environmental
properties management, LLC

Cimarron Environmental Response Trust
Revision of Aquifer Pumping Test Data
Pilot Test Report - Appendix Z

January 15, 2019

environmental
properties management, LLC

January 15, 2019

Mr. Paul Davis
Project Manager
Oklahoma Department of Environmental Quality
707 North Robinson
Oklahoma City, OK 73102

Re: Cimarron Environmental Response Trust
Revision of Aquifer Pumping Test Data Analysis – Pilot Test Report Appendix Z

Dear Mr. Davis:

In a letter dated August 24, 2018, the Oklahoma Department of Environmental Quality (DEQ) commented on *Remediation Pilot Test Report*, submitted by Environmental Properties Management LLC (EPM) on June 1, 2018. That report included an analysis of data generated during an aquifer pumping test conducted at Extraction Trench GETR-BA1-01. Water level measurement data collected during the pumping and recovery phases of the test were evaluated using AQTESOLV™ software. The software calculated hydrogeologic parameters for the transition zone material surrounding the extraction trench. The values for these parameters were subsequently used to revise the design of groundwater remediation infrastructure in Burial Area #1 (BA1).

DEQ commented that the location coordinate values entered in the software application were incorrect because an x-axis coordinate of zero should be entered for all observation wells located on either side of the extraction trench alignment, provided they are not located beyond the linear extent of the trench alignment. The y-axis coordinate would then be determined by measuring the distance from each observation point to the trench in a direction perpendicular to the trench. DEQ requested a corrected version of Appendix Z containing revised coordinate inputs and aquifer parameter outputs resulting from the AQTESOLV solutions.

A copy of the corrected Appendix Z is attached to this letter. The parameter values generated by AQTESOLV were tabulated in Table 6-2 of the *Remediation Pilot Test Report.* In addition to Appendix Z, a copy of the original Table 6-2 is attached to this letter as well as the corrected Table 6-2, containing the corrected output parameters. The corrected Table 6-2 contains the word "revised" in the file name and the date of the revision in the footer. A comparison of the original and corrected versions of Table 6-2 indicates the changes in aquifer parameter values resulting from the pump test solution revisions are relatively minor in magnitude.

The impact of correcting the X and Y coordinate values in the AQTESOLV software application for each observation point is that changes in aquifer parameters were insignificant in most cases, and less than 15 percent in all cases. Aquifer parameters such as transmissivity and hydraulic conductivity (parameters for which values were calculated by AQTESOLV) typically range by orders of magnitude. For instance, hydraulic conductivity may range from 10^{-7} centimeters per second (cm/sec) for a low-permeability soil to 10^{-1} cm/sec for coarse alluvial material.

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Consequently, a change of less than 15% is insignificant, and does not indicate that changes to the location or design of groundwater remediation infrastructure components are warranted.

In summary, the revision of x- and y- coordinate values in the AQTESOLV software application did not result in aquifer parameter changes that would require modifications to the location or design of groundwater remediation infrastructure presented in the November 2, 2018 *Facility Decommissioning Plan – Rev 1*.

If you have questions or further comment, please contact me at 405-642-5152 or jlux@envpm.com.

Sincerely,

Jeff Lux

Jeff Lux, P.E.
Project Manager

Attachments

cc: Ken Kalman, US Nuclear Regulatory Commission
Lifeng Guo, US Nuclear Regulatory Commission (electronic copy only)
Robert Evans, US Nuclear Regulatory Commission – Region IV

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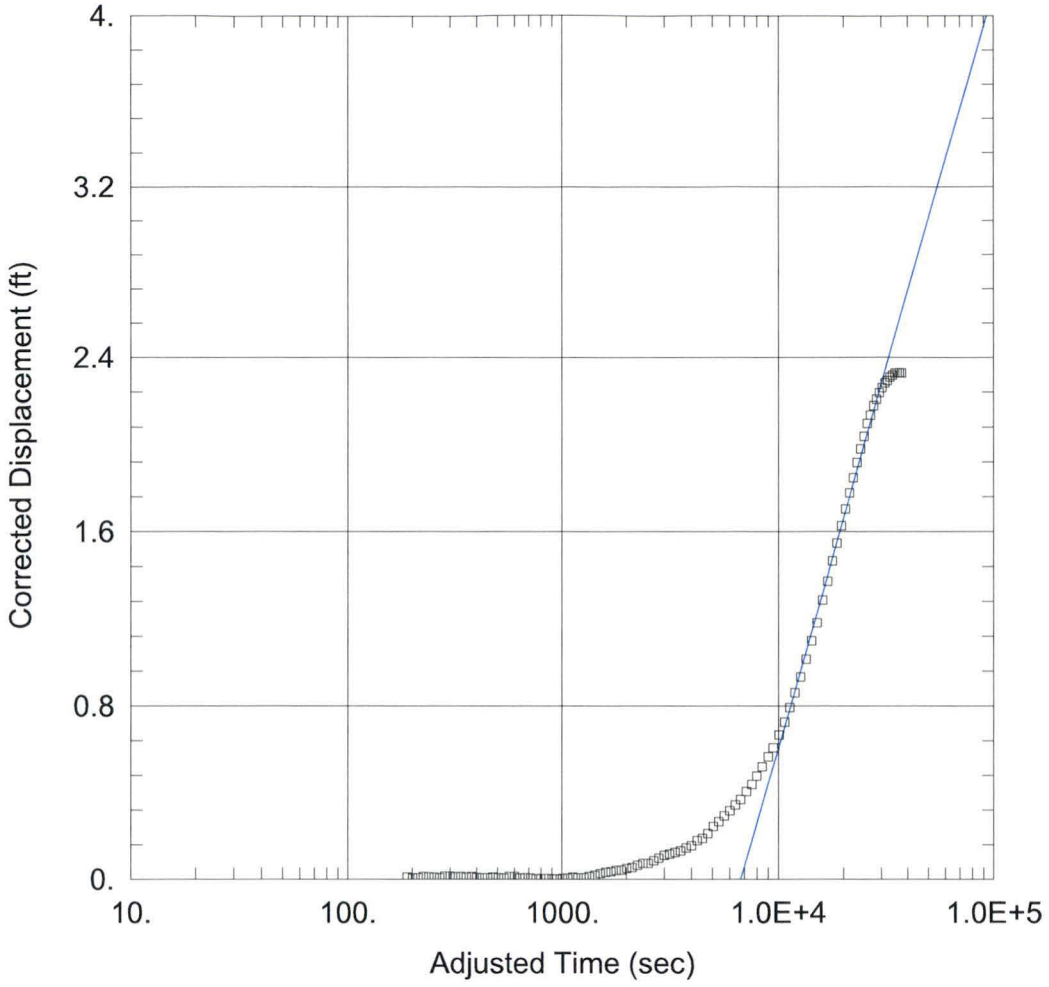
ATTACHMENT 1
APPENDIX Z TO *REMEDIATION PILOT TEST REPORT*
REVISED VERSION



WELL TEST ANALYSIS

Data Set: Z:\...\02W02_Cooper Jacobs-08282018.aqt
Date: 12/07/18 Time: 13:57:53

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16. ft Anisotropy Ratio (Kz/Kr): 0.02351

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ 02W02	0	-25

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 161. ft^2/day S = 0.04472

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 12/07/18
Time: 13:59:22

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01

AQUIFER DATA

Saturated Thickness: 16. ft
Anisotropy Ratio (Kz/Kr): 0.02351

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 2

Observation Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of Observations: 53

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.	0.03	960.	0.53
30.	0.06	1080.	0.55
45.	0.08	1200.	0.61
60.	0.08	1500.	0.78
75.	0.07	1800.	0.92
90.	0.08	2100.	1.09
105.	0.09	2400.	1.23
120.	0.12	2700.	1.4
135.	0.12	3000.	1.54

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
150.	0.12	3300.	1.67
165.	0.13	3600.	1.82
180.	0.14	4200.	2.14
195.	0.15	4800.	2.37
210.	0.15	5400.	2.71
225.	0.17	6000.	2.94
240.	0.17	6600.	3.2
255.	0.19	7200.	3.47
270.	0.19	9000.	4.17
285.	0.21	1.08E+4	4.88
300.	0.22	1.26E+4	5.59
360.	0.24	1.44E+4	6.24
420.	0.26	1.62E+4	6.98
480.	0.31	1.8E+4	7.54
540.	0.34	2.16E+4	8.99
600.	0.38	2.52E+4	10.27
720.	0.43	2.88E+4	10.28
840.	0.48		

Observation Well No. 2: 02W02

X Location: 0. ft
Y Location: -25. ft

Radial distance from GETR-BA1-01B: 25. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 102

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
189.6	0.01	3576.	0.132
201.	0.005	3786.	0.145
213.	0.006	4008.	0.156
225.6	0.013	4248.	0.179
238.8	0.011	4500.	0.19
253.2	0.01	4764.	0.212
268.2	0.007	5046.	0.245
283.8	0.014	5346.	0.268
300.6	0.014	5664.	0.295
318.6	0.011	6000.	0.32
337.2	0.013	6360.	0.346
357.6	0.009	6720.	0.372
378.6	0.013	7140.	0.411
400.8	0.008	7560.	0.444
424.8	0.007	7980.	0.484
450.	0.006	8460.	0.528
476.4	0.01	9000.	0.575
504.6	0.007	9480.	0.618
534.6	0.005	1.008E+4	0.681
566.4	0.013	1.068E+4	0.742
600.	0.012	1.128E+4	0.812
636.	0.005	1.194E+4	0.884
672.	0.006	1.266E+4	0.961
714.	0.005	1.344E+4	1.049
756.	0.002	1.422E+4	1.139
798.	0.003	1.506E+4	1.229
846.	0.003	1.596E+4	1.341
900.	0.002	1.686E+4	1.436
948.	0.001	1.776E+4	1.539
1008.	0.004	1.866E+4	1.629
1068.	0.005	1.956E+4	1.718
1128.	0.009	2.046E+4	1.804
1194.	0.007	2.136E+4	1.888
1266.	0.007	2.226E+4	1.967

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1344.	0.012	2.316E+4	2.048
1422.	0.018	2.406E+4	2.119
1506.	0.026	2.496E+4	2.185
1596.	0.032	2.586E+4	2.255
1692.	0.035	2.676E+4	2.3
1788.	0.041	2.766E+4	2.35
1896.	0.043	2.856E+4	2.384
2010.	0.049	2.946E+4	2.42
2130.	0.054	3.036E+4	2.448
2256.	0.064	3.126E+4	2.473
2388.	0.074	3.216E+4	2.485
2532.	0.074	3.306E+4	2.505
2682.	0.086	3.396E+4	2.515
2838.	0.097	3.486E+4	2.527
3006.	0.111	3.576E+4	2.527
3186.	0.116	3.666E+4	2.53
3372.	0.124	3.756E+4	2.528

SOLUTION

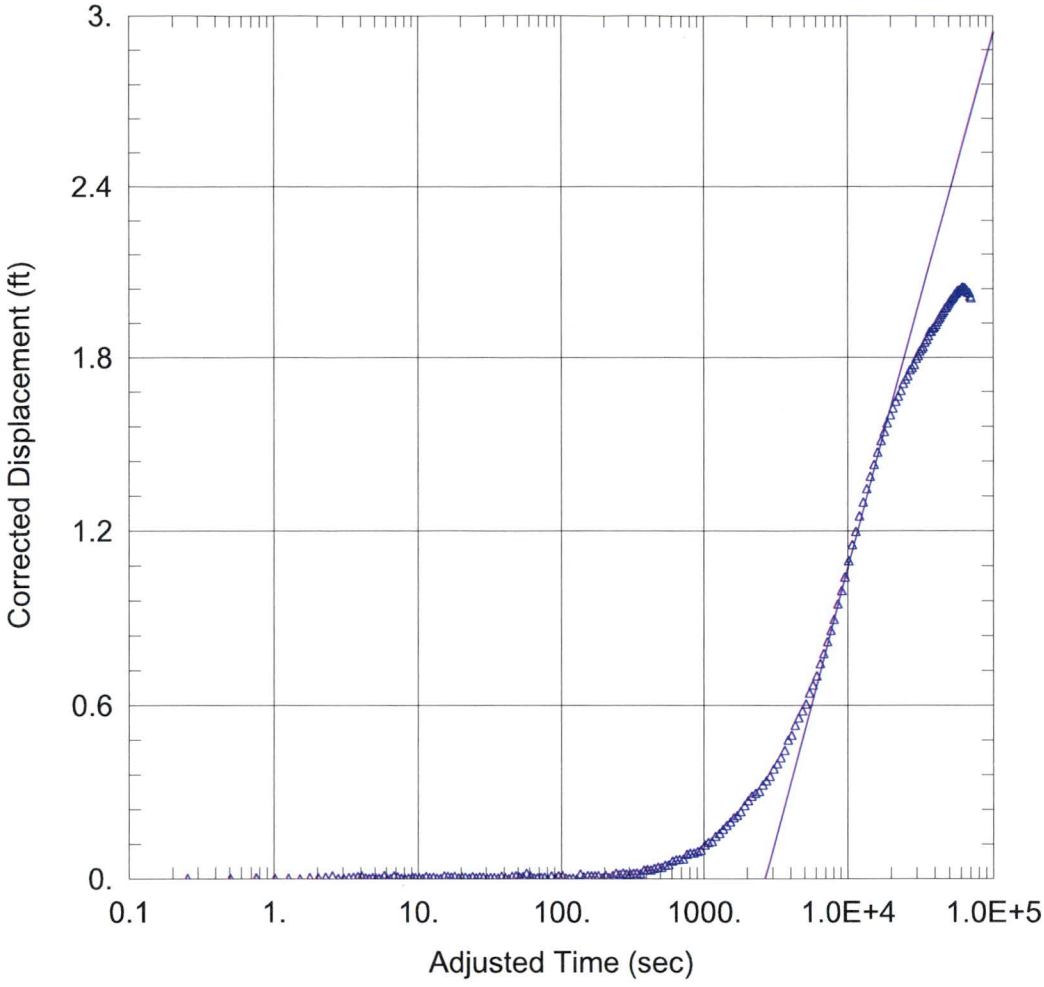
Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	161.	ft^2/day
S	0.04472	

= T/b = 10.06 ft/day (0.00355 cm/sec)
= S/b = 0.002795 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\02W28_cooper_jacobs-08282018.aqt
Date: 12/07/18 Time: 14:15:05

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16.33 ft Anisotropy Ratio (Kz/Kr): 0.01333

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
△ 02W28	0	19

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 303.1 ft^2/day S = 0.05741

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 12/07/18
Time: 14:15:42

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01

AQUIFER DATA

Saturated Thickness: 16.33 ft
Anisotropy Ratio (Kz/Kr): 0.01333

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 16.06 ft
Screen Length: 1480. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 1

Observation Well No. 1: 02W28

X Location: 0. ft
Y Location: 19. ft

Radial distance from GETR-BA1-01B: 19. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 221

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.25	0.002	948.	0.099
0.5	0.001	1008.	0.116
0.75	0.003	1068.	0.125
1.	0.001	1128.	0.129
1.25	0.002	1194.	0.147
1.5	0.	1266.	0.157
1.75	0.004	1344.	0.171
2.	0.003	1422.	0.185
2.25	0.005	1506.	0.197
2.5	0.009	1596.	0.212

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
2.75	0.001	1692.	0.22
3.	0.001	1788.	0.233
3.25	0.004	1896.	0.255
3.5	0.005	2010.	0.272
3.75	0.007	2130.	0.288
4.	0.009	2256.	0.298
4.25	0.003	2388.	0.305
4.5	0.001	2532.	0.327
4.75	0.004	2682.	0.342
5.	0.002	2838.	0.358
5.25	0.002	3006.	0.384
5.5	0.	3186.	0.402
5.75	0.011	3372.	0.424
6.	0.	3576.	0.45
6.36	0.001	3786.	0.487
6.72	0.009	4008.	0.504
7.14	0.006	4248.	0.539
7.56	0.002	4500.	0.566
7.98	0.001	4764.	0.591
8.46	0.002	5046.	0.616
9.	0.005	5346.	0.655
9.48	0.004	5664.	0.684
10.08	0.004	6000.	0.716
10.68	0.001	6360.	0.761
11.28	0.007	6720.	0.797
11.94	0.004	7140.	0.84
12.66	0.005	7560.	0.881
13.44	0.002	7980.	0.921
14.22	0.001	8460.	0.978
15.06	0.009	9000.	1.026
15.96	0.008	9480.	1.076
16.92	0.005	1.008E+4	1.135
17.88	0.008	1.068E+4	1.195
18.96	0.003	1.128E+4	1.245
20.1	0.006	1.194E+4	1.302
21.3	0.005	1.266E+4	1.355
22.56	0.002	1.344E+4	1.406
23.88	0.007	1.422E+4	1.452
25.32	0.003	1.506E+4	1.497
26.82	0.006	1.596E+4	1.543
28.38	0.005	1.686E+4	1.588
30.06	0.002	1.776E+4	1.622
31.86	0.004	1.866E+4	1.655
33.72	0.004	1.956E+4	1.686
35.76	0.002	2.046E+4	1.713
37.86	0.008	2.136E+4	1.739
40.08	0.004	2.226E+4	1.759
42.48	0.	2.316E+4	1.781
45.	0.008	2.406E+4	1.809
47.64	0.01	2.496E+4	1.825
50.46	0.005	2.586E+4	1.839
53.46	0.007	2.676E+4	1.862
56.64	0.018	2.766E+4	1.87
60.	0.009	2.856E+4	1.882
63.6	0.003	2.946E+4	1.907
67.2	0.003	3.036E+4	1.918
71.4	0.004	3.126E+4	1.936
75.6	0.005	3.216E+4	1.945
79.8	0.	3.306E+4	1.953
84.6	0.009	3.396E+4	1.972
90.	0.002	3.486E+4	1.982
94.8	0.009	3.576E+4	1.997
100.8	0.011	3.666E+4	2.013
106.8	0.002	3.756E+4	2.015
112.8	0.001	3.846E+4	2.028
119.4	0.002	3.936E+4	2.033
126.6	0.	4.026E+4	2.041

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
134.4	0.016	4.116E+4	2.053
142.2	0.006	4.206E+4	2.063
150.6	0.011	4.296E+4	2.071
159.6	0.01	4.386E+4	2.081
169.2	0.009	4.476E+4	2.089
178.8	0.011	4.566E+4	2.096
189.6	0.003	4.656E+4	2.108
201.	0.012	4.746E+4	2.111
213.	0.004	4.836E+4	2.119
225.6	0.011	4.926E+4	2.128
238.8	0.018	5.016E+4	2.136
253.2	0.014	5.106E+4	2.142
268.2	0.019	5.196E+4	2.147
283.8	0.016	5.286E+4	2.153
300.6	0.016	5.376E+4	2.16
318.6	0.018	5.466E+4	2.166
337.2	0.019	5.556E+4	2.169
357.6	0.017	5.646E+4	2.178
378.6	0.029	5.736E+4	2.175
400.8	0.032	5.826E+4	2.18
424.8	0.03	5.916E+4	2.179
450.	0.035	6.006E+4	2.187
476.4	0.04	6.096E+4	2.192
504.6	0.038	6.186E+4	2.183
534.6	0.046	6.276E+4	2.191
566.4	0.047	6.366E+4	2.188
600.	0.061	6.456E+4	2.184
636.	0.065	6.546E+4	2.179
672.	0.066	6.636E+4	2.171
714.	0.067	6.726E+4	2.172
756.	0.084	6.816E+4	2.169
798.	0.089	6.906E+4	2.155
846.	0.089	6.996E+4	2.149
900.	0.094		

SOLUTION

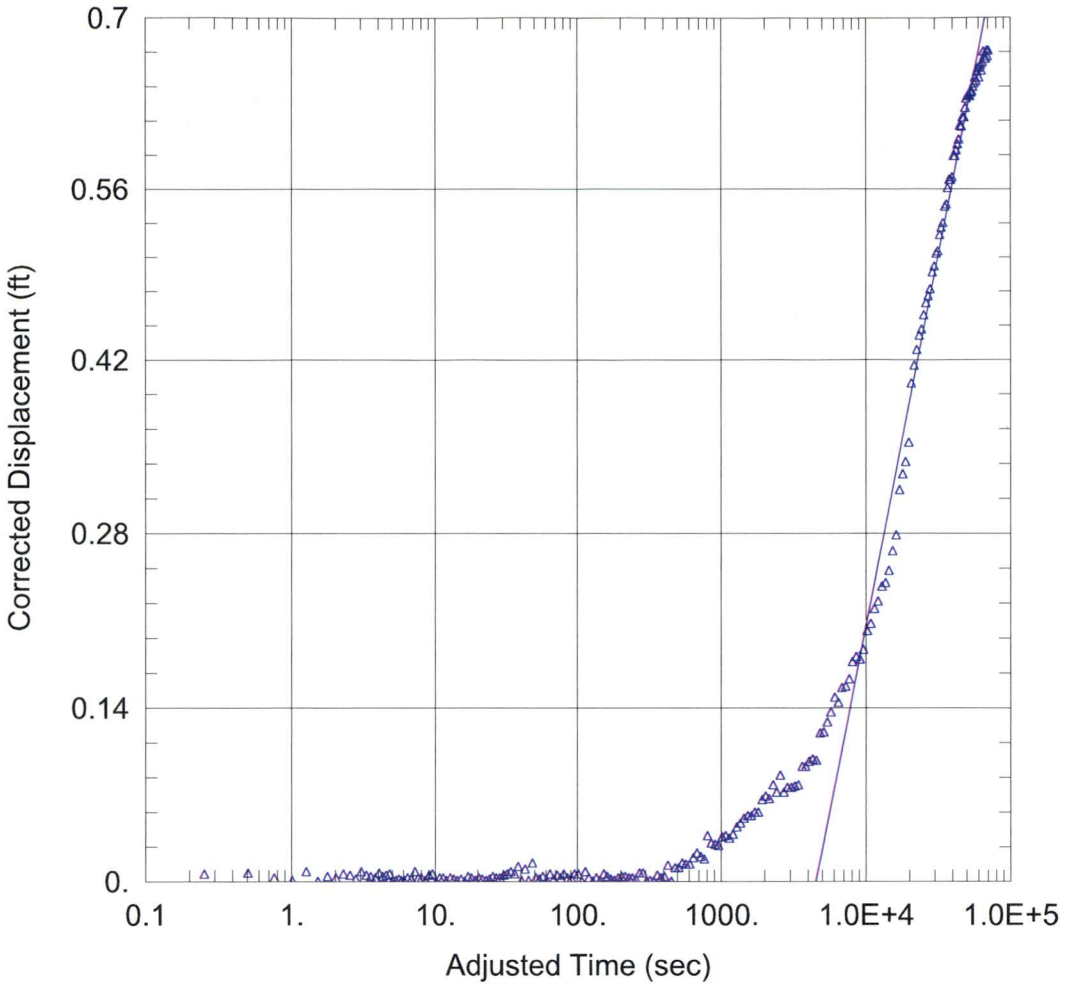
Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	303.1	ft^2/day
S	0.05741	

K = T/b = 18.56 ft/day (0.006549 cm/sec)
Ss = S/b = 0.003516 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\02W39_cooper_jacobs.aqt
Date: 12/07/18 Time: 15:13:37

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16.33 ft Anisotropy Ratio (Kz/Kr): 0.01333

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
△ 02W39	25	4

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 945.3 ft^2/day S = 0.1712

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 12/07/18
Time: 15:14:16

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01

AQUIFER DATA

Saturated Thickness: 16.33 ft
Anisotropy Ratio (Kz/Kr): 0.01333

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 16.06 ft
Screen Length: 1480. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 1

Observation Well No. 1: 02W39

X Location: 25. ft
Y Location: 4. ft

Radial distance from GETR-BA1-01B: 25.3179778 ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 221

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.251	0.006	948.	0.029
0.501	0.007	1008.	0.036
0.751	0.003	1068.	0.037
1.001	0.001	1128.	0.035
1.251	0.008	1194.	0.038
1.501	0.	1266.	0.044
1.751	0.004	1344.	0.047
2.001	0.003	1422.	0.051
2.251	0.006	1506.	0.053
2.501	0.005	1596.	0.053

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
2.751	0.002	1692.	0.056
3.001	0.008	1788.	0.056
3.251	0.005	1896.	0.066
3.501	0.004	2010.	0.069
3.751	0.003	2130.	0.067
4.001	0.007	2256.	0.078
4.251	0.004	2388.	0.072
4.501	0.005	2532.	0.086
4.751	0.006	2682.	0.072
5.001	0.001	2838.	0.076
5.251	0.001	3006.	0.076
5.501	0.002	3186.	0.077
5.751	0.001	3372.	0.078
6.001	0.001	3576.	0.093
6.36	0.003	3786.	0.093
6.72	0.002	4008.	0.097
7.14	0.008	4248.	0.099
7.56	0.003	4500.	0.098
7.98	0.003	4764.	0.12
8.46	0.001	5046.	0.121
9.	0.005	5346.	0.129
9.48	0.006	5664.	0.137
10.08	0.	6000.	0.149
10.68	0.003	6360.	0.145
11.28	0.003	6720.	0.157
11.94	0.001	7140.	0.158
12.66	0.003	7560.	0.164
13.44	0.002	7980.	0.178
14.22	0.001	8460.	0.182
15.06	0.002	9000.	0.18
15.96	0.	9480.	0.188
16.92	0.004	1.008E+4	0.203
17.88	0.003	1.068E+4	0.209
18.96	0.001	1.128E+4	0.221
20.1	0.003	1.194E+4	0.227
21.3	0.002	1.266E+4	0.239
22.56	0.001	1.344E+4	0.242
23.88	0.002	1.422E+4	0.252
25.32	0.004	1.506E+4	0.268
26.82	0.003	1.596E+4	0.281
28.38	0.003	1.686E+4	0.318
30.06	0.005	1.776E+4	0.331
31.86	0.006	1.866E+4	0.341
33.72	0.008	1.956E+4	0.357
35.76	0.006	2.046E+4	0.406
37.86	0.012	2.136E+4	0.421
40.08	0.001	2.226E+4	0.434
42.48	0.01	2.316E+4	0.446
45.	0.001	2.406E+4	0.451
47.64	0.015	2.496E+4	0.463
50.46	0.003	2.586E+4	0.473
53.46	0.002	2.676E+4	0.479
56.64	0.004	2.766E+4	0.485
60.	0.001	2.856E+4	0.499
63.6	0.006	2.946E+4	0.504
67.2	0.002	3.036E+4	0.515
71.4	0.005	3.126E+4	0.517
75.6	0.003	3.216E+4	0.531
79.8	0.006	3.306E+4	0.537
84.6	0.003	3.396E+4	0.541
90.	0.003	3.486E+4	0.555
94.8	0.006	3.576E+4	0.557
100.8	0.006	3.666E+4	0.571
106.8	0.	3.756E+4	0.578
112.8	0.008	3.846E+4	0.578
119.4	0.003	3.936E+4	0.58
126.6	0.	4.026E+4	0.598

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
134.4	0.003	4.116E+4	0.598
142.2	0.001	4.206E+4	0.603
150.6	0.006	4.296E+4	0.608
159.6	0.004	4.386E+4	0.612
169.2	0.002	4.476E+4	0.624
178.8	0.001	4.566E+4	0.623
189.6	0.003	4.656E+4	0.631
201.	0.004	4.746E+4	0.631
213.	0.004	4.836E+4	0.639
225.6	0.003	4.926E+4	0.647
238.8	0.003	5.016E+4	0.649
253.2	0.002	5.106E+4	0.65
268.2	0.007	5.196E+4	0.649
283.8	0.007	5.286E+4	0.652
300.6	0.	5.376E+4	0.653
318.6	0.001	5.466E+4	0.657
337.2	0.	5.556E+4	0.66
357.6	0.005	5.646E+4	0.665
378.6	0.003	5.736E+4	0.662
400.8	0.004	5.826E+4	0.67
424.8	0.013	5.916E+4	0.673
450.	0.	6.006E+4	0.665
476.4	0.011	6.096E+4	0.674
504.6	0.011	6.186E+4	0.676
534.6	0.015	6.276E+4	0.671
566.4	0.014	6.366E+4	0.678
600.	0.014	6.456E+4	0.687
636.	0.019	6.546E+4	0.683
672.	0.023	6.636E+4	0.681
714.	0.02	6.726E+4	0.681
756.	0.018	6.816E+4	0.688
798.	0.037	6.906E+4	0.683
846.	0.031	6.996E+4	0.688
900.	0.03		

SOLUTION

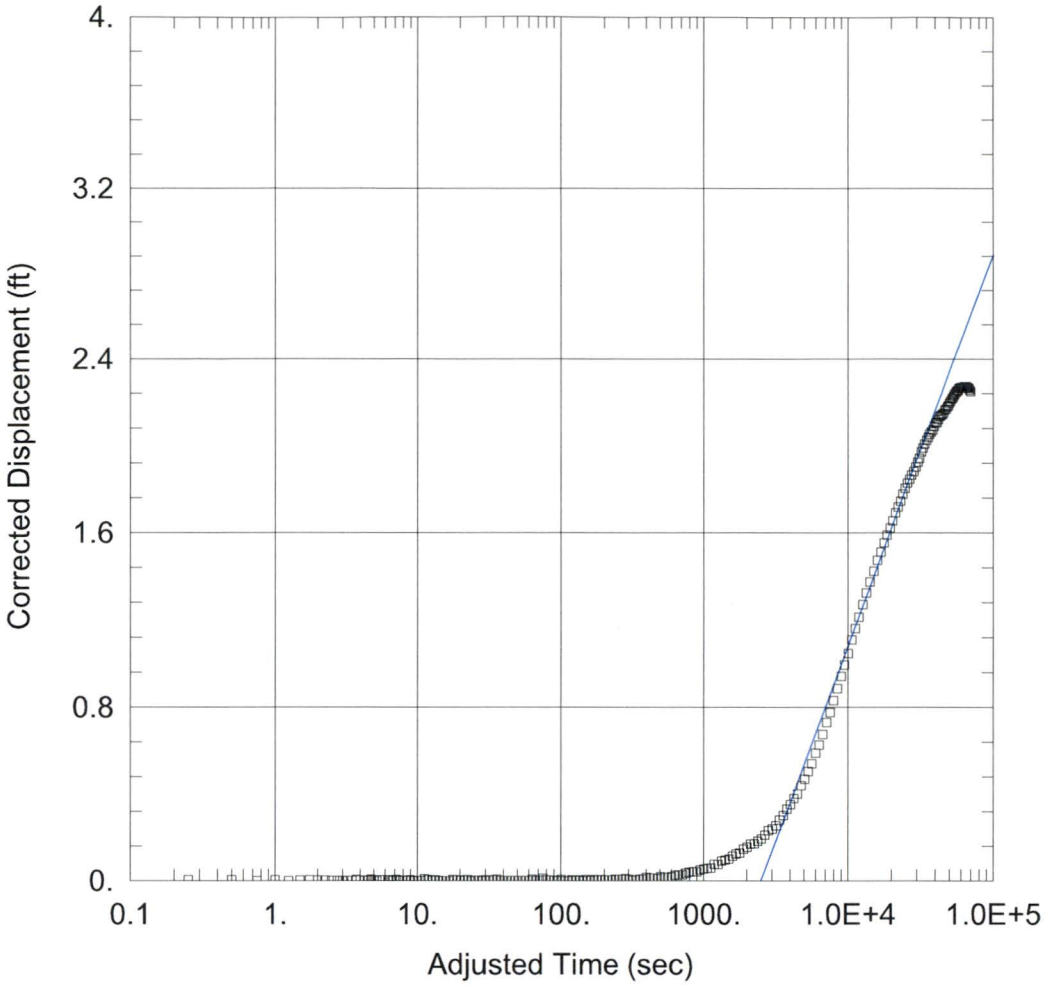
Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	945.3	ft^2/day
S	0.1712	

K = T/b = 57.89 ft/day (0.02042 cm/sec)
Ss = S/b = 0.01048 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\TMW09_Cooper Jacobs.aqt
Date: 12/07/18 Time: 15:08:38

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16. ft Anisotropy Ratio (Kz/Kr): 0.02351

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
TMW09	0	-22

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 314.2 ft^2/day S = 0.04183

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 12/07/18
Time: 15:09:06

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01

AQUIFER DATA

Saturated Thickness: 16. ft
Anisotropy Ratio (Kz/Kr): 0.02351

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 2

Observation Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of Observations: 53

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.	0.03	960.	0.53
30.	0.06	1080.	0.55
45.	0.08	1200.	0.61
60.	0.08	1500.	0.78
75.	0.07	1800.	0.92
90.	0.08	2100.	1.09
105.	0.09	2400.	1.23
120.	0.12	2700.	1.4
135.	0.12	3000.	1.54

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
150.	0.12	3300.	1.67
165.	0.13	3600.	1.82
180.	0.14	4200.	2.14
195.	0.15	4800.	2.37
210.	0.15	5400.	2.71
225.	0.17	6000.	2.94
240.	0.17	6600.	3.2
255.	0.19	7200.	3.47
270.	0.19	9000.	4.17
285.	0.21	1.08E+4	4.88
300.	0.22	1.26E+4	5.59
360.	0.24	1.44E+4	6.24
420.	0.26	1.62E+4	6.98
480.	0.31	1.8E+4	7.54
540.	0.34	2.16E+4	8.99
600.	0.38	2.52E+4	10.27
720.	0.43	2.88E+4	10.28
840.	0.48		

Observation Well No. 2: TMW09

X Location: 0. ft
Y Location: -22. ft

Radial distance from GETR-BA1-01B: 22. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 221

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.25	0.003	948.	0.049
0.5	0.004	1008.	0.054
0.75	0.	1068.	0.057
1.	0.003	1128.	0.059
1.25	0.	1194.	0.077
1.5	0.002	1266.	0.075
1.75	0.004	1344.	0.092
2.	0.002	1422.	0.096
2.25	0.002	1506.	0.1
2.5	0.001	1596.	0.113
2.75	0.001	1692.	0.124
3.	0.	1788.	0.129
3.25	0.001	1896.	0.146
3.5	0.001	2010.	0.155
3.75	0.005	2130.	0.17
4.	0.002	2256.	0.172
4.25	0.001	2388.	0.184
4.5	0.002	2532.	0.195
4.75	0.006	2682.	0.212
5.	0.004	2838.	0.233
5.25	0.001	3006.	0.241
5.5	0.003	3186.	0.256
5.75	0.003	3372.	0.284
6.	0.003	3576.	0.305
6.36	0.003	3786.	0.335
6.72	0.001	4008.	0.356
7.14	0.005	4248.	0.384
7.56	0.001	4500.	0.406
7.98	0.002	4764.	0.445
8.46	0.001	5046.	0.476
9.	0.003	5346.	0.513
9.48	0.	5664.	0.549
10.08	0.001	6000.	0.6
10.68	0.001	6360.	0.638

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
11.28	0.008	6720.	0.689
11.94	0.005	7140.	0.747
12.66	0.001	7560.	0.796
13.44	0.003	7980.	0.853
14.22	0.001	8460.	0.911
15.06	0.	9000.	0.971
15.96	0.	9480.	1.027
16.92	0.	1.008E+4	1.084
17.88	0.005	1.068E+4	1.15
18.96	0.004	1.128E+4	1.206
20.1	0.001	1.194E+4	1.263
21.3	0.003	1.266E+4	1.325
22.56	0.005	1.344E+4	1.383
23.88	0.	1.422E+4	1.438
25.32	0.002	1.506E+4	1.492
26.82	0.002	1.596E+4	1.549
28.38	0.	1.686E+4	1.589
30.06	0.003	1.776E+4	1.637
31.86	0.001	1.866E+4	1.676
33.72	0.003	1.956E+4	1.713
35.76	0.006	2.046E+4	1.75
37.86	0.001	2.136E+4	1.791
40.08	0.001	2.226E+4	1.822
42.48	0.001	2.316E+4	1.851
45.	0.001	2.406E+4	1.888
47.64	0.001	2.496E+4	1.918
50.46	0.001	2.586E+4	1.945
53.46	0.001	2.676E+4	1.966
56.64	0.001	2.766E+4	1.988
60.	0.001	2.856E+4	2.007
63.6	0.007	2.946E+4	2.03
67.2	0.001	3.036E+4	2.055
71.4	0.002	3.126E+4	2.077
75.6	0.011	3.216E+4	2.111
79.8	0.004	3.306E+4	2.13
84.6	0.002	3.396E+4	2.152
90.	0.001	3.486E+4	2.172
94.8	0.	3.576E+4	2.187
100.8	0.005	3.666E+4	2.204
106.8	0.	3.756E+4	2.217
112.8	0.	3.846E+4	2.227
119.4	0.003	3.936E+4	2.246
126.6	0.001	4.026E+4	2.265
134.4	0.004	4.116E+4	2.268
142.2	0.	4.206E+4	2.284
150.6	0.005	4.296E+4	2.299
159.6	0.001	4.386E+4	2.304
169.2	0.005	4.476E+4	2.31
178.8	0.003	4.566E+4	2.316
189.6	0.005	4.656E+4	2.334
201.	0.004	4.746E+4	2.339
213.	0.003	4.836E+4	2.352
225.6	0.004	4.926E+4	2.359
238.8	0.006	5.016E+4	2.373
253.2	0.007	5.106E+4	2.382
268.2	0.007	5.196E+4	2.395
283.8	0.009	5.286E+4	2.4
300.6	0.006	5.376E+4	2.41
318.6	0.002	5.466E+4	2.421
337.2	0.004	5.556E+4	2.432
357.6	0.006	5.646E+4	2.439
378.6	0.008	5.736E+4	2.44
400.8	0.015	5.826E+4	2.453
424.8	0.012	5.916E+4	2.455
450.	0.012	6.006E+4	2.457
476.4	0.011	6.096E+4	2.458
504.6	0.018	6.186E+4	2.459

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
534.6	0.016	6.276E+4	2.46
566.4	0.016	6.366E+4	2.463
600.	0.019	6.456E+4	2.462
636.	0.025	6.546E+4	2.463
672.	0.027	6.636E+4	2.458
714.	0.028	6.726E+4	2.458
756.	0.035	6.816E+4	2.453
798.	0.04	6.906E+4	2.443
846.	0.042	6.996E+4	2.435
900.	0.041		

SOLUTION

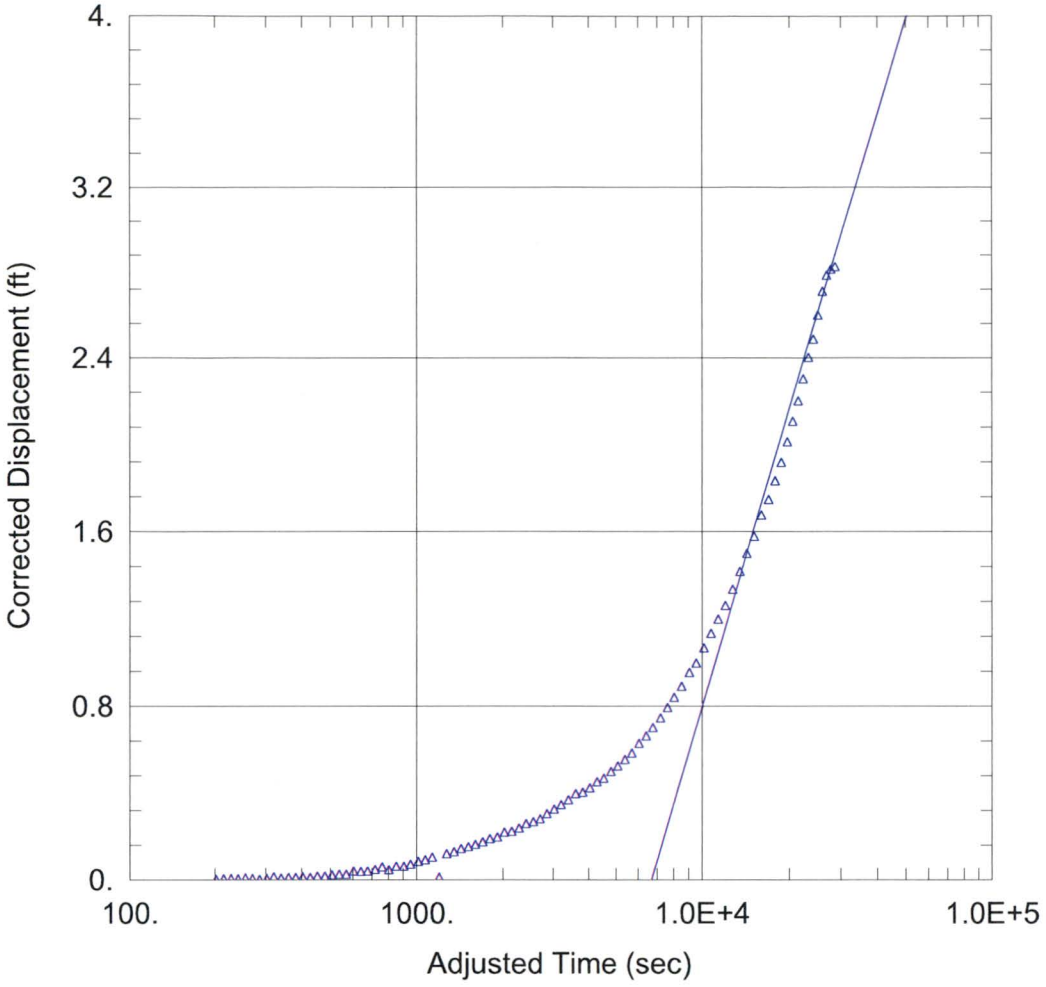
Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	314.2	ft^2/day
S	0.04183	

K = T/b = 19.64 ft/day (0.006928 cm/sec)
Ss = S/b = 0.002614 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\1404_cooper_jacobs.aqt
Date: 12/07/18 Time: 14:42:08

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16.33 ft Anisotropy Ratio (Kz/Kr): 0.01333

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
△ 1404	0	14

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 123.8 ft^2/day S = 0.1095

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 12/07/18
Time: 14:42:43

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01

AQUIFER DATA

Saturated Thickness: 16.33 ft
Anisotropy Ratio (Kz/Kr): 0.01333

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 16.06 ft
Screen Length: 1480. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 1

Observation Well No. 1: 1404

X Location: 0. ft
Y Location: 14. ft

Radial distance from GETR-BA1-01B: 14. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 91

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
201.	0.001	2838.	0.307
213.	0.003	3006.	0.328
225.6	0.005	3186.	0.35
238.8	0.004	3372.	0.373
253.2	0.008	3576.	0.401
268.2	0.005	3786.	0.408
283.8	0.001	4008.	0.429
300.6	0.005	4248.	0.457
318.6	0.012	4500.	0.475
337.2	0.007	4764.	0.506

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
357.6	0.01	5046.	0.532
378.6	0.01	5346.	0.563
400.8	0.012	5664.	0.594
424.8	0.01	6000.	0.64
450.	0.016	6360.	0.676
476.4	0.016	6720.	0.716
504.6	0.021	7140.	0.762
534.6	0.024	7560.	0.812
566.4	0.025	7980.	0.862
600.	0.039	8460.	0.915
636.	0.038	9000.	0.983
672.	0.04	9480.	1.029
714.	0.046	1.008E+4	1.103
756.	0.058	1.068E+4	1.175
798.	0.045	1.128E+4	1.246
846.	0.062	1.194E+4	1.313
900.	0.062	1.266E+4	1.393
948.	0.071	1.344E+4	1.483
1008.	0.084	1.422E+4	1.574
1068.	0.091	1.506E+4	1.661
1128.	0.103	1.596E+4	1.77
1194.	0.011	1.686E+4	1.85
1266.	0.12	1.776E+4	1.948
1344.	0.128	1.866E+4	2.044
1422.	0.144	1.956E+4	2.153
1506.	0.153	2.046E+4	2.263
1596.	0.163	2.136E+4	2.373
1692.	0.175	2.226E+4	2.493
1788.	0.19	2.316E+4	2.611
1896.	0.198	2.406E+4	2.712
2010.	0.22	2.496E+4	2.848
2130.	0.225	2.586E+4	2.983
2256.	0.24	2.676E+4	3.075
2388.	0.261	2.766E+4	3.111
2532.	0.269	2.856E+4	3.125
2682.	0.283		

SOLUTION

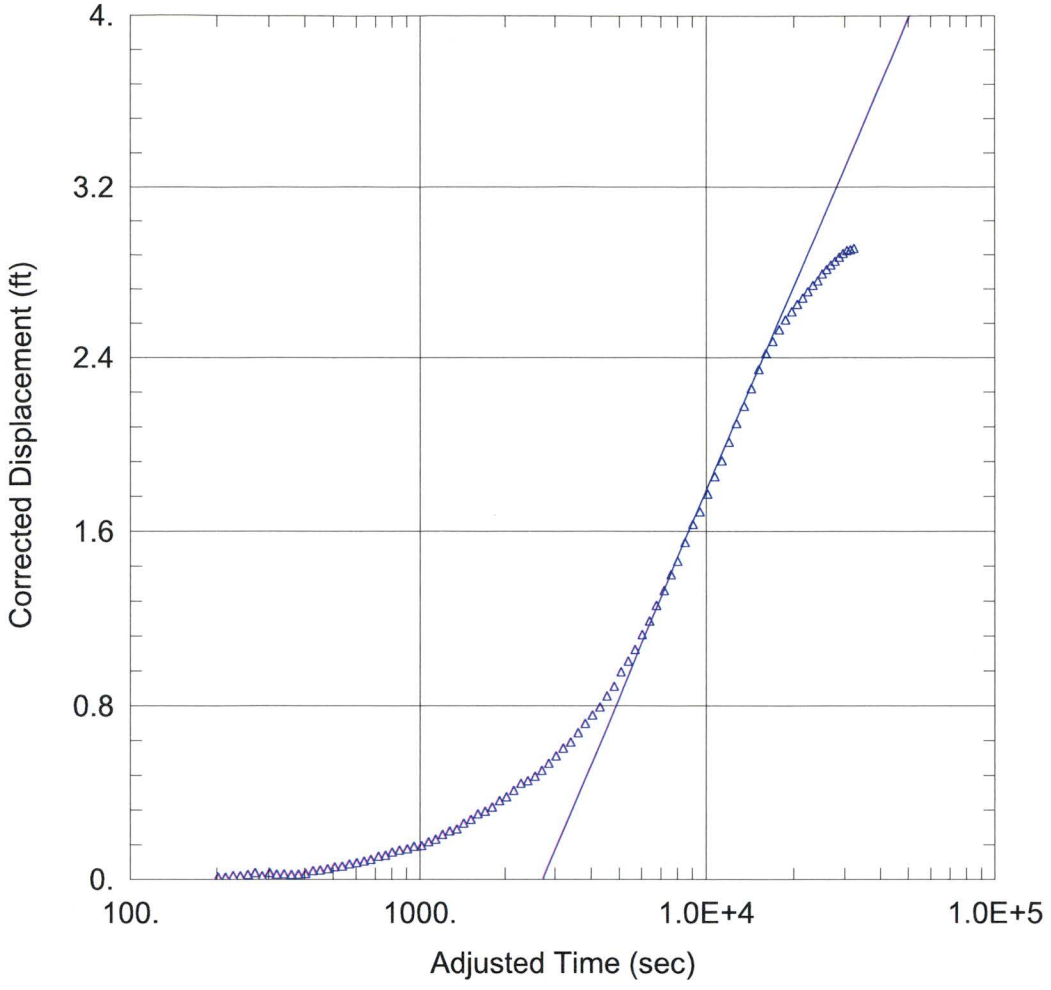
Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	123.8	ft^2/day
S	0.1095	

K = T/b = 7.582 ft/day (0.002675 cm/sec)
Ss = S/b = 0.006705 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\1405_cooper_jacobs.aqt
Date: 12/07/18 Time: 14:58:47

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: 1405
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16.33 ft Anisotropy Ratio (Kz/Kr): 0.01333

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
△ 1405	0	14

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 179.2 ft^2/day S = 0.06429

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 12/07/18
Time: 14:59:13

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: 1405

AQUIFER DATA

Saturated Thickness: 16.33 ft
Anisotropy Ratio (Kz/Kr): 0.01333

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 16.06 ft
Screen Length: 1480. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 1

Observation Well No. 1: 1405

X Location: 0. ft
Y Location: 14. ft

Radial distance from GETR-BA1-01B: 14. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 95

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
201.	0.01	3186.	0.616
213.	0.01	3372.	0.644
225.6	0.017	3576.	0.689
238.8	0.015	3786.	0.735
253.2	0.022	4008.	0.774
268.2	0.031	4248.	0.814
283.8	0.015	4500.	0.867
300.6	0.03	4764.	0.913
318.6	0.023	5046.	0.984
337.2	0.024	5346.	1.037

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
357.6	0.022	5664.	1.093
378.6	0.023	6000.	1.167
400.8	0.026	6360.	1.234
424.8	0.039	6720.	1.311
450.	0.042	7140.	1.386
476.4	0.048	7560.	1.465
504.6	0.057	7980.	1.534
534.6	0.06	8460.	1.628
566.4	0.071	9000.	1.721
600.	0.076	9480.	1.786
636.	0.084	1.008E+4	1.878
672.	0.091	1.068E+4	1.969
714.	0.106	1.128E+4	2.051
756.	0.111	1.194E+4	2.15
798.	0.125	1.266E+4	2.249
846.	0.135	1.344E+4	2.342
900.	0.141	1.422E+4	2.438
948.	0.152	1.506E+4	2.542
1008.	0.156	1.596E+4	2.631
1068.	0.174	1.686E+4	2.697
1128.	0.186	1.776E+4	2.763
1194.	0.208	1.866E+4	2.819
1266.	0.224	1.956E+4	2.866
1344.	0.234	2.046E+4	2.906
1422.	0.26	2.136E+4	2.943
1506.	0.279	2.226E+4	2.98
1596.	0.305	2.316E+4	3.015
1692.	0.316	2.406E+4	3.041
1788.	0.336	2.496E+4	3.081
1896.	0.366	2.586E+4	3.106
2010.	0.385	2.676E+4	3.133
2130.	0.415	2.766E+4	3.155
2256.	0.448	2.856E+4	3.178
2388.	0.46	2.946E+4	3.2
2532.	0.482	3.036E+4	3.217
2682.	0.51	3.126E+4	3.223
2838.	0.543	3.216E+4	3.23
3006.	0.579		

SOLUTION

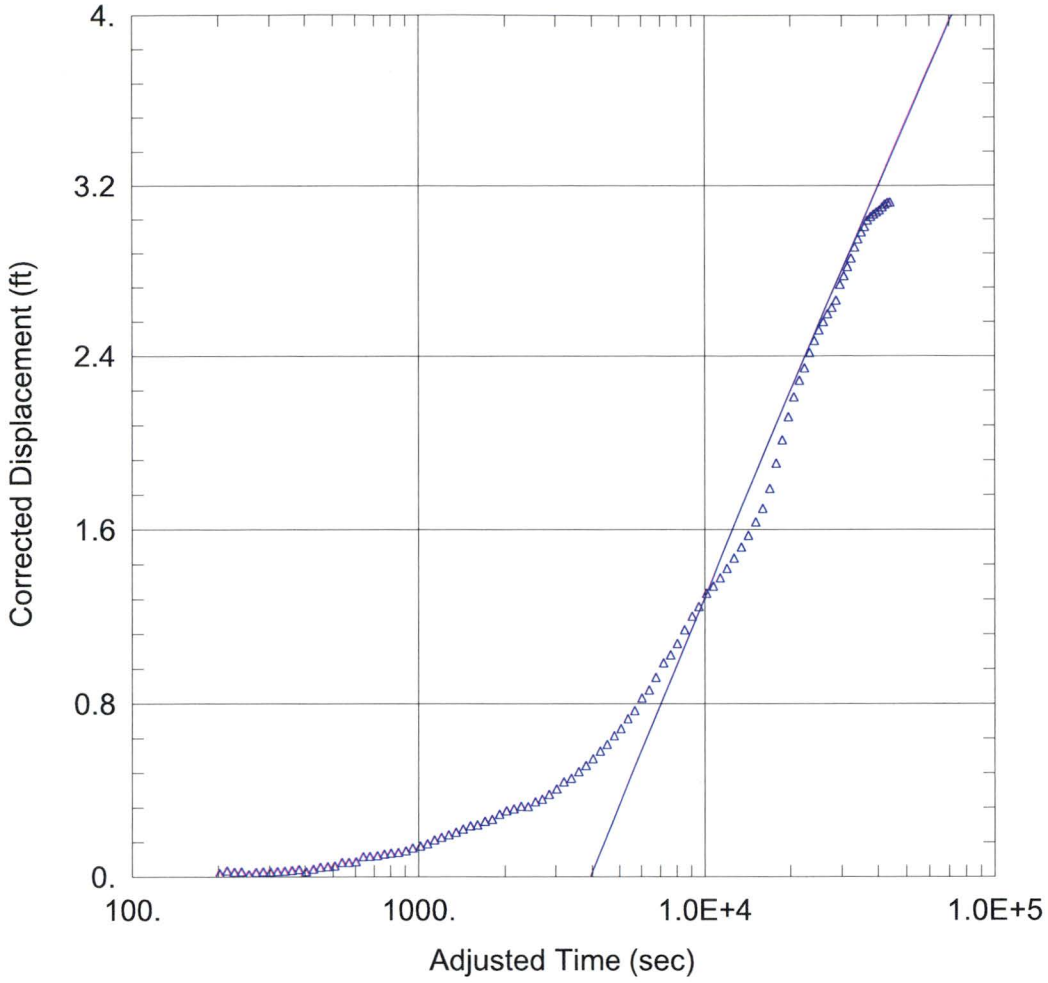
Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	179.2	ft^2/day
S	0.06429	

K = T/b = 10.97 ft/day (0.00387 cm/sec)
Ss = S/b = 0.003937 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\1406_cooper_jacobs.aqt
Date: 12/07/18 Time: 15:04:00

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: 1406
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16.33 ft Anisotropy Ratio (Kz/Kr): 0.01333

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
△ 1406	0	12

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 177.8 ft^2/day S = 0.1259

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 12/07/18
Time: 15:05:08

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: 1406

AQUIFER DATA

Saturated Thickness: 16.33 ft
Anisotropy Ratio (Kz/Kr): 0.01333

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 16.06 ft
Screen Length: 1480. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 1

Observation Well No. 1: 1406

X Location: 0. ft
Y Location: 12. ft

Radial distance from GETR-BA1-01B: 12. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 108

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
201.	0.016	4500.	0.623
213.	0.027	4764.	0.665
225.6	0.021	5046.	0.699
238.8	0.023	5346.	0.747
253.2	0.01	5664.	0.786
268.2	0.02	6000.	0.846
283.8	0.023	6360.	0.886
300.6	0.022	6720.	0.946
318.6	0.024	7140.	1.018
337.2	0.026	7560.	1.057

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
357.6	0.029	7980.	1.112
378.6	0.033	8460.	1.181
400.8	0.023	9000.	1.248
424.8	0.035	9480.	1.297
450.	0.044	1.008E+4	1.363
476.4	0.047	1.068E+4	1.398
504.6	0.05	1.128E+4	1.44
534.6	0.066	1.194E+4	1.487
566.4	0.066	1.266E+4	1.54
600.	0.069	1.344E+4	1.596
636.	0.093	1.422E+4	1.655
672.	0.094	1.506E+4	1.724
714.	0.097	1.596E+4	1.794
756.	0.105	1.686E+4	1.897
798.	0.109	1.776E+4	2.031
846.	0.112	1.866E+4	2.153
900.	0.12	1.956E+4	2.277
948.	0.133	2.046E+4	2.383
1008.	0.142	2.136E+4	2.474
1068.	0.153	2.226E+4	2.543
1128.	0.171	2.316E+4	2.627
1194.	0.183	2.406E+4	2.694
1266.	0.194	2.496E+4	2.753
1344.	0.207	2.586E+4	2.8
1422.	0.221	2.676E+4	2.844
1506.	0.236	2.766E+4	2.879
1596.	0.241	2.856E+4	2.921
1692.	0.258	2.946E+4	3.011
1788.	0.266	3.036E+4	3.061
1896.	0.29	3.126E+4	3.114
2010.	0.308	3.216E+4	3.164
2130.	0.317	3.306E+4	3.228
2256.	0.329	3.396E+4	3.276
2388.	0.327	3.486E+4	3.317
2532.	0.35	3.576E+4	3.349
2682.	0.362	3.666E+4	3.388
2838.	0.384	3.756E+4	3.408
3006.	0.411	3.846E+4	3.423
3186.	0.444	3.936E+4	3.436
3372.	0.46	4.026E+4	3.448
3576.	0.492	4.116E+4	3.467
3786.	0.521	4.206E+4	3.483
4008.	0.554	4.296E+4	3.493
4248.	0.59	4.386E+4	3.495

SOLUTION

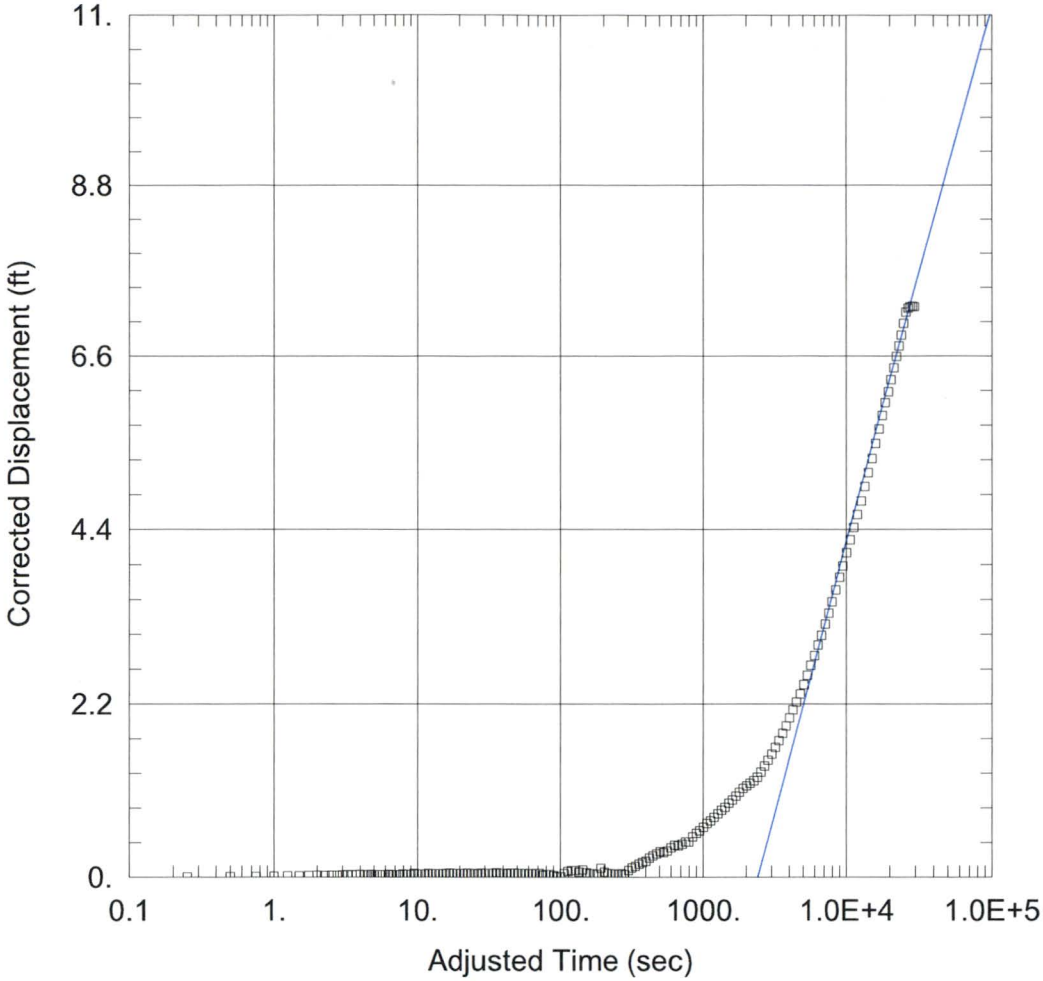
Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	177.8	ft^2/day
S	0.1259	

K = T/b = 10.89 ft/day (0.00384 cm/sec)
Ss = S/b = 0.007711 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\GETRBA1MW01(TR-08)_Cooper Jacobs.aqt
Date: 01/09/19 Time: 11:20:03

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16. ft Anisotropy Ratio (Kz/Kr): 0.02351

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
TR-08	0	0

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 82.36 ft^2/day S = 46.6

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 01/09/19
Time: 11:20:47

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01

AQUIFER DATA

Saturated Thickness: 16. ft
Anisotropy Ratio (Kz/Kr): 0.02351

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 2

Observation Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of Observations: 53

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.	0.03	960.	0.53
30.	0.06	1080.	0.55
45.	0.08	1200.	0.61
60.	0.08	1500.	0.78
75.	0.07	1800.	0.92
90.	0.08	2100.	1.09
105.	0.09	2400.	1.23
120.	0.12	2700.	1.4
135.	0.12	3000.	1.54

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
150.	0.12	3300.	1.67
165.	0.13	3600.	1.82
180.	0.14	4200.	2.14
195.	0.15	4800.	2.37
210.	0.15	5400.	2.71
225.	0.17	6000.	2.94
240.	0.17	6600.	3.2
255.	0.19	7200.	3.47
270.	0.19	9000.	4.17
285.	0.21	1.08E+4	4.88
300.	0.22	1.26E+4	5.59
360.	0.24	1.44E+4	6.24
420.	0.26	1.62E+4	6.98
480.	0.31	1.8E+4	7.54
540.	0.34	2.16E+4	8.99
600.	0.38	2.52E+4	10.27
720.	0.43	2.88E+4	10.28
840.	0.48		

Observation Well No. 2: TR-08

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 176

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.251	0.001	253.2	0.035
0.501	0.005	268.2	0.041
0.751	0.007	283.8	0.032
1.001	0.012	300.6	0.083
1.251	0.015	318.6	0.116
1.501	0.016	337.2	0.137
1.751	0.019	357.6	0.167
2.001	0.023	378.6	0.187
2.251	0.019	400.8	0.202
2.501	0.024	424.8	0.245
2.751	0.023	450.	0.273
3.001	0.025	476.4	0.3
3.251	0.031	504.6	0.326
3.501	0.026	534.6	0.315
3.751	0.029	566.4	0.336
4.001	0.033	600.	0.377
4.251	0.029	636.	0.411
4.501	0.029	672.	0.403
4.751	0.034	714.	0.424
5.001	0.032	756.	0.451
5.251	0.032	798.	0.453
5.501	0.032	846.	0.521
5.751	0.031	900.	0.565
6.001	0.03	948.	0.6
6.361	0.034	1008.	0.648
6.721	0.029	1068.	0.696
7.141	0.032	1128.	0.733
7.561	0.032	1194.	0.778
7.981	0.037	1266.	0.827
8.461	0.035	1344.	0.872
9.001	0.034	1422.	0.913
9.481	0.045	1506.	0.967
10.08	0.04	1596.	1.011
10.68	0.038	1692.	1.065

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
11.28	0.04	1788.	1.116
11.94	0.046	1896.	1.171
12.66	0.041	2010.	1.205
13.44	0.042	2130.	1.239
14.22	0.043	2256.	1.273
15.06	0.044	2388.	1.324
15.96	0.046	2532.	1.397
16.92	0.051	2682.	1.478
17.88	0.045	2838.	1.559
18.96	0.046	3006.	1.649
20.1	0.047	3186.	1.745
21.3	0.045	3372.	1.84
22.56	0.051	3576.	1.945
23.88	0.047	3786.	2.054
25.32	0.045	4008.	2.168
26.82	0.042	4248.	2.287
28.38	0.051	4500.	2.404
30.06	0.046	4764.	2.523
31.86	0.047	5046.	2.666
33.72	0.045	5346.	2.809
35.76	0.054	5664.	2.959
37.86	0.047	6000.	3.11
40.08	0.045	6360.	3.279
42.48	0.042	6720.	3.433
45.	0.05	7140.	3.615
47.64	0.05	7560.	3.799
50.46	0.047	7980.	3.984
53.46	0.047	8460.	4.191
56.64	0.047	9000.	4.405
60.	0.044	9480.	4.606
63.6	0.042	1.008E+4	4.842
67.2	0.045	1.068E+4	5.075
71.4	0.045	1.128E+4	5.305
75.6	0.021	1.194E+4	5.552
79.8	0.034	1.266E+4	5.817
84.6	0.035	1.344E+4	6.109
90.	0.017	1.422E+4	6.397
94.8	0.008	1.506E+4	6.702
100.8	0.004	1.596E+4	7.04
106.8	0.041	1.686E+4	7.372
112.8	0.07	1.776E+4	7.697
119.4	0.085	1.866E+4	8.011
126.6	0.085	1.956E+4	8.296
134.4	0.064	2.046E+4	8.626
142.2	0.091	2.136E+4	8.96
150.6	0.056	2.226E+4	9.299
159.6	0.043	2.316E+4	9.636
169.2	0.042	2.406E+4	9.991
178.8	0.034	2.496E+4	10.4
189.6	0.112	2.586E+4	10.83
201.	0.064	2.676E+4	11.
213.	0.047	2.766E+4	11.04
225.6	0.041	2.856E+4	11.07
238.8	0.04	2.946E+4	11.05

SOLUTION

Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

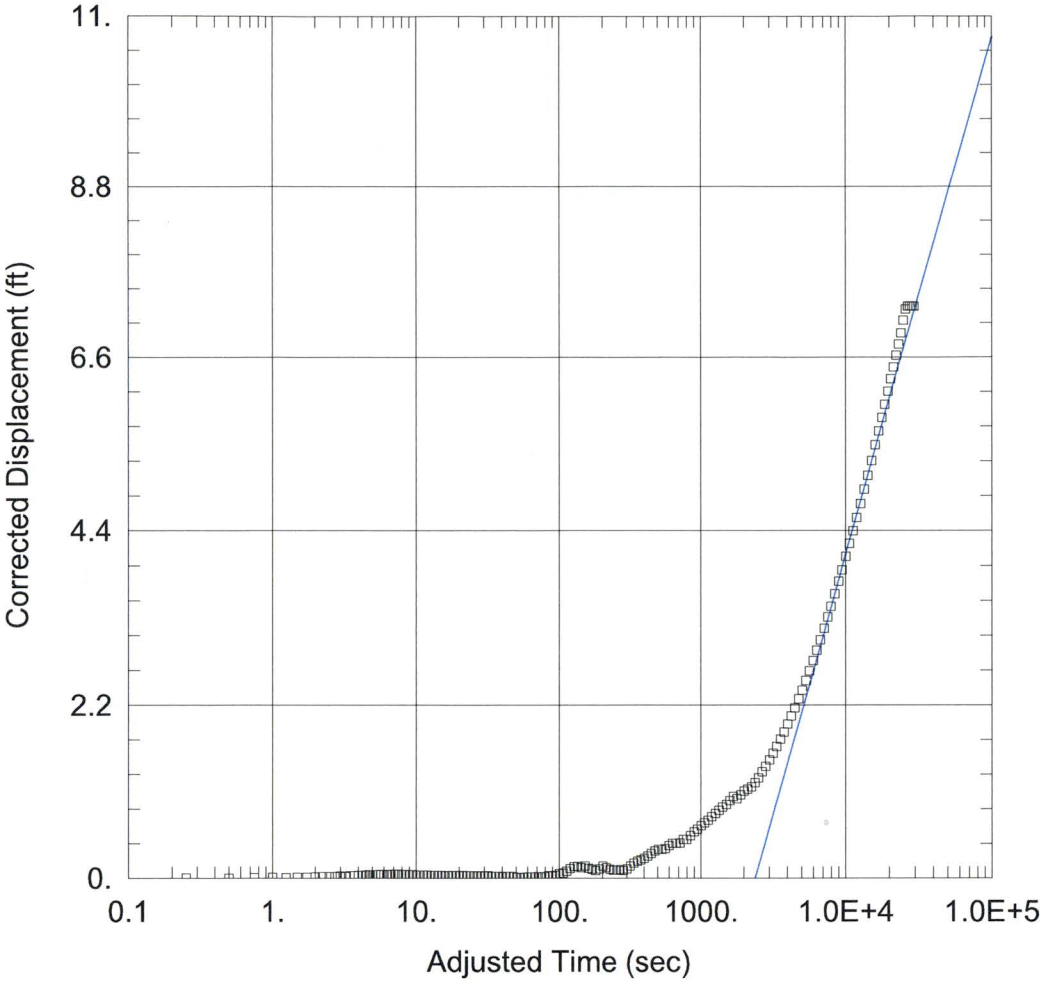
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	82.36	ft^2/day

S 46.6

' ' = T/b = 5.147 ft/day (0.001816 cm/sec)
s = S/b = 2.913 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\GETRBA1MW02(TR-09)_Cooper Jacobs.aqt
Date: 01/09/19 Time: 11:23:42

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16. ft Anisotropy Ratio (Kz/Kr): 0.02351

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
TR-09	0	0

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 85.45 ft^2/day S = 48.26

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 01/09/19
Time: 11:24:02

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01

AQUIFER DATA

Saturated Thickness: 16. ft
Anisotropy Ratio (Kz/Kr): 0.02351

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 2

Observation Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of Observations: 53

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.	0.03	960.	0.53
30.	0.06	1080.	0.55
45.	0.08	1200.	0.61
60.	0.08	1500.	0.78
75.	0.07	1800.	0.92
90.	0.08	2100.	1.09
105.	0.09	2400.	1.23
120.	0.12	2700.	1.4
135.	0.12	3000.	1.54

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
150.	0.12	3300.	1.67
165.	0.13	3600.	1.82
180.	0.14	4200.	2.14
195.	0.15	4800.	2.37
210.	0.15	5400.	2.71
225.	0.17	6000.	2.94
240.	0.17	6600.	3.2
255.	0.19	7200.	3.47
270.	0.19	9000.	4.17
285.	0.21	1.08E+4	4.88
300.	0.22	1.26E+4	5.59
360.	0.24	1.44E+4	6.24
420.	0.26	1.62E+4	6.98
480.	0.31	1.8E+4	7.54
540.	0.34	2.16E+4	8.99
600.	0.38	2.52E+4	10.27
720.	0.43	2.88E+4	10.28
840.	0.48		

Observation Well No. 2: TR-09

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 176

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.25	0.004	253.2	0.099
0.5	0.	268.2	0.11
0.75	0.005	283.8	0.096
1.	0.009	300.6	0.117
1.25	0.007	318.6	0.152
1.5	0.011	337.2	0.191
1.75	0.012	357.6	0.217
2.	0.016	378.6	0.232
2.25	0.018	400.8	0.254
2.5	0.018	424.8	0.28
2.75	0.02	450.	0.316
3.	0.026	476.4	0.346
3.25	0.02	504.6	0.37
3.5	0.029	534.6	0.37
3.75	0.03	566.4	0.377
4.	0.034	600.	0.417
4.25	0.035	636.	0.45
4.5	0.038	672.	0.447
4.75	0.041	714.	0.454
5.	0.041	756.	0.5
5.25	0.041	798.	0.5
5.5	0.044	846.	0.548
5.75	0.046	900.	0.598
6.	0.048	948.	0.635
6.36	0.044	1008.	0.679
6.72	0.046	1068.	0.721
7.14	0.051	1128.	0.754
7.56	0.053	1194.	0.8
7.98	0.045	1266.	0.843
8.46	0.045	1344.	0.886
9.	0.043	1422.	0.929
9.48	0.043	1506.	0.965
10.08	0.04	1596.	1.016
10.68	0.037	1692.	1.071

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
11.28	0.038	1788.	1.044
11.94	0.038	1896.	1.096
12.66	0.035	2010.	1.148
13.44	0.034	2130.	1.172
14.22	0.035	2256.	1.203
15.06	0.034	2388.	1.26
15.96	0.03	2532.	1.328
16.92	0.032	2682.	1.411
17.88	0.035	2838.	1.491
18.96	0.033	3006.	1.581
20.1	0.032	3186.	1.676
21.3	0.033	3372.	1.77
22.56	0.032	3576.	1.876
23.88	0.031	3786.	1.98
25.32	0.032	4008.	2.094
26.82	0.028	4248.	2.214
28.38	0.03	4500.	2.332
30.06	0.026	4764.	2.463
31.86	0.029	5046.	2.597
33.72	0.023	5346.	2.742
35.76	0.022	5664.	2.892
37.86	0.022	6000.	3.051
40.08	0.017	6360.	3.214
42.48	0.022	6720.	3.375
45.	0.024	7140.	3.563
47.64	0.019	7560.	3.748
50.46	0.009	7980.	3.924
53.46	0.007	8460.	4.138
56.64	0.012	9000.	4.357
60.	0.014	9480.	4.553
63.6	0.014	1.008E+4	4.796
67.2	0.015	1.068E+4	5.027
71.4	0.018	1.128E+4	5.264
75.6	0.013	1.194E+4	5.514
79.8	0.02	1.266E+4	5.784
84.6	0.029	1.344E+4	6.08
90.	0.026	1.422E+4	6.367
94.8	0.035	1.506E+4	6.679
100.8	0.055	1.596E+4	7.027
106.8	0.062	1.686E+4	7.352
112.8	0.086	1.776E+4	7.669
119.4	0.121	1.866E+4	7.995
126.6	0.147	1.956E+4	8.34
134.4	0.148	2.046E+4	8.679
142.2	0.134	2.136E+4	9.017
150.6	0.152	2.226E+4	9.37
159.6	0.124	2.316E+4	9.722
169.2	0.112	2.406E+4	10.1
178.8	0.098	2.496E+4	10.55
189.6	0.116	2.586E+4	11.
201.	0.154	2.676E+4	11.11
213.	0.131	2.766E+4	11.12
225.6	0.112	2.856E+4	11.12
238.8	0.101	2.946E+4	11.12

SOLUTION

Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

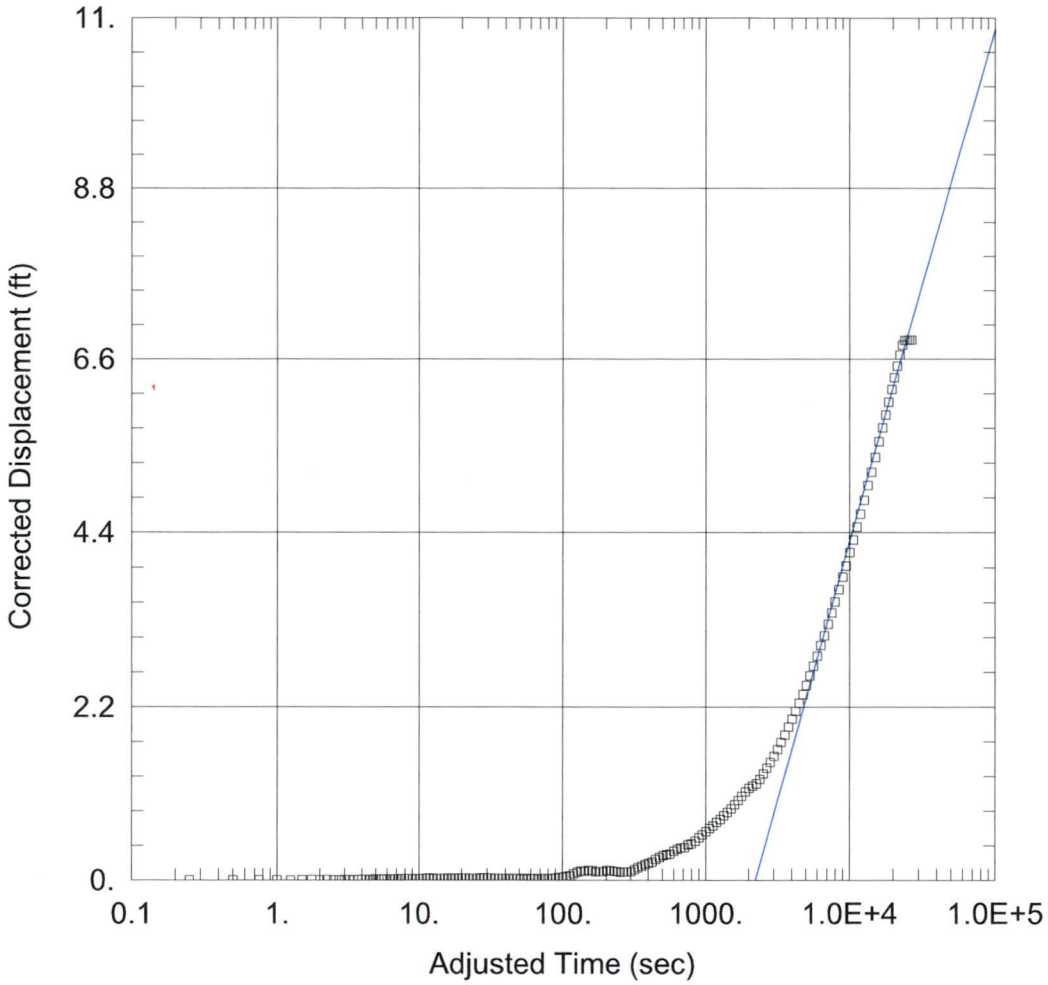
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	85.45	ft^2/day

S 48.26

= T/b = 5.341 ft/day (0.001884 cm/sec)
s = S/b = 3.016 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\GETRBA1MW03(TR-10)_Cooper Jacobs.aqt
Date: 01/09/19 Time: 11:32:24

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16. ft Anisotropy Ratio (Kz/Kr): 0.02351

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
TR-10	0	0

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 86.35 ft^2/day S = 45.16

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 01/09/19
Time: 11:33:23

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01

AQUIFER DATA

Saturated Thickness: 16. ft
Anisotropy Ratio (Kz/Kr): 0.02351

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 2

Observation Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of Observations: 53

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.	0.03	960.	0.53
30.	0.06	1080.	0.55
45.	0.08	1200.	0.61
60.	0.08	1500.	0.78
75.	0.07	1800.	0.92
90.	0.08	2100.	1.09
105.	0.09	2400.	1.23
120.	0.12	2700.	1.4
135.	0.12	3000.	1.54

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
150.	0.12	3300.	1.67
165.	0.13	3600.	1.82
180.	0.14	4200.	2.14
195.	0.15	4800.	2.37
210.	0.15	5400.	2.71
225.	0.17	6000.	2.94
240.	0.17	6600.	3.2
255.	0.19	7200.	3.47
270.	0.19	9000.	4.17
285.	0.21	1.08E+4	4.88
300.	0.22	1.26E+4	5.59
360.	0.24	1.44E+4	6.24
420.	0.26	1.62E+4	6.98
480.	0.31	1.8E+4	7.54
540.	0.34	2.16E+4	8.99
600.	0.38	2.52E+4	10.27
720.	0.43	2.88E+4	10.28
840.	0.48		

Observation Well No. 2: TR-10

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 173

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.251	0.003	238.8	0.109
0.501	0.004	253.2	0.101
0.751	0.002	268.2	0.106
1.001	0.001	283.8	0.104
1.251	0.	300.6	0.108
1.501	0.001	318.6	0.134
1.751	0.005	337.2	0.159
2.001	0.004	357.6	0.18
2.251	0.005	378.6	0.2
2.501	0.003	400.8	0.215
2.751	0.004	424.8	0.232
3.001	0.008	450.	0.265
3.251	0.006	476.4	0.288
3.501	0.004	504.6	0.316
3.751	0.008	534.6	0.329
4.001	0.01	566.4	0.335
4.251	0.009	600.	0.371
4.501	0.008	636.	0.398
4.751	0.011	672.	0.416
5.001	0.013	714.	0.42
5.251	0.011	756.	0.456
5.501	0.011	798.	0.469
5.751	0.013	846.	0.502
6.001	0.013	900.	0.55
6.36	0.014	948.	0.587
6.72	0.013	1008.	0.629
7.14	0.015	1068.	0.673
7.56	0.019	1128.	0.705
7.98	0.019	1194.	0.751
8.46	0.017	1266.	0.791
9.	0.017	1344.	0.842
9.48	0.016	1422.	0.886
10.08	0.019	1506.	0.935
10.68	0.02	1596.	0.991

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
11.28	0.024	1692.	1.046
11.94	0.027	1788.	1.103
12.66	0.019	1896.	1.166
13.44	0.024	2010.	1.212
14.22	0.021	2130.	1.243
15.06	0.021	2256.	1.275
15.96	0.028	2388.	1.335
16.92	0.022	2532.	1.411
17.88	0.025	2682.	1.493
18.96	0.023	2838.	1.576
20.1	0.026	3006.	1.659
21.3	0.025	3186.	1.758
22.56	0.024	3372.	1.858
23.88	0.023	3576.	1.966
25.32	0.021	3786.	2.08
26.82	0.026	4008.	2.196
28.38	0.029	4248.	2.314
30.06	0.025	4500.	2.43
31.86	0.025	4764.	2.562
33.72	0.023	5046.	2.7
35.76	0.022	5346.	2.844
37.86	0.021	5664.	2.995
40.08	0.024	6000.	3.154
42.48	0.02	6360.	3.319
45.	0.023	6720.	3.478
47.64	0.021	7140.	3.666
50.46	0.015	7560.	3.85
53.46	0.021	7980.	4.033
56.64	0.016	8460.	4.242
60.	0.022	9000.	4.461
63.6	0.022	9480.	4.658
67.2	0.016	1.008E+4	4.902
71.4	0.024	1.068E+4	5.129
75.6	0.021	1.128E+4	5.372
79.8	0.017	1.194E+4	5.624
84.6	0.024	1.266E+4	5.896
90.	0.025	1.344E+4	6.196
94.8	0.033	1.422E+4	6.474
100.8	0.04	1.506E+4	6.796
106.8	0.047	1.596E+4	7.147
112.8	0.055	1.686E+4	7.467
119.4	0.08	1.776E+4	7.783
126.6	0.101	1.866E+4	8.107
134.4	0.118	1.956E+4	8.44
142.2	0.114	2.046E+4	8.772
150.6	0.124	2.136E+4	9.103
159.6	0.12	2.226E+4	9.439
169.2	0.103	2.316E+4	9.76
178.8	0.107	2.406E+4	9.917
189.6	0.107	2.496E+4	9.919
201.	0.125	2.586E+4	9.923
213.	0.122	2.676E+4	9.921
225.6	0.114		

SOLUTION

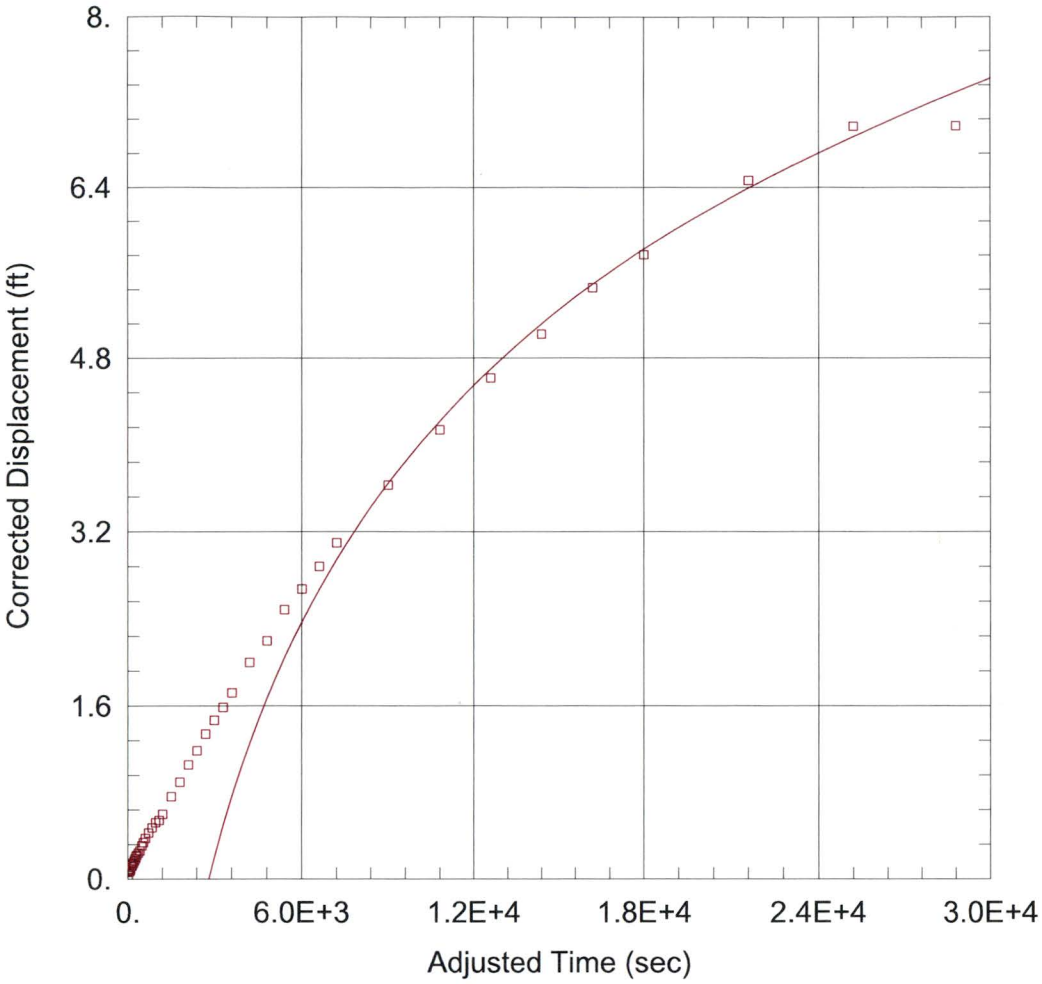
Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	86.35	ft^2/day
S	45.16	

K = T/b = 5.397 ft/day (0.001904 cm/sec)
Ss = S/b = 2.823 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\GETRBA101B_cooper.aqt
Date: 12/07/18 Time: 16:27:15

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01B
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16. ft Anisotropy Ratio (Kz/Kr): 0.02449

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 78.07 ft^2/day S = 52.56

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 12/07/18
me: 16:27:56

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01B

AQUIFER DATA

Saturated Thickness: 16. ft
Anisotropy Ratio (Kz/Kr): 0.02449

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

o. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 2

Observation Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of Observations: 53

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.	0.03	960.	0.53
30.	0.06	1080.	0.55
45.	0.08	1200.	0.61
60.	0.08	1500.	0.78
75.	0.07	1800.	0.92
90.	0.08	2100.	1.09
105.	0.09	2400.	1.23
120.	0.12	2700.	1.4
135.	0.12	3000.	1.54

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
150.	0.12	3300.	1.67
165.	0.13	3600.	1.82
180.	0.14	4200.	2.14
195.	0.15	4800.	2.37
210.	0.15	5400.	2.71
225.	0.17	6000.	2.94
240.	0.17	6600.	3.2
255.	0.19	7200.	3.47
270.	0.19	9000.	4.17
285.	0.21	1.08E+4	4.88
300.	0.22	1.26E+4	5.59
360.	0.24	1.44E+4	6.24
420.	0.26	1.62E+4	6.98
480.	0.31	1.8E+4	7.54
540.	0.34	2.16E+4	8.99
600.	0.38	2.52E+4	10.27
720.	0.43	2.88E+4	10.28
840.	0.48		

Observation Well No. 2: 1404

X Location: 0. ft
Y Location: 14. ft

Radial distance from GETR-BA1-01B: 14. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 92

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
201.	0.001	2838.	0.307
213.	0.003	3006.	0.328
225.6	0.005	3186.	0.35
238.8	0.004	3372.	0.373
253.2	0.008	3576.	0.401
268.2	0.005	3786.	0.408
283.8	0.001	4008.	0.429
300.6	0.005	4248.	0.457
318.6	0.012	4500.	0.475
337.2	0.007	4764.	0.506
357.6	0.01	5046.	0.532
378.6	0.01	5346.	0.563
400.8	0.012	5664.	0.594
424.8	0.01	6000.	0.64
450.	0.016	6360.	0.676
476.4	0.016	6720.	0.716
504.6	0.021	7140.	0.762
534.6	0.024	7560.	0.812
566.4	0.025	7980.	0.862
600.	0.039	8460.	0.915
636.	0.038	9000.	0.983
672.	0.04	9480.	1.029
714.	0.046	1.008E+4	1.103
756.	0.058	1.068E+4	1.175
798.	0.045	1.128E+4	1.246
846.	0.062	1.194E+4	1.313
900.	0.062	1.266E+4	1.393
948.	0.071	1.344E+4	1.483
1008.	0.084	1.422E+4	1.574
1068.	0.091	1.506E+4	1.661
1128.	0.103	1.596E+4	1.77
1194.	0.011	1.686E+4	1.85
1266.	0.12	1.776E+4	1.948
1344.	0.128	1.866E+4	2.044

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1422.	0.144	1.956E+4	2.153
1506.	0.153	2.046E+4	2.263
1596.	0.163	2.136E+4	2.373
1692.	0.175	2.226E+4	2.493
1788.	0.19	2.316E+4	2.611
1896.	0.198	2.406E+4	2.712
2010.	0.22	2.496E+4	2.848
2130.	0.225	2.586E+4	2.983
2256.	0.24	2.676E+4	3.075
2388.	0.261	2.766E+4	3.111
2532.	0.269	2.856E+4	3.125
2682.	0.283	2.946E+4	3.13

SOLUTION

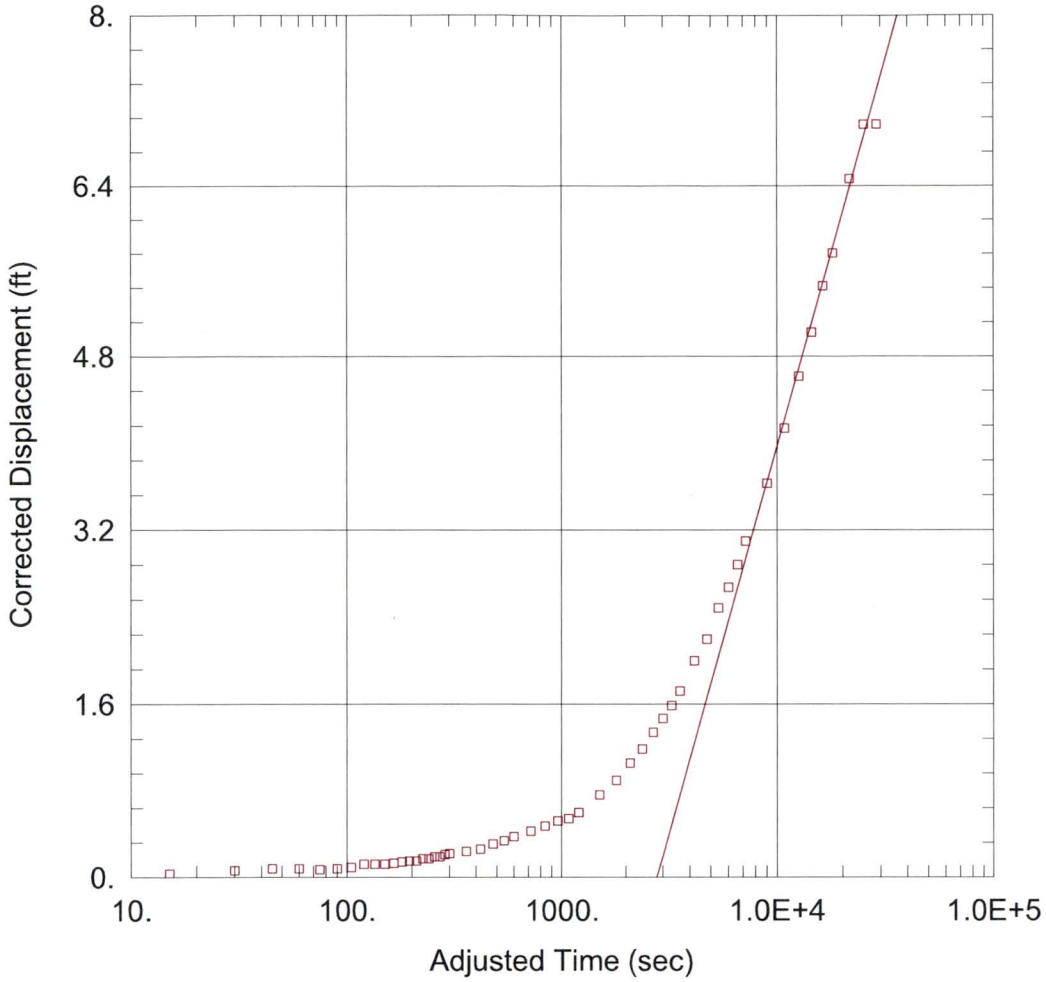
Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	78.07	ft^2/day
S	52.56	

K = T/b = 4.88 ft/day (0.001721 cm/sec)
Ss = S/b = 3.285 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\GETRBA101B_Cooper Jacobs2_12072018.pdf
Date: 01/09/19 Time: 09:52:46

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01B
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16. ft Anisotropy Ratio (Kz/Kr): 0.02449

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 78.07 ft^2/day S = 52.56

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 01/09/19
Time: 09:53:33

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01B

AQUIFER DATA

Saturated Thickness: 16. ft
Anisotropy Ratio (Kz/Kr): 0.02449

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 1

Observation Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of Observations: 53

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.	0.03	960.	0.53
30.	0.06	1080.	0.55
45.	0.08	1200.	0.61
60.	0.08	1500.	0.78
75.	0.07	1800.	0.92
90.	0.08	2100.	1.09
105.	0.09	2400.	1.23
120.	0.12	2700.	1.4
135.	0.12	3000.	1.54

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
150.	0.12	3300.	1.67
165.	0.13	3600.	1.82
180.	0.14	4200.	2.14
195.	0.15	4800.	2.37
210.	0.15	5400.	2.71
225.	0.17	6000.	2.94
240.	0.17	6600.	3.2
255.	0.19	7200.	3.47
270.	0.19	9000.	4.17
285.	0.21	1.08E+4	4.88
300.	0.22	1.26E+4	5.59
360.	0.24	1.44E+4	6.24
420.	0.26	1.62E+4	6.98
480.	0.31	1.8E+4	7.54
540.	0.34	2.16E+4	8.99
600.	0.38	2.52E+4	10.27
720.	0.43	2.88E+4	10.28
840.	0.48		

SOLUTION

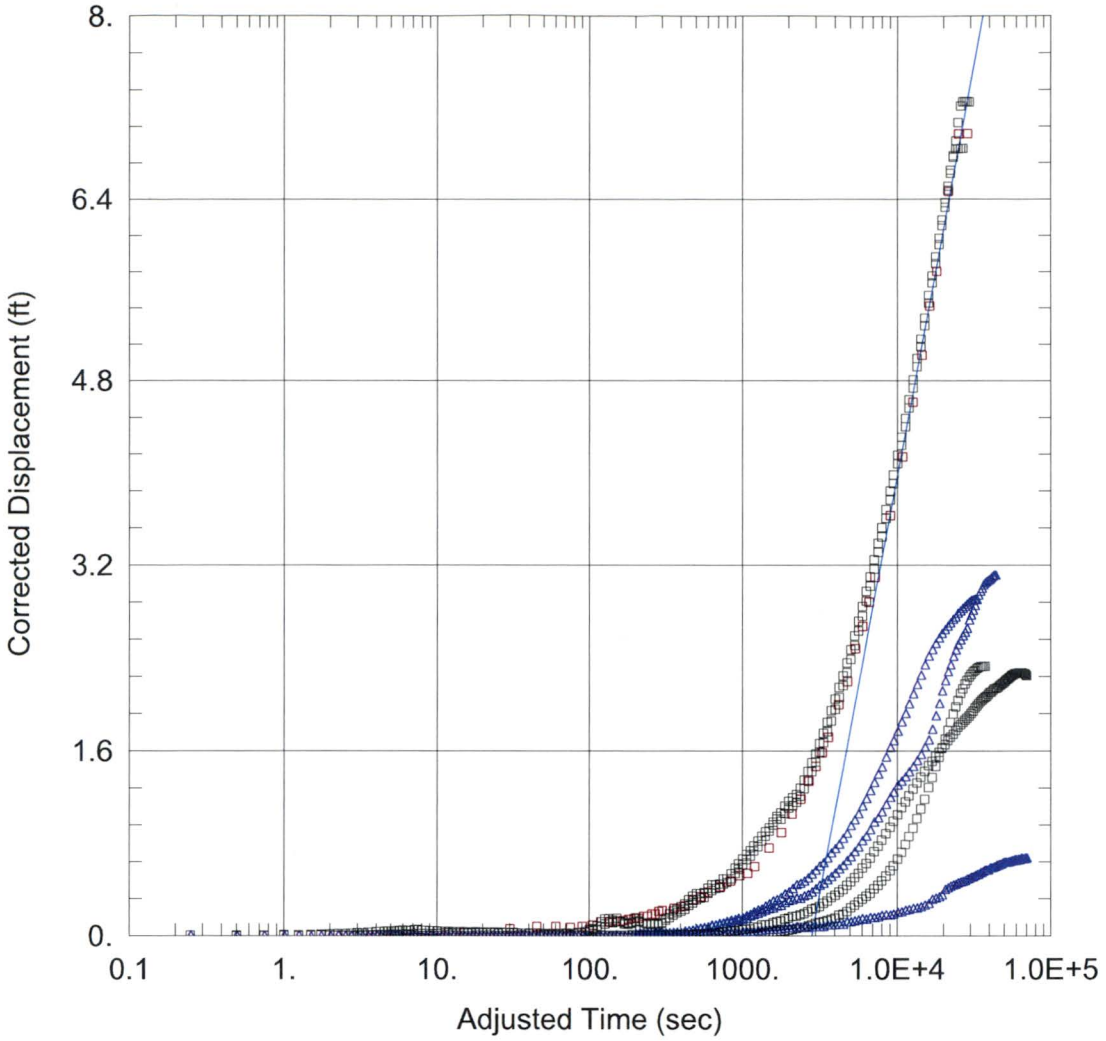
Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	78.07	ft^2/day
S	52.56	

= T/b = 4.88 ft/day (0.001721 cm/sec)
Ss = S/b = 3.285 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\GETRBA101B_cooper_composite.aqt
Date: 12/07/18 Time: 16:19:52

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01B
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16. ft Anisotropy Ratio (Kz/Kr): 0.02449

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0
02W02	0	-25
02W39	25	4
1405	0	14
TR-09	0	0
1406	0	-12
TMW09	0	-22
TR-10	0	0

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aquife
Date: 12/07/18
Time: 16:20:13

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01B

AQUIFER DATA

Saturated Thickness: 16. ft
Anisotropy Ratio (Kz/Kr): 0.02449

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 10

Observation Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of Observations: 53

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.	0.03	960.	0.53
30.	0.06	1080.	0.55
45.	0.08	1200.	0.61
60.	0.08	1500.	0.78
75.	0.07	1800.	0.92
90.	0.08	2100.	1.09
105.	0.09	2400.	1.23
120.	0.12	2700.	1.4
135.	0.12	3000.	1.54
150.	0.12	3300.	1.67
165.	0.13	3600.	1.82
180.	0.14	4200.	2.14
195.	0.15	4800.	2.37
210.	0.15	5400.	2.71
225.	0.17	6000.	2.94

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
240.	0.17	6600.	3.2
255.	0.19	7200.	3.47
270.	0.19	9000.	4.17
285.	0.21	1.08E+4	4.88
300.	0.22	1.26E+4	5.59
360.	0.24	1.44E+4	6.24
420.	0.26	1.62E+4	6.98
480.	0.31	1.8E+4	7.54
540.	0.34	2.16E+4	8.99
600.	0.38	2.52E+4	10.27
720.	0.43	2.88E+4	10.28
840.	0.48		

Observation Well No. 2: 1404

X Location: 0. ft
Y Location: 14. ft

Radial distance from GETR-BA1-01B: 14. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 92

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
201.	0.001	2838.	0.307
213.	0.003	3006.	0.328
225.6	0.005	3186.	0.35
238.8	0.004	3372.	0.373
253.2	0.008	3576.	0.401
268.2	0.005	3786.	0.408
283.8	0.001	4008.	0.429
300.6	0.005	4248.	0.457
318.6	0.012	4500.	0.475
337.2	0.007	4764.	0.506
357.6	0.01	5046.	0.532
378.6	0.01	5346.	0.563
400.8	0.012	5664.	0.594
424.8	0.01	6000.	0.64
450.	0.016	6360.	0.676
476.4	0.016	6720.	0.716
504.6	0.021	7140.	0.762
534.6	0.024	7560.	0.812
566.4	0.025	7980.	0.862
600.	0.039	8460.	0.915
636.	0.038	9000.	0.983
672.	0.04	9480.	1.029
714.	0.046	1.008E+4	1.103
756.	0.058	1.068E+4	1.175
798.	0.045	1.128E+4	1.246
846.	0.062	1.194E+4	1.313
900.	0.062	1.266E+4	1.393
948.	0.071	1.344E+4	1.483
1008.	0.084	1.422E+4	1.574
1068.	0.091	1.506E+4	1.661
1128.	0.103	1.596E+4	1.77
1194.	0.011	1.686E+4	1.85
1266.	0.12	1.776E+4	1.948
1344.	0.128	1.866E+4	2.044
1422.	0.144	1.956E+4	2.153
1506.	0.153	2.046E+4	2.263
1596.	0.163	2.136E+4	2.373
1692.	0.175	2.226E+4	2.493
1788.	0.19	2.316E+4	2.611
1896.	0.198	2.406E+4	2.712
2010.	0.22	2.496E+4	2.848
2130.	0.225	2.586E+4	2.983
2256.	0.24	2.676E+4	3.075
2388.	0.261	2.766E+4	3.111
2532.	0.269	2.856E+4	3.125
2682.	0.283	2.946E+4	3.13

Observation Well No. 3: TR-08

X Location: 0. ft
Y Location: 0. ft

R l distance from GETR-BA1-01B: 0. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 1

Observation Data

Time (sec)	Displacement (ft)
189.6	12.94

Observation Well No. 4: 02W02

X Location: 0. ft
Y Location: -25. ft

Radial distance from GETR-BA1-01B: 25. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 102

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
189.6	0.01	3576.	0.132
201.	0.005	3786.	0.145
213.	0.006	4008.	0.156
225.6	0.013	4248.	0.179
238.8	0.011	4500.	0.19
253.2	0.01	4764.	0.212
268.2	0.007	5046.	0.245
283.8	0.014	5346.	0.268
300.6	0.014	5664.	0.295
318.6	0.011	6000.	0.32
337.2	0.013	6360.	0.346
357.6	0.009	6720.	0.372
378.6	0.013	7140.	0.411
400.8	0.008	7560.	0.444
424.8	0.007	7980.	0.484
450.	0.006	8460.	0.528
476.4	0.01	9000.	0.575
504.6	0.007	9480.	0.618
534.6	0.005	1.008E+4	0.681
566.4	0.013	1.068E+4	0.742
600.	0.012	1.128E+4	0.812
636.	0.005	1.194E+4	0.884
672.	0.006	1.266E+4	0.961
714.	0.005	1.344E+4	1.049
756.	0.002	1.422E+4	1.139
798.	0.003	1.506E+4	1.229
846.	0.003	1.596E+4	1.341
900.	0.002	1.686E+4	1.436
948.	0.001	1.776E+4	1.539
1008.	0.004	1.866E+4	1.629
1068.	0.005	1.956E+4	1.718
1128.	0.009	2.046E+4	1.804
1194.	0.007	2.136E+4	1.888
1266.	0.007	2.226E+4	1.967
1344.	0.012	2.316E+4	2.048
1422.	0.018	2.406E+4	2.119
1506.	0.026	2.496E+4	2.185
1596.	0.032	2.586E+4	2.255
1692.	0.035	2.676E+4	2.3
1788.	0.041	2.766E+4	2.35
1896.	0.043	2.856E+4	2.384
2010.	0.049	2.946E+4	2.42
2130.	0.054	3.036E+4	2.448

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
2256.	0.064	3.126E+4	2.473
2388.	0.074	3.216E+4	2.485
2532.	0.074	3.306E+4	2.505
2682.	0.086	3.396E+4	2.515
2838.	0.097	3.486E+4	2.527
3006.	0.111	3.576E+4	2.527
3186.	0.116	3.666E+4	2.53
3372.	0.124	3.756E+4	2.528

Observation Well No. 5: 02W39

X Location: 25. ft
Y Location: 4. ft

Radial distance from GETR-BA1-01B: 25.3179778 ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 221

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.251	0.006	948.	0.029
0.501	0.007	1008.	0.036
0.751	0.003	1068.	0.037
1.001	0.001	1128.	0.035
1.251	0.008	1194.	0.038
1.501	0.	1266.	0.044
1.751	0.004	1344.	0.047
2.001	0.003	1422.	0.051
2.251	0.006	1506.	0.053
2.501	0.005	1596.	0.053
2.751	0.002	1692.	0.056
3.001	0.008	1788.	0.056
3.251	0.005	1896.	0.066
3.501	0.004	2010.	0.069
3.751	0.003	2130.	0.067
4.001	0.007	2256.	0.078
4.251	0.004	2388.	0.072
4.501	0.005	2532.	0.086
4.751	0.006	2682.	0.072
5.001	0.001	2838.	0.076
5.251	0.001	3006.	0.076
5.501	0.002	3186.	0.077
5.751	0.001	3372.	0.078
6.001	0.001	3576.	0.093
6.36	0.003	3786.	0.093
6.72	0.002	4008.	0.097
7.14	0.008	4248.	0.099
7.56	0.003	4500.	0.098
7.98	0.003	4764.	0.12
8.46	0.001	5046.	0.121
9.	0.005	5346.	0.129
9.48	0.006	5664.	0.137
10.08	0.	6000.	0.149
10.68	0.003	6360.	0.145
11.28	0.003	6720.	0.157
11.94	0.001	7140.	0.158
12.66	0.003	7560.	0.164
13.44	0.002	7980.	0.178
14.22	0.001	8460.	0.182
15.06	0.002	9000.	0.18
15.96	0.	9480.	0.188
16.92	0.004	1.008E+4	0.203
17.88	0.003	1.068E+4	0.209
18.96	0.001	1.128E+4	0.221
20.1	0.003	1.194E+4	0.227
21.3	0.002	1.266E+4	0.239
22.56	0.001	1.344E+4	0.242
23.88	0.002	1.422E+4	0.252
25.32	0.004	1.506E+4	0.268
26.82	0.003	1.596E+4	0.281

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
28.38	0.003	1.686E+4	0.318
30.06	0.005	1.776E+4	0.331
31.86	0.006	1.866E+4	0.341
33.72	0.008	1.956E+4	0.357
35.76	0.006	2.046E+4	0.406
37.86	0.012	2.136E+4	0.421
40.08	0.001	2.226E+4	0.434
42.48	0.01	2.316E+4	0.446
45.	0.001	2.406E+4	0.451
47.64	0.015	2.496E+4	0.463
50.46	0.003	2.586E+4	0.473
53.46	0.002	2.676E+4	0.479
56.64	0.004	2.766E+4	0.485
60.	0.001	2.856E+4	0.499
63.6	0.006	2.946E+4	0.504
67.2	0.002	3.036E+4	0.515
71.4	0.005	3.126E+4	0.517
75.6	0.003	3.216E+4	0.531
79.8	0.006	3.306E+4	0.537
84.6	0.003	3.396E+4	0.541
90.	0.003	3.486E+4	0.555
94.8	0.006	3.576E+4	0.557
100.8	0.006	3.666E+4	0.571
106.8	0.	3.756E+4	0.578
112.8	0.008	3.846E+4	0.578
119.4	0.003	3.936E+4	0.58
126.6	0.	4.026E+4	0.598
134.4	0.003	4.116E+4	0.598
142.2	0.001	4.206E+4	0.603
150.6	0.006	4.296E+4	0.608
159.6	0.004	4.386E+4	0.612
169.2	0.002	4.476E+4	0.624
178.8	0.001	4.566E+4	0.623
189.6	0.003	4.656E+4	0.631
201.	0.004	4.746E+4	0.631
213.	0.004	4.836E+4	0.639
225.6	0.003	4.926E+4	0.647
238.8	0.003	5.016E+4	0.649
253.2	0.002	5.106E+4	0.65
268.2	0.007	5.196E+4	0.649
283.8	0.007	5.286E+4	0.652
300.6	0.	5.376E+4	0.653
318.6	0.001	5.466E+4	0.657
337.2	0.	5.556E+4	0.66
357.6	0.005	5.646E+4	0.665
378.6	0.003	5.736E+4	0.662
400.8	0.004	5.826E+4	0.67
424.8	0.013	5.916E+4	0.673
450.	0.	6.006E+4	0.665
476.4	0.011	6.096E+4	0.674
504.6	0.011	6.186E+4	0.676
534.6	0.015	6.276E+4	0.671
566.4	0.014	6.366E+4	0.678
600.	0.014	6.456E+4	0.687
636.	0.019	6.546E+4	0.683
672.	0.023	6.636E+4	0.681
714.	0.02	6.726E+4	0.681
756.	0.018	6.816E+4	0.688
798.	0.037	6.906E+4	0.683
846.	0.031	6.996E+4	0.688
900.	0.03		

Observation Well No. 6: 1405

X Location: 0. ft
Y Location: 14. ft

Radial distance from GETR-BA1-01B: 14. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 95

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
201.	0.01	3186.	0.616
213.	0.01	3372.	0.644
225.6	0.017	3576.	0.689
238.8	0.015	3786.	0.735
253.2	0.022	4008.	0.774
268.2	0.031	4248.	0.814
283.8	0.015	4500.	0.867
300.6	0.03	4764.	0.913
318.6	0.023	5046.	0.984
337.2	0.024	5346.	1.037
357.6	0.022	5664.	1.093
378.6	0.023	6000.	1.167
400.8	0.026	6360.	1.234
424.8	0.039	6720.	1.311
450.	0.042	7140.	1.386
476.4	0.048	7560.	1.465
504.6	0.057	7980.	1.534
534.6	0.06	8460.	1.628
566.4	0.071	9000.	1.721
600.	0.076	9480.	1.786
636.	0.084	1.008E+4	1.878
672.	0.091	1.068E+4	1.969
714.	0.106	1.128E+4	2.051
756.	0.111	1.194E+4	2.15
798.	0.125	1.266E+4	2.249
846.	0.135	1.344E+4	2.342
900.	0.141	1.422E+4	2.438
948.	0.152	1.506E+4	2.542
1008.	0.156	1.596E+4	2.631
1068.	0.174	1.686E+4	2.697
1128.	0.186	1.776E+4	2.763
1194.	0.208	1.866E+4	2.819
1266.	0.224	1.956E+4	2.866
1344.	0.234	2.046E+4	2.906
1422.	0.26	2.136E+4	2.943
1506.	0.279	2.226E+4	2.98
1596.	0.305	2.316E+4	3.015
1692.	0.316	2.406E+4	3.041
1788.	0.336	2.496E+4	3.081
1896.	0.366	2.586E+4	3.106
2010.	0.385	2.676E+4	3.133
2130.	0.415	2.766E+4	3.155
2256.	0.448	2.856E+4	3.178
2388.	0.46	2.946E+4	3.2
2532.	0.482	3.036E+4	3.217
2682.	0.51	3.126E+4	3.223
2838.	0.543	3.216E+4	3.23
3006.	0.579		

Observation Well No. 7: TR-09

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 176

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.25	0.004	253.2	0.099
0.5	0.	268.2	0.11
0.75	0.005	283.8	0.096
1.	0.009	300.6	0.117
1.25	0.007	318.6	0.152
1.5	0.011	337.2	0.191
1.75	0.012	357.6	0.217
2.	0.016	378.6	0.232

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
2.25	0.018	400.8	0.254
2.5	0.018	424.8	0.28
2.75	0.02	450.	0.316
3.	0.026	476.4	0.346
3.25	0.02	504.6	0.37
3.5	0.029	534.6	0.37
3.75	0.03	566.4	0.377
4.	0.034	600.	0.417
4.25	0.035	636.	0.45
4.5	0.038	672.	0.447
4.75	0.041	714.	0.454
5.	0.041	756.	0.5
5.25	0.041	798.	0.5
5.5	0.044	846.	0.548
5.75	0.046	900.	0.598
6.	0.048	948.	0.635
6.36	0.044	1008.	0.679
6.72	0.046	1068.	0.721
7.14	0.051	1128.	0.754
7.56	0.053	1194.	0.8
7.98	0.045	1266.	0.843
8.46	0.045	1344.	0.886
9.	0.043	1422.	0.929
9.48	0.043	1506.	0.965
10.08	0.04	1596.	1.016
10.68	0.037	1692.	1.071
11.28	0.038	1788.	1.044
11.94	0.038	1896.	1.096
12.66	0.035	2010.	1.148
13.44	0.034	2130.	1.172
14.22	0.035	2256.	1.203
15.06	0.034	2388.	1.26
15.96	0.03	2532.	1.328
16.92	0.032	2682.	1.411
17.88	0.035	2838.	1.491
18.96	0.033	3006.	1.581
20.1	0.032	3186.	1.676
21.3	0.033	3372.	1.77
22.56	0.032	3576.	1.876
23.88	0.031	3786.	1.98
25.32	0.032	4008.	2.094
26.82	0.028	4248.	2.214
28.38	0.03	4500.	2.332
30.06	0.026	4764.	2.463
31.86	0.029	5046.	2.597
33.72	0.023	5346.	2.742
35.76	0.022	5664.	2.892
37.86	0.022	6000.	3.051
40.08	0.017	6360.	3.214
42.48	0.022	6720.	3.375
45.	0.024	7140.	3.563
47.64	0.019	7560.	3.748
50.46	0.009	7980.	3.924
53.46	0.007	8460.	4.138
56.64	0.012	9000.	4.357
60.	0.014	9480.	4.553
63.6	0.014	1.008E+4	4.796
67.2	0.015	1.068E+4	5.027
71.4	0.018	1.128E+4	5.264
75.6	0.013	1.194E+4	5.514
79.8	0.02	1.266E+4	5.784
84.6	0.029	1.344E+4	6.08
90.	0.026	1.422E+4	6.367
94.8	0.035	1.506E+4	6.679
100.8	0.055	1.596E+4	7.027
106.8	0.062	1.686E+4	7.352
112.8	0.086	1.776E+4	7.669
119.4	0.121	1.866E+4	7.995
126.6	0.147	1.956E+4	8.34
134.4	0.148	2.046E+4	8.679
142.2	0.134	2.136E+4	9.017
150.6	0.152	2.226E+4	9.37
159.6	0.124	2.316E+4	9.722

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
169.2	0.112	2.406E+4	10.1
178.8	0.098	2.496E+4	10.55
189.6	0.116	2.586E+4	11.
201.	0.154	2.676E+4	11.11
213.	0.131	2.766E+4	11.12
225.6	0.112	2.856E+4	11.12
238.8	0.101	2.946E+4	11.12

Observation Well No. 8: 1406

X Location: 0. ft
Y Location: -12. ft

Radial distance from GETR-BA1-01B: 12. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 108

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
201.	0.016	4500.	0.623
213.	0.027	4764.	0.665
225.6	0.021	5046.	0.699
238.8	0.023	5346.	0.747
253.2	0.01	5664.	0.786
268.2	0.02	6000.	0.846
283.8	0.023	6360.	0.886
300.6	0.022	6720.	0.946
318.6	0.024	7140.	1.018
337.2	0.026	7560.	1.057
357.6	0.029	7980.	1.112
378.6	0.033	8460.	1.181
400.8	0.023	9000.	1.248
424.8	0.035	9480.	1.297
450.	0.044	1.008E+4	1.363
476.4	0.047	1.068E+4	1.398
504.6	0.05	1.128E+4	1.44
534.6	0.066	1.194E+4	1.487
566.4	0.066	1.266E+4	1.54
600.	0.069	1.344E+4	1.596
636.	0.093	1.422E+4	1.655
672.	0.094	1.506E+4	1.724
714.	0.097	1.596E+4	1.794
756.	0.105	1.686E+4	1.897
798.	0.109	1.776E+4	2.031
846.	0.112	1.866E+4	2.153
900.	0.12	1.956E+4	2.277
948.	0.133	2.046E+4	2.383
1008.	0.142	2.136E+4	2.474
1068.	0.153	2.226E+4	2.543
1128.	0.171	2.316E+4	2.627
1194.	0.183	2.406E+4	2.694
1266.	0.194	2.496E+4	2.753
1344.	0.207	2.586E+4	2.8
1422.	0.221	2.676E+4	2.844
1506.	0.236	2.766E+4	2.879
1596.	0.241	2.856E+4	2.921
1692.	0.258	2.946E+4	3.011
1788.	0.266	3.036E+4	3.061
1896.	0.29	3.126E+4	3.114
2010.	0.308	3.216E+4	3.164
2130.	0.317	3.306E+4	3.228
2256.	0.329	3.396E+4	3.276
2388.	0.327	3.486E+4	3.317
2532.	0.35	3.576E+4	3.349
2682.	0.362	3.666E+4	3.388
2838.	0.384	3.756E+4	3.408
3006.	0.411	3.846E+4	3.423
3186.	0.444	3.936E+4	3.436
3372.	0.46	4.026E+4	3.448
3576.	0.492	4.116E+4	3.467

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3786.	0.521	4.206E+4	3.483
4008.	0.554	4.296E+4	3.493
4248.	0.59	4.386E+4	3.495

Observation Well No. 9: TMW09

X Location: 0. ft
Y Location: -22. ft

Radial distance from GETR-BA1-01B: 22. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 221

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.25	0.003	948.	0.049
0.5	0.004	1008.	0.054
0.75	0.	1068.	0.057
1.	0.003	1128.	0.059
1.25	0.	1194.	0.077
1.5	0.002	1266.	0.075
1.75	0.004	1344.	0.092
2.	0.002	1422.	0.096
2.25	0.002	1506.	0.1
2.5	0.001	1596.	0.113
2.75	0.001	1692.	0.124
3.	0.	1788.	0.129
3.25	0.001	1896.	0.146
3.5	0.001	2010.	0.155
3.75	0.005	2130.	0.17
4.	0.002	2256.	0.172
4.25	0.001	2388.	0.184
4.5	0.002	2532.	0.195
4.75	0.006	2682.	0.212
5.	0.004	2838.	0.233
5.25	0.001	3006.	0.241
5.5	0.003	3186.	0.256
5.75	0.003	3372.	0.284
6.	0.003	3576.	0.305
6.36	0.003	3786.	0.335
6.72	0.001	4008.	0.356
7.14	0.005	4248.	0.384
7.56	0.001	4500.	0.406
7.98	0.002	4764.	0.445
8.46	0.001	5046.	0.476
9.	0.003	5346.	0.513
9.48	0.	5664.	0.549
10.08	0.001	6000.	0.6
10.68	0.001	6360.	0.638
11.28	0.008	6720.	0.689
11.94	0.005	7140.	0.747
12.66	0.001	7560.	0.796
13.44	0.003	7980.	0.853
14.22	0.001	8460.	0.911
15.06	0.	9000.	0.971
15.96	0.	9480.	1.027
16.92	0.	1.008E+4	1.084
17.88	0.005	1.068E+4	1.15
18.96	0.004	1.128E+4	1.206
20.1	0.001	1.194E+4	1.263
21.3	0.003	1.266E+4	1.325
22.56	0.005	1.344E+4	1.383
23.88	0.	1.422E+4	1.438
25.32	0.002	1.506E+4	1.492
26.82	0.002	1.596E+4	1.549
28.38	0.	1.686E+4	1.589
30.06	0.003	1.776E+4	1.637
31.86	0.001	1.866E+4	1.676
33.72	0.003	1.956E+4	1.713
35.76	0.006	2.046E+4	1.75

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
37.86	0.001	2.136E+4	1.791
40.08	0.001	2.226E+4	1.822
42.48	0.001	2.316E+4	1.851
45.	0.001	2.406E+4	1.888
47.64	0.001	2.496E+4	1.918
50.46	0.001	2.586E+4	1.945
53.46	0.001	2.676E+4	1.966
56.64	0.001	2.766E+4	1.988
60.	0.001	2.856E+4	2.007
63.6	0.007	2.946E+4	2.03
67.2	0.001	3.036E+4	2.055
71.4	0.002	3.126E+4	2.077
75.6	0.011	3.216E+4	2.111
79.8	0.004	3.306E+4	2.13
84.6	0.002	3.396E+4	2.152
90.	0.001	3.486E+4	2.172
94.8	0.	3.576E+4	2.187
100.8	0.005	3.666E+4	2.204
106.8	0.	3.756E+4	2.217
112.8	0.	3.846E+4	2.227
119.4	0.003	3.936E+4	2.246
126.6	0.001	4.026E+4	2.265
134.4	0.004	4.116E+4	2.268
142.2	0.	4.206E+4	2.284
150.6	0.005	4.296E+4	2.299
159.6	0.001	4.386E+4	2.304
169.2	0.005	4.476E+4	2.31
178.8	0.003	4.566E+4	2.316
189.6	0.005	4.656E+4	2.334
201.	0.004	4.746E+4	2.339
213.	0.003	4.836E+4	2.352
225.6	0.004	4.926E+4	2.359
238.8	0.006	5.016E+4	2.373
253.2	0.007	5.106E+4	2.382
268.2	0.007	5.196E+4	2.395
283.8	0.009	5.286E+4	2.4
300.6	0.006	5.376E+4	2.41
318.6	0.002	5.466E+4	2.421
337.2	0.004	5.556E+4	2.432
357.6	0.006	5.646E+4	2.439
378.6	0.008	5.736E+4	2.44
400.8	0.015	5.826E+4	2.453
424.8	0.012	5.916E+4	2.455
450.	0.012	6.006E+4	2.457
476.4	0.011	6.096E+4	2.458
504.6	0.018	6.186E+4	2.459
534.6	0.016	6.276E+4	2.46
566.4	0.016	6.366E+4	2.463
600.	0.019	6.456E+4	2.462
636.	0.025	6.546E+4	2.463
672.	0.027	6.636E+4	2.458
714.	0.028	6.726E+4	2.458
756.	0.035	6.816E+4	2.453
798.	0.04	6.906E+4	2.443
846.	0.042	6.996E+4	2.435
900.	0.041		

Observation Well No. 10: TR-10

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Piezometer
Piezometer Depth: 10. ft

N f Observations: 173

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.251	0.003	238.8	0.109
0.501	0.004	253.2	0.101

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.751	0.002	268.2	0.106
1.001	0.001	283.8	0.104
1.251	0.	300.6	0.108
1.501	0.001	318.6	0.134
1.751	0.005	337.2	0.159
2.001	0.004	357.6	0.18
2.251	0.005	378.6	0.2
2.501	0.003	400.8	0.215
2.751	0.004	424.8	0.232
3.001	0.008	450.	0.265
3.251	0.006	476.4	0.288
3.501	0.004	504.6	0.316
3.751	0.008	534.6	0.329
4.001	0.01	566.4	0.335
4.251	0.009	600.	0.371
4.501	0.008	636.	0.398
4.751	0.011	672.	0.416
5.001	0.013	714.	0.42
5.251	0.011	756.	0.456
5.501	0.011	798.	0.469
5.751	0.013	846.	0.502
6.001	0.013	900.	0.55
6.36	0.014	948.	0.587
6.72	0.013	1008.	0.629
7.14	0.015	1068.	0.673
7.56	0.019	1128.	0.705
7.98	0.019	1194.	0.751
8.46	0.017	1266.	0.791
9.	0.017	1344.	0.842
9.48	0.016	1422.	0.886
10.08	0.019	1506.	0.935
10.68	0.02	1596.	0.991
11.28	0.024	1692.	1.046
11.94	0.027	1788.	1.103
12.66	0.019	1896.	1.166
13.44	0.024	2010.	1.212
14.22	0.021	2130.	1.243
15.06	0.021	2256.	1.275
15.96	0.028	2388.	1.335
16.92	0.022	2532.	1.411
17.88	0.025	2682.	1.493
18.96	0.023	2838.	1.576
20.1	0.026	3006.	1.659
21.3	0.025	3186.	1.758
22.56	0.024	3372.	1.858
23.88	0.023	3576.	1.966
25.32	0.021	3786.	2.08
26.82	0.026	4008.	2.196
28.38	0.029	4248.	2.314
30.06	0.025	4500.	2.43
31.86	0.025	4764.	2.562
33.72	0.023	5046.	2.7
35.76	0.022	5346.	2.844
37.86	0.021	5664.	2.995
40.08	0.024	6000.	3.154
42.48	0.02	6360.	3.319
45.	0.023	6720.	3.478
47.64	0.021	7140.	3.666
50.46	0.015	7560.	3.85
53.46	0.021	7980.	4.033
56.64	0.016	8460.	4.242
60.	0.022	9000.	4.461
63.6	0.022	9480.	4.658
67.2	0.016	1.008E+4	4.902
71.4	0.024	1.068E+4	5.129
75.6	0.021	1.128E+4	5.372
79.8	0.017	1.194E+4	5.624
84.6	0.024	1.266E+4	5.896
90.	0.025	1.344E+4	6.196
94.8	0.033	1.422E+4	6.474
100.8	0.04	1.506E+4	6.796
106.8	0.047	1.596E+4	7.147
112.8	0.055	1.686E+4	7.467

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
119.4	0.08	1.776E+4	7.783
126.6	0.101	1.866E+4	8.107
134.4	0.118	1.956E+4	8.44
142.2	0.114	2.046E+4	8.772
150.6	0.124	2.136E+4	9.103
159.6	0.12	2.226E+4	9.439
169.2	0.103	2.316E+4	9.76
178.8	0.107	2.406E+4	9.917
189.6	0.107	2.496E+4	9.919
201.	0.125	2.586E+4	9.923
213.	0.122	2.676E+4	9.921
225.6	0.114		

SOLUTION

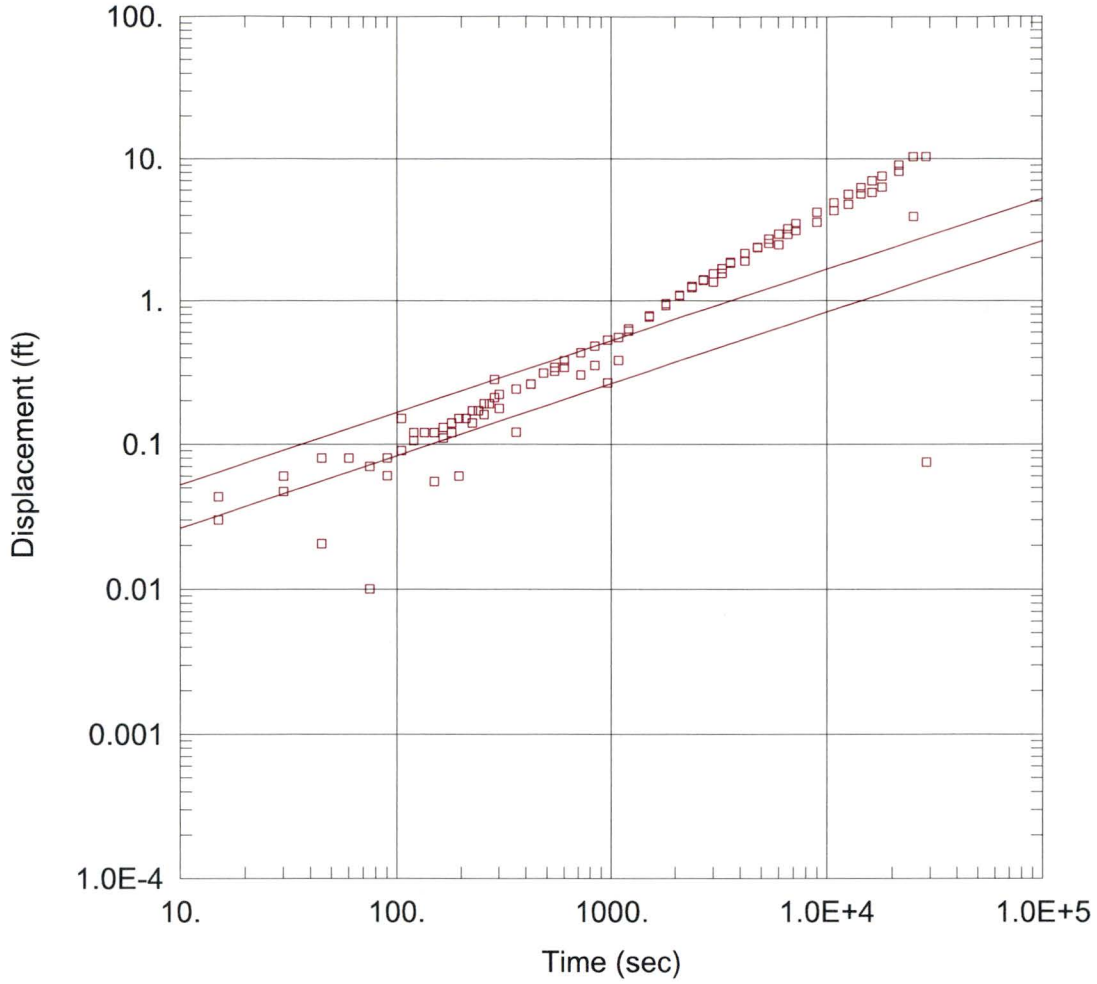
Pumping Test
Aquifer Model: Unconfined
Solution Method: Cooper-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	78.07	ft^2/day
S	52.56	

K = T/b = 4.88 ft/day (0.001721 cm/sec)
Ss = S/b = 3.285 1/ft



WELL TEST ANALYSIS

Data Set: Z:\...\GETRBA101B_Murdoch.aqt
Date: 12/07/18 Time: 16:28:51

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01B
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16. ft Trench Length: 102.8 ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Murdoch (Trench)

Kx = 26.35 ft/day Ss = 1.701 ft^{-1}
Ky/Kx = 0.00105 Lt = 102.8 ft

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 12/07/18
Time: 16:29:10

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01B

AQUIFER DATA

Saturated Thickness: 16. ft
Anisotropy Ratio (Kz/Kr): 0.02449
Trench Length: 102.8 ft

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 2

Observation Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of Observations: 53

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.	0.03	960.	0.53
30.	0.06	1080.	0.55
45.	0.08	1200.	0.61
60.	0.08	1500.	0.78
75.	0.07	1800.	0.92
90.	0.08	2100.	1.09
105.	0.09	2400.	1.23
120.	0.12	2700.	1.4

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
135.	0.12	3000.	1.54
150.	0.12	3300.	1.67
165.	0.13	3600.	1.82
180.	0.14	4200.	2.14
195.	0.15	4800.	2.37
210.	0.15	5400.	2.71
225.	0.17	6000.	2.94
240.	0.17	6600.	3.2
255.	0.19	7200.	3.47
270.	0.19	9000.	4.17
285.	0.21	1.08E+4	4.88
300.	0.22	1.26E+4	5.59
360.	0.24	1.44E+4	6.24
420.	0.26	1.62E+4	6.98
480.	0.31	1.8E+4	7.54
540.	0.34	2.16E+4	8.99
600.	0.38	2.52E+4	10.27
720.	0.43	2.88E+4	10.28
840.	0.48		

Observation Well No. 2: 1404

X Location: 0. ft
Y Location: 14. ft

Radial distance from GETR-BA1-01B: 14. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 92

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
201.	0.001	2838.	0.307
213.	0.003	3006.	0.328
225.6	0.005	3186.	0.35
238.8	0.004	3372.	0.373
253.2	0.008	3576.	0.401
268.2	0.005	3786.	0.408
283.8	0.001	4008.	0.429
300.6	0.005	4248.	0.457
318.6	0.012	4500.	0.475
337.2	0.007	4764.	0.506
357.6	0.01	5046.	0.532
378.6	0.01	5346.	0.563
400.8	0.012	5664.	0.594
424.8	0.01	6000.	0.64
450.	0.016	6360.	0.676
476.4	0.016	6720.	0.716
504.6	0.021	7140.	0.762
534.6	0.024	7560.	0.812
566.4	0.025	7980.	0.862
600.	0.039	8460.	0.915
636.	0.038	9000.	0.983
672.	0.04	9480.	1.029
714.	0.046	1.008E+4	1.103
756.	0.058	1.068E+4	1.175
798.	0.045	1.128E+4	1.246
846.	0.062	1.194E+4	1.313
900.	0.062	1.266E+4	1.393
948.	0.071	1.344E+4	1.483
1008.	0.084	1.422E+4	1.574
1068.	0.091	1.506E+4	1.661
1128.	0.103	1.596E+4	1.77
1194.	0.011	1.686E+4	1.85
1266.	0.12	1.776E+4	1.948

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1344.	0.128	1.866E+4	2.044
1422.	0.144	1.956E+4	2.153
1506.	0.153	2.046E+4	2.263
1596.	0.163	2.136E+4	2.373
1692.	0.175	2.226E+4	2.493
1788.	0.19	2.316E+4	2.611
1896.	0.198	2.406E+4	2.712
2010.	0.22	2.496E+4	2.848
2130.	0.225	2.586E+4	2.983
2256.	0.24	2.676E+4	3.075
2388.	0.261	2.766E+4	3.111
2532.	0.269	2.856E+4	3.125
2682.	0.283	2.946E+4	3.13

SOLUTION

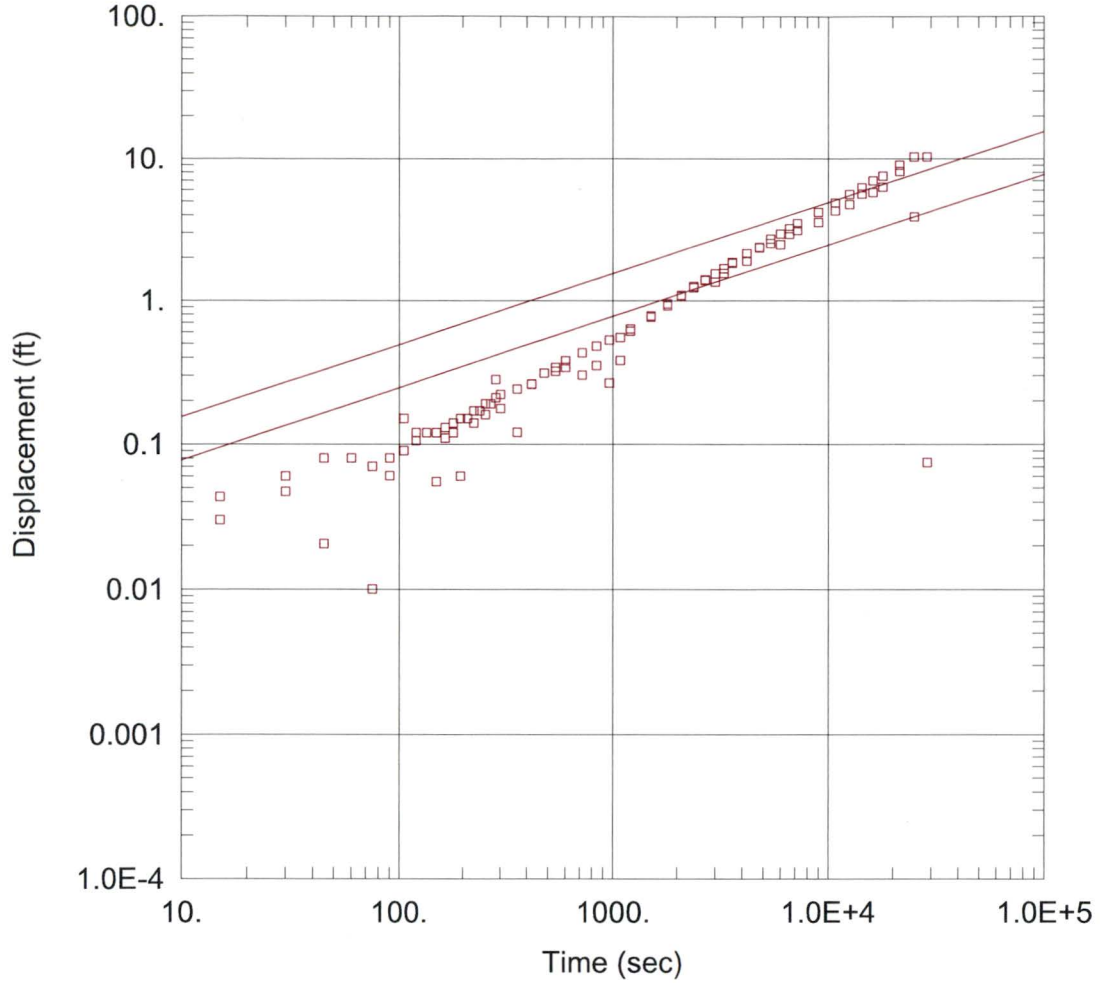
Pumping Test
Aquifer Model: Confined
Solution Method: Murdoch (Trench)

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
Kx	26.35	ft/day
Ss	1.701	ft^{-1}
Ky/Kx	0.00105	
Lt	102.8	ft

K = 0.009294 cm/sec
T = K*b = 421.5 ft^2/day (4.533 sq. cm/sec)



WELL TEST ANALYSIS

Data Set: Z:\...\GETRBA101B_Murdoch_2.aqt
Date: 12/07/18 Time: 16:30:07

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01B
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16. ft Trench Length: 106.7 ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ GETR-BA1-01B	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Murdoch (Trench)

Kx = 26.35 ft/day Ss = 0.1869 ft^{-1}
Ky/Kx = 0.001015 Lt = 106.7 ft

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 12/07/18
Time: 16:30:22

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01B

AQUIFER DATA

Saturated Thickness: 16. ft
Anisotropy Ratio (Kz/Kr): 0.02449
Trench Length: 106.7 ft

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of pumping periods: 1

Pumping Period Data

Time (sec)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 2

Observation Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of Observations: 53

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.	0.03	960.	0.53
30.	0.06	1080.	0.55
45.	0.08	1200.	0.61
60.	0.08	1500.	0.78
75.	0.07	1800.	0.92
90.	0.08	2100.	1.09
105.	0.09	2400.	1.23
120.	0.12	2700.	1.4

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
135.	0.12	3000.	1.54
150.	0.12	3300.	1.67
165.	0.13	3600.	1.82
180.	0.14	4200.	2.14
195.	0.15	4800.	2.37
210.	0.15	5400.	2.71
225.	0.17	6000.	2.94
240.	0.17	6600.	3.2
255.	0.19	7200.	3.47
270.	0.19	9000.	4.17
285.	0.21	1.08E+4	4.88
300.	0.22	1.26E+4	5.59
360.	0.24	1.44E+4	6.24
420.	0.26	1.62E+4	6.98
480.	0.31	1.8E+4	7.54
540.	0.34	2.16E+4	8.99
600.	0.38	2.52E+4	10.27
720.	0.43	2.88E+4	10.28
840.	0.48		

Observation Well No. 2: 1404

X Location: 0. ft
Y Location: 14. ft

Radial distance from GETR-BA1-01B: 14. ft

Piezometer
Piezometer Depth: 10. ft

No. of Observations: 92

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
201.	0.001	2838.	0.307
213.	0.003	3006.	0.328
225.6	0.005	3186.	0.35
238.8	0.004	3372.	0.373
253.2	0.008	3576.	0.401
268.2	0.005	3786.	0.408
283.8	0.001	4008.	0.429
300.6	0.005	4248.	0.457
318.6	0.012	4500.	0.475
337.2	0.007	4764.	0.506
357.6	0.01	5046.	0.532
378.6	0.01	5346.	0.563
400.8	0.012	5664.	0.594
424.8	0.01	6000.	0.64
450.	0.016	6360.	0.676
476.4	0.016	6720.	0.716
504.6	0.021	7140.	0.762
534.6	0.024	7560.	0.812
566.4	0.025	7980.	0.862
600.	0.039	8460.	0.915
636.	0.038	9000.	0.983
672.	0.04	9480.	1.029
714.	0.046	1.008E+4	1.103
756.	0.058	1.068E+4	1.175
798.	0.045	1.128E+4	1.246
846.	0.062	1.194E+4	1.313
900.	0.062	1.266E+4	1.393
948.	0.071	1.344E+4	1.483
1008.	0.084	1.422E+4	1.574
1068.	0.091	1.506E+4	1.661
1128.	0.103	1.596E+4	1.77
1194.	0.011	1.686E+4	1.85
1266.	0.12	1.776E+4	1.948

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1344.	0.128	1.866E+4	2.044
1422.	0.144	1.956E+4	2.153
1506.	0.153	2.046E+4	2.263
1596.	0.163	2.136E+4	2.373
1692.	0.175	2.226E+4	2.493
1788.	0.19	2.316E+4	2.611
1896.	0.198	2.406E+4	2.712
2010.	0.22	2.496E+4	2.848
2130.	0.225	2.586E+4	2.983
2256.	0.24	2.676E+4	3.075
2388.	0.261	2.766E+4	3.111
2532.	0.269	2.856E+4	3.125
2682.	0.283	2.946E+4	3.13

SOLUTION

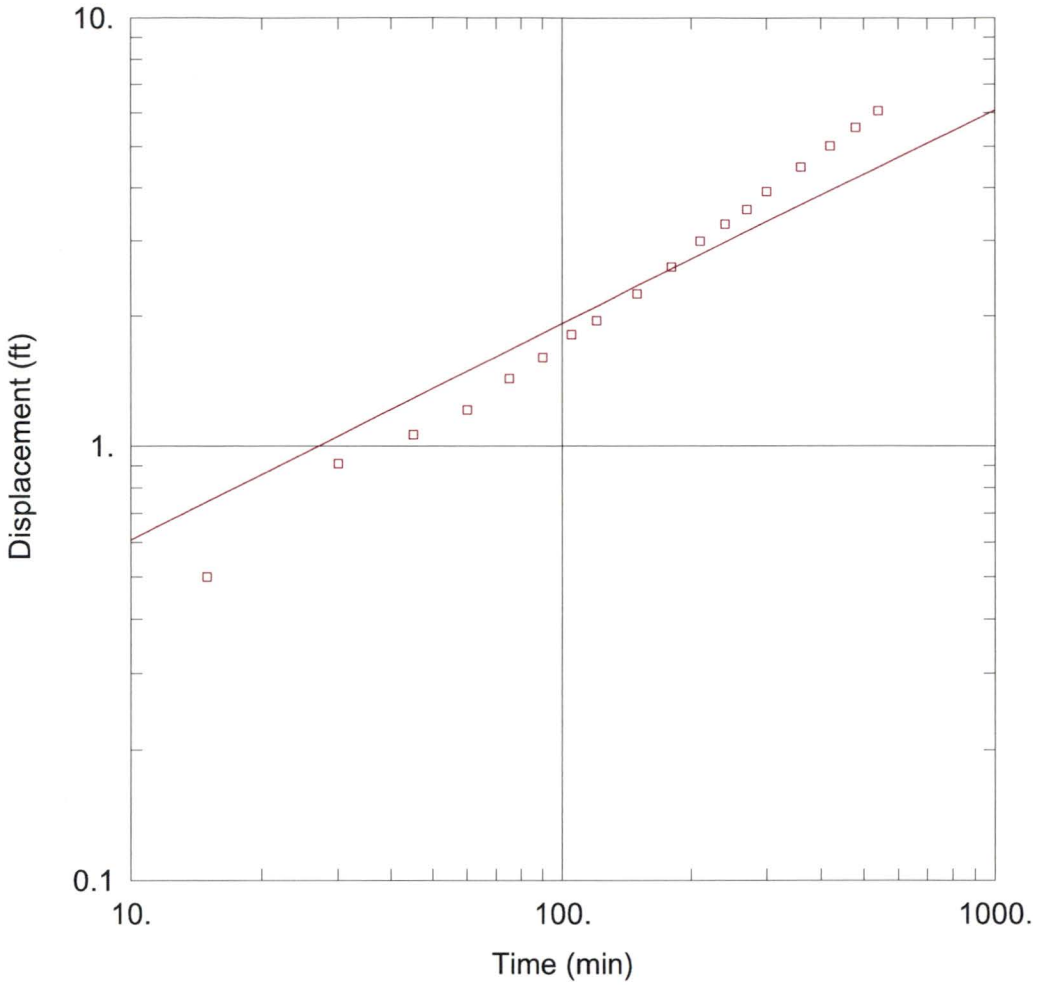
Pumping Test
Aquifer Model: Confined
Solution Method: Murdoch (Trench)

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
Kx	26.35	ft/day
Ss	0.1869	ft^{-1}
Ky/Kx	0.001015	
Lt	106.7	ft

K = 0.009294 cm/sec
T = K*b = 421.5 ft^2/day (4.533 sq. cm/sec)



WELL TEST ANALYSIS

Data Set: Z:\...\GETRBA101B_murdoch_recovery.aqt
Date: 01/09/19 Time: 10:16:26

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Well: GETR-BA1-01B
Test Date: November 27, 2017

AQUIFER DATA

Saturated Thickness: 16. ft Trench Length: 79.58 ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
GETR-BA1-01B	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Murdoch (Trench)

Kx = 11.59 ft/day
Ky/Kx = 0.001
Ss = 3.023 ft^{-1}
Lt = 79.58 ft

Data Set: Z:\Clients\ENS\CERT\96785_CERT-DECOM2017\Support\Data\Remediation Pilot Test\GETR-BA1 Aq
Date: 01/09/19
Time: 10:16:53

PROJECT INFORMATION

Company: Burns& McDonnell
Client: CERT
Project: 96785
Location: Crescent, OK
Test Date: November 27, 2017
Test Well: GETR-BA1-01B

AQUIFER DATA

Saturated Thickness: 16. ft
Anisotropy Ratio (Kz/Kr): 1.646E+4
Trench Length: 79.58 ft

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Casing Radius: 0.5 ft
Well Radius: 0.33 ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of pumping periods: 1

Pumping Period Data

Time (min)	Rate (gal/min)
0.	16.

OBSERVATION WELL DATA

No. of observation wells: 1

Observation Well No. 1: GETR-BA1-01B

X Location: 0. ft
Y Location: 0. ft

Radial distance from GETR-BA1-01B: 0. ft

Horizontal Well
Depth to Top of Screen: 14.83 ft
Screen Length: 200. ft

No. of Observations: 18

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
15.	0.5	180.	2.6
30.	0.91	210.	2.99
45.	1.06	240.	3.28
60.	1.21	270.	3.55
75.	1.43	300.	3.91
90.	1.6	360.	4.47
105.	1.81	420.	5.01
120.	1.95	480.	5.54

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
150.	2.25	540.	6.06

OLUTION

Pumping Test
Aquifer Model: Confined
Solution Method: Murdoch (Trench)

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
Kx	11.59	ft/day
Ss	3.023	ft^{-1}
Ky/Kx	0.001	
Lt	79.58	ft

K = 0.004088 cm/sec
T = K*b = 185.4 ft^2/day (1.994 sq. cm/sec)

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	Approx. C.I.	t-Ratio	
Kx	8.659	4.264E+7	+/- 9.147E+7	2.03E-7	ft/day
Ss	3.002	1.737E+7	+/- 3.726E+7	1.728E-7	ft^{-1}
Ky/Kx	0.001	445.2	+/- 955.	2.246E-6	
Lt	79.58	1.094E+8	+/- 2.348E+8	7.271E-7	ft

C.I. is approximate 95% confidence interval for parameter
atio = estimate/std. error
o estimation window

K = 0.003055 cm/sec
T = K*b = 138.5 ft^2/day (1.49 sq. cm/sec)

Parameter Correlations

	Kx	Ss	Ky/Kx	Lt
Kx	1.00	-0.91	0.67	0.01
Ss	-0.91	1.00	-0.30	-0.43
Ky/Kx	0.67	-0.30	1.00	-0.73
Lt	0.01	-0.43	-0.73	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 3.611 ft^2
Variance . . . . . 0.2579 ft^2
Std. Deviation . . . . . 0.5079 ft
Mean . . . . . -0.1544 ft
No. of Residuals 18
No. of Estimates 4

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ATTACHMENT 2
TABLE 6-2 FROM *REMEDIATION PILOT TEST REPORT*
ORIGINAL VERSION

Ta 6-2
Constant Rate np Test Results
Remediation Pilot Test
Cimarron Environmental Response Trust
North Highway 74
Guthrie, OK

Extraction Sump/ Monitor Well	Transmissivity (ft^2/day)	Hydraulic Conductivity		Storativity	Specific Storage
		ft/day	cm/sec		
Pumping Test Results					
GETR-BA1-01B[1]	78.07	4.88	1.72×10^{-3}		3.29 ft^{-1}
GETR-BA1-01B[2]	421.5	26.35	9.29×10^{-3}		1.70 ft^{-1}
02W02	168.9	10.56	3.73×10^{-3}	4.72E-02	
02W28	310.5	19.01	6.71×10^{-3}	9.70E-04	
02W39	1,073	65.71	2.32×10^{-2}	2.34E-03	
TMW-09	312.1	19.51	6.88×10^{-3}	2.72E-03	
1404	123.8	7.58	2.68×10^{-3}	1.10E-01	
1405	202.5	12.40	4.38×10^{-3}	2.54E-03	
1406	158.2	9.69	3.42×10^{-3}	8.05E-04	
TR-08	80.61	5.04	1.78×10^{-3}	1.41E-03	
TR-09	76.74	4.80	1.69×10^{-3}	2.76E-04	
TR-10	87.52	5.47	1.93×10^{-3}	1.36E-04	
Recovery Test Results					
GETR-BA1-01B[2]	138.5	8.66	3.00×10^{-3}		3.002 ft^{-1}

Notes:

cm/sec = centimeters per second

ft/day = feet per day

ft^2/day = square feet per day

[1]Cooper, HH and CE Jacob, 1946. *A Generalized Graphical Method for Evaluating Formation Constants and Summarizing Well Field History*, American Geophysical Union Trans. Vol. 27, pp 526 -534.

[2]Murdoch, LC, 1994. *Transient Analyses of an Interceptptor Trench,* Water Resources Research, Vol. 30, No. 11, pp 3023 -3031.

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ATTACHMENT 3
TABLE 6-2 FROM *REMEDIATION PILOT TEST REPORT*
REVISED VERSION

Ta 6-2
Constant Rate np Test Results
Remediation Pilot Test
Cimarron Environmental Response Trust
North Highway 74
Guthrie, OK

Extraction Sump/ Monitor Well	Transmissivity (ft^2/day)	Hydraulic Conductivity		Storativity	Specific Storage
		ft/day	cm/sec		
Pumping Test Results					
GETR-BA1-01B[1]	78.07	4.88	1.72×10^{-3}		3.29 ft^{-1}
GETR-BA1-01B[2]	421.5	26.35	9.29×10^{-3}		1.70 ft^{-1}
02W02[1]	161.0	10.06	3.55×10^{-3}	4.47E-02	
02W28[1]	303.1	18.56	6.55×10^{-3}	5.70E-02	
02W39[1]	945.3	57.89	2.04×10^{-2}	1.71E-01	
TMW-09[1]	314.2	19.64	6.93×10^{-3}	4.18E-02	
1404[1]	123.8	7.58	2.67×10^{-3}	1.10E-01	
1405[1]	179.2	10.97	3.87×10^{-3}	6.43E-02	
1406[1]	177.8	10.89	3.84×10^{-3}	1.26E-01	
TR-08[1,3]	82.36	5.15	1.82×10^{-3}	4.66E+01	
TR-09[1,3]	85.45	5.34	1.88×10^{-3}	4.83E+01	
TR-10[1,3]	86.35	5.40	1.90×10^{-3}	4.52E+01	
Recovery Test Results					
GETR-BA1-01B[2]	185.44	11.59	4.09×10^{-3}		3.023 ft^{-1}

Notes:

cm/sec = centimeters per second

ft/day = feet per day

ft^2/day = square feet per day

[1]Cooper, HH and CE Jacob, 1946. *A Generalized Graphical Method for Evaluating Formation Constants and Summarizing Well Field History*, American Geophysical Union Trans. Vol. 27, pp 526 -534.

[2]Murdoch, LC, 1994. *Transient Analyses of an Interceptor Trench,* Water Resources Research, Vol. 30, No. 11, pp 3023 -3031.