Results of Aquifer Test Analysis

for the

Southern Hills

Well No. 4

for

Wiedenfeld Water Works, Inc.

P.O. Box 418

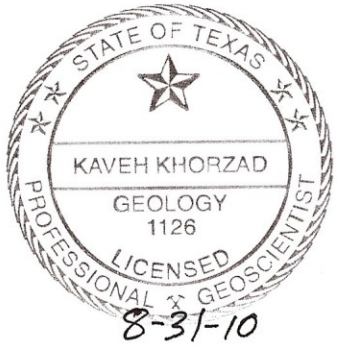
Center Point, TX 78010

WRGS Project No. 008-001-10

August 30, 2010

Wet Rock Groundwater Services, L.L.C.
Groundwater Specialists
TBPG Firm No: 50038
P.O. Box 163144
Austin, Texas 78716
Ph: 512-773-3226 Fax: 512-879-6809
www.wetrockgs.com

The seal appearing on this document was authorized on August 30, 2010 by:



Kaveh Khorzad, P.G.
License No. 1126

Wet Rock Groundwater Services, LLC
TBPG Firm Registration No. 50038

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Wet Rock Groundwater Services, L.L.C.
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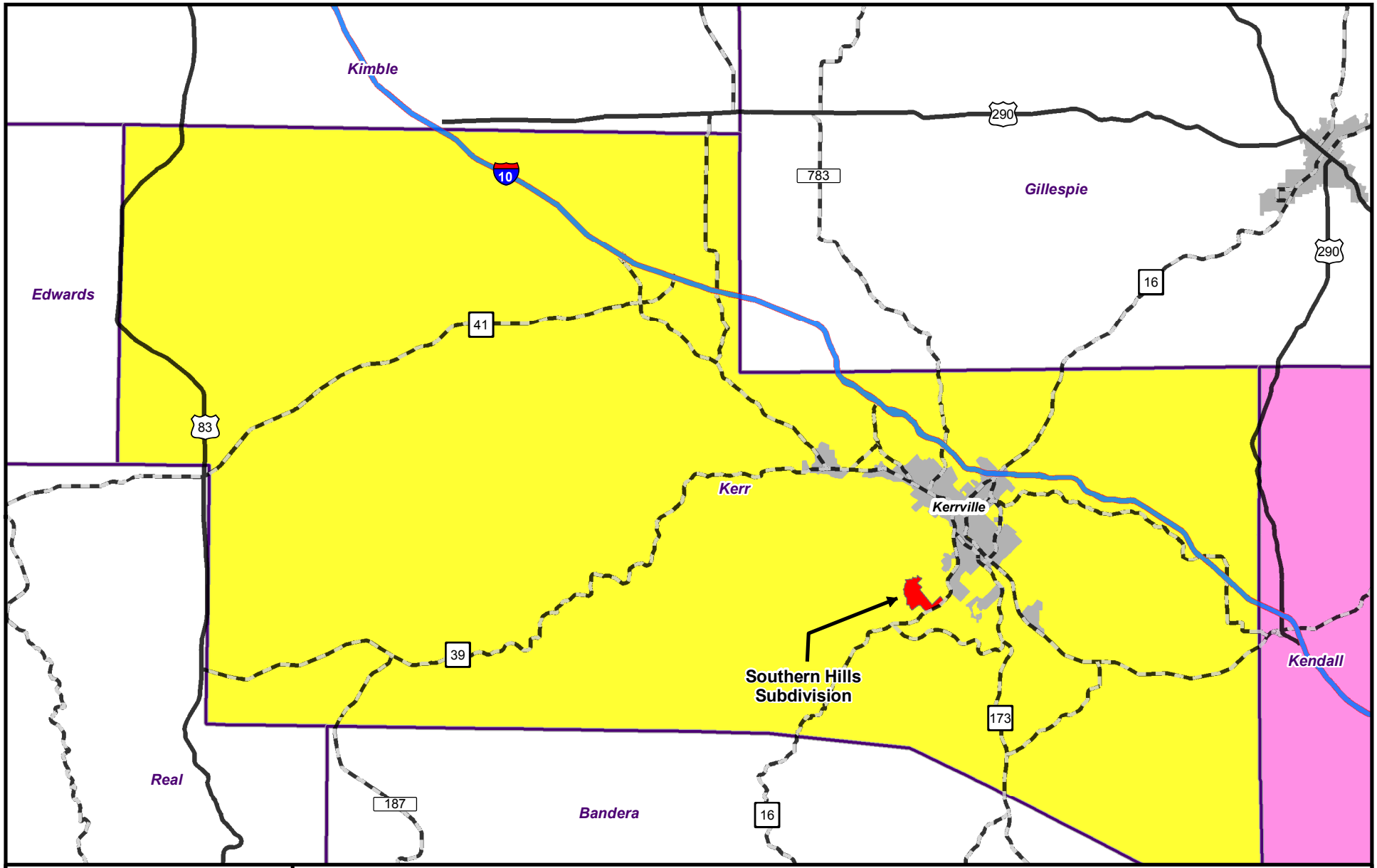
Wiedenfeld Water Works, Inc.
Southern Hills Well No. 4
Lower Trinity Aquifer

Contents

Attachment 1

Well Location Map



Southern Hills Well No. 4 Location Map

DRAWN BY: CAM DATE: 7/10

REVISED BY: DATE:

PROJECTION: UTM NAD 83 Zone 14

Legend

- Headwaters GCD
- Cow Creek GCD

Southern Hills
Well No. 4
Kerr County, Texas

Wet Rock Groundwater Services, L.L.C.
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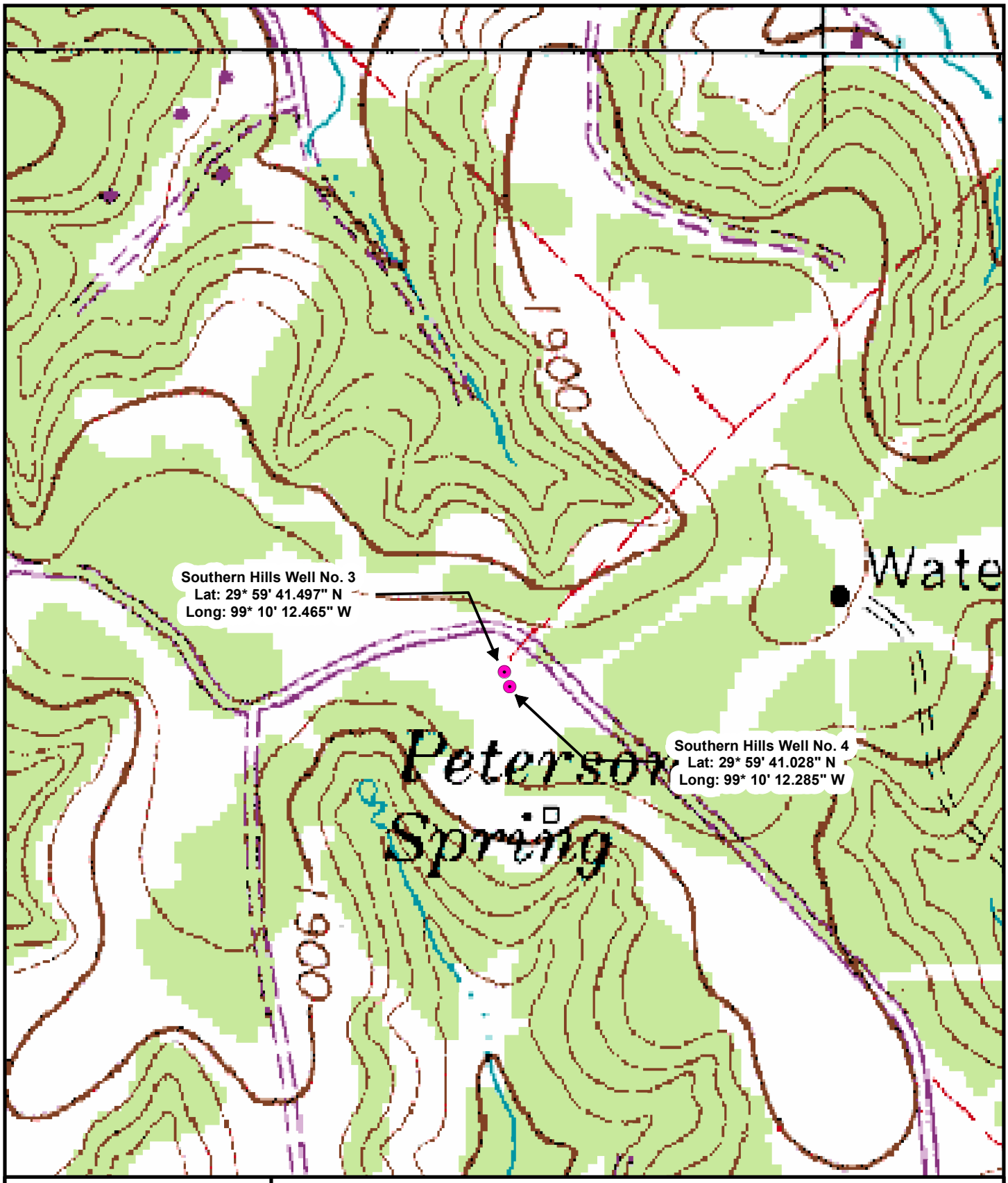
Attachment 2

U.S. Geological Survey Topographic Map



0 250 500 Feet

Southern Hills Well No. 4 Topo Map

DRAWN BY: CAM DATE: 7/10

REVISED BY: DATE:

PROJECTION: UTM NAD 83 Zone 14

Southern Hills
Well No. 4
Kerr County, Texas

Wet Rock Groundwater Services, L.L.C.
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Attachment 3

Log Plot: Well No. 4

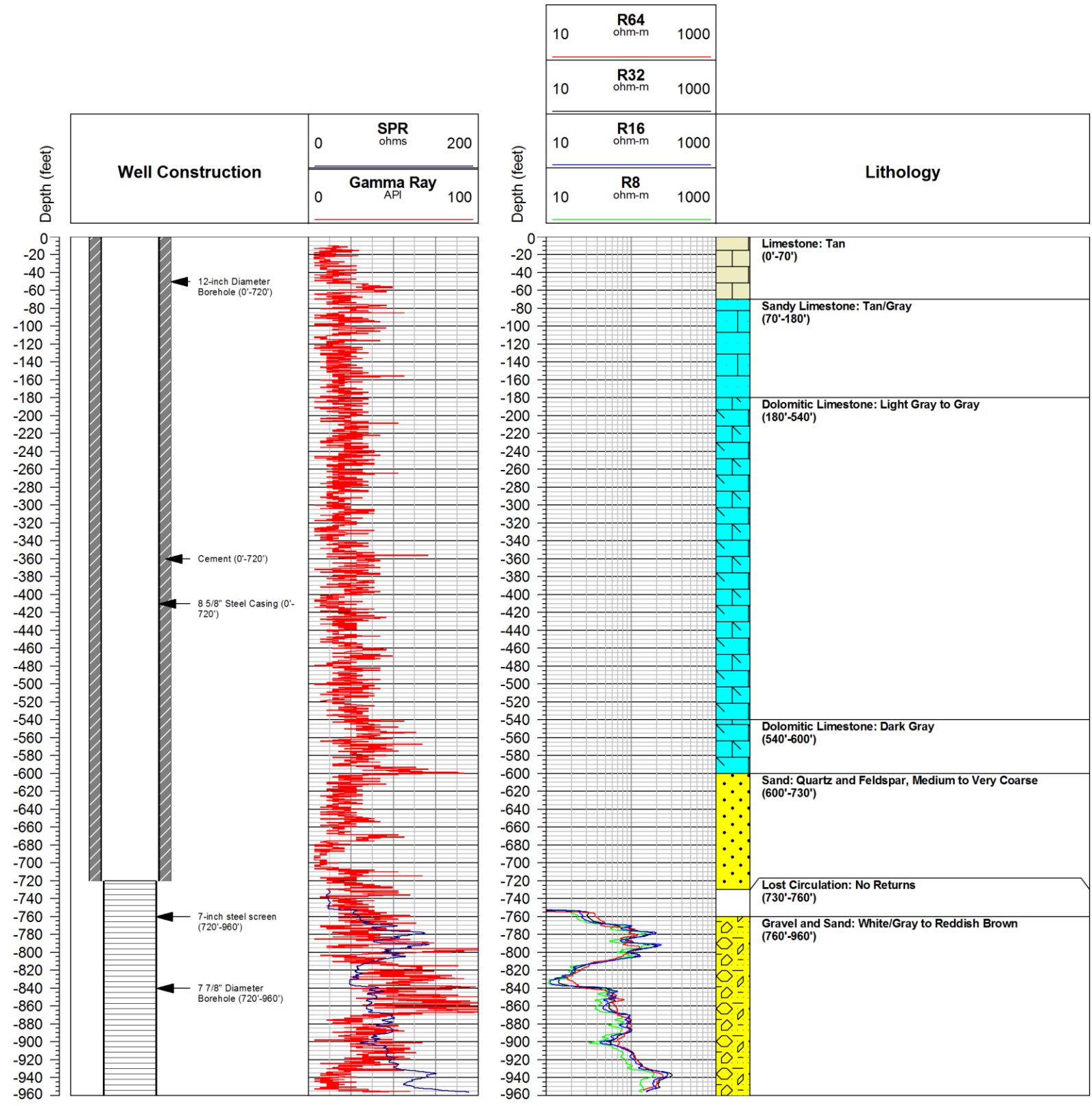
Wet Rock Groundwater Services, LLC

Groundwater Specialists

P.O. Box 163144 Austin, TX 78716
Ph: 512.799.5875 Fax: 512.879.6809
www.wetrockgs.com

Well Name: Well No. 4

Client:	**Southern Hills Water**	Elevation:	**1927 ft msl**
Location:	**Kerr County, Texas**	Total Depth:	**960 ft bgs**
Drill Date:	**6-30-2010**	Latitude:	**29.994728**
Drilled By:	**Edmonds Drilling**	Longitude:	**-99.170077**



Attachment 4

State of Texas Well Report

Attention Owner: Confidentiality Privilege Notice on reverse side of owner's copy.

Texas Department of Licensing and Regulation

Water Well Driller/Pump Installer Section
P.O. Box 12157 Austin, Texas 78711 (512)463-7880 FAX (512)463-8616
Toll free (800)803-9202
Email address: water.well@license.state.tx.us Web address: www.license.state.tx.us

This form must be completed and filed with the department and owner within 60 days upon completion of the well.

WELL REPORT

A. WELL IDENTIFICATION AND LOCATION DATA

1) OWNER

Name:	Address:	City:	State:	Zip:
WIEDENFELD WATER WORKS, INC	P.O. BOX 418	CENTER POINT	TX.	78010

2) WELL LOCATION

Well # or # of wells drilled	County:	Physical Address:	City:
	KERR	304 MADRANA DR	KERRVILLE, TX. 78028

3) Type of Work

- [X] New Well
- [ ] Reconditioning
- [ ] Replacement
- [ ] Deepening

Lat. 29.59 - 41.8 | Long. 99.10 - 12.4 | Grid # 69-07-2 NT

4) Proposed Use (check) [ ] Monitor [ ] Environmental Soil Boring [ ] Domestic [ ] Extraction [ ] Industrial [ ] Irrigation [ ] Injection [ ] Closed-Loop Geothermal [ ] De-watering [ ] Testwell [ ] Rig Supply [ ] Stock [X] Public Supply – If Public Supply, were plans approved? [ ] Yes [ ] No

5)

6) Drilling Date

Started 6/15/10

Completed 6/25/10

Diameter of Hole

Dia.(in)	From (ft)	To (ft)
12	Surface	720
7 7/8	720	960

7) Drilling Method (check)

[ ] Driven [X] Air Rotary [ ] Mud Rotary [ ] Bored [ ] Air Hammer [ ] Cable Tool [ ] Jetted [ ] Hollow Stem Auger [ ] Reverse Circulation [ ] Other

From (ft)	To (ft)	Description and color of formation material
0	80	LIMESTONE
80	600	BLUE SHALE
600	650	RED. BED
650	660	GREEN SAND
660	700	TAN SAND
700	720	BLUE CLAY (HAMMET)
720	840	TAN SAND
840	860	RED SAND
860	940	COURSE GRAVEL
940	960	RED SHALE

(Use reverse side of Well Owner's copy, if necessary)

8) Borehole Completion [ ] Open Hole [X] Straight Wall [ ] Under-reamed [ ] Gravel Packed [ ] Other

Gravel packed interval from: ft. to: ft. Size:

Casing, Blank Pipe, and Well Screen Data:

Dia. (in.)	New Or Used	Steel, Plastic, etc. Perf., Slotted, etc Screen Mfg., if commercial	Setting (ft) From	To	Gage Casing Screen
8	N	STEEL	0	720	
7	N	STEEL SCREEN	720	960	

9) Annular Seal Data: i.e. (from 0 ft to 100 ft #sacks & material 13 cement)

from 720 ft. to 0 ft. #sacks & material 140 SKS CE.
from ft. to ft. #sacks & material
from ft. to ft. #sacks & material
Method Used TRIM Performed By EDMONDS D
Distance to septic field or other concentrated contamination N/A ft.
Distance to Property Line N/A ft
Method Verified:

13) Plugged [ ] Well plugged within 48 hours

Casing left in well: From (ft)	To (ft)	Cement/Bentonite placed in well: From (ft)	To (ft)	# Sacks & Material used

10) Surface Completion (If steel cased, leave blank)

[X] Surface Slab Installed [ ] Surface Sleeve Installed [ ] Pitless Adapter Used [ ] Alternative Procedure Used

14) Type Pump

[ ] Turbine [ ] Jet [ ] Submersible [ ] Cylinder [ ] Other
Depth to pump bowls, cylinder, jet etc., ft.

11) Water Level

Static level 592 ft. Date: 6/25/10
Artesian Flow gpm

12) Packers:

Type	Depth	Type	Depth
	NONE		

15) Water Test

Type test [ ] Pump [ ] Bailer [X] Jetted [X] Estimated
Yield: 1000+ gpm with N/A ft. drawdown after 1 hrs.

16) Water Quality

Type of water Depth of Strata: Was a chemical analysis made? [ ] Yes [ ] No
Did you knowingly penetrate a strata which contains undesirable constituents? [ ] Yes [X] No If yes, Continue:
Check One: [ ] Naturally poor-quality groundwater – type [ ] Hydrocarbons (i.e. gas, oil, etc.) [ ] Hazardous material/waste contamination encountered [ ] Other (describe)

[ ] *I certify that while drilling, deepening, or otherwise altering the above described well, undesirable water or constituents was encountered and the landowner was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.*

By signing this well report, I certify that I drilled or supervised the drilling of this well and that each and all of the statements herein are true and correct.

Company & Individual's Name: (type or print)	EDMONDS DRLG (WADE BLUMEL)	Lic. No.: 58357W
Address: P.O. BOX 1552	City: KERRVILLE	State: TX Zip 78029
Signature: [signature]	8/21/10	Signature:

Company or Individual's Signature Date Apprentice Apprentice Reg. Number

Attachment 5

Table 1 - Well Construction Summary
Table 2 - Aquifer Testing Summary
Table 3 - Summary of Aquifer Testing Analyses

Table 1 - Well Construction Summary

Well	Hole Diameter (inches)	From (ft)	To (ft)	Casing Type	Casing Diameter (inches)	From (ft)	To (ft)
Southern Hills Well No. 4	12	0	720	Steel	8.625	0	720
	8.75	720	960	Steel Screen	7.875	720	960

Table 2 - Aquifer Testing Summary

Well	Static Water Level (ft MSL)	Q (gpm)	Drawdown (ft)	SC (gpm/ft)	Pumping Duration (minutes)	Δ t (°F)	T_{R90} (minutes)
Southern Hills Well No. 4	1,395.8	101	29.9	3.38	1,205	-1.03	1,989

Notes: Q = discharge; SC = specific capacity; r = distance from pumping well; Δt = change in temperature; T_{R90} = Time pumping well Recovered 90%

Table 3 - Summary of Aquifer Testing Analyses

Well	Analysis	b (ft)	T (ft^2/day)	K (ft/day)	S	r (ft)
Southern Hills Well No. 4	**Theis**	200	227	1.13	n/a	0
	Theis Recovery	200	236	1.18	n/a	0
	Average:	200	231.5	1.16	n/a	0
Observation Well	**Theis**	200	620	3.10	0.013	50

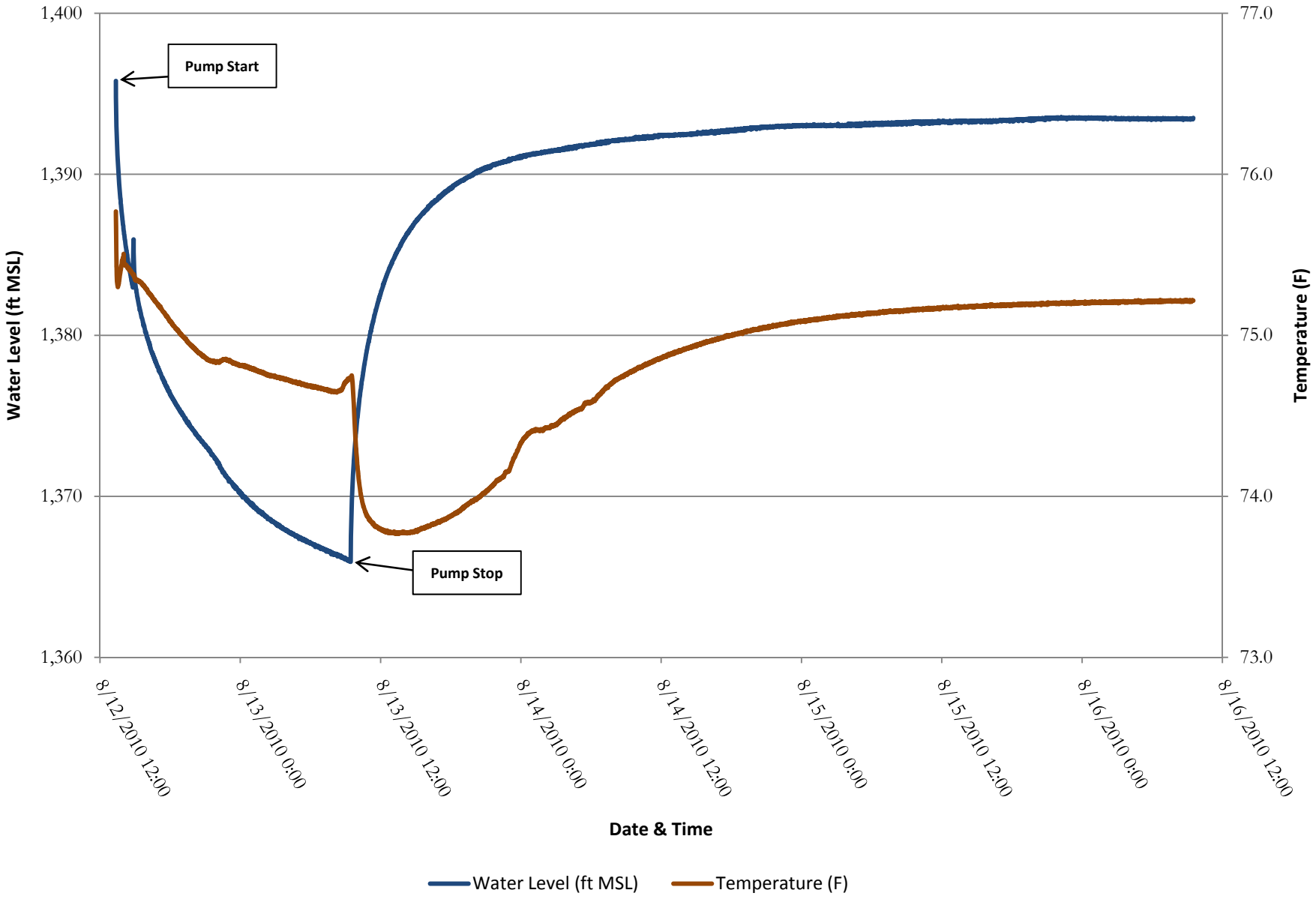
Notes: b = aquifer thickness; r = distance from pumping well; T = transmissivity; S = storativity; K = hydraulic conductivity

Note: The transmissivity value calculated for the observation well (Southern Hills Well No. 3) is artificially high due to poor connectivity between the two wells.

Attachment 6

Aquifer Test Drawdown and Temperature Curves

Southern Hills Well No. 4 - 8/12/2010



Attachment 7

Aquifer Test Analyses

Wet Rock Groundwater Services, LLC
Groundwater Specialists
P.O. Box 163144 Austin, Texas 78716
Ph: 512.773.3226 Fax: 512.879.6809
www.wetrockgs.com

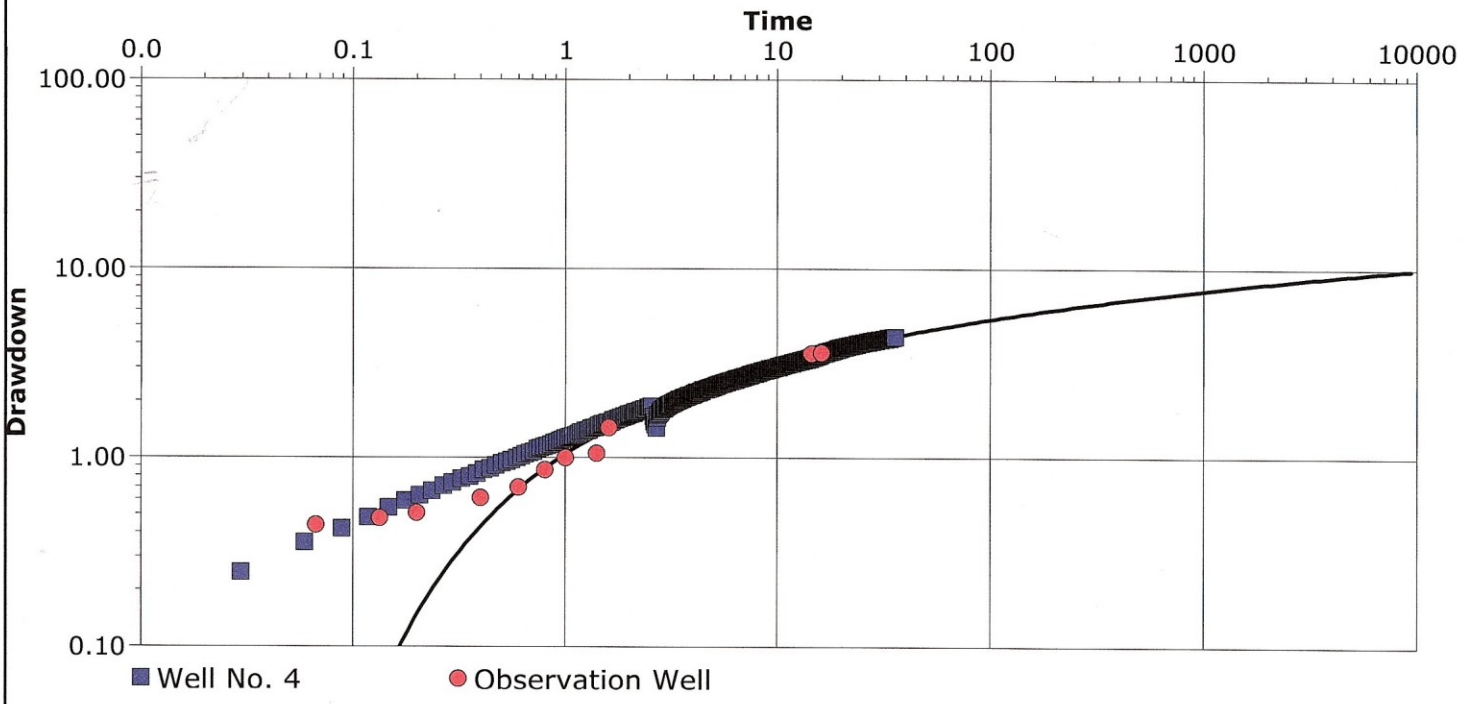
Pumping Test Analysis Report

Project: Southern Hills Well No. 4

Number: 008-001-10

Client: Wiedenfeld Water Works

Location: Kerr County, Texas	Pumping Test: Well No. 4 Pumping Test	Pumping Well: Well No. 4
Test Conducted by: Cassidy Miller		Test Date: 8/12/2010
Analysis Performed by: Cassidy Miller	Theis	Analysis Date: 8/20/2010
Aquifer Thickness: 200.00 ft	Discharge: variable, average rate 101.06 [U.S. gal/min]	



Calculation after Theis

Observation Well	Transmissivity [ft²/d]	Hydraulic Conductivity [ft/d]	Storage coefficient	Radial Distance to PW [ft]	
Well No. 4	2.27×10^{2}	1.13×10^{0}			
Observation Well	6.20×10^{2}	3.10×10^{0}	1.30×10^{-2}	49.87	
Average	4.23×10^{2}	2.12×10^{0}	1.30×10^{-2}		

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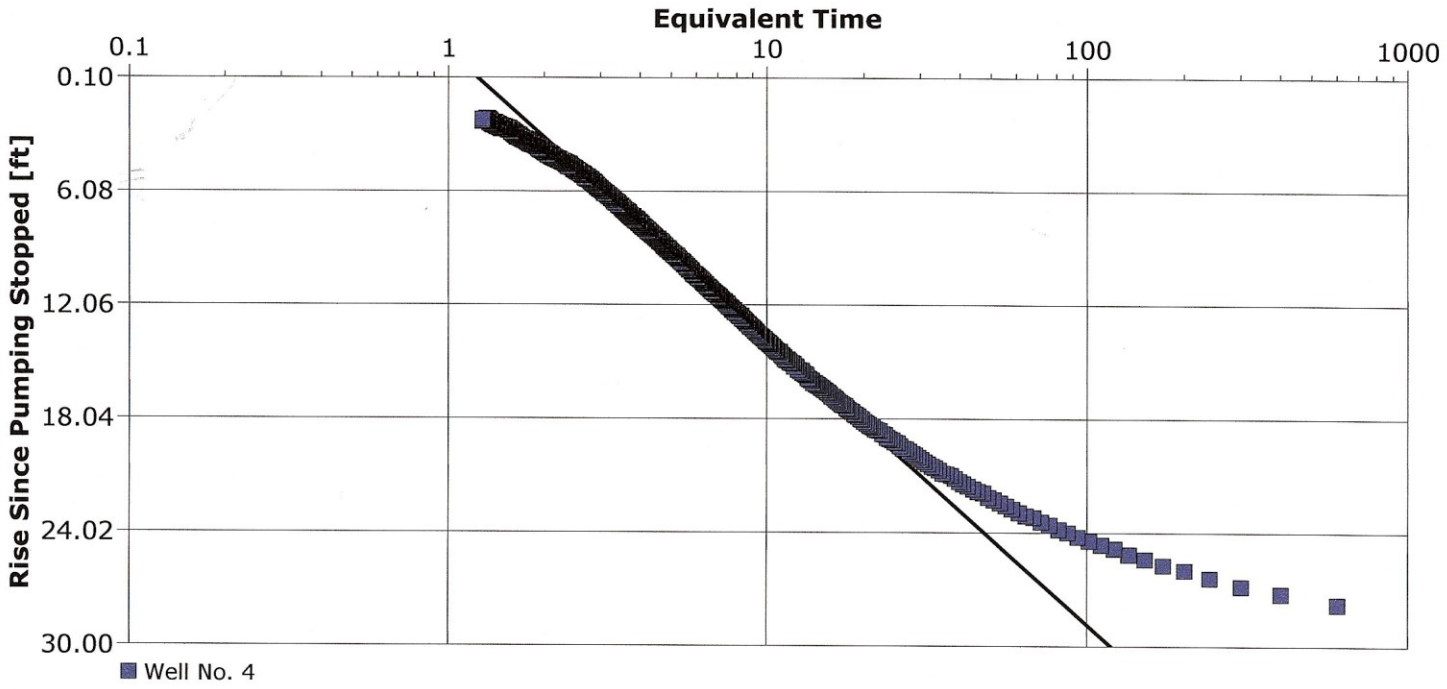
Pumping Test Analysis Report

Project: Southern Hills Well No. 4

Number: 008-001-10

Client: Wiedenfeld Water Works

Location: Kerr County, Texas	Pumping Test: Well No. 4 Pumping Test	Pumping Well: Well No. 4
Test Conducted by: Cassidy Miller		Test Date: 8/12/2010
Analysis Performed by: Cassidy Miller	Theis Recovery	Analysis Date: 8/20/2010
Aquifer Thickness: 200.00 ft	Discharge: variable, average rate 101.06 [U.S. gal/min]	



Calculation after Theis & Jacob

Observation Well	Transmissivity [ft²/d]	Hydraulic Conductivity [ft/d]	Radial Distance to PW [ft]	
Well No. 4	2.36×10^{2}	1.18×10^{0}		

Attachment 8

Aquifer Test Data

Southern Hills No. 4 Pump Test Summary (8-12-2010)

Date and Time	Time Since Pump Start (min)	Time Since Pump Stop (min)	Temperature (F)	Water Level (ft bgs)	Water Level (ft MSL)	Drawdown (ft)	Pump Rate (gpm)	Specific Capacity (gpm/ft)	pH	Cond (µS*cm-1)	Comments
8/12/2010 13:21	0		75.77	531.21	1,395.79	0.00					Meter = 300 gallons
8/12/2010 13:22	1		75.67	532.89	1,394.11	1.68	108	64.13	7.26	760	
8/12/2010 13:23	2		75.54	533.64	1,393.36	2.43					
8/12/2010 13:24	3		75.45	534.07	1,392.93	2.87					
8/12/2010 13:25	4		75.39	534.50	1,392.50	3.29					
8/12/2010 13:26	5		75.35	534.92	1,392.08	3.72	103	27.71	7.2	780	
8/12/2010 13:27	6		75.33	535.26	1,391.74	4.05					
8/12/2010 13:28	7		75.32	535.51	1,391.49	4.31					
8/12/2010 13:29	8		75.31	535.78	1,391.22	4.57					
8/12/2010 13:30	9		75.31	536.05	1,390.95	4.84					
8/12/2010 13:31	10		75.30	536.24	1,390.76	5.04	102	20.26	7.19	780	
8/12/2010 13:32	11		75.31	536.48	1,390.52	5.27					
8/12/2010 13:33	12		75.31	536.65	1,390.35	5.45					
8/12/2010 13:34	13		75.31	536.84	1,390.16	5.64					
8/12/2010 13:35	14		75.32	537.10	1,389.90	5.89					
8/12/2010 13:36	15		75.32	537.20	1,389.80	6.00	103	17.17	7.18	790	
8/12/2010 13:51	30		75.44	539.39	1,387.61	8.18	102	12.46	7.19	770	
8/12/2010 14:06	45		75.44	540.97	1,386.03	9.76	102	10.45	7.18	790	
8/12/2010 14:21	60		75.42	542.21	1,384.79	11.01	101	9.18	7.2	780	
8/12/2010 14:36	75		75.40	543.24	1,383.76	12.03	102	8.48	7.18	780	
8/12/2010 14:51	90		75.38	541.45	1,385.55	10.25	101	9.86	7.13	780	
8/12/2010 15:06	105		75.34	544.19	1,382.81	12.99	101	7.78	7.12	780	
8/12/2010 15:21	120		75.33	545.23	1,381.77	14.03	101	7.20	7.12	780	
8/12/2010 16:21	180		75.25	547.90	1,379.10	16.70					
8/12/2010 17:21	240		75.15	549.66	1,377.34	18.46					
8/12/2010 18:21	300		75.06	551.09	1,375.91	19.89					
8/12/2010 19:21	360		74.98	552.25	1,374.75	21.04					
8/12/2010 20:21	420		74.90	553.27	1,373.73	22.06					
8/12/2010 21:21	480		74.84	554.14	1,372.86	22.93					
8/12/2010 22:21	540		74.84	555.29	1,371.71	24.09					
8/12/2010 23:21	600		74.83	556.30	1,370.70	25.09					
8/13/2010 0:21	660		74.81	557.02	1,369.98	25.82					
8/13/2010 1:21	720		74.78	557.77	1,369.23	26.56					
8/13/2010 2:21	780		74.75	558.35	1,368.65	27.14					
8/13/2010 3:21	840		74.74	558.82	1,368.18	27.62					
8/13/2010 4:21	900		74.71	559.28	1,367.72	28.08					
8/13/2010 5:21	960		74.70	559.68	1,367.32	28.48					

Note: bgs = below ground surface Column Pipe Diameter = 2-inch steel Horsepower = 20 HP
MSL = Mean Sea Level Pump Setting = 903 feet bgs

Southern Hills No. 4 Pump Test Summary (8-12-2010)

Date and Time	Time Since Pump Start (min)	Time Since Pump Stop (min)	Temperature (F)	Water Level (ft bgs)	Water Level (ft MSL)	Drawdown (ft)	Pump Rate (gpm)	Specific Capacity (gpm/ft)	pH	Cond (µS*cm-1)	Comments
8/13/2010 6:21	1,020		74.68	560.03	1,366.97	28.82					
8/13/2010 7:21	1,080		74.66	560.43	1,366.57	29.22					
8/13/2010 8:21	1,140		74.65	560.64	1,366.36	29.43					
8/13/2010 9:21	1,200		74.73	561.00	1,366.00	29.79					
8/13/2010 9:26	1,205	0	74.74	561.05	1,365.95	29.85	101	3.38			Meter = 100,600 gallons
8/13/2010 9:27	1,206	1	74.74	559.72	1,367.28	28.51					
8/13/2010 9:28	1,207	2	74.74	559.03	1,367.97	27.82					
8/13/2010 9:29	1,208	3	74.74	558.47	1,368.53	27.26					
8/13/2010 9:30	1,209	4	74.75	558.04	1,368.96	26.83					
8/13/2010 9:31	1,210	5	74.75	557.61	1,369.39	26.40					
8/13/2010 9:32	1,211	6	74.75	557.23	1,369.77	26.02					
8/13/2010 9:33	1,212	7	74.74	556.93	1,370.07	25.72					
8/13/2010 9:34	1,213	8	74.73	556.63	1,370.37	25.43					
8/13/2010 9:35	1,214	9	74.72	556.37	1,370.63	25.16					
8/13/2010 9:36	1,215	10	74.70	556.08	1,370.92	24.87					
8/13/2010 9:37	1,216	11	74.68	555.86	1,371.14	24.65					
8/13/2010 9:38	1,217	12	74.66	555.68	1,371.32	24.47					
8/13/2010 9:39	1,218	13	74.64	555.47	1,371.53	24.26					
8/13/2010 9:40	1,219	14	74.61	555.24	1,371.76	24.03					
8/13/2010 9:41	1,220	15	74.59	555.06	1,371.94	23.85					
8/13/2010 9:56	1,235	30	74.26	552.67	1,374.33	21.46					
8/13/2010 10:11	1,250	45	74.07	550.94	1,376.06	19.74					
8/13/2010 10:26	1,265	60	73.96	549.66	1,377.34	18.45					
8/13/2010 10:41	1,280	75	73.90	548.51	1,378.49	17.30					
8/13/2010 10:56	1,295	90	73.87	547.47	1,379.53	16.27					
8/13/2010 11:11	1,310	105	73.84	546.71	1,380.29	15.50					
8/13/2010 11:26	1,325	120	73.82	545.89	1,381.11	14.68					
8/13/2010 12:26	1,385	180	73.79	543.41	1,383.59	12.21					
8/13/2010 13:26	1,445	240	73.78	541.76	1,385.24	10.55					
8/13/2010 14:26	1,505	300	73.77	540.50	1,386.50	9.29					
8/13/2010 15:26	1,565	360	73.80	539.55	1,387.45	8.34					
8/13/2010 16:26	1,625	420	73.83	538.83	1,388.17	7.62					
8/13/2010 17:26	1,685	480	73.86	538.19	1,388.81	6.98					
8/13/2010 18:26	1,745	540	73.89	537.59	1,389.41	6.39					
8/13/2010 19:26	1,805	600	73.95	537.19	1,389.81	5.98					
8/13/2010 20:26	1,865	660	74.00	536.78	1,390.22	5.57					
8/13/2010 21:26	1,925	720	74.06	536.48	1,390.52	5.28					

Note: bgs = below ground surface Column Pipe Diameter = 2-inch steel Horsepower = 20 HP
MSL = Mean Sea Level Pump Setting = 903 feet bgs

Southern Hills No. 4 Pump Test Summary (8-12-2010)

Date and Time	Time Since Pump Start (min)	Time Since Pump Stop (min)	Temperature (F)	Water Level (ft bgs)	Water Level (ft MSL)	Drawdown (ft)	Pump Rate (gpm)	Specific Capacity (gpm/ft)	pH	Cond (µS*cm-1)	Comments
8/13/2010 22:26	1,985	780	74.12	536.26	1,390.74	5.05					
8/13/2010 23:26	2,045	840	74.24	536.00	1,391.00	4.80					
8/14/2010 0:26	2,105	900	74.37	535.81	1,391.19	4.60					
8/14/2010 1:26	2,165	960	74.41	535.68	1,391.32	4.48					
8/14/2010 2:26	2,225	1,020	74.43	535.60	1,391.40	4.39					
8/14/2010 3:26	2,285	1,080	74.47	535.48	1,391.52	4.28					
8/14/2010 4:26	2,345	1,140	74.52	535.40	1,391.60	4.19					
8/14/2010 5:26	2,405	1,200	74.58	535.24	1,391.76	4.04					
8/14/2010 6:26	2,465	1,260	74.61	535.08	1,391.92	3.87					
8/14/2010 7:26	2,525	1,320	74.68	534.95	1,392.05	3.74					
8/14/2010 8:26	2,585	1,380	74.74	534.86	1,392.14	3.66					
8/14/2010 9:26	2,645	1,440	74.78	534.82	1,392.18	3.61					
8/14/2010 10:26	2,705	1,500	74.81	534.65	1,392.35	3.45					
8/14/2010 11:26	2,765	1,560	74.84	534.64	1,392.36	3.44					
8/14/2010 12:26	2,825	1,620	74.87	534.58	1,392.42	3.37					
8/14/2010 13:26	2,885	1,680	74.90	534.56	1,392.44	3.35					
8/14/2010 14:26	2,945	1,740	74.93	534.51	1,392.49	3.31					
8/14/2010 15:26	3,005	1,800	74.95	534.48	1,392.52	3.28					
8/14/2010 16:26	3,065	1,860	74.97	534.41	1,392.59	3.20					
8/14/2010 17:26	3,125	1,920	74.99	534.37	1,392.63	3.17					
8/14/2010 18:26	3,185	1,980	75.01	534.29	1,392.71	3.08					
8/14/2010 19:26	3,245	2,040	75.03	534.16	1,392.84	2.95					
8/14/2010 20:26	3,305	2,100	75.04	534.17	1,392.83	2.96					
8/14/2010 21:26	3,365	2,160	75.06	534.05	1,392.95	2.84					
8/14/2010 22:26	3,425	2,220	75.07	534.03	1,392.97	2.82					
8/14/2010 23:26	3,485	2,280	75.08	533.97	1,393.03	2.77					
8/15/2010 0:26	3,545	2,340	75.09	533.92	1,393.08	2.72					
8/15/2010 1:26	3,605	2,400	75.10	533.97	1,393.03	2.76					
8/15/2010 2:26	3,665	2,460	75.11	533.96	1,393.04	2.76					
8/15/2010 3:26	3,725	2,520	75.12	533.96	1,393.04	2.75					
8/15/2010 4:26	3,785	2,580	75.13	533.93	1,393.07	2.73					
8/15/2010 5:26	3,845	2,640	75.14	533.93	1,393.07	2.72					
8/15/2010 6:26	3,905	2,700	75.14	533.90	1,393.10	2.69					
8/15/2010 7:26	3,965	2,760	75.15	533.89	1,393.11	2.69					
8/15/2010 8:26	4,025	2,820	75.15	533.77	1,393.23	2.56					
8/15/2010 9:26	4,085	2,880	75.16	533.79	1,393.21	2.58					
8/15/2010 10:26	4,145	2,940	75.17	533.75	1,393.25	2.55					

Note: bgs = below ground surface Column Pipe Diameter = 2-inch steel Horsepower = 20 HP
MSL = Mean Sea Level Pump Setting = 903 feet bgs

Attachment 9

Distance-Drawdown Graph and Assumptions

Wet Rock Groundwater Services, L.L.C.
Groundwater Specialists
TBPG Firm No: 50038
P.O. Box 163144
Austin, Texas 78716
Ph: 512-773-3226 Fax: 512-879-6809
www.wetrockgs.com

Assumptions for Estimating Drawdown Calculations

From: *Driscoll, F.G., 1986: Groundwater and Wells: second Ed. Pp.235*

The following assumptions apply:

Uncontrollable and unknown factors such as:

- future pumpage from the aquifer or from interconnected aquifers from area wells outside of the subdivision or any other factor that cannot be predicted that will affect the storage of water in the aquifer;
- long-term impacts to the aquifer based on climatic variations; and
- future impacts to usable groundwater due to unforeseen or unpredictable contamination.

Estimates of drawdown are based upon the following assumptions.

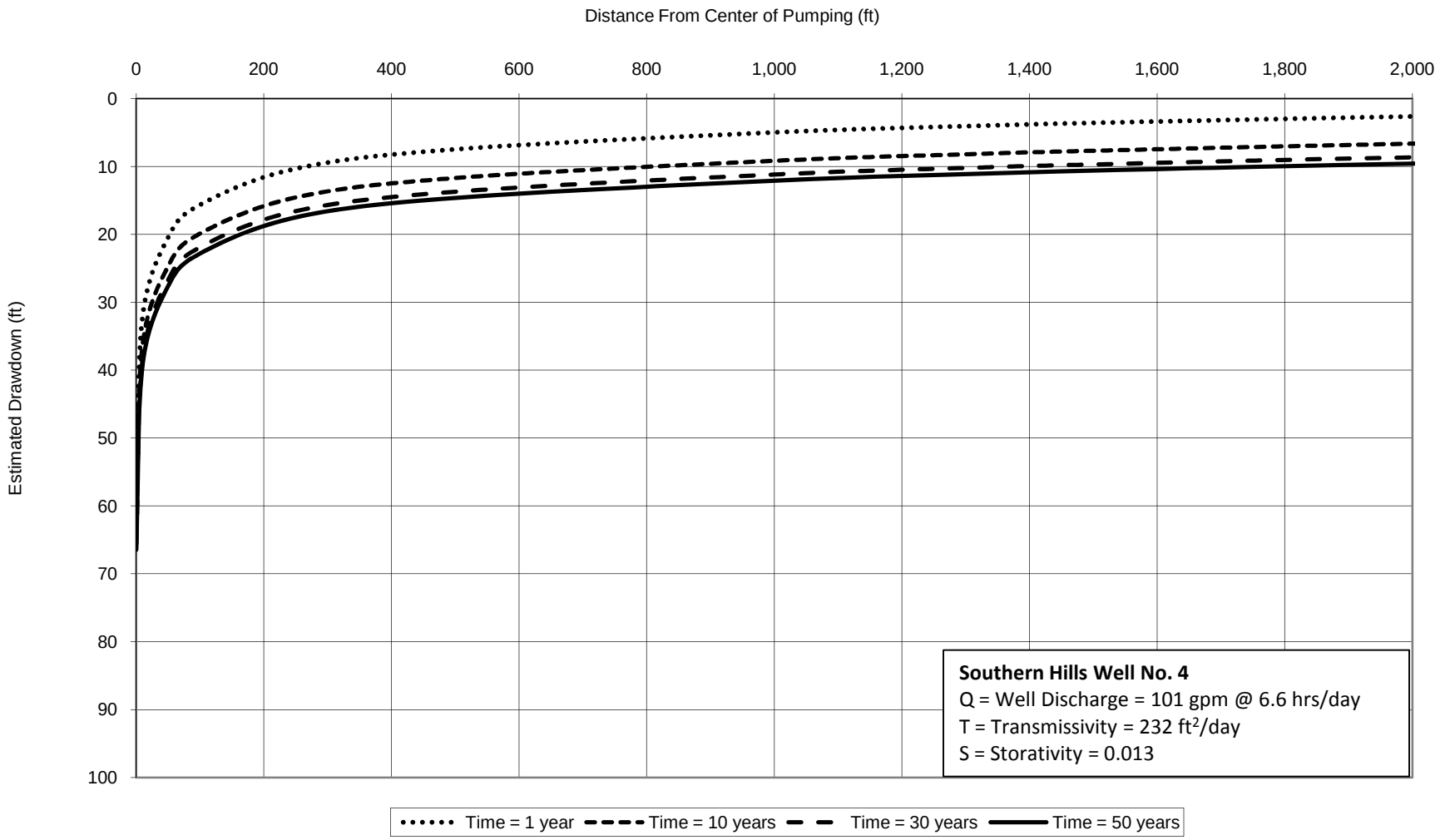
- Total daily water demand (Entire subdivision) = 40,000 gallons per day (gpd);
- The well will be pumped at 101 gpm for 6.6 hours per day.

The edge of the cone of depression was estimated by taking the distance from the pumped well where the drawdown flattened out and was minimal.

The following assumptions are used in deriving the Theis equation:

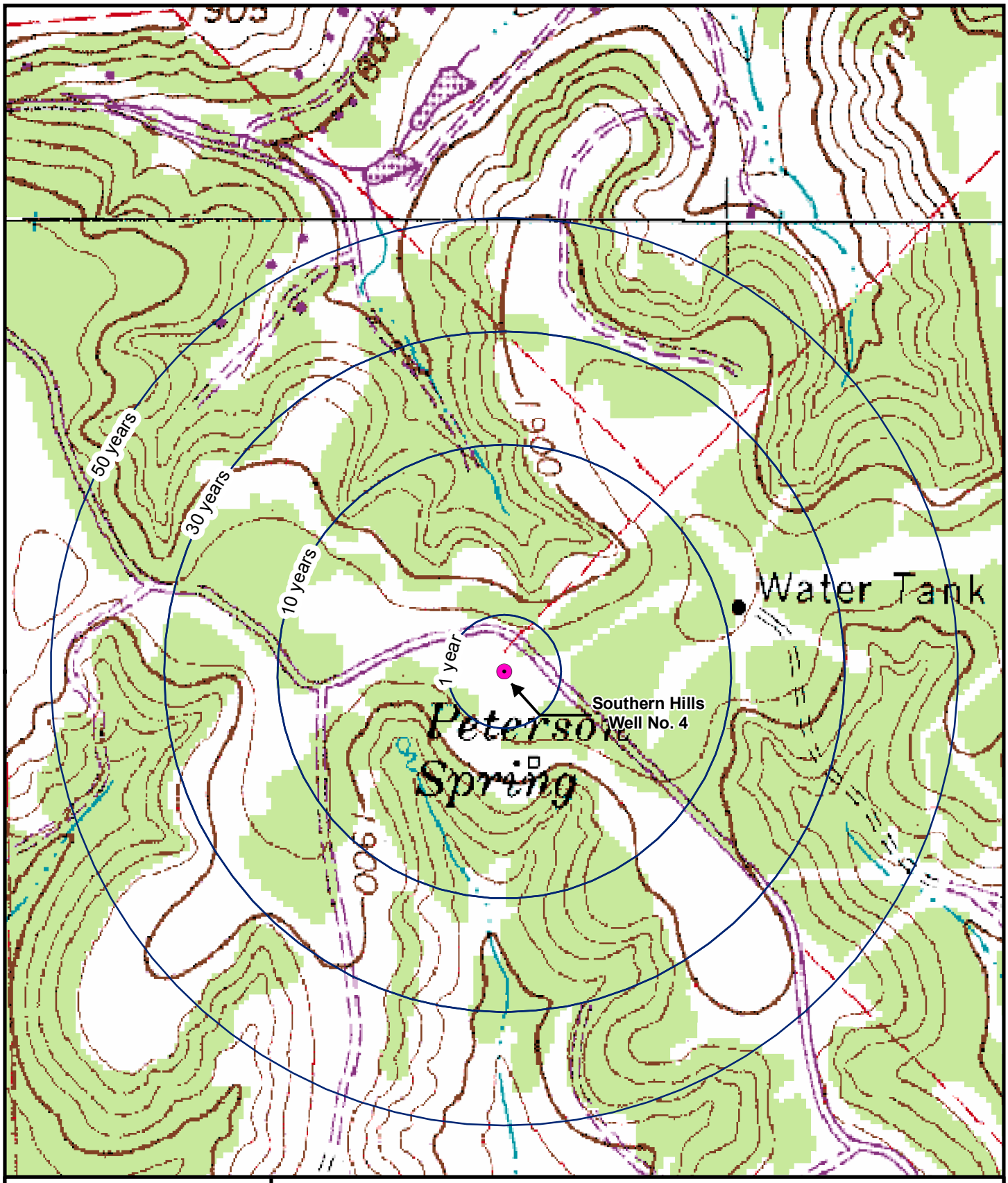
- The water bearing formation is uniform in character and the hydraulic conductivity is the same in all directions;
- The formation is uniform in thickness and infinite in areal extent;
- The formation receives no recharge from any source
- The pumped well penetrates, and receives water from, the full thickness of the water bearing formation;
- The water removed from storage is discharged instantaneously when the head is lowered;
- The pumping well is 100% efficient;
- All water removed from the well comes from aquifer storage;
- Laminar flow exists throughout the well and aquifer; and
- The water table or potentiometric surface has no slope.

Southern Hills No. 4: Distance-Drawdown



Attachment 10

Radius of Influence Map



0 400 800 Feet

Southern Hills Well No. 4 Radius of Influence

DRAWN BY: CAM DATE: 7/10

REVISED BY: DATE:

PROJECTION: UTM NAD 83 Zone 14

Southern Hills
Well No. 4
Kerr County, Texas

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Attachment 11

Estimated Well Efficiency

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Well Efficiency Calculations

From: *Driscoll, F.G., 1986: Groundwater and Wells: second Ed. Pp.575-579*

Well Efficiency = (Actual specific capacity / Theoretical specific capacity)

Actual Specific Capacity = Q/s

Where: Q = Discharge of well, in gpm; and
s = drawdown, in feet

Actual Specific Capacity = 101 gpm / 29.85 ft = 3.38 gpm/ft

Theoretical Specific Capacity = $\frac{Q}{s} = \frac{T}{264 \log \frac{0.3Tt}{r^2 S}} = \frac{T}{2000}$

Where: T = Transmissivity, in gpd/ft
t = Time of pumping, in days
S = Storage Coefficient, = 0.0130 from Aquifer Test.
r = radius of well, in ft

Theoretical Specific Capacity = $\frac{1735}{264 \log \frac{0.3(1735)(0.84)}{0.25^2 (0.0130)}}$ **= 1.15**

Efficiency = Actual Specific Capacity / Theoretical Specific Capacity = 3.38 / 1.41 **= 295%**

The fact that the actual specific capacity is greater than the theoretical specific capacity suggests that the well approaches 100 % efficiency.