APPENDIX C

MONITORING WELL INSTALLATION AND DEVELOPMENT LOGS

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MONITORING WELL INSTALLATION AND DEVELOPMENT LOGS

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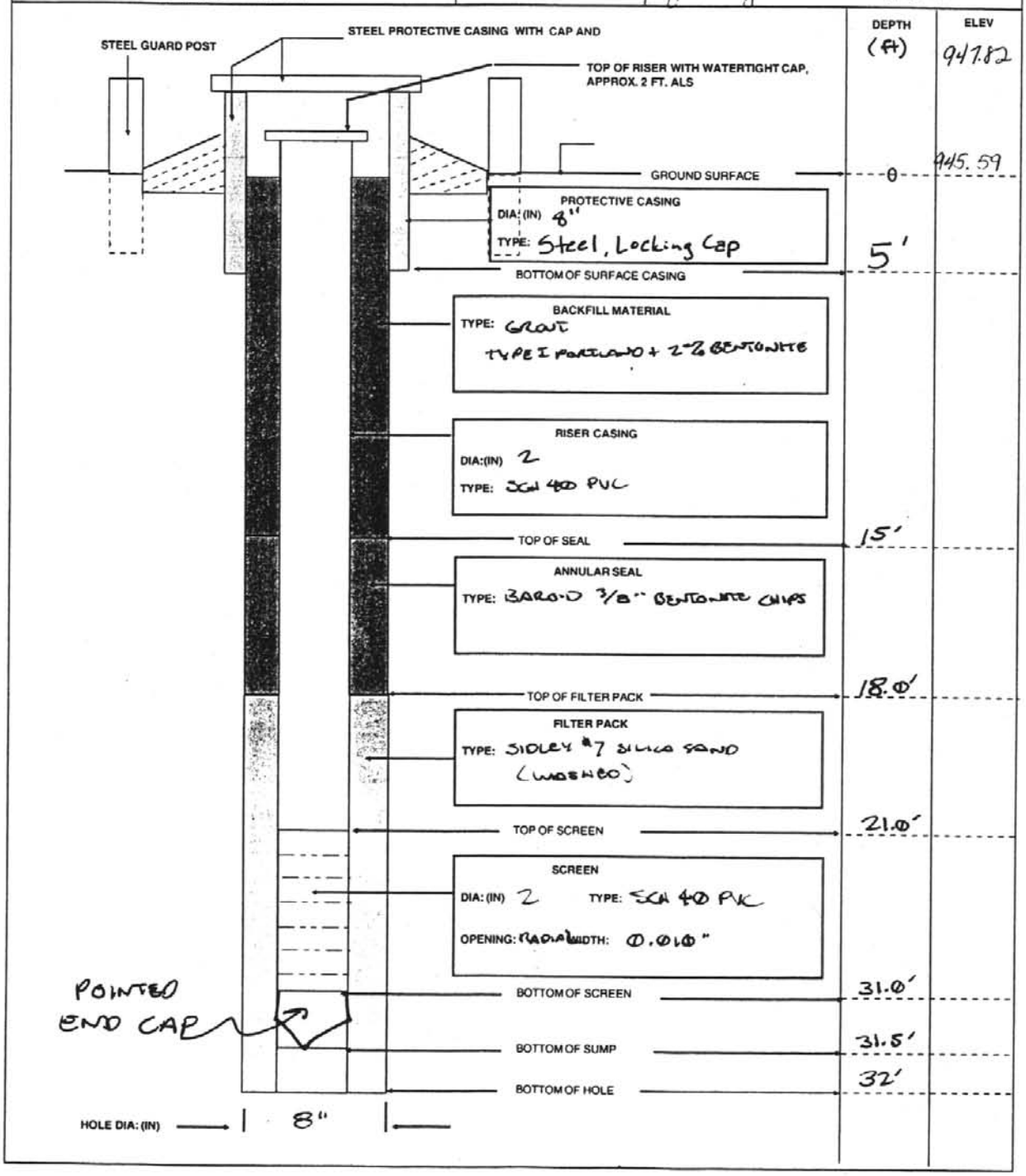
MONITORING WELL

PROJECT NAME: Erie Burning Grounds Phase II **DELIVERY ORDER NO:** CY10

WELL NUMBER: EBG MW-123	**BEGIN:** 10/28/03	**END:** 10/29/03
COORDINATES: N: 571747.04 E: 2380049.21	**REFERENCE POINT:** Top of Casing	**ELEVATION:** 947.82 **MSL**



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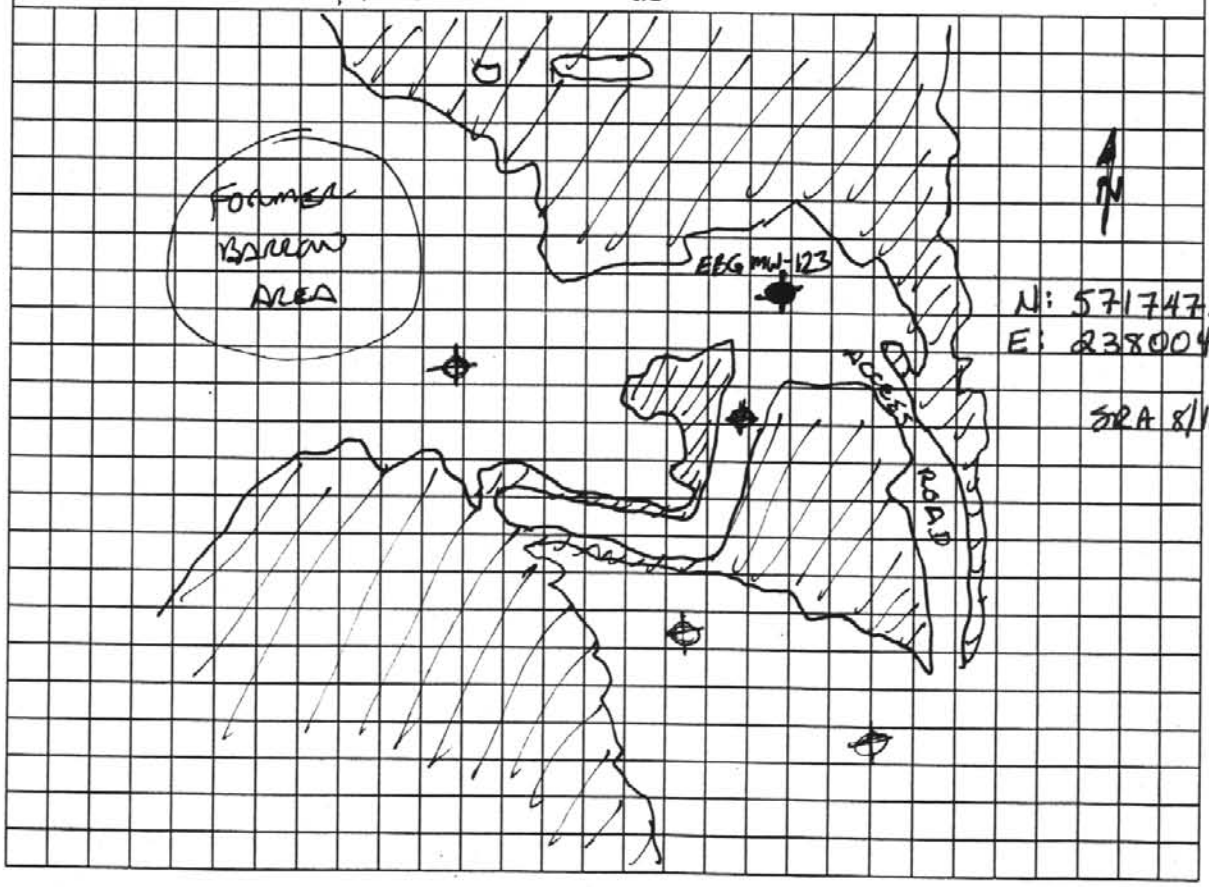
HTRW DRILLING LOG

DISTRICT: Louisville		HOLE NUMBER MW-123
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: FRONTZ DRILLING	SHEET 1 OF 5
3. PROJECT: Erie Burning Grounds Phase II	4. LOCATION: Erie Burning Grounds	
5. NAME OF DRILLER: FRONTZ DRILLING: AARON MACKEY	6. MANUFACTURERS DESIGNATION OF DRILL: CME 750	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4 1/4 I.D. HSA, 2" SPLIT SPOON	8. HOLE LOCATION: northend of EBG access road	
	9. SURFACE ELEVATION: 947.82 TOC 945.59 ground	
	10. DATE STARTED: 10/28/03	11. DATE COMPLETED: 11/24/03
12. OVERBURDEN THICKNESS: 32'+	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 7.28' bgs @ 1250 10/30/03	
14. TOTAL DEPTH OF HOLE: 32 fbgs.	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES: Ø			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
—	—	—	—	—	—	
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
VERTICAL	—	MW-123	—			

LOCATION SKETCH/COMMENTS ◆ INSTALLED WELL LOCATION ◇ PROPOSED WELL LOCATION SCALE: 1" = 200'



N: 571747.04
E: 2380049.21

SRA 8/16/04

HTRW DRILLING LOG

HOLE NUMBER MW-123

PROJECT: Erie Burning Grounds Phase II

INSPECTOR CHARLES L. KLINGER

SHEET 2 OF 5

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	CL: LEAN CLAY, SP/SS, MOIST, LIGHT OLIVE BROWN (2.5Y5/4); RED/ORANGE FEATURES OF DEPLETIONS AND COATINGS				2/2/3/4 S/S 0'-2' 1.2'/2'
	1	GRAY (7.5YR 6/1) STRONG BROWN (7.5YR 5/8) MEDIUM STIFF, MOIST				
	2	SAME AS ABOVE (SAA)				3/2/3/4 S/S 2'-4' 1.2'/2'
	3					
	4	SAA				2/3/3/4 S/S 4'-6' 1.1'/2'
	5					
	6	SAA w/ 6.6'-7.4' HIGHLY WEATHERED SANDSTONE, MORE MOIST				2/12/9/4 S/S 6'-8' 1.7'/2'
	7					comments: 0-8' bgs is fill. 8-8.4' bgs is possible fill 8.4-8.9' bgs is possible native material SRA 6/27/05
	8	8.0'-8.4' SW-SM WELL GRADED SAND WITH GRAVEL AND SILT, SATURATED, LT. YELLOWISH BROWN (2.5Y 6/3)				DRILLER REPORTS WATER IN HOLE AT 8' 2/2/2/3 S/S 8'-10' 1.1'/2'
	8.4	8.4'-8.9' PEAT, SATURATED DK. BROWN (7.5YR 3/2)				
	9	CL: LEAN CLAY, STIFF, SATURATED, DK. GRAY (5Y 4/1), LAMINATED - OR - VARVED				
	10					

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HTRW DRILLING LOG

HOLE NUMBER MW-123

PROJECT: Eric Burning Grounds Phase II | INSPECTOR | SHEET 3 OF 5

ELEV. (A)	DEPTH (B) (FT)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	10	CL: LEAN CLAY, STIFF, SATURATED, DK. GRAY (5Y 4/1) (SAME AS ABOVE), LAMINATED				2/2/3/2 S/S 10'-12' 0.9'/2'
	11					
	12	S, AS ABOVE				1/2/3/3 S/S 12'-14' 1.6'/2'
	13					
	14	SAA				1/1/1/2 S/S 14'-16' 1.7'/2'
	15					
	16	SAA, INCREASE IN SILT GRADING TO MH: ELASTIC SILT, SLIGHTLY PLASTIC SILT AND CLAY, SLIGHTLY STICKY.				3/4/4/7 S/S 16'-18' 1.1'/2'
	17					
	18	ML-MH ELASTIC SILT				2/3/7/9 S/S 18'-20' 1.8/2'
	19					

HTRW DRILLING LOG

HOLE NUMBER MW-123

PROJECT: Erie Burning Grounds Phase II

INSPECTOR Charles L. Klinger

SHEET 4 OF 5

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	20	SAME AS ABOVE WITH FINE SAND STRINGERS				1/1/3/5 S/5 20'-22' 1.1'/2'
	21					
	22	SAME AS ABOVE, GRADING TO ML: SILT WITH FINE SAND, SATURATED, FIRM, DK. GRAY (5Y 4/1)				3/4/4/5 S/5 22'-24' 1.8'/2'
	23					
	24	SAA				1/1/3/4 S/5 24'-26' 1.8'/2'
	25					
	26	SAA TO 27.4				2/1/3/4 S/5 26'-28' 1.6/2'
	27					
	28	27.4-28 TILL CH FAT CLAY WITH SAND, SAND IS COARSE SAND, SUBANGULAR, GREENISH-GRAY AND DARK RED (2.5YR 3/4) ROCK CHIPS				1/1/3/2 S/5 28'-30' 1.9'/2'
	29	@28'. SM SILTY SAND, SAND TO FINE SAND WITH SILT, SATURATED, DK GRAY SUBANGULAR TO EVERYWHERE MIXED LITHOLOGIES				
	30	CH FAT CLAY AS ABOVE TO 29.9'				

1

HTRW DRILLING LOG

HOLE NUMBER MW-123

PROJECT: Erie Burning Grounds Phase II

INSPECTOR CHARLES L. KLINGER

SHEET 5 OF 5

ELEV. (A)	DEPTH (B) (Ft)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	30	SM SAND WITH SILT, AS ABOVE (28' TO 29.6')				1/1/3/2 S/S 30'-32'
	31					
		TILL				
		CH FAT CLAY WITH GRAVEL (ROUNDED TO SUBANGULAR)				
	32	PLASTIC, STICKY, VERY STIFF, MOIST, OLIVE GRAY (5Y 4/2)				
		END OF BORING @ 32'				
	33					
	34					

C-7
10/28/03

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MONITORING WELL INSTALLATION LOG

PROJECT NAME: Erie Burning Grounds Phase II **DELIVERY ORDER: CY10**

MONITORING WELL ID: EBG MW-123

INSTALLATION START: DATE: 10/28/03 TIME: 0730

INSTALLATION FINISH: DATE: 10/29/03 TIME: 1120

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: SIDLEY #7 QUANTITY: 380 lbs

BENTONITE SEAL: TYPE: BAROID 3/8" CHIPS QUANTITY: 55 lbs

GROUT: PORTLAND TYPE: I + BENTONITE (QUICK-GROUT) QUANTITY:

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (inches): 0.010 SLOT CONFIGURATION: RADIAL

TOTAL OPEN AREA PER FOOT OF SCREEN:

OUTSIDE DIAMETER: 2 3/8" NOMINAL INSIDE DIAMETER: 2"

SCHEDULE/THICKNESS: SCH 40 COMPOSITION: PVC

MANUFACTURER: GLOBAL

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN:

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 2 3/8" NOMINAL INSIDE DIAMETER: 2"

SCHEDULE/THICKNESS: SCH 40 COMPOSITION: PVC

MANUFACTURER: GLOBAL

JOINT DESIGN AND COMPOSITION: THREADED F/J

CENTRALIZERS DESIGN AND COMPOSITION: N/A

DESCRIPTION OF PROTECTIVE CASING: STEEL, STICK-UP, LOCKING CAP

NOMINAL INSIDE DIAMETER: 5" COMPOSITION: STEEL

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

NA

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [X] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [X] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [X] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: 0

RECORDED BY: [signature] 10/29/03 (Signature & Date)

QA CHECK BY: CLA 11/10/04 (Signature & Date)

PAGE 1 OF 1

WELL NUMBER AND LOCATION: EBGmw123

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
11/11/03	1712	0	12.0	0.658	7.17	999	0	0	initial reading
↓ DEVELOPMENT	1030	15	11.0	0.625	7.09	999	15	1.2	
	1059	~~28~~ 12	11.1	0.607	7.14	999	~~27~~	2.2	
	1143	13	11.1	0.595	7.12	732	40	NA	
	1238	18	11.2	0.598	7.20	999	58		
	1244	2	NA	NA	NA	552	60		clearing
	1310	10	11.1	0.598	7.25	354	70		
↓	1349	NA	11.4	0.598	7.28	43	NA	↓	final reading
11/25/03	0917	4	8.9	0.656	6.35	260	1	NA	initial reading
	0927	1	9.4	0.622	6.92	357	1.0	NA	
	0934	1.5	10.0	0.614	7.05	199	1.5	NA	
	0944	1.5	10.0	0.614	7.13	185	2.0	NA	
	0945	1.5	10.0	0.614	7.15	183	2.5	NA	final reading before sample
↓	1148	NA	9.7	0.610	7.29	118	NA	NA	final reading

RECORDED BY: Kelly A S 11/11/03
(Signature and Date)

QA CHECK BY: M Clough 3/2/04
(Signature and Date)

C-12

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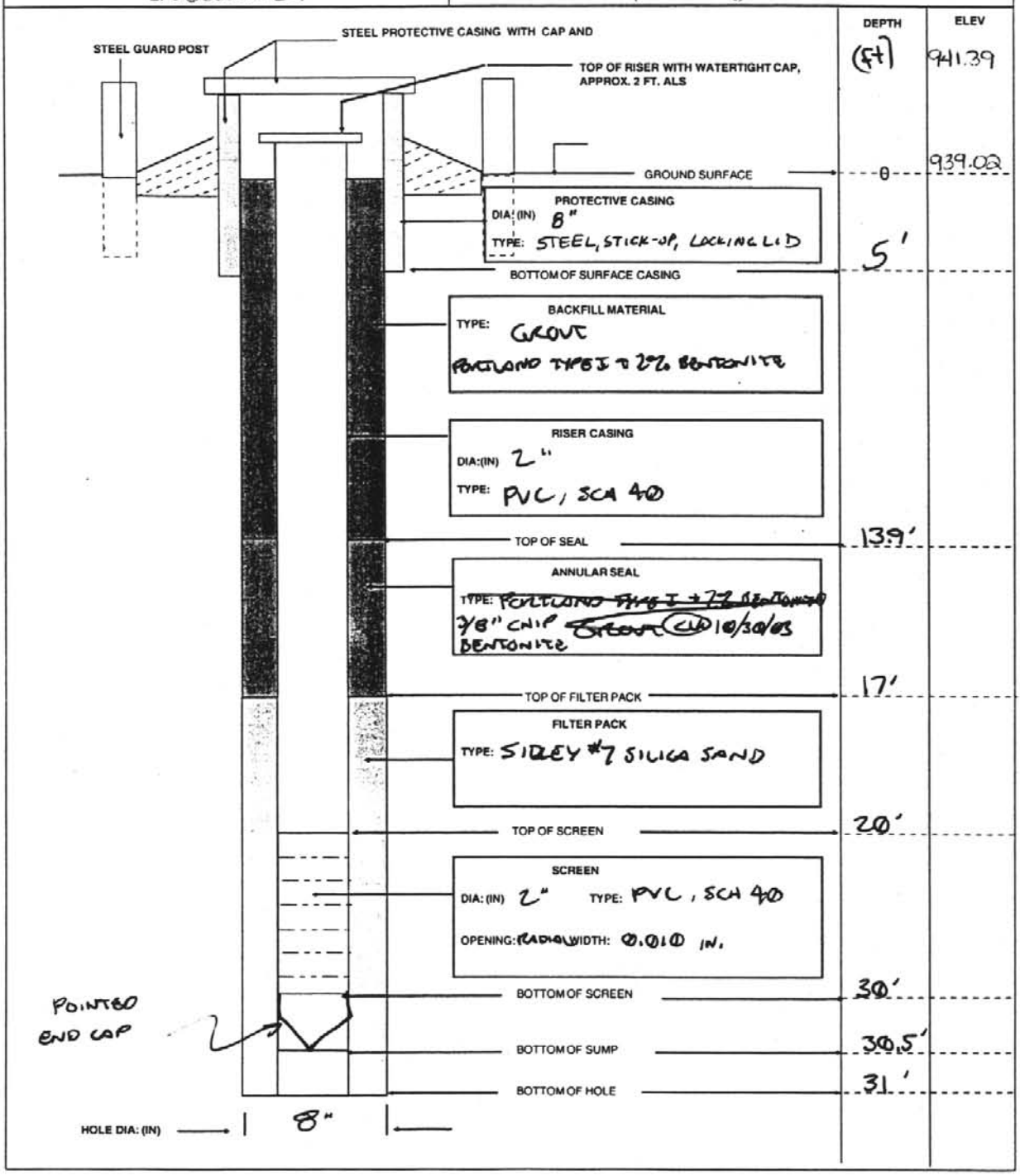
MONITORING WELL

PROJECT NAME: Erie Burning Grounds Phase II **DELIVERY ORDER NO:** CY10

WELL NUMBER: EBG MW-124	**BEGIN:** 10/30/03	**END:** 10/31/03
COORDINATES: N: 571618.07 E: 2380030.24	**REFERENCE POINT:** Top of Casing	**ELEVATION:** 941.39 MSL



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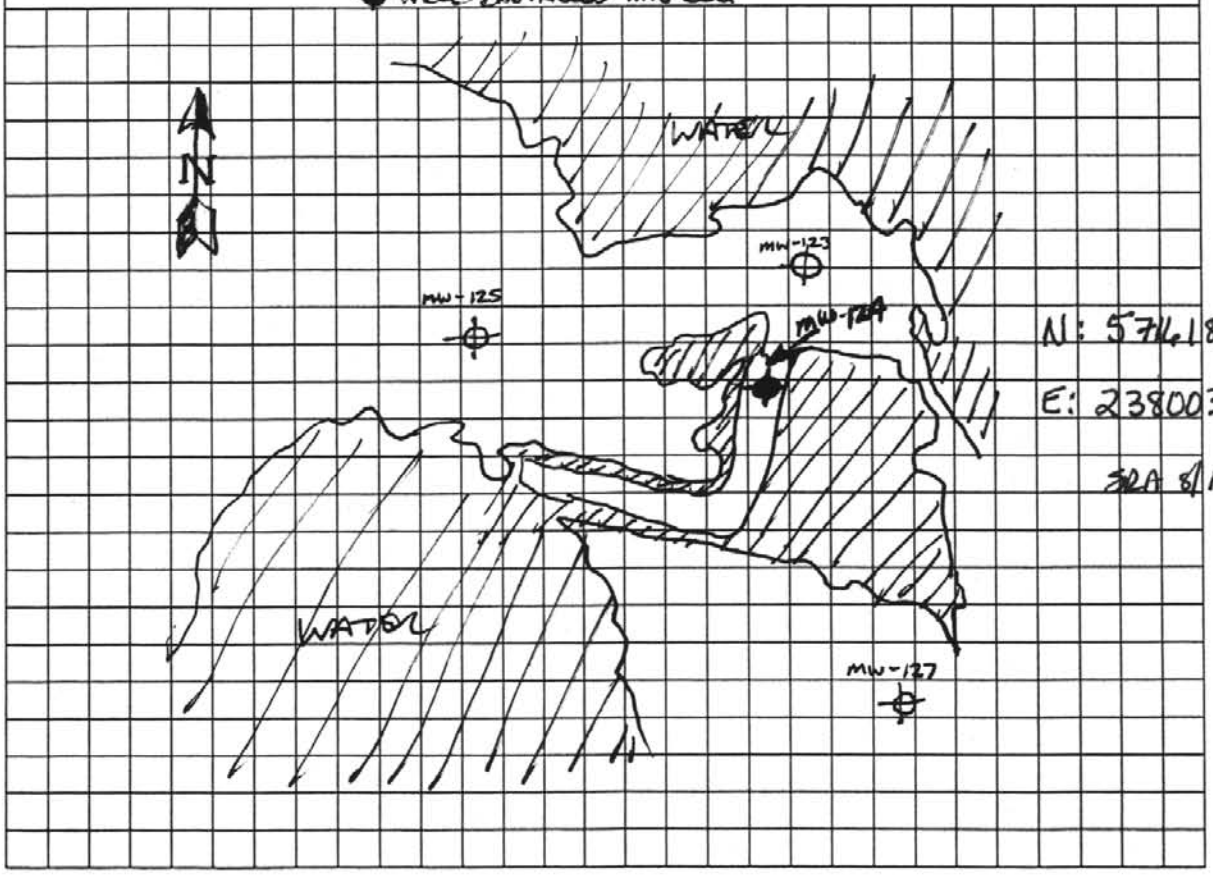
HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER EBG mw-124
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: FRONTIER DRILLING	SHEET 1 of 5

3. PROJECT: Erie Burning Grounds Phase II	4. LOCATION: Erie Burning Grounds
5. NAME OF DRILLER: AARON MAXLEY	6. MANUFACTURERS DESIGNATION OF DRILL: CME 750
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4 1/4" HSA, 2" SPLIT SPOONS, SHELBY TUBES	8. HOLE LOCATION: T. area of EBG
	9. SURFACE ELEVATION: 939.02 ground
	10. DATE STARTED: 10/30/03 — 11. DATE COMPLETED: 11/3/03
12. OVERBURDEN THICKNESS: 32'+	15. DEPTH GROUNDWATER ENCOUNTERED:
13. DEPTH DRILLED INTO ROCK: N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED:
14. TOTAL DEPTH OF HOLE: 32' Ebgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES: 0			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
		X				

LOCATION SKETCH/COMMENTS ⊕ WELL ◆ WELL INSTALLED THIS LOG — SCALE: 1" = 200 ft.



N: 571618.07
E: 2380030.24
SDA 8/16/04

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HTRW DRILLING LOG

HOLE NUMBER MW-124

PROJECT: Eric Burning Grounds Phase II

INSPECTOR CHARLES L. KLINGER

SHEET 2 OF 5

ELEV. (A)	DEPTH (B) (Ft)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	0'-0.3 SP-SM: POORLY GRADED SAND WITH SILT AND ORGANIC MATERIAL, SATURATED NO PLASTICITY, BLACK (10YR 2/1)				1/9/6/3 S/S 0'-2' 1.0'/2'
	1	SANDSTONE, WEATHERED, GRAY (N6/0) AND YELLOWISH BROWN (10YR 5/8)				
	2	OL/OH ORGANIC MUCK FROM 2.0' - 2.2'				1/1/1/1 S/S 2'-4' 0.8'/2'
	3	CH FAT CLAY, MOIST, HIGH PLASTICITY, STICKY, LAMINATED, GRAY (5Y 5/1)				
	4	SAME AS ABOVE CH FAT CLAY, COLOR CHANGES FROM GRAY TO OLIVE BROWN (2.5Y 4/4)				1/2/3/3 S/S 4'-6' 1.8'/2.0'
	5	AND BACK TO GRAY AGAIN				
	6					7/5/8/4 S/S 6'-8' 2.0'/2.0'
	7	SP POORLY GRADED SAND, WET, MEDIUM TO FINE SUB ANGULAR TO SUB ROUNDED GRAYISH-BROWN (2.5Y 5/2)				
	8	CH FAT CLAY, SAME AS ABOVE @ 2.2'-6.4'				1/2/3/5 S/S 8'-10' 1.7'/2'
	9					
	10					

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HTRW DRILLING LOG

HOLE NUMBER MW-129

PROJECT: Erie Burning Grounds Phase II | INSPECTOR CHARLES L. KUINGER | SHEET 3 OF 5

ELEV. (A)	DEPTH (B) (Ft)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	10	SAME AS ABOVE (CH: FAT CLAY, LAMINATED) MOIST, GRAY				1/3/5/8 S/S 10'-12' 1.9'/2.0'
	11					
	12	SAME AS ABOVE, GRADING TO CL: LEAN CLAY WITH MEDIUM PLASTICITY AND TO INCREASED SILT V. THIN STRINGERS, MOIST, GRAY (N 6/0) SLIGHTLY SILTY.				9/8/12/14 S/S 12'-14' 1.7'/2.0'
	13					
	14	SAME AS ABOVE				2/2/4/3 S/S 14'-16' 1.9'/2'
	15					
		SAND STRINGER				
	16	SAME AS ABOVE				6/6/4/5 S/S 16'-18' 2'/2'
		SAND STRINGER, WET				
		ML SANDY SILT, MOIST, NON PLASTIC, GRAY (N 6/0)				
	17	SP POORLY GRADED SAND, WET, MEDIUM TO FINE SATURATED GRAY (N 6/0) SUBANGULAR				
		ML SANDY SILT AS ABOVE				
	18				SHELBY EBG 284 TUBE	PUSHED SHELBY TUBE FROM 18'-20' Full recovery (~24") porosity 0.255 TOC <.10 SC-SM wet density 140.1 dry density 123.1 Specific Gravity 2.65
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER MW-12A

PROJECT: Erie Burning Grounds Phase II

INSPECTOR Charles L. Kluger

SHEET 4 OF 5

ELEV. (A)	DEPTH (B) (A)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	20	SP: POORLY GRADED SAND, MEDIUM TO FINE, SUBANGULAR, SATURATED GRAY (N 6/0)				2/2/2/2 S/S 20'-22' 2'/2'
	21					
	22	SAME AS ABOVE				4/3/8/8 S/S 22'-24' 1.8'/2.0'
	23					
	24	SAA				8/7/7/8 S/S 24'-26' 2'/2'
	25	SW-SM WELL GRADED SAND WITH GRAVEL AND SILT LOOSENING WITH DEPTH, SATURATED, GRAY (N 6/0)				
		SP AS ABOVE				
	26	ML SILT AND FINE V. FINE SAND			Shelby Tube No Recovery	COLLECT SHELBY TUBE FROM 26' TO 28' EGS. ZERO (0') RECOVERY
	27					
	28	SP: POORLY GRADED SAND, FINE TO MEDIUM, SATURATED, SUBANGULAR, GRAY (N 6/0)				6/10/9/11 1.0'/2'
		ML: SILT LOMINATED GRAY MOIST				
	29					
	30					

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HTRW DRILLING LOG

HOLE NUMBER MW-12A

PROJECT: Erie Burning Grounds Phase II

INSPECTOR CHARLES L. KUNKLER

SHEET 5 OF 5

ELEV. (A)	DEPTH (B) (Ft)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	30	ML: SILT, LOW PLASTICITY, V. FINE SAND STRINGERS AND SUBANGULAR GRAVEL (5%), MOIST, GRAY (N6/0)				9/13/16/21 S/S 30'-32' 1.9/2'
	31	NOTE: AUGERED W/ 8" O.D. HSA TO 31' BGS				
	32	END OF BORING @	32' BGS	(SPLIT SPOON)		
	33					
	34					
	35					
	36					
	37					
	38					
	39					
	40					

10/30/03

MONITORING WELL INSTALLATION LOG

PROJECT NAME: Erie Burning Grounds Phase II **DELIVERY ORDER:** CY10

MONITORING WELL ID: EBG MW-12A

INSTALLATION START: DATE: 10/30/03 TIME: 0845

INSTALLATION FINISH: DATE: 10/30/03 TIME: 1510

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: SIDLEY #7 QUANTITY: 4000 LBS

BENTONITE SEAL: TYPE: BAROID 3/8" CHIPS QUANTITY: 50 LBS

GROUT: PORTLAND TYPE: I + 2% BENTONITE QUANTITY: 1000

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (inches): 0.010 SLOT CONFIGURATION: RADIAL

TOTAL OPEN AREA PER FOOT OF SCREEN: _____

OUTSIDE DIAMETER: 2 3/8" NOMINAL INSIDE DIAMETER: 2"

SCHEDULE/THICKNESS: SCH 40 COMPOSITION: PVC

MANUFACTURER: GLOBAL

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN:

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 2 3/8" NOMINAL INSIDE DIAMETER: 2"

SCHEDULE/THICKNESS: SCH 40 COMPOSITION: PVC

MANUFACTURER: GLOBAL

JOINT DESIGN AND COMPOSITION: THREADED F/J

CENTRALIZERS DESIGN AND COMPOSITION: NA

DESCRIPTION OF PROTECTIVE CASING: STEEL CASING, STICK-UP, LOCKING LID

NOMINAL INSIDE DIAMETER: 8" COMPOSITION: STEEL

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [X] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [X] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [X] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: 0

RECORDED BY: _____ 10/30/03 QA CHECK BY: _____ 3/1/04

(Signature & Date) (Signature & Date)

CHARLES L. KLINGER

[redacted]

WELL NUMBER AND LOCATION: EBGmw0124

	DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (μMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
DEV. DEVELOPMENT	11/11/Ø3	1347	Ø	11.4	Ø.7ØØ	7.21	999	Ø	Ø	initial reading
	11/11/Ø3	14ØØ	15	11.4	Ø.638	7.23	999	15	1	
	↓	141Ø	15	11.5	Ø.612	7.39	42Ø	3Ø	2	
		1428	15	11.6	Ø.6ØØ	7.41	53	45	3	
		1440	15	11.6	Ø.594	7.33	54	6Ø	4	
		1458	15	11.6	Ø.592	7.39	2Ø	75	5	final reading
SAMP.	25NOVØ3	1ØØØ	Ø	8.9	Ø.665	7.23	258	Ø	NA	initial reading
	↓	1ØØ5	Ø.5	9.2	Ø.692	7.1Ø	258	Ø.5	NA	
		1Ø1Ø	Ø.5	9.3	Ø.68Ø	7.15	262	1.Ø	NA	
		1Ø15	Ø.5	9.1	Ø.674	7.22	264	1.5	NA	final reading before sampling
		1125	Ø.5	9.1	Ø.618	7.26	325	2.Ø	NA	final reading

MCC

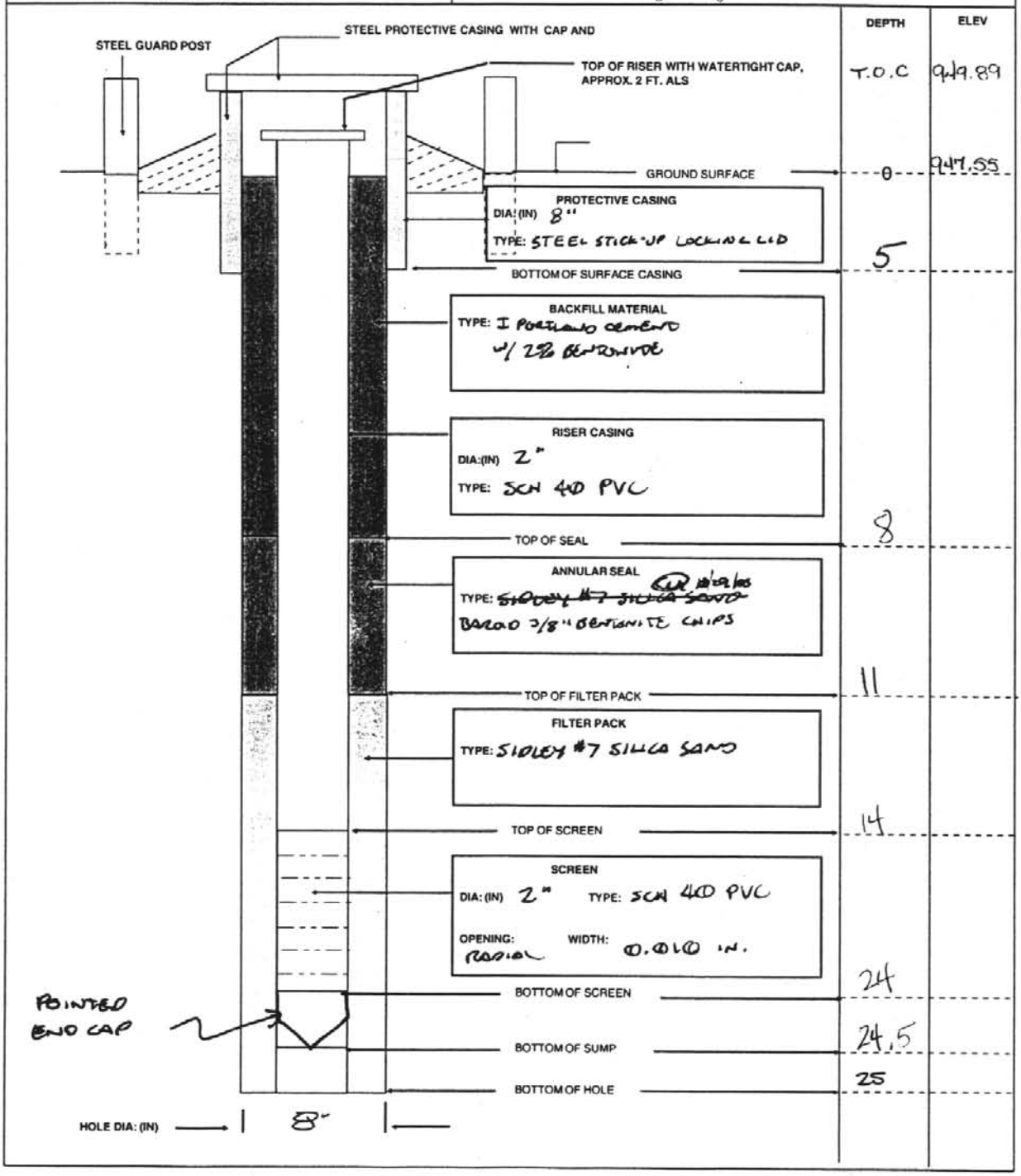
RECORDED BY: Kelly [signature] 11/11/Ø3 (Signature and Date)

QA CHECK BY: G Clough 3/2/04 (Signature and Date)

MONITORING WELL

PROJECT NAME: Erie Burning Grounds Phase II **DELIVERY ORDER NO:** CY10

WELL NUMBER: EBG MW-125	**BEGIN:** 10/29/03	**END:** 10/29/03
COORDINATES: N: 571655.63 E: 2379699.20	**REFERENCE POINT:** Top of Casing	**ELEVATION:** 949.89 MSL



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HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER EBG MW-125
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: FRONTZ DRILLING	SHEET 1 OF 4

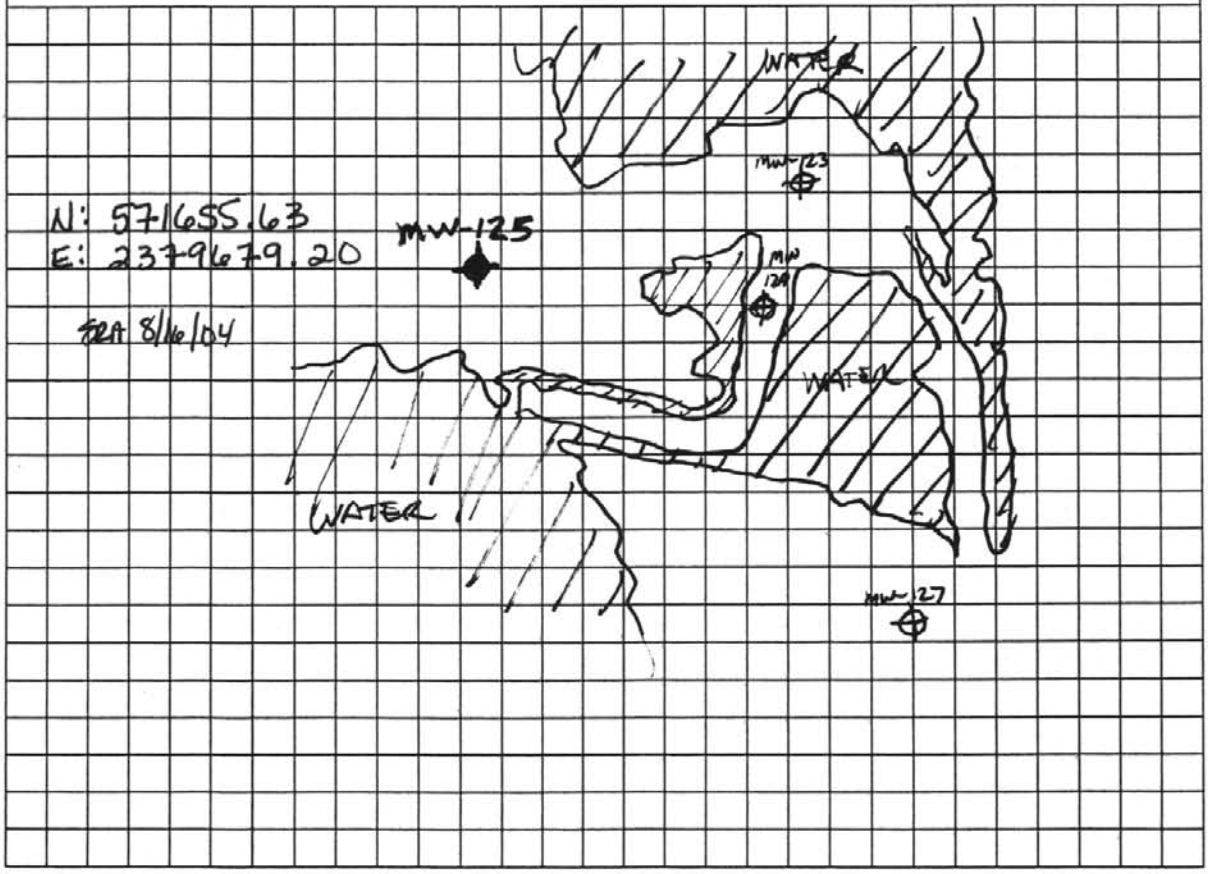
3. PROJECT: Erie Burning Grounds Phase II	4. LOCATION: Erie Burning Grounds
5. NAME OF DRILLER: AARON MACKEY	6. MANUFACTURERS DESIGNATION OF DRILL: CME 750
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4¼" ID HSA, 2" SPLIT SPOONS, SHELBY TUBES	8. HOLE LOCATION: EBG on Track 4/9 Embankment
	9. SURFACE ELEVATION: 947.55 ground
	10. DATE STARTED: 10/29/03 — 11. DATE COMPLETED: 10/29/03
12. OVERBURDEN THICKNESS: 25'±	15. DEPTH GROUNDWATER ENCOUNTERED:
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 9.18' bgs @ 1205 10/29/03
14. TOTAL DEPTH OF HOLE: 25' BGS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES: Ø

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
	—	—	—			

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
VERTICAL	—	EBG MW-125	—	CHARLES L. KLINGER

LOCATION SKETCH/COMMENTS — SCALE: 1" = 200'



HTRW DRILLING LOG

HOLE NUMBER MW-125

PROJECT: Erie Burning Grounds Phase II | INSPECTOR CHARLES L. KLINGER | SHEET 2 OF 4

ELEV. (A)	DEPTH (B) (ft)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	0'-0.3' ML: SILT WITH SAND AND TRACE GRAVEL, MOIST, SLIGHTLY PLASTIC, SOFT, NON-STICKY DK. GRAYISH BROWN (10YR 4/2)				2/2/3/4 S/S 0'-2' 1.0'/2'
	1	CL: LEAN CLAY WITH FINE SAND. MEDIUM PLASTICITY, MOIST, FIRM YELLOWISH BROWN MATRIX (10YR 5/4) WITH REDOX-MORPHIC FEATURES HIGH CHROMA MOTTLES BROWNISH YELLOW (10YR 6/8) DEPLETIONS LT. GRAY (N 7/0)				
	2					3/4/7/4 S/S 2'-4' 1.1/2
	3					
	4	SAME AS ABOVE (SAA)				1/2/4/7 S/S 4'-6' 1.0'/2'
	5					
	6	SAME AS ABOVE WITH SANDSTON FROM 6.5' TO 8' (STUCK IN SHOE OF S/S)				4/5/11/11 S/S 6'-8' 1.5'/2'
	7					
	8	SANDSTONE				15/6/4/3 S/S 8'-10' 0.4'/2'
	9					Comments: 0 - 10.2' bgs is fill material
	10					SRA 6/27/05

HTRW DRILLING LOG

HOLE NUMBER MW-125

PROJECT: Erie Burning Grounds Phase II

INSPECTOR CHARLES L. KUNDER

SHEET 3 OF 4

ELEV. (A)	DEPTH (B) (FT)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	10	SANDSTONE				3/3/3/3 S/S 10'-12' 1A/2'
	11	ML SANDY SILT, V. FINE SAND, MOIST GRADING TO SATURATED, SOFT, NON PLASTIC, GRAY (N 6/0) GRADING TO DK. GRAY AND BLUEISH-GREEN, WITH VERY DISTINCT REDDISH-YELLOW PORE LININGS (5YR 6/8)				Comments: 10.2 - 12.0' bgs is possible native material SEA 10/27/05
	12					
	13	SP: POORLY GRADED FINE SAND, TRACE SILT. SATURATED, GRAY (N 6/0) GRADING TO BRWNISH GRAY AND BACK TO GRAY				3/6/6/5 S/S 12'-14' 1.3'/2'
	14					
	15	SAME AS ABOVE				1/2/2/3 S/S 14'-16' 1.4'/2'
	16					
	17					ATTEMPTED TO COLLECT SHELBY TUBE FROM 16' HAD HEAVE IN AUGER COULD NOT PUSH TUBE MORE THAN 2" HAD NO RECOVERY
	18	SAA				1/3/4/5 S/S 18'-20' 1.7'/2'
	19					
	20					

EBG-MW-

26

HTRW DRILLING LOG

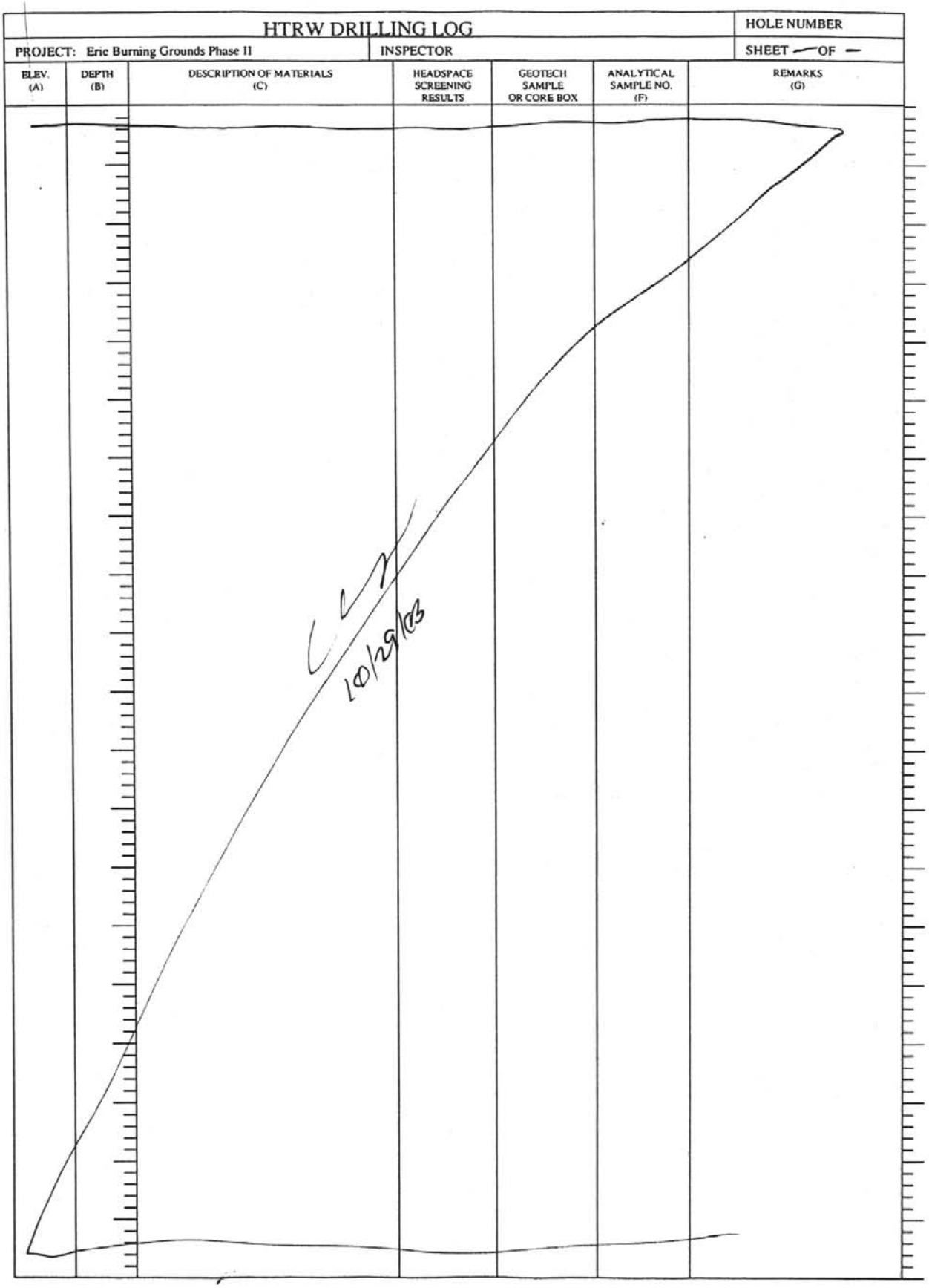
HOLE NUMBER 125

PROJECT: Erie Burning Grounds Phase II

INSPECTOR CHARLES L. KLINGER

SHEET 4 OF 4

ELEV. (A)	DEPTH (B) (Ft)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	20	SAME AS ABOVE SP: POORLY GRADED FINE TO MEDIUM SAND, GRAY SATURATED				1/2/5/7 5/6 20'-22' 1.6'/2'
	21					
	22	SAA SC/SM			Shelby Tube EBG 385	COLLECTED SHELBY TUBE FROM 22' TO 24.5' 25.25" RECOVERY - SATURATED. HAD TO USE HAMMER TO DRIVE TUBE. @ 1510 Porosity 0.316 TOC <.10 Wet Density 126.3
	23					
	24					Dry Density 107.5 Specific Gravity 2.64
	25					
		END OF BORING @ 25' BGS				
	26					
	27					
	28					
	29					
	30					


HTRW DRILLING LOG
HOLE NUMBER
PROJECT: Erie Burning Grounds Phase II
INSPECTOR
SHEET — OF —
ELEV. (A)
DEPTH (B)
DESCRIPTION OF MATERIALS (C)
HEADSPACE SCREENING RESULTS
GEOTECH SAMPLE OR CORE BOX
ANALYTICAL SAMPLE NO. (F)
REMARKS (G)
10/29/03

MONITORING WELL INSTALLATION LOG

PROJECT NAME: Erie Burning Grounds Phase II **DELIVERY ORDER:** CY10

MONITORING WELL ID: EBG MW-125

INSTALLATION START: DATE: 10/29/03 TIME: 1230

INSTALLATION FINISH: DATE: 10/29/03 TIME: 1815

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: SIDLEY #7 QUANTITY: _____

BENTONITE SEAL: TYPE: BARO 3/8 CHIPS QUANTITY: _____

GROUT: PORTLAND TYPE: I + 2% BENTONITE QUANTITY: _____

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (inches): 0.010 SLOT CONFIGURATION: RADIAL

TOTAL OPEN AREA PER FOOT OF SCREEN: _____

OUTSIDE DIAMETER: 2 3/8" NOMINAL INSIDE DIAMETER: 2"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: GLOBAL

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN:

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 2 3/8" NOMINAL INSIDE DIAMETER: 2"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: GLOBAL

JOINT DESIGN AND COMPOSITION: THREADED F/J

CENTRALIZERS DESIGN AND COMPOSITION: NA

DESCRIPTION OF PROTECTIVE CASING: STEEL, STICK-UP, LOCKING LID

NOMINAL INSIDE DIAMETER: 8" COMPOSITION: STEEL

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

—

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [X] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [X] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [X] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: _____

RECORDED BY: [signature] 10/29/03 QA CHECK BY: [signature] 07/14/04

(Signature & Date) (Signature & Date)

CHARLES L. KLINGER

PROJECT NAME: [redacted] PROJECT NO.: [redacted]

PAGE 1 OF 1

WELL NUMBER AND LOCATION: EBGmw 125

12 & 72

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
11/11/03	0903	0	12.0	0.429	6.40	999	0	0	initial reading
11/11/03	0911	12	12.5	0.381	6.85	999	12	1	
	0922	13	12.4	0.394	6.94	999	25	2	
	0927	12	12.5	0.376	6.93	999	37	3	
	0934	18	12.5	0.376	6.95	156	55	4.5	
↓	0947	20	12.6	0.374	6.93	43	75	6.2	final reading
11/11/03	0953	0	16.6	0.369	6.71	32	0	0	initial reading
	0958	0.5	14.4	0.346	6.87	16	0.5	NA	
	1003	~~0.5~~ ~~1.0~~	13.8	0.350	6.93	28	1.0	NA	
	1009	~~0.5~~ ~~1.5~~	13.6	0.361	6.95	14	1.5	NA	
	1014	0.5	13.5	0.364	7.02	1	2.0	NA	final reading before sampling
↓	1045	NA	13.8	0.364	7.09	10	NA	NA	

DEVELOPMENT → initial purging

RECORDED BY: Kelly AR 11/11/03
(Signature and Date)

QA CHECK BY: M Clough 2/3/04
(Signature and Date)

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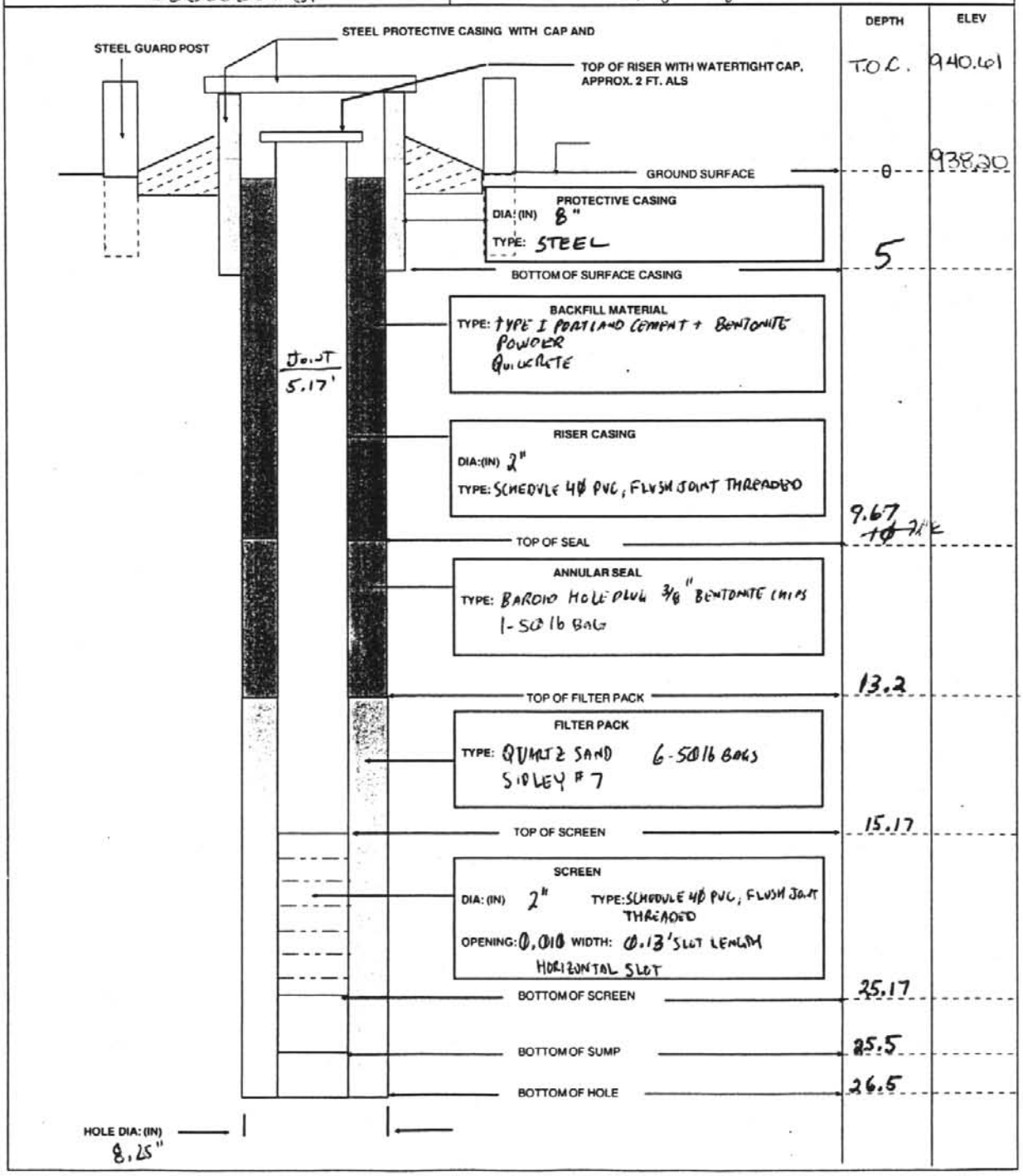
MONITORING WELL

PROJECT NAME: ~~Erie Boulevard Groundwater Phase II RI~~ Ramsdell Quarry Phase I RI DELIVERY ORDER NO: ~~CY-11~~

WELL NUMBER: EBG-MW-126	BEGIN: 10-28-03 @ 1100	END: 10-29-03 1006
COORDINATES: N: 572348.81 E: 2380307.31	REFERENCE POINT: Top of Casing	ELEVATION: 940.61 MSL



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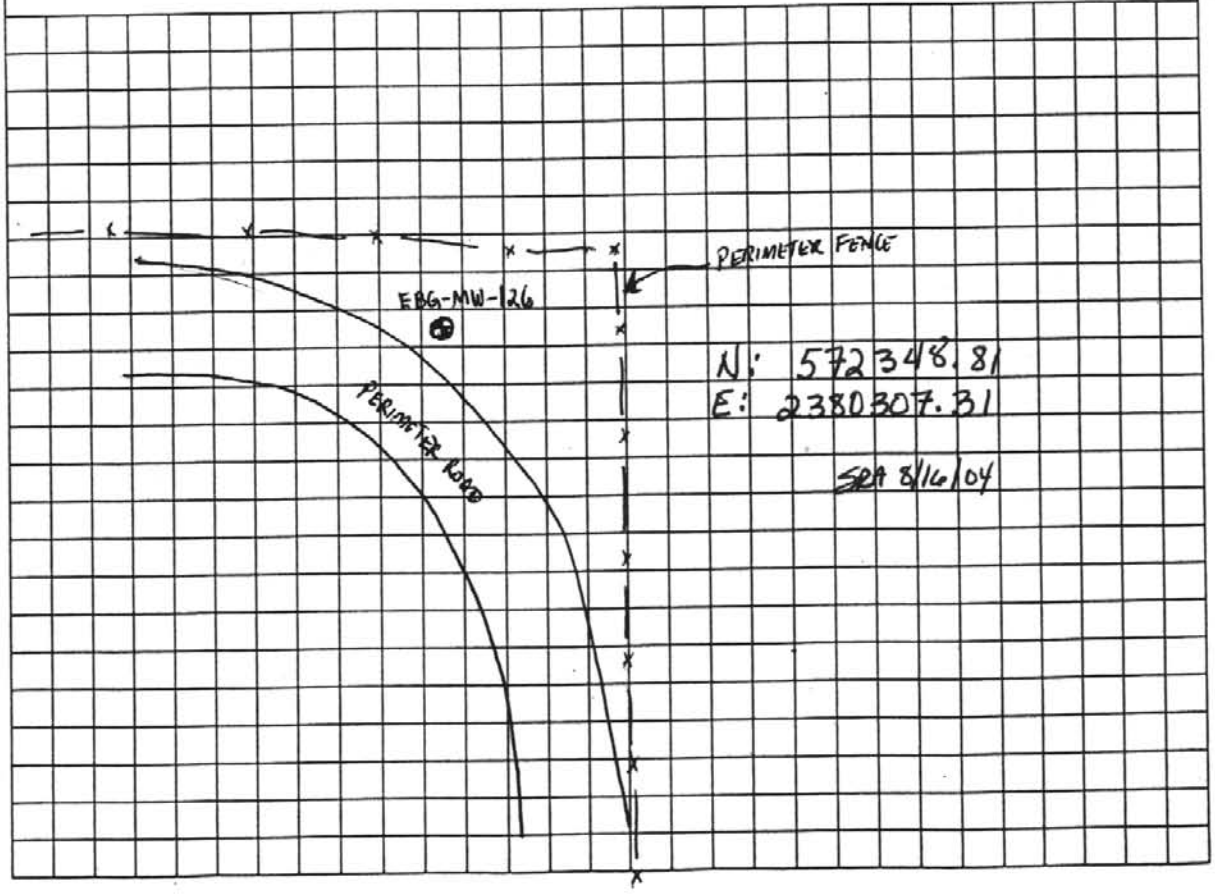
HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER EBG-MW-126
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: Frontz	SHEET 1 OF 5

3. PROJECT: ~~Ramsdell Quarry Phase I RI~~ ERIE BURNING GROUNDS PHASE II RI	4. LOCATION: ~~Ramsdell Quarry~~ ERIE BURNING GROUNDS
5. NAME OF DRILLER:	6. MANUFACTURERS DESIGNATION OF DRILL: CME 75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 9 1/2" ID Hollow Stem Auger, 2" Diam. Split Spoon Sampler	8. HOLE LOCATION: North East corner of ERIE Burning Grounds along perimeter road/fence
	9. SURFACE ELEVATION: 938.20 ground amsl
	10. DATE STARTED: 10-28-03 / 11. DATE COMPLETED: 10/29/03
12. OVERBURDEN THICKNESS >28'	15. DEPTH GROUNDWATER ENCOUNTERED:
13. DEPTH DRILLED INTO ROCK N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED:
14. TOTAL DEPTH OF HOLE 28' BGL	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES NA			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
N/A	N/A	N/A	N/A	N/A	NA	
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
		X		Todd B. Eby		

LOCATION SKETCH/COMMENTS — SCALE: ~1"=20'



HTRW DRILLING LOG

HOLE NUMBER EBG-MW-126

PROJECT: ~~ERIE BURNING GROUNDS~~ ~~Ramadell Quarry Phase I RI~~ PHASE II RI

INSPECTOR TEDD EABY

SHEET 2 OF 5

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		SURFACE: GRASS				
		CLAYEY SILT (ML): VERY DARK GRAY (2.5Y 3/1) ~20% SLAG GRAVEL, MOIST, SLIGHTLY PLASTIC, MOTTLED, ROOT ZONE, SOFT				SPLIT SPOON @ 0-2' BGL REC. 1.2/2 3/7/9/9
		(0-0.5)				
	1	SILT (ML): OLIVE (5Y 4/4), ~20% SS GRAVEL, ROUNDED TO SUB-ROUNDED, DENSE, SLIGHTLY MOIST, TRACE ROOTS, ALSO @ 1' PEBBLES				
		(0.5-1.2')				
		ACCUMULATED LOST CORE				
	2	~~HOME~~ TAN SILTY CLAY (CL); GREENISH GRAY (10Y 5/1), MED. DENSE, SLIGHTLY MOIST, MED. PLASTICITY, ROOT FRAGMENTS				HAND AUGURED TO 4' TO CONTINUE TO CLEAR FOR UXO - ALL CLEAR
	3					
	4	SILTY CLAY (CL): GRAY (5Y) MOIST, SOFT, MED. PLASTICITY				SPLITSPOON 4-6' BGL REC: 1.6/2' BLOWS: 2/1/2/2
	5	(4-5.6')				
		ACCUMULATED LOST CORE				
	6	SILTY CLAY (CL): SAME AS ABOVE W/ 1-2mm FINE SAND INTERBEDS				SPLITSPOON 6-8' BGL REC: 1.7/2' BLOWS: WT/WT/2/2
	7	(6-7.7' BGL)				
		ACCUMULATED LOST CORE				
	8	SILTY CLAY (CL): GRAY (5Y), MOIST, SOFT 1-2mm FINE SAND INTERBEDS UP TO 1" THICK FINE SAND INTERBEDS - SATURATED @ 8' BGL				SPLIT SPOON @ 8-10' BGL REC: 1.5/2' BLOWS: WT/2/2/4
	9	(8-9.5' BGL)				
		ACCUMULATED LOST CORE				
	10					

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HTRW DRILLING LOG

HOLE NUMBER	EBG-MN-12b
SHEET	3 OF 5

PROJECT: ~~Ramsdell Quarry Phase I RI~~ ERIE BURNING GROUNDS PHASE II RI

INSPECTOR: TODD EABY

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		SILTY CLAY (CL) WITH FINE SAND INTERBEDS; SAME AS ABOVE, POSSIBLE L.S. FRAGS @ 11.5' BGL				SPLIT SPOON 10-12' BGL REC: 1.7/2-0 BLOWS: WT/4/5/4
	11	(10-11.5' BGL)				
		SILTY SAND (SM): GRAY (5N) WELL GRADED FINE TO COARSE SAND, SATURATED				
		ACCUMULATED LOST CORE				
	12	SILTY SAND (SM): GRAY (5N) FINE TO MED. GRAINED, SATURATED, TRACE COARSE SAND				SPLIT SPOON 12-14' BGL REC: 2/2 BLOWS: 1/3/5/4
	13	(12-13.2' BGL)				
		SILTY SAND (SM): GRAY (5N) FINE GRAINED, SATURATED				
	14	(13.2-14.4')				SPLIT SPOON 14-16' BGL REC: 1.7/2 BLOWS: 4/2/3/3
		SANDY SILT (ML-SM): GRAY (5N) ~50% OF EACH, SAND - VERY FINE GRAINED, SATURATED, SOFT				
	15	(14.4-15.7' BGL)				
		ACCUMULATED LOST CORE				
	16	SILTY SAND (SM): GRAY (5N) VERY FINE TO FINE GRAINED, SATURATED, SOFT (16-18)				SPLIT SPOON 16-18' BGL REC: 2/2 BLOWS: 1/3/2/3
	17					
	18	V. FINE SAND (18-19)				SPLIT SPOON 18-20' REC 2/2 BLOWS: WT/1/3/2
	19	INCREASING SILT TO ~50% W/ V. FINE GRAINED SAND (ML-SM) (19-20)				
	20					

HTRW DRILLING LOG

HOLE NUMBER EBG-MW-126

PROJECT: ~~Ramsdell Quarry Phase I RI~~ ERG BURNING GROUNDS PHASE II RI

INSPECTOR TODD EGBY

SHEET 4 OF 5

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	21	SILTY SAND (SM) GRAY (5N) V. FINE GRAINED, SATURATED, SOFT				SPLIT SPOON 20-22' BGL REC: 2/2 BLOWS: 2/2/5/6
	22					SPLIT SPOON 22-24' REC 2/2 BLOWS: 1/3/2/4
	23					
	24					SPLIT SPOON 24-26 REC: 2/2 BLOWS: 3/5/6/3
	25	GRAVELLY, SANDY, SILTY CLAY (CL) W/SANDY INTERBEDS - FINE GRAINED: GRAY (5N) ~5% ROUNDED TO SUB-ROUNDED GRAVEL UP TO 3/4", QTZ, STIFF, MED. PLASTICITY, MOIST				
	26	SILTY SAND (SM): GRAY (5N) FINE TO V. FINE GRAINED, MAFIC SUB. ANGULAR TO SUB-ROUNDED GRAVEL, SOFT, SATURATED				SPLIT SPOON 26-28' REC: 2/2 BLOWS: 2325
	27					
	28	SANDY SILT (ML) AND SILTY SAND INTERBEDS (SM): GRAY (5N), SOME STONE GRAVEL - SUB-ROUNDED TO SUB-ANGULAR, MOIST, MED. STIFF				
		TD 28.0'				
	29					
	30					

MONITORING WELL INSTALLATION LOG

PROJECT NAME: ~~Ramsdell Quarry Phase I RI~~ ERIE BOATING GROUNDS PHASE II RI DELIVERY ORDER: ~~CY11~~

MONITORING WELL ID: EBG-MW-126

INSTALLATION START: DATE: 10-28-03 TIME: 0910

INSTALLATION FINISH: DATE: 10-29-03 TIME: 1000

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: SILICA, ~~SIBLEY #4~~ SIBLEY #7 (2nd 10-29-03) QUANTITY: 6-50lb BAGS (300 lbs)

BENTONITE SEAL: TYPE: BAROID HOLE PLUG 3/8" CHIPS QUANTITY: 1-50lb BAG

GROUT: TYPE: TYPE I PORTLAND CEMENT + BENTONITE QUANTITY: 1.5-94lb BAGS PORTLAND 9lb OF BENTONITE

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (inches): 0.010 SLOT CONFIGURATION: HORIZONTAL

TOTAL OPEN AREA PER FOOT OF SCREEN: _____

OUTSIDE DIAMETER: 0.2' (~2 3/8") NOMINAL INSIDE DIAMETER: 0.17' (2")

SCHEDULE/THICKNESS: SCHEDULE 40 COMPOSITION: PVC

MANUFACTURER: ENVIRONMENTAL MANUFACTURING, INC.

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN:

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 0.2' (~2 3/8") NOMINAL INSIDE DIAMETER: 0.17' (2")

SCHEDULE/THICKNESS: SCHEDULE 40 COMPOSITION: PVC

MANUFACTURER: ENVIRONMENTAL MANUFACTURING, INC.

JOINT DESIGN AND COMPOSITION: THREADED PVC

CENTRALIZERS DESIGN AND COMPOSITION: N/A

DESCRIPTION OF PROTECTIVE CASING: STICK-UP LOCKING LID

NOMINAL INSIDE DIAMETER: 8" COMPOSITION: STEEL

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

—

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [X] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [X] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [X] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: NONE

RECORDED BY: M Clough 10/29/03 (Signature & Date) QA CHECK BY: M Clough 3/1/04 (Signature & Date)

PROJECT NAME [redacted] PROJECT NO. [redacted]

WELL NUMBER AND LOCATION: EBGmw126

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
11/1Φ/Φ3	1435	Φ	11.8	Φ.64Φ	6.48	999	Φ	Φ	initial reading
	1452	2Φ.3	12.3	Φ.62Φ	6.91	999	2Φ.3	1.5	
	15Φ1	9.4	12.2	Φ.618	6.95	999	29.7	2.2	
	151Φ	2Φ.3	11.8	Φ.6Φ5	6.95	535	5Φ	3.7	
	1522	18.9	12.Φ	Φ.6Φ6	6.94	475	68.9	5.1	
	153Φ	6.7	11.9	Φ.6Φ4	6.94	67	75.6	5.6	final reading
11/2Φ/Φ3	Φ951	Φ	11.4	Φ.474	6.97	236	Φ	Φ	initial reading
	Φ957	2	11.5	Φ.448	7.41	Φ	2	NA	
	1ΦΦ3	.5	11.4	Φ.447	7.58	Φ	2.5	NA	
	1ΦΦ8	.5	11.6	Φ.447	7.63	Φ	3	NA	
	1Φ13	.5	11.6	Φ.447	7.66	Φ	3.5	NA	
	1127	NA	12.1	Φ.453	7.73	Φ	NA	NA	Final Reading

DEVELOPMENT →

sample purging

RECORDED BY: [signature] 11/1Φ/Φ3
(Signature and Date)

QA CHECK BY: M Clough 3/2/04
(Signature and Date)

C-35

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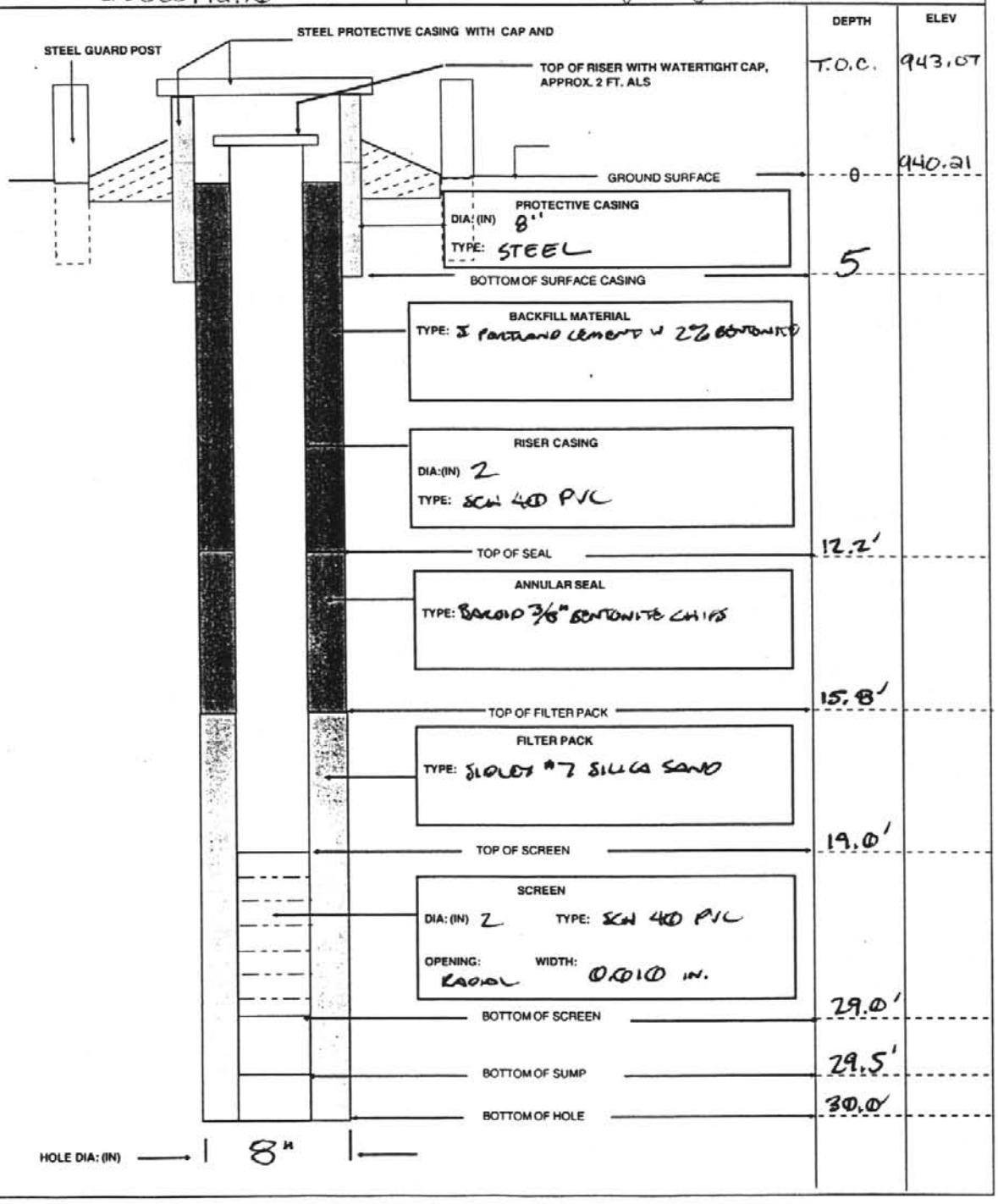
MONITORING WELL

PROJECT NAME: Erie Burning Grounds Phase II **DELIVERY ORDER NO:** CY10

WELL NUMBER: EBG MW-127	**BEGIN:** 10/30/03	**END:** 10/31/03
COORDINATES: N: 571083.01 E: 2380172.16	**REFERENCE POINT:** Top of Casing	**ELEVATION:** 943.07 MSL



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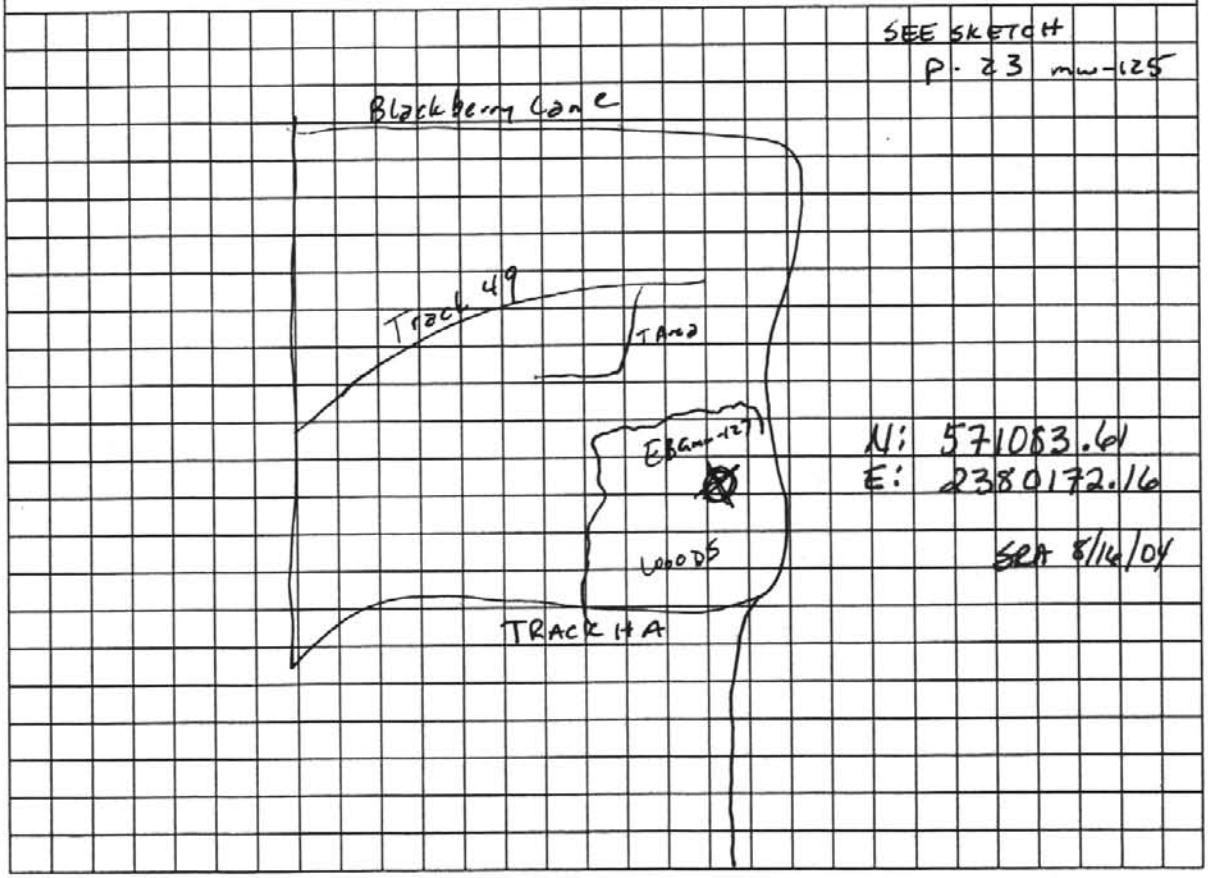
HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER: EBG MW-127
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: Frontz	SHEET 1 of 5

3. PROJECT: Erie Burning Grounds Phase II	4. LOCATION: Erie Burning Grounds
5. NAME OF DRILLER: Aaron Mackey	6. MANUFACTURERS DESIGNATION OF DRILL: CME 75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4¼" ID HSA; 2" SPLITSPOONS; SHELBY TUBES	8. HOLE LOCATION: EBG, SE
	9. SURFACE ELEVATION: 940.21 (ground) 'amsl
	10. DATE STARTED: 10/30/03 — 11. DATE COMPLETED: 10/31/03
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: 12' bgs
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED:
14. TOTAL DEPTH OF HOLE: 30.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):

18. GEOTECHNICAL SAMPLES	DISTRICT	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES: NA			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR: M Clayton		
		X				

LOCATION SKETCH/COMMENTS — SCALE: NA



HTRW DRILLING LOG

HOLE NUMBER MW-127

PROJECT: Erie Burning Grounds Phase II | INSPECTOR | SHEET 2 OF 5

ELEV. (A)	DEPTH (B) (Ft)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	ML SANDY SILT, V. FINE SAND, SUBANGULAR, WET, V. DK. GRAYISH BROWN (10YR 4/2)				1/1/1/3 S/S 0'-2' 1.4'/2'
	1	CL LEAN CLAY WITH SAND GRADING TO SP-SC POORLY GRADED SAND WITH CLAY, WET, LT. GRAY (10YR 7/2) MATRIX WITH HIGH CHROMA MOTTLES YELLOWISH BROWN (10YR 5/6)				
	2	SAME AS ABOVE (SP-SC) MORE PRONOUNCED REDOXIMORPHIC FEATURES GRAY (N 5/0) AND DK YELLOWISH BROWN (10YR 4/6), STIFF LOW PLASTICITY, MOIST				3/4/5/5 S/S 2'-4' 1.4'/2'
	3					
	4	SP POORLY GRADED SAND, FINE, SUBANGULAR, GRAY (N 6/0) SATURATED				1/1/1/1 S/S 4'-6' 2'/2'
	5					
	6	ML SILT, NON PLASTIC, MOIST, GRAY (N 6/0), STIFF, LAMINATED				3/7/9/8 S/S 6'-8' 1.6'/2'
	7					
	8	SAME AS ABOVE				2/2/3/5 S/S 8'-10'
	9					
	10					

HTRW DRILLING LOG

HOLE NUMBER EBGMW127

PROJECT: Erie Burning Grounds Phase II

INSPECTOR CHARLES L. KLINGER

SHEET 3 OF 5

ELEV. (A)	DEPTH (B) (Ft)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	10	ML: SILT, STIFF, LAMINATED, MOIST, GRAY (N 6/0) NON PLASTICITY				3/3/5/4 S/S 10'-12' 1.9'/2'
	11					
	12	SAME AS ABOVE NO PLASTICITY, WET				6/5/11/10 S/S 12'-14' 2'/2'
	13					
	14	INCREASING AMOUNT OF SAND GRADING TO V. FINE SAND				10/30/03 @ 14' BGS, END DRILLING TODAY
		SAME AS ABOVE				3/4/6/6 S/S 14'-16' 1.7'/2'
	15					
	16					5/7/7/7 S/S 16'-18' 1.4'/2'
	17	SP: POORLY GRADED FINE AND VERY FINE SAND, SOFT, SATURATED, GRAY (N 6/0) SOME SILT				
	18	SAME AS ABOVE				3/5/7/7 S/S 18'-20' 1.4'/2'
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER EBGMW-127

PROJECT: Eric Burning Grounds Phase II

INSPECTOR CHARLES L. KLINGER

SHEET 4 OF 5

ELEV. (A)	DEPTH (B) Ft	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	20	SAME AS ABOVE SP: FINE + V. FINE SAND WITH SILT, SATURATED, GRAY 50 PT				5/7/7/5 S/S 20'-22' 1.5/2'
	21	ML SILT WITH FINE SAND SOFT TO FIRM, GRAY, WET				
	22	SW-SM WELL GRADED SAND AND SILT, SUBANGULAR TO SUBROUNDED, SATURATED GRAY (N 6/0)				5/7/10/11 S/S 22'-24' 1.2'/2' 1" ROUNDED GRAVEL IN END OF S/S
	23	SILT LENSE				
	24	SAME AS ABOVE, INCREASED SILT AND GRAVEL (SANDSTONE), STIFF, GRAY (N 6/0)				6/8/12/24 S/S 24'-26' 1'/2'
	25					
	26					ATTEMPTED TO COLLECT SHELBY TUBE, COULD ONLY DRIVE IT 4", RECOVERED 4" OF SILT, SAND, AND ANGULAR GRAVEL, DID NOT SAVE.
	27	END OF 8" AUGER HOLE SAME AS ABOVE COARSE SAND LENSE AT 27'				6/20/25/31 S/S 27'-29' 1.6'/2' SAND HEAVED 3' INTO AUGERS UNTIL AT 27' FBGS.
	28	SEE NOTE IN TASK TEAM ACTIVITY REPORT.				WILL AUGER BLIND FROM 29'-30' TOOK S/S FROM 27'-28'.
	29	END OF BORING @ 29' BGS (S/S TO 29')				AUGERED TO 29' AUGERED BLIND FROM 29'-30', DRILLED SAME AS TILL LIKE MATERIAL ABOVE.
	30	END OF BORING @ 30' BGS				

MONITORING WELL INSTALLATION LOG

PROJECT NAME: Erie Burning Grounds Phase II **DELIVERY ORDER: CY10**

MONITORING WELL ID: EBG MW-127

INSTALLATION START: DATE: 10/30/03 TIME: 1600

INSTALLATION FINISH: DATE: 10/31/03 TIME: 1630

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: SIDLEY #7 SILICA SAND QUANTITY: 275 LBS

BENTONITE SEAL: TYPE: BAROID 3/8" CHIPS QUANTITY: 50 LBS

GROUT: FORTLAND TYPE: I + 7% BENTONITE QUANTITY: 90

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (inches): 0.010 SLOT CONFIGURATION: RADIAL

TOTAL OPEN AREA PER FOOT OF SCREEN: _____

OUTSIDE DIAMETER: 2 3/8" NOMINAL INSIDE DIAMETER: 2"

SCHEDULE/THICKNESS: SCH 40 COMPOSITION: PVC

MANUFACTURER: GLOBAL

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN:

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 2 3/8" NOMINAL INSIDE DIAMETER: 2"

SCHEDULE/THICKNESS: SCH 40 COMPOSITION: PVC

MANUFACTURER: GLOBAL

JOINT DESIGN AND COMPOSITION: F/S THREADED

CENTRALIZERS DESIGN AND COMPOSITION: NA

DESCRIPTION OF PROTECTIVE CASING: STICK-UP, LOCKING LID

NOMINAL INSIDE DIAMETER: 8" COMPOSITION: STEEL

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [X] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [X] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [X] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: 0

RECORDED BY: M Clough 10/31/03 (Signature & Date) QA CHECK BY: M Clough 3/1/04 (Signature & Date)

PROJECT NAME [redacted]

PAGE 1 OF 1

WELL NUMBER AND LOCATION: EBGmw-127 Erie Burning Grounds

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
14 NOV 03	0900	0	9.9	.599	6.59	999	0	0	Initial reading
	1006	14.1	9.2	.571	7.21	-10	14.1	1.0	
17 NOV 03	1327	14.1	12.2	.464	7.74	115	28.2	2.0	
	1629	14.1	11.1	.425	7.69	6	42.3	3.0	
19 NOV	0914	14.1	11	.491	[illegible]	125	56.4	4.0	
	1215	7.0	12.3	.445	7.01	999	63.4	4.5	
	1731	3.5	11.7	.456	7.54	999	67.0	4.75	
	[illegible]	1.75	11.5	.422	7.43	707	68.75	4.875	
	[illegible]	1.75	[illegible]	.448	7.46	510	70.50	5.0	[illegible]
11/25/03	NA	0	NA			→	0	NA	initial reading
1[illegible]/03	0945	0	9.8	0.400	[illegible]	156	0	NA	[illegible]
[illegible]	[illegible]	[illegible]							

MC

RECORDED BY: [signature] 14 NOV 03
(Signature and Date)

QA CHECK BY: [signature] 3/2/04
(Signature and Date)

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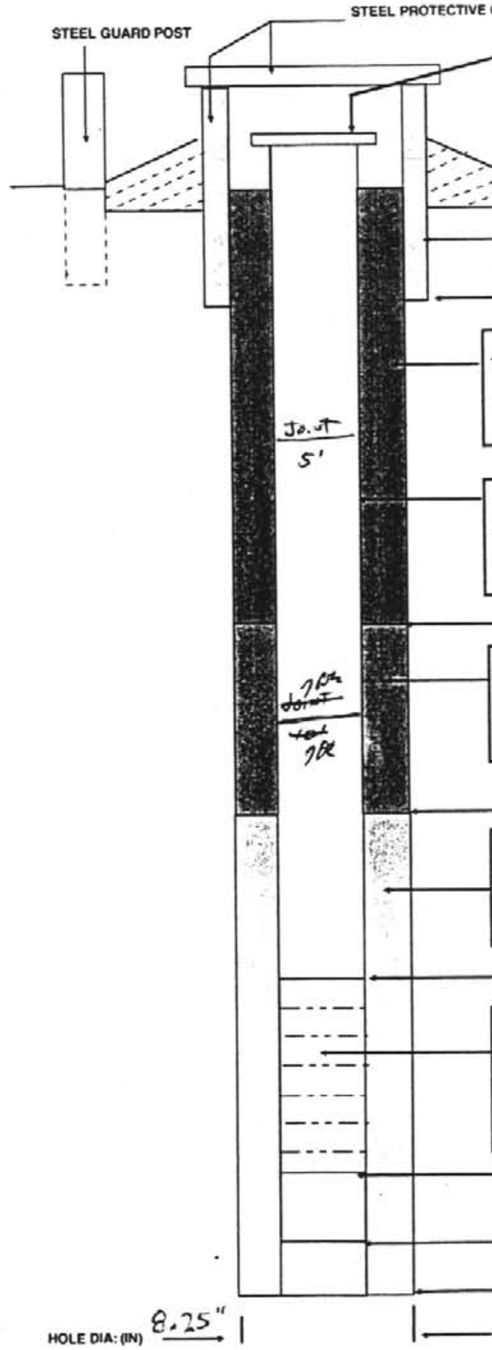
MONITORING WELL

PROJECT NAME: ~~Ramsdell Quarry Phase I RI~~ ERIE BURNING GROUNDS PHASE II RI DELIVERY ORDER NO: ~~CY1~~

WELL NUMBER: EBG-MW-12B	BEGIN: 10-29-03, 1520	END: 10-30-03
COORDINATES: N: ~~570970.21~~ 570970.32 E: ~~2379893.53~~ 2379892.79 (SRA 8/16/04)	REFERENCE POINT: Top of Casing	ELEVATION: 942.47 MSL



Item	Details	DEPTH	ELEV
TOP OF RISER		T.O.C.	942.47
GROUND SURFACE		0	
PROTECTIVE CASING	DIA: (IN) 8"; TYPE: STEEL		
BOTTOM OF SURFACE CASING		5	
BACKFILL MATERIAL	TYPE: TYPE I PORTLAND CEMENT + BENTONITE QUICKRETE		
RISER CASING	DIA: (IN) 2" ID; TYPE: SCHEDULE 40 PVC, FLUSH JOINT THREADED		
TOP OF SEAL		8.1	
ANNULAR SEAL	TYPE: BARIOD HOLEPLUG - 3/8" BENTONITE CHIPS		
TOP OF FILTER PACK		12	
FILTER PACK	TYPE: QUARTZ SAND - SIDLEY #7		
TOP OF SCREEN		15	
SCREEN	DIA: (IN) 2" ID; TYPE: SCHEDULE 40 PVC FLUSH JOINT THREADED; OPENING: 0.010; WIDTH:		
BOTTOM OF SCREEN		25	
BOTTOM OF SUMP		25.33	
BOTTOM OF HOLE		26	

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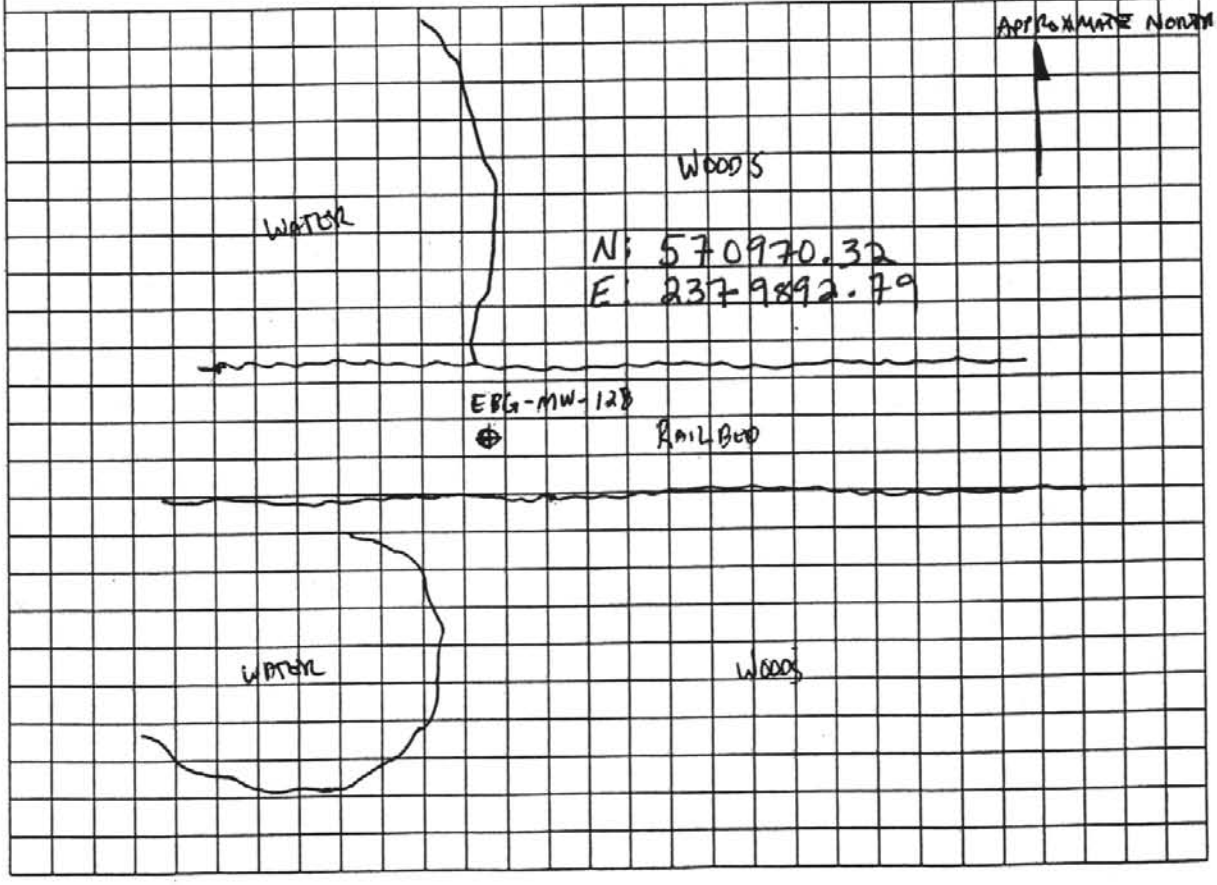
HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER EBG-MW-128
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR Frontz	SHEET 1 OF 5

3. PROJECT: ERIE BURNING GROUNDS PHASE II RI ~~Ramsdell Quarry Phase I RI~~	4. LOCATION: ERIE BURNING GROUNDS ~~Ramsdell Quarry~~
5. NAME OF DRILLER:	6. MANUFACTURERS DESIGNATION OF DRILL: CME 75
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4¼" I.D. HOLLOW STEM AUGERS, 2" DIAM. SPLIT SPOON SAMPLERS	8. HOLE LOCATION: ALONG RAILBED ON SOUTHERN BORDER OF BURNING GROUNDS, ~400' WEST OF ROAD AT SE CORNER
	9. SURFACE ELEVATION: 942.47' amsl
	10. DATE STARTED: 10-29-03 / 11. DATE COMPLETED: 10/30/03
12. OVERBURDEN THICKNESS: > 28'	15. DEPTH GROUNDWATER ENCOUNTERED:
13. DEPTH DRILLED INTO ROCK: N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED:
14. TOTAL DEPTH OF HOLE: 28'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES: NA			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY: NA %
	NA	NA	NA			
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR: Todd A. Gray		
		X				

LOCATION SKETCH/COMMENTS — SCALE: 1" = 200'



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ERIE ~~BOULEVARD & RAILROAD~~ HTRW DRILLING LOG

HOLE NUMBER EB4-MW-128

PROJECT: ~~Ramadell Quarry Phase I RI~~ Phase II RI

INSPECTOR Todd W. Gaj

SHEET 2 OF 5

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	FILL: SLAG GRAVEL (0-0.2') CLAYEY SILT (ML): STRONG BROWN (7.5YR 5/6) AND GRAY (2.5Y 5/1) SOFT, SLIGHTLY PLASTIC, MOIST, FILL				SPLIT SPOON 0-2' REC: 1.2/2 BLOWS: 4/3/4/3
	2	ACCUMULATED LOST CORE				
	3	SILTY CLAY (CL): DARK GREENISH GRAY (10Y 4/1), ORGANIC FRAGMENTS, MEDIUM STIFF, MOIST (2-4.6')				SPLIT SPOON ~~2-4'~~ REC: BLOWS: HAND AUGER 2-4' TO CLEAR UXO
	4					SPLIT SPOON 4-6' REC: 1.2/2 BLOWS: 3/4/5/3
	5	SILTY CLAY (CL): BLACK (5Y 2.5/1), MEDIUM STIFF SLIGHTLY MOIST, FINE ROOTS (4.8-5.2') ACCUMULATED LOST CORE				
	6	SILTY CLAY (CL): SAME AS ABOVE (6-6.2) SANDY CLAY (CL): DARK GRAY (5Y/N) PLASTIC, SOFT, MEDIUM TO FINE SAND, MOIST (6.2-6.6)				SPLIT SPOON 6-8' REC: 1.7/2 BLOWS: 5/8/5/7
	7	CLAY (CL): DARK GRAY (5Y/N) AND LIGHT OLIVE BROWN (2.5Y 5/3) MOTTLED LOW, SOFT, MOIST, MEDIUM PLASTICITY (6.6-7.7)				
	8	ACCUMULATED LOST CORE				
	9	INTERBEDDED FINE GRAINED SAND (SM) AND SILTY CLAY (CL) & DARK GRAY TO DARK GRAYISH BROWN (2.5Y 4/1 - 4/2), MOIST, MEDIUM TO LOW PLASTICITY (8-9.5')				SPLIT SPOON 8-10' REC: 2/2 BLOWS 3/4/3/3
	10	INTERBEDDED SILTY SAND (SM) AND SILTY CLAY (CL): DARK GRAY TO GRAY (5N-4N) SOFT, FINE GRAINED SAND, MOIST, STICKY				

HTRW DRILLING LOG

HOLE NUMBER EBG-MW-13B

PROJECT: ~~Ramsdell Quarry Phase I RI~~ ~~ERIE BURNING GROUNDS~~ Phase II RI

INSPECTOR Todd D. Eaf

SHEET 3 OF 5

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	11	SILTY SAND (SM): LIGHT OLIVE BROWN (2.5Y 5/3), FINE GRAINED, SATURATED (10-11')				SPLIT SPOON 10-12', REC 2/2 BLOWS 4/7/3/4
	12	SILTY SAND (SM): GARNISH BROWN TO GRAY (2.5Y 5/2-5/1) FINE GRAINED, INCREASED SILT FROM ABOVE, SATURATED (11-12')				
		CLAY (CL): GRAY (2.5Y 5/1), DENSE, MED. PLASTICITY, TRACE SUB-ROUNDED GRAVEL, MOIST (12-12.7')				SPLIT SPOON 12-14' REC: 2/2 BLOWS 2/4/4/5
	13	SILTY SAND (SP): GRAY (2.5Y 5/1) FINE GRAINED, SATURATED, ~5% COARSE SAND, TRACE SUB-ROUNDED TO SUB ANGULAR GRAVEL				
	14					SPLIT SPOON 14-16' REC: BLOWS: WT/2/1/2
	15					
		SILTY CLAY (CL): GRAY (2.5Y 5/1) DENSE, MED. PLASTIC, MOIST (12.7-15.8')				
	16	SAND (SP): SAME AS 12.7-15.8' INTERVAL @ TOP OF SHELBY TUBE		14/35 SHELBY TUBE 250 PSI 2' REC	Shelby Tube EBG 288	SHELBY TUBE 16-18' B&L porosity .353 TOC <.10 CL Wet Density 132.8 Dry Density 109.9 Specific Gravity 2.72
	17					
		BOTTOM OF SHELBY: SILTY CLAY, SAME AS 15.8-16' INTERVAL				
	18	SAND (SP) SAME AS 12.7-15.8 INTERVAL (18-18.8)				SPLIT SPOON 18-20' REC: 2/2 BLOWS: 1/3/4/4
	19	SILTY (ML) + GRAVEL (SM) SAT. SOFT TO MED. STIFF (18.8-19.1)				
		SILTY CLAY (CL): GRAY (5Y) MOIST, MED PLASTICITY MED. STIFF (19.1-19.4')				
		SILT (ML) SAME AS 18.8-19.1				
	20	SILTY CLAY (CL): SAME AS 19.1-19.4 INTERVAL				

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ERIE BURNING GROUNDS HTRW DRILLING LOG — HOLE NUMBER EBG-MW-128

PROJECT: ~~Ramsdell Quarry Phase I RI~~ PHASE II RI — INSPECTOR — SHEET 4 OF 5

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	20	INTERBEDDED SILTY SAND (SM) AND SILTY CLAY (CL); GRAY (5Y), FINE GRAINED, SATURATED, MED. PLASTICITY CLAY (20 - 20.9')				SPLIT SPOON 20-22' REC: 1.6/2 Blows: 3/5/2/6
	21	CLAYEY SILT (ML): GRAY (5Y), MOIST, MEDIUM STIFF (20.9 - 21.6')				
		ACCUMULATED LOST CORE				
	22	TOP OF SHELBY: SILTY SAND (SM): GRAY (5Y), VERY FINE GRAINED		1455 SHELBY TUBE 22 - 24'	Shelby Tube EBG 0883	SHELBY TUBE 22-24' REC 2' 250 PSI Porosity 0.394 TOC < 0.10 CL-ML Wet Density 127.7 Dry Density 102.6 Specific Gravity 2.71
	23	BOTTOM OF SHELBY: SANDY SILT (ML): GRAY (5Y), VERY FINE GRAINED, MOIST				
	24	CLAYEY SILT (ML): GRAY (5Y), MOIST, SLIGHT PLASTICITY, TRACE SUB-ROUNDED GRAVEL (24 - 24.9')				SPLIT SPOON 24-26' REC: 0.9' Blows: 2/2/3/7
	25	ACCUMULATED LOST CORE				
	26	SILTY CLAY (CL): GRAY (5Y) MOIST, SOFT MED. TO LOW PLASTICITY (26 - 26.3)				SPLIT SPOON 26-28' REC: 16 1/2 Blows: WT/1/8/16
		CLAYEY SILT (ML): GRAY (5Y) DENSE, VERY STIFF, SLIGHT MOIST TO DRY, ANGULAR CHIPS - FINE GRAVEL, 2 ANGULAR PIECES ~ 1" LONG (26.3 - 27.1')				
	27	ACCUMULATED LOST CORE				
	28					10-29-03 ADDED ~200 GAL TO AID IN SANDPACK PLACEMENT 10-30-03
	29					
	30					

MONITORING WELL INSTALLATION LOG

PROJECT NAME: ~~Ramsdell Quarry Phase I RI~~ ERIE BURNING GROUNDS PHASE II RI **DELIVERY ORDER:** ~~CY11~~

MONITORING WELL ID: EBG-MW-12B

INSTALLATION START: DATE: 10-29-03 TIME: 1520

INSTALLATION FINISH: DATE: 10/30/03 TIME: 1003

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: QUARTZ, SIBLEY #7 QUANTITY: 9.5 - 50lb BAGS

BENTONITE SEAL: TYPE: BAROID HOLE PLUG, 3/8" BENTONITE CHIPS QUANTITY: 1-50lb BAG

GROUT: TYPE: TYPE I PORTLAND + BENTONITE QUANTITY: 1-94lb BAG PORTLAND, 6lb BENTONITE

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (inches): 0.010 SLOT CONFIGURATION: HORIZONTAL

TOTAL OPEN AREA PER FOOT OF SCREEN: _____

OUTSIDE DIAMETER: 0.2' (~2 3/8") NOMINAL INSIDE DIAMETER: 0.17' (2")

SCHEDULE/THICKNESS: SCHEDULE 40 COMPOSITION: PVC

MANUFACTURER: ENVIRONMENTAL MANUFACTURING, INC

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN:

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 0.2' (~2 3/8") NOMINAL INSIDE DIAMETER: 0.17' (2")

SCHEDULE/THICKNESS: SCHEDULE 40 COMPOSITION: PVC

MANUFACTURER: ENVIRONMENTAL MANUFACTURING, INC.

JOINT DESIGN AND COMPOSITION: FLUSH THREADED PVC

CENTRALIZERS DESIGN AND COMPOSITION: NONE

DESCRIPTION OF PROTECTIVE CASING: STICK-UP, LOCKING LID

NOMINAL INSIDE DIAMETER: 8" COMPOSITION: STEEL

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

—

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [X] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [X] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [X] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: 0

RECORDED BY: M Clough 10/30/03 (Signature & Date) QA CHECK BY: M Clough 3/1/04 (Signature & Date)

PROJECT NAME: Erie Burning Grounds [illegible]

PAGE 1 OF 1

WELL NUMBER AND LOCATION: EBGmw-128 Erie Burning Grounds

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
14NOV03	1119	0	10.8	.1018	7.38	999	0	0	Initial Reading
	1137	13	10.4	.598	7.38	999	13	1.0	
17NOV03	0847	~~26~~ 13	12.0	.422	6.42	843	26	2.0	
	0912	13	11.7	.405	6.77	621	39	3.0	
	0937	13	11.9	.370	7.36	113	52	4.0	
	1021	13	12.5	.362	7.44	-10	65	5.0	
	1055	13	12.8	.366	7.72	-10	78	6.0	
	1129	13	12.6	.360	7.87	-10	91	7.0	
	1200	13	13.3	.363	7.78	-10	104	8.0	
	1337	13	13.0	.356	7.89	98	117	9.0	
	1430	13	12.6	.369	7.81	-10	130	10.0	
	1458	13	12.7	.357	7.65	-10	143	11.0	
	1519	13	12.6	.357	7.69	-10	156	12.0	final reading
24NOV03	0824	0	12.5	.413	6.35	85	~~0~~	~~12.0~~ NA	micropurge initial reading
	0838	0.5	12.5	0.371	6.75	86	0.5	NA	
	0845	0.1	12.6	0.361	6.94	87	0.6'	NA	

DEVELOPMENT

RECORDED BY: T. Brown 14 NOV 03
(Signature and Date)

QA CHECK BY: M Clough 3/2/04
(Signature and Date)

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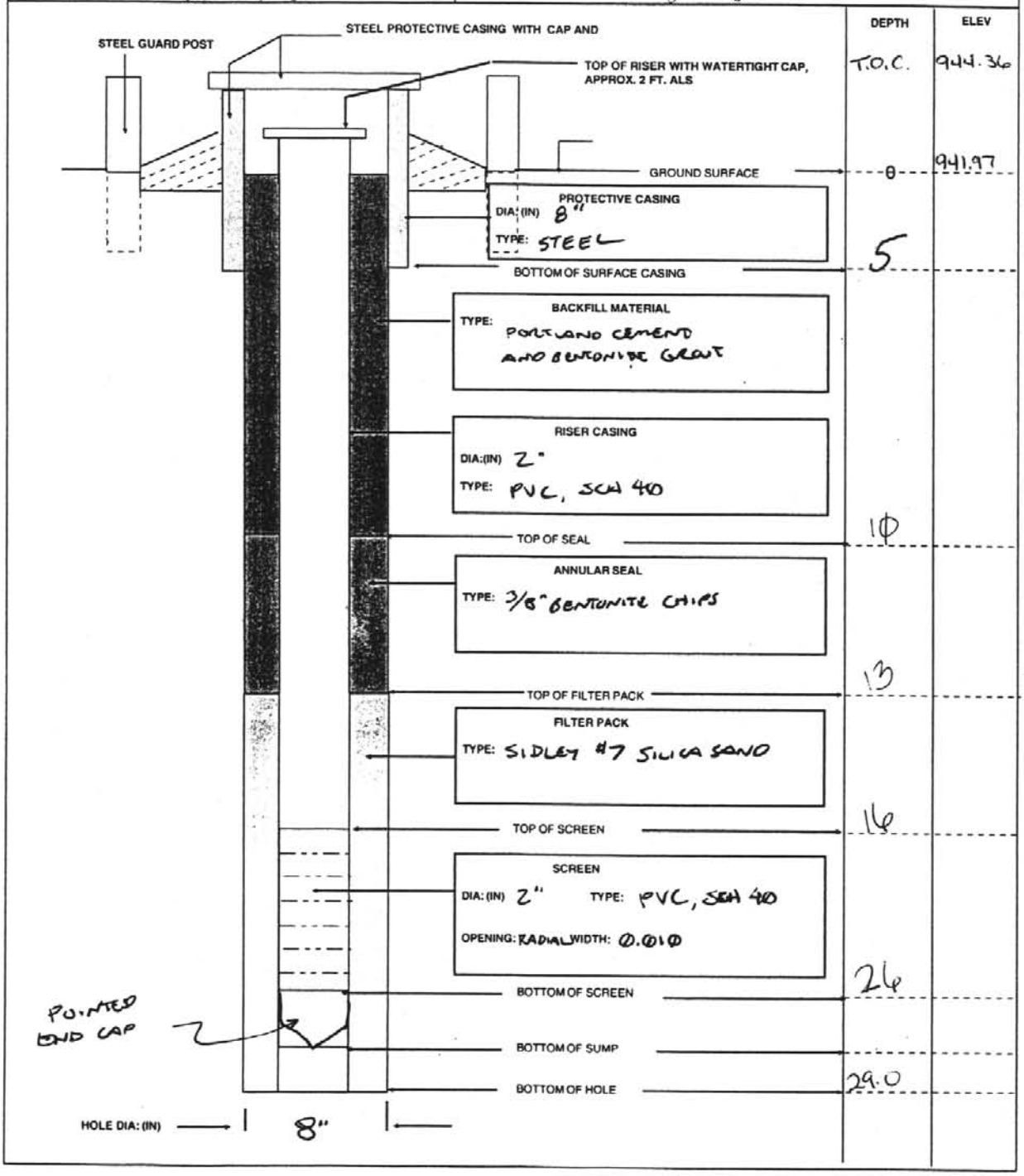
MONITORING WELL

PROJECT NAME: Erie Burning Grounds Phase II **DELIVERY ORDER NO.** CY10

WELL NUMBER: EBG MW-129	**BEGIN:** 11/02/03	**END:** 11/03/03
COORDINATES: N: 572035.68 E: 2379240.52	**REFERENCE POINT:** Top of Casing	**ELEVATION:** 944.36 MSL



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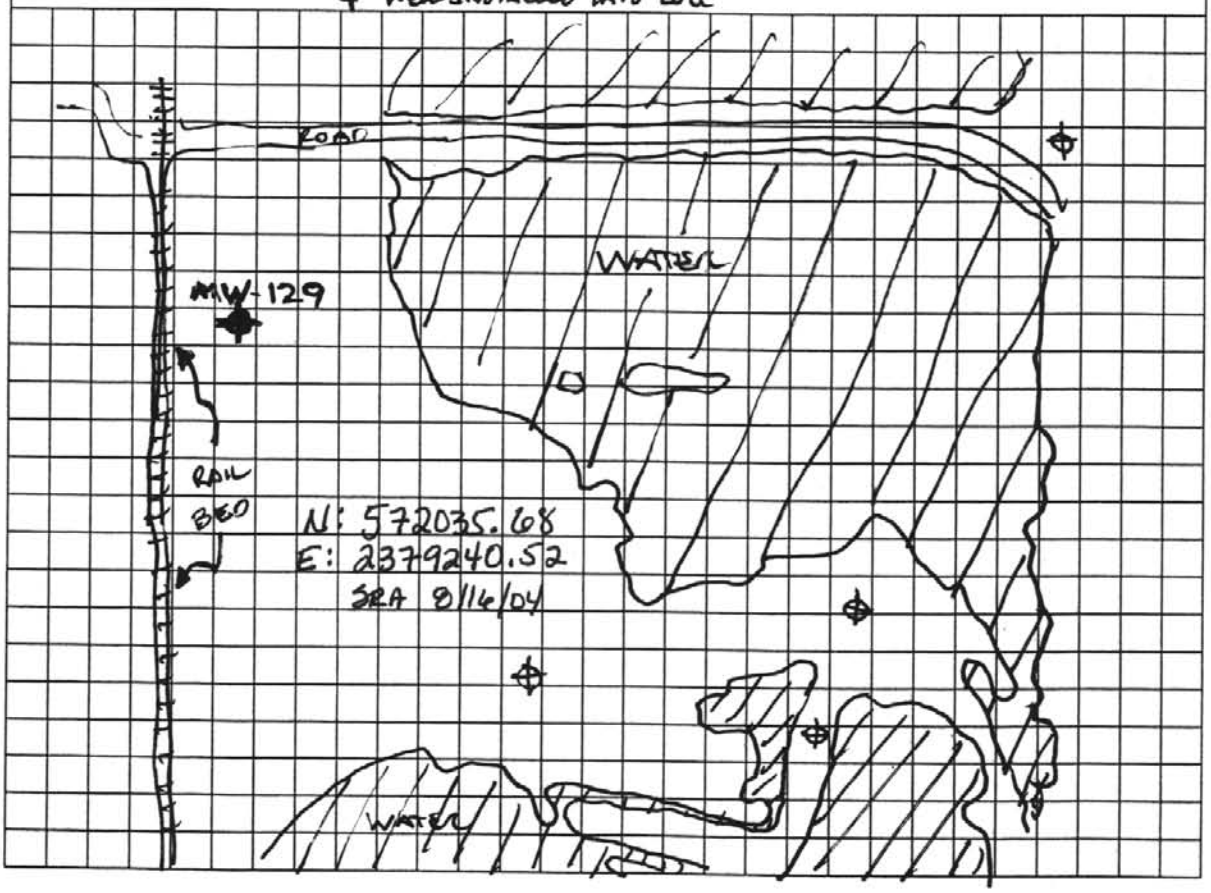
HTRW DRILLING LOG	DISTRICT: Louisville	HOLE NUMBER EBG MW-129
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: FRONTL DRILLING	SHEET 1 OF 4
3. PROJECT: Erie Burning Grounds Phase II	4. LOCATION: Erie Burning Grounds	
5. NAME OF DRILLER: JOSH VIZZO	6. MANUFACTURERS DESIGNATION OF DRILL: CME 750	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4¼" ID HSA, 2" SPLIT SPOONS	8. HOLE LOCATION:	
	9. SURFACE ELEVATION: 941.97' amsl ground	
	10. DATE STARTED: 11/02/03	11. DATE COMPLETED: 11/03/03
12. OVERBURDEN THICKNESS 29'+	15. DEPTH GROUNDWATER ENCOUNTERED: 2' bgs	
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED:	
14. TOTAL DEPTH OF HOLE 29' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):	

18. GEOTECHNICAL SAMPLES	DISTRICT	(UNDISTURBED)	19. TOTAL NUMBER OF CORE BOXES Ø			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
-	—	—	—	—	—	
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
	—	EBGMW129				

LOCATION SKETCH/COMMENTS: WELLS — WELL INSTALLED THIS LOG — SCALE: 1" = 200'



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HTRW DRILLING LOG

HOLE NUMBER MW-125

PROJECT: Erie Burning Grounds Phase II | INSPECTOR CHARLES L. KLINGER | SHEET 2 OF 4

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	SP-SM Poorly graded SAND AND FINE SAND WITH SILT, MOIST, DK. YELLOWISH BROWN (10YR 4/6), SUBANGULAR TO SUBROUNDED				WEIGHT OF TOOL S/S 0'-2' 0.4'/2'
	1					
	2	SAME AS ABOVE, SATURATED GRADING FROM DK. YELLOWISH BROWN TO GRAY (2.5Y 6/1)				1/1/1/1 S/S 2'-4' 1.3'/2'
	3					
	4	SAME AS ABOVE, SOME COLOR CHANGES, LESS SILT				1/WOH/WOH/1 S/S 4'-6' 1.7'/2'
	5					
	6	SAME AS ABOVE, GRADING TO SP, FINE SAND, GRAY (N 6/0) AT 7.3' BGS				2/3/2/3 S/S 6'-8'
	7					
	8					2/1/1/1 S/S 8'-10' 1.9'/2'
	9	ML SILT WITH V. FINE SAND, SATURATED, NON PLASTIC. GRAY (N 6/0)				
	10					

HTRW DRILLING LOG

HOLE NUMBER MW-129

PROJECT: Erie Burning Grounds Phase II

INSPECTOR CHARLES L. KLINGER

SHEET 3 OF 4

ELEV. (A)	DEPTH (B) (Ft)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	10	ML SILT WITH V. FINE SAND SATURATED, GRAY, NONPLASTIC				WEIGHT OF TOOL S/S 10'-12' 1.0'/2'
	11					
	12	SAME AS ABOVE GRADING TO SP-SM AT 13' BGS.				1/2/2/1 S/S 12'-14' 1.3'/2'
	13					
	14					WEIGHT OF TOOL S/S 14'-16' 0.8'/2'
	15	SW WELL GRADED SAND, SATURATED, SUBANGULAR, MIXED LITHOLOGIES, GETS COARSER WITH DEPTH TO INCLUDED GRAVEL AT 17' GRAY (N 6/0)				
	16					1/1/3/3 S/S 16'-18' 1.3'/2'
	17					
	18	SAME AS ABOVE, SAND CHANGES IN SIZE BACK AND FORTH				2/4/5/5 S/S 18'-20'
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER MW 129

PROJECT: Erie Burning Grounds Phase II

INSPECTOR Charles L. Klinger

SHEET 4 OF 4

ELEV. (A)	DEPTH (FT)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	20	SAME AS ABOVE SW		SHELBY TUBE 20'-22'		2'/2' Collected Shelby Tube from 20' to 22' porosity TNP* TOC * wet density TNP* dry density TNP* spec. gravity TNP*
	21	*TNP - insufficient recovery to perform geotechnical analysis (test not performed)				
	22					3/3/4/4 S/S 22'-24'
		SP POORLY GRADED FINE TO MEDIUM SAND, OLIVE GRAY (5Y 5/2) SATURATED				
	23	SW WELL GRADED SAND TO COARSE SAND WITH TRACE GRAVEL. GRAY (N 6/0) SUBANGULAR, SATURATED				
	24	SP: POORLY GRADED SAND, SUBANGULAR, SATURATED, GRAY (N 6/0).				5/12/6/13 S/S 24'-26'
	25					
	26	SAME AS ABOVE (SP)				2/3/4/5 S/S 26'-28' 2'/2'
	27					
	28					
	29	END OF BORING @ 29' BGS.				
	30					

MONITORING WELL INSTALLATION LOG

PROJECT NAME: Erie Burning Grounds Phase II **DELIVERY ORDER:** CY10

MONITORING WELL ID: EBG MW-129

INSTALLATION START: DATE: 11/02/03 TIME: 0800

INSTALLATION FINISH: DATE: 11/3/03 TIME: 1400

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: SILICA #7 QUANTITY: 2500 LBS

BENTONITE SEAL: TYPE: BAROID 3/8" CHIPS QUANTITY: 50 LBS

GROUT: PORTLAND TYPE: I + 2% BENTONITE QUANTITY: 150 LBS

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (inches): 0.010 SLOT CONFIGURATION: RADIAL

TOTAL OPEN AREA PER FOOT OF SCREEN: _____

OUTSIDE DIAMETER: 2 3/8" NOMINAL INSIDE DIAMETER: 2"

SCHEDULE/THICKNESS: SCH 40 COMPOSITION: PVC

MANUFACTURER: GLOBAL

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN:

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 2 3/8" NOMINAL INSIDE DIAMETER: 2"

SCHEDULE/THICKNESS: SCH 40 COMPOSITION: PVC

MANUFACTURER: GLOBAL

JOINT DESIGN AND COMPOSITION: THREADED F/J

CENTRALIZERS DESIGN AND COMPOSITION: NA

DESCRIPTION OF PROTECTIVE CASING: STICK-UP, LOCKING LID

NOMINAL INSIDE DIAMETER: 8" COMPOSITION: STEEL

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

—

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [X] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [X] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [X] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: 35 GAL USED TO JET ROCK FREE DURING DRILLING OF WELL

RECORDED BY: _____ 11/03/03 (Signature & Date) QA CHECK BY: _____ 3/1/04 (Signature & Date)

PROJECT NAME: Erie Burning [illegible] ORDER NO: C[illegible]

PAGE 1 OF 1

WELL NUMBER AND LOCATION: EBGmw129

DEVELOPMENT

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
11/17/03	1016	0	11.0	0.298	7.84	999	0	0	initial reading
	1023	17	11.1	0.281	7.84	999	17	1.3	
	1030	13	11.1	0.297	7.91	999	30	2	
	1038	13	11.1	0.276	7.92	109	43	3	
	1049	22	11.0	0.277	7.91	4	65	4.5	
	1054	10	11.0	0.276	7.93	5	75	5.5	
	1108	30	11.2	0.277	7.93	0	105	additional volume from water added during construction	
	1122	25	11.2	0.276	7.94	0	130		
	1130	15	11.2	0.277	7.94	0	145		
	1306	30	11.7	0.289	8.00	0	175		temp ↑ as sun came out
	1315	25	11.5	0.277	7.98	0	200		
	1330	20	11.5	0.276	7.93	0	220		
	1340	20	11.4	0.276	7.95	0	240		
↓	1350	10	11.4	0.276	7.93	0	250	↓	final reading
24 NOV 03	1305	0	9.2	0.361	7.48	63	0	NA	initial micro purge reading
↓	1312	1.0	10.0	0.360	7.08	999	1.0	NA	very turbid!

RECORDED BY: [signature] 11/17/03
(Signature and Date)

QA CHECK BY: [signature] 3/2/04
(Signature and Date)

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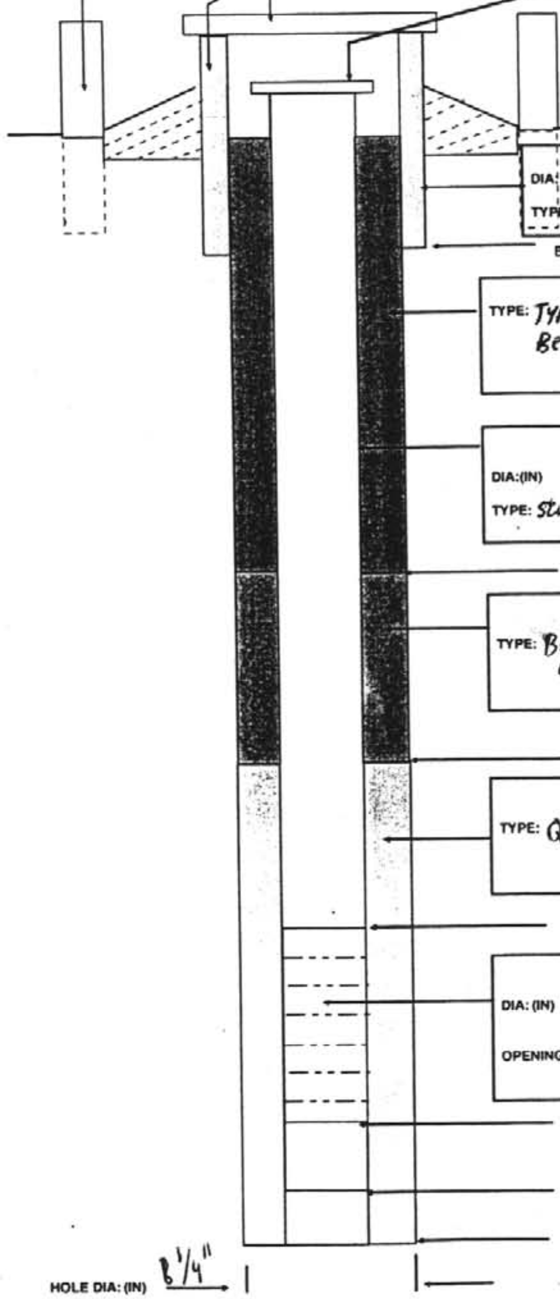
MONITORING WELL

PROJECT NAME: ~~Ramsdell Quarry Phase I RI~~ ERIE BURNING GROUNDS PHASE II RI DELIVERY ORDER NO. CY11

WELL NUMBER: EBG mw - 130	BEGIN: 10-30-01	END: 10/30/03
COORDINATES: N: 570695.61 E: 2379220.69	REFERENCE POINT: Top of Casing	ELEVATION: 944.00 MSL



STEEL GUARD POST

STEEL PROTECTIVE CASING WITH CAP AND

TOP OF RISER WITH WATERTIGHT CAP, APPROX. 2 FT. ALS

GROUND SURFACE

PROTECTIVE CASING
DIA: (IN) 8"
TYPE: STEEL

BOTTOM OF SURFACE CASING

BACKFILL MATERIAL
TYPE: TYPE I QUIKRETE PORTLAND CEMENT + BENTONITE POWDER - GROUT

RISER CASING
DIA: (IN) 2"
TYPE: SCHEDULE 40 PVC, FLUSH JOINT THREADED

TOP OF SEAL

ANNULAR SEAL
TYPE: BAROID HOLE PLUG, 3/8" BENTONITE CHIPS

TOP OF FILTER PACK

FILTER PACK
TYPE: QUARTZ SAND - SIDLEY #7

TOP OF SCREEN

SCREEN
DIA: (IN) 2"
TYPE: SCHEDULE 40 PVC FLUSH JOINT THREADED
OPENING: ~~0.10~~ 0.010 WIDTH:

BOTTOM OF SCREEN

BOTTOM OF SUMP

BOTTOM OF HOLE

HOLE DIA: (IN) 8 1/4"

	DEPTH	ELEV
TOP OF RISER	T.O.C.	944.00
GROUND SURFACE	0	941.18
BOTTOM OF SURFACE CASING	5	
TOP OF SEAL	8.5'	
TOP OF FILTER PACK	12'	
TOP OF SCREEN	15.17	
BOTTOM OF SCREEN	25.17	
BOTTOM OF SUMP	25.5	
BOTTOM OF HOLE	26	

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HTRW DRILLING LOG

DISTRICT: Louisville

HOLE NUMBER: EBG MW - 130

SHEET 1 OF 4

1. COMPANY NAME: SAIC

2. DRILL SUBCONTRACTOR: DRILLING FRONTZ ~~DRILLER INC~~

3. PROJECT: ERIE BURNING GROUNDS PHASE II RI ~~Ramsdell Quarry Phase I RI~~

4. LOCATION: ERIE BURNING GROUNDS ~~Ramsdell Quarry~~

5. NAME OF DRILLER: ROB HAMILTON

6. MANUFACTURERS DESIGNATION OF DRILL: CME 75

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4¼" HOLLOW STEM AUGER; 2" DIAM. SPLIT SPOONS

8. HOLE LOCATION: SOUTH WEST SECTION OF ERIE BURNING GROUNDS @ INTERSECTION OF RAIL BEDS

9. SURFACE ELEVATION: 941.18' amsl ground

10. DATE STARTED: 10-30-03

11. DATE COMPLETED: 10-31-03

12. OVERBURDEN THICKNESS: > 25' BGL

15. DEPTH GROUNDWATER ENCOUNTERED:

13. DEPTH DRILLED INTO ROCK: N/A

16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED:

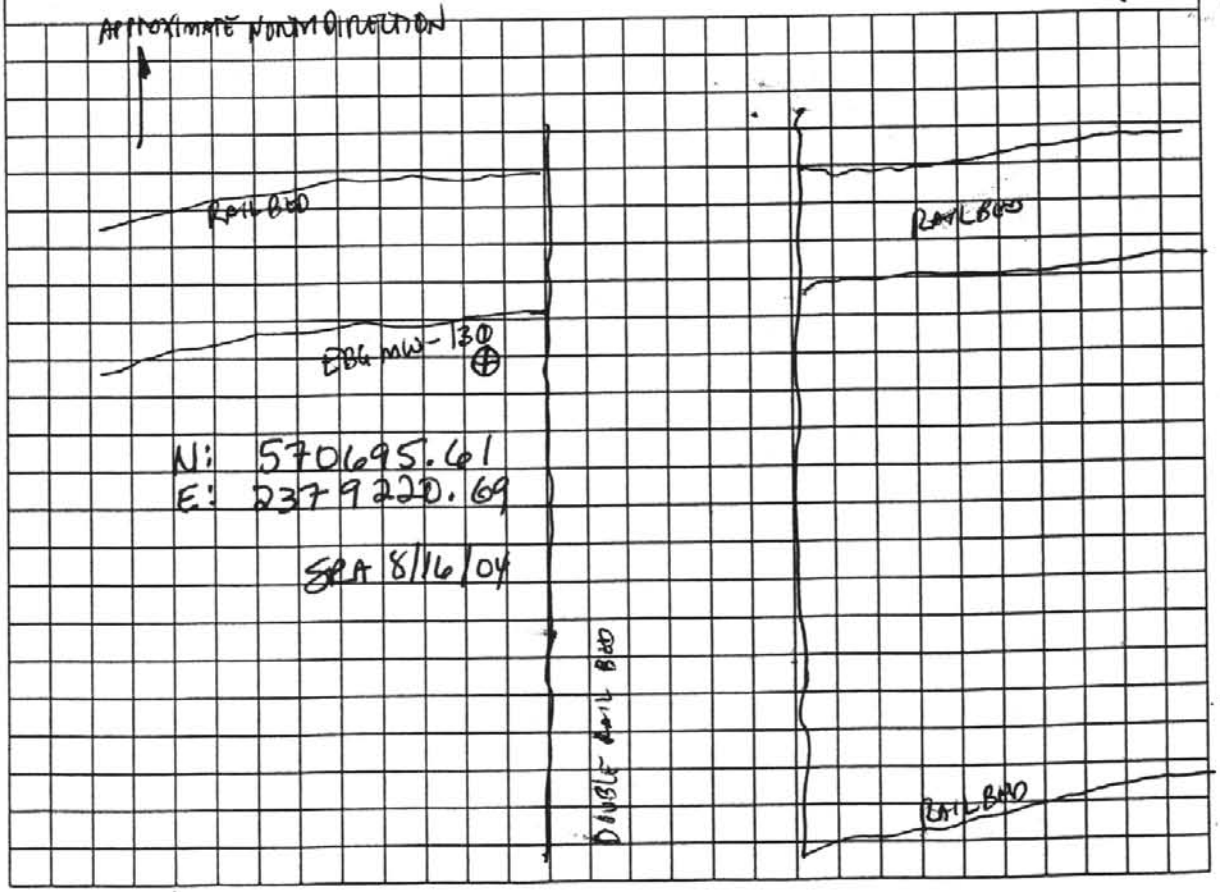
14. TOTAL DEPTH OF HOLE

17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):

18. GEOTECHNICAL SAMPLES	DISTURBED	(UNDISTURBED)	19. TOTAL NUMBER OF CORE BOXES: N/A			
20. SAMPLES FOR CHEMICAL ANALYSIS: NONE	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL: X	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR: Todd M. Lacy		

LOCATION SKETCH/COMMENTS

SCALE: ~1" = 20'



HTRW DRILLING LOG

PROJECT: ~~Ramsdell Quarry Phase I RI~~ ERIE BURNING GROUNDS PHASE II RI	INSPECTOR [illegible signature]	HOLE NUMBER EBG MW-130 (13)
		SHEET 2 OF 4

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	ROOT ZONE, CLAYEY SILT (ML): BROWN (10YR 4/3), MOIST, SOFT TO MED. STIFF, VERY SLIGHT PLASTICITY (0-0.9')				SPLIT SPOON 0-2' REC: 0.9/2 BLOWS: 4/3/2/2
	1	ACCUMULATED LOST CORE				
	2	CLAYEY SILT (ML): SAME AS ABOVE, W/O ROOTS (2-2.7')				SPLITSPOON 2-4' REC: 1.4/2 BLOWS: 1/2/2/3
	3	SILTY CLAY (CL): VERY DARK GRAY (10YR 3/1), MOIST, SOFT, MEDIUM TO LOW PLASTICITY, SLIGHT MOTTLING, AND IRON STAINING (2.7-3.4')				
		ACCUMULATED LOST CORE				
	4	SANDY SILTY CLAY (CL): DARK YELLOWISH BROWN (10YR 4/4) W/ GRAY (5/N) MOTTLING, FINE TO COARSE SAND (4-5.4')				SPLITSPOON 4-6' REC: 1.4/2 BLOWS: 1/2/1/1
	5	ACCUMULATED LOST CORE				
	6	SANDY SILTY CLAY (CL): SAME AS ABOVE (6-6.3')				SPLIT SPOON 6-8' REC: 1.6/2 BLOWS: WT/1/1/2
	7	CLAY-SANDY (CL): GREENISH GRAY (10Y 5/1), SOFT, MOIST MEDIUM PLASTICITY, FINE TO MEDIUM GRAINED SAND 1-2% (6.3-7.6')				
		ACCUMULATED LOST CORE				
	8	SANDY CLAY (CL): SAME AS ABOVE (8-8.6')				SPLIT SPOON 8-10 REC: 1.7/2 BLOWS: WT/1/3/3
		SILTY SAND (SM): AS 9.1-9.7' INTERVAL				
	9	SANDY CLAY (CL): SAME AS 8-8.6' INTERVAL				
		SILTY SAND (SM): GREENISH GRAY (10Y 5/1) FINE GRAINED, POORLY GRADED, SATURATED, <10% SILT (9.1-9.7')				
	10	ACCUMULATED LOST CORE				

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ERIE BOULEVARD GRAVURE HTRW DRILLING LOG — HOLE NUMBER EBGMW-137

PROJECT: ~~Ramsdell Quarry Phase I RI~~ PHASE II RI — INSPECTOR Jodell A. Ley — SHEET 3 OF 4

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	10	~~Sand~~ SILTY SAND (SM); SAME AS ABOVE, < 10% SILT				SPLIT SPOON 10-12 REC: 1.8 BLOWS: 1/2/1/1
	11					
	12	ACCUMULATED LOST CORE				
		SILTY SAND (SM): SAME AS ABOVE		SHELBY TUBE 12- SAND - NO RECOVERY		SHELBY TUBE ~~10~~ 12- < 1000 PSI SAND — NO RECOVERY
	1					
	13					
	14	SILTY SAND (SM); SAME AS ABOVE				SPLIT SPOON ~~14~~ 16' REC: 2/2 BLOWS: 1/2/3/4
	15					
	16	- SAA				SPLIT SPOON 16-18' REC: 2/2 BLOWS: 3/5/7/11
	17					
		- MORE VERY COARSE SAND				
	18	- SAA				SPLIT SPOON 18-20' REC: 2/2 BLOWS: 1/3/4/7
	19					
	20					

HTRW DRILLING LOG

PROJECT: ~~Ramsdell Quarry Phase I RI~~ ERIE BURNING GROUNDS PHASE II RI | INSPECTOR: Todd D. C[illegible]

HOLE NUMBER: EBG MW-130 | SHEET 4 OF 4

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	HEADSPACE SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	20	SAA - TRACE SUB-ROUNDED QTZ GRAVEL				SPLIT SPOON 20-22' REC: BLOWS: 3/3/3/4
	21					
	22	- ½" CLAY SEAM OF SAME COLOR, MEDIUM PLASTICITY, SANDY				SPLIT SPOON 22-24 REC: 2' BLOWS: 1/1/2/5
	23					
	24	SANDY, GRAVELLY SILTY CLAY (CL); GREENISH GRAY (10Y 5/1) FINE SAND, SUB-ROUNDED TO SUB-ANGULAR GRAVEL, MEDIUM TO LOW PLASTICITY, MOIST				
	24	SHELBY 24-24.7 BOTTOM OF SHELBY SAME AS ABOVE		SHELBY EBG290	Porosity = .266 CL WD = 142.8 DD = 122.7 SG = 2.69	SHELBY 24-24.7 750 psi 8" REC
	25	SAME AS ABOVE ↓ SANDSTONE CHIPS AND FRAGMENTS - WEATHERED, CRUMBLY				SPLIT SPOON 24.7-26 REC: 0.9'/1.5 BLOWS: 31/48/29
	26	ACCUMULATED LOST CORE				
	26	TD = 26' BGS				~40 GALLONS OF H_2O USED WHILE DRILLING FROM 18-26' BGL TO CONTROL HEAVING SANDS
	27					
	28					
	29					
	30					

MONITORING WELL INSTALLATION LOG

PROJECT NAME: ~~Ramsdell Quarry Phase I RI~~ EBG Burning Grounds Phase II RI **DELIVERY ORDER:** ~~CY11~~

MONITORING WELL ID: EBG mw - 130

INSTALLATION START: DATE: 10-30-03 TIME: 1345

INSTALLATION FINISH: DATE: 10-30-03 TIME: 1652

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: QUARTZ, SIDLEY #7 QUANTITY: 9.5 - 50 lb BAGS

BENTONITE SEAL: TYPE: BAROID HOLE PLUG 3/8" BENTONITE CHIPS QUANTITY: 1 - 50 lb BAG

GROUT: TYPE: TYPE I PORTLAND CEMENT + BENTONITE POWDER QUANTITY: 1 - 94 lb BAG PORTLAND + 6 lb BENTONITE

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (inches): 0.010 SLOT CONFIGURATION: HORIZONTAL

TOTAL OPEN AREA PER FOOT OF SCREEN: _____

OUTSIDE DIAMETER: 0.2' (~2 3/8") NOMINAL INSIDE DIAMETER: 0.17' (2")

SCHEDULE/THICKNESS: SCHEDULE 40 COMPOSITION: PVC

MANUFACTURER: ENVIRONMENTAL MANUFACTURING, INC

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN:

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 0.2' (~2 3/8") NOMINAL INSIDE DIAMETER: 0.17' (2")

SCHEDULE/THICKNESS: SCHEDULE 40 COMPOSITION: PVC

MANUFACTURER: ENVIRONMENTAL MANUFACTURING, INC

JOINT DESIGN AND COMPOSITION: FLUSH JOINT THREADED, PVC

CENTRALIZERS DESIGN AND COMPOSITION: N/A

DESCRIPTION OF PROTECTIVE CASING: STICK-UP, LOCKING LID

NOMINAL INSIDE DIAMETER: 8" COMPOSITION: STEEL

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

—

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [X] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [X] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [X] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: NONE

RECORDED BY: [signature] 10-30-03 (Signature & Date)

QA CHECK BY: [signature] 3/2/04 (Signature & Date)

PROJECT NAME: Erie Burning Grounds Phase I — DENVER ORDER NO: CY10

PAGE 1 OF 1

WELL NUMBER AND LOCATION: EBGmw-130

	DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
DEVELOPMENT	13 NOV 03	1325	0	11.1	.600	7.69	999	0	0	Initial reading
		1329	13.25	11.4	.524	7.50	999	13.25	1.0	
		1333	~~13.25~~ 13.25	11.4	.524	7.39	999	26.50	2.0	
		1339	13.25	11.2	.519	7.39	999	39.75	3.0	
		1344	13.25	11.1	.524	7.37	999	53.00	4.0	
		1351	13.25	11.1	.521	7.33	374	66.25	5.0	
	13 NOV 03	1355	13.25	11.2	.524	7.29	116	79.50	6.0	final reading
SAMPLE	20 NOV 03	1405	0	13.3	0.527	7.87	0	0	NA	Initial
GRAB		1416	NA	12.9	0.321	8.04	0	NA	NA	
		1426		12.9	0.322	7.86	0			
		1431		12.8	0.332	7.73	0			
		1436		12.4	0.362	7.61	0			
		1441		12.3	0.372	7.61	0			
		1446		12.3	0.374	7.62	0			sample @ 1448
		1520	↓	12.1	0.373	7.84	0	↓	↓	Final readings

RECORDED BY: T Bowen 13 Nov 03 (Signature and Date)
M Clough 20 Nov 03

QA CHECK BY: Kelly [illegible] 12/15/03 (Signature and Date)

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