Appendix H
Aquifer Test Summary Results for Alluvial System
Beazer/INDSPEC Properties
Petrolia, Pennsylvania

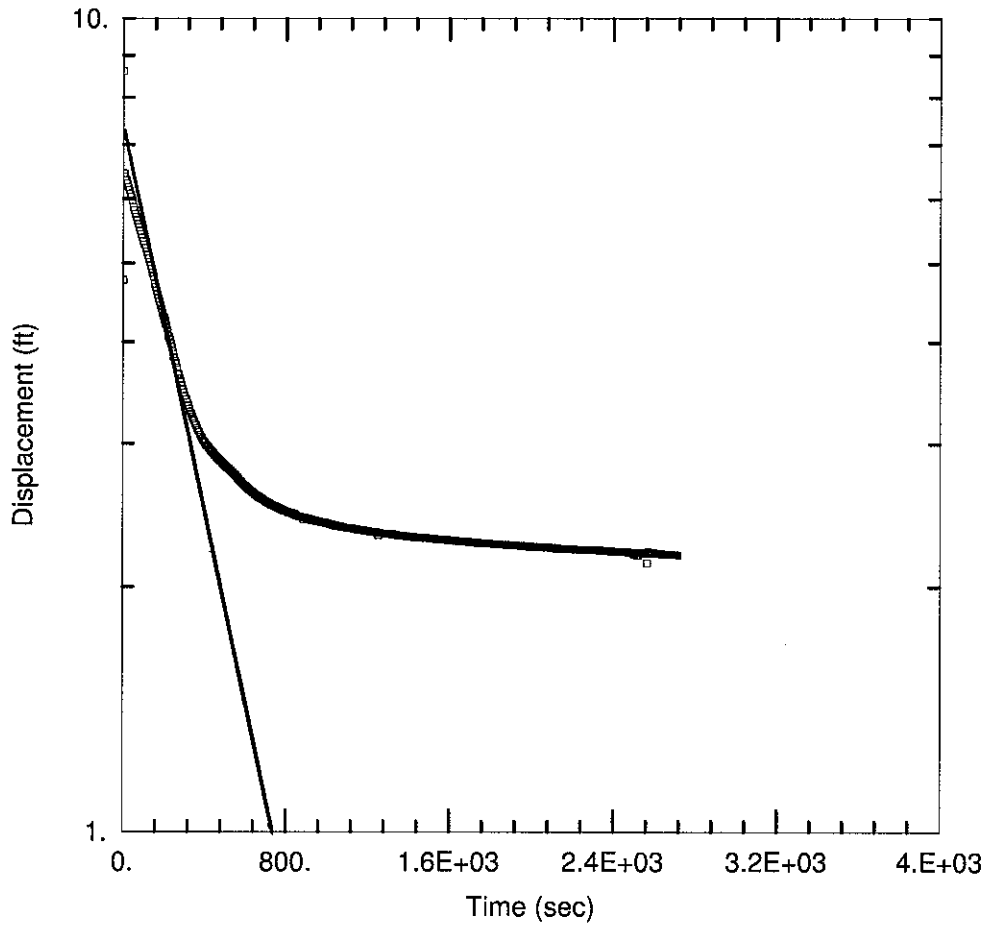
Input Parameters																	
Well Number	**Aquifer System**	**Type of Test**	**Date of Test**	**AOI**	**Saturated Thickness of Aquifer[3] (ft)**	**Anisotropy Ratio (ft)**	**Length of Well Screen (ft)**	**Total Well Penetration (ft)**	**Well Casing Diameter (ft)**	**Well Casing Radius (ft)**	**Wellbore Diameter (ft)**	**Well Bore Radius (ft)**	**Well Skin Radius (ft)**	**Effective Porosity**	**Initial Displacement (ft)**	**Hydraulic Conductivity Bouwer-Rice Method (ft/day)**	**Transmissivity Bouwer-Rice Method (ft^2/day)**
MW-74A	Alluvial	Rising[1]	09/27/06	1 (No.1 Bldg. Area)	10.00	1	10.00	10.00	0.166	0.083	0.500	0.250	0.255	0.3	8.61	***0.22***	***2.20***
WP-04	Alluvial	Rising[1]	09/21/06	1 (No.1 Bldg. Area)	15.00	1	15.00	15.00	0.083	0.041	0.250	0.125	0.130	0.3	15.36	***0.07***	***1.11***
WP-13	Alluvial	Rising[1]	09/21/06	1 (No.1 Bldg. Area)	7.00	1	7.00	7.00	0.083	0.041	0.250	0.125	0.130	0.3	3.21	***0.07***	***0.51***
WP-14	Alluvial	Rising[1]	09/21/06	1 (No.1 Bldg. Area)	6.00	1	6.00	6.00	0.083	0.041	0.250	0.125	0.130	0.3	4.59	***0.01***	***0.08***
															Average	**0.10**	***0.97***
GM-6A	Alluvial	Rising[2]	12/3/2004	1 (S. End of Plant)	15.00	1	15.00	15.00	0.166	0.083	0.500	0.250	0.255	0.3	1.25	***1.33***	***19.95***
GM-16A	Alluvial	Rising[2]	12/3/2004	3 (N. End of Lagoon)	10.00	1	10.00	10.00	0.166	0.083	0.500	0.250	0.255	0.3	7.11	***1.93***	***19.30***
GM-4A	Alluvial	Rising[2]	12/3/2004	1 (N. End of Plant)	5.00	1	5.00	5.00	0.166	0.083	0.500	0.250	0.255	0.3	6.60	***2.17***	***10.85***
MW-65A	Alluvial	Rising[2]	12/3/2004	3 (Lagoon Area)	10.00	1	10.00	10.00	0.166	0.083	0.500	0.250	0.255	0.3	6.10	***2.14***	***21.40***
															Average	**1.89**	***12.89***

1 - Rising head slug test were performed using either a centrifugal or peristaltic pump to evacuate the water column, then measuring Displacement vs. Time.
2 - Rising head slug test were performed using a grunfos pump to evacuate the water column, then measuring Displacement vs. Time.
3 - Assumed saturated thickness based on the well screen interval that was saturated.

Appendix H
Short Duration Pump Test Results for Shallow and Clarion Bedrock Systems
Beazer/INDSPEC Properties
Petrolia, Pennsylvania

Input Parameters														
Pumping Well Number	**Observation Well**	**Aquifer System**	**AOI**	**Saturated Thickness of Aquifer (ft)[1]**	**Pumping Rate (ft3/sec)**	**Length of Well Screen (ft)**	**Total Well Penetration (ft)**	**Well Casing Diameter (inch)**	**Wellbore Diameter (inch)**	**Effective Porosity**	**Anisotropy Ratio (ft)**	**Transmissivity Theis Method (ft^2/day)**	**Storativity Theis Method**	**Hydraulic Conductivity [2] ft/day**
MW-60C		Clarion	1	50	1.203	7	140	4	8	0.3	1.0	**499.9**	**4.00E-04**	**9.98**
	MW-45D		3	50	NA	6.2	136.22	4	8	0.3	1.0			
MW-45B		Shallow Bedrock	3	34.14	0.267	15	40.11	2	4	0.3	1.0	**601.00**	**4.00E-05**	**17.60**
	GM-14B		3	34.14	NA	10	24.17	4	8	0.3	1.0			

1 - Assumed saturated thickness based on formation thickness, water levels, depth/penetration of well and well screen intervals
2 - K =T/b where T = Transmissivity, and b=Assumed Saturated Thickness of Aquifer



RISING HEAD TEST

Data Set: Q:\...\mw-74a_072908.aqt
Date: 07/30/08 Time: 10:54:17

PROJECT INFORMATION

Company: Langan Engineering & Env.
Client: INDSPEC/Beazer
Project: 2568414
Test Location: No. 1 Builiding Area
Test Well: MW-74A
Test Date: 9/21/06

AQUIFER DATA

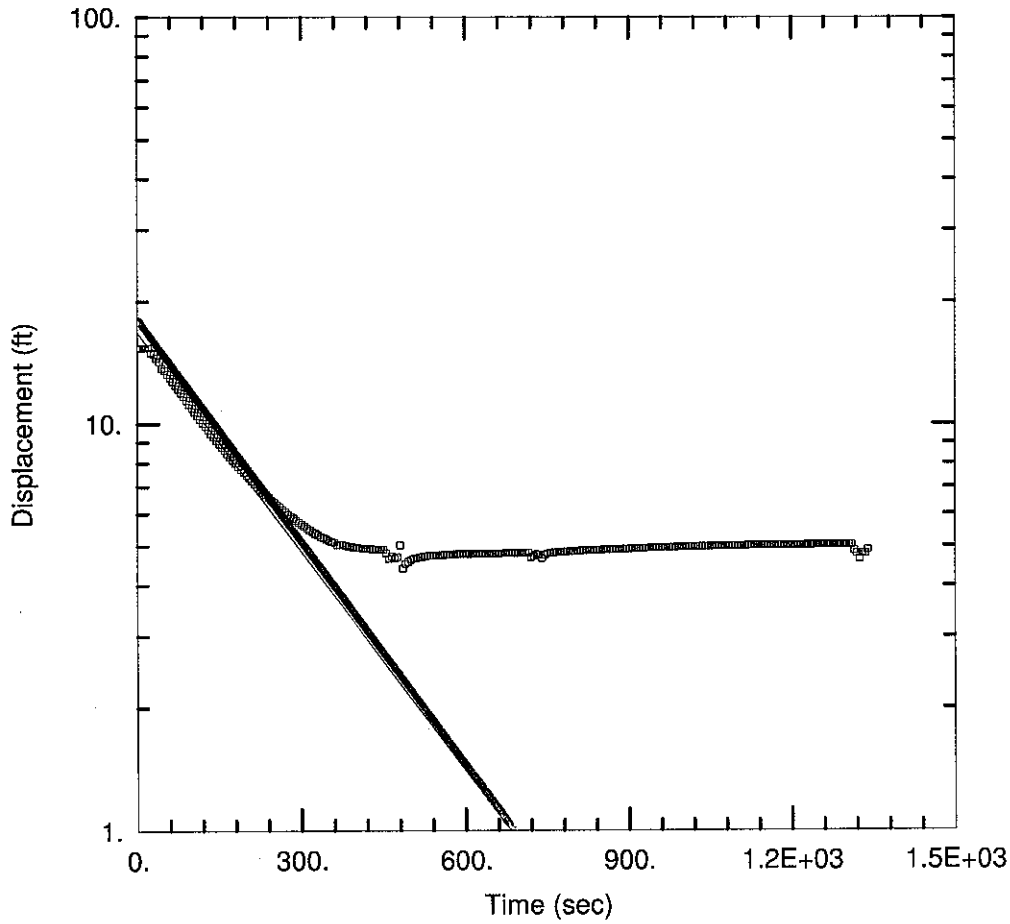
Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-74A)

Initial Displacement: 8.61 ft
Wellbore Radius: 0.25 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.083 ft
Well Skin Radius: 0.255 ft
Total Well Penetration Depth: 10. ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.2249 ft/day
y0 = 7.349 ft



RISING HEAD TEST

Data Set: Q:\...\WP-04.aqt
Date: 07/30/08 Time: 11:29:47

PROJECT INFORMATION

Company: Langan Engineering & Env.
Client: INDSPEC/Beazer
Project: 2568414
Test Location: No. 1 Builiding Area
Test Well: WP-04
Test Date: 9/21/06

AQUIFER DATA

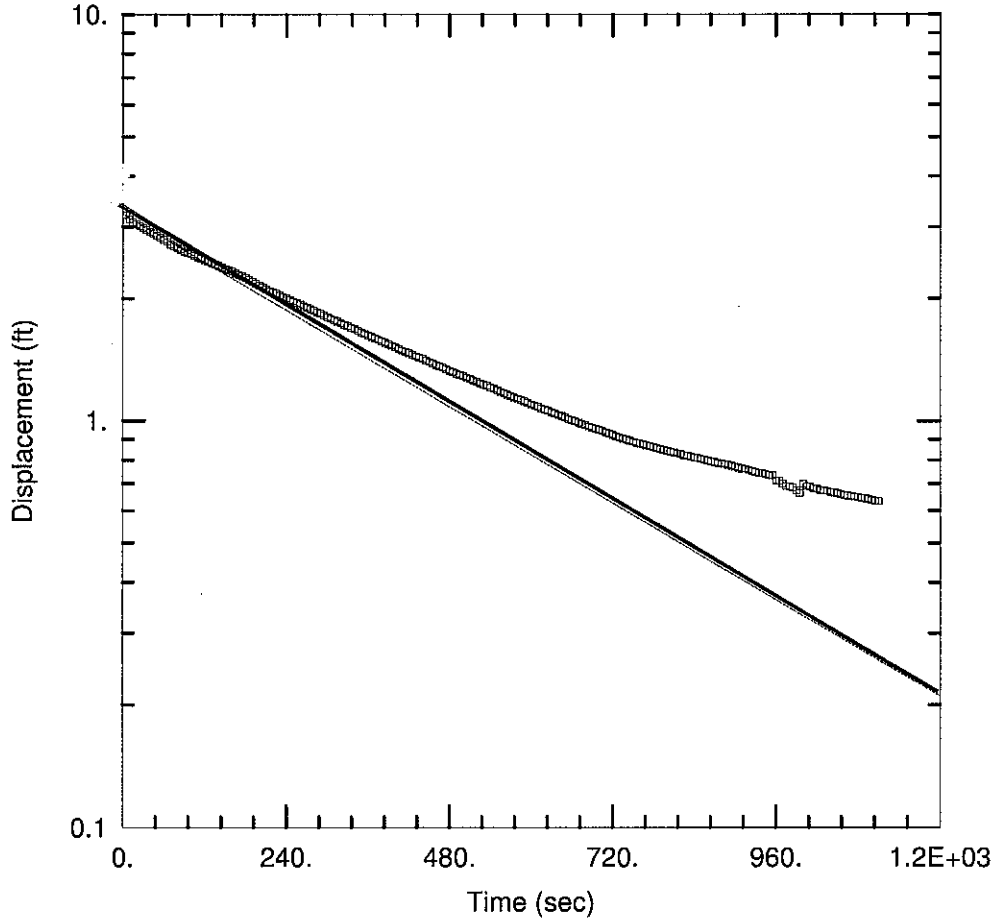
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (WP-04)

Initial Displacement: 15.36 ft
Wellbore Radius: 0.125 ft
Screen Length: 15. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.041 ft
Well Skin Radius: 0.13 ft
Total Well Penetration Depth: 15. ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.07396 ft/day
y0 = 16.78 ft



RISING HEAD TEST

Data Set: Q:\...\WP-13_072908.aqt
Date: 07/30/08 Time: 11:27:20

PROJECT INFORMATION

Company: Langan Engineering & Env.
Client: INDSPEC/Beazer
Project: 2568414
Test Location: No. 1 Builiding Area
Test Well: WP-13
Test Date: 9/21/06

AQUIFER DATA

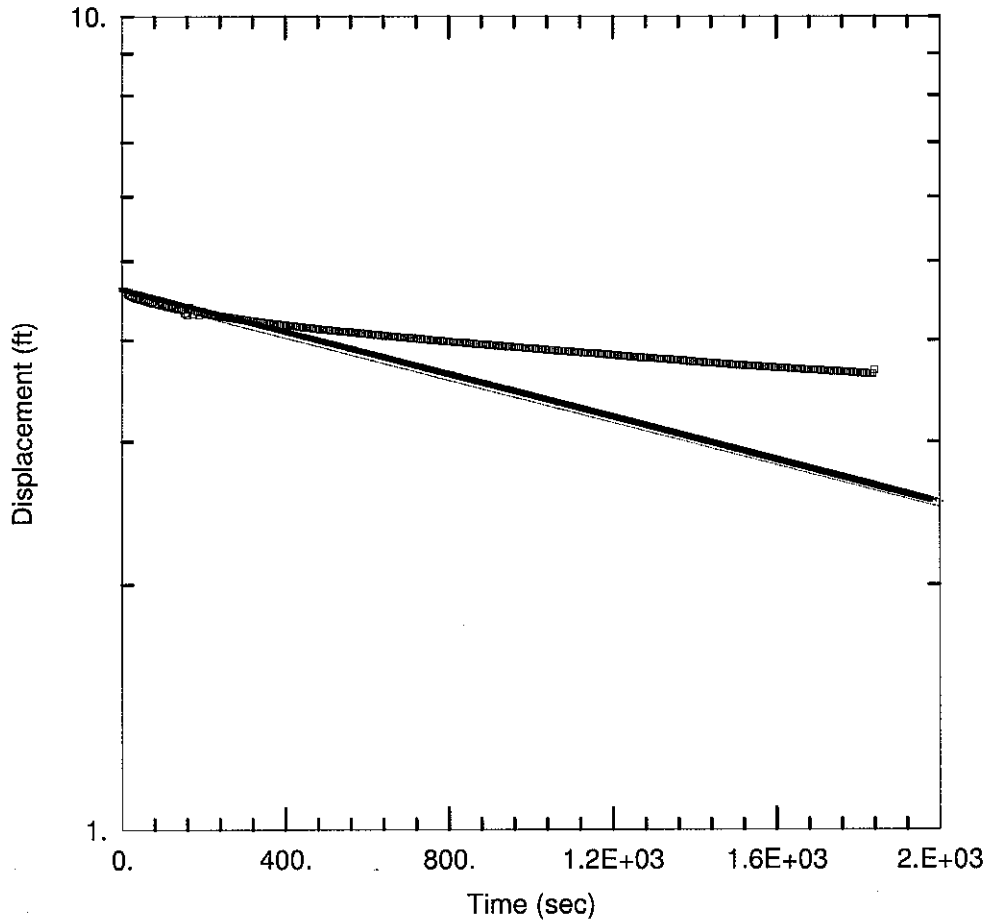
Saturated Thickness: 7. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (WP-13)

Initial Displacement: 3.21 ft
Wellbore Radius: 0.125 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.041 ft
Well Skin Radius: 0.13 ft
Total Well Penetration Depth: 7. ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.07281 ft/day
y0 = 3.224 ft



RISING HEAD TEST

Data Set: Q:\...\WP-14_072908.aqt
Date: 07/30/08 Time: 11:33:16

PROJECT INFORMATION

Company: Langan Engineering & Env.
Client: INDSPEC/Beazer
Project: 2568414
Test Location: No. 1 Builiding Area
Test Well: WP-14
Test Date: 9/21/06

AQUIFER DATA

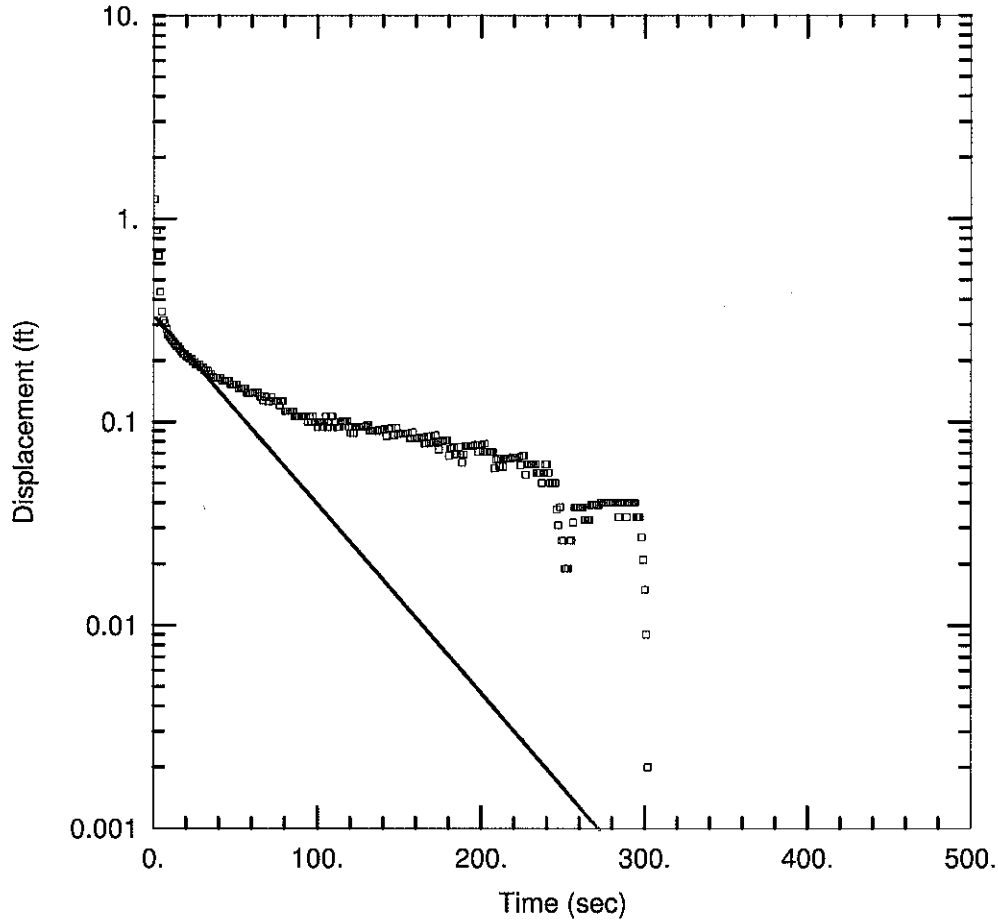
Saturated Thickness: 6. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (WP-14)

Initial Displacement: 4.59 ft
Wellbore Radius: 0.125 ft
Screen Length: 6. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.041 ft
Well Skin Radius: 0.13 ft
Total Well Penetration Depth: 6. ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.01077 ft/day
y0 = 4.538 ft



WELL TEST ANALYSIS

Data Set: Q:\...\GM-6A_072908.aqt
Date: 07/30/08 Time: 10:55:55

PROJECT INFORMATION

Company: Langan Engineering
Client: INDSPEC/Beazer
Project: 2568409
Test Location: Petrolia, PA
Test Well: GM-6A
Test Date: 12/2/04

AQUIFER DATA

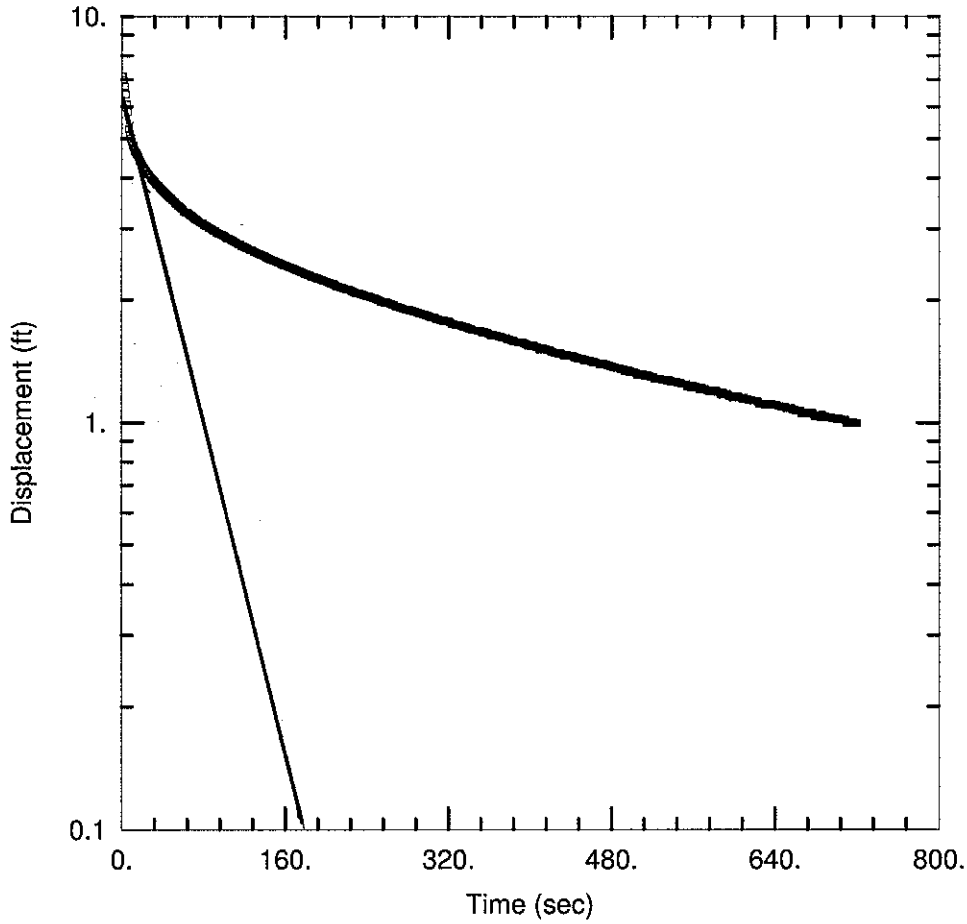
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (GM-6A)

Initial Displacement: 1.25 ft
Wellbore Radius: 0.25 ft
Screen Length: 15. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.083 ft
Well Skin Radius: 0.255 ft
Total Well Penetration Depth: 15. ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.329 ft/day
y0 = 0.326 ft



WELL TEST ANALYSIS

Data Set: Q:\...\GM-16A_BR_rev.aqt
Date: 07/30/08 Time: 11:54:40

PROJECT INFORMATION

Company: Langan Engineering
Client: INDSPEC/Beazer
Project: 2568409
Test Location: Petrolia, PA
Test Well: GM-16A
Test Date: 12/2/04

AQUIFER DATA

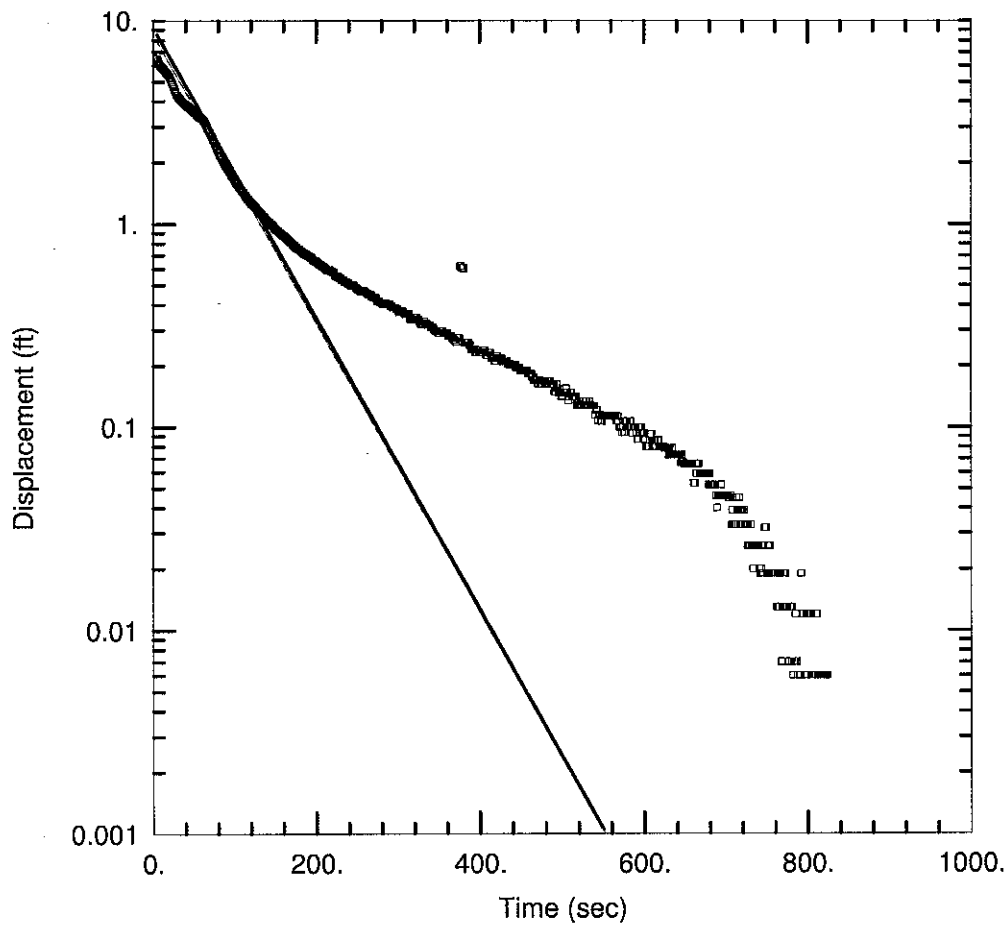
Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (GM-16A)

Initial Displacement: 7.11 ft
Wellbore Radius: 0.25 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.083 ft
Well Skin Radius: 0.26 ft
Total Well Penetration Depth: 10. ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.927 ft/day
y0 = 6.111 ft



WELL TEST ANALYSIS

Data Set: Q:\...\GM-4A_BR_072908.aqt
Date: 07/30/08 Time: 10:56:56

PROJECT INFORMATION

Company: Langan Engineering
Client: INDSPEC/Beazer
Project: 2568409
Test Location: Petrolia, PA
Test Well: GM-4A
Test Date: 12/2/04

AQUIFER DATA

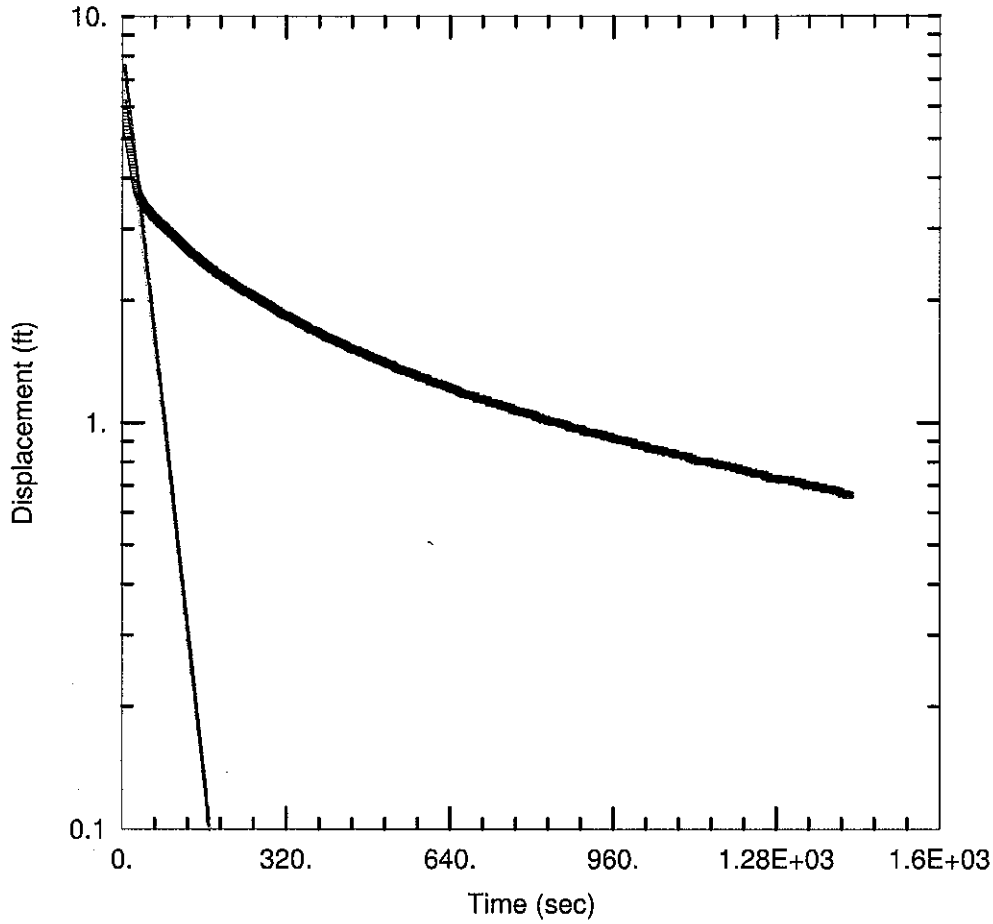
Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (GM-4A)

Initial Displacement: 6.6 ft
Wellbore Radius: 0.25 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.083 ft
Well Skin Radius: 0.255 ft
Total Well Penetration Depth: 5. ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.165 ft/day
y0 = 8.565 ft



WELL TEST ANALYSIS

Data Set: Q:\...\MW-65A_BR_rev.aqt
Date: 07/30/08 Time: 11:40:46

PROJECT INFORMATION

Company: Langan Engineering
Client: INDSPEC/Beazer
Project: 2568409
Test Location: Petrolia, PA
Test Well: MW-65A
Test Date: 12/2/04

AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-65A)

Initial Displacement: 6.1 ft
Wellbore Radius: 0.25 ft
Screen Length: 10. ft
Gravel Pack Porosity: 1.
Casing Radius: 0.0833 ft
Well Skin Radius: 0.26 ft
Total Well Penetration Depth: 10. ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 2.135 ft/day
y0 = 7.235 ft