

WATER WELL RECORD

Form WWC-5

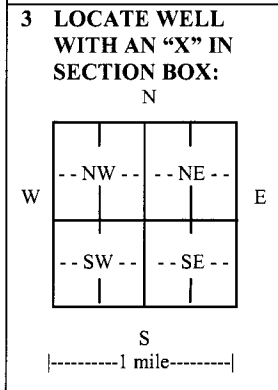
Division of Water Resources App. No.

1 LOCATION OF WATER WELL: County: <u>Ottawa</u>	Fraction $\frac{1}{4}$ $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$	Section Number <u>16</u>	Township No. T <u>11</u> S	Range Number R <u>2</u> <input type="checkbox"/> E <input checked="" type="checkbox"/> W
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Street/Rural Address of Well Location; if unknown, distance & direction from nearest town or intersection: If at owner's address, check here .
Former Atlas Missile site S-1 located at intersection of Justice Rd. and N. 210th Rd.

Global Positioning System (GPS) information:
Latitude: 279032.2' (Northing)..... (in decimal degrees)
Longitude: 1441867.5' (Easting)..... (in decimal degrees)
Elevation: 1397.5'
Datum: WGS 84, NAD 83, NAD 27
Collection Method:
 GPS unit (Make/Model:)
 Digital Map/Photo, Topographic Map, Land Survey
Est. Accuracy: <3 m, 3-5 m, 5-15 m, >15 m

2 WATER WELL OWNER: Army Corps of Engineers
RR#, Street Address, Box #: 601 E. 12th St.
City, State, ZIP Code : Kansas City, MO 64106



4 DEPTH OF COMPLETED WELL 90.5..... ft.
Depth(s) Groundwater Encountered (1)..... ft. (2)..... ft. (3)..... ft.
WELL'S STATIC WATER LEVEL 77.42..... ft. below land surface measured on mo/day/yr. 9/19/2011.....
Pump test data: Well water was.....ft. after..... hours pumping..... gpm
EST. YIELD.....gpm. Well water was.....ft. after..... hours pumping..... gpm
Bore Hole Diameter 8.....in. to 19.8.....ft., and 6.....in. to 90.5.....ft.
WELL WATER TO BE USED AS: Public water supply Geothermal Injection well
 Domestic Feedlot Oil field water supply Dewatering Other (Specify below)
 Irrigation Industrial Domestic-lawn & garden Monitoring well MW-02
Was a chemical/bacteriological sample submitted to Department? Yes No
If yes, mo/day/yr sample was submitted.....
Water well disinfected? Yes No

5 TYPE OF CASING USED: Steel PVC Other
CASING JOINTS: Glued Clamped Welded Threaded
Casing diameter 2..... in. to 70..... ft., Diameter in. to ft., Diameter in. to ft.
Casing height above land surface 3..... in., Weightlbs./ft., Wall thickness or gauge No.
TYPE OF SCREEN OR PERFORATION MATERIAL:
 Steel Stainless Steel PVC Other (Specify)
 Brass Galvanized Steel None used (open hole)
SCREEN OR PERFORATION OPENINGS ARE:
 Continuous slot Mill slot Gauze wrapped Torch cut Drilled holes None (open hole)
 Louvered shutter Key punched Wire wrapped Saw cut Other (specify)
SCREEN-PERFORATED INTERVALS: From 90..... ft. to 70..... ft., From ft. to ft.
From..... ft. to ft., From ft. to ft.
GRAVEL PACK INTERVALS: From 90.5..... ft. to 66.7..... ft., From ft. to ft.
From..... ft. to ft., From ft. to ft.

6 GROUT MATERIAL: Neat cement Cement grout Bentonite Other
Grout Intervals: From 61.5..... ft. to 1.0..... ft., From ft. to ft., From ft. to ft.
What is the nearest source of possible contamination:
 Septic tank Lateral lines Pit privy Livestock pens Insecticide storage Other (specify below)
 Sewer lines Cesspool Sewage lagoon Fuel storage Abandoned water well
 Watertight sewer lines Seepage pit Feedyard Fertilizer storage Oil well/gas well missile complex
Direction from well Distance from well

FROM	TO	LITHOLOGIC LOG	FROM	TO	LITHO. LOG (cont.) or PLUGGING INTERVALS
0	13.5	clay/silt overburden			
13.5	20	interbedded shale/sandstone			
20	90.5	sandstone w/ occasional claystone			

7 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION: This water well was constructed, reconstructed, or plugged under my jurisdiction and was completed on (mo/day/year) 07/25/2011..... and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. This Water Well Record was completed on (mo/day/year) 12/09/2011..... under the business name of US Army COE..... by (signature) *[Signature]*

INSTRUCTIONS: Use typewriter or ball point pen. PLEASE PRESS FIRMLY and PRINT clearly. Please fill in blanks and check the correct answers. Send three copies (white, blue, pink) to Kansas Department of Health and Environment, Bureau of Water, Geology Section, 1000 SW Jackson St., Suite 420, Topeka, Kansas 66612-1367. Telephone 785-296-5524. Send one copy to WATER WELL OWNER and retain one for your records. Include fee of \$5.00 for each constructed well. Visit us at <http://www.kdheks.gov/waterwell/index.html>.

MONITORING WELL INSTALLATION FORM

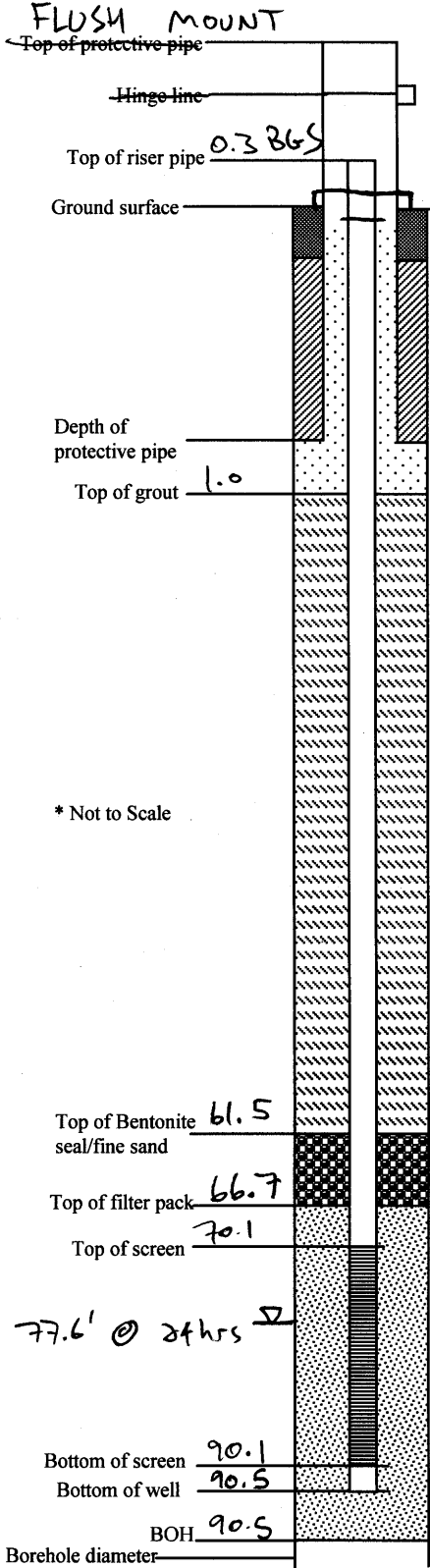
completed as MW-02
per USCOE, KGS-DLS

Project Schilling S-1
Boring Number MW-02A

Well Number MW-02A
Date Installed 7/25/11

Type of riser pipe & diameter Sch 40 2" PVC

Type of screen & slot size PVC 20 slot



Measurements:

Length of riser pipe 90.2

Length of screen 20.0

Length of end blank 0.4

Total length of well installation 90.2

Bottom depth of borehole 90.5

Length of riser pipe stickup above ground surface 0.3' BGS

Centralizers:

Total number of centralizers 2

Depth(s) of centralizer(s) BGS 70', 50'

Protective Pipe:

Date set FLUSH MOUNT SURFACE COMPLETION

Size and type of protective pipe _____

Number of weep holes drilled in protective pipe _____

Well Pad:

Dimensions of well pad 3' x 3'

Number and size of protective posts around well 0

Filter Pack:

Type and grain size of filter pack material 20/40 silica sand

Grout Mix (es):

Type of grout mix and locations used in the well installation

1:1 portland grout with 5% Bentonite

Amount and type of grout materials used for each mix

Other:

Portland:

Bentonite (specify type):

Water:

1. Material used to fill annular space between borehole and protective pipe Grout

2. Material used to fill void between protective pipe and well riser pipe Cement

HTW DRILLING LOG

completed as MW-02 per
USCOE, 2024-04 KGS-DLS

HOLE NO.
MW-02A

1. COMPANY NAME USACE		2. DRILLING SUBCONTRACTOR USCOE, 2024-04 KGS-DLS			SHEET 1 OF 11 SHEETS	
3. PROJECT Schilling S1			4. LOCATION			
5. NAME OF DRILLER D Morgans			6. MANUFACTURER'S DESIGNATION OF DRILL Ditch D50 TM			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 3 1/2" ID HSA 3 1/4" ID IBS 4" Core Barrel		8. HOLE LOCATION 279032.169 N. 9441867496 E		9. SURFACE ELEVATION 1397.541		
		10. DATE STARTED 7/20/11		11. DATE COMPLETED 7/27/11		
		12. OVERBURDEN THICKNESS 13.5		15. DEPTH GROUNDWATER ENCOUNTERED		
		13. DEPTH DRILLED INTO ROCK 77		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED		
14. TOTAL DEPTH OF HOLE 90.5		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) 24 hrs after MW-02 installed 77.6' PWS				
18. GEOTECHNICAL SAMPLES		DISTURBED NA	UNDISTURBED NA	19. TOTAL NUMBER OF CORE BOXES 7		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC ✓	METALS NA	OTHER (SPECIFY) NA	OTHER (SPECIFY) NA	OTHER (SPECIFY) NA
21. TOTAL CORE RECOVERY 63%		22. DISPOSITION OF HOLE		23. SIGNATURE OF INSPECTOR Isaac Thomas		
		BACKFILLED NA	MONITORING WELL ✓	OTHER (SPECIFY) NA		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	0	LEAN CLAY BROWN TO REDDISH BROWN VERY STIFF DRY Silty Nodules	Measured with PID 0.0ppm	NA	Sampled with Terodor NA	NA	Drive 1 3 1/2" ID Follow Stem Also (HSA) 3 1/4" ID inner Barrel Sampler (IBS) D-FA R-36
	1						
	2						
	3						
	4	4.5'			fis		4.4
	5	FAT CLAY GREY MOIST STIFF	0.0ppm		MW-02-SB-01 MW-02-SB-01A MW-02-SB-01MSD		Drive 2 3 1/2" ID HSA 3 1/4" ID IBS

HTW DRILLING LOG

HOLE NO.
MW-02A

PROJECT Schilling S-1

INSPECTOR *[Signature]*

SHEET 2
OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	5	Same as above FAT CLAY GREY MOIST STIFF	0.0 ppm	NA	MW-02- SB-01 MW-02- SB-01MS MW-02- SB-01MSD	NA	Drive 2 Cont'd D-4.3 D-4.3
	6				L-5		
	7	LEAN CLAY LIGHT BROWN TO BROWN DRY STIFF	0.0 ppm				
	8				NA		
	8.4						
	9	SILT TAN DRY MEDIUM DENSE	0.0 ppm				8.7 Drive 3 3 1/4" ID USA 3 1/4" ID IBS D-5.0 D-1.3
	10						
	11		0.0 ppm				
	12						
	13						
	13.5						
	14	SEE NEXT PAGE FOR DESCRIPTION	0.0 ppm				(3.7) Drive 4

HTW DRILLING LOG

HOLE NO. MW-024

PROJECT Schilling S-1

INSPECTOR *[Signature]*

SHEET 3 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	14	INTERBEDDED SHALEY SANDSTONE					Drive 4 cont'd
	15	SH- GREY. SOFT THEN TO MEDIUM BEDDED FINE GRAINED <small>Slidensided</small> SS - TAN TO WHITE SOFT THEN TO MEDIUM BEDDED FINE GRAINED Poorly cemented	0.0ppm	NA	NA	NA	3 3/4" ID HSA 3 1/4" ID IBS D-2.5 R-1.5
SS	16						16.2
	17		0.0ppm				Drive 5 3 3/4" ID HSA 3 1/4" ID IBS D-3.0 R-3.0
SH	18		0.0ppm				17.2 MW-02-SB-02 17.8
SS	19		0.0ppm				19.2
SH	20		0.0ppm				NA
SS	21		0.0ppm				17.8
Loss = 0.3'	20			Box 1			Drive 6 3 3/4" ID HSA 3 1/4" ID IBS D-0.5 R-0.5
	21	SANDSTONE REDDISH ORANGE FINE GRAINED THEN BEDDED SOFT Ironstone partings					19.5 Clean out 5 1/2" to core Roller bit Set 19.8' & 6" casing 19.8'
Loss = 3.7'	22						PULL 1 4" core Barrel Start 1533 Stop 1533 Run 1.5 Rev 0.1 PRD 0 CD 20.5 LWD 0 Loss 1.1 2.3 VL = 0.3
	23						PULL 2

HTW DRILLING LOG

HOLE NO. MW-02A

PROJECT Schilling S-1

INSPECTOR *[Signature]*

SHEET 4 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	23			Box 1	NA	NA	PULL 2
Loss = 5.7'	24		NA				cont'd 4" Core Barrel Start 1553 Stop 1605 Run 6.7 Rec'd - DAD @ CD 262 LDW @ loss 6.7 UL = 5.7
	25						
	26						
Loss = 1.5'	27						CD End 7/21/11
	27.7						
	28	SANDSTONE ORANGISH BROWN SOFT FINE GRAINED THIN BEDDED Moderately Cemented Ironstone partings	0.0 ppm		27.8 MW-02-SD-02 27.7		28.0
	29				NA		PULL 3 4" Core Barrel Start 0728 Stop 0748 Run 3.2 Rec'd 2.8 DAD 10% CD 3.5 LDW @ loss 0 UL = 1.5 Begin 7/21/11
	30						
	31						
Loss = 0.2'	32		0.0 ppm				3/8 PULL 4 0746

HTW DRILLING LOG

HOLE NO. MW-02A

PROJECT Schilling S-1

INSPECTOR *[Signature]*

SHEET 5 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
Loss 0.07	32	Same As Above			NA	NA	PULL 4
		SANDSTONE		Box 1			Cont'd
	33	ORANGISH BROWN	0.0 ppm				4" Con Barrel
		SOFT					Start 0.7 to Stop 0.00
		THEN TO THICK BEDDED					Run 10.0 Rev 9.3
		FINE GRAINED					RQD 59% CO 4.4
		Moderately Cemented					LOW loss 0.7
		Ironstone partings					UL 0.7
	34			34.2			
				Box 2			
	35		0.0 ppm		35.4		
					MW-02-SB-04		
					35.6		
	36						
	37						
	38		0.0 ppm				
	39						
	40						
	41						

HTW DRILLING LOG

HOLE NO. MW-02A

PROJECT Schilling S-1

INSPECTOR *[Signature]*

SHEET 6 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	41	Same As Above	0.0 ppm	Box 2 41.4			PULL & CONT'D LD
LOSS = 2.3'	42	SANDSTONE SOFT ORANGISH BROWN THEN TO THICK BEDDED FINE GRAINED Moderately cemented filled		Box 3	NA		41.8 PULL S 4" Core Barrel Start 08:47 Stop 09:02 Run 10.0 Read 7.4 DSD 57% CO 51 LOW loss 2.6 UL = 2.3
	43					NA	
	44		0.0 ppm				
	45						
SH	46	SANDY SHALE BED GREY SOFT	0.0 ppm		46.0 MU-02-S2-05 46.3 NA		
	47						
	48		0.0 ppm				
	49						
	50						

HTW DRILLING LOG

HOLE NO. MW-02A

PROJECT Schillings S-1

INSPECTOR *[Signature]*

SHEET 7 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	50	Same As Above SANDSTONE ORANGISH BROWN SOFT FINE GRAINED THEN TO THICK BEDDED Moderately cemented Pitted	0.0ppm	Box 3	NA	NA	PULL 5 CONT'D Run 10 Rec'd 7.4 CO 51.0 UL=2.3 <D
	51			Box 4			51.8
	52						PULL 6 4" Core Barrel Start 9.7 Stop 09.9 Run 9.7 Rec'd 8.4 RQD 75% C761.3 LOW LOSS 1.3 UL=2.0
	53						
	54						
	55						
	56						
	57						
	58						
	59						

Loss = 2.0'

HTW DRILLING LOG

HOLE NO. **MW-02A**

PROJECT **Schilling S-1**

INSPECTOR *[Signature]*

SHEET **2**
OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	59	Same as above SANDSTONE ORANGISH BROWN SOFT	0.0ppm	Box 4	NA	NA	PULL 6 Cut'd Run - 9.7 Rec'd - 8.4 UL - 2.0 CD - 1.3
	60	THIN TO THICK BEDDED FINE GRAINED Moderately cemented P.H.C. Occ shale beds	0.0ppm	60.4	NA		
	61	SANDY SHALE BED THIN BED GREY SOFT		Box 5			
	62						PULL 7 4" Core Barrel Start 10.0 Stop 10.57 Run 10.0 Rec'd 8.4 Rec'd 65% CD 71 LOW 10SS 1.6 UL = 1.5
	63	SANDSTONE TAN SOFT THIN TO MEDIUM BEDDED FINE GRAINED Weakly cemented	0.0ppm				
	64						
	65						
	66						
	67				67.5		
	68		0.0ppm		MW-02-SB-09 67.7		

Fract'd
Loss = 1.5

62.8

.7
.5
.6
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HTW DRILLING LOG

HOLE NO. MW-02A

PROJECT Schilling S1

INSPECTOR *[Signature]*

SHEET 9 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	68	Same as Above SANDSTONE TAN SOFT THIN TO MEDIUM BEDDED FINE GRAINED Weakly Cemented	0.0ppm	Box 5	NA	NA	PULL 7
	69			19.1			Start 1007 Stop 1022
	70			Box 6			Run 10.0 Rec'd 8.4
	71						R20 65% CO 71
	72						LOW loss 1.6
	73						UL 1.5
	74						End 7/21/11
	75						CD
	76						71.5
	77						PULL 8
	78						4' Core Barrel
	79						Start 1243 Stop 1258
	80						Run 5.2 Rec'd 2.9
	81						R20 55% CO 70.0
	82						LOW 2.5pm loss 2.3
	83						UL = 2.1
	84						Begin 7/28/11
	85						S 8" / 12" BOS / 1m
	86						CD
	87						76.7
	88						PULL 9
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	198						
	199						
	200						

LOSS = 2.1

LOSS = 2.3

76.0

SANDSTONE
SOFT
TAN
FINE GRAINED
Weakly Cemented

HTW DRILLING LOG

HOLE NO. MW-02A

PROJECT Schilling S-1

INSPECTOR *[Signature]*

SHEET 10 OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h			
Loss = 5.8'	77	Same As Above SANDSTONE SOFT TAN FINE GRAINED Dusky cementar		Box 6	NA	NA	PULL 9 Cor'd 4' Core Barrel Start 1355 Stop 1402 Run S.O. Rec'd O R.O. O CD 20 LDW 2.5 spm loss UL: 2.5			
Loss = 1.8'	79									Logged by cuttings CD
Loss = 5.7'	81									21.7 PULL 10 4' Core Barrel Start 1430 Stop 1485 Run f.s. Rec'd O R.O. O CD 20 LDW 2.5 spm loss f.s UL: 1.8 Logged by cuttings
Highly Fract'd	86		0.0ppm							

HTW DRILLING LOG

HOLE NO. MW-024

PROJECT Schilling S-1

INSPECTOR *[Signature]*

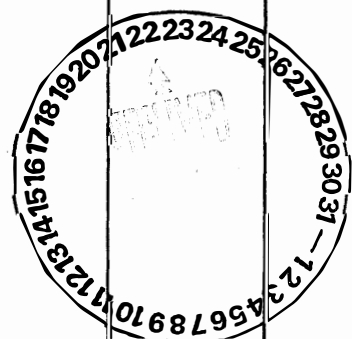
SHEET 11 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
86		Same As Above		Box 6			PULL 10' Core
		SANDSTONE					PULL 11
		SOFT					4" Core Barrel
	87	TAN			NA	NA	Start 1500 Sep 1/88
		FINE GRAINED					Run 5.8 Rec'd 4.8
		THEN BEDDED					200 ft. L2 90.5
		Partly Cemented	0.0ppm	37.9			LDW X spm 1055 1.0
	88			Box 7			
	89	.4					
		.4					
		.4					
		.4					
	90	.4					
		90.5 BOT	90.5	90.5	90.5	90.5	CP
	91	No Return!					
	92						92.0
	93						Installed MW-03
	94						
	95						

HTW DRILLING LOG

1. COMPANY NAME <i>USACE</i>		2. DRILLING SUBCONTRACTOR <i>USACE</i>		HOLE NO. <i>MW-02</i>			
3. PROJECT <i>Schilling S-1</i>			4. LOCATION				
5. NAME OF DRILLER <i>D. Morganis</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geotech D90 TM</i>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <i>3 3/4" ID HSA</i> <i>3 1/4" ID IBS</i>		8. HOLE LOCATION		9. SURFACE ELEVATION			
		10. DATE STARTED <i>7/20/11</i>		11. DATE COMPLETED <i>7/20/11</i>			
		12. OVERBURDEN THICKNESS <i>10.0</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>Not Encountered</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
		13. DEPTH DRILLED INTO ROCK <i>—</i>		14. TOTAL DEPTH OF HOLE <i>10.0</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
18. GEOTECHNICAL SAMPLES		DISTURBED <i>NA</i>	UNDISTURBED <i>NA</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC <i>X</i>	METALS <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	OTHER (SPECIFY) <i>NA</i>		
21. TOTAL CORE RECOVERY <i>0</i> %		OTHER (SPECIFY) <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	OTHER (SPECIFY) <i>NA</i>		
22. DISPOSITION OF HOLE		BACKFILLED <i>X</i>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>Brandon Harmon</i>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	0	<i>LEAN CLAY BROWN STIFF DRY Rootlets</i>	<i>Measured with IED 0.0 ppm</i>	<i>NA</i>	<i>Sampled with TerraCore</i>	<i>NA</i>	<i>Drive 1</i>
	1						<i>3 3/4" ID Hollow Stem Auger (HSA)</i>
	2						<i>3 1/4" ID Finer Barrel Sampler (IBS)</i>
	3						<i>D-4-A 2-1.6</i>
	4						
	5						<i>44</i>
							<i>Drive 2 3 3/4" ID HSA 3 1/4" ID IBS</i>



(initial drill hole)

HTW DRILLING LOG

HOLE NO. MW-02

PROJECT Schilling S-1

INSPECTOR [Signature]

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	5	Same As Above					
	6	LEAN CLAY BROWN STIFF DRY	0.0ppm	NA	NA	NA	Drive 2 cont'd 3 3/4" ID USA 3 1/4" IBS D-3.1 R-2.6
	6.8						
	7	LEAN CLAY VERY STIFF GREY DRY Silty	0.0ppm				7.5
	8						Drive 3 3 3/4" ID USA 3 1/4" ID IBS D-1.9 R-1.2
	8.1						
	9	SILT TAN MEDIUM DENSE DRY	0.0ppm				9.4
	10	10.0 BOH	10.0	10.0	10.0	10.0	Drive 4 3 3/4" ID USA 3 1/4" ID IBS D-0.6 R-0.1 10.0
	11						Driller believes an old pipe was encountered but not penetrated. Stopped drilling and moved to the E re-drill
	12						
	13						
	14						

Kansas Stat Plane 1983
 Kansas North 1501

Well Development Form

Project Name: <u>Schilling S-1</u>		Project Number:		Well Number: <u>MW-02A</u>	
Project Information			Elevation of Well		
Facility Name: <u>Schilling S-1</u>			Ground Surface Elevation: <u>1397.734</u> completed as MW-02, per USACE-04/2024 KGS-DLS)		
Location: <u>N 279032.169 E 1441067.496</u>			Top of Casing Elevation (TOC): <u>1397.541</u>		
Well Information			Borehole Volume Calculation: $13.2 \times 0.0408 \times 36 = 19.4 \text{ gal}$		
Date and Time Well Seal Installed: <u>7/25/2011</u>			90.5 71.3 19.2		
Total Depth of Well: <u>90.5 feet from BGS</u>			1 borehole volume (gallons) = initial height of water column (ft) x 0.0408 x (borehole diameter (in)) ²		
Depth to Top of Screen: <u>70 feet from BGS</u>			initial height of water column = total depth (ft) - initial depth to water (ft)		
Length of Casing Screened: <u>20 feet</u>			Volume of Water Lost During Drilling and Well Installation:		
Type of Formation Screened: <u>Sandstone</u>			Well development Method description		
Surge: <u>Surged with 1" surge block</u>			Development Completion Criteria		
Bail:			Field parameter stabilized? <u>Y</u> <u>(N)</u>		
Pump: <u>Pumped with Grundfos submersible</u>			Turbidity < 50 NTU? <u>(Y)</u> <u>N</u>		
Other:			Volume of water removed during development: <u>110</u> gallons		
			Other:		

Observations During Well Development													
Date	Start time	End time	Depth to water	Total depth	Water removed		Temp (degree CF)	pH (units)	S.C. (µS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)	Remarks (Color, Odor, Particulates)
					Gallons	Total							
8/3	0850						20.13	5.93	.410		22	12.02	Light Brown
	0900						20.14	6.02	.401	>1000	21	12.52	Light Brown
	0908						21.18	6.46	.229	346	189	13.07	
	0908				18		21.17	6.60	.230	173	176	13.61	
	0920						21.21	6.7	.301		176	12.10	Surged 15 min
	0947						22.24	6.17	.300	919	157	10.72	Light Brown
	0952						22.01	6.21	.358	290	145	12.97	
	1000						18.97	6.22	.236	118	154	13.37	
	1007						18.59	6.96	.328	574	158	13.03	clear
	1011						18.50	6.9	.329	319	174	12.6	
	1015				110		18.69	6.24	.227	26.3	185	12.30	
		1017			110								

Measurements from TOC unless otherwise noted.

TABLE 1
Monitoring Well Network Construction Information

Schilling Air Force Base Atlas S-01, Project No. B07KS025902 - Correct locations provided by Samantha See, E.I.T. (USACE-KCD)

Well ID	Northing	Easting	Latitude	Longitude	Top of Casing (ft amsl)	Well Depth (ft bgs)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Diameter (inches)	Sampling Frequency
Shallow Monitoring Wells										
MW-02	279032.169	1441867.496	39.0985705727	-97.5435716983	1397.54	90.1	70.1	90.1	2	Annually
MW-03	278937.277	1441577.013	39.0983140530	-97.5445969123	1384.71	78.60	58.60	78.60	2	Annually
MW-04	279109.941	1441576.113	39.0987881310	-97.5445970239	1389.17	86.00	66.00	86.00	2	Annually
MW-05	279344.840	1441570.378	39.0994331480	-97.5446130692	1383.92	79.65	59.65	79.65	2	Annually
MW-06	279210.863	1442001.957	39.0990593324	-97.5430947409	1404.76	101.40	81.40	101.40	2	Annually
MW-07	279310.810	1442343.890	39.0993290033	-97.5418881317	1384.41	79.70	59.70	79.70	2	Annually
MW-09	278756.990	1441794.260	39.0978160555	-97.5438346336	1391.50	85.90	65.90	85.90	2	Annually
MW-10S	279105.200	1441252.830	39.0987795724	-97.5457362163	1388.86	81.20	61.20	81.20	2	Annually
MW-14S	279330.968	1440981.456	39.0994031739	-97.5466884379	1368.40	71.25	47.70	67.70	2	Annually
Deep Monitoring Wells										
MW-08	279035.52	1441848.21	39.0985800401	-97.5436395941	1396.88	126.90	106.90	126.90	2	Annually
MW-10D	279086.68	1441253.16	39.0987287194	-97.5457353809	1390.13	124.70	104.70	124.70	2	Annually
MW-11	279409.82	1441246.39	39.0996160246	-97.5457535239	1375.15	114.00	94.00	114.00	2	Annually
MW-12	278823.90	1441248.66	39.0980072936	-97.5457558816	1391.58	127.10	107.10	127.10	2	Annually
MW-13	279215.44	1440657.48	39.0990904279	-97.5478320311	1362.53	93.90	73.90	93.90	2	Annually
MW-14D	279337.39	1440978.52	39.0994208465	-97.5466986699	1368.10	106.93	83.00	103.00	2	Annually
Other Wells										
MW-01	278836.203	1441792.168	39.0980335714	-97.5438405989	1391.64	91.15	65.73	91.15	4	Annually
TH 06-10	278851.15	1442371.89	39.0980665739	-97.5417976666	1390.63	115.00	95.00	115.00	2	Annually
TH 09-10	279590.79	1440702.39	39.1001203716	-97.5476671807	1366.13	104.00	83.50	103.50	2	Annually

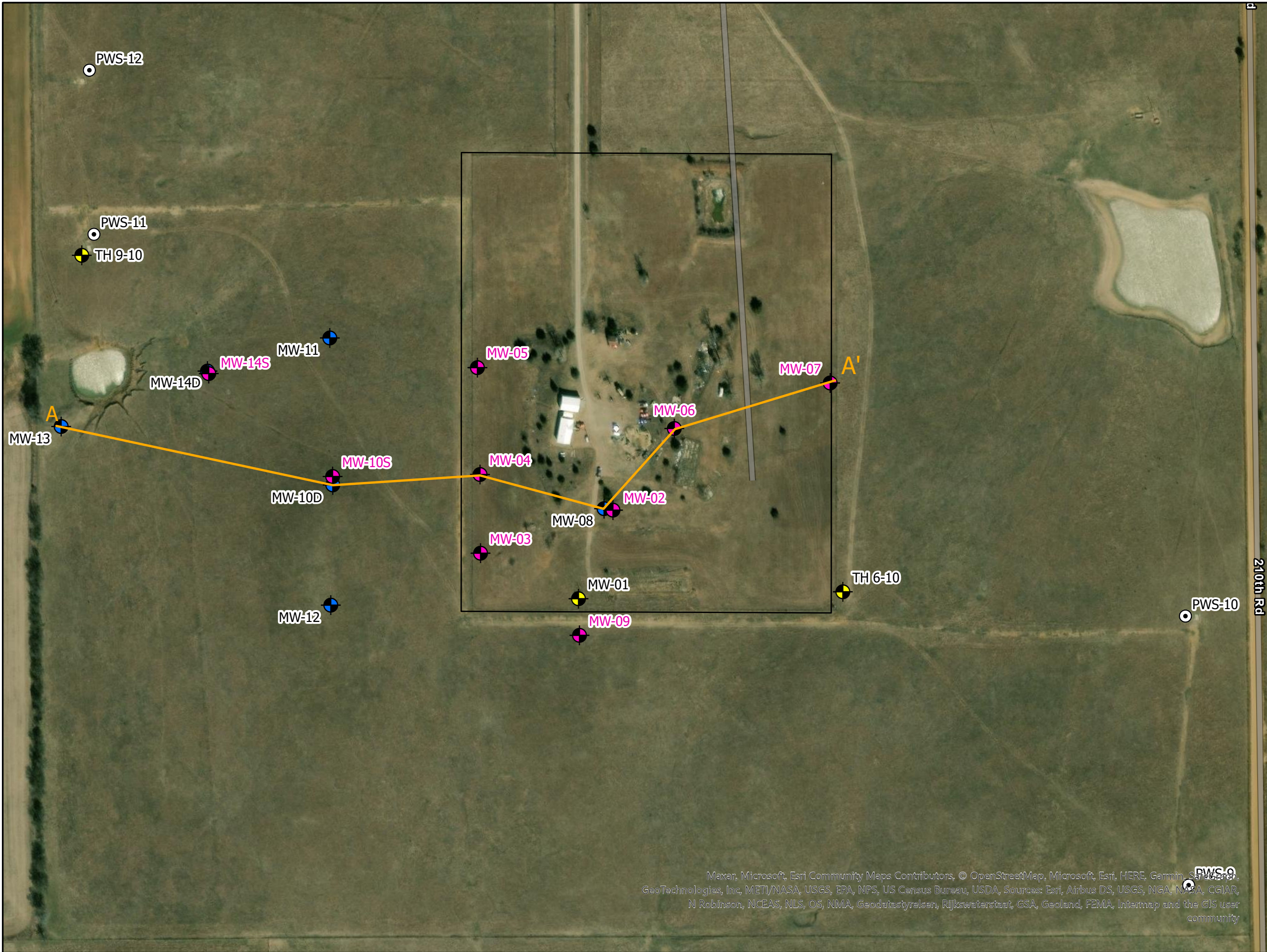
Notes:

- 1) Horizontal Coordinates are Kansas State Plane North, Zone 1501, NAD 1983 US Survey feet and Geographic NAD83
- 2) Elevations are NAVD 1988 US Survey feet
- 3) ft amsl = feet above mean sea level
- 4) ft bgs = feet below ground surface

received KGS-DRL 1/4/2024 (dls)

Table 1: MODFLOW Observation Data

Well	Northing	Easting	Ground Surface Elevation	TOC Corrected Elevation (USACE -0.49 ft)	Screen Mid Point Elevation	September 2011 Water Level Elevation
MW-02	279032.169	1441867.496	1397.73	1397.05	1316.95	1319.63
MW-03	278937.277	1441577.013	1385.01	1384.22	1315.62	1319.17
MW-04	279109.941	1441576.113	1389.43	1388.68	1312.68	1319.17
MW-05	279344.84	1441570.378	1384.18	1383.43	1313.78	1319.24
MW-06	279210.771	1442001.931	1405.08	1404.27	1312.87	1319.87
TH1-10	280513.40	1440693.08	1359.12	1361.58	1280.08	1315.79
TH2-10	278194.98	1440713.24	1355.61	1358.19	1278.19	1317.62
TH3-10	278198.09	1443127.10	1381.35	1383.58	1277.58	1321.05
TH4-10	280618.82	1443138.71	1377.74	1379.58	1276.58	1323.76
TH5-10	278778.84	1443158.88	1374.51	1377.21	1279.21	1321.72
TH6-10	278851.15	1442371.89	1388.27	1390.63	1285.63	1320.23
TH8-10	279917.13	1440699.72	1371.23	1373.77	1273.77	1316.68
TH9-10	279590.79	1440702.39	1363.79	1366.13	1275.13	1317.08
TH11-10	279108.87	1441553.16	1388.16	1390.93	1283.93	1319.36
TW10-10	279593.93	1440716.42	1364.36	1366.96	1275.96	1317.12
TW12-10	278201.09	1443112.03	1381.89	1384.31	1278.31	1321.07
TW13-10	279970.88	1440696.52	1371.57	1373.99	1277.99	1316.64
TW7-10	278797.28	1443161.43	1375.78	1378.21	1282.21	1321.76



Legend

- Missile Property Boundary
- Shallow Monitoring Well
- Deep Monitoring Well
- Other Monitoring Well
- PWS Well

LTM - Long Term Monitoring
 Note: Cross-section A to A' shown on Figure 2-5

0 50 100 200 300 400 Feet



Figure 2-4
 LTM Network and Existing Wells
 2023 Annual Report
 Schilling Air Force Base Atlas Site S-01
 Bennington, Kansas

DESIGNED BY: SMC	CHECKED BY: SS
DRAWN BY: SMC	REVIEWED BY: SS
DATE: DECEMBER 2023	

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