previously purged? <u>P3mw1</u>		SAMPLING DEVICE Type Device? <u>Bailor</u> How was the device decontaminated? <u>See logbook</u> How was the line decontaminated? <u>dedicated</u> Which well was previously sampled? <u>P3mw1</u>	
INITIAL WELL VOLUME Well diameter (in.) <u>2"</u> Stickup (ft.) <u>-0.3</u> Depth to bottom of well (ft.) <u>25' BTOC</u> Depth to water surface (ft.) <u>10.9' BTOC</u> Length of water (ft.) <u>14.1'</u> Volume of water (ft ³) <u>0.3102</u> (gal.) <u>~2.25</u> Amount of sediment at bottom of well (ft.) <u>—</u> LNAPL (ft.) <u>—</u> DNAPL (ft.) <u>—</u>		PURGING Time started <u>1042</u> Finished <u>1125</u> Volume purged <u>11 gals</u> Comments on Well Recovery <u>immediate</u> Additional Comments _____ Samples Collected: Start <u>1126</u> Finish <u>1146</u>	
IN-SITU TESTING		Date: <u>8-15-93</u> <u>8-15-93</u> <u>8-15-93</u> <u>8-15-93</u> <u>8-15-93</u> <u>8-15-93</u>	
Time: <u>1042</u> <u>1052</u> <u>1102</u> <u>1110</u> <u>1119</u> <u>1146</u>			
Water Level <u>10.9</u>			
Well Volume Purged (gal.) <u>-0.</u> <u>2.5</u> <u>5</u> <u>7.5</u> <u>10</u> <u>-</u>			
Turbidity <u>none</u> <u>none</u> <u>-0.</u> <u>-0.</u> <u>-0.</u> <u>-0.</u>			
Odor <u>none</u> <u>none</u> <u>-0.</u> <u>-0.</u> <u>-0.</u> <u>-0.</u>			
Organic Vapor (ppm) <u>-0.</u> <u>-0.</u> <u>-0.</u> <u>-0.</u> <u>-0.</u> <u>-0.</u>			
pH (units) <u>8.08</u> <u>8.05</u> <u>7.85</u> <u>7.89</u> <u>7.83</u> <u>7.84</u>			
Conductivity (µ mhos) <u>303</u> <u>330</u> <u>326</u> <u>332</u> <u>333</u> <u>331</u>			
Water Temperature (°C) <u>63.1</u> <u>61.2</u> <u>59.8</u> <u>60.2</u> <u>60.1</u> <u>60.3</u>			
Notes: 1 ft. length of 4" = 0.087 m ³ or 0.65 gal Turbidity choices: clear, turbid, opaque		1 ft. length 2" = 0.022 m ³ or 0.16 gal Revision Date: 2-8-91	

TETC134

GROUNDWATER SAMPLING

Sample ID: P8MW2QW4

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8/29/93
 WELL NO. MW2 LOCATION Site 8
 WEATHER CONDITIONS p cloudy, calm, cool AMBIENT TEMP: 65°F
 PERSONNEL J. Smith + P. [unclear] M. Skalen
 REVIEWED BY: DRT

EQUIPMENT USED: Peristaltic Pump + disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE Type Device? <u>Peristaltic Pump</u> How was the device decontaminated? <u>see logbook</u> How was the line decontaminated? <u>see logbook</u> Which well was previously purged? <u>Site 9 MW3</u>	SAMPLING DEVICE <u>for metals → peristaltic pump</u> Type Device? <u>teflon bailer for VOCs, SVOCs, TPH</u> How was the device decontaminated? <u>DI water + allonox → DI water → methanol; air dry</u> How was the line decontaminated? <u>disposable new nylon cord used each time</u> Which well was previously sampled? <u>P9 MW3 QW4</u>

INITIAL WELL VOLUME Well diameter (in.) <u>2"</u> Stickup (ft.) <u>22'</u> Depth to bottom of well (ft.) BDC <u>32.0</u> Depth to water surface (ft.) BDC <u>17.90</u> Length of water (ft.) <u>14.1</u> Volume of water (ft ³) <u>0.31</u> (gal.) <u>2.3 3.3</u> Amount of sediment at bottom of well (ft.) <u>NM</u> LNAPL (ft.) <u>NM</u> DNAPL (ft.) <u>NM</u>	PURGING Time started <u>0818</u> Finished <u>0850</u> Volume purged <u>9 gallons</u> Comments on Well Recovery <u>none</u> Additional Comments <u>none</u> Samples Collected: Start <u>0850</u> Sample time <u>0900</u> Finish <u>0904</u>

2.3
3.3
6.6

IN-SITU TESTING	Date: <u>8/19/93</u>						
Time:	<u>0821</u>	<u>0831</u>	<u>0836</u>	<u>0844</u>	<u>0850</u>	<u>0904</u>	
Water Level <u>if BDC</u>	<u>17.95</u>	<u>17.94</u>	<u>17.94</u>	<u>17.94</u>	<u>17.94</u>	<u>NM</u>	
Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>9</u>	
Turbidity	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	
pH (units)	<u>7.78</u>	<u>7.85</u>	<u>7.91</u>	<u>7.99</u>	<u>7.97</u>	<u>7.90</u>	
Conductivity (μ mhos)	<u>794</u>	<u>392</u>	<u>384</u>	<u>418</u>	<u>410</u>	<u>422</u>	
Water Temperature (°F) <u>8/29/93</u>	<u>60.9</u>	<u>54.8</u>	<u>54.8</u>	<u>54.4</u>	<u>54.6</u>	<u>55.6</u>	

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC154

NM = Not Measured G-79
 BDC = Below Top of (PVC outer steel) casing
8/29/93

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: P8MW34W4

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8/29/93
 WELL NO. MW3 LOCATION Site 8
 WEATHER CONDITIONS cloudy, calm, dry AMBIENT TEMP: 60 °F
 PERSONNEL J. Smith & Mark Stoker
 REVIEWED BY: DFJ

EQUIPMENT USED: Peristaltic Pump & disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE
 Type Device? Peristaltic Pump
 How was the device decontaminated? See logbook
 How was the line decontaminated? See logbook
 Which well was previously purged? Site 8 MW2

SAMPLING DEVICE formetals → peristaltic pump
 Type Device? teflon bailer for VOCs, SVOCs, TPH
 How was the device decontaminated? DI water → methanol, airdry
 How was the line decontaminated? disposable new nylon cord used each time
 Which well was previously sampled? P8MW2 GW4

INITIAL WELL VOLUME
 Well diameter (in.) 2"
 Stickup (ft.) ~ 2'
 Depth to bottom of well (ft.) BTOC 32.0
 Depth to water surface (ft.) BTOC 17.88'
 Length of water (ft.) 14.12
 Volume of water (ft³) 0.31
 (gal.) 2.3
 Amount of sediment at bottom of well (ft.) NM
 LNAPL (ft.) NM DNAPL (ft.) NM

PURGING
 Time started 0926 0948 1002
 Time finished 0948
 Volume purged 8 gallons
 Comments on Well Recovery none
 Additional Comments none
 Samples Collected: Start 0948
 Sample time 1000 Finish 1002

IN-SITU TESTING	Date: <u>8/29/93</u>					
	Time: <u>0926</u>	<u>0934</u>	<u>0939</u>	<u>0945</u>	<u>0948</u>	<u>1002</u>
Water Level <u>ft BTOC</u>	<u>17.91</u>	<u>17.91</u>	<u>17.91</u>	<u>17.91</u>	<u>17.91</u>	<u>NM</u>
Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>7</u>	<u>8</u>
Turbidity	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)	<u>7.84</u>	<u>7.62</u>	<u>7.70</u>	<u>7.65</u>	<u>7.65</u>	<u>8.18</u>
Conductivity (μ mhos)	<u>587</u>	<u>543</u>	<u>540</u>	<u>572</u>	<u>564</u>	<u>565</u>
Water Temperature ($^{\circ}$ F)	<u>58.8</u>	<u>58.8</u>	<u>55.8</u>	<u>55.9</u>	<u>54.9</u>	<u>56.9</u>

Notes: 1 ft. length of 4" = 0.007 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC154

NM = Not Measured
 BTOC = Below Top of (outer steel) casing
 PVC G-80
8/29/93

FIGURE 3-2

GROUNDWATER SAMPLING

Blind Duplicate P8 MW96W4 @ 1230

Sample ID: P8 MW4CWT

@ 1140

PROJECT NAME Phelps Collins R1 JOB NO: 931800-12 DATE: 8/29/93
 WELL NO. MW4 LOCATION Site 8
 WEATHER CONDITIONS partly cloudy, calm, dry AMBIENT TEMP: 70°F
 PERSONNEL J. Smith + P. Edg + M. Stover
 REVIEWED BY: DFJ

EQUIPMENT USED: Peristaltic Pump + disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE
 Type Device? Peristaltic Pump
 How was the device decontaminated? see logbook
 How was the line decontaminated? see logbook
 Which well was previously purged? Site 8 MW3

SAMPLING DEVICE metals → peristaltic pump
 Type Device? teflon bailer for VOCs, SVOCs, TPH
 How was the device decontaminated? DI water + alconox → DI water → methanol; air dry
 How was the line decontaminated? disposable new nylon cord used each time
 Which well was previously sampled? P8 MW3 G104

INITIAL WELL VOLUME
 Well diameter (in.) 2"
 Stickup (ft.) ~2'
 Depth to bottom of well (ft.) BTOC 56.5
 Depth to water surface (ft.) BTOC 18.18
 Length of water (ft.) 38.32
 Volume of water (ft³) 0.8
 (gal.) 6.1
 Amount of sediment at bottom of well (ft.) submit NM
 LNAPL (ft.) NM DNAPL (ft.) NM

PURGING
 Time started 1020 Finished 1137
 Volume purged 22 gallons
 Comments on Well Recovery none
 Additional Comments none
 Samples Collected: Start 1137
 Sample time 1140 Finish 1157

IN-SITU TESTING	Date: <u>8/29/93</u>						
	Time: <u>1020</u>	<u>1043</u>	<u>1052</u>	<u>1105</u>	<u>1121</u>	<u>1136</u>	<u>1157</u>
Water Level <u>f BTOC</u>	<u>18.24</u>	<u>18.24</u>	<u>18.24</u>	<u>18.25</u>	<u>18.24</u>	<u>18.24</u>	<u>18.18</u>
Well Volume Purged (gal.)	<u>0</u>	<u>4</u>	<u>8</u>	<u>12</u>	<u>16</u>	<u>20</u>	<u>22</u>
Turbidity	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>	<u>clear</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)	<u>8.59</u>	<u>8.52</u>	<u>8.24</u>	<u>8.25</u>	<u>8.16</u>	<u>8.48</u>	<u>8.55</u>
Conductivity (μ mhos)	<u>337</u>	<u>320</u>	<u>318</u>	<u>321</u>	<u>319</u>	<u>321</u>	<u>323</u>
Water Temperature (°F)	<u>59.9</u>	<u>57.7</u>	<u>56.1</u>	<u>57.6</u>	<u>58.0</u>	<u>58.4</u>	<u>58.7</u>

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque

Revision Date: 2-8-91

TETC154

NM = Not Measured

G-81

BTOC = Below Top of (outer steel) casing

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: P8mw5gw4

PROJECT NAME <u>Phelps Collins</u>		JOB NO: <u>931800-12</u>		DATE: <u>9/13/93</u> PHL	
WELL NO. <u>mw5</u>		LOCATION <u>Site B</u>			
WEATHER CONDITIONS <u>Rainy</u>		AMBIENT TEMP: <u>~55°F</u>			
PERSONNEL <u>PHLag, DFJager</u>					
REVIEWED BY: <u>DFJ</u>					
EQUIPMENT USED: <u>Bailer rope hand pump assembly, filter</u>					
PURGING DEVICE			SAMPLING DEVICE		
Type Device? <u>Bailer</u>			Type Device? <u>Bailer - See logbook</u> PHL		
How was the device decontaminated? <u>See logbook</u>			How was the device decontaminated? <u>See logbook</u>		
How was the line decontaminated? <u>dedicated</u>			How was the line decontaminated? <u>dedicated</u>		
Which well was previously purged? <u>P5mw9</u>			Which well was previously sampled? _____		
INITIAL WELL VOLUME			PURGING		
Well diameter (in.) <u>2"</u>			Time started <u>1450</u> Finished <u>1510</u>		
Stickup (ft.) <u>-0.3</u>			Volume purged <u>7 gals</u>		
Depth to bottom of well (ft.) <u>19.55</u>			Comments on Well Recovery <u>immediate</u>		
Depth to water surface (ft.) <u>11.38</u>			Additional Comments _____		
Length of water (ft.) <u>8.17</u>			_____		
Volume of water (ft ³) <u>0.18</u>			_____		
(gal.) <u>1.3</u>			_____		
Amount of sediment at bottom of well (ft.) <u>-</u>			Samples Collected: Start <u>11/2</u>		
LNAPL (ft.) <u>-</u> DNAPL (ft.) <u>-</u>			<u>9/14/93</u> Finish <u>1130</u>		
IN-SITU TESTING					
Date:	<u>9/13/93</u>	<u>9/13/93</u>	<u>9/13/93</u>	<u>9/14/93</u>	_____
Time:	<u>1445</u>	<u>1458</u>	<u>1510</u>	<u>11:10</u>	_____
Water Level	<u>11.38</u>	_____	<u>11.40</u>	_____	_____
Well Volume Purged (gal.)	<u>0</u>	<u>3.5</u>	<u>7</u>	<u>-</u>	_____
Turbidity	<u>SI</u>	<u>SI</u>	<u>SI</u>	<u>SI</u>	_____
Odor	<u>SI</u>	<u>SI</u>	<u>SI</u>	<u>SI</u>	_____
Organic Vapor (ppm)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	_____
pH (units)	<u>unable to calibrate</u>				_____
Conductivity (µ mhos)	<u>pH and conductivity</u>				_____
Water Temperature (°C)	<u>63.5</u>	<u>64.2</u>	<u>64.1</u>	<u>64.3</u>	_____
Notes: 1 ft. length of 4" = 0.087 ft ³ or 0.65 gal. 1 ft. length 2" = 0.022 ft ³ or 0.16 gal. Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91					

TETC154

GROUNDWATER SAMPLING

Sample ID: P9MW1GW4

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8/27/93
 WELL NO. MW1 LOCATION Sik 9
 WEATHER CONDITIONS hot, humid, sunny AMBIENT TEMP: ~85°F
 PERSONNEL P. Lay, J. Smith
 REVIEWED BY: D. F. J. J.

EQUIPMENT USED: Peristaltic Pump + disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE
 Type Device? Peristaltic Pump
 How was the device decontaminated? See logbook
 How was the line decontaminated? See logbook
 Which well was previously purged? Sik 9 MW1

SAMPLING DEVICE metals → peristaltic pump
 Type Device? teflon bailer for VOCs, SVOCs, TPH + metal
 How was the device decontaminated? DI water → peristaltic pump → DI water → methanol; air dry
 How was the line decontaminated? disposable new nylon cord used each time
 Which well was previously sampled? P9MW2GW4

INITIAL WELL VOLUME
 Well diameter (in.) 2"
 Slickup (ft.) ~2'
 Depth to bottom of well (ft.) BDC 31.85
 Depth to water surface (ft.) BDC 18.54
 Length of water (ft.) 13.31
 Volume of water (ft³) —
 (gal.) 2.1
 Amount of sediment at bottom of well (ft.) NM
 LNAPL (ft.) NM DNAPL (ft.) NM

PURGING
 Time started 1043 Finished 1057
 Volume purged 9 gallons
 Comments on Well Recovery none
 Additional Comments pH meter may be drifting, pH readings are suspect
 Samples Collected: Start 1530 Finish 1548
1545

2.1 gal
3
6.3 gal
minimum
pump

IN-SITU TESTING	Date: <u>8/27/93</u>						
	Time: <u>1043</u>	<u>1046</u>	<u>1049</u>	<u>1054</u>	<u>1057</u>	<u>1530</u>	<u>7</u>
Water Level <u>ft BDC</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>18.53</u>	
Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>8</u>	
Turbidity	<u>clear</u>	<u>v. turbid</u>	<u>v. turbid</u>	<u>v. turbid</u>	<u>sl. turbid</u>	<u>clear/turbid</u>	
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	
<u>H₂S</u> Organic Vapor (ppm)	<u>0</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	
pH (units)	<u>7.84</u>	<u>8.81</u>	<u>8.90</u>	<u>9.40</u>	<u>9.14</u>	<u>4</u>	
Conductivity (μ mhos)	<u>488</u>	<u>4.56</u>	<u>4.90</u>	<u>4.81</u>	<u>5.12</u>	<u>413</u>	
Water Temperature ($^{\circ}$ F) <u>8/27/93</u>	<u>63.9</u>	<u>60.8</u>	<u>58.4</u>	<u>58.9</u>	<u>78.6</u>	<u>58.7</u>	

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal 1 ft. length 2" = 0.022 ft³ or 0.16 gal
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC154

NM = Not Measured

G-83

BDC = Below Top of (Outer steel) casing

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: PMW54W4

PROJECT NAME <u>Phelps Collins RI</u>		JOB NO: <u>931800-12</u>		DATE: <u>8/27/93</u>	
WELL NO. <u>NW2</u>		LOCATION <u>Site 9</u>			
WEATHER CONDITIONS <u>hot, humid, calm, sunny</u> AMBIENT TEMP: <u>~80°F</u>					
PERSONNEL <u>P. Lay + J. Smith</u>					
REVIEWED BY: <u>D. Taylor</u>					
EQUIPMENT USED: <u>Peristaltic pump & disposable polyethylene hose; teflon bailer with disposable nylon cord</u>					
PURGING DEVICE			SAMPLING DEVICE		
Type Device? <u>Peristaltic Pump</u>			Type Device? <u>teflon bailer for VOCs, SVOCs, TPH</u>		
How was the device decontaminated? <u>see logbook</u>			How was the device decontaminated? <u>DI water + alconox → DI water → methanol; air dry</u>		
How was the line decontaminated? <u>see logbook</u>			How was the line decontaminated? <u>disposable new nylon cord used each time</u>		
Which well was previously purged? <u>Site 9 MW5</u>			Which well was previously sampled? <u>PMW54W4</u>		
INITIAL WELL VOLUME			PURGING		
Well diameter (in.) <u>2"</u>			Time started <u>0949</u> Finished <u>1000</u>		
Stickup (ft.) <u>~2'</u>			Volume purged <u>6</u> gallons		
Depth to bottom of well (ft.) <u>BTC</u> <u>33.77</u>			Comments on Well Recovery <u>none</u>		
Depth to water surface (ft.) <u>BTC</u> <u>25.12</u>			Additional Comments <u>none</u>		
Length of water (ft.) <u>8.65</u>			Samples Collected: Start <u>1418</u> Finish <u>1445</u>		
Volume of water (ft ³) <u>—</u>			Amount of sediment at bottom of well (ft.) <u>NM</u>		
(gal.) <u>1.3</u>			LNAPL (ft.) <u>NM</u> DNAPL (ft.) <u>NM</u>		
IN-SITU TESTING					
Date:	<u>8/27/93</u>				
Time:	<u>0949</u>	<u>0952</u>	<u>0953</u>	<u>0955</u>	<u>0956</u>
Water Level # <u>BTC</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
Well Volume Purged (gal.)	<u>0</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Turbidity	<u>clear</u>	<u>v. turbid</u>	<u>v. turbid</u>	<u>v. turbid</u>	<u>v. turbid</u>
Odor	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)	<u>0</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)	<u>3.88</u>	<u>4.20</u>	<u>4.05</u>	<u>4.40</u>	<u>4.63</u>
Conductivity (μ mhos)	<u>7.85</u>	<u>7.98</u>	<u>8.29</u>	<u>8.46</u>	<u>8.48</u>
Water Temperature (°F)	<u>61.8</u>	<u>55.0</u>	<u>53.8</u>	<u>53.9</u>	<u>53.8</u>
Notes:	1 ft. length of 4" = 0.087 ft ³ or 0.65 gal				
Turbidity choices:	clear, turbid, opaque				
	1 ft. length 2" = 0.022 ft ³ or 0.16 gal				
	Revision Date: 2-6-91				

3
8.65
0.16
51.90
8650
128.40

1.3 gal
x 3 wells
3.9 gallons
in 3 well volume (minimum)

HNW

Just prior to sampling

just after sampling

TETC134

NM = Not Measured

G-84

BTC = Below Top of (Outer steel) Casing

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: P9 MW3C.W4

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8/27/93
 WELL NO. MW3 LOCATION Sik 9
 WEATHER CONDITIONS hot, sunny, humid, slight breeze AMBIENT TEMP: 85 °F
 PERSONNEL J Smith & P Lay
 REVIEWED BY: DFT

EQUIPMENT USED: Peristaltic Pump & disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE
 Type Device? Peristaltic Pump
 How was the device decontaminated? See logbook
 How was the line decontaminated? See logbook
 Which well was previously purged? MW1 Sik 9

SAMPLING DEVICE metals → peristaltic pump
 Type Device? teflon bailer for VOCs, SVOCs, TPH, metals
 How was the device decontaminated? DI water → H₂O₂ → DI water → methanol, air dry
 How was the line decontaminated? disposable new nylon cord used each time
 Which well was previously sampled?

INITIAL WELL VOLUME
 Well diameter (in.) 2"
 Stickup (ft.) ~2'
 Depth to bottom of well (ft.) BOC 5.68
 Depth to water surface (ft.) BOC 15.31
 Length of water (ft.) 17.37
 Volume of water (ft³) 0.288
 (gal.) 1.7
 Amount of sediment at bottom of well (ft.) NM
 LNAPL (ft.) NM DNAPL (ft.) NM

PURGING
 Time started 1141 Finished 1154
 Volume purged 8 gallons
 Comments on Well Recovery
 Additional Comments pH meter is drifting (using pH paper as well)
 Samples Collected: Start 1640
1650 Finish 1650

IN-SITU TESTING	Date: <u>8/27/93</u>					
	Time:	<u>1141</u>	<u>1144</u>	<u>1148</u>	<u>1151</u>	<u>1154</u>
Water Level # BOC		<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>15.33</u>
Well Volume Purged (gal.)		<u>0</u>	<u>2</u>	<u>4.5</u>	<u>6</u>	<u>8</u>
Turbidity		<u>clear</u>	<u>turbid</u>	<u>turbid</u>	<u>turbid</u>	<u>SI</u>
Odor		<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>	<u>none</u>
Organic Vapor (ppm)		<u>0</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>	<u>NM</u>
pH (units)		<u>8.5(7)</u>	<u>8.4(7)</u>	<u>9.8(7)</u>	<u>9.4(7)</u>	<u>9.54(7)</u>
Conductivity (µ mhos)		<u>433</u>	<u>468</u>	<u>514</u>	<u>433</u>	<u>428</u>
Water Temperature (°F)		<u>65.4</u>	<u>57.9</u>	<u>59.5</u>	<u>57.9</u>	<u>57.4</u>

Notes: 1 ft. length of 4" = 0.007 ft³ or 0.05 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC134

NM = Not Measured
 BOC = Below Top of (outer steel) casing

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: P9mw4 Gw4

PROJECT NAME <u>Phelps Collins RT</u>		JOB NO: <u>931800-12</u>		DATE: <u>9/8/93</u>																																																																																	
WELL NO. <u>mw4</u>		LOCATION <u>Site 9 Radar Tower proposed location.</u>																																																																																			
WEATHER CONDITIONS <u>cool, cloudy</u>		AMBIENT TEMP: <u>~60°F</u>																																																																																			
PERSONNEL <u>PLCay and BF Noeton</u>																																																																																					
REVIEWED BY: <u>DFS</u>																																																																																					
EQUIPMENT USED: <u>Bailer, rope, pump assembly, filter</u>																																																																																					
PURGING DEVICE <u>PHL</u> Type Device? <u>Pump & Bailer</u> <u>9/8/93</u> How was the device decontaminated? <u>See logbook</u> How was the line decontaminated? <u>dedicated</u> Which well was previously purged? <u>P2mw5 Resample</u>			SAMPLING DEVICE Type Device? <u>Bailer</u> How was the device decontaminated? <u>See logbook</u> How was the line decontaminated? <u>dedicated</u> Which well was previously sampled? <u>P2mw5 Resample</u>																																																																																		
INITIAL WELL VOLUME Well diameter (in.) <u>2"</u> Stickup (ft.) <u>~2'</u> Depth to bottom of well (ft.) <u>32.29' BTOC</u> Depth to water surface (ft.) <u>20.63' BTOC</u> Length of water (ft.) <u>11.66</u> Volume of water (ft ³) <u>0.256</u> (gal.) <u>1.865</u> Amount of sediment at bottom of well (ft.) <u>-</u> LNAPL (ft.) _____ DNAPL (ft.) _____			PURGING Time started <u>0850</u> Finished <u>0910</u> Volume purged <u>9</u> Comments on Well Recovery <u>Immediate</u> Additional Comments _____ Samples Collected: Start <u>1045</u> Finish <u>1100</u>																																																																																		
IN-SITU TESTING <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Date: <u>9/8/93</u></th> <th><u>9/8/93</u></th> <th><u>9/8/93</u></th> <th><u>9/8/93</u></th> <th><u>9/8/93</u></th> <th><u>9/8/93</u></th> <th><u>9/8/93</u></th> </tr> </thead> <tbody> <tr> <td>Time:</td> <td><u>0850</u></td> <td><u>0855</u></td> <td><u>0858</u></td> <td><u>0900</u></td> <td><u>0905</u></td> <td><u>0910</u></td> <td><u>1100</u></td> </tr> <tr> <td>Water Level</td> <td><u>20.63</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>20.64</u></td> </tr> <tr> <td>Well Volume Purged (gal.)</td> <td><u>initial</u></td> <td><u>2</u></td> <td><u>4</u></td> <td><u>6</u></td> <td><u>8</u></td> <td><u>9</u></td> <td><u>-</u></td> </tr> <tr> <td>Turbidity</td> <td><u>none</u></td> <td><u>sl.</u></td> <td><u>mod</u></td> <td><u>very</u></td> <td><u>very</u></td> <td><u>mod</u></td> <td><u>mod</u></td> </tr> <tr> <td>Odor</td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> </tr> <tr> <td>Organic Vapor (ppm)</td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> </tr> <tr> <td>pH (units)</td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>-</u></td> </tr> <tr> <td>Conductivity (μ mhos)</td> <td><u>352</u></td> <td><u>328</u></td> <td><u>323</u></td> <td><u>332</u></td> <td><u>318</u></td> <td><u>323</u></td> <td><u>348</u></td> </tr> <tr> <td>Water Temperature (°C)</td> <td><u>52.4</u></td> <td><u>50.6</u></td> <td><u>50.1</u></td> <td><u>50.3</u></td> <td><u>50.2</u></td> <td><u>50.2</u></td> <td><u>51.2</u></td> </tr> </tbody> </table>							Date: <u>9/8/93</u>	<u>9/8/93</u>	<u>9/8/93</u>	<u>9/8/93</u>	<u>9/8/93</u>	<u>9/8/93</u>	<u>9/8/93</u>	Time:	<u>0850</u>	<u>0855</u>	<u>0858</u>	<u>0900</u>	<u>0905</u>	<u>0910</u>	<u>1100</u>	Water Level	<u>20.63</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>20.64</u>	Well Volume Purged (gal.)	<u>initial</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>9</u>	<u>-</u>	Turbidity	<u>none</u>	<u>sl.</u>	<u>mod</u>	<u>very</u>	<u>very</u>	<u>mod</u>	<u>mod</u>	Odor	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	Organic Vapor (ppm)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	pH (units)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	Conductivity (μ mhos)	<u>352</u>	<u>328</u>	<u>323</u>	<u>332</u>	<u>318</u>	<u>323</u>	<u>348</u>	Water Temperature (°C)	<u>52.4</u>	<u>50.6</u>	<u>50.1</u>	<u>50.3</u>	<u>50.2</u>	<u>50.2</u>	<u>51.2</u>
	Date: <u>9/8/93</u>	<u>9/8/93</u>	<u>9/8/93</u>	<u>9/8/93</u>	<u>9/8/93</u>	<u>9/8/93</u>	<u>9/8/93</u>																																																																														
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Turbidity	<u>none</u>	<u>sl.</u>	<u>mod</u>	<u>very</u>	<u>very</u>	<u>mod</u>	<u>mod</u>																																																																														
Odor	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>																																																																														
Organic Vapor (ppm)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>																																																																														
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Notes: 1 ft. length of 4" = 0.087 ft ³ or 0.65 gal Turbidity choices: clear, turbid, opaque 1 ft. length 2" = 0.022 ft ³ or 0.16 gal Revision Date: 2-8-91																																																																																					

TETC154

GROUNDWATER SAMPLING

Sample ID: P9MWSGW4

PROJECT NAME Phelps Collins RI JOB NO: 931800-12 DATE: 8/26/93
 WELL NO. MW5 LOCATION Site 9
 WEATHER CONDITIONS partly cloudy, humid, calm AMBIENT TEMP: -80°F
 PERSONNEL J. Smith & P. Lay
 REVIEWED BY: DFJ

EQUIPMENT USED: Peristaltic Pump & disposable polyethylene hose; teflon bailer with disposable nylon cord

PURGING DEVICE	SAMPLING DEVICE
Type Device? <u>Peristaltic Pump</u>	Type Device? <u>metals → peristaltic pump</u>
How was the device decontaminated? <u>see logbook</u>	How was the device decontaminated? <u>DI water → possible + allonox → DI water → methanol; air dry</u>
How was the line decontaminated? <u>see logbook</u>	How was the line decontaminated? <u>disposable new nylon cord used each time</u>
Which well was previously purged? <u>Site 6 MW3</u>	Which well was previously sampled? <u>P6 MW 3 GW 4</u>

INITIAL WELL VOLUME	PURGING
Well diameter (in.) <u>2"</u>	Time started <u>1547</u> Finished <u>1658</u>
Stickup (ft.) <u>~2'</u>	Volume purged <u>16 gallons</u>
Depth to bottom of well (ft.) BTOC <u>53.65</u>	Comments on Well Recovery
Depth to water surface (ft.) BTOC <u>21.57</u>	Additional Comments <u>* PH meter is drifting; all readings are suspect</u>
Length of water (ft.) <u>32.08</u>	
Volume of water (ft ³) <u>0.7</u>	
(gal.) <u>5.13</u>	
Amount of sediment at bottom of well (ft.) <u>NM</u>	Sample Collected: Start <u>1659</u>
LNAPL (ft.) <u>NM</u> DNAPL (ft.) <u>NM</u>	1715 Finish <u>1717</u>

IN-SITU TESTING	Date:	8/26/93					
	Time:	1547	1619	1635	1650	1659	1717
Water Level ft BTOC		21.57	21.61	21.62	21.61	21.53	NM
Well Volume Purged (gal.)		0	5	10	15		16
Turbidity		clear	clear	clear	clear		clear
Odor		none	none	none	none		none
Organic Vapor (ppm)		NM	NM	NM	NM		NM
pH (units)		8.00	10.85	9.87	9.31		9.47
Conductivity (μ mhos)		683	666	588	580		624
Water Temperature (°F)		74.5	65.9	62.6	62.6		61.4

Notes: 1 ft. length of 4" = 0.007 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.18 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

TETC134

NM = Not Measured

G-87

BTOC = Below Top of (Outer steel) Casing

FIGURE 3-2

GROUNDWATER SAMPLING

Sample ID: P9MW6GW4

PROJECT NAME Phelps Collins AUG RT JOB NO: 931800-12 DATE: 9/14/93
 WELL NO. MW6 LOCATION Site 9 RT
 WEATHER CONDITIONS Cool, rainy AMBIENT TEMP: 80°F
 PERSONNEL PHLay EDS
 REVIEWED BY: SSB

EQUIPMENT USED: Bailer, rope, hand pump assembly, filter

PURGING DEVICE
 Type Device? Bailer
 How was the device decontaminated? See logbook
 How was the line decontaminated? dedicated
 Which well was previously purged? P9MW5 expurge

SAMPLING DEVICE
 Type Device? Bailer
 How was the device decontaminated? Acetox+DI, DI rinse
 How was the line decontaminated? dedicated
 Which well was previously sampled? _____

INITIAL WELL VOLUME
 Well diameter (in.) 2"
 Stickup (ft.) - 0.3
 Depth to bottom of well (ft.) 23.35
 Depth to water surface (ft.) 14.44
 Length of water (ft.) 8.91
 Volume of water (ft³) 0.196
 (gal.) 1.425
 Amount of sediment at bottom of well (ft.) -
 LNAPL (ft.) - DNAPL (ft.) -

PURGING
 Time started: 2037 Finished 2100
 Volume purged 6 gallons
 Comments on Well Recovery immediate
 Additional Comments _____
 Samples Collected: Start 1335
 Finish 1350

IN-SITU TESTING	Date: <u>9/14/93</u>	<u>9/14/93</u>	<u>9/14/93</u>				
	Time: <u>2037</u>	<u>2048</u>	<u>2100</u>				
Water Level	<u>14.44</u>		<u>14.44</u>				
Well Volume Purged (gal.)	<u>-</u>	<u>3</u>	<u>6</u>				
Turbidity	<u>none</u>	<u>sl.</u>	<u>mod</u>				
Odor	<u>mod</u>	<u>strong</u>	<u>strong</u>				
Organic Vapor (ppm)	<u>-</u>	<u>-</u>	<u>-</u>				
pH (units)	<u>unable to calibrate</u>						
Conductivity (μ mhos)	<u>P.H. and conductivity</u>						
Water Temperature (°C)	<u>58.5°F</u>	<u>58.1</u>	<u>59.5</u>				

Notes: 1 ft. length of 4" = 0.087 ft³ or 0.65 gal. 1 ft. length 2" = 0.022 ft³ or 0.16 gal.
 Turbidity choices: clear, turbid, opaque Revision Date: 2-8-91

Appendix H: Surveying Data

R. S. Scott Associates, Inc.

ARCHITECTS. ENGINEERS. SURVEYORS

405 RIVER STREET
ALPENA, MICHIGAN 49707
(517) 354-3178

November 4, 1987

W.O. 4-7347

ELEV.			ELEV.			
RT9 - MW1	=	691.00	SF5 - MW1	=	681.03	P.W. #1 - Conc. Floor
RT9 - MW2	=	692.85	SF5 - MW2	=	681.29(a)	Directly opposite well on
RT9 - MW3	=	685.50	SF5 - MW3	=	682.27	West Side = 683.10
RT9 - MW4	=	687.77	SF5 - MW4	=	681.97	
RT9 - MW5	=	687.85	SF5 - SB1	=	677.95	P.W. #2 - Conc. Floor
RT9 - SB1	=	691.27	SF5 - SB2	=	677.85	Directly North of well
RT9 - SB2	=	689.87	SF5 - SB3	=	680.05	casing = 685.43
RT9 - SB3	=	685.57	SF5 - SB4	=	678.95	
RT9 - SB4	=	687.01				P.W. #3 - Top of casing
RT9 - SB5	=	685.71	LF6 - MW1	=	690.54	with cap on = 680.16
RT9 - SB6	=	688.81	LF6 - MW2	=	685.01	
			LF6 - MW3	=	687.14	P.W. #4 - Conc. Floor
CG3 - MW1	=	687.96	FF7 - SB1	=	683.74	West Side = 693.59
CG3 - MW2	=	694.41	FF7 - SB2	=	682.64	
CG3 - MW3	=	690.01	FF7 - SB3	=	684.34	P.W. #5 - Top of well cas
CG3 - MW4	=	694.13	FF7 - SB4	=	682.54	under cap = 681.35
CG3 - MW5	=	694.26				
CG3 - SB1	=	691.92	Spring #1	=	649.66	P.W. #6 - Well appears to
CG3 - SB2	=	691.72	Spring #2	=	649.78	under trailer - trailer
CG3 - SB3	=	692.22	Spring #3	=	644.19	floor at bathroom door
CG3 - SB4	=	692.02	Spring #7	=	646.23	= 681.51
CG3 - SB5	=	691.92	Spring #8	=	646.19	
CG3 - SB6	=	692.02				
CG3 - SB7	=	692.72	TF4 - MW1	=	690.24	Staff Gauge #1 = 674.42
CG3 - SB8	=	692.32	TF4 - MW2	=	688.63	Staff Gauge #2 = 672.65
CG3 - SB9	=	691.82	TF4 - MW3	=	685.00	Staff Gauge #3 = 673.42
CG3 - SB10	=	692.02	TF4 - MW4	=	686.14	Staff Gauge #4 = 673.08
			TF4 - SB1	=	686.23	Staff Gauge #5 = 673.21
HN8 - MW1	=	687.15	TF4 - SB2	=	686.33	Staff Gauge #6 = 642.51
HN8 - MW2	=	693.00	TF4 - SB3	=	686.43	
HN8 - MW3	=	693.65	TF4 - SB4	=	686.23	
HN8 - MW4	=	693.75				
HN8 - SB1	=	690.27	Galvanized Pipe Wells			
			#1	=	680.19	
MP2 - MW1	=	684.63	#2	=	680.13	
MP2 - MW2	=	683.87	#3	=	681.17	
MP2 - SB1	=	682.56	#4	=	678.10	
MP - MW3	=	683.43	#5	=	680.65	
MP - MW4	=	683.59	#6	=	681.77	
MP - MW5	=	683.47	#7	=	682.44	

Staff Gauges 1-6 did not exist on 4 July 1993
JSS 6/14/95

Staff gauges 1-6 did not
exist on 6 July 1993
JSS 6/14/95

NOTE: Elevations as shown were taken at the following locations:
Monitoring Wells: Top of the rim, inside next to the hasp.
Soil Borings: Ground surface at the boring location.
Springs: At the water discharge point.
Galvanized Pipe Wells: Top of casing below the cap.
Staff Gauges: Top of the nail at the gauge.

August 23, 1988

	<u>ELEV.</u>
SF5 - MW2	= 680.31
Staff Gauge #6	= 634.46

- (a) Well and staff gauge were repaired in August 1988 due to damage.
R.S. Scott shot new elevations in August 1988.

Surveying Data - August 1993

IDENTIFICATION NUMBER	REFERENCE POINT TYPE			EAST COORDINATE	NORTH (Y) COORDINATE	ELEVATION (Z) COORDINATE	
	VEIL	SOIL BORING	OTHER			GROUND	ROD
SIW1	X			18224.98	15843.11	678.6	678.23
SIW2	X			18398.47	15431.11	681.8	681.16
SIW3	X			18267.71	15084.96	681.0	680.55
SIW4	X			18359.24	15875.88	679.3	678.94
SIW5	X			18045.17	15408.50		
SIW6	X			18078.39	15717.59	677.2	679.28
SIW11	X			17823.93	15389.00	676.1	677.74
SIW12	X			18169.08	15949.70	678.3	680.20
SIW13	X			18045.33	15421.99	678.0	680.27
SIW14	X			18299.83	15377.91	678.6	679.18
SIP21			PEIZOMETER	18132.60	15386.60	679.3	679.06
SIP72			PEIZOMETER	18366.38	15773.28	679.6	678.34
SIP73			PEIZOMETER	18369.31	15184.00	678.4	
SIS84		X		18247.68	15185.39	680.7	
SIS85		X		18188.20	15284.29	678.5	
SIS86		X		18300.10	15289.43	678.7	
SIS87		X		18088.90	15489.70	678.9	
SIS88		X		18193.58	15480.24	680.2	
SIS89		X		18244.70	15574.21	678.8	
SIS910		X		18331.07	15583.39	679.71	
SIS911		X		18315.98	15752.54	678.0	
SIS912		X		18407.33	15780.24	678.3	
SIS913		X		18177.83	15844.00	682.9	682.62
MP2M1	X			18664.42	15676.93	681.6	683.78
MP2M12	X			18089.82	16301.46	681.3	683.18
MP2M13	X			18902.92	16708.65	681.4	683.44
MP2M14	X			18902.95	16188.32	681.3	683.39
MP2M15	X			18038.02	16585.46	683.1	682.85
MP2M16	X			19255.95	18092.98	683.1	682.79
MP2M17	X			18080.24	16115.91	683.3	
MP2S82		X		19157.12	16108.92	683.3	
MP2S83		X		18370.53	16085.84	683.4	
MP2S84		X		19287.27	16073.03	683.4	
MP2S85		X		18091.18	15850.30	682.6	
MP2S86		X		18979.30	15675.17	682.1	
MP2S87		X		19035.60	15784.71	682.3	
MP2S88		X		19281.44	16051.20	683.4	
MP2S89		X		20322.51	15856.35	685.7	687.87
CG3M1	X			19865.45	16308.88	692.0	694.30
CG3M12	X			19528.94	16008.16	687.9	688.80
CG3M13	X			18657.11	16335.78	692.0	694.00
CG3M14	X			18887.87	16441.48	693.0	694.00

3-H : D. R. MacNEILL & ASSOC
 3-H : D. R. MacNEILL & ASSOC
 3-H : D. R. MacNEILL & ASSOC

IDENTIFICATION NUMBER	REFERENCE POINT TYPE			EAST (X) COORDINATE	NORTH (Y) COORDINATE	ELEVATION (Z) COORDINATE	
	WELL	SOIL BORING	OTHER			GROUND	EDM
LF6BW5	X			17902.45	20034.28	881.8	883.71
LF6BW6	X			18257.52	18417.45	685.3	687.18
LF6BW7	X			17855.84	19828.03	684.1	686.00
LF6BW8	X			19745.18	17984.81	682.9	685.01
LF6BW9	X			18858.79	17950.27	682.3	684.21
LF6BW10	X			17743.08	20075.35	680.7	682.70
HN6BW1	X			20424.46	16241.29	687.3	687.11
HN6BW2	X			20170.26	17023.30	680.6	682.91
HN6BW3	X			20101.13	16583.59	691.4	683.47
HN6BW4	X			20089.64	16388.20	691.6	683.84
HN6BW5	X			20317.55	18880.22	687.8	687.49
HN6SB2	X	X		20390.58	16478.64	688.3	
HN6SB3		X		20321.60	16459.88	688.4	
HN6SB4		X		20180.38	18618.05	689.9	
HN6SB5		X		20334.88	18358.34	688.3	
HN6SB6		X		20188.28	16433.67	691.2	
HN6SB7		X		20186.87	16381.80	690.7	
HN6SB8		X		20390.31	18381.25	688.4	
RT9BW1	X			20224.38	17920.04	688.9	690.79
RT9BW2	X			18887.73	18432.03	690.5	692.63
RT9BW3	X			18545.58	18122.35	683.2	685.22
RT9BW4	X			18673.73	18430.34	685.4	687.52
RT9BW5	X			18886.42	18428.12	685.3	687.81
RT9BW6	X			18675.51	18138.87	685.3	685.00
RT9BW7			TEST WELL	18672.55	18244.83	686.1	
RT9BW8			TEST WELL	18685.52	17813.68	685.7	
RT9SB13		X		19887.45	17778.80	688.9	
SPRING #1			SPRING	19933.14	19214.74	651.2	
SPRING #2			SPRING	18584.35	19272.79	651.1	
SPRING #3			SPRING	18570.00	19361.67	648.7	
SPRING #4			SPRING	18516.17	19185.88	651.6	
SPRING #5			SPRING	19474.84	19172.83	652.5	
SPRING #6			SPRING	18388.53	19284.41	649.7	
B.M. IN 7" ASH			BENCHMARK	17878.98	20153.49		675.04
B.M. IN 20" WHITE PINE STUMP			BENCHMARK	17816.97	15505.52		674.72
B.M. IN 6" WHITE BIRCH			BENCHMARK	18581.73	19342.21		651.31
USGS COLLINS #1			BENCHMARK	20331.88	16706.53		688.56

* B4 staff gauge # 3 (Site 6+7) 6/11/95
 * B4 staff gauge # 4 (Site 1) 6/14/95-150
 * Benchmark in sinkhole; used to determine elevation for staff gauge # 3 in sinkhole JSB 6/14/95
 * These are the only existing JSB 6/14/95

* Staff gauge elevations are provided on Table B-1; do to for the staff gauges reference

H 109423

STATE OF MICHIGAN
DEPARTMENT OF COMMERCE

BOARD OF PROFESSIONAL SURVEYORS
PROFESSIONAL SURVEYOR
LICENSE

DUANE R MAC NEILL
432 RIPLEY BLVD
ALPENA MI 49707

JOHN ENGLER
GOVERNOR

THIS DOCUMENT IS DULY
ISSUED UNDER THE LAWS OF
THE STATE OF MICHIGAN.

PERMANENT ID. NO. 4001014237
EXPIRATION DATE 10/31/95
2515177

Collins 1956

PCR NGS 16 FEB 95

NAO 27 ϕ 45 04 50.23900
h 83 33 56.18500
NAP 83 ϕ 45 04 50.28171
h 83 33 56.11395

Collins 1956 RM 1
 ϕ 45 04 50.
h 83 33 56

AP 1966 STA B SCALED
 ϕ 45 07 02
h 83 33 58

ARP 1966 SCALED.
 ϕ 45 07 18
h 87 38 04

NANCY.

301-713-3242 NGS info LINE
CD ROM 50⁰⁰ (13 STATES)
5^{1/4} or 3^{1/2} @ 30⁰⁰ BY COUNTY.

JANUARY 1973

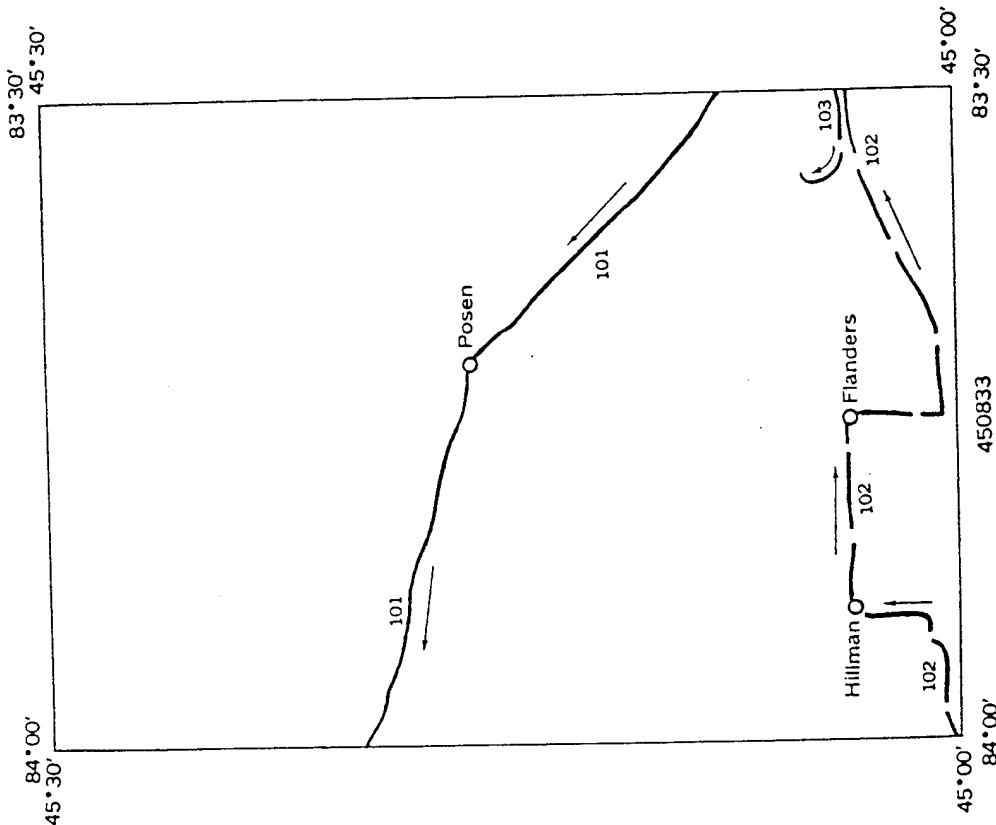
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

VERTICAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
SEA LEVEL DATUM OF 1929

QUAD - - - - - 150033
HIGHLAND
LATITUDE 45° 00' 45° 30'
LONGITUDE 84° 00' 84° 30'
DIAGRAM ALPHA 17-7

0.2



REPLACES EARLIER LISTS

USCOMMA-NOAA-ASHEVILLE

QUAD 450853
 HIGHTMAN
 LATITUDE
 LONGITUDE
 DIAGONAL

VERTICAL CONTROL DATA

by the
 NATIONAL GEODETIC SURVEY
 SEA-LEVEL DATUM OF 1929

JANUARY 1973
 U.S. DEPARTMENT OF COMMERCE
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 NATIONAL OCEAN SURVEY
 REPLACES ELEV. OF MARCH 1962

LINE 101

ADJUSTMENT OF 1929 HZ L-2380

M. M. Gibson 1934 FIRST-ORDER

BENCH MARK	ADJUSTED ELEVATION (Meters)	ADJUSTED ELEVATION (Feet)
HW 25 (DM HY)	214.633	704.175
Q 36	215.119	705.770
R 36	DESTROYED	
S 36	DESTROYED	
T 36	220.695	724.064
U 36	228.424	749.421
RV 26 (DM HY)	239.258	784.966
Y 36	248.902	816.606
Z 36	DESTROYED	
A 37	DESTROYED	
RV 27 (DM HY)	247.043	810.507
B 37	255.887	839.523
C 37	DESTROYED	

LINE 102

ADJUSTMENT OF 1940 HZ L-2384

M. M. Gibson 1934 SECOND-ORDER

BENCH MARK	ADJUSTED ELEVATION (Meters)	ADJUSTED ELEVATION (Feet)
Z 79	258.181	847.049
C 80	237.483	779.142
D 80	221.022	725.136
E 80	232.169	761.708
F 80	233.520	766.140
J 80	226.083	741.741
L 80	207.755	681.610
M 80	201.151	659.943

LINE 103

HZ L-20817

ADJUSTMENT OF 1966

E. T. Ogilby 8-11-66 8-19-66 SECOND-ORDER

BENCH MARK	ADJUSTED ELEVATION (Meters)	ADJUSTED ELEVATION (Feet)
C 183	192.816	632.597
D 183	202.191	663.555
E 183	203.664	668.188
AP 1966 STA A	207.530	680.215
P 183	209.887	687.948
COLLINS	209.720	688.056
COLLINS RM 1	209.875	688.558
COLLINS RM 2	210.107	689.326
ARP 1966	208.983	679.077

JANUARY 1973

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

VERTICAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
SEA LEVEL DATUM OF 1929

QUAD 450833 PAGE NO. 5
MICHIGAN 45° 00' 45" 30"
LATITUDE 87° 30' 00" 00"
LONGITUDE ALPENA MI 17-7
DIAGRAM LINE 103

DESCRIPTION OF BENCH MARK

Designation AP 1966 STA A State Michigan County Alpena
Nearest town Alpena Chief of party E.T.O.
Distance and direction from nearest town 6.5 mi. west Leveling date August 1966
Character of mark Standard topographic mark Stamping AP 1966 STA A
Established by USCGS
Detailed description

The station is located at Phelps Collins Airport 175.0 ft east of the intersection of the centerline of runway end 36 and the end of the overrun. It is a standard topographic disk set in the top of a concrete post and is stamped "AP 1966 STA A".

DESCRIPTION OF BENCH MARK

Designation C 183 State Michigan County Alpena
Nearest town Alpena Chief of party E.T.O.
Distance and direction from nearest town 3.0 miles west Leveling date August 1966
Character of mark Standard disk Stamping C 183 1966
Established by USCGS

The mark is located 3.0 miles west of the intersection of State Highway 32 and the Detroit & Mackinac Railroad tracks at the intersection of State Highway 32 and Walter Street 0.9 mile west of B 183 and 1.25 miles east of D 183, 90 feet west of the centerline of Walter Street, and 34 feet north of the centerline of State Highway 32. The mark is a standard disk stamped "C 183 1966" set in the top of a 9-inch concrete post 3 feet and 1 foot lower than the road.

DESCRIPTION OF BENCH MARK

Designation D 183 State Michigan County Alpena
Nearest town Alpena Chief of party E.T.O.
Distance and direction from nearest town 4.2 miles west Leveling date August 1966
Character of mark Standard disk Stamping D 183 1966
Established by USCGS

The mark is located 3.2 miles west of the intersection of State Highway 32 and the Detroit & Mackinac Railroad tracks, 1.25 miles west of C 183, 0.85 mile east of E 183, on the property of the F. Wako Small Animal Clinic, 74 feet south of the centerline of State Highway 32, 22 feet west of the centerline of the driveway to the clinic, and 3 feet west of a guyed power pole. It is a standard disk stamped "D 183 1966" set in top of a 9-inch concrete post flush with the ground and is about two feet higher than the highway.

DESCRIPTION OF BENCH MARK

Designation E 183 State Michigan County Alpena
Nearest town Alpena Chief of party E.T.O.
Distance and direction from nearest town 5.0 miles west Leveling date August 1966
Character of mark Standard disk Stamping E 183 1966
Established by USCGS
Detailed description

The mark is located 4.0 miles west of the intersection of State Highway 32 and the Detroit & Mackinac Railroad tracks, 0.8 miles west of D 183, and about 6000 feet east of the north-south runway extended. The mark is at the northeast corner of the intersection of W-32 with a 1-road to the right, and is on U.S. Government property. It is 77 feet north of the centerline of W-32, 10 feet east of the centerline of a dirt road, 2 feet north of a corner fence post, 65 feet west of a tall hemlock tree, and 44 feet southeast of power pole number 20. The mark is 4 feet lower than the highway, set in a 9 inch concrete post projecting 2 inches above the ground. It is a standard disk stamped "E 183 1966". Described: B.A.T.

100-20-000-10-127
100-20

DESCRIPTION OF BENCH MARK

Designation F 183 State Michigan County Alpena
Nearest town Alpena Chief of party E.T.O.
Distance and direction from nearest town 6.3 miles west Leveling date August 1966
Character of mark Standard disk Stamping F 183 1966
Established by USCGS
Detailed description

The mark is located at Phelps Collins Airport in the center of the lawn on the east side of the terminal and Weather Bureau building. It is set in the top of a 9 inch concrete post flush with the ground. The mark is 10 feet north of the edge of the south walkway from the terminal, 7 feet west of the airplane parking area and a wire fence, 26.5 feet east of the east face of the terminal, and 11 feet north of the middle walkway from the terminal. Described: B.A.T.

DESCRIPTION OF BENCH MARK

Designation COLLINS State Michigan County Alpena
Nearest town Alpena Chief of party E.T.O.
Distance and direction from nearest town 6.5 mi. west Leveling date August 1966
Character of mark Standard triangulation disk Stamping COLLINS 1966
Established by USCGS
Detailed description

The mark is located 6.5 miles west of Alpena, on Phelps Collins Airport at the intersection of 3rd Street and East Avenue, 108 feet southeast of the intersection, 64 feet southeast of the southwest corner of Building 1-10, 35 feet west of a witness post, 34 feet east of the center of 3rd Street, and 20.5 feet west of the southwest leg of the beacon tower. It is a standard disk set in a concrete post flush with the ground and is stamped "COLLINS 1966." Described: BAS

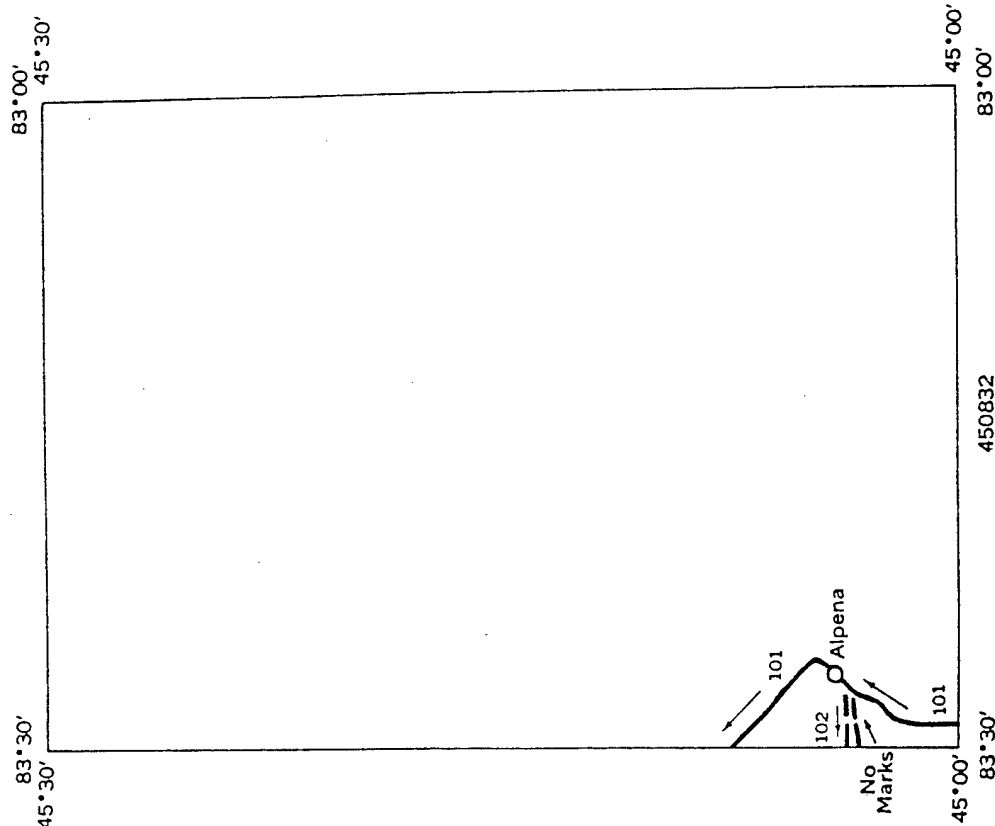
JANUARY 1973

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

VERTICAL CONTROL DATA

By the
NATIONAL GEODETIC SURVEY
SEA LEVEL DATUM OF 1929

QUAD-----150832
MICHIGAN
LATITUDE 45°00' to 45°30'
LONGITUDE 83°00' to 83°30'
DIAGRAM ALPENA ILL 17-7



REPLACES EARLIER LIST

USCOMM-NOAA-ASHEVILLE

JANUARY 1973

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY
REPLACES ELEV. OF APRIL 1962

VERTICAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
SEA-LEVEL DATUM OF 1929

QUAD 450832 PAGE 110 1
MICHIGAN 45°00' to 45°30'
LATITUDE 83°00' to 83°30'
LONGITUDE ALPENA
DIAGRAM HL 17-7

LINE 101

ADJUSTMENT OF 1929		HQZ L-2350	
W. M. Gibson 1934		SECOND ORDER	
BENCH MARK	ADJUSTED ELEVATION		
H 36	189.878	622.958	
J 36	190.251	624.182	
K 36		DESTROYED	
L 36		DESTROYED	

ADJUSTMENT OF 1966		HQZ L-20817	
E. T. Ogilby 8-11-66 9-19-66		SECOND ORDER	
M 36	184.972	606.862	
PIRE LDMK 1941	180.595	592.502	
(USLS)		NOT RECOVERED	
PH		DESTROYED	
LIBRARY (USLS)			
PO (USLS)	180.325	591.616	

LINE 102

ADJUSTMENT OF 1966		HQZ L-20817	
E. T. Ogilby 8-11-66 9-19-66		SECOND ORDER	
BENCH MARK	ADJUSTED ELEVATION (METERS)	ADJUSTED ELEVATION (FEET)	
A 183	185.722	602.761	
B 183	194.552	638.293	

JANUARY 1973

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

VERTICAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
SEA LEVEL DATUM OF 1929

QUAD 450832 PAGE 110.3
MICHIGAN 45°00' to 45°30'
LATITUDE 83°00' to 83°30'
LONGITUDE 83°00' to 83°30'
DIAGRAM ALPEHA
LINE 102

LINE 102

SPUR LINE TO PHELPS COLLINS AIRPORT

DESCRIPTION OF BENCH MARK

Designation A 183
Nearest town Alpena
Distance and direction from nearest town At Alpena
Character of mark Standard disk
Established by CGCS
Detailed description

State Michigan
County Alpena
E.T.O.
Chief of party AUGUST 1966
Leveling date AUGUST 1966
Stamping "A 183 1966"

The mark is located 0.2 mile west of the intersection of State Highway 32 and the Detroit & Macinec Railroad tracks in the center of a grass island in a Michigan State Highway rest area. The mark is 94 feet southwest of the center of three 4-foot willow trees, 88 feet west of the centerline of S. Eleventh Street, 85.5 feet south of a drinking fountain, 61 feet east of a blazed maple tree, and 44 feet north of the centerline of State Highway 32. It is a standard disk set in top of a 9-inch concrete post flush with the ground and stamped "A 183 1966".

The mark is 0.7 mile southwest of H 36 and 0.85 mile east of B 183.

DESCRIPTION OF BENCH MARK

Designation B 183
Nearest town Alpena
Distance and direction from nearest town 2.0 miles west
Character of mark Standard disk
Established by CGCS
Detailed description

State Michigan
County Alpena
E.T.O.
Chief of party August 1966
Leveling date August 1966
Stamping "B 183 1966"

The mark is located 2.0 miles west of Alpena along State Highway 32, 0.85 mile west of A 183, 0.9 mile east of C 183 in the southwest 2X2' concrete guy anchor for the WATZ radio antenna, 179 feet north of the centerline of State Highway 32, 70 feet west of the west face of WATZ radio station building. The mark is a standard disk stamped "B 183 1966" set in the top of the anchor projecting 6 inches and is about 5 feet higher than the highway.

SPUR LINE CONTINUES INTO QUAD 450833

B. 11:

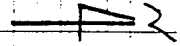
This might be gone by now
we have a new B.M. set by a
Power Pole in front of All Phone
Elec. I don't have the information
here at Alpena at the present time
I will get it by the first of next
week and pass it on to you.
Copy B.M. included
C.L.F. New Included

Bm 183 RESET 1991

17LPENR

Elev. 636.238

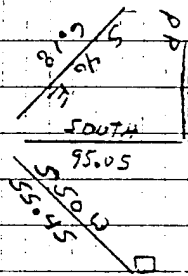
M-32



All Phase

BLDG

SE Cor 4' Cont Walk



1/589

SE Cor
50' 11"
SIDW post

BAGLEY ST

C. Lindgren
Dist. #4 Surveyor

**Appendix I: Analytical Results; Investigation Derived
Wastes - Decontamination Water and Soil Cuttings**

SHEALY ENVIRONMENTAL SERVICES, INC.

BIOLOGISTS, TOXICOLOGISTS & CHEMISTS

106 VANTAGE POINT DRIVE
OVERLOOK BUSINESS CENTER
CAYCE, SOUTH CAROLINA 29033
(803) 791-9700
FAX (803) 791-9111

CERTIFICATE OF ANALYSIS

SC DHEC CERTIFICATION NO. 26103
NC DEM NO. 329
VA VDH-DWSE NO. 00303
TN DHE NO. 2964
Page 1

Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Project Name: Phelp Collins A&G

Attention: JEAN MCKEE

SHEALY Lab No: 44079R
Description: PPT5002

Coll. Date: 08/23/93
Coll. Time: 1420

Date Received: 08/24/93
Date Reported: 08/30/93
Date Revised: 08/31/93
* Extraction Date 08/25/93
** Blank depletions >0.50 mg/l

QA/QC Officer YMBE

Parameters	Result	Units	%Spike Recovery	Analyst	Date Analyzed
BOD5-Total	**138	mg/l		KAB	08/25/93
TPH 418.1	<5.0	mg/l		MDE	08/24/93
TSS	10	mg/l		RLB	08/24/93
METALS					
Antimony	<0.020	mg/l	116.0	FT	08/27/93
Arsenic	<0.050	mg/l	97.0	FT	08/27/93
Beryllium	<0.005	mg/l	95.0	FT	08/27/93
Cadmium	<0.005	mg/l	94.0	FT	08/27/93
Chromium	0.036	mg/l	93.0	FT	08/27/93
Copper	<0.010	mg/l	97.0	FT	08/27/93
Lead	<0.020	mg/l	106.0	FT	08/27/93
Mercury	<0.001	mg/l		FT	08/27/93
Nickel	<0.005	mg/l	93.0	FT	08/27/93
Selenium	<0.050	mg/l	100.0	FT	08/27/93
Silver	<0.005	mg/l	99.0	FT	08/27/93
Thallium	<0.100	mg/l	95.0	FT	08/27/93
Zinc	<0.005	mg/l	94.0	FT	08/27/93
VOLATILE ORGANICS METHOD 624				YY	08/24/93
Benzene	<5.0	ug/l	106.0		
Bromochloromethane	<5.0	ug/l			
Bromodichloromethane	<5.0	ug/l			
Bromoform	<5.0	ug/l			
Bromomethane	<10.0	ug/l			
2-Butonane (MEK)	<5.0	ug/l			
Carbon tetrachloride	<5.0	ug/l			
Chlorobenzene	<5.0	ug/l	103.0		
Chloroethane	<10.0	ug/l			
2-Chloroethylvinylether	<5.0	ug/l			
Chloroform	<5.0	ug/l			

Chloromethane	<10.0	ug/l			
Dibromochloromethane	<5.0	ug/l			
1,2-Dibromoethane (EDB)	<5.0	ug/l			
1,2-Dichlorobenzene	<5.0	ug/l			
1,3-Dichlorobenzene	<5.0	ug/l			
1,4-Dichlorobenzene	<5.0	ug/l			
Dichlorodifluoromethane	<10.0	ug/l			
1,1-Dichloroethane	<5.0	ug/l			
1,2-Dichloroethane	<5.0	ug/l			
1,1-Dichloroethene	<5.0	ug/l	99.0		
trans-1,2-Dichloroethene	<5.0	ug/l			
1,2-Dichloropropane	<5.0	ug/l			
cis-1,3-Dichloropropene	<5.0	ug/l			
trans-1,3-Dichloropropene	<5.0	ug/l			
Diisopropylether (IPE)	<5.0	ug/l			
Ethyl benzene	<5.0	ug/l			
Methylene chloride	<5.0	ug/l			
Methyl tertiary butyl ether	<5.0	ug/l			
1,1,2,2-Tetrachloroethane	<5.0	ug/l			
Tetrachloroethene	<5.0	ug/l			
Toluene	<5.0	ug/l	105.0		
1,1,1-Trichloroethane	<5.0	ug/l			
1,1,2-Trichloroethane	<5.0	ug/l			
Trichloroethene	<5.0	ug/l	107.0		
Trichlorofluoromethane	<10.0	ug/l			
Vinyl chloride	<10.0	ug/l			
Total Xylenes	<12.0	ug/l			
Acetonitrile	<100	ug/l		YY	08/24/93
bis(Chloromethyl)ether	<20000	ug/l		YY	08/24/93
ACID EXTRACTABLES *				JAB	08/26/93
4-Chloro-3-methylphenol	<10.0	ug/l	65.1		
2-Chlorophenol	<10.0	ug/l	59.8		
2,4-Dichlorophenol	<10.0	ug/l			
2,4-Dimethylphenol	<10.0	ug/l			
4,6-Dinitro-2-methylphenol	<20.0	ug/l			
2,4-Dinitrophenol	<50.0	ug/l			
2-Nitrophenol	<10.0	ug/l			
4-Nitrophenol	<10.0	ug/l	35.5		
Pentachlorophenol	<10.0	ug/l	50.6		
Phenol	<10.0	ug/l	34.0		
2,4,6-Trichlorophenol	<10.0	ug/l			
BASE NEUTRAL EXTRACTABLES *				JAB	08/26/93
Acenaphthene	<10.0	ug/l	51.6		
Acenaphthylene	<10.0	ug/l			
Anthracene	<10.0	ug/l			
Azobenzene	<10.0	ug/l			
Benzidine	<10.0	ug/l			
Benzo(a)anthracene	<10.0	ug/l			
Benzo(b+k)fluoranthene	<20.0	ug/l			
Benzo(g,h,i)perylene	<10.0	ug/l			
Benzo(a)pyrene	<10.0	ug/l			
bis(2-Chloroethoxy)methane	<10.0	ug/l			
bis(2-Chloroethyl)ether	<10.0	ug/l			
bis(2-Chloroisopropyl)ether	<10.0	ug/l			
bis(2-Ethylhexyl)phthalate	<10.0	ug/l			
4-Bromophenylphenylether	<10.0	ug/l			
Butylbenzylphthalate	<10.0	ug/l			

Parameters

Result

Units

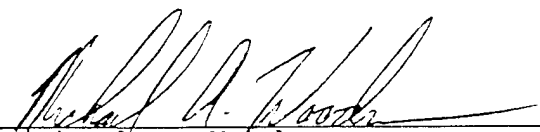
%Spike
Recovery

Analyst

Date
Analyzed

Parameters	Result	Units	%Spike Recovery	Analyst	Date Analyzed
2-Chloronaphthalene	<10.0	ug/l			
4-Chlorophenylphenylether	<10.0	ug/l			
Chrysene	<10.0	ug/l			
p-Cresol	<10.0	ug/l			
o-Cresol	<10.0	ug/l			
Dibenzo(a,h)anthracene	<10.0	ug/l			
1,2-Dichlorobenzene	<10.0	ug/l			
1,3-Dichlorobenzene	<10.0	ug/l			
1,4-Dichlorobenzene	<10.0	ug/l	56.3		
3,3'-Dichlorobenzidine	<10.0	ug/l			
Diethylphthalate	<10.0	ug/l			
Dimethylphthalate	<10.0	ug/l			
di-N-Butylphthalate	<10.0	ug/l			
2,4-Dinitrotoluene	<10.0	ug/l	59.4		
2,6-Dinitrotoluene	<10.0	ug/l			
di-N-Octylphthalate	<10.0	ug/l			
Fluoranthene	<10.0	ug/l			
Fluorene	<10.0	ug/l			
Hexachlorobenzene	<10.0	ug/l			
Hexachlorobutadiene	<10.0	ug/l			
Hexachlorocyclopentadiene	<10.0	ug/l			
Hexachloroethane	<10.0	ug/l			
Indeno(1,2,3-c,d)pyrene	<10.0	ug/l			
Isophorone	<10.0	ug/l			
Naphthalene	<10.0	ug/l			
Nitrobenzene	<10.0	ug/l			
N-Nitrosodimethylamine	<10.0	ug/l			
N-Nitrosodi-N-propylamine	<10.0	ug/l	60.2		
N-Nitrosodiphenylamine	<10.0	ug/l			
Phenanthrene	<10.0	ug/l			
Pyrene	<10.0	ug/l	51.3		
1,2,4-Trichlorobenzene	<10.0	ug/l	53.7		

Reported by:


 Michael A. Woodrum
 Vice President Analytical Services

SHEALY ENVIRONMENTAL SERVICES, INC.

BIOLOGISTS, TOXICOLOGISTS & CHEMISTS

106 VANTAGE POINT DRIVE
OVERLOOK BUSINESS CENTER
CAYCE, SOUTH CAROLINA 29033
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FAX (803) 791-9111

CERTIFICATE OF ANALYSIS

SC DHEC CERTIFICATION NO. 26103
NC DEM NO. 329
VA VDH-DWSE NO. 00303
TN DHE NO. 2964
Page 1

Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Project Name: Hazwrap-Phelps Collins Ang

Attention: PATRICK LAY

SHEALY Lab No: 44434R
Description: PPT003

Coll. Date: 08/31/93
Coll. Time: 1530

Date Received: 09/02/93
Date Reported: 09/07/93

QA/QC Officer 

Parameters	Result	Units	Analyst	Date Analyzed
TPH 418.1	<5.0	mg/l	MDE	09/07/93

Reported by:


Michael A. Woodrum
Vice President of Analytical Services

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Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

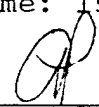
Project Name: Hazwrap-Phelps Collins Ang

Attention: PATRICK LAY

SHEALY Lab No: 44435R
Description: PPT003

Coll. Date: 08/31/93
Coll. Time: 1530

Date Received: 09/02/93
Date Reported: 09/07/93

QA/QC Officer 

Ext Date 09/02/93
* Blank read <10.0 ug/l

Parameters	Result	Units	Analyst	Date Analyzed
ACID EXTRACTABLES			JAB	09/03/93
4-Chloro-3-methylphenol	<10.0	ug/l		
2-Chlorophenol	<10.0	ug/l		
2,4-Dichlorophenol	<10.0	ug/l		
2,4-Dimethylphenol	<10.0	ug/l		
4,6-Dinitro-2-methylphenol	<20.0	ug/l		
2,4-Dinitrophenol	<50.0	ug/l		
2-Nitrophenol	<10.0	ug/l		
4-Nitrophenol	<20.0	ug/l		
Pentachlorophenol	<10.0	ug/l		
Phenol	<20.0	ug/l		
2,4,6-Trichlorophenol	<10.0	ug/l		
BASE NEUTRAL EXTRACTABLES			JAB	09/03/93
Acenaphthene	<10.0	ug/l		
Acenaphthylene	<10.0	ug/l		
Anthracene	<10.0	ug/l		
Azobenzene	<10.0	ug/l		
Benzidine	<10.0	ug/l		
Benzo(a)anthracene	<10.0	ug/l		
Benzo(b+k)fluoranthene	<20.0	ug/l		
Benzo(g,h,i)perylene	<10.0	ug/l		
Benzo(a)pyrene	<10.0	ug/l		
bis(2-Chloroethoxy)methane	<10.0	ug/l		
bis(2-Chloroethyl)ether	<10.0	ug/l		
bis(2-Chloroisopropyl)ether	<20.0	ug/l		
bis(2-Ethylhexyl)phthalate	*998	ug/l		
4-Bromophenylphenylether	<10.0	ug/l		
Butylbenzylphthalate	<10.0	ug/l		
2-Chloronaphthalene	<10.0	ug/l		
4-Chlorophenylphenylether	<10.0	ug/l		

	Result	Units	Date Analyst Analyzed
Chrysene	<10.0	ug/l	
Dibenzo(a,h)anthracene	<10.0	ug/l	
1,2-Dichlorobenzene	<10.0	ug/l	
1,3-Dichlorobenzene	<10.0	ug/l	
1,4-Dichlorobenzene	<10.0	ug/l	
3,3'-Dichlorobenzidine	<10.0	ug/l	
Diethylphthalate	<10.0	ug/l	
Dimethylphthalate	<10.0	ug/l	
di-N-Butylphthalate	<10.0	ug/l	
2,4-Dinitrotoluene	<10.0	ug/l	
2,6-Dinitrotoluene	<10.0	ug/l	
di-N-Octylphthalate	*43.1	ug/l	
Fluoranthene	<10.0	ug/l	
Fluorene	<10.0	ug/l	
Hexachlorobenzene	<10.0	ug/l	
Hexachlorobutadiene	<10.0	ug/l	
Hexachlorocyclopentadiene	<10.0	ug/l	
Hexachloroethane	<10.0	ug/l	
Indeno(1,2,3-c,d)pyrene	<10.0	ug/l	
Isophorone	<10.0	ug/l	
Naphthalene	<10.0	ug/l	
Nitrobenzene	<10.0	ug/l	
N-Nitrosodimethylamine	<20.0	ug/l	
N-Nitrosodi-N-propylamine	<10.0	ug/l	
N-Nitrosodiphenylamine	<10.0	ug/l	
Phenanthrene	<10.0	ug/l	
Pyrene	<10.0	ug/l	
1,2,4-Trichlorobenzene	<10.0	ug/l	
m+p-Cresol	<20.0	ug/l	
o-Cresol	<10.0	ug/l	

Reported by: Mark D. Edwards for
Michael A. Woodrum
Vice President Analytical Services

SHEALY ENVIRONMENTAL SERVICES, INC.

BIOLOGISTS, TOXICOLOGISTS & CHEMISTS

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CERTIFICATE OF ANALYSIS

SC DHEC CERTIFICATION NO. 26103
NC DEM NO. 329
VA VDH-DWSE NO. 00303
TN DHE NO. 2964

Page 1

Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Project Name: Hazwrap-Phelps Collins Ang

Attention: PATRICK LAY

SHEALY Lab No: 44436R
Description: PPT003

Coll. Date: 08/31/93
Coll. Time: 1530

Date Received: 09/02/93
Date Reported: 09/04/93

QA/QC Officer 

Parameters	Result	Regulatory Limit	Units	%Spike Recovery	Analyst	Date Analyzed
METALS					FT	09/02/93
Antimony	<0.020		mg/l	86.0		
Arsenic	<0.050		mg/l	106.0		
Beryllium	<0.005		mg/l	95.0		
Cadmium	<0.005		mg/l	90.0		
Chromium	0.026		mg/l	94.0		
Copper	0.015		mg/l	91.0		
Lead	<0.050		mg/l	101.0		
Nickel	<0.005		mg/l	91.0		
Selenium	<0.050		mg/l	99.0		
Silver	<0.005		mg/l	86.0		
Thallium	<0.100		mg/l	99.0		
Zinc	<0.005		mg/l	94.0		

Reported by:


Michael A. Woodrum
Vice President Analytical Services

SHEALY ENVIRONMENTAL SERVICES, INC.

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TN DHE NO. 2964
Page 1

Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Project Name: Hazwrap-Phelps Collins Ang

Attention: PATRICK LAY

SHEALY Lab No: 44437R
Description: PPT003

Coll. Date: 08/31/93
Coll. Time: 1530

Date Received: 09/02/93
Date Reported: 09/07/93

QA/QC Officer 

* BOD received out of holding time, not analyzed per client.

Parameters	Result	Units	Analyst	Date Analyzed
BOD5-Total	*	mg/l		
TSS	20	mg/l	RLB	09/03/93

Reported by:


Michael A. Woodrum

Vice President of Analytical Services

SHEALY ENVIRONMENTAL SERVICES, INC.

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SC DHEC CERTIFICATION NO. 26103
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VA VDH-DWSE NO. 00303
TN DHE NO. 2964
Page 1

Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Project Name: Hazwrap-Phelps Collins Ang

Attention: PATRICK LAY

SHEALY Lab No: 44438R
Description: PPT003

Coll. Date: 08/31/93
Coll. Time: 1530

Date Received: 09/02/93
Date Reported: 09/07/93

QA/QC Officer 

Parameters	Result	Units	Analyst	Date Analyzed
VOLATILE ORGANICS METHOD 624			YY	09/02/93
Benzene	<5.0	ug/l		
Bromochloromethane	<5.0	ug/l		
Bromodichloromethane	<5.0	ug/l		
Bromoform	<5.0	ug/l		
Bromomethane	<10.0	ug/l		
2-Butonane (MEK)	<5.0	ug/l		
Carbon tetrachloride	<5.0	ug/l		
Chlorobenzene	<5.0	ug/l		
Chloroethane	<10.0	ug/l		
2-Chloroethylvinylether	<5.0	ug/l		
Chloroform	<5.0	ug/l		
Chloromethane	<10.0	ug/l		
Dibromochloromethane	<5.0	ug/l		
1,2-Dibromoethane (EDB)	<5.0	ug/l		
1,2-Dichlorobenzene	<5.0	ug/l		
1,3-Dichlorobenzene	<5.0	ug/l		
1,4-Dichlorobenzene	<5.0	ug/l		
Dichlorodifluoromethane	<10.0	ug/l		
1,1-Dichloroethane	<5.0	ug/l		
1,2-Dichloroethane	<5.0	ug/l		
1,1-Dichloroethene	<5.0	ug/l		
trans-1,2-Dichloroethene	<5.0	ug/l		
1,2-Dichloropropane	<5.0	ug/l		
cis-1,3-Dichloropropene	<5.0	ug/l		
trans-1,3-Dichloropropene	<5.0	ug/l		
Diisopropylether (IPE)	<5.0	ug/l		
Ethyl benzene	<5.0	ug/l		

Methylene chloride	<5.0	ug/l		
Methyl tertiary butyl ether (MTBE)	<5.0	ug/l		
Naphthalene	<5.0	ug/l		
1,1,2,2-Tetrachloroethane	<5.0	ug/l		
Tetrachloroethene	<5.0	ug/l		
Toluene	<5.0	ug/l		
1,1,1-Trichloroethane	<5.0	ug/l		
1,1,2-Trichloroethane	<5.0	ug/l		
Trichloroethene	<5.0	ug/l		
Trichlorofluoromethane	<10.0	ug/l		
Vinyl chloride	<10.0	ug/l		
Total Xylenes	<12.0	ug/l		
Acrolein	<50.0	ug/l		
Acrylonitrile	<50.0	ug/l		
Acetonitrile	<100	ug/l		
bis(Chloromethyl) ether	<20000	ug/l		

Reported by: Mark D. Edwards for
Michael A. Woodrum
Vice President of Analytical Services

SHEALY ENVIRONMENTAL SERVICES, INC.

BIOLOGISTS, TOXICOLOGISTS & CHEMISTS

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CERTIFICATE OF ANALYSIS

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TN DHE NO. 2964
Page 1

Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Project Name: PHELPS COLLINS ANG CRTIC RI

Attention: PATRICK LAY

SHEALY Lab No: 45203
Description: P10002

Coll. Date: 09/15/93
Coll. Time: 2108

Date Received: 09/17/93
Date Reported: 10/06/93

QA/QC Officer MAC

*Ext Date 09/21/93

**bis(2-Ethylhexyl)phthalate <10.0 ug/l in blank

Parameters	Result	Units	Analyst	Date Analyzed
BOD5-Total	27	mg/l	RLB	09/17/93
TPH 418.1	<5.00	mg/l	MDE	09/22/93
TSS	445	mg/l	RLB	09/21/93
METALS				
Antimony	<0.020	mg/l	FT	10/05/93
Arsenic	0.090	mg/l	FT	10/05/93
Beryllium	<0.010	mg/l	FT	10/05/93
Cadmium	<0.010	mg/l	FT	10/05/93
Chromium	<0.020	mg/l	FT	10/05/93
Copper	0.187	mg/l	FT	10/05/93
Lead	0.337	mg/l	FT	10/05/93
Mercury	<0.001	mg/l	FT	09/29/93
Nickel	<0.010	mg/l	FT	10/05/93
Selenium	<0.050	mg/l	FT	10/05/93
Silver	<0.005	mg/l	FT	10/05/93
Thallium	<0.500	mg/l	FT	10/05/93
Zinc	0.370	mg/l	FT	10/05/93
VOLATILE ORGANICS METHOD 624			YY	09/17/93
Benzene	<5.0	ug/l		
Bromochloromethane	<5.0	ug/l		
Bromodichloromethane	<5.0	ug/l		
Bromoform	<5.0	ug/l		
Bromomethane	<10.0	ug/l		
2-Butonane (MEK)	<5.0	ug/l		
Carbon tetrachloride	<5.0	ug/l		
Chlorobenzene	<5.0	ug/l		
Chloroethane	<10.0	ug/l		
2-Chloroethylvinylether	<5.0	ug/l		
Chloroform	<5.0	ug/l		

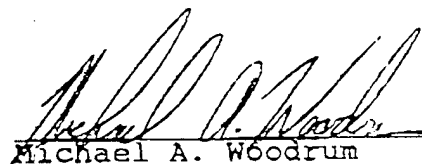
Parameters

Result Units Analyst Date Analyzed

Parameters	Result	Units	Analyst	Date Analyzed
Chloromethane	<10.0	ug/l		
Dibromochloromethane	<5.0	ug/l		
1,2-Dibromoethane (EDB)	<5.0	ug/l		
1,2-Dichlorobenzene	<5.0	ug/l		
1,3-Dichlorobenzene	<5.0	ug/l		
1,4-Dichlorobenzene	<5.0	ug/l		
Dichlorodifluoromethane	<10.0	ug/l		
1,1-Dichloroethane	<5.0	ug/l		
1,2-Dichloroethane	<5.0	ug/l		
1,1-Dichloroethene	<5.0	ug/l		
trans-1,2-Dichloroethene	<5.0	ug/l		
1,2-Dichloropropane	<5.0	ug/l		
cis-1,3-Dichloropropene	<5.0	ug/l		
trans-1,3-Dichloropropene	<5.0	ug/l		
Diisopropylether (IPE)	<5.0	ug/l		
Ethyl benzene	<5.0	ug/l		
Methylene chloride	<5.0	ug/l		
Methyl tertiary butyl ether (MTBE)	<5.0	ug/l		
Naphthalene	<5.0	ug/l		
1,1,2,2-Tetrachloroethane	<5.0	ug/l		
Tetrachloroethene	<5.0	ug/l		
Toluene	<5.0	ug/l		
1,1,1-Trichloroethane	<5.0	ug/l		
1,1,2-Trichloroethane	<5.0	ug/l		
Trichloroethene	<5.0	ug/l		
Trichlorofluoromethane	<10.0	ug/l		
Vinyl chloride	<10.0	ug/l		
Total Xylenes	<12.0	ug/l		
Acetonitrile	<100	ug/l		
bis(Chloromethyl) ether	<20000	ug/l		
ACID EXTRACTABLES *			JAB	09/28/93
4-Chloro-3-methylphenol	<10.0	ug/l		
2-Chlorophenol	<10.0	ug/l		
2,4-Dichlorophenol	<10.0	ug/l		
2,4-Dimethylphenol	<10.0	ug/l		
4,6-Dinitro-2-methylphenol	<20.0	ug/l		
2,4-Dinitrophenol	<10.0	ug/l		
2-Nitrophenol	<10.0	ug/l		
4-Nitrophenol	<10.0	ug/l		
Pentachlorophenol	<10.0	ug/l		
Phenol	<10.0	ug/l		
2,4,6-Trichlorophenol	<10.0	ug/l		
BASE NEUTRAL EXTRACTABLES *			JAB	09/28/93
Acenaphthene	<10.0	ug/l		
Acenaphthylene	<10.0	ug/l		
Anthracene	<10.0	ug/l		
Azobenzene	<10.0	ug/l		
Benzidine	<10.0	ug/l		
Benzo(a)anthracene	<10.0	ug/l		
Benzo(b+k)fluoranthene	<20.0	ug/l		
Benzo(g,h,i)perylene	<10.0	ug/l		
Benzo(a)pyrene	<10.0	ug/l		
bis(2-Chloroethoxy)methane	<10.0	ug/l		
bis(2-Chloroethyl) ether	<10.0	ug/l		
bis(2-Chloroisopropyl) ether	<10.0	ug/l		
bis(2-Ethylhexyl)phthalate	**33.4	ug/l		
4-Bromophenylphenylether	<10.0	ug/l		

	Result	Units	Analyst	Date Analyzed
Butylbenzylphthalate	<10.0	ug/l		
2-Chloronaphthalene	<10.0	ug/l		
4-Chlorophenylphenylether	<20.0	ug/l		
Chrysene	<10.0	ug/l		
Dibenzo(a,h)anthracene	<10.0	ug/l		
1,2-Dichlorobenzene	<10.0	ug/l		
1,3-Dichlorobenzene	<10.0	ug/l		
1,4-Dichlorobenzene	<10.0	ug/l		
3,3'-Dichlorobenzidine	<10.0	ug/l		
Diethylphthalate	<20.0	ug/l		
Dimethylphthalate	<10.0	ug/l		
di-N-Butylphthalate	<10.0	ug/l		
2,4-Dinitrotoluene	<10.0	ug/l		
2,6-Dinitrotoluene	<10.0	ug/l		
di-N-Octylphthalate	<10.0	ug/l		
Fluoranthene	<10.0	ug/l		
Fluorene	<10.0	ug/l		
Hexachlorobenzene	<10.0	ug/l		
Hexachlorobutadiene	<10.0	ug/l		
Hexachlorocyclopentadiene	<10.0	ug/l		
Hexachloroethane	<10.0	ug/l		
Indeno(1,2,3-c,d)pyrene	<10.0	ug/l		
Isophorone	<10.0	ug/l		
Naphthalene	<10.0	ug/l		
Nitrobenzene	<10.0	ug/l		
N-Nitrosodimethylamine	<10.0	ug/l		
N-Nitrosodi-N-propylamine	<10.0	ug/l		
N-Nitrosodiphenylamine	<20.0	ug/l		
Phenanthrene	<10.0	ug/l		
Pyrene	<10.0	ug/l		
1,2,4-Trichlorobenzene	<10.0	ug/l		
m+p-Cresol	<20.0	ug/l		
o-Cresol	<10.0	ug/l		

Reported by:


Michael A. Woodrum
Vice President of Analytical Services

TCLP Analytical Results for Soil Cuttings

SHEALY ENVIRONMENTAL SERVICES, INC.

BIOLOGISTS, TOXICOLOGISTS & CHEMISTS

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Page 1

Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Attention: Jean McKee

SHEALY Lab No: 45146
Description: DECON

Coll. Date: 09/13/93
Coll. Time: 1836

Date Received: 09/16/93
Date Reported: 10/06/93

QA/QC Officer CMJ

Parameters	Result	Regulatory Limit	Units	Analyst	Date Analyzed
TCLP METALS					
Arsenic	<0.050	5.0	mg/l	FT	10/01/93
Barium	0.419	100.0	mg/l	FT	10/01/93
Cadmium	<0.005	1.0	mg/l	FT	10/01/93
Chromium	0.039	5.0	mg/l	FT	10/01/93
Lead	<0.050	5.0	mg/l	FT	10/01/93
Mercury	<0.002	0.2	mg/l	FT	09/28/93
Selenium	<0.050	1.0	mg/l	FT	10/01/93
Silver	<0.005	5.0	mg/l	FT	10/01/93
TCLP VOLATILES					
Benzene	<0.10	0.5	mg/l	YY	09/23/93
Carbon tetrachloride	<0.10	0.5	mg/l		
Chlorobenzene	<0.10	100.0	mg/l		
Chloroform	<0.10	6.0	mg/l		
1,4-Dichlorobenzene	<0.10	7.5	mg/l		
1,2-Dichloroethane	<0.10	0.5	mg/l		
1,1-Dichloroethene	<0.10	0.7	mg/l		
Methyl ethyl ketone	<0.10	200.0	mg/l		
Tetrachloroethene	<0.10	0.7	mg/l		
Trichloroethene	<0.10	0.5	mg/l		
Vinyl chloride	<0.20	0.2	mg/l		
TCLP SEMIVOLATILES					
m+p-Cresol	<0.020	200.0	mg/l	JAB	09/22/93
o-Cresol	<0.010	200.0	mg/l		
2,4-Dinitrotoluene	<0.010	0.13	mg/l		
Hexachlorobenzene	<0.010	0.13	mg/l		
Hexachloro-1,3-butadiene	<0.010	0.5	mg/l		
Hexachloroethane	<0.010	3.0	mg/l		
Nitrobenzene	<0.010	2.0	mg/l		
Pentachlorophenol	<0.020	100.0	mg/l		
Pyridine	<0.010	5.0	mg/l		
2,4,5-Trichlorophenol	<0.010	400.0	mg/l		
2,4,6-Trichlorophenol	<0.010	2.0	mg/l		

Reported by:



Michael A. Woodrum

Vice President Analytical Services

SHEALY ENVIRONMENTAL SERVICES, INC.

BIOLOGISTS, TOXICOLOGISTS & CHEMISTS

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Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Attention: Jean McKee

SHEALY Lab No: 45147
Description: LF6MW8

Coll. Date: 09/13/93
Coll. Time: 1912

Date Received: 09/16/93
Date Reported: 10/06/93

QA/QC Officer

CMF

Parameters	Result	Regulatory Limit	Units	Analyst	Date Analyzed
TCLP METALS					
Arsenic	<0.050	5.0	mg/l	FT	10/01/93
Barium	0.614	100.0	mg/l	FT	10/01/93
Cadmium	<0.005	1.0	mg/l	FT	10/01/93
Chromium	<0.010	5.0	mg/l	FT	10/01/93
Lead	<0.050	5.0	mg/l	FT	10/01/93
Mercury	<0.001	0.2	mg/l	FT	09/28/93
Selenium	<0.050	1.0	mg/l	FT	10/01/93
Silver	<0.005	5.0	mg/l	FT	10/01/93
TCLP VOLATILES					
Benzene	<0.10	0.5	mg/l	YY	09/23/93
Carbon tetrachloride	<0.10	0.5	mg/l		
Chlorobenzene	<0.10	100.0	mg/l		
Chloroform	<0.10	6.0	mg/l		
1,4-Dichlorobenzene	<0.10	7.5	mg/l		
1,2-Dichloroethane	<0.10	0.5	mg/l		
1,1-Dichloroethene	<0.10	0.7	mg/l		
Methyl ethyl ketone	<0.10	200.0	mg/l		
Tetrachloroethene	<0.10	0.7	mg/l		
Trichloroethene	<0.10	0.5	mg/l		
Vinyl chloride	<0.20	0.2	mg/l		
TCLP SEMIVOLATILES					
m+p-Cresol	<0.020	200.0	mg/l	JAB	09/22/93
o-Cresol	<0.010	200.0	mg/l		
2,4-Dinitrotoluene	<0.010	0.13	mg/l		
Hexachlorobenzene	<0.010	0.13	mg/l		
Hexachloro-1,3-butadiene	<0.010	0.5	mg/l		
Hexachloroethane	<0.010	3.0	mg/l		
Nitrobenzene	<0.010	2.0	mg/l		
Pentachlorophenol	<0.020	100.0	mg/l		
Pyridine	<0.010	5.0	mg/l		
2,4,5-Trichlorophenol	<0.010	400.0	mg/l		
2,4,6-Trichlorophenol	<0.010	2.0	mg/l		

Reported by:



Michael A. Woodrum
Vice President Analytical Services

SHEALY ENVIRONMENTAL SERVICES, INC.

BIOLOGISTS, TOXICOLOGISTS & CHEMISTS

106 VANTAGE POINT DRIVE
OVERLOOK BUSINESS CENTER
CAYCE, SOUTH CAROLINA 29033
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CERTIFICATE OF ANALYSIS

SC DHEC CERTIFICATION NO. 26103
NC DEM NO. 329
VA VDH-DWSE NO. 00303
TN DHE NO. 2964
Page 1

Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Attention: Jean McKee

SHEALY Lab No: 45148
Description: S1COMP

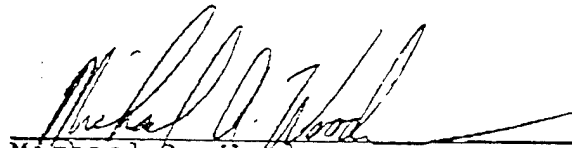
Coll. Date: 09/13/93
Coll. Time: 2000

Date Received: 09/16/93
Date Reported: 10/06/93

QA/QC Officer CMJ

Parameters	Result	Regulatory Limit	Units	Analyst	Date Analyzed
TCLP METALS					
Arsenic	<0.050	5.0	mg/l	FT	10/01/93
Barium	0.319	100.0	mg/l	FT	10/01/93
Cadmium	<0.005	1.0	mg/l	FT	10/01/93
Chromium	<0.010	5.0	mg/l	FT	10/01/93
Lead	<0.050	5.0	mg/l	FT	10/01/93
Mercury	<0.001	0.2	mg/l	FT	09/28/93
Selenium	<0.050	1.0	mg/l	FT	10/01/93
Silver	<0.005	5.0	mg/l	FT	10/01/93
TCLP VOLATILES				YY	09/23/93
Benzene	<0.10	0.5	mg/l		
Carbon tetrachloride	<0.10	0.5	mg/l		
Chlorobenzene	<0.10	100.0	mg/l		
Chloroform	<0.10	6.0	mg/l		
1,4-Dichlorobenzene	<0.10	7.5	mg/l		
1,2-Dichloroethane	<0.10	0.5	mg/l		
1,1-Dichloroethene	<0.10	0.7	mg/l		
Methyl ethyl ketone	<0.10	200.0	mg/l		
Tetrachloroethene	<0.10	0.7	mg/l		
Trichloroethene	<0.10	0.5	mg/l		
Vinyl chloride	<0.20	0.2	mg/l		
TCLP SEMIVOLATILES				JAB	09/22/93
m+p-Cresol	<0.020	200.0	mg/l		
o-Cresol	<0.010	200.0	mg/l		
2,4-Dinitrotoluene	<0.010	0.13	mg/l		
Hexachlorobenzene	<0.010	0.13	mg/l		
Hexachloro-1,3-butadiene	<0.010	0.5	mg/l		
Hexachloroethane	<0.010	3.0	mg/l		
Nitrobenzene	<0.010	2.0	mg/l		
Pentachlorophenol	<0.020	100.0	mg/l		
Pyridine	<0.010	5.0	mg/l		
2,4,5-Trichlorophenol	<0.010	400.0	mg/l		
2,4,6-Trichlorophenol	<0.010	2.0	mg/l		

Reported by:



Michael A. Woodrum
Vice President Analytical Services

SHEALY ENVIRONMENTAL SERVICES, INC.

BIOLOGISTS, TOXICOLOGISTS & CHEMISTS

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CERTIFICATE OF ANALYSIS

SC DHEC CERTIFICATION NO. 26103

NC DEM NO. 329

VA VDH-DWSE NO. 00303

TN DHE NO. 2964

Page 1

Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Attention: Jean McKee

SHEALY Lab No: 45149
Description: SF5MW8

Coll. Date: 09/13/93
Coll. Time: 1905

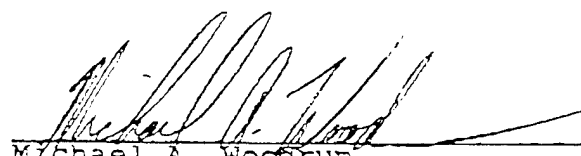
Date Received: 09/16/93
Date Reported: 10/06/93

QA/QC Officer

cmf

Parameters	Result	Regulatory Limit	Units	Analyst	Date Analyzed
TCLP METALS					
Arsenic	<0.050	5.0	mg/l	FT	10/01/93
Barium	0.629	100.0	mg/l	FT	10/01/93
Cadmium	<0.005	1.0	mg/l	FT	10/01/93
Chromium	<0.010	5.0	mg/l	FT	10/01/93
Lead	<0.050	5.0	mg/l	FT	10/01/93
Mercury	<0.001	0.2	mg/l	FT	09/28/93
Selenium	<0.050	1.0	mg/l	FT	10/01/93
Silver	<0.005	5.0	mg/l	FT	10/01/93
TCLP VOLATILES				YY	09/23/93
Benzene	<0.10	0.5	mg/l		
Carbon tetrachloride	<0.10	0.5	mg/l		
Chlorobenzene	<0.10	100.0	mg/l		
Chloroform	<0.10	6.0	mg/l		
1,4-Dichlorobenzene	<0.10	7.5	mg/l		
1,2-Dichloroethane	<0.10	0.5	mg/l		
1,1-Dichloroethene	<0.10	0.7	mg/l		
Methyl ethyl ketone	<0.10	200.0	mg/l		
Tetrachloroethene	<0.10	0.7	mg/l		
Trichloroethene	<0.10	0.5	mg/l		
Vinyl chloride	<0.20	0.2	mg/l		
TCLP SEMIVOLATILES				JAB	09/22/93
m+p-Cresol	<0.020	200.0	mg/l		
o-Cresol	<0.010	200.0	mg/l		
2,4-Dinitrotoluene	<0.010	0.13	mg/l		
Hexachlorobenzene	<0.010	0.13	mg/l		
Hexachloro-1,3-butadiene	<0.010	0.5	mg/l		
Hexachloroethane	<0.010	3.0	mg/l		
Nitrobenzene	<0.010	2.0	mg/l		
Pentachlorophenol	<0.020	100.0	mg/l		
Pyridine	<0.010	5.0	mg/l		
2,4,5-Trichlorophenol	<0.010	400.0	mg/l		
2,4,6-Trichlorophenol	<0.010	2.0	mg/l		

Reported by:



Michael A. Woodrum
Vice President Analytical Services

SHEALY ENVIRONMENTAL SERVICES, INC.

BIOLOGISTS, TOXICOLOGISTS & CHEMISTS

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CERTIFICATE OF ANALYSIS

SC DHEC CERTIFICATION NO. 26103
NC DEM NO. 929
VA VDH-DWSE NO. 00303
TN DHE NO. 2964
Page 1

Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Attention: Jean McKee

SHEALY Lab No: 45150
Description: RT9MW6

Coll. Date: 09/13/93
Coll. Time: 1930

Date Received: 09/16/93
Date Reported: 10/06/93

QA/QC Officer

CMJ

Parameters	Result	Regulatory Limit	Units	Analyst	Date Analyzed
TCLP METALS					
Arsenic	<0.050	5.0	mg/l	FT	10/01/93
Barium	0.346	100.0	mg/l	FT	10/01/93
Cadmium	<0.005	1.0	mg/l	FT	10/01/93
Chromium	<0.010	5.0	mg/l	FT	10/01/93
Lead	<0.050	5.0	mg/l	FT	10/01/93
Mercury	<0.001	0.2	mg/l	FT	09/28/93
Selenium	<0.050	1.0	mg/l	FT	10/01/93
Silver	<0.005	5.0	mg/l	FT	10/01/93
TCLP VOLATILES					
Benzene	<0.10	0.5	mg/l	YY	09/23/93
Carbon tetrachloride	<0.10	0.5	mg/l		
Chlorobenzene	<0.10	100.0	mg/l		
Chloroform	<0.10	6.0	mg/l		
1,4-Dichlorobenzene	<0.10	7.5	mg/l		
1,2-Dichloroethane	<0.10	0.5	mg/l		
1,1-Dichloroethene	<0.10	0.7	mg/l		
Methyl ethyl ketone	<0.10	200.0	mg/l		
Tetrachloroethene	<0.10	0.7	mg/l		
Trichloroethene	<0.10	0.5	mg/l		
Vinyl chloride	<0.20	0.2	mg/l		
TCLP SEMIVOLATILES					
m+p-Cresol	<0.020	200.0	mg/l	JAB	09/22/93
o-Cresol	<0.010	200.0	mg/l		
2,4-Dinitrotoluene	<0.010	0.13	mg/l		
Hexachlorobenzene	<0.010	0.13	mg/l		
Hexachloro-1,3-butadiene	<0.010	0.5	mg/l		
Hexachloroethane	<0.010	3.0	mg/l		
Nitrobenzene	<0.010	2.0	mg/l		
Pentachlorophenol	<0.020	100.0	mg/l		
Pyridine	<0.010	5.0	mg/l		
2,4,5-Trichlorophenol	<0.010	400.0	mg/l		
2,4,6-Trichlorophenol	<0.010	2.0	mg/l		

Reported by:



Michael A. Woodrum
Vice President Analytical Services

SHEALY ENVIRONMENTAL SERVICES, INC.

BIOLOGISTS, TOXICOLOGISTS & CHEMISTS

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OVERLOOK BUSINESS CENTER
CAYCE, SOUTH CAROLINA 29033
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CERTIFICATE OF ANALYSIS

SC DHEC CERTIFICATION NO. 26105
NC DEM NO. 329
VA VDH-DWSE NO. 00303
TN DHE NO. 2964

Page 1

Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Attention: Jean McKee

SHEALY Lab No: 45151
Description: C63PZ1

Coll. Date: 09/13/93
Coll. Time: 1948

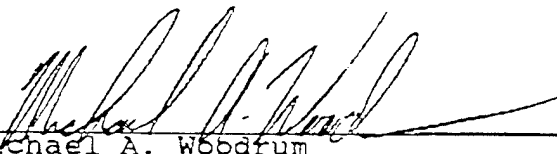
Date Received: 09/16/93
Date Reported: 10/06/93

QA/QC Officer CMF

* Pentachlorophenol <0.020 mg/l in blank

Parameters	Result	Regulatory Limit	Units	Analyst	Date Analyzed
TCLP METALS					
Arsenic	<0.050	5.0	mg/l	FT	10/01/93
Barium	0.319	100.0	mg/l	FT	10/01/93
Cadmium	<0.005	1.0	mg/l	FT	10/01/93
Chromium	<0.010	5.0	mg/l	FT	10/01/93
Lead	<0.050	5.0	mg/l	FT	10/01/93
Mercury	<0.001	0.2	mg/l	FT	09/28/93
Selenium	<0.050	1.0	mg/l	FT	10/01/93
Silver	<0.005	5.0	mg/l	FT	10/01/93
TCLP VOLATILES					
Benzene	<0.10	0.5	mg/l	YY	09/24/93
Carbon tetrachloride	<0.10	0.5	mg/l		
Chlorobenzene	<0.10	100.0	mg/l		
Chloroform	<0.10	6.0	mg/l		
1,4-Dichlorobenzene	<0.10	7.5	mg/l		
1,2-Dichloroethane	<0.10	0.5	mg/l		
1,1-Dichloroethene	<0.10	0.7	mg/l		
Methyl ethyl ketone	<0.10	200.0	mg/l		
Tetrachloroethene	<0.10	0.7	mg/l		
Trichloroethene	<0.10	0.5	mg/l		
Vinyl chloride	<0.20	0.2	mg/l		
TCLP SEMIVOLATILES					
m+p-Cresol	<0.020	200.0	mg/l	JAB	09/23/93
o-Cresol	<0.010	200.0	mg/l		
2,4-Dinitrotoluene	<0.010	0.13	mg/l		
Hexachlorobenzene	<0.010	0.13	mg/l		
Hexachloro-1,3-butadiene	<0.010	0.5	mg/l		
Hexachloroethane	<0.010	3.0	mg/l		
Nitrobenzene	<0.010	2.0	mg/l		
Pentachlorophenol	*0.182	100.0	mg/l		
Pyridine	<0.010	5.0	mg/l		
2,4,5-Trichlorophenol	<0.010	400.0	mg/l		
2,4,6-Trichlorophenol	<0.010	2.0	mg/l		

Reported by:



Michael A. Woodrum
Vice President Analytical Services

SHEALY ENVIRONMENTAL SERVICES, INC.

BIOLOGISTS, TOXICOLOGISTS & CHEMISTS

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OVERLOOK BUSINESS CENTER
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CERTIFICATE OF ANALYSIS

SC DHEC CERTIFICATION NO. 26103
NC DEM NO. 329
VA VDH-DWSE NO. 00303
TN DHE NO. 2964

Page 1

Client: EARTH TECHNOLOGY CENTER
683 EMORY VALLEY RD.
OAK RIDGE, TN 37830-

Attention: Jean McKee

SHEALY Lab No: 45152
Description: MP2SB5

Coll. Date: 09/14/93
Coll. Time: 0745

Date Received: 09/16/93
Date Reported: 10/06/93

QA/QC Officer

CMJ

Parameters	Result	Regulatory Limit	Units	Analyst	Date Analyzed
TCLP METALS					
Arsenic	<0.050	5.0	mg/l	FT	10/01/93
Barium	0.351	100.0	mg/l	FT	10/01/93
Cadmium	<0.005	1.0	mg/l	FT	10/01/93
Chromium	<0.010	5.0	mg/l	FT	10/01/93
Lead	<0.050	5.0	mg/l	FT	10/01/93
Mercury	<0.001	0.2	mg/l	FT	09/28/93
Selenium	<0.050	1.0	mg/l	FT	10/01/93
Silver	<0.005	5.0	mg/l	FT	10/01/93
TCLP VOLATILES					
Benzene	<0.010	0.5	mg/l	YY	09/24/93
Carbon tetrachloride	<0.010	0.5	mg/l		
Chlorobenzene	<0.010	100.0	mg/l		
Chloroform	<0.010	6.0	mg/l		
1,4-Dichlorobenzene	<0.010	7.5	mg/l		
1,2-Dichloroethane	<0.010	0.5	mg/l		
1,1-Dichloroethene	<0.010	0.7	mg/l		
Methyl ethyl ketone	<0.010	200.0	mg/l		
Tetrachloroethene	<0.010	0.7	mg/l		
Trichloroethene	<0.010	0.5	mg/l		
Vinyl chloride	<0.020	0.2	mg/l		
TCLP SEMIVOLATILES					
m+p-Cresol	<0.020	200.0	mg/l	JAB	09/22/93
o-Cresol	<0.010	200.0	mg/l		
2,4-Dinitrotoluene	<0.010	0.13	mg/l		
Hexachlorobenzene	<0.010	0.13	mg/l		
Hexachloro-1,3-butadiene	<0.010	0.5	mg/l		
Hexachloroethane	<0.010	3.0	mg/l		
Nitrobenzene	<0.010	2.0	mg/l		
Pentachlorophenol	<0.020	100.0	mg/l		
Pyridine	<0.010	5.0	mg/l		
2,4,5-Trichlorophenol	<0.010	400.0	mg/l		
2,4,6-Trichlorophenol	<0.010	2.0	mg/l		

Reported by:



Michael A. Woodrum
Vice President Analytical Services