
Appendix M

Additional Borehole Lithological and Geophysical Data

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OCWD-EW1

LITHOLOGY LOG**PROJECT:** NBGPP Extraction Well Installations GBM-2007-3**LOCATION:** 529 State College Blvd, Fullerton**DATE DRILLED:** 07/1/08 – 07/15/08.**HOLE DIAMETER:** 17.5"**TOTAL DEPTH:** 324 ft. bgs.**SCREEN INTERVALS:** 160-235 and 250-295

DEPTH (ft)	SAMPLE DESCRIPTION	NOTES
0 - 10	<u>SAND</u> . 90% sand, 10% silt, dark yellowish brown (10YR/4/4), <1/16 to 1/2mm, very fine to medium sand, well to very well sorted, subrounded, high sphericity.	
10 - 20	<u>SAND WITH SILT</u> . 85% sand, 15% silt, dark brown (10YR/4/3), <1/16 to 1/4mm, very fine to fine sand, well sorted, subangular to subrounded, high sphericity.	
20 - 30	<u>SAND WITH SILT</u> . 75% sand, 20% silt, 5% clay, dark brown (10YR/4/3), <1/16 to 1mm, very fine to coarse sand, moderately to well sorted, subangular to subrounded, high sphericity.	
30 - 35	<u>SAND</u> . 95% sand, 5% silt, dark brown (10YR/4/3), <1/16 to 1mm, very fine to coarse sand, well sorted, subangular to subrounded, high sphericity. Tan coarse sand.	
35 - 40	<u>SILT and CLAY WITH SAND</u> . 30% sand, 30% clay, 40% silt, light yellowish brown (10YR/6/4), <1/16 to 1/4mm, very fine to fine sand, moderately sorted, subangular to subrounded, high sphericity.	
40 - 50	<u>SILT and CLAY AND SAND</u> . 45% sand, 15% clay, 40% silt, dark brown (10YR/4/3), <1/16 to 1mm, very fine to coarse sand, poor to moderately sorted, subangular to subrounded, high sphericity. Red oxidized coloring.	
50 - 55	<u>SAND WITH SILT</u> . 80% sand, 20% silt, light olive brown (2.5Y/5/4), <1/16 to 2mm, very fine to very coarse sand, moderately sorted, subangular to subrounded, high sphericity. Trace clay.	
55 - 60	<u>SAND</u> . 100% sand, light olive brown (2.5Y/5/4), 1/16 to 4mm, very fine sand to very fine pebble gravel, poorly sorted, subangular to subrounded, moderate sphericity. Trace silt.	
60 - 65	<u>SAND</u> . 95% sand, 5% gravel, light olive brown (2.5Y/5/4), 1/16 to 8mm, very fine sand to fine pebble gravel, poorly sorted, subangular to subrounded, moderate sphericity. Trace silt.	
65 - 70	<u>SAND</u> . 95% sand, 5% gravel, light olive brown (2.5Y/5/4), 1/16 to 8mm, very fine sand to fine pebble gravel, poorly sorted, subangular to subrounded, moderate sphericity. Trace silt.	
70 - 75	<u>SAND</u> . 95% sand, 5% silt, light olive brown (2.5Y/5/4), 1/16 to 1/2mm, very fine sand to medium sand, moderately sorted, subrounded, high sphericity.	
75 - 80	<u>SAND</u> . 95% sand, 5% silt, light olive brown (2.5Y/5/4), 1/16 to 1mm, very fine sand to coarse sand, poorly sorted, subangular to subrounded, moderate to high sphericity.	
80 - 85	<u>SAND</u> . 95% sand, 5% gravel, light olive brown (2.5Y/5/4), 1/16 to 4mm, very fine sand to very fine pebble gravel, poorly sorted, subangular to subrounded, high sphericity.	
85 - 90	<u>SAND WITH GRAVEL</u> . 80% sand, 20% gravel, light olive brown (2.5Y/5/4),	

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DEPTH (ft)	SAMPLE DESCRIPTION	NOTES
	1/16 to 4mm, very fine sand to very fine pebble gravel, poorly sorted, subangular, high sphericity.	
90 - 95	<u>SAND</u> . 100% sand, light yellowish brown (2.5Y/6/4), 1/16 to 1mm, very fine to coarse sand, moderately sorted, subangular to subrounded, high sphericity.	
95 - 100	<u>SAND WITH SILT</u> . 80% sand, 20% silt, light yellowish brown (2.5Y/6/4), 1/16 to 1mm, very fine to coarse sand, moderately sorted, subangular to subrounded, high sphericity.	
100 - 105	<u>SAND WITH SILT</u> . 60% sand, 30% silt, 10% clay, light yellowish brown (2.5Y/6/4), 1/16 to 2mm, very fine to very coarse sand, moderately sorted, subangular to subrounded, high sphericity.	
105 - 110	<u>SAND AND SILT</u> . 50% sand, 40% silt, 10% clay, light yellowish brown (2.5Y/6/4), 1/16 to 1mm, very fine to coarse sand, moderately sorted, subangular to subrounded, high sphericity.	
110 - 115	<u>SILT and CLAY WITH SAND</u> . 50% silt, 30% sand, 20% clay, light yellowish brown (2.5Y/6/4), <1/16 to 1/2mm, very fine to medium sand, moderately sorted, subrounded, high sphericity.	
115 - 120	<u>SAND AND SILT</u> . 50% sand, 40% silt, 10% clay, light yellowish brown (2.5Y/6/4), <1/16 to 1/2mm, very fine to medium sand, moderately sorted, subrounded, high sphericity.	
120 - 125	<u>SILT and CLAY WITH SAND</u> . 30% sand, 20% clay, 50% silt, light yellowish brown (2.5Y/6/4), <1/16 to 1/2mm, very fine to medium sand, moderately sorted, subrounded, high sphericity.	
125 - 130	<u>SAND</u> . 95% sand, 5% silt, light olive brown (2.5Y/5/4), <1/16 to 1mm, very fine to coarse sand, poorly to moderately sorted, subangular to subrounded, moderate to high sphericity.	
130 - 135	<u>SAND WITH SILT</u> . 85% sand, 15% silt, light olive brown (2.5Y/5/4), 1/16 to 1/2mm, very fine to medium sand, well sorted, subrounded, high sphericity.	
135 - 140	<u>SILT AND SAND</u> . 50% silt, 40% sand, 10% clay, light olive brown (2.5Y/5/4), <1/16 to 1/2mm, very fine to medium sand, moderately sorted, subrounded, high sphericity.	
140 - 145	<u>SAND WITH SILT</u> . 85% sand, 15% silt, light olive brown (2.5Y/5/4), 1/16 to 1mm, very fine to coarse sand, well sorted, subangular to subrounded, high sphericity.	
145 - 150	<u>SILT AND SAND</u> . 50% silt, 40% sand, 10% clay, light olive brown (2.5Y/5/4), <1/16 to 1/2mm, very fine to medium sand, well sorted, subrounded, high sphericity.	
150 - 155	<u>SILT AND SAND</u> . 50% silt, 40% sand, 10% clay, light olive brown (2.5Y/5/4), <1/16 to 1/2mm, very fine to medium sand, well sorted, subrounded, high sphericity.	
155- 160	<u>SAND WITH SILT</u> . 85% sand, 15% silt, light olive brown (2.5Y/5/4), 1/16 to 1/2mm, very fine to medium sand, well sorted, subrounded, high sphericity.	
160 - 165	<u>SAND</u> . 100% sand, light yellowish brown (2.5Y/6/4), 1/16 to 2mm, very fine to very coarse sand, poorly sorted, subangular to subrounded, moderate sphericity. Trace silt.	
165 - 170	<u>SAND</u> . 95% sand, 5% silt, light yellowish brown (2.5Y/6/4), 1/16 to 2mm, very fine to coarse sand, poorly sorted, subangular to subrounded, high sphericity.	

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DEPTH (ft)	SAMPLE DESCRIPTION	NOTES
170 - 175	<u>SAND</u> . 100% sand, light yellowish brown (2.5Y/6/4), 1/16 to 1mm, very fine to coarse sand, moderately sorted, subangular to subrounded, high sphericity. Trace silt.	
175 - 180	<u>SAND</u> . 100% sand, light yellowish brown (2.5Y/6/4), 1/16 to 1mm, very fine to coarse sand, moderately sorted, subangular to subrounded, high sphericity. Trace silt.	
180 - 185	<u>SAND WITH SILT</u> . 80% sand, 20% silt, light yellowish brown (2.5Y/6/4), 1/16 to 4mm, very fine sand to very fine pebble gravel, poorly sorted, subrounded to subangular, moderate sphericity.	
185 - 190	<u>SAND WITH SILT</u> . 85% sand, 15% silt, light yellowish brown (2.5Y/6/4), 1/16 to 1mm, very fine to coarse sand, moderately sorted, subrounded to subangular, high sphericity.	
190 - 195	<u>SAND</u> . 95% sand, 5% silt, light yellowish brown (2.5Y/6/4), 1/16 to 1mm, very fine to coarse sand, moderately sorted, subangular to subrounded, high sphericity. Trace clay.	
195 - 200	<u>SAND</u> . 5% gravel, 95% sand, light yellowish brown (2.5Y/6/4), 1/16 to 4mm, very fine sand to very fine pebble gravel, poorly sorted, subangular, moderate sphericity.	
200 - 205	<u>SAND</u> . 100% sand, light yellowish brown (2.5Y/6/4), 1/16 to 4mm, very fine sand to gravel, poorly sorted, subangular, moderate sphericity.	
205 - 210	<u>SAND</u> . 95% sand, 5% silt, light yellowish brown (2.5Y/6/4), 1/16 to 1mm, very fine to coarse sand, moderately sorted, subangular to subrounded, high sphericity.	
210 - 215	<u>SAND</u> . 95% sand, 5% silt, light yellowish brown (2.5Y/6/4), 1/16 to 1mm, very fine to coarse sand, well sorted, subangular to subrounded, high sphericity.	
215 - 220	<u>SAND</u> . 100% sand, pale yellow (2.5Y/7/3), 1/16 to 1mm, very fine to coarse sand, moderately sorted, subangular to subrounded, high sphericity.	
220 - 225	<u>SAND</u> . 100% sand, pale yellow (2.5Y/7/3), 1/16 to 1mm, very fine to coarse sand, moderately sorted, subangular to subrounded, high sphericity.	
225 - 230	<u>SAND</u> . 95% sand, 5% silt, light yellowish brown (2.5Y/6/4), 1/16 to 2mm, very fine to very coarse sand, poorly sorted, subangular to subrounded, moderate sphericity.	
230 - 235	<u>SAND</u> . 95% sand, 5% silt, light yellowish brown (2.5Y/6/4), 1/16 to 4mm, very fine sand to very fine pebble gravel, moderately sorted, subangular to subrounded, high sphericity.	
235 - 240	<u>SAND</u> . 95% sand, 5% silt, light yellowish brown (2.5Y/6/4), 1/16 to 2mm, very fine to very coarse sand, well sorted, subangular to subrounded, high sphericity.	
240 - 245	<u>SAND</u> . 100% sand, light yellowish brown (2.5Y/6/4), 1/16 to 1/2mm, very fine to medium sand, well sorted, subangular to subrounded, high sphericity.	
245 - 250	<u>SILT and CLAY AND SAND</u> . 45% sand, 30% silt, 20% clay, 5% gravel, light olive brown (2.5Y/5/4), <1/16 to 1/2mm and 2 to 8mm, very fine to medium sand and very fine to fine pebble gravel, poorly sorted, subangular to subrounded, high sphericity.	
250 - 255	<u>SAND WITH GRAVEL</u> . 70% sand, 20% gravel, 10% clay, light brownish gray (2.5Y/6/2), 1/16 to 8mm, very fine sand to fine pebble gravel, very poorly sorted, angular to rounded, moderate to high sphericity.	

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DEPTH (ft)	SAMPLE DESCRIPTION	NOTES
255 - 260	<u>SAND and GRAVEL WITH CLAY.</u> 65% sand, 20% clay, 15% gravel, light yellowish brown (2.5Y/6/4), 1/16 to 8mm and 16 to 32mm, very fine sand to coarse pebbles and gravel, very poorly sorted, angular to subrounded, low to moderate sphericity.	
260 - 265	<u>SAND.</u> 90% sand, 10% gravel, light yellowish brown (2.5Y/6/4), 1/16 to 8mm, very fine sand to fine pebble gravel, very poorly sorted, angular to subrounded, low to moderate sphericity.	
265 - 270	<u>SAND.</u> 95% sand, 5% gravel, light brownish gray (2.5Y/6/2), 1/16 to 8mm, very fine sand to fine pebble gravel, very poorly sorted, angular to subrounded, low to moderate sphericity.	
270 - 275	<u>SAND.</u> 90% sand, 10% gravel, grayish brown (2.5Y/5/2), 1/16 to 8mm, very fine sand to fine pebble gravel, very poorly sorted, angular to subrounded, low to moderate sphericity.	
275 - 280	<u>SAND.</u> 90% sand, 10% gravel, light olive brown (2.5Y/5/3), 1/16 to 8mm, very fine sand to fine pebble gravel, poorly sorted, angular to subrounded, low to high sphericity.	
280 - 285	<u>SAND.</u> 100% sand, light brownish gray (2.5Y/6/2), 1/16 to 8mm, very fine sand to fine pebble gravel, poorly sorted, subangular to subrounded, moderate sphericity.	
285 - 290	<u>SAND.</u> 95% sand, 5% silt, grayish brown (2.5Y/5/2), 1/16 to 8mm, very fine sand to fine pebble gravel, very poorly sorted, subangular to subrounded, moderate sphericity.	
290 - 295	<u>SAND WITH GRAVEL.</u> 80% sand, 20% gravel, light brownish gray (2.5Y/6/2), 1/16 to 16mm, very fine sand to medium pebble gravel, very poorly sorted, angular to subrounded, low to moderate sphericity.	
295 - 300	<u>SAND.</u> 90% sand, 5% gravel, 5% silt, light olive brown (2.5Y/5/3), 1/16 to 4mm, very fine sand to very fine pebble gravel, very poorly sorted, angular to subrounded, low to moderate sphericity.	
300 - 305	<u>SAND.</u> 95% sand, 5% gravel, light brownish gray (2.5Y/6/2), 1/16 to 4mm, very fine sand to gravel, very poorly sorted, angular to subrounded, low to moderate sphericity. Trace clay.	
305 - 310	<u>SAND.</u> 100% sand, grayish brown (2.5Y/5/2), 1/16 to 4mm, very fine sand to very fine pebble gravel, moderately sorted, subangular to subrounded, moderate to high sphericity.	
310 - 315	<u>SAND WITH GRAVEL.</u> 80% sand, 20% gravel, olive (2.5Y/4/3), 1/16 to 4mm, very fine sand to very fine pebble gravel, very poorly sorted, angular to subangular, moderate sphericity.	
315 - 320	<u>SAND.</u> 100% sand, grayish brown (2.5Y/5/2), 1/16 to 2mm, very fine to very coarse sand, moderately sorted, subangular to subrounded, high sphericity. Trace very fine pebble gravel.	
320 - 324	<u>SAND.</u> 100% sand, grayish brown (2.5Y/5/2), 1/16 to 2mm, very fine to very coarse sand, poorly sorted, angular to subrounded, moderate sphericity. Trace very fine pebble gravel.	

ELECTRIC LOG

Job No. 14040
Company BAKERSFIELD WELL & PUMP
Well EW-1
Field FULLERTON
County ORANGE
State CA

Location: 501-641 STATE COLLEGE BLVD.
Other Services: GRILL3, SONIC, DEVIATION

Permament Datum G.L. 0' Elevation above perm. datum
Log Measured From G.L.
Drilling Measured From G.L.
Date 7/18/2008

Run Number ONE
Depth Driller 324'
Depth Logger 320'
Bottom Logged Interval 320'
Top Log Interval 50'
Casing Driller 26" @ 50'
Casing Logger 50'
Bit Size 17.5"

Type Fluid in Hole WATER
Density / Viscosity NA
pH / Fluid Loss NA
Source of Sample TANK
Rim @ Meas. Temp 9.7 @ 77F
Rint @ Meas. Temp 9.7 @ 77F
Rim @ Meas. Temp NA
Source of Rmt / Rmc MEAS
Rim @ BHT NA
Time Circulation Stopped 8 HOURS
Time Logger on Bottom 10:15 PM
Max. Recorded Temperature NA
Equipment Number PS-4
Location L.A.
Recorded By ABREU/JMELSON
Witnessed By D. FIELD

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

Calibration Report

Database File: 14040.db
Dataset Pathname: elog
Dataset Creation: Fri Jul 18 22:19:21 2008 by Log Open-Cased 071220

ELOG Calibration Report

Serial: D4
Model: DTQ
Shop Calibration Performed: Thu Mar 20 11:33:28 2008
Before Survey Verification Performed: Sun Sep 09 13:17:43 2007
After Survey Verification Performed: Sun Sep 09 13:17:48 2007

Shop Calibration

	Readings			References			Results	
	Zero	Cal		Zero	Cal		Gain	Offset
Short	9.852	101.836		10.200	102.200	Ohm-m	1.000	0.346
Long	10.744	100.214		10.200	102.200	Ohm-m	1.028	-17.311
IEE	7625.740	7624.060	counts	8.346	8.344	A		
VSN	8684.080	8685.640	counts	165.638	165.668	V		
VLN	2162.320	2161.960	counts	41.244	41.237	V		

Before Survey Verification

	Readings			References			Results	
	Zero	Cal		Zero	Cal		Gain	Offset
Short	40.249	101.201		40.505	101.206	Ohm-m	0.996	0.422
Long	142.638	102.842		102.858	102.858	Ohm-m	1.024	-2.408
IEE	212.960	7070.960	counts	0.233	7.738	A		
VSN	96.300	8039.720	counts	1.837	153.348	V		
VLN	85.320	2042.520	counts	1.627	38.959	V		

After Survey Verification

	Readings			References			Results	
	Zero	Cal		Zero	Cal		Gain	Offset
Short	40.270	101.200		40.249	101.201	Ohm-m	1.000	-0.035
Long	142.491	102.843		102.842	102.842	Ohm-m	1.004	-0.383
IEE	213.380	7077.580	counts	0.234	7.746	A		
VSN	96.540	8047.160	counts	1.841	153.490	V		
VLN	85.400	2044.440	counts	1.629	38.995	V		

After Survey Verification compared to Before Survey Calibration

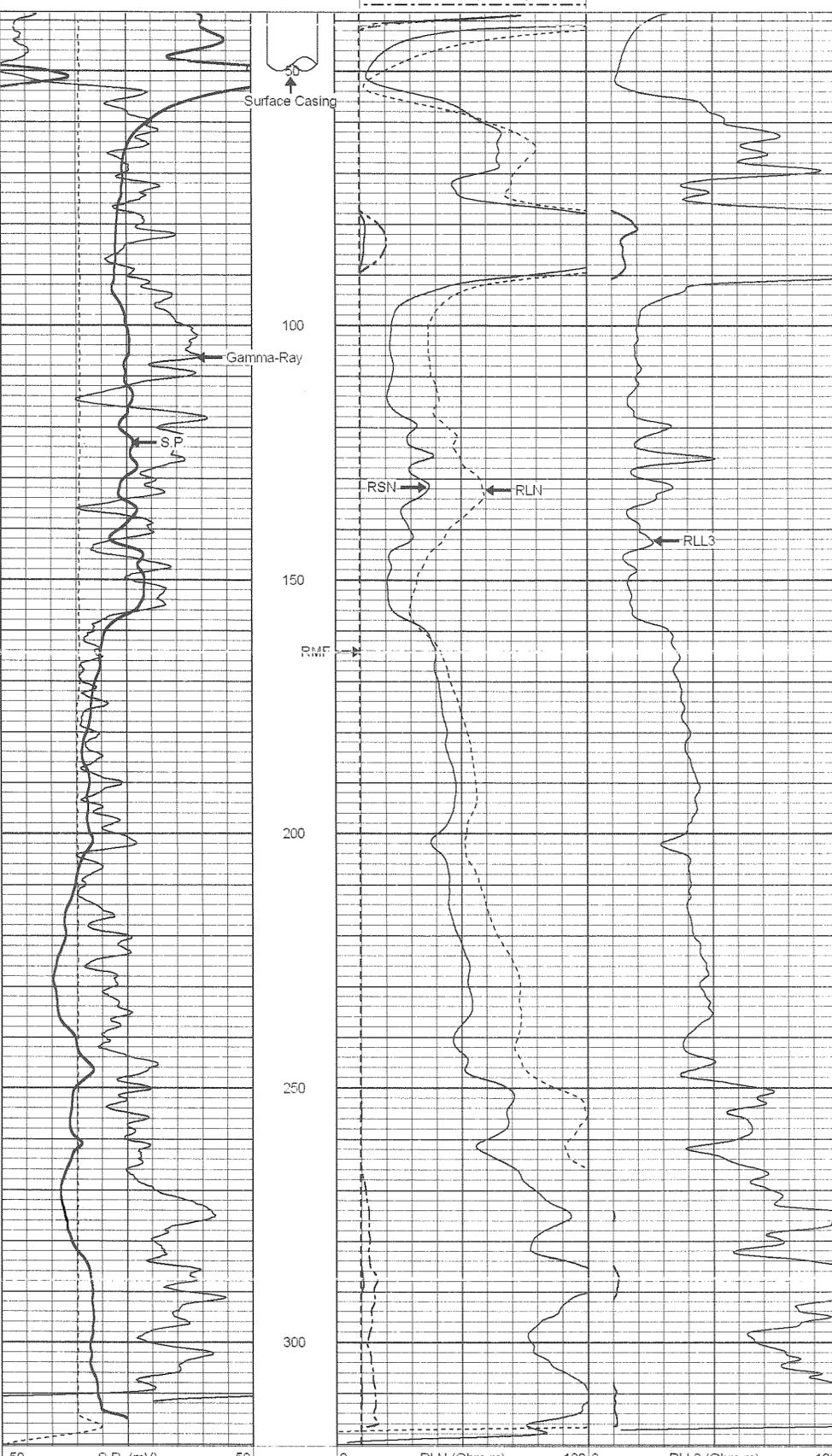
	Zero			Cal			
	Before	After		Before	After		
Short	40.505	40.249	Ohm-m	101.206	101.201	Ohm-m	
Long	143.592	142.638	Ohm-m	102.858	102.842	Ohm-m	

Gamma Ray Calibration Report

Serial Number: D4
Tool Model: ELOG
Performed: Sun Sep 09 13:17:55 2007
Calibrator Value: 162.0 GAPI
Background Reading: 172.5 cps
Calibrator Reading: 717.9 cps
Sensitivity: 0.2970 GAPI/cps

Database File: 14040.db
Dataset Pathname: elog
Presentation Format: elog-2
Dataset Creation: Fri Jul 18 22:19:21 2008 by Log Open-Cased 071220
Charted by: Depth in Feet scaled 1:240

-50	S.P. (mV)	50	0	RLN (Ohm-m)	100	0	RLL3 (Ohm-m)	100
20	Gamma-Ray (GAPI)	70	0	RMF (Ohm-m)	100	100	RLL3 x 10 (Ohm-m)	1000
0	Line Speed (ft/min)	-100	0	RSN (Ohm-m)	100			
			100	RSN x 10 (Ohm-m)	1000			
			100	RLN x 10 (Ohm-m)	1000			



-50	S.P. (mV)	50	0	RLN (Ohm-m)	100	0	RLL3 (Ohm-m)	100
20	Gamma-Ray (GAPI)	70	0	RMF (Ohm-m)	100	100	RLL3 x 10 (Ohm-m)	1000
0	Line Speed (ft/min)	-100	0	RSN (Ohm-m)	100			
			100	RSN x 10 (Ohm-m)	1000			
			100	RLN x 10 (Ohm-m)	1000			

LITHOLOGY LOG**PROJECT:** NBGPP Extraction Well Installations GBM-2007-3**LOCATION:** Parking lot of Fullerton Town Center.**DATE DRILLED:** 10/17/08 to 10/27/08.**HOLE DIAMETER:** 17.5" pilot & 24" Ream.**TOTAL DEPTH:** 264 ft. bgs.**SCREEN INTERVALS:** 150 – 175, 194 – 199, and 238 – 250ft. bgs.

DEPTH (ft)	SAMPLE DESCRIPTION	NOTES
0 - 10	<u>SILT WITH SAND.</u> 70% silt, 20% sand, 10% gravel, pale brown (10YR/6/3), 1/16 to 4mm, very fine sand to very fine pebble gravel, very well sorted, subrounded to well rounded, high sphericity.	
10 - 20	<u>SILT.</u> 90% silt, 10% sand, light olive brown (2.5Y/5/3).	
20 - 30	<u>SAND AND GRAVEL.</u> 50% sand, 50% gravel, light olive brown (2.5Y/5/3), 1/16 to 8mm, very fine sand to fine pebble gravel, poorly sorted, subangular to rounded, moderate sphericity.	
30 - 40	<u>GRAVEL AND SAND.</u> 60% gravel, 40% sand, light olive brown (2.5Y/5/3), 1/16 to 8mm, very fine sand to fine pebble gravel, moderately sorted, subangular to rounded, moderate sphericity.	
40 - 50	<u>GRAVEL WITH SAND.</u> 80% gravel, 20% sand, light olive brown (2.5Y/5/3), 1/16 to 8mm, very fine sand to fine pebble gravel, poorly sorted, subangular to rounded, moderate sphericity.	
50 - 55	<u>SAND.</u> 100% sand, light olive brown (2.5YR/5/4), 1/16 to 1mm, very fine to coarse sand, moderately sorted, subangular to rounded, moderate sphericity. Trace silt.	
55 - 60	<u>SAND.</u> 90% sand, 10% silt, light olive brown (2.5YR/5/4), 1/16 to 1mm, very fine to coarse sand, moderately to well sorted, subrounded to well rounded, moderate sphericity. Predominantly finer than previous.	
60 - 65	<u>SAND WITH SILT.</u> 85% sand, 15% silt, light olive brown (2.5YR/5/4), 1/16 to 2mm, very fine to very coarse sand, moderately sorted, subangular to rounded, moderate sphericity.	
65 - 68	<u>SAND.</u> 95% sand, 5% silt, light olive brown (2.5YR/5/4), 1/16 to 1mm, very fine to coarse sand, moderately to well sorted, subangular to rounded, moderate to high sphericity.	
68 - 73	<u>SAND WITH SILT.</u> 80% sand, 15% silt, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 16mm, very fine to very coarse sand, poor to moderately sorted, subangular to rounded, moderate sphericity. Black/dark gray silt and clay balls. Trace gravel.	
73 - 78	<u>SAND WITH CLAY.</u> 70% sand, 20% clay, 10% silt, very dark gray (7.5YR/3/1), <1/16 to 16mm, very fine to very coarse sand, poor to moderately sorted, subangular to rounded, moderate sphericity. Trace very fine to medium pebble gravel.	
78 - 83	<u>SILT and CLAY WITH SAND.</u> 50% silt, 30% clay, 20% sand, olive brown (2.5Y/4/4), <1/16 to 1mm, very fine to coarse sand, moderately to well sorted, subangular to subrounded, moderate sphericity.	
83 - 88	<u>SILT and CLAY WITH SAND.</u> 55% silt, 30% sand, 15% clay, yellowish brown (10YR/5/4), <1/16 to 1mm, very fine to coarse sand, moderately sorted, subangular to subrounded, moderate sphericity. Hard compact sandy silt balls.	
88 - 91	<u>SILT AND SAND.</u> 50% silt, 40% sand, 10% clay, brown (10YR/5/3), <1/16 to 32 mm, very fine to very coarse sand, poor to moderately sorted, very fine to coarse	

OCWD-EW3

DEPTH (ft)	SAMPLE DESCRIPTION	NOTES
	sand, subangular to rounded, moderate sphericity. Trace gravel, 1" piece of shale.	
91 - 96	<u>SILT and CLAY WITH SAND.</u> 60% silt, 20% sand, 20% clay, brown (10YR/5/3), <1/16 to 2mm, very fine to very coarse sand, moderately sorted, subangular to well rounded, moderate sphericity. Sticky clay balls, Trace gravel, 1 piece of gravel (1/2").	
96 - 101	<u>SILT and CLAY WITH SAND.</u> 60% silt, 20% sand, 20% clay, dark yellowish brown (10YR/4/6), <1/16 to 1mm, very fine to coarse sand, moderately to well sorted, subangular to rounded, moderate sphericity. No gravel, sticky clay balls.	
101 - 106	<u>SILT AND CLAY.</u> 50% silt, 40% clay, 10% sand, dark yellowish brown (10YR/4/6).	
106 - 109	<u>SILT and CLAY WITH SAND and GRAVEL.</u> 50% silt, 30% sand, 10% clay, 10% gravel, dark yellowish brown (10YR/4/6), <1/16 to 32mm, very fine sand to coarse pebble gravel, poorly sorted, angular to rounded, moderate sphericity, Gravelly and rocky silt.	
109 - 114	<u>SAND WITH SILT.</u> 70% sand, 20% silt, 10% gravel, light olive brown (2.5YR/5/6), 1/16 to 32mm, very fine sand to coarse pebble gravel, poorly sorted, subangular to rounded, moderate sphericity. Gravelly/rocky sand.	
114 - 119	<u>SAND.</u> 90% sand, 10% silt, light olive brown (2.5YR/5/6), 1/16 to 16mm, very fine to very coarse sand, poor to moderately sorted, subrounded to rounded, moderate sphericity. Trace very fine to medium pebble gravel.	
119 - 124	<u>SAND WITH SILT.</u> 75% sand, 20% silt, 5% clay, light olive brown (2.5YR/5/6), <1/16 to 16mm, very fine to very coarse sand, poorly sorted, angular to rounded, moderate sphericity. Trace very fine pebble gravel.	
124 - 128	<u>SAND WITH SILT.</u> 70% sand, 20% silt, 10% clay, light olive brown (2.5YR/5/6), <1/16 to 2mm, very fine to very coarse sand, poorly sorted, subangular to rounded, moderate sphericity.	
128 - 132	<u>SAND WITH SILT.</u> 60% sand, 35% silt, 5% clay, light olive brown (2.5YR/5/6), 1/16 to 16mm, very fine to very coarse sand, poorly sorted, subangular to rounded, moderate sphericity. Trace very fine to medium pebble gravel.	
132 - 138	<u>SAND.</u> 90% sand, 10% silt, light olive brown (2.5YR/5/4), 1/16 to 1mm, very fine to coarse sand, moderate to well sorted, subangular to rounded, moderate to high sphericity. Predominantly medium to coarse grained sand with some silt.	
138 - 142	<u>SAND.</u> 90% sand, 10% silt, light olive brown (2.5YR/5/4), <1/16 to 1mm, very fine to coarse sand, moderate to well sorted, subangular to rounded, moderate to high sphericity. Predominantly coarse grained sand with silt.	
142 - 148	<u>SAND WITH SILT.</u> 65% sand, 30% silt, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 1mm, very fine to coarse sand, moderate to well sorted, subangular to rounded, moderate to high sphericity.	
148 - 150	<u>SAND WITH SILT.</u> 65% sand, 35% silt, light olive brown (2.5YR/5/4), 1/16 to 1/4mm, very fine to fine sand, very well sorted, subrounded to well rounded, high sphericity.	
150 - 155	<u>SAND WITH SILT.</u> 80% sand, 20% silt, light olive brown (2.5YR/5/4), 1/16 to 1mm, very fine to coarse sand, well sorted, subangular to rounded, moderate to high sphericity.	
155 - 160	<u>SAND WITH SILT.</u> 65% sand, 20% silt, 10% gravel, 5% clay, olive brown (2.5YR/4/4), <1/16 to 16mm, very fine sand to medium pebble gravel, moderately sorted, subangular to rounded, moderate sphericity.	

OCWD-EW3

DEPTH (ft)	SAMPLE DESCRIPTION	NOTES
160 - 165	<u>SAND WITH SILT.</u> 60% sand, 30% silt, 10% clay, light olive brown (2.5YR/5/4), <1/16 to 2mm, very fine to very coarse sand, moderately sorted, subangular to rounded, moderate sphericity.	
165 - 170	<u>SAND WITH SILT.</u> 65% sand, 30% silt, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 4mm, very fine to very coarse sand, moderately to well sorted, subangular to rounded, moderate sphericity. Trace very fine pebble gravel.	
170 - 175	<u>SAND WITH SILT.</u> 65% sand, 30% silt, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 4mm, very fine to very coarse sand, moderately to well sorted, subangular to rounded, moderate sphericity. Trace very fine pebble gravel.	
175 - 180	<u>SAND.</u> 85% sand, 10% silt, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 4mm, very fine to very coarse sand, poorly sorted, subangular to rounded, moderate sphericity. Trace very fine pebble gravel.	
180 - 185	<u>SAND.</u> 85% sand, 10% silt, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 2mm, very fine to very coarse sand, poorly sorted, subangular to rounded, moderate sphericity.	
185 - 190	<u>SAND.</u> 85% sand, 10% silt, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 4mm, very fine to very coarse sand, poorly sorted, subangular to rounded, moderate sphericity. Trace very fine pebble gravel.	
190 - 195	<u>SAND WITH SILT and CLAY.</u> 65% sand, 20% silt, 15% clay, light olive brown (2.5YR/5/4), <1/16 to 1/2mm, very fine to medium sand, moderately sorted, subangular to rounded, moderate sphericity. Increased clay content.	
195- 200	<u>SAND.</u> 95% sand, 5% silt, light olive brown (2.5YR/5/4), 1/16 to 1/4mm and 2 to 4mm, very fine to very coarse sand, well sorted, subrounded to rounded, moderate sphericity. Trace very fine pebble gravel with some mica.	
200 - 205	<u>SAND.</u> 95% sand, 5% silt, light olive brown (2.5YR/5/4), 1/16 to 1/4mm, very fine to fine sand, well sorted, subrounded to rounded, moderate sphericity. Some mica content.	
205 - 210	<u>SAND.</u> 95% sand, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 4mm, very fine to very coarse sand, very poorly sorted, subangular to rounded, moderate sphericity. Coarser sand, trace very fine pebble gravel.	
210 - 215	<u>SAND.</u> 95% sand, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 1/4mm and 2 to 4mm, very fine to very coarse sand, well sorted, subrounded to rounded, moderate sphericity. Trace very fine pebble gravel with some mica.	
215 - 220	<u>SAND.</u> 95% sand, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 1/4mm and 2 to 4mm, very fine to very coarse sand, well sorted, subrounded to rounded, moderate sphericity. Trace very fine pebble gravel with some mica.	
220 - 225	<u>SAND.</u> 100% sand, light olive brown (2.5YR/5/4), <1/16 to 1/4mm, very fine to fine sand, well sorted, subangular to rounded, moderate sphericity. Trace clay.	
225 - 230	<u>SAND.</u> 100% sand, light olive brown (2.5YR/5/4), <1/16 to 1/4mm, very fine to fine sand, well sorted, subangular to rounded, moderate sphericity. Trace clay.	
230 - 235	<u>SAND.</u> 95% sand, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 1/4mm, poorly sorted, subangular to rounded, moderate sphericity.	
235 - 240	<u>SAND WITH GRAVEL.</u> 75% sand, 20% gravel, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 8mm, very fine sand to fine pebble gravel, very poorly sorted, subangular to rounded, moderate sphericity. Dark mafic gravel.	

OCWD-EW3

DEPTH (ft)	SAMPLE DESCRIPTION	NOTES
240 - 245	<u>SAND AND GRAVEL.</u> 55% sand, 40% gravel, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 8mm, very fine sand to fine pebble gravel, very poorly sorted, subangular to rounded, moderate sphericity. Dark mafic gravel.	
245 - 250	<u>SAND.</u> 85% sand, 10% gravel, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 4mm, very fine sand to very fine pebble gravel, moderately sorted, subangular to rounded, moderate sphericity.	
250 - 255	<u>SAND WITH GRAVEL.</u> 75% sand, 20% gravel, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 8mm, very fine sand to fine pebble gravel, very poorly sorted, subangular to rounded, moderate sphericity.	
255 - 260	<u>SAND.</u> 75% sand, 20% gravel, 5% clay, light olive brown (2.5YR/5/4), <1/16 to 4mm, very fine sand to very fine pebble gravel, very poorly sorted, subangular to rounded, moderate sphericity. Dark mafic gravel.	
260 - 264	<u>SAND.</u> 90% sand, 10% clay, light olive brown (2.5YR/5/4), <1/16 to 4mm, very fine to very coarse sand, poorly sorted, subangular to rounded, moderate sphericity. Trace very fine pebble gravel.	

ELECTRIC LOG



5201 Woodnere Drive, Bakersfield, CA 93313 - www.welenco.com - (800) 445-9914
 California Contractor's License No. 722373

ELECTRIC - GUARD - GAMMA RAY - TEMP LOG

FILING NO. _____ COMPANY Orange County Water District
 WELL ELMS
 FIELD Fullerton
 STATE California COUNTY Orange
 LOCATION: S. E. Corner of Hill and Harbor in Parking Lot OTHER SERVICES: _____
 Sonic Deviation _____
 JOB NO. 10167 SEC. 33 TWP. 38 RGE. 10N LAT. 33° 57' 38.2" LONG. 117° 55' 57.2" MERIDIAN: San Bernardino
 Permanent Datum: _____ Ground Level _____ Ft. Elev. _____ K. B. _____ Ft. _____
 Log Measured From: _____ Ground Level _____ 0 _____ Ft. Above Perm. Datum _____ D. F. _____ Ft. _____
 Drilling Measured From: _____ Ground Level _____ G. L. _____ Ft. _____

Run	Date	Log	Guard
	Oct. 28, 2008	263	263
Depth-Driller		Ft	Ft
Depth-Logger		Ft	Ft
Top Logged Interval		Ft	Ft
Btm. Logged Interval		Ft	Ft
Casing-Driller		In @ 50	Ft
Casing-Logger		In @ 50	Ft
Bit Size		17.5	In
Time On Bottom		4:00	4:14
Type Fluid In Hole		Polybore	
Density			
Viscosity			
pH			
Fluid Loss			
Source of Sample		Pit	
Run @ Measured Temp.		6.8 @ 75	-F
Ref @ Measured Temp.		6.8 @ 75	-F
Run @ Measured Temp.		@	-F
Source Run @ Measured Temp.		Meas	-F
Run @ SHR		@	-F
Time Since Circulation		4.0	HR
Max. Rec. Temp.		70.5	-F
Van No. Location		L-23	BHD
Drilled By		Craig Corbett	
Checked By		Maritime Alter	

Miscellaneous Information

A recreational GRS accurate to 4'-45 feet set for Datum WGS84 was used to calculate Latitude, Longitude & Elevation values. The Section, Township, and Range then determined using the IRS program (IRS accuracy is not guaranteed). The IRS program converts Latitude and Longitude to Section, Township, and Range. The NOTICE at the bottom of this heading also applies.

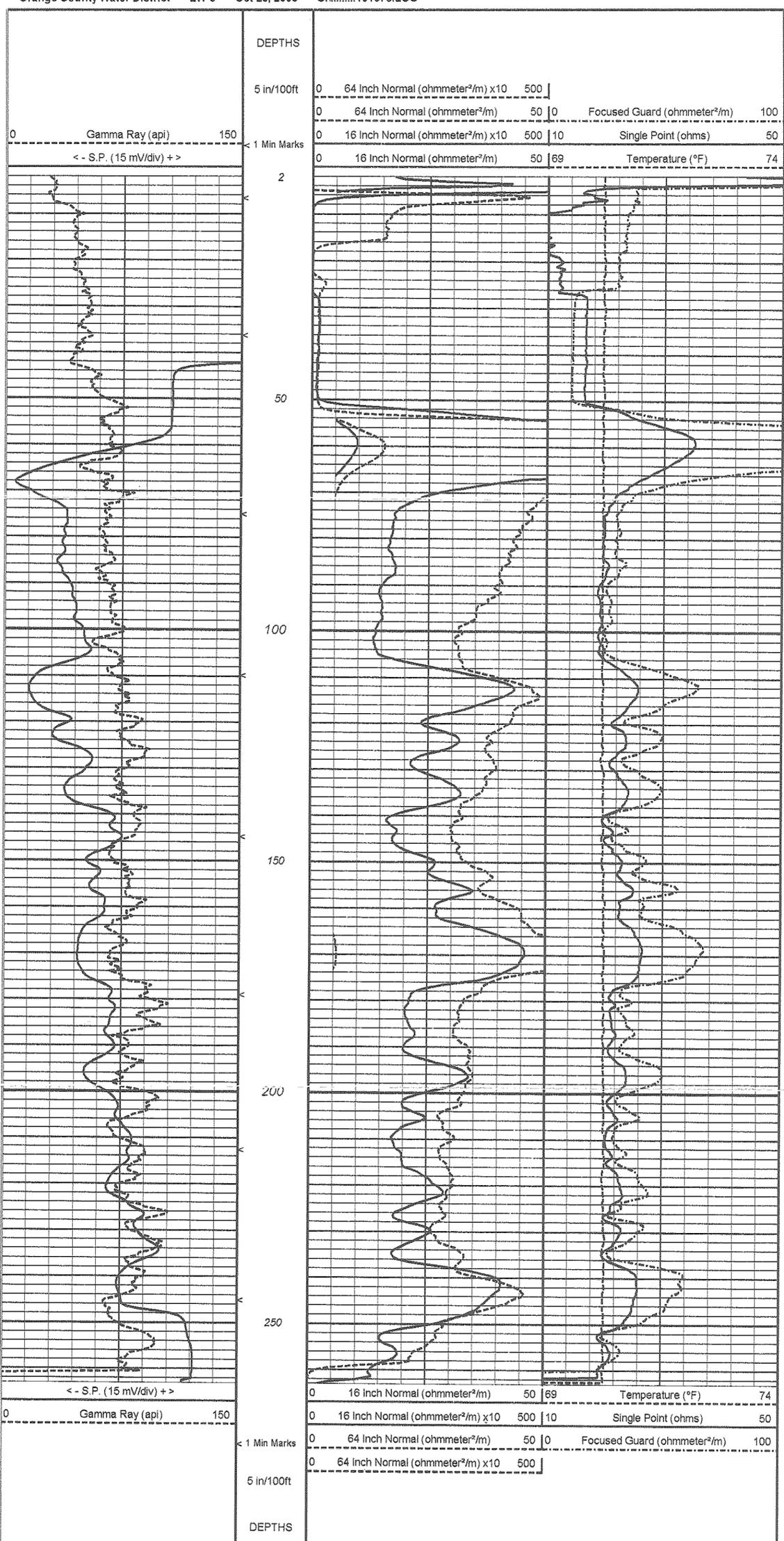
Drilled By: Bakersfield Well and Pump

NOTICE

All interpretations are opinions based on inferences from electrical and other measurements and we do not guarantee the accuracy or correctness of any verbal or written interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by one of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions as set out in our current Price Schedule. welenco, inc. October 28, 2008

GEOPHYSICAL WELL LOGS

Orange County Water District EW-3 Oct 28, 2008 CA:.....10167e.LOG



FM-16
LITHOLOGY LOG
(Adjusted to Electric Logs)

PROJECT: Forebay VOC Monitoring Well Construction Project (FB910A)

LOCATION: Behind 641 State College Blvd., near south wall in southwest corner of parking lot, 348 feet west of centerline of State College Blvd., 183 feet south of centerline of Fullerton Industrial Park access road, 9 feet west of FM-16A.

DATE DRILLED: 7/17/01 to 7/18/01

HOLE DIAMETER: 10 5/8" borehole, top 40 feet enlarged by drive casing to 11 3/4"

TOTAL DEPTH: 282 ft. bgs

SCREEN INTERVAL: 248 ft. - 268 ft. bgs

DEPTH (ft)	SAMPLE DESCRIPTION	NOTES
0 - 5	<u>SAND and CLAY.</u> 50% sand, 50% clay, trace gravel, dark yellow brown (10YR/3/4), <1/16 to 1/2mm, 1 to 4mm, very fine to medium sand and very coarse sand to very fine pebble gravel, well sorted, subrounded to rounded, high sphericity.	
5 - 10	<u>SAND with CLAY.</u> 80% sand, 20% clay, dark yellow brown (10YR/4/4), 1/16 to 1/4mm, very fine to fine sand, well sorted, rounded to well rounded, high sphericity.	
10 - 20	<u>CLAY and SAND.</u> 60% clay, 40% sand, dark brown (10YR/4/3), 1/16 to 1/4mm, very fine to fine sand, well sorted, rounded, high sphericity.	
20 - 25	<u>SAND.</u> 100% sand, trace clay, trace silt, light olive brown (2.5Y/5/4), 1/16 to 1/8mm, very fine sand, very well sorted, well rounded, high sphericity.	
25 - 30	<u>SAND.</u> 80% sand, 10% clay, 10% silt, brown (10YR/5/3), <1/16 to 2mm, very fine to very coarse sand, moderately sorted, subangular to subrounded, moderate sphericity.	
30 - 35	<u>CLAY and SAND.</u> 50% clay, 40% sand, 10% silt, light olive brown (2.5Y/5/4), <1/16 to 1/4mm, 2 to 4mm, very fine to fine and very coarse sand, poor to moderately sorted, subangular, moderate sphericity.	
35 - 40	<u>CLAY.</u> 80% clay, 10% silt, 10% sand, trace gravel, light olive brown (2.5Y/5/4).	
40 - 45	<u>SAND and CLAY with SILT.</u> 40% sand, 40% clay, 20% silt, light olive brown (2.5Y/5/4), <1/16 to 1/2mm, very fine to medium sand, moderately sorted, subangular, moderate sphericity.	
45 - 50	<u>SAND and SILT.</u> 50% sand, 40% silt, 10% clay, light olive brown (2.5Y/5/4), <1/16 to 1mm, 2 to 4mm, very fine to coarse sand and very fine pebble gravel, moderately sorted, subangular, moderate sphericity.	
50 - 55	<u>SAND and CLAY with SILT.</u> 40% sand, 40% clay, 20% silt, light olive brown (2.5Y/5/4), <1/16 to 1/2mm, 2 to 4mm, very fine to medium sand and very fine pebble gravel, moderately sorted, subrounded, moderate sphericity.	
55 - 60	<u>SAND with CLAY and SILT.</u> 60% sand, 25% clay, 15% silt, multi-colored, <1/16 to 8mm, very fine sand to fine pebble gravel, poorly sorted, subrounded, moderate sphericity, K-feldspar, quartz.	
60 - 65	<u>CLAY with SAND.</u> 65% clay, 30% sand, 5% silt, light olive brown (2.5Y/5/4), <1/16 to 1/8mm, 1 to 2mm, very fine and very coarse sand, moderately sorted,	

FM-16

DEPTH (ft)	SAMPLE DESCRIPTION	NOTES
	rounded, moderate sphericity.	
65 - 70	<u>SAND and CLAY</u> . 50% sand, 40% clay, 10% silt, trace gravel, light olive brown (2.5Y/5/4), <1/16 to 4mm, very fine sand to very fine pebble gravel, poorly sorted, subangular, moderate sphericity.	
70 - 75	<u>SAND with CLAY and SILT</u> . 60% sand, 25% clay, 15% silt, trace gravel, yellowish brown (10YR/5/4), <1/16 to 4mm, very fine sand to very fine pebble gravel, poorly sorted, subrounded, moderate sphericity.	
75 - 80	<u>SAND and CLAY</u> . 50% sand, 45% clay, 5% silt, dark brown (10YR/4/3), <1/16 to 16mm, very fine sand to medium pebble gravel, poorly sorted, subrounded, moderate sphericity.	
80 - 85	<u>CLAY and SAND</u> . 50% clay, 40% sand, 10% silt, dark brown (10YR/4/3), <1/16 to 1mm, very fine to coarse sand, moderately sorted, rounded, moderate sphericity.	
85 - 90	<u>SAND and CLAY with SILT</u> . 40% sand, 40% clay, 20% silt, trace gravel, dark brown (10YR/4/3), <1/16 to 1mm, very fine to coarse sand, moderately sorted, subrounded to rounded, moderate sphericity.	
90 - 95	<u>SAND and CLAY</u> . 50% sand, 40% clay, 10% silt, dark yellow brown (10YR/4/4), <1/16 to 1/4mm, very fine to fine sand, well sorted, rounded, moderate sphericity.	
95 - 100	<u>SAND and GRAVEL with CLAY and SILT</u> . 40% sand, 25% clay, 20% gravel, 15% silt, dark yellow brown (10YR/4/4), <1/16 to 1mm, very fine to coarse sand, moderately sorted, subrounded to rounded, moderate sphericity.	
100 - 105	<u>SAND and GRAVEL with CLAY and SILT</u> . 40% sand, 20% clay, 20% gravel, 20% silt, dark yellow brown (10YR/4/4), <1/16 to 4mm, very fine sand to very fine pebble gravel, moderately sorted, subrounded to rounded, moderate sphericity.	
105 - 110	<u>GRAVEL with SILT and SAND</u> . 50% gravel, 25% silt, 20% sand, 5% clay, multi-colored, <1/16 to 8mm, very fine sand to fine pebble gravel, moderately sorted, subangular to subrounded, low to moderate sphericity.	
110 - 115	<u>GRAVEL with SAND and SILT</u> . 55% gravel, 20% sand, 20% silt, 5% clay, multi-colored, <1/16 to 16mm, very fine sand to medium pebble gravel, moderately sorted, angular to subangular, low to moderate sphericity.	
115 - 120	<u>GRAVEL with SAND and SILT</u> . 50% gravel, 20% sand, 20% silt, 10% clay, dark yellow brown (10YR/4/4), <1/16 to 16mm, very fine sand to medium pebble gravel, moderately sorted, angular to subangular, low to moderate sphericity.	
120 - 125	<u>GRAVEL with SAND</u> . 65% gravel, 20% sand, 10% silt, 5% clay, multi-colored, <1/16 to 8mm, very fine sand to medium pebble gravel, poor to moderately sorted, subangular to subrounded, moderate sphericity.	
125 - 130	<u>GRAVEL with SAND and SILT</u> . 45% gravel, 30% sand, 20% silt, 5% clay, dark yellow brown (10YR/4/4), <1/16 to 4mm, very fine sand to very fine pebble gravel, moderately sorted, subangular to subrounded, moderate sphericity.	
130 - 135	<u>SAND and GRAVEL with SILT</u> . 40% sand, 40% gravel, 20% silt, trace clay, yellow brown (10YR/5/4), <1/16 to 4mm, very fine sand to very fine pebble gravel, moderately sorted, subangular to subrounded, low to moderate sphericity.	
135 - 140	<u>SAND with GRAVEL</u> . 70% sand, 20% gravel, 10% silt, multi-colored, <1/16 and 1/4 to 2mm, very fine and medium to very coarse sand, well sorted, subrounded, moderate to high sphericity.	

FM-16

DEPTH	SAMPLE DESCRIPTION	NOTES
140 - 145	<u>SAND with GRAVEL.</u> 60% sand, 30% gravel, 10% silt, multi-colored, <1/16 and 1/4 to 4mm, very fine and medium sand to very fine pebble gravel, moderately sorted, subangular to subrounded, low to moderate sphericity.	
145 - 150	<u>SAND with GRAVEL.</u> 60% sand, 20% gravel, 10% clay, 10% silt, multi-colored, <1/16 and 1/2 to 4mm, very fine and coarse sand to very fine pebble gravel, moderately sorted, subangular to subrounded, low to moderate sphericity.	
150 - 155	<u>SAND with CLAY and GRAVEL.</u> 60% sand, 20% clay, 20% gravel, trace silt, multi-colored, <1/16 and 1/4 to 4mm, very fine and medium sand to very fine pebble gravel, moderately sorted, angular to subangular, low to moderate sphericity.	
155 - 160	<u>SAND and GRAVEL with CLAY and SILT.</u> 50% sand, 20% gravel, 15% clay, 15% silt, brown (10YR/5/3), <1/16 to 1/8mm, 1/2 to 4mm, very fine and medium sand to very fine pebble gravel, moderately sorted, angular to subangular, low to moderate sphericity.	
160 - 165	<u>GRAVEL with CLAY.</u> 60% gravel, 30% clay, 10% sand, trace silt, multi-colored, <1/16mm, 2 to 8mm, very fine sand and very fine to fine pebble gravel, moderate to well sorted, angular to subangular, low to moderate sphericity.	
165 - 170	<u>CLAY and SILT and GRAVEL and SAND.</u> 30% silt, 30% clay, 20% gravel, 20% sand, brown (10YR/5/3), <1/16 to 1/8mm, 2 to 8mm, very fine sand and very fine to fine pebble gravel, poor to moderately sorted, angular to subangular, low to moderate sphericity.	
170 - 175	<u>CLAY with GRAVEL and SAND.</u> 45% clay, 25% gravel, 20% sand, 10% silt, brown (10YR/5/3), <1/16mm, 1 to 8mm, very fine sand and very coarse sand to fine pebble gravel, poorly sorted, subangular, moderate sphericity.	
175 - 180	<u>CLAY and SAND with GRAVEL.</u> 45% clay, 30% sand, 15% gravel, 10% silt, brown (10YR/5/3), <1/16mm, 1 to 4mm, very fine sand and very coarse sand to very fine pebble gravel, poorly sorted, subangular to subrounded, moderate sphericity.	
180 - 185	<u>CLAY with GRAVEL and SAND.</u> 50% clay, 25% gravel, 20% sand, 5% silt, brown (10YR/5/3), <1/16 to 1/8mm, 1 to 4mm, very fine sand and very coarse sand to very fine pebble gravel, poorly sorted, subangular, moderate sphericity.	
185 - 190	<u>CLAY with GRAVEL and SAND.</u> 45% clay, 25% gravel, 20% sand, 10% silt, brown (10YR/5/3), <1/16 to 1/8mm, 1 to 8mm, very fine sand and very coarse sand to fine pebble gravel, poor to moderately sorted, subangular, moderate sphericity.	
190 - 195	<u>SAND with SILT and CLAY.</u> 50% sand, 25% silt, 20% clay, 5% gravel, brown (10YR/5/3), <1/16mm, 1 to 8mm, very fine sand and very coarse sand to fine pebble gravel, poorly sorted, subangular to subrounded, moderate sphericity.	
195 - 200	<u>SAND and SILT with GRAVEL and CLAY.</u> 40% sand, 25% silt, 20% gravel, 15% clay, brown (10YR/5/3), <1/16 to 1/8mm, 1 to 8mm, very fine sand and very coarse sand to fine pebble gravel, poorly sorted, subangular to subrounded, moderate sphericity.	
200 - 205	<u>GRAVEL with SAND and SILT.</u> 50% gravel, 30% sand, 15% silt, 5% clay, brown (10YR/5/3), <1/16 to 1/8mm, 1/2 to 8mm, very fine and coarse sand to fine pebble gravel, poor to moderately sorted, subangular, moderate sphericity.	

FM-16

DEPTH (ft)	SAMPLE DESCRIPTION	NOTES
205 - 210	<u>SAND with GRAVEL and SILT.</u> 50% sand, 25% gravel, 20% silt, 5% clay, brown (10YR/5/3), <1/16 to 8mm, very fine sand to fine pebble gravel, moderately sorted, subangular to subrounded, moderate sphericity.	
210 - 215	<u>SAND with SILT.</u> 70% sand, 20% silt, 5% clay, 5% gravel, brown (10YR/5/3), <1/16 to 2mm, very fine to very coarse sand, moderate to well sorted, subrounded, moderate to high sphericity.	
215 - 220	<u>SAND and SILT with CLAY.</u> 40% sand, 35% silt, 20% clay, 5% gravel, brown (10YR/5/3), <1/16 to 1/8mm, 1/2 to 4mm, very fine and coarse sand to very fine pebble gravel, moderately sorted, subrounded, moderate sphericity.	
220 - 225	<u>CLAY and SAND and SILT.</u> 35% clay, 30% sand, 25% silt, 10% gravel, brown (10YR/5/3), <1/16 to 1/4mm, 1 to 8mm, very fine to fine sand and very coarse sand to fine pebble gravel, moderately sorted, subrounded, moderate sphericity.	
225 - 230	<u>CLAY and SAND with SILT.</u> 40% clay, 40% sand, 20% silt, trace gravel, brown (10YR/5/3), <1/16 to 1/2mm, very fine to medium sand, moderate to well sorted, subrounded, moderate to high sphericity.	
230 - 235	<u>CLAY and SAND with SILT.</u> 45% clay, 40% sand, 15% silt, trace gravel, brown (10YR/5/3), <1/16 to 1/2mm, very fine to medium sand, well sorted, subrounded, moderate to high sphericity.	
235 - 240	<u>SAND with SILT.</u> 60% sand, 30% silt, 5% clay, 5% gravel, brown (10YR/5/3), <1/16 to 1/8mm, 1 to 4mm, very fine sand and very coarse sand to very fine pebble gravel, moderately sorted, subrounded, moderate sphericity.	
240 - 245	<u>SAND.</u> 70% sand, 10% silt, 10% clay, 10% gravel, brown (10YR/5/3), <1/16 to 1/4mm, 1 to 4mm, very fine to fine sand and very coarse sand to very fine pebble gravel, moderately sorted, subrounded, moderate sphericity.	
245 - 250	<u>SAND with SILT and CLAY.</u> 60% sand, 20% silt, 15% clay, 5% gravel, brown (10YR/5/3), <1/16 to 1/4mm, 1 to 4mm, very fine to fine sand and very coarse sand to very fine pebble gravel, moderately sorted, subrounded, moderate sphericity.	
250 - 255	<u>SAND with SILT.</u> 60% sand, 30% silt, 10% clay, brown (10YR/5/3), <1/16 to 2mm, very fine to very coarse sand, moderately sorted, subrounded, moderate sphericity.	
255 - 260	<u>SAND with GRAVEL and SILT.</u> 60% sand, 20% gravel, 20% silt, brown (10YR/5/3), <1/16 to 1/8mm, 1/2 to 4mm, very fine and coarse sand to very fine pebble gravel, moderately sorted, subrounded to rounded, moderate to high sphericity.	
260 - 265	<u>SAND with GRAVEL and SILT.</u> 70% sand, 15% gravel, 15% silt, multi-colored, <1/16 to 4mm, very fine sand to very fine pebble gravel, moderately sorted, subangular to subrounded, moderate to high sphericity.	
265 - 270	<u>SAND with GRAVEL and SILT.</u> 70% sand, 15% gravel, 15% silt, trace clay, multi-colored, <1/16 to 4mm, very fine sand to very fine pebble gravel, moderately sorted, subangular to subrounded, moderate to high sphericity.	
270 - 280	<u>SAND with GRAVEL and SILT.</u> 70% sand, 15% gravel, 15% silt, multi-colored, <1/16 to 4mm, very fine sand to very fine pebble gravel, moderately sorted, subangular to subrounded, moderate to high sphericity.	

ELECTRIC LOG

Job No: 00874
Company: ORANGE COUNTY WATER DISTRICT
Well: FM-16
Field: FULLERTON
County: ORANGE
State: CA

Location: BEHIND 641 STATE COLLEGE BLVD
Other Services: GRALL3

Permanent Datum: G.L.
Log Measured From: G.L.
Drilling Measured From: G.L.

Date: 7/19/01
Run Number: ONE
Depth Drier: 280'
Depth Logger: 281'
Bottom Logged Interval: 280'

Top Log Interval: 40'
Casing Driller: 20'
Casing Logger: N/A
BH Size: 10.5"
Type Fluid in Hole: BENTONITE

Density / Viscosity: N/A
pH / Fluid Loss: N/A
Source of Sample: PIT
Rm @ Meas. Temp: 7.7 @ 77F
Rmt @ Meas. Temp: 8.7 @ 77F
Source of Rmt / Rmc: MEAS
Rm @ BHT: N/A
Time Circulation Stopped: N/A
Time Logger on Bottom: 11:20
Max. Recorded Temperature: N/A
Equipment Number: PSS-3
Location: LA
Recorder By: LOOEY
Witnessed By: D. FIELD

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

ELOG Calibration Report

Serial Model: D2 DTQ
Shop Calibration Performed: Fri Jul 06 13:17:34 2001
Before Survey Verification Performed: Fri Jun 01 09:26:50 2001
After Survey Verification Performed: Fri Jun 01 09:44:15 2001

Shop Calibration

	Readings			References			Results	
	Zero	Cal		Zero	Cal		Gain	Offset
Short	9.012	100.498		10.200	102.200	Ohm-m	1.006	1.137
Long	7.515	97.252		10.200	102.200	Ohm-m	1.025	2.495
IEE	169.093	7257.435	counts	0.185	7.943	A		
VSN	86.296	8184.398	counts	1.646	156.107	V		
VLN	99.444	2108.926	counts	1.897	40.225	V		

Before Survey Verification

	Readings			References			Results	
	Zero	Cal		Zero	Cal		Gain	Offset
Short	55.548	100.654		48.278	100.391	Ohm-m	1.155	-15.899
Long	54.265	100.943		103.425	103.425	Ohm-m	-3.314	437.988
IEE	89.361	7244.112	counts	0.098	7.928	A		
VSN	55.769	8192.019	counts	1.064	156.253	V		
VLN	13.620	2053.897	counts	0.260	39.176	V		

After Survey Verification

	Readings			References			Results	
	Zero	Cal		Zero	Cal		Gain	Offset
Short	55.007	100.650		55.548	100.654	Ohm-m	0.988	1.187
Long	55.447	100.964		100.943	100.943	Ohm-m	1.025	-2.595
IEE	89.954	7202.551	counts	0.098	7.882	A		
VSN	55.593	8144.757	counts	1.060	155.351	V		
VLN	14.009	2042.542	counts	0.267	38.959	V		

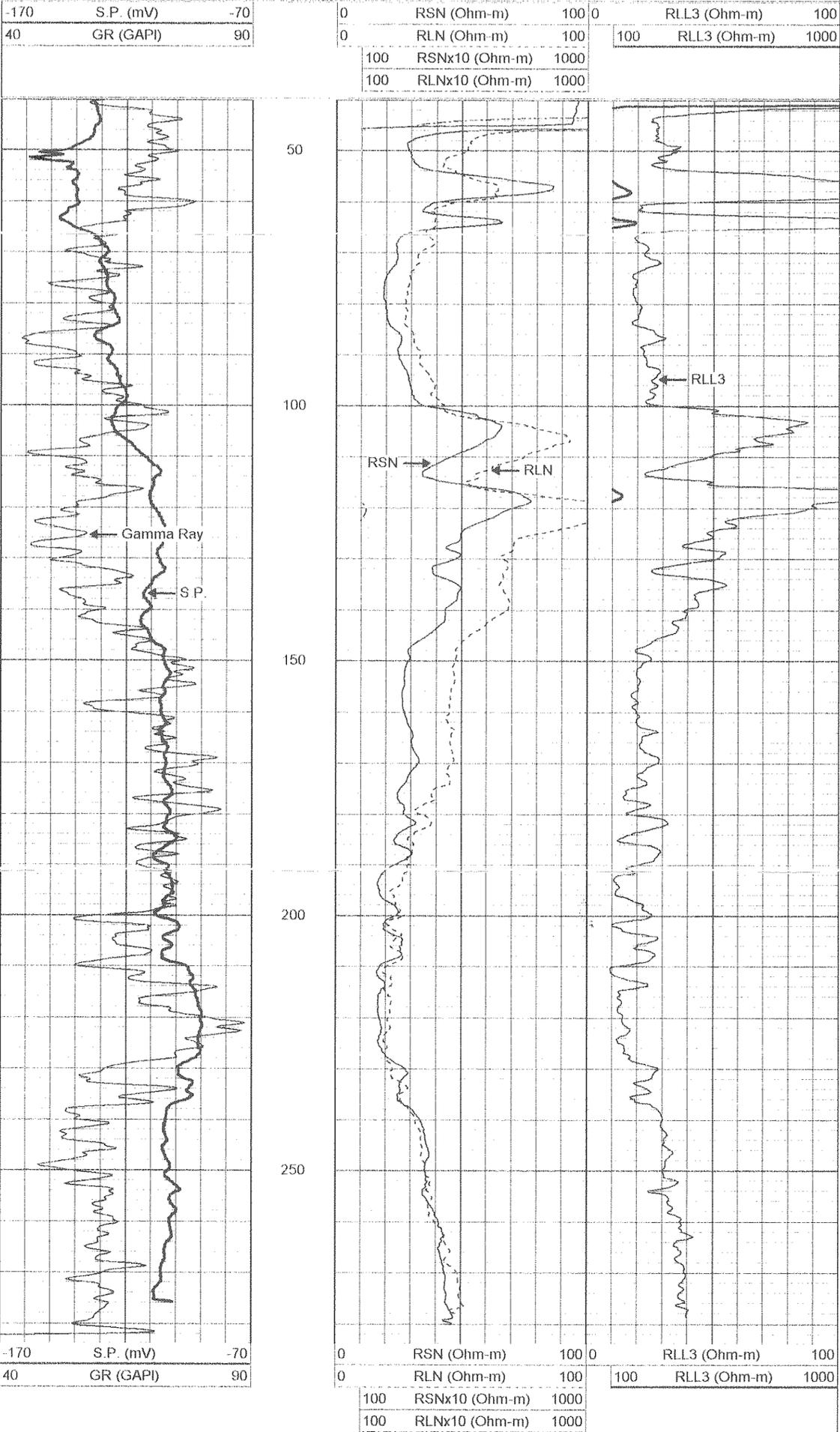
After Survey Verification compared to Before Survey Calibration

	Zero			Cal			
	Before	After		Before	After		
Short	48.278	55.548	Ohm-m	100.391	100.654	Ohm-m	
Long	258.132	54.265	Ohm-m	103.425	100.943	Ohm-m	

Gamma Ray Calibration Report

Serial Number: D2
Tool Model: ELOG
Performed: Fri Jun 01 10:50:12 2001
Calibrator Value: 162 GAPI
Background Reading: 165.089 cps
Calibrator Reading: 727.35 cps
Sensitivity: 0.288122 GAPI/cps

Database File: 00874.db
Dataset Pathname: OCWD/FM16/ELOG/MERGE2
Presentation Format: elog
Dataset Creation: Thu Jul 19 11:53:48 2001
Charted by: Depth in Feet scaled 1:240



STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

DWR USE ONLY — DO NOT FILL IN
035110W-35N03
STATE WELL NO./STATION NO
LATITUDE _____ LONGITUDE _____
APN/TRS/OTHER _____

Owner's Well No. **Kimberly 1A** No. **779871**
Date Work Began **01/07/02** Ended **05/01/02**
Local Permit Agency **Orange County Health Dept**
Permit No. **02-01-26** Permit Date **01/07/02**

GEOLOGIC LOG		
ORIENTATION () <input checked="" type="checkbox"/> VERTICAL _____ HORIZONTAL _____ ANGLE _____ (SPECIFY)		
DRILLING METHOD Air Reverse FLUID _____		
DEPTH FROM SURFACE		
Ft	to	Ft
DESCRIPTION		
Describe material, grain size, color, etc		
0	50	not logged
50	65	clayey sand
65	95	clay
95	105	sandy clay
105	150	sand
150	170	clay
170	185	sand
185	205	clayey sand
205	235	sand
235	250	clay
250	260	clayey sand
260	270	sand
270	280	clay
280	300	sand
300	310	gravelly sand
310	350	sand
350	360	clayey silt
360	370	sand
370	435	gravelly sand
5	445	silty sand
445	455	sand
455	500	clay
500	540	sand
540	550	clay
550	575	sand
575	585	clay
585	595	sandy clay
595	620	clay
620	640	sand
640	650	silty sand
TOTAL DEPTH OF BORING 1353 Feet		
TOTAL DEPTH OF COMPLETED WELL 1243 Feet		

WELL OWNER
Name **City of Fullerton**
Mailing Address **303 W. Commonwealth Fullerton Ca 92831**
CITY STATE ZIP

WELL LOCATION
Address **1400 Kimberly**
City **Fullerton**
County **Orange**
APN Book _____ Page _____ Parcel _____
Township **33N** Range **10W** Section **35**
Latitude **33** DEG **52** MIN **95.97** SEC NORTH Longitude **117** DEG **54** MIN **12.06** SEC WEST

LOCATION SKETCH
NORTH _____ SOUTH _____
WEST _____ EAST _____
Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc and attach a map. Use additional paper if necessary. **PLEASE BE ACCURATE & COMPLETE.**

ACTIVITY ()
 NEW WELL
MODIFICATION/REPAIR
_____ Deepen
_____ Other (Specify) _____
DESTROY (Describe Procedures and Materials Under 'GEOLOGIC LOG')
PLANNED USES ()
WATER SUPPLY
_____ Domestic Public
_____ Irrigation _____ Industrial
MONITORING _____
TEST WELL _____
CATHODIC PROTECTION _____
HEAT EXCHANGE _____
DIRECT PUSH _____
INJECTION _____
VAPOR EXTRACTION _____
SPARGING _____
REMEDICATION _____
OTHER (SPECIFY) _____

WATER LEVEL & YIELD OF COMPLETED WELL
DEPTH TO FIRST WATER **122.5** (Ft.) BELOW SURFACE
DEPTH OF STATIC **121**
WATER LEVEL **3150** (Ft.) & DATE MEASURED **4/22/02**
ESTIMATED YIELD **continuous** (GPM) & TEST TYPE
TEST LENGTH **28** (Hrs.) TOTAL DRAWDOWN **16.35** (Ft.)
* May not be representative of a well's long-term yield.

DEPTH FROM SURFACE	BORE-HOLE DIA. (Inches)	CASING (S)								
		TYPE ()				MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)	
		BLANK	SCREEN	CONDUCTOR	FILL PIPE					
0	50	42"	X	X			steel	36"Ø	5/16	
0	463	34"	X				copper brg	20"	3/8	
455	460	34"	X				" steel	20x16	3/8	
460	500	34"	X				"	16"	5/16	
500	535	34"	X	X			"	16"	5/16	.070"
535	550	34"	X				"	16"	5/16	

DEPTH FROM SURFACE	ANNULAR MATERIAL			
	TYPE			
Ft. to Ft.	CE-MENT ()	BEN-TONITE ()	FILL ()	FILTER PACK (TYPE/SIZE)
0	460	X		
460	1243		X	1/4 x 8

ATTACHMENTS ()
 Geologic Log
 Well Construction Diagram
 Geophysical Log(s)
 Soil/Water Chemical Analyses
 Other _____
 ATTACH ADDITIONAL INFORMATION, IF IT EXISTS

CERTIFICATION STATEMENT
I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.
 NAME **Layne Christensen Company**
 (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
 ADDRESS **11001 Etiwanda Ave., Fontana, Ca. 92337** CITY STATE ZIP
 Signed _____ DATE SIGNED **4/24/02** STATE **510011** ZIP
 WELL OWNER/AUTHORIZED REPRESENTATIVE DATE SIGNED C-57 LICENSE NUMBER

ORIGINAL
File with DWR

Page 2 of 4

Owner's Well No. Kimberly 1A

Date Work Began 01/07/02

Local Permit Agency Orange County Health Dept

Permit No. C2-C1-26 Permit Date 01/07/02

STATE OF CALIFORNIA
WELL COMPLETION REPORT

Refer to Instruction Pamphlet

No. 779874

Ended 05/01/02

DWR USE ONLY - DO NOT FILL IN

03S110W-35N03
STATE WELL NO / STATION NO

LATITUDE _____ LONGITUDE _____

APN/TRS/OTHER _____

DEPTH FROM SURFACE		DESCRIPTION
Ft	to Ft	
650	680	sand
680	690	clayey sand
690	720	clayey sand
720	750	clay
750	760	clayey silt
760	770	silty sand
770	810	sand
810	860	gravelly sand
860	870	sandy clay
870	890	gravelly sand
890	920	clay
920	930	sand
930	980	clay
980	1070	sand
1070	1080	gravelly sand
1080	1190	sand
1190	1283	gravelly sand
1283	1313	silty sand
1313	1323	sand
1323	1333	clayey silt
1333	1343	sandy silt
1343	1353	sand

WELL OWNER

Name City of Fullerton

Mailing Address 303 W. Commonwealth

Fullerton Ca 92832

CITY STATE ZIP

WELL LOCATION

Address 1400 K& Kimberly

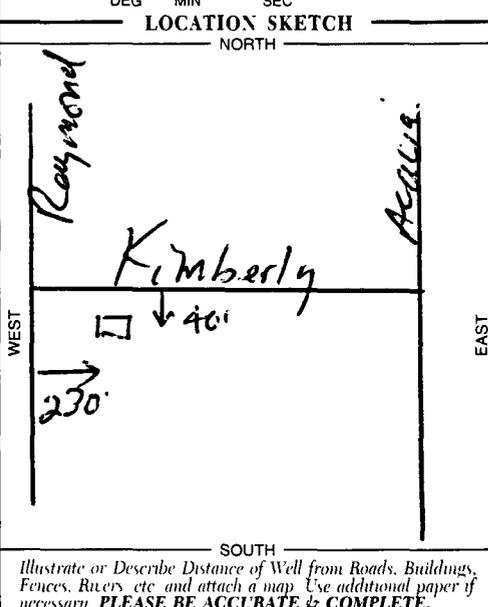
City KX Fullerton

County Orange

APN Book _____ Page _____ Parcel _____

Township 33 Range 10W Section 35

Latitude 33 52 95.97 NORTH Longitude 117 54 12.06 WEST



ACTIVITY (NEW WELL)

MODIFICATION/REPAIR

Deepen

Other (Specify) _____

DESTROY (Describe Procedures and Material Under "GEOLOGIC LOG")

PLANNED USES (WATER SUPPLY)

Domestic Public

Irrigation Industrial

MONITORING

TEST WELL

CATHODIC PROTECTION

HEAT EXCHANGE

DIRECT PUSH

INJECTION

VAPOR EXTRACTION

SPARGING

REMEDIATION

OTHER (SPECIFY) _____

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 122.5 (Ft.) BELOW SURFACE

DEPTH OF STATIC 121

WATER LEVEL _____ (Ft.) & DATE MEASURED 4/22/02

ESTIMATED YIELD 3150 (GPM) & TEST TYPE continuous

TEST LENGTH 28 (Hrs) TOTAL DRAWDOWN 16.35 (Ft.)

* May not be representative of a well's long-term yield.

TOTAL DEPTH OF BORING 1353 (Feet)

TOTAL DEPTH OF COMPLETED WELL 1243 (Feet)

DEPTH FROM SURFACE	BORE-HOLE DIA. (Inches)	CASING (S)								
		TYPE (<input checked="" type="checkbox"/>)				MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)	
Ft	to Ft	BLANK	SCREEN	CON. DUCTOR	FILL PIPE					
550	570	34"	X				cppr brg stl	16	5/16	.080"
570	660	34"	X				"	16	5/16	
660	710	34"	X				"	16	5/16	.070"
710	765	34"	X				"	16	5/16	
765	885	34"	X				"	16	5/16	.070"
885	970	34"	X				"	16	5/16	

DEPTH FROM SURFACE	ANNULAR MATERIAL			
	TYPE			
Ft. to Ft.	CE-MENT (<input checked="" type="checkbox"/>)	BEN-TONITE (<input checked="" type="checkbox"/>)	FILL (<input checked="" type="checkbox"/>)	FILTER PACK (TYPE/SIZE)

ATTACHMENTS ()

Geologic Log

Well Construction Diagram

Geophysical Log(s)

Soil/Water Chemical Analyses

Other _____

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME Layne Christensen ~~ES&K~~ Company

(PERSON, FIRM OR CORPORATION) (TYPED OR PRINTED)

ADDRESS 11001 Etiwanda Ave Fontana Ca. 92337

CITY STATE ZIP

Signed [Signature] DATE SIGNED 4/24/02 510011

WELL DRILLER AUTHORIZED REPRESENTATIVE C-57 LICENSE NUMBER

ELECTRIC LOG



BOREHOLE GEOPHYSICS

17301 W. COLFAX, STE. 265, GOLDEN, CO 80401
PHONE: (303) 279-0171 FAX: 279-2730

WELL: KIMBERLY 1A
LOGS: 16-64" NORMAL RES
SINGLE POINT RESIST.
SPONTANEOUS POTENTIAL

03S110W-35N03

PROJECT: CITY OF FULLERTON
CLIENT: LAYNE CHRISTENSEN
LOCATION: FULLERTON

DATE: 4 FEBRUARY 02
COUNTY: LOS ANGELES
STATE: CALIFORNIA

DRILLING CONTRACTOR: LAYNE CHRISTENSEN
ELEV: NA DEPTH REF: GROUND LEVEL

CUSTOMER ID: 1353
COLOG ID: 1347

RUN NO.	BIT RECORD			CASINGS RECORD		
	Bit Size	From	To	Size/Wgt/Thk	From	To
1	42"	0	50'	36"	0	50'
2	17.5"	50'	1353'			
3						
4						

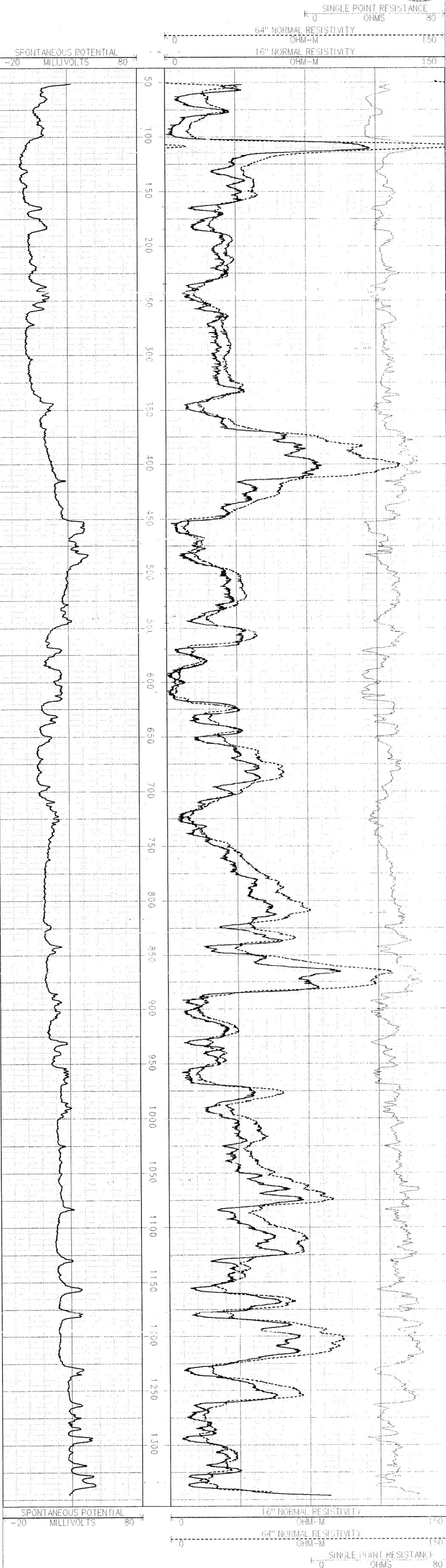
DRILL METHOD: REVERSE ROTARY DATE DRILLED: TIME SINCE CIRC 1 HOUR
 HOLE MEDIUM: WATER FLUID LEVEL 0 MUD TYPE: N/A
 VISCOSITY: N/A WEIGHT: N/A Fm N/A at N/A Deg N/A

LOGGING ENGINEER: J ABREAU INSTRUMENTS: MSI SERIES 5
 CLIENT REP: EARL PENSEE UNIT/TRUCK: 17
 OTHER SERVICES: GAMMA, CALIPER, GUARD

LOG FUNCTION	RUN NO.	MODEL	EQUIPMENT		LOGGING SPEED FT/MIN	DETECTOR TYPE	SPACING		SOURCE TYPE	SOURCE SIZE CURIP	LOGGED INTERVAL		INT. FEET
			PROBE S.N.	UPHOLE S.N.			16"-R2 FEET	64"-R2 FEET			FROM	TO	
16" NORMAL	1	RLP	404	1524	0.1	40					1345'	50'	1295'
64" NORMAL	1	RLP	404	1524	0.1	40					1345'	50'	1295'
SINGLE PT	1	RLP	404	1524	0.1	40					1345'	50'	1295'
SP	1	RLP	404	1524	0.1	40					1345'	50'	1295'

SOURCE S.N.(S): NONE USED CALIBRATION FACTOR(S):
 DIGITAL FILE NAME(S): RLP.RA0, RLP.PLP, RLP.INT, RLP.BAT
 REMARKS:
 PRE-LOG CALIBRATION CHECK WITHIN 2%
 POST-LOG CALIBRATION CHECK WITHIN 2% N/A - NOT AVAILABLE
 SURFACE CASING STICKUP = 0.0'

CITY OF FULLERTON, KIMBERLY #1, 4 FEBRUARY 02



CITY OF FULLERTON, KIMBERLY #1, 4 FEBRUARY 02

