EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location: 14A
Drilling Method: HSA / Air Hammer		Boring No. MW-14A
Sampling Method: Continuous Split Spoon		Sheet 1 of

Water Level				Drilling Start	Drilling Finish
Time	-			8/1/11	8/1/11
Date					
Reference					

Surface Conditions: Asphalt

Sample Type	Inches Drvn/In. Recvrd	Dpth. Csg.	Sample No.	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	
				0.0		1			FILL - Asphalt (0-6" Bgs), 10YR 4/4 Sandy SILT, lit. gravel, tr. clay
						2			
						3			
						4			
						5			
	2'/1.5			0.0	3 3	6			
				0.0	4 4	7			SAME (10YR 4/4) Sandy SILT, etc.
	2'/1.5			0.0	2 2	8			10YR 4/4 SILT, lit clay, tr.-lit f. sand, well sorted, dry
				0.0	4 6	9			
	2'/1.5'			0.0	2 2	10			10YR 4/4 SAME
				0.0	3 3	11			10YR 8/1 f.-m SAND, tr.-lit silt, moist, poorly sorted, mod. loose
	2'/1.5			0.0	2 4	12			
				0.0	5 5	13			10YR 4/4 SILT, lit-some clay, tr. f. sand, moist, mod. stiff, well sorted
	2'/1.8'			0.0	3 4	14			↳ 10YR 8/1 Sand lens, loose, poorly sorted
				0.0	7 9	15			
	2'/1.8			0.0	3 3	16			SAME
				0.0	4 6	17			10YR 5/2 / 4/3 SILT lit-some f. sand, tr.-lit. f. gravel, dry, poorly sorted
	2'/2'			0.0	3 5	18			10YR 4/3 SILT, lit-some clay, tr. f-m sand, dry-moist, poorly sorted
				0.0	7 10	19			
	2'/2'			0.0	3 5	20			SAME, dry
				0.0	7 9	21			

Logged by: Steven Wickes

Date: 8/1/11

Drilling Contractor: Summit

Driller: Summit / Chad Chism

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location:
Drilling Method: HSA / Air Hammer		Boring No. MW-14A
Sampling Method: Cont. split spoon		Sheet 2 of
		Drilling

Water Level				Start	Finish
Time	-			8/1/11	
Date					
Reference					

Sample Type	Inches Drvn/In. Recvrd	Dpth. Csg.	Sample No.	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions:
	2'/1.5			0.0	5	21			10YR 5/4 SILT, lit - some clay, tr. f sand, moist, poorly sorted,
				0.0	9 9	22			
	2'/2'			0.0	5 7	23			
				0.0	10 15	24			10YR 5/3 CLAY, lit - some silt, tr f sand (mottled 10YR 2/1 - rust ring?), well sorted, stiff, moist
	2/2'			0.0	7 10	25			
				0.0	15 12	26			SAME
	2/2'				6 10	27			SAME (mottled 10YR 3/1), dry
					14 15	28			
	2/2'				5 9	29			10YR 5/3 SILT, some clay (mottled 10YR 6/1), tr - lit f sand, well sorted, dry - moist, mod. stiff
					10 12	30			
	2'/1.8'				6 7	31			SAME
▼					9 12	32			↳ Sand lens 10YR 7/1 @ 31' bgs
	2'/2'				4 6	33			10YR 4/3 SILT, tr - lit clay, wet, mod. soft, well sorted, apparent GW at 32' Bgs while drilling
					10 14	34			
	2'/2'				3 5	35			10YR 4/1 SILT, some v f sand, sand lens throughout (10YR 7/1), wet, mod. stiff, poorly sorted (sand increasing w/ depth),
					7 9	36			
	2'/2'				6 10	37			10YR 4/1 Apparent weathered bed rock, SILT, some f sand, 10YR 7/1 sand veins, stiff, well sorted, wet.
					14 18	38			
	2/2'				7 8	39			SAME
					9 11	40			
						41			Boring terminated at 40' Bgs

Logged by: SGW

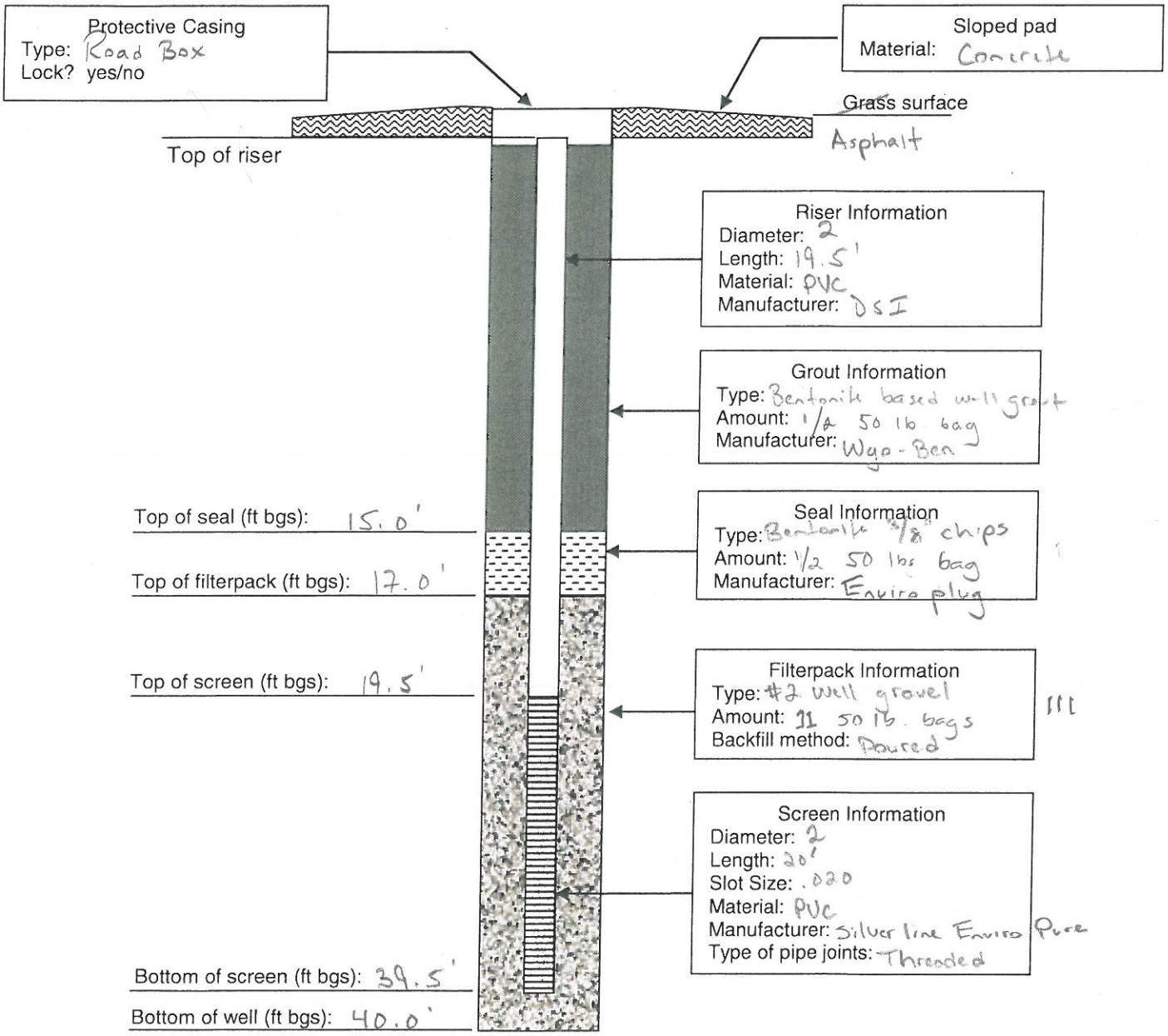
Date: 8/1/11

Drilling Contractor: Cuda / MW-14B

Driller: Chad Chism

RECORD OF MONITORING WELL CONSTRUCTION
(FLUSH MOUNT)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: MW-14A
Project Title/ Project No.: Gude Landfill	Date/Time Installed: 8/1/2011/1145 Time Finished:
Location: Gude Landfill (Bentendorff CT)	Depth to Water: ~32' during drilling
Site Geologist: Steven Wicker	Drilling Method: HSA



Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location: 14B
Drilling Method: HSA / Air Hammer		Boring No. MW-14B
Sampling Method: Cont split spoon		Sheet 1 of 5

Water Level				Drilling Start	Drilling Finish
Time	-			8/1/11	8/2/11
Date					
Reference					

Surface Conditions: Asphalt

Sample Type	Inches Drvn/In. Recvrd	Dpth. Csg.	Sample No.	PID ppm	Blows per 6 in.	Depth in Feet	USCS Log	
Remolded				0.0		1		FILL - Asphalt (0-6" Bgs)
						2		FILL - 10YR 4/4 Sandy SILT, lit gravel, tr. clay
						3		
						4		
						5		
	2'/1.8'				2, 3	6		10YR 4/4 Sandy SILT, lit gravel, tr - lit clay, dry, soft - mod stiff, poorly sorted
					4, 4	7		
	2'/1.5'				3, 3	8		10YR 4/4 SILT, lit clay, lit f. sand, well sorted, dry, mod stiff
					4, 5	9		
	2/1.8'				3, 3	10		SAME - sand lens (10YR 7/1) at 10'
					4, 5	11		
	2'/1.5'				4, 5	12		SAME, slightly moist
					5, 7	13		
	2'/2'				4, 7	14		10YR 4/4 SILT, lit clay, tr. f sand, moist, poorly sorted, mod stiff ↳ 10YR 8/2 Sand lens
					9, 10	15		
	2'/2'				5, 7	16		SAME
					9, 11	17		
	2'/2'				3, 6	18		10YR 5/2 / 4/3 SILT, lit - some m-c Sand, tr - lit gravel, dry, moist, poorly sorted
					10, 14	19		10YR 4/3 SILT, some clay, tr f-m sand, dry
	2/2				5, 6	20		
					9, 12	21		SAME - Apparent rust ring around 21' Bgs

Logged by: Steven Wicker

Date: 8/1/2011

Drilling Contractor: Summit

Driller: Chad Chism

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location: 14B
Drilling Method: HSA / Air Hammer		Boring No. MW-14B
Sampling Method: Cont. split spoon		Sheet 2 of 5

Water Level				Drilling Start	Drilling Finish
Time	-			8/1/11	8/2/11
Date					
Reference					

Surface Conditions:

Sample Type	Inches Drvn/In. Recvrd	Dpth. Csg.	Sample No.	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	
	2/1.8'			0.0	6 9	21			10YR 5/4 SILT lit - some clay, tr - lit f sand, moist, poorly sorted
				0.0	10 15	22			to 10YR 8/1 sand lens, increasing clay w/ depth
	2'/2'			0.0	4 7	23			10YR 5/3 Clayey SILT, tr f sand, moist, well sorted (mottled 10YR 2/1), stiff
				0.0	7 9	24			
	2'/2'			0.0	3 6	25			SAME (mottled 10YR 2/1), clay decreasing w/ depth
				0.0	7 9	26			
	2'/2			0.0	6 8	27			SAME, tr - lit f sand
				0.0	12 12	28			Sand lens 10YR 8/1
	2/2			0.0	5 7	29			10YR 5/3 SILT, lit - some clay, (mottled 10YR 5/1) tr - lit f. sand, mod. soft → mod. stiff, moist, poorly sorted
				0.0	10 10	30			
	2'/1.8'			0.0	6 9	31			SAME, moist - wet
				0.0	9 10	32			
	2/2			0.0	5 6	33			10YR 4/3 SILT, lit clay, tr - lit f. sand, wet, apparent GW @ 32' bgs
				0.0	8 10	34			10YR 8/1 f. SAND, lit silt, wet, mod. loose, poorly sorted
	2/1.5			0.0	9 9	35			
				0.0	10 15	36			SAME f-m SANDS
	2'/2.0'			0.0	5 7	37			SAME (wet on spoon)
					9 10	38			
	2'/1.5'				5 7	39			SAME, tr. c. sand
					10 12	40			
					18 21	41			

Logged by: S(W)

Date: 8/1/11

Drilling Contractor: Summit

Driller: Chad Chism

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location: 14B
Drilling Method: HSA / Air Hammer		Boring No. MW-14B
Sampling Method: Cont. split spoon		Sheet 3 of 5

Water Level				Drilling Start	Drilling Finish
Time	-			8/1/11	8/2/11
Date					
Reference					

Surface Conditions:

Sample Type	Inches Drvn/In. Recvrd	Dpth. Csg.	Sample No.	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	
	2'/2'				41 53	41			Apparent weathered bed rock, SILT, sand/quartz veins, very stiff, moist - wet, boring terminated 8/1 - will resume 8/2
						42			
						43			END 8/1/2011
						44			Begin 8/2/2011
						45			↳ will cont. spinning augers through weathered bed rock until Air hammer is needed
						46			
						47			
						48			
						49			
						50			
						51			
						52			
						53			
	2'/2'			0.0	27 38	54			SAME
				0.0	45 56	55			
						56			
						57			
						58			
	2/1.8'			0.0	30 40	59			SAME - wet, Saprolite? very weathered, cuttings at bending exists
				0.0	43 51	60			
						61			

Logged by: SGW

Date: 8/1/11 / 8/2/11

Drilling Contractor: "

Driller: "

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location: 14B
Drilling Method: HSA / Air Hammer		Boring No. MW-14B
Sampling Method: Cont. split spoon		Sheet 4 of 5

Water Level				Drilling Start	Drilling Finish
Time	-			8/1/11	8/2/11
Date					
Reference					

Sample Type	Inches Drvn/In. Recvrd	Dpth. Csg.	Sample No.	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions:
						61			
						62			
						63			
	2/2			0.0	28 37 49	64	-		SAME, Rig chatter → approaching solid bed rock, Saprolite →
				0.0	53	65			
	NA			NA	NA	66			
						67			
						68			
						69			
						70			Apparent bed rock at approx 70' bgs, change bit to use 'Air hammer' down to 100' bgs
						71			
						72			
						73			
						74			
						75			
						76			Bedrock down to 100' BGS
						77			
						78			
						79			
						80			
						81			

Logged by: SGW

Date: 8/1/11 / 8/2/11

Drilling Contractor: Summit

Driller: Chad Chism

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location: MW-14B
Drilling Method: HSA / Air Hammer		Boring No. MW-14B
Sampling Method: Cont. Split Spoon		Sheet 5 of 5

Water Level				Drilling Start	Drilling Finish
Time	-			8/1/11	8/2/11
Date					
Reference					

Sample Type	Inches Drvn/In. Recvrd	Dpth. Csg.	Sample No.	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions:
	NA			NA	NA				
						82			Bedrock - cuttings are saturated and pulverized
						83			
						84			
						85			
						86			
						87			
						88			
						89			
						90			
						91			Bedrock
						92			
						93			
						94			
						95			
						96			
						97			
						98			
						99			
						100			Terminate boring at 100' BGS - apparent bedrock 8/2/2011
						21			

Logged by: Steven Wicker

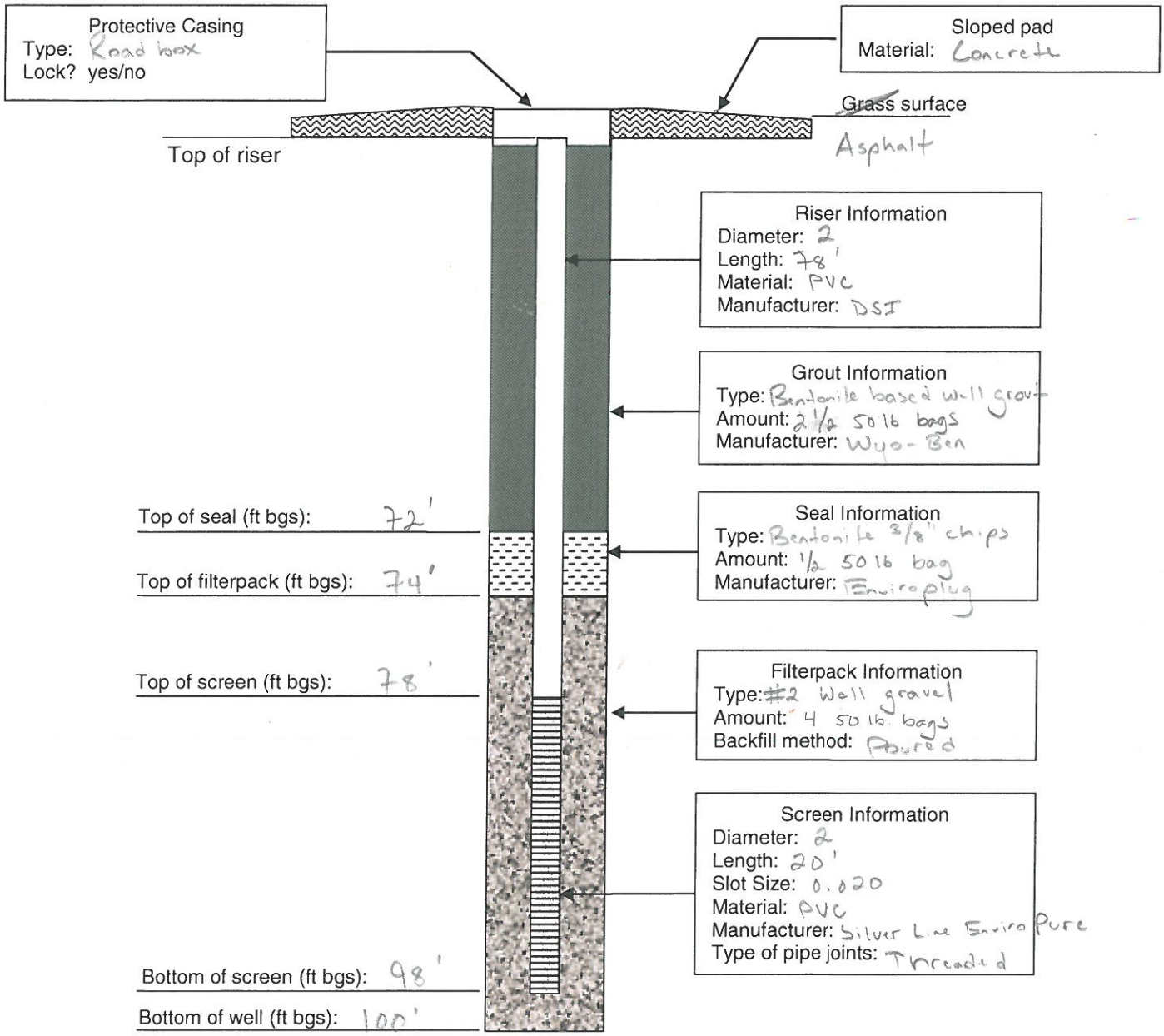
Date: 8/1/2011 / 8/2/2011

Drilling Contractor: Summit

Driller: Chad Chism

RECORD OF MONITORING WELL CONSTRUCTION
(FLUSH MOUNT)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: MW-14B
Project Title/ Project No.:	Date/Time Installed: 8/2/11 Time Finished:
Location: Cude Landfill	Depth to Water:
Site Geologist: Steven Wicker	Drilling Method: HSA/Air Hammer



Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface: '
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location: MW-15
Drilling Method: HSA		Boring No. MW15
Sampling Method: Cont. Split Spoon		Sheet 1 of

Water Level				Drilling Start	Drilling Finish
Time	-			8/3/11	8/3/11
Date					
Reference					

Sample Type	Inches Drvn/In. Recvrd	Dpth. Csg.	Sample No.	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	Surface Conditions:
Remolded						1			FILL - Asphalt (0-6")
						2			10YR 4/4 Sandy SILT, lit gravel, tr. clay FILL
						3			
						4			
						5			
	2/1.8			0.0	3 3	6			10YR 5/3 CLAY, Some silt tr-lit f sand, dry, stiff, well sorted
				0.0	3 4	7			
	2/2'			0.0	3 4	8			SAME, mottled 10YR 4/1, tr. gravel
				0.0	4 5	9			
	2/1.5'			0.0	3 4	10			SAME
				0.0	4 5	11			
	2/2'			0.0	4 5	12			10YR 5/2 Clayey SILT tr-lit f sand, tr. gravel, dry-moist, mod stiff, well sorted (mottled 10YR 4/1 / 3/3)
				0.0	6 8	13			
	2/1.8			0.0	5 6	14			10YR 4/4 SILT, Some f. sand, tr. gravel, tr. clay, mod stiff-mod (loose) dry, well sorted
				0.0	8 8	15			
	2/1.5			0.0	6 8	16			SAME, increasing clay w/depth
				0.0	12 13	17			
	2/2			0.0	11 13	18			
				0.0	16 18	19			
	2/1.5			0.0	11 13	20			SAME, large piece of gravel at ~ 20' bgs
				0.0	23 18	21			

Logged by: Steven Wicker

Date: 8/3/11

Drilling Contractor: Summit

Driller: Chad Chism

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL/ROCK BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Desc:

Job. No.	Client:	Location: MW-15
Drilling Method: HSA		Boring No. MW-15
Sampling Method: Cont. split spoon		Sheet 2 of 2

Water Level				Drilling Start	Drilling Finish
Time	-			8/3/11	8/3/11
Date					
Reference					

Surface Conditions:

Sample Type	Inches Drvn/In. Recvrd	Dpth. Csg.	Sample No.	PID ppm	Blows per 6 in.	Depth in Feet		USCS Log	
	2/1.8'			0.0	6 8	21			10YR 5/3 SILT, some f. sand, tr.-little clay, moist, mod. soft, well sorted, apparent rust fine
				0.0	9 4	22			
▼	2/2			0.0	5 6	23			SAME, moist - wet (wet on spoon), GW @ ~23'
				0.0	8 9	24			
	2/2			0.0	3 4	25			10YR 5/4 SILT little-some clay, tr.-little f. sand, moist, soft, well sorted
				0.0	4 5	26			
	2/2			0.0	3 5	27			SAME
				0.0	5 6	28			
	2/1.5			0.0	7 8	29			MULTI (10YR 5/3, 7/1, 3/3) SILT, little-some f.-m. sand, tr.-little clay, tr. gravel, wet, mod. loose, well sorted
				0.0	12 14	30			
	2/1.8			0.0	6 9	31			SAME, SANDY SILT, wet
				0.0	12 14	32			MULTI (10YR 5/3, 7/1, 5/3) Sandy SILT, tr. clay, tr. gravel, mod. soft - stiff, apparent weathered bed rock
	2/1.8'			0.0	10 22	33			
				0.0	50/2	34			
	2/2			0.0	16 27	35			SAME, increasing firmness
					50/3	36			
	2/1.8				16 28	37			SAME, advance HSA down to 40' through apparent weathered bedrock
					50/5	38			
						39			
						40			
						41			

Logged by: SGW

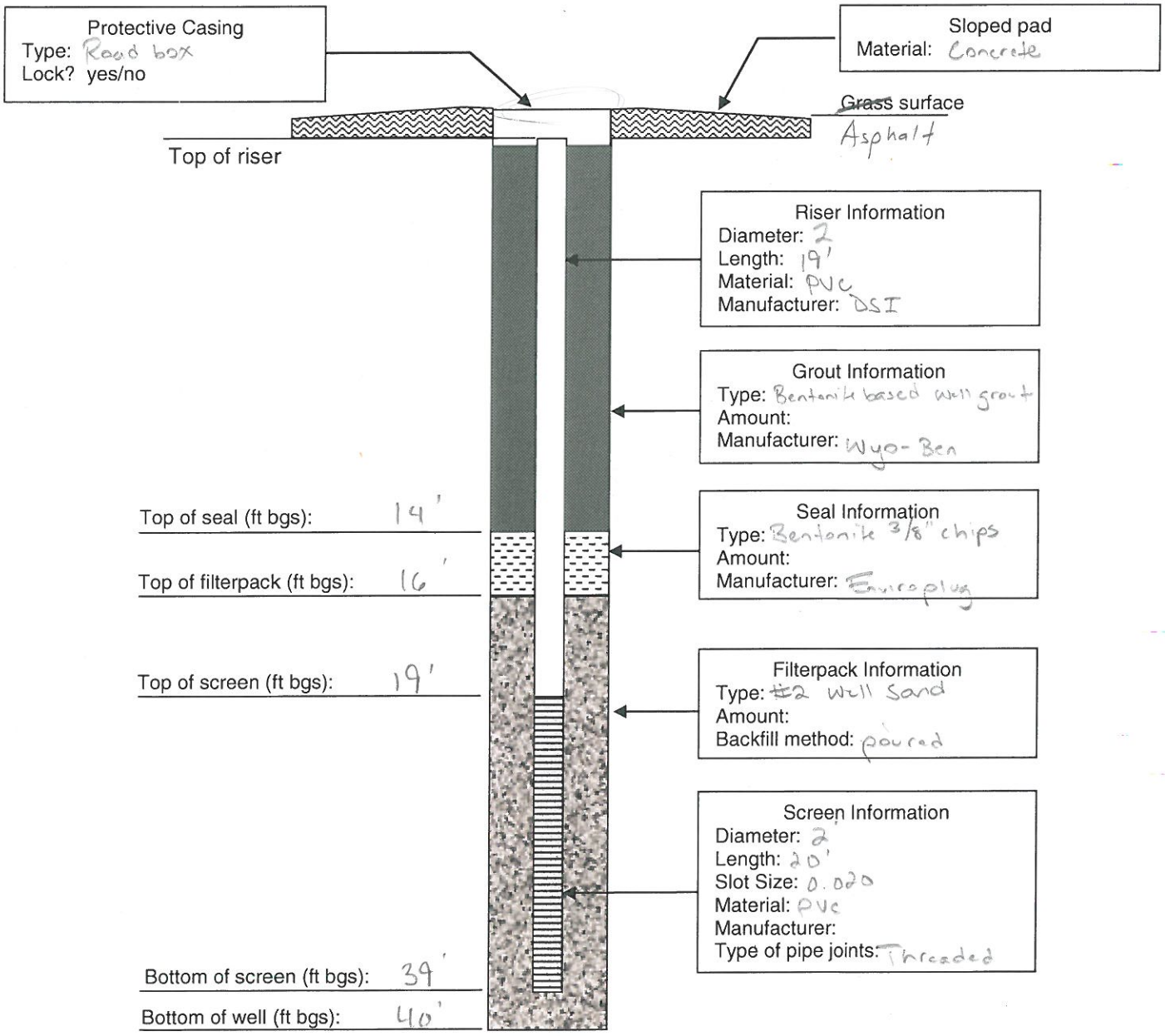
Date: 8/3/11

Drilling Contractor: Summit

Driller: Chad Chism

RECORD OF MONITORING WELL CONSTRUCTION
(FLUSH MOUNT)

EA Engineering, Science, and Technology, Inc.	Monitoring Well/Soil Boring ID No.: MW-15
Project Title/ Project No.: Crude Landfill	Date/Time Installed: 8/3/11 / Time Finished:
Location: Rockville, MD	Depth to Water:
Site Geologist: Steven Wicker	Drilling Method: HSA



Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

C 1 6256 — SEQUENCE NO. (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 574458

ST/CO USE ONLY — DATE Received MM DD YY (8–13)

DATE WELL COMPLETED MM 8 DD 7 YY 11 (15–20)

Depth of Well 22 40 26 (TO NEAREST FOOT) — MW2

PERMIT NO. FROM "PERMIT TO DRILL WELL" 10 - 10 - 017 (28 29 30 31 32 33 34 35 36 37)

OWNER Gude Landfill (last name / first name)

STREET OR RFD 600 East Gude Dr. TOWN Rockville

SUBDIVISION _____ SECTION _____ LOT _____

WELL LOG
MW2 Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Asphalt & Fill	0	2	
Brown f. Hd f sand	2	40	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO. M D 063

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO. 36 D 066

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] (44) no [N] (44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] (45 46) BENTONITE CLAY [BC] (45 46)

NO. OF BAGS 2 NO. OF POUNDS 200

GALLONS OF WATER 14

DEPTH OF GROUT SEAL (to nearest foot) from 0 (48 TOP 52) ft. to 25 (54 BOTTOM 58) ft. (enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL (60 61)	2" (63 64)	30 (66–70)

OTHER CASING (if used) — EACH CASING

diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below

[ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

C 2 (1 2)

DEPTH (nearest ft.) — EACH SCREEN

1	PL (8 9)	30 (11–15)	40 (17–21)
2	(23 24)	(26–30)	(32–36)
3	(38 39)	(41–45)	(47–51)

SLOT SIZE 1 0 2 1 3 0

DIAMETER OF SCREEN 2" (56–60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 — from 27 to 40 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (E.R.O.S.) W Q

70 TELESCOPE CASING — 72 LOG INDICATOR — 74 75 76 OTHER DATA

C 3 (1 2)

PUMPING TEST
HOURS PUMPED (nearest hour) ____ (8 9)

PUMPING RATE (gal. per min.) ____ (11–15)

METHOD USED TO MEASURE PUMPING RATE ____

WATER LEVEL (distance from land surface)

BEFORE PUMPING ____ (17–20) ft.

WHEN PUMPING ____ (22–25) ft.

TYPE OF PUMP USED (for test)

[A] air (27) [P] piston (27) [T] turbine (27) [C] centrifugal (27) [R] rotary (27) [O] other (describe below) (27) [J] jet (27) [S] submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. ____ (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) ____ (31–35)

PUMP HORSE POWER ____ (37–41)

PUMP COLUMN LENGTH (nearest ft.) ____ (43–47)

CASING HEIGHT (circle appropriate box and enter casing height) [+] above (49) [–] below (49) LAND SURFACE -5 (50 51) (nearest foot)

LOCATION OF WELL ON LOT

N

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)

Endwall Pedestal

DRILLER

DENV-CR00

C 1 6255

SEQUENCE NO. (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY (8–13)

DATE WELL COMPLETED MM 8 DD 2 YY 11 (15–20)

Depth of Well 22 98 26 (TO NEAREST FOOT) MW3

PERMIT NO. FROM "PERMIT TO DRILL WELL" MO-10-0149 (28–37)

OWNER Gude Land Fill (last name / first name)

STREET OR RFD 600 east Gude Rd TOWN Rockville

SUBDIVISION ____ SECTION ____ LOT ____

WELL LOG

MW3 Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Asphalt Fill	0	2	
Brown silty F sand	2'	40'	
whethered rock	40'	70'	
Rock	70'	100'	
T.D. 100'			

NUMBER OF UNSUCCESSFUL WELLS: 4

WELL HYDROFRACTURED yes Y no N

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO. M GD 063

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO. 56 D 066

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD

WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y (44) no N (44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT CM (45 46) BENTONITE CLAY BC

NO. OF BAGS 8 NO. OF POUNDS 800

GALLONS OF WATER 56

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48 TOP 52) ft. to 82 (54 BOTTOM 58) ft.

(enter 0 if from surface)

CASING RECORD

casing types insert appropriate code below

ST STEEL, CO CONCRETE, PL PLASTIC, OT OTHER

MAIN CASING TYPE PL (60 61) Nominal diameter top (main) casing (nearest inch)! 2" (63 64) Total depth of main casing (nearest foot) 88' (66–70)

OTHER CASING (if used) — EACH CASING

diameter inch	depth (feet) from	to

SCREEN RECORD

screen type or open hole — insert appropriate code below

ST STEEL, BR BRASS BRONZE, HO OPEN HOLE, PL PLASTIC, OT OTHER

C 2

DEPTH (nearest ft.)

EACH SCREEN			
1	PL (8 9)	88 (11–15)	98 (17–21)
2	(23 24)	(26–30)	(32–36)
3	(38 39)	(41–45)	(47–51)

SLOT SIZE 1 0 2 1 3 0

DIAMETER OF SCREEN 2" (56 60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 — from 85 to 98 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (E.R.O.S.) W Q

70 TELESCOPE CASING — 72 LOG INDICATOR — 74 75 76 OTHER DATA

C 3

PUMPING TEST

HOURS PUMPED (nearest hour) (8 9)

PUMPING RATE (gal. per min.) (11–15)

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING (17–20) ft.

WHEN PUMPING (22–25) ft.

TYPE OF PUMP USED (for test)

A air (27), P piston (27), T turbine (27), C centrifugal (27), R rotary (27), O other (describe below) (27), J jet (27), S submersible (27)

PUMP INSTALLED

DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31–35)

PUMP HORSE POWER (37–41)

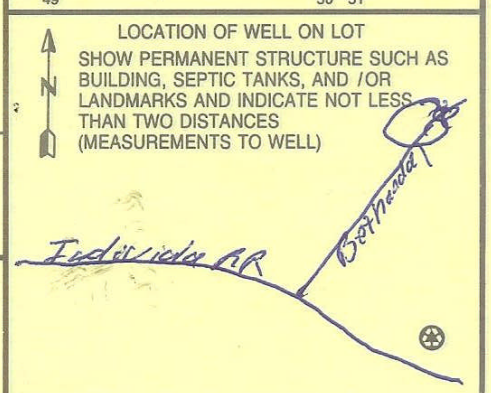
PUMP COLUMN LENGTH (nearest ft.) (43–47)

CASING HEIGHT (circle appropriate box and enter casing height)

+ above (49) / − below (49) — LAND SURFACE -5 (50 51) (nearest foot)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00

ORIGINAL

C 1 6258 — SEQUENCE NO. (MDE USE ONLY)

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 574458

ST/CO USE ONLY DATE Received MM DD YY (8–13)

DATE WELL COMPLETED MM 8 DD 3 YY 11 (15–20)

Depth of Well 22 40 26 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" MO-10-0150 (28–37)

OWNER Gude Land Fill (last name, first name)

STREET OR RFD 600 East Gude Rd. TOWN Rockville

SUBDIVISION ____ SECTION ____ LOT ____

WELL LOG
Mwl — Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Asphalt Fill	0	2	
Brown silt & sand	2'	40'	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO. MGD063

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO. 5GD066

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] (44) no [N] (44)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] (45 46) BENTONITE CLAY [BC] (45 46)

NO. OF BAGS 2 NO. OF POUNDS 200

GALLONS OF WATER 14

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (48 TOP 52) ft. to 35 (54 BOTTOM 58) ft.

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE PL (60 61) Nominal diameter top (main) casing (nearest inch)! 2" (63 64) Total depth of main casing (nearest foot) 30 (66 70)

OTHER CASING (if used) — EACH CASING

diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below

[ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

C 2 (1 2) DEPTH (nearest ft.) — EACH SCREEN

1	PL (8 9)	30 (11–15)	40 (17–21)
2	(23 24)	(26–30)	(32–36)
3	(38 39)	(41–45)	(47–51)

SLOT SIZE 1 0 2 1 3 0

DIAMETER OF SCREEN 2" (56 60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 — from 27 to 40 (68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (70) (E.R.O.S.) (72) W Q (74 75 76)

TELESCOPE CASING — LOG INDICATOR — OTHER DATA

C 3 (1 2)

PUMPING TEST
HOURS PUMPED (nearest hour) (8 9)

PUMPING RATE (gal. per min.) (11–15)

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING (17–20) ft.

WHEN PUMPING (22–25) ft.

TYPE OF PUMP USED (for test)

[A] air (27) [P] piston (27) [T] turbine (27)

[C] centrifugal (27) [R] rotary (27) [O] other (describe below) (27)

[J] jet (27) [S] submersible (27)

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31–35)

PUMP HORSE POWER (37–41)

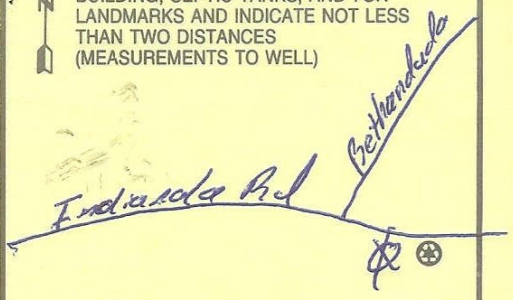
PUMP COLUMN LENGTH (nearest ft.) (43–47)

CASING HEIGHT (circle appropriate box and enter casing height)

[+] above (49) [−] below (49) — LAND SURFACE -5 (50 51) (nearest foot)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00

ORIGINAL

EA Engineering, Science, and Technology, Inc.

FIELD RECORD OF WELL DEVELOPMENT

Start 1140
STOP

Well Designation	MW-14A	Project Name	Linde
Condition	Flush	Project Location	Rockville
Well Grout Date	8/1/2011	Developer Initials	SGW
Well Installation Date	8/1/2011	Well Development Date	8/4/2011
Gauge Date	8/4/2011	Gauge Time	1135
Sounding Method	water level indicator	Measurement Ref.	Top of PVC
Stick up/down (ft)	Flush	Well Diameter	2 ~~4~~ in.
Static Water Level		Screen Length	20'
Development Time			
Surge Device	Whale pump		
Weather	clear, 80s		

Well Volume Determination:

A. Well Depth 38.65
B. Depth to Water 19.99
C. Liquid Depth (A-B) (ft) 18.66
D. Well Volume/ft 3.04
E. Liquid screen length (ft) _____

	Beginning	1	2	3	4	5
Surge Time (min)	0	5*	5*	0	0	0
Pump Rate (gpm)	5	→	→	→	→	→
Volume purged	~3.0	~3.0	~3.0	~3.0	~6.0	~6.0
Turbidity (NTU)	921.2	2645.7	2662.7	2637.1	2640.1	2045.7
Temp °C	18.21	16.01	15.88	15.82	15.83	16.04
cond. (us/cm)	823	933	605	513	464	420
ORP	169.3	189.2	177.3	170.4	169.8	175.6
DO (mg/L)	39.89	42.04	34.92	36.94	35.70	33.18

Total volume of water removed (gal): _____
Estimated Recharge Rate: _____
Depth to sediment before development: _____ Depth to sediment after development: _____

Total Surging Time: _____

Development Description: * Surge block not available, over pump + surge with whale pump, Well is very turbid, visibly clearing after 6 WVs

EA Engineering, Science, and Technology, Inc.

FIELD RECORD OF WELL DEVELOPMENT

Well Designation	MW-14A	Project Name	Gude
Condition	Flush	Project Location	Rockville
Well Grout Date	8/1/11	Developer Initials	SGW
Well Installation Date	8/1/11	Well Development Date	
Gauge Date	8/4/11	Gauge Time	
Sounding Method	water level indicator	Measurement Ref.	Top of PVC
Stick up/down (ft)	Flush	Well Diameter	2 in.
Static Water Level		Screen Length	
Development Time			
Surge Device	Whale pump		
Weather	Clear, 80s		

Well Volume Determination:

A. Well Depth _____
B. Depth to Water _____
C. Liquid Depth (A-B) (ft) _____
D. Well Volume/ft _____
E. Liquid screen length (ft) _____

	Beginning	1	2	3	4	5
Surge Time (min)	0	—	—	—	—	—
Pump Rate (gpm)	5 gpm →					
Volume purged	~6.0	~6.0	~6.0	~6.0	~6.0	~6.0
Turbidity (NTU)	1409.1	1212.3	485.2	151.1	75.1	100.3
Temp °C	16.01	16.12	16.03	16.13	16.25	16.20
Cond (us/cm)	404	398	353	375	396	327
ORP	183.8	189.7	205.4	205.7	215.0	211.8
DO (mg/L)	31.86	30.14	27.02	29.12	20.90	20.13

Total volume of water removed (gal): _____
Estimated Recharge Rate: _____
Depth to sediment before development: 38.65 Depth to sediment after development: 39.10

Total Surging Time: _____

Development Description: Well went dry after ~12WVs, allow well to recharge for ~5 minutes (1220), well went dry after 16 WVs, allow well to recharge for 10 minutes (1235) Turbidity stable around 100 NTU (does not appear to be dropping), stop development after 20 WVs

EA Engineering, Science, and Technology, Inc.

FIELD RECORD OF WELL DEVELOPMENT

Start 1330
Stop 1415

Well Designation	MW-14B	Project Name	Goode
Condition	Flush	Project Location	Rockville
Well Grout Date	8/3/11	Developer Initials	SAW
Well Installation Date	8/3/11	Well Development Date	8/4/11
Gauge Date	8/4/11	Gauge Time	1320
Sounding Method	water level indicator	Measurement Ref.	Top of PVC
Stick up/down (ft)	Flush	Well Diameter	2 in.
Static Water Level	21.60	Screen Length	20
Development Time	45 mins		
Surge Device	Whale pump		
Weather	Clear, 80s		

Well Volume Determination:

A. Well Depth 98.00
B. Depth to Water 21.60
C. Liquid Depth (A-B) (ft) 76.40
D. Well Volume/ft 12.45
E. Liquid screen length (ft) _____

	Beginning	1	2	3	4	5	6
Surge Time (min)	0	5*	5*	0	0	0	0
Pump Rate (gpm)	5 gpm	5					5
Volume purged	~12.50	~12.50	~12.50	~12.50	~12.50	~12.50	
Turbidity (NTU)	550.2	330.3	72.0	51.3	26.3	25.4	25.7
Temp °C	15.98	15.09	14.89	14.94	15.00	15.44	15.26
Cond (µs/cm)	97	92	89	89	89	92	91
ORP	201.0	200.0	200.3	201.2	200.9	204.9	203.7
DO (mg/L)	12.32	12.73	12.71	12.44	12.58	12.21	12.38

Total volume of water removed (gal): _____
Estimated Recharge Rate: > 4.0 gpm
Depth to sediment before development: 98.00 Depth to sediment after development: 98.00

Total Surging Time: 10 min

Development Description: * No surge block available, over pump + surge with whale pump, very clear after 3 WVs, reading have stabilized after 7 WVs, turbidity steady around 25 NTU, stop development after 7 WVs

EA Engineering, Science, and Technology, Inc.

FIELD RECORD OF WELL DEVELOPMENT

Start 0950
STOP 1050

Well Designation	MW-15	Project Name	Cavle
Condition	Flush	Project Location	Rockville
Well Grout Date	8/3/11	Developer Initials	SGW
Well Installation Date	8/3/11	Well Development Date	8/4/11
Gauge Date	8/4/11	Gauge Time	0950
Sounding Method	water level indicator	Measurement Ref.	Top of PVC
Stick up/down (ft)	Flush	Well Diameter	2 4 in.
Static Water Level	15.05	Screen Length	20'
Development Time			
Surge Device	Pump		
Weather	Clear, 80's		

15.05

39.40

Well Volume Determination:

A. Well Depth 39.40
B. Depth to Water 15.05
C. Liquid Depth (A-B) (ft) 24.35
D. Well Volume/ft 3.96
E. Liquid screen length (ft) ✓

	Beginning	1	2	3	4	5
Surge Time (min)	0	0	5*	5*	0	
Pump Rate (gpm)	5 gpm	→	→	→	→	→
Volume purged	~3.96	~3.96	~3.96	~3.96	~3.96	~3.96
Turbidity (NTU)	2691.7	2675.3	2659.7	2665.4	2634.5	2013.3
Cond. (us/cm)	268	181	148	149	136	132
Temp. °C	17.87	17.29°	16.64	16.87	16.40	16.28
ORP	140.3	78.1	63.1	60.1	67.0	73.9
DO (mg/L)	27.08	26.63	25.13	25.60	25.49	25.00

Total volume of water removed (gal): _____
Estimated Recharge Rate: _____
Depth to sediment before development: _____ Depth to sediment after development: _____

Total Surging Time: _____

Development Description: *Surge block not available, will over pump and surge with pump, no sediment on water level indicator

0950

EA Engineering, Science, and Technology, Inc.

FIELD RECORD OF WELL DEVELOPMENT

Well Designation	MW-15	Project Name	Gude
Condition	Flush	Project Location	Rockville
Well Grout Date	8/3/11	Developer Initials	SGW
Well Installation Date	8/3/11	Well Development Date	8/4/11
Gauge Date	8/4/11	Gauge Time	0950
Sounding Method	water level indicator	Measurement Ref.	Top of PVC
Stick up/down (ft)	Flush	Well Diameter	2~~4~~ in.
Static Water Level	15.05	Screen Length	20
Development Time			
Surge Device	Pump		
Weather	Clear, 80s		

Well Volume Determination:

A. Well Depth _____
B. Depth to Water _____
C. Liquid Depth (A-B) (ft) _____
D. Well Volume/ft _____
E. Liquid screen length (ft) _____

	Beginning	1	2	3	4	5
Surge Time (min)	0	0	0	0	0	
Pump Rate (gpm)	5 gpm	5 gpm	5 gpm	5 gpm	5 gpm	5 gpm
Volume purged	~3.96	~10	~4.0	~4.0	~4.0	~4.0
Turbidity (NTU)	1880.2	457.2	127.9	145.4	120.2	137.7
Cond. (µs/cm)	129	107	106	107	112	109
Temp °C	16.29	16.16	16.28	16.35	16.81	16.72
ORP	77.3	85.9	92.9	124.7	113.4	112.8
DO (mg/L	26.65	24.14	23.90	26.61	25.43	26.97

Total volume of water removed (gal): ~54
Estimated Recharge Rate: >4.0 gpm
Depth to sediment before development: 39.40 Depth to sediment after development: 39.40

Total Surging Time: 10 min

Development Description: Clear to the unaided eye at 10 WVs, Well is very clear at 11 WVs, Turbidity appears to be steady around 140-120 NTUs (silty aquifer), all other readings have stabilized, Stop development after approx. 1 hr. of purging