

CORRECTION(S) TO WATER WELL RECORD (Form WWC-5)
(to rectify lacking or incorrect information)

LOCATION OF WATER WELL: County: <u>Johnson</u>	Fraction <u>1/4 NE 1/4 NW 1/4 NW 1/4</u>	Section <u>4</u>	Township T <u>13</u> S	Range R <u>22</u> ☒ E ☐ W
Owner: <u>USACE c/o Burns & McDonnell</u>				
Location was listed as:		Location changed to:		
Sec. _____ T _____ S R _____ ☐ E ☐ W		Sec. _____ T _____ S R _____ ☐ E ☐ W		
Fraction: _____		Fraction: _____		
Other changes: Initial statements: <u>HTW Drill Log Location: N 239849.1668 E 2858113.8007</u>				
Changed to: <u>38.952637654 -94.982356045</u>				
Comments: <u>Converted State Plane 1501-Kansas North NAD 27 to Geographic Decimal Degrees NAD 83.</u>				
Verification method: <u>Corpscon 6.0.1</u>				
initials: <u>df</u> date: <u>04/14/2014</u>				
Submitted by: <u>Kansas Geological Survey, Data Resources Library, 1930 Constant Ave., Lawrence, KS 66047-3726</u> to: <u>Kansas Dept of Health & Environment, Bureau of Water, 1000 SW Jackson, Suite 420, Topeka, KS 66612-1367.</u>				

1 LOCATION OF WATER WELL: County: <u>Johnson</u>		Fraction: <u>N 1/4 NW 1/4 NW 1/4</u>		Section Number: <u>4</u>	Township Number: <u>T 13 S</u>	Range Number: <u>R 22 E</u>
Distance and direction from nearest town or city street address of well if located within city? <u>Well #96-1D at Sunflower AAP near DeSoto KS</u>						
2 WATER WELL OWNER: <u>USACE 90 Burns & McDonnell</u>				Board of Agriculture, Division of Water Resources		
RR#, St. Address, Box #: <u>9400 Ward Parkway</u>				Application Number:		
City, State, ZIP Code: <u>Kansas City MO 64114</u>						
3 LOCATE WELL'S LOCATION WITH AN "X" IN SECTION BOX:		4 DEPTH OF COMPLETED WELL: <u>39.7</u> ft. ELEVATION:				
		Depth(s) Groundwater Encountered: 1. _____ ft. 2. _____ ft. 3. _____ ft. WELL'S STATIC WATER LEVEL: <u>29</u> ft. below land surface measured on mo/day/yr 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: <u>10</u> in. to <u>5.7</u> ft., and <u>6</u> in. to <u>44.7</u> ft.				
		WELL WATER TO BE USED AS: 5 Public water supply 8 Air conditioning 11 Injection well 1 Domestic 3 Feedlot 6 Oil field water supply 9 Dewatering 12 Other (Specify below) 2 Irrigation 4 Industrial 7 Lawn and garden only <u>10</u> Monitoring well				
		Was a chemical/bacteriological sample submitted to Department? Yes _____ No <u>X</u> ; If yes, mo/day/yr sample was submitted Water Well Disinfected? Yes _____ No <u>X</u>				
5 TYPE OF BLANK CASING USED:						
1 Steel 3 RMP (SR) 5 Wrought iron 8 Concrete tile CASING JOINTS: Glued _____ Clamped _____ <u>2</u> PVC 4 ABS 7 Fiberglass 9 Other (specify below) Welded _____ Threaded _____ Blank casing diameter: <u>6</u> in. to <u>5.7</u> ft., Dia. <u>2</u> in. to <u>30</u> ft., Dia. _____ in. to _____ ft. Casing height above land surface: <u>30</u> in., weight _____ lbs./ft. Wall thickness or gauge No. <u>Sch. 40</u>						
TYPE OF SCREEN OR PERFORATION MATERIAL:						
1 Steel 3 Stainless steel 5 Fiberglass 8 RMP (SR) 10 Asbestos-cement 2 Brass 4 Galvanized steel 6 Concrete tile 9 ABS 11 Other (specify) _____ 12 None used (open hole) SCREEN OR PERFORATION OPENINGS ARE: 5 Gauzed wrapped 8 Saw cut 11 None (open hole) 1 Continuous slot <u>3</u> Mill slot 6 Wire wrapped 9 Drilled holes 2 Louvered shutter 4 Key punched 7 Torch cut 10 Other (specify) _____						
SCREEN-PERFORATED INTERVALS: From <u>29.5</u> ft. to <u>39.5</u> ft., From _____ ft. to _____ ft.						
GRAVEL PACK INTERVALS: From <u>24.5</u> ft. to <u>44.7</u> ft., From _____ ft. to _____ ft.						
6 GROUT MATERIAL: 1 Neat cement <u>2</u> Cement grout <u>3</u> Bentonite 4 Other _____						
Grout Intervals: From <u>0</u> ft. to <u>5.7</u> ft., From <u>0</u> ft. to <u>24.5</u> ft., From _____ ft. to _____ ft.						
What is the nearest source of possible contamination:						
1 Septic tank 4 Lateral lines 7 Pit privy 10 Livestock pens 14 Abandoned water well 2 Sewer lines 5 Cess pool 8 Sewage lagoon 11 Fuel storage 15 Oil well/Gas well 3 Watertight sewer lines 6 Seepage pit 9 Feedyard 12 Fertilizer storage <u>16</u> Other (specify below) <u>Ammunition plant</u> 13 Insecticide storage						
Direction from well? _____ How many feet? _____						
FROM	TO	LITHOLOGIC LOG			FROM	TO
PLUGGING INTERVALS						
<u>* Surface casing waiver approved by Don Taylor of KDHE on 9/6/96 at 1300 hr.</u>						
7 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION: This water well was <u>(1)</u> constructed, (2) reconstructed, or (3) plugged under my jurisdiction and was completed on (mo/day/year) <u>9/11/96</u> and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. <u>570</u> This Water Well Record was completed on (mo/day/yr) <u>11/27/96</u> under the business name of <u>AQUADRILL, INC.</u> by (signature) <u>Jeff Jolyn</u>						

HTW DRILLING LOG

HOLE NO.
76-1D1. COMPANY NAME
BURNS & McDONNELL2. DRILLING SUBCONTRACTOR
AQUADRILLSHEET 1
OF 6 SHEETS3. PROJECT
94-800-4-020-01 USSFRFI4. LOCATION
SUNFLOWER ARMY AMMUNITION PLANT5. NAME OF DRILLER
JEFF JOSLYN6. MANUFACTURER'S DESIGNATION OF DRILL
ENSPER BEAT-22R, Mobile B-577. SIZES AND TYPES OF DRILLING
AND SAMPLING EQUIPMENT
8 1/4" I.D. Hollow Stem Augers (HSA)
Kelly (Blade) Bit
Chisel tooth and Blade b.t
2' x 1 1/2" I.D. Split Spoon
NQA Wireline Core Barrel8. HOLE LOCATION
N-239 8 49, 1668 E-2858 113,80079. SURFACE ELEVATION
859.210. DATE STARTED
08-26-9611. DATE COMPLETED
9-11-9612. OVERBURDEN THICKNESS
5.7' BGS15. DEPTH GROUNDWATER ENCOUNTERED
34.8' BGS13. DEPTH DRILLED INTO ROCK
39.0'16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
1510 9-11-96 WL = 9.80' BGS; Bail 13 gal - WL = 9.1' @ 15514. TOTAL DEPTH OF HOLE
44.7' BGS

17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES
1DISTURBED
X

UNDISTURBED

19. TOTAL NUMBER OF CORE BOXES
420. SAMPLES FOR CHEMICAL ANALYSIS
1

VOC

METALS

OTHER (SPECIFY)

OTHER (SPECIFY)

OTHER (SPECIFY)

21. TOTAL CORE
RECOVERY

W/TICS

X

SUCC/W/TICS

K Hydro/Kerrite
Sulfate, CNExplosives, DC
GN, NQ

86.9 %

22. DISPOSITION OF HOLE

BACKFILLED

MONITORING WELL

OTHER (SPECIFY)

23. SIGNATURE OF INSPECTOR

Monitoring Well

96-1D

X 96-21

Signature of Inspector

Signature of Inspector

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	CLAY, some fine to medium grained sand (15%), trace silt (10%), very dark brown (10YR 2/2), moist, medium consistency, medium plasticity, massive trace roots (CL) [TOPSOIL]	B2 = 0ppm LCL = 0% O2 = 20% S = 0ppm	N/A	96-DLSR (0-0.5')	N/A	1345 Collected Surface sample 96-DLSR from (0-0.5')
	1		B2 = 0ppm LCL = 0% O2 = 21.0% S = 0ppm	96-D1 (1-4.5) ft physical		1750 3 5 8 9 14 18.0	1750 Started drilling with 8 1/4" I.D. HSA's. Started sampling at 1.0' bgs. logged 0.5'-1.0' from cuttings. Continuous sampling with 2x 178" I.D. split spoon 8-27-96 0830 WL = DRY.
	2	CLAY, some silt (30%), trace fine sand (5%), yellowish red (5YR 4/6), moist, stiff consistency, medium plasticity, iron staining, (CL) [ALLUVIUM]			N/A		
	3	Iron staining more prevalent 3.0-4.5 ft.	S = 0ppm LCL = 0% O2 = 21.0% S = 0ppm			1754 1757 5 7 23 10/1.5	
	4				N/A		
	5	LIMESTONE, slightly weathered, moderately strong, very pale orange (10YR 8/2) (MERRIAM)		1605		1802	1802 8-26-96 auger refusal

PROJECT

94-800-4-020-01 USSFRFI

HOLE NO.

96-10

HTW DRILLING LOG

HOLE NO. 1D
910-OT 8-27-96

PROJECT
94-800-4-020-01 USSFRFI

INSPECTOR
J. William Zuer, Suzanne Bailey

SHEET
2
OF 6 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						0835 8-27-96 Su 2.5 POC Schedule 40 surface casing 0845 5.2 POC pulling augers
	6	LIMESTONE, dark yellowish orange (10YR6/6), moderately strong, moderately weathered, medium bedded, even bedded, argillaceous, fossiliferous, fragments of crinoids, brachiopods, pelecypods, in microcrystalline matrix (Merriam)	BH = 0 ppm BZ = 0 ppm		FRACTURES	0934 9-10-96	0853 Grout mix: 3-94 lb bags Lowester Portland Cement 21 gal water 14.5 lb bentonite (5% per bag)
	7	SHALE and LIMESTONE, grayish orange (10YR7/4), extremely weathered, weak, limestone gravel and clay, calcareous (Merriam)	S = 0 ppm	BOX 1	NR	Run	0925 pumped grout to ground surface, checked for plumbness.
	8	LIMESTONE, pale yellowish brown (10YR6/2), with medium light gray (N6) mottling and interbedding, moderately weathered, moderately strong, medium bedded with shale partings composed of skeletal pickstone, clay-filled vugs (7.8 to 8.6 ft), argillaceous, fossiliferous crinoid stems, pelecypod & brachiopod shells, sand-filled with clay, algal mottling from 9.3 to 9.6 ft (Merriam)	LEL = 0% O ₂ = 21.0%			8.0 10.0 9.0	9-10-96 0910 Setting up Mobile B-57 rig with NQ2 wireline core barrel. Bore hole is dry.
	9				FRACTURES		0934 Began coring at 5.7 ft bgs.
	10	SHALE, dusky yellow (5Y6/4), highly weathered, very weak, mottled with limonite stringers, roots and carbonized organic material on some fracture surfaces, platy to massive bedding, calcareous, trace medium gray (N5) mottling (Bonner Springs)	S = 0 ppm		roots		0954 Retrieving core from 5.7 to 9.7 ft bgs, partial run.
	11						0958 Resume coring NOTE VOID LOGS from rubble on fracture surfaces (6.8-7.3 ft)
	12	SHALE, dark greenish gray (5GY4/1) to med. dark gray (N3), moderately weathered, very weak, massive bedding, micaceous, calcareous, silty, (Bonner Springs)			FRACTURES		
	13	Becoming olive gray (5Y4/1)	S = 0 ppm				

HTW DRILLING LOG

HOLE NO.
96-10

PROJECT
94-800-4-020-01 USSFRFI

INSPECTOR
Suzanne Bailey

SHEET 3
OF 6 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	SHALE, dark greenish gray (5GY4/1) to dark gray (N3), moderately weathered, very weak, massive bedding, micaceous, calcareous, silty		BOX 1		Run 1 8.0 / 10.0 1017	end Run 1 at 14.7 ft.
	15	(Bonner Springs) becoming at 13.5 ft. (5Y4/1)	BH=0 ppm BZ=0 ppm S=0 ppm LEL=0% O ₂ =21.0%	BOX 2	NR	Run 2 1025	
	16					6.4 8.4 / 10.0 10.0	1055 Retrieved core from 14.7 to 19.7 ft, partial run. Lost shale due to destruction during coring (14.7 to 19.0 ft)
	17						1110 Resumed coring
	18						
	19	LIMESTONE, medium gray (N5) fresh, moderately strong, oolitic, fossiliferous, crinoid stems, <u>Composita</u> brachiopods, mottled with medium dark gray (N4) algal-like structures, fossils, medium to thick bedded, sparry calcite on some surfaces, microcrystalline matrix. Other fossils noted: fusulinids, bryozoans	S=0 ppm				
	20	(Fauley) Member					
	21						
	22						
	23						

HTW DRILLING LOG

HOLE NO.
96-110

PROJECT
94-800-4-020-01 USSFRFI

INSPECTOR
Suzanne Bailey

SHEET 4
OF 6 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	23.4 ft. Becoming skeletal and pebble conglomeratic limestone, some pebbles composed of chert, most clasts are 1 to 2 inches, Grayish orange pink (SYR 7/2) and grayish to greenish gray (SG 6/1) clasts in an argillaceous, fine grained, skeletal limestone matrix. (FARLEY)		BOX 2		Run 2 6.4 8.4 5.0 10.0	
	24	SHALE, medium gray (NS), fresh, weak, micaceous, silty, laminated, interbedded with skeletal limestone Non-calcareous (FARLEY)			Fracture	1135	End Run 2 at 24.7
	25	LIMESTONE, light gray (N7) to light brownish gray (SYR 6/1), fresh, moderately strong, thin to medium bedded, even to wavy bedding, conglomeratic, clasts range from 0.1 to 1.0 inch, inter- bedded with shale partings up to 0.1 ft. thick, sparry calcite on hammered fractures, trace fossiliferous, primarily fragments of bryozoans, brachiopods, graptolites, pelecypods, trace coal fragments, pitted surface (birds-eye structure) (FARLEY)	BH=0ppm BZ=0ppm S=0ppm LEL=0% C ₂ =21.0%	BOX 3	Fracture	1318 Run 3 10.0 9.5 5.0 10.0	
	26	SHALE, medium gray (NS), fresh, weak, micaceous, silty, laminated, wavy bedded, interbedded with thin (0.2") limestone (packstone), slightly calcareous (FARLEY)	S=0ppm		FRACTURES		
	27	LIMESTONE, light gray (N7) to light brownish gray (SYR 6/1), fresh, moderately strong, thin to medium bedded, even to medium bedded, conglomeratic, clasts ranging from 0.1 to 1 inch, interbedded with silty shale partings up to 0.3 ft thick, sparry calcite on hammered fracture surfaces, trace fossil- iferous, primarily corinoid, bryozoan, brachiopod, pelecypod fragments, trace coal fragments (FARLEY)					1340 Retrieved core from 24.7 to 29.7 ft. 1350 Resumed Coring
	28						
	29						
	30						
	31						
	32						

HTW DRILLING LOG

HOLE NO. 96-1D

PROJECT 94-800-4-020-01 USSRFI

INSPECTOR Suzanne Bailey

SHEET 5 OF 16 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
	32	LIMESTONE, light gray (N7) to light brownish gray (5YR6/1), fresh, moderately strong, with thin to medium bedded, even to wavy bedded, conglomeratic appearance, clasts ranging from 0.1 to 1.0 inch, interbedded with silty shale partings up to 0.3 ft. thick, sparry calcite on hammered fracture surfaces,	S=0 ppm	Box 3		Run 3 10.0 10.0	
	33						
	34						
	35	Coal on bottom of core at 34.7 ft trace fossiliferous, primarily crinoid, bryozoan, brachiopod, pelecypod fragments, trace coal fragments (FARLEY)	BH=0 ppm BZ=0 ppm S=0 ppm UEL=0.1 O ₂ =20.8%	Box 4		1411 1723 Run 4 9.5 10.0	End Run 3 1710 Water SB at 34.7 ft. SB bgs. SB 1723 Resumed Coring. SB 1420 Drillers pumping water out of borehole 1438 Water level = 34.4 ft bgs. 1702 Water level remains at 34.4 ft. Bill Craig, Fsu, said to core 10.0 more feet and allow well to set overnight. 1723 Resumed Coring.
	36						
	37						
	38						
	39						
	40	SHALE, medium dark gray, (N4), fresh, very weak, fissile to massively bedded (ISLAND CREEK)	S=0 ppm				1807 End Run 4 at 44.7 ft bgs. 1833 Drillers pumping drilling fluids out of well 1840 Water level = 45.2 ft TOC (2.8 ft, stickup of casing)
	41						

FRACTURES

HTW DRILLING LOG

HOLE NO.
96-1D

PROJECT
94-800-4-020-01 USSRFI

INSPECTOR
SUZANNE BAILEY

SHEET 10
OF 60 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
	42	SHALE, medium dark gray, fresh, very weak, fissile to massive bedding (ISLAND CREEK)	S=0ppm	Box 4	Run 4 9.5 10.0	Run 4 9.5 10.0	
	43						
	44						
						1807	End Run 4 at 44.7 ft.
	45						BOTTOM OF HOLE 9/1/96 10.5 BEGIN REAMING w/6\" TRICONT BULL BIT 1100 BEGIN SLOUGHING WHEN PUL TO ADD NEXT ROD - RETEAM 1130 ADD SECOND DRILL ROD 1235 BREAK FOR LUNCH 1340 DRILLERS BACK @ 96-10 RESUME REAMING 1415 END REAMING @ 40.5' bgs 1420 SET CASING 0.23' ENDCAP 10.10' 2\" PVC 0.01\" SLOTTED SCREEN 35.00' 2\" PVC RISER 1\" STAINLESS STEEL CENTRALIZER 17\" bgs 1425 BEGIN ADDING FILTER PACK 1435 FILTER PACK @ 24.0' END. 1436 BEGIN SLOUGHING 1446 END SURGING TOP OF FILTER PACK 24.5' bgs 2.75, 100 lb BAGS 1447 ADD BENTONITE CHIPS 1452 BENTONITE @ 19.8' bgs STOP 150 lb BAG 1500 CUT 2.50' TO GROUND SURFACE 1510 MEASURE TD 42.19' FROM TOL

NOT TO SCALE