

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

<b>LOCATION OF WATER WELL:</b> 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> <input checked="" type="checkbox"/> E <input type="checkbox"/> W
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**Owner:** USACE c/o Burns & McDonnell

<p><b>Location was listed as:</b></p> <p>Sec. _____ T _____ S R _____ <input type="checkbox"/>E <input type="checkbox"/>W</p> <p>Fraction: _____</p>	<p><b>Location changed to:</b></p> <p>Sec. _____ T _____ S R _____ <input type="checkbox"/>E <input type="checkbox"/>W</p> <p>Fraction: _____</p>
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**Other changes:** Initial statements: HTW Drill Log Location: N 239849.1668 E 2858113.8007

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Changed to: 38.952637654 -94.982356045

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Comments: Converted State Plane 1501-Kansas North NAD 27 to Geographic Decimal Degrees NAD 83.

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Verification method: Corpscon 6.0.1

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initials: df date: 04/14/2014

Submitted by: Kansas Geological Survey, Data Resources Library, 1930 Constant Ave., Lawrence, KS 66047-3726  
to: Kansas Dept of Health & Environment, Bureau of Water, 1000 SW Jackson, Suite 420, Topeka, KS 66612-1367.

1 LOCATION OF WATER WELL: County: Johnson Fraction: N 1/4 NW 1/4 NW 1/4 Section Number: 4 Township Number: T 13 S Range Number: R 22 EX

Distance and direction from nearest town or city street address of well if located within city?  
Well #96-1D at Sunflower AAP near DeSoto KS

2 WATER WELL OWNER: USACE Yo Burns & McDonnell  
 RR#, St. Address, Box #: 9400 Ward Parkway Board of Agriculture, Division of Water Resources  
 City, State, ZIP Code: Kansas City MO 64114 Application Number:

3 LOCATE WELL'S LOCATION WITH AN "X" IN SECTION BOX:

4 DEPTH OF COMPLETED WELL: 39.7 ft. ELEVATION:  
 Depth(s) Groundwater Encountered 1 \_\_\_\_\_ ft. 2 \_\_\_\_\_ ft. 3 \_\_\_\_\_ ft.  
 WELL'S STATIC WATER LEVEL: 29 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: 10 in. to 5.7 in. and 6 in. to 44.7 in.  
 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 10 Monitoring well  
 Was a chemical/bacteriological sample submitted to Department? Yes \_\_\_\_\_ No X; If yes, mo/day/yr sample was sub-  
 mitted Water Well Disinfected? Yes \_\_\_\_\_ No

5 TYPE OF BLANK CASING USED: 1 Steel 2 PVC 3 RMP (SR) 4 ABS 5 Wrought iron 6 Asbestos-Cement 7 Fiberglass 8 Concrete tile 9 Other (specify below) 10 Asbestos-cement 11 Other (specify) 12 None used (open hole)  
 Blank casing diameter: 6 in. to 5.7\* ft. Dia 2 in. to 30" to 31" ft. Dia \_\_\_\_\_ in. to \_\_\_\_\_ ft.  
 Casing height above land surface: 30 in., weight \_\_\_\_\_ lbs./ft. Wall thickness or gauge No. Sch. 40  
 TYPE OF SCREEN OR PERFORATION MATERIAL: 1 Steel 2 Brass 3 Stainless steel 4 Galvanized steel 5 Fiberglass 6 Concrete tile 7 PVC 8 RMP (SR) 9 ABS 10 Asbestos-cement 11 Other (specify) 12 None used (open hole)  
 SCREEN OR PERFORATION OPENINGS ARE: 1 Continuous slot 2 Louvered shutter 3 Mill slot 4 Key punched 5 Gauzed wrapped 6 Wire wrapped 7 Torch cut 8 Saw cut 9 Drilled holes 10 Other (specify) 11 None (open hole)  
 SCREEN-PERFORATED INTERVALS: From 29.5 ft. to 39.5 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
 GRAVEL PACK INTERVALS: From 24.5 ft. to 44.7 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

6 GROUT MATERIAL: 1 Neat cement 2 Cement grout 3 Bentonite 4 Other \_\_\_\_\_  
 Grout Intervals: From 0 ft. to 5.7 ft. From 0 ft. to 24.5 ft. From \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
 What is the nearest source of possible contamination: 1 Septic tank 2 Sewer lines 3 Watertight sewer lines 4 Lateral lines 5 Cess pool 6 Seepage pit 7 Pit privy 8 Sewage lagoon 9 Feedyard 10 Livestock pens 11 Fuel storage 12 Fertilizer storage 13 Insecticide storage 14 Abandoned water well 15 Oil well/Gas well 16 Other (specify below) Ammunition plant  
 Direction from well? How many feet?

FROM	TO	LITHOLOGIC LOG	FROM	TO	PLUGGING INTERVALS

\* Surface casing waiver approved by Don Taylor of KDHE on 9/6/96 at 1300 hr.

7 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION: This water well was (1) constructed, (2) reconstructed, or (3) plugged under my jurisdiction and was completed on (mo/day/year) 9/11/96 and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. 570 This Water Well Record was completed on (mo/day/yr) 11/27/96 under the business name of AQUADRILL, INC. by (signature) Jeff Jollyn

INSTRUCTIONS: Use typewriter or ball point pen. PLEASE PRESS FIRMLY and PRINT clearly. Please fill in blanks, underline or circle the correct answers. Send top three copies to Kansas Department of Health and Environment, Bureau of Water, Topeka, Kansas 66620-0001. Telephone: 913-296-5545. Send one to WATER WELL OWNER and retain one for your records.

OFFICE USE ONLY T R E W SEC.

# HTW DRILLING LOG

HOLE NO.  
76-1D

1. COMPANY NAME <b>BURNS &amp; McDONNELL</b>		2. DRILLING SUBCONTRACTOR <b>AQUADRILL</b>		SHEET 1 OF 6 SHEETS			
3. PROJECT <b>94-800-4-020-01 USSFRFI</b>			4. LOCATION <b>SUNFLOWER ARMY AMMUNITION PLANT</b>				
5. NAME OF DRILLER <b>JEFF JOSLYN</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>GENSPEL BRAT-22R, Mobile B-57</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION <b>N-239 849,1668 E-2858113,8007</b>		9. SURFACE ELEVATION <b>859.2</b>			
		10. DATE STARTED <b>08-26-96</b>				11. DATE COMPLETED <b>9-11-96</b>	
		12. OVERBURDEN THICKNESS <b>5.7' BGS</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>34.8' BGS</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>1510 9-11-96 WL=9.80' BGS; Bail 13gal-1WL=91.0' @ 155</b>	
		13. DEPTH DRILLED INTO ROCK <b>39.0'</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
14. TOTAL DEPTH OF HOLE <b>44.7' BGS</b>		18. GEOTECHNICAL SAMPLES		19. TOTAL NUMBER OF CORE BOXES <b>4</b>			

20. SAMPLES FOR CHEMICAL ANALYSIS		DISTURBED <b>X</b>		UNDISTURBED		21. TOTAL CORE RECOVERY <b>86.9%</b>	
1		VOC		METALS		OTHER (SPECIFY)	
1		WC/TICS		<b>X</b>		N/A Hydro/Chloride Sulfate, CN	
22. DISPOSITION OF HOLE <b>Monitoring Well</b>		BACKFILLED		MONITORING WELL <b>96-1D X 96-21</b>		OTHER (SPECIFY)	
						23. SIGNATURE OF INSPECTOR <i>[Signature]</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	CLAY, some fine to medium grained sand (15%), trace silt (10%), very dark brown (10YR 2/2), moist, medium consistency, medium plasticity, <del>moist</del> trace roots (CL) [TOPSOIL]	B2=0ppm LCL=0% O2=21.0% 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	96-01 (1-4.5) ft physical	N/A	1750 3 5 8 9 1.4/2.0	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 1 7/8" i.d. split spore
	2	CLAY, some silt (30%), trace fine sand (5%), yellowish red (5YR 4/6), moist, stiff consistency, medium plasticity, iron staining (CL) [ALLUVIUM]					X-27-96 0830 WL=DRY.
	3	Iron staining more prevalent 3.0-4.5 ft.	S=0ppm LCL=0% O2=21.0% S=0ppm			1754 1757 5 7 23	
	4				N/A	10/1.5	
	5	LIMESTONE, slightly weathered, moderately strong, very pale orange (10YR 8/2) (MERRIAM)		1605		1802	1802 8-26-96 auger refusal

# HTW DRILLING LOG

HOLE NO. 1D  
910-0T 8-27-96

PROJECT 94-800-4-020-01 USSFRFI

INSPECTOR *J. Williams Inc., 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 Surf. 2.5' PVC Schedule 40 surface casing 0845 5-2' bgs 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 fpm BZ = 0 fpm			0934 9-10-96	0853 Grout mix: 3-94 lb bags Lester Portland Cement 2 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 fpm	BOX 1	FRAC NR	Run 1	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 peckstone, clay-filled vugs (7.8 to 8.6 ft), argillaceous, fossiliferous crinoid stems, pelecypod & brachiopod shells, matrix filled with clay, algal mottling from 9.3 to 9.6 ft (Merriam)	LEL = 0' O <sub>2</sub> = 21.0'			8/20/96 9.0	9-10-96 0910 Setting up Mobile B-57 rig with NQ2 wireline core barrel. Bore hole is dry.
	9				FRAC		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 fpm		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 surface (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)			FRAC		
	13	Becoming olive gray (5Y4/1)	S = 0 fpm				

# 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 (5G44/1) to dark gray (N3), moderately weathered, very weak, massive bedding, micaceous, calcareous, silty  (Bonner Springs) becoming at 13.5 ft. olive gray (5Y4/1)		BOX 1		Run 1 5.0 / 10.0 10.17	end Run 1 at 14.7 ft.   1055 Retrieved core from 14.7 to 19.7 ft, partial run. Lost shale due to destructible during coring (14.7 to 19.0 ft)  1110 Resumed coring
	15		BH=0 ppm BZ=0 ppm			10.25	
	16		S=0 ppm LEL=0% O <sub>2</sub> =21.0%	BOX 2	NR	Run 2 6.4 / 8.4 / 10.0	
	17						
	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, fossiliferous, medium to thick bedded, sparry calcite on some surfaces, microcrystalline matrix. Other fossils noted: fusulinids, bryozoans  (Fauley) Member					
	20		S=0 ppm				
	21						
	22						
	23						

# HTW DRILLING LOG

HOLE NO. 96-11D

PROJECT 94-800-4-020-01 USSRFI

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.					
	24	Becoming skeletal and pebble conglomeratic lime stone, 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 <del>9-5 SB</del> 10-0	
	25	SHALE, medium gray (NS), fresh, weak, micaceous, silty, laminated, interbedded with skeletal limestone non-calcareous (FARLEY)	BH=0ppm		Fracture	1135	End Run 2 at 24.7
	26	LIMESTONE, light gray (NS) to light brownish gray (SYR 4/1), fresh, moderately strong, thin to medium bedded, even to wavy bedding, conglomeratic, clasts range from 0.1 to 1.0 inch, interbedded with shale partings up to 0.1 ft. thick, sparry calcite on hammered fractures, trace fossiliferous, primarily fragments of bryozoans, brachiopods, pelecypods, trace coal fragments, pitted surface (birds-eye structure) (FARLEY)	BZ=0ppm S=0ppm LEL=0%	BOX 3	Fracture	Run 3 10-0 <del>9-5 SB</del> 10-0	
	28	SHALE, medium gray (NS), fresh, weak, micaceous, silty, laminated, wavy bedded, interbedded with thin (0.2") limestone (packstone), slightly calcareous (FARLEY)	S=0ppm		FRACTURES		
	30	LIMESTONE, light gray (B7) to light brownish gray (SYR 6/1), fresh, moderately strong, thin to medium bedded, even to wavy 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 fossiliferous, primarily corinoid, bryozoan, brachiopod, pelecypod fragments, trace coal fragments (FARLEY)					1340 Retrieved core from 24.7 to 29.7 ft 1350 Resumed coring
	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=0ppm	Box 3		Run 3	
	33					10.0	
	34					10.0	
	35					1411	
	35	Coal on bottom of core at 34.7 ft trace fossiliferous, primarily crinoid, bryozoan, brachiopoda, pelecypod fragments, trace coal fragments (FARLEY)	BH=0ppm BZ=0ppm S=0ppm	Box 4		Run 4	End Run 3 1710 water level at 34.7 ft 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	SHALE, medium dark gray, (N4), fresh, very weak, fissile to massively bedded (ISLAND CREEK)	UEL=0! O <sub>2</sub> =20.8% S=0ppm			9.5	FRACTURES
	37					10.0	
	38						
	39						
	40						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						

# HTW DRILLING LOG

HOLE NO. **96-1D**

PROJECT **94-800-4-020-01 USSRFI**

INSPECTOR **SUZANNE BAILEY**

SHEET **6** 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
	42	SHALE, medium dark gray, fresh, very weakly fissile to massive bedding (ISLAND CREEK)	S=0ppm	Box 4	Run 4	Run 4	
	43				9.5	9.5	
	44				10.0	10.0	
					fracture		
						1807	End Run 4 at 44.7 ft.

TOTAL DEPTH OF WELL FROM TOC **42.19'**

TOTAL DEPTH OF BORING = **44.7 bgs**

NOT TO SCALE

9/1/96

10:5 BEGIN REAMING w/6" TRICONT BULK BIT

1100 BEGIN SLOUGHING WHEN PULL TO ADD NEXT ROD - REREAM

1130 ADD SECOND DRILLED

1235 BREAK FOR LUNCH

1340 DRILLERS BACK @ 96-1D RESUME REAMING

1415 END REAMING @ 40.5' bgs

1420 SET CASING 0.23' ENDCAP

10.10' 2" PVC 0.010" SLOTTED SCREEN

35.00' 2" PVC RISER

15 STAINLESS STEEL CENTRALIZER 17.0' 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 RISER TO 2.50' ABOVE GROUND SURFACE

1510 MEASURE TD 42.19' FROM TOC