

**Appendix H**

Well Development Logs



## MONITORING WELL DEVELOPMENT LOG

Sampling Personnel: P. Cambien  
Job Number: \_\_\_\_\_  
Weather: Cloudy

Well ID: PZ-203  
Date: 7/21/10  
Time In: 8:00 Time Out: \_\_\_\_\_

## WELL INFORMATION

|                          | TIC | TOC          | BGS |
|--------------------------|-----|--------------|-----|
| Well Depth (feet)        |     | <u>14.55</u> |     |
| Water Table Depth (feet) |     | <u>12.6</u>  |     |

check where appropriate

Well Type: Flushmount ☒ Stick-Up ☐  
Well Locked: Yes ☒ No ☐  
Measuring Point Marked: Yes ☒ No ☐  
Well Diameter: 1" ☒ 2" ☐ Other: \_\_\_\_\_

## WELL WATER INFORMATION

|                                |                    |
|--------------------------------|--------------------|
| Length of Water Column: (feet) | <u>6.45</u>        |
| Volume of Water in Well: (gal) | <u>0.284</u>       |
| Pumping Rate of Pump: (mL/min) |                    |
| Pumping Rate of Pump: (GPM)    | <u>0.2-0.8 GPM</u> |
| Minutes of Pumping: (min)      |                    |
| Total Volume Removed: (gal)    | <u>4.2-6.3</u>     |

## Conversion Factors

| gallons per foot | 1" ID | 2" ID | 4" ID | 6" ID |
|------------------|-------|-------|-------|-------|
| of water column: | 0.041 | 0.163 | 0.653 | 1.469 |

1 gal = 3.785 L = 3785 mL = 0.1337 cubic ft.

## Well Brushing Method and Duration:

Well Screen Surging Method and Duration: Backwash 15 minutes

## EVACUATION INFORMATION

Evacuation Method: Bailor ☐ Peristaltic ☒ Grunfos ☐ WaTerra ☐ Other Pump ☒ P  
Tubing Used: Teflon ☐ Polyethylene ☐

Did well go dry?

Yes ☐No ☐

Water Quality Meter Type: \_\_\_\_\_

| Time                     | 1              | 2            | 3            | 4            | 5            | 6            | 7              | 8 | 9 |
|--------------------------|----------------|--------------|--------------|--------------|--------------|--------------|----------------|---|---|
| Parameter                | <u>8:20</u>    | <u>8:25</u>  | <u>8:30</u>  | <u>8:32</u>  | <u>8:35</u>  | <u>8:40</u>  |                |   |   |
| Volume Purged (ml)       | <u>Initial</u> | <u>1 GAL</u> | <u>2 GAL</u> | <u>3 GAL</u> | <u>4 GAL</u> | <u>5 GAL</u> | <u>6.3 GAL</u> |   |   |
| Depth to Water (ft. TIC) | <u>12.6</u>    | <u>14.4</u>  | <u>15.3</u>  | <u>15.2</u>  | <u>16.2</u>  | <u>15.7</u>  |                |   |   |
| Temperature (°C)         |                |              |              |              |              |              |                |   |   |
| pH                       |                |              |              |              |              |              |                |   |   |
| Conductance (mS/cm)      |                |              |              |              |              |              |                |   |   |
| Dissolved Oxygen (mg/L)  |                |              |              |              |              |              |                |   |   |
| Turbidity (NTU)          |                |              |              |              |              |              |                |   |   |
| ORP (mV)                 |                |              |              |              |              |              |                |   |   |

| Time                     | 10 | 11 | 12 | 13 | 14 |
|--------------------------|----|----|----|----|----|
| Parameter                |    |    |    |    |    |
| Volume Purged (ml)       |    |    |    |    |    |
| Depth to Water (ft. TIC) |    |    |    |    |    |
| Temperature (°C)         |    |    |    |    |    |
| pH                       |    |    |    |    |    |
| Conductance (mS/cm)      |    |    |    |    |    |
| Dissolved Oxygen (mg/L)  |    |    |    |    |    |
| Turbidity (NTU)          |    |    |    |    |    |
| ORP (mV)                 |    |    |    |    |    |

## MISCELLANEOUS OBSERVATIONS/NOTES

WENT CLEAR @ 4.2  
RE SURGE FOR 2 MINUTES  
WENT CLEAR @ 5.8



## MONITORING WELL DEVELOPMENT LOG

Sampling Personnel: MLS/PJC Well ID: PZ-204  
Job Number: B0045363 Date: 7/20/10  
Weather: Sunny, FOS Time In: \_\_\_\_\_ Time Out: \_\_\_\_\_

## WELL INFORMATION

|                   |        | TIC | B TOC        | SGS |
|-------------------|--------|-----|--------------|-----|
| Well Depth        | (feet) |     | <u>30</u>    |     |
| Water Table Depth | (feet) |     | <u>19.17</u> |     |

check where appropriate

Well Type: Flushmount ☒ Stick-Up ☐  
Well Locked: Yes ☐ No ☐  
Measuring Point Marked: Yes ☐ No ☐  
Well Diameter: 1" ☒ 2" ☐ Other: \_\_\_\_\_

## WELL WATER INFORMATION

|                          |          |              |
|--------------------------|----------|--------------|
| Length of Water Column:  | (feet)   | <u>10.83</u> |
| Volume of Water in Well: | (gal)    | <u>0.45</u>  |
| Pumping Rate of Pump:    | (mL/min) |              |
| Pumping Rate of Pump:    | (GPM)    |              |
| Minutes of Pumping:      | (min)    |              |
| Total Volume Removed:    | (gal)    |              |

## Conversion Factors

| gallons per foot | 1" ID | 2" ID | 4" ID | 6" ID |
|------------------|-------|-------|-------|-------|
| of water column: | 0.041 | 0.163 | 0.653 | 1.469 |

1 gal = 3.785 L = 3785 mL = 0.1337 cubic ft.

Well Brushing Method and Duration: \_\_\_\_\_  
Well Screen Surging Method and Duration: Bailer (Weighted)

## EVACUATION INFORMATION

Evacuation Method: Bailer ☒ Peristaltic ☒ Grunfos ☐ WaTerra ☐ Other Pump ☐  
Tubing Used: Teflon ☐ Polyethylene ☒

Did well go dry?

Yes ☐No ☒

Water Quality Meter Type: \_\_\_\_\_

| Time                             | 1            | 2            | 3            | 4            | 5            | 6           | 7            | 8            | 9 |
|----------------------------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|---|
| Parameter                        | Initial      |              |              |              |              |             |              |              |   |
| Volume Purged (ft <sup>3</sup> ) | <u>0.2</u>   | <u>0.5</u>   | <u>1.0</u>   | <u>1.5</u>   | <u>2.0</u>   | <u>3.0</u>  | <u>4.0</u>   | <u>4.5</u>   |   |
| Depth to Water (ft. TIC)         | <u>19.20</u> | <u>19.10</u> | <u>19.40</u> | <u>19.21</u> | <u>19.18</u> | <u>19.2</u> | <u>19.16</u> | <u>19.21</u> |   |
| Temperature (°C)                 |              |              |              |              |              |             |              |              |   |
| pH                               |              |              |              |              |              |             |              |              |   |
| Conductance (mS/cm)              |              |              |              |              |              |             |              |              |   |
| Dissolved Oxygen (mg/L)          |              |              |              |              |              |             |              |              |   |
| Turbidity (NTU)                  |              |              |              |              |              |             |              |              |   |
| ORP (mV)                         |              |              |              |              |              |             |              |              |   |

| Time                     | 10 | 11 | 12 | 13 | 14 |
|--------------------------|----|----|----|----|----|
| Parameter                |    |    |    |    |    |
| Volume Purged (ml)       |    |    |    |    |    |
| Depth to Water (ft. TIC) |    |    |    |    |    |
| Temperature (°C)         |    |    |    |    |    |
| pH                       |    |    |    |    |    |
| Conductance (mS/cm)      |    |    |    |    |    |
| Dissolved Oxygen (mg/L)  |    |    |    |    |    |
| Turbidity (NTU)          |    |    |    |    |    |
| ORP (mV)                 |    |    |    |    |    |

## MISCELLANEOUS OBSERVATIONS/NOTES

Peri Pump would not  
work. Purged with 3/4 inch  
bailer. Still very silty  
stopped purging

Ticker No 4155574501

206-382-1051 Michelle



## MONITORING WELL DEVELOPMENT LOG

Sampling Personnel: D. Ramquist Well ID: P2-204  
Job Number: 30045303 Date: 8-11-10  
Weather: Sunny 70° Time In: 0845 Time Out: 1310

## WELL INFORMATION

|                          | TIC | TOC          | BGS |
|--------------------------|-----|--------------|-----|
| Well Depth (feet)        |     | <u>18.1</u>  |     |
| Water Table Depth (feet) |     | <u>21.23</u> |     |

Final DTW 70.4 TO 29.52

check where appropriate

Well Type: Flushmount ☒ Stick-Up ☐  
Well Locked: Yes ☒ No ☐  
Measuring Point Marked: Yes ☐ No ☒  
Well Diameter: 1" ☒ 2" ☐ Other: ☐

## WELL WATER INFORMATION

|                                |                |
|--------------------------------|----------------|
| Length of Water Column: (feet) | <u>11.13</u>   |
| Volume of Water in Well: (gal) | <u>45</u>      |
| Pumping Rate of Pump: (mL/min) |                |
| Pumping Rate of Pump: (GPM)    |                |
| Minutes of Pumping: (min)      | <u>3.75 hr</u> |
| Total Volume Removed: (gal)    | <u>3</u>       |

## Conversion Factors

| gallons per foot | 1" ID       | 2" ID | 4" ID | 6" ID |
|------------------|-------------|-------|-------|-------|
| of water column: | <u>0.04</u> | 0.163 | 0.653 | 1.469 |

1 gal = 3.785 L = 3785 mL = 0.1337 cubic ft.

Well Brushing Method and Duration:

Well Screen Surging Method and Duration:

## EVACUATION INFORMATION

Evacuation Method: Bailer ☒ Peristaltic ☒ Grunfos ☐ WaTerra ☐ Other Pump ☐  
Tubing Used: Teflon ☐ Polyethylene ☐

Did well go dry? Yes ☐ No ☒ Water Quality Meter Type: 16155 mps

| Time                     | 1       | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--------------------------|---------|---|---|---|---|---|---|---|---|
| Parameter                | Initial |   |   |   |   |   |   |   |   |
| Volume Purged (mL)       |         |   |   |   |   |   |   |   |   |
| Depth to Water (ft. TIC) |         |   |   |   |   |   |   |   |   |
| Temperature (°C)         |         |   |   |   |   |   |   |   |   |
| pH                       |         |   |   |   |   |   |   |   |   |
| Conductance (mS/cm)      |         |   |   |   |   |   |   |   |   |
| Dissolved Oxygen (mg/L)  |         |   |   |   |   |   |   |   |   |
| Turbidity (NTU)          |         |   |   |   |   |   |   |   |   |
| ORP (mV)                 |         |   |   |   |   |   |   |   |   |

| Time                     | 10 | 11 | 12 | 13 | 14 |
|--------------------------|----|----|----|----|----|
| Parameter                |    |    |    |    |    |
| Volume Purged (mL)       |    |    |    |    |    |
| Depth to Water (ft. TIC) |    |    |    |    |    |
| Temperature (°C)         |    |    |    |    |    |
| pH                       |    |    |    |    |    |
| Conductance (mS/cm)      |    |    |    |    |    |
| Dissolved Oxygen (mg/L)  |    |    |    |    |    |
| Turbidity (NTU)          |    |    |    |    |    |
| ORP (mV)                 |    |    |    |    |    |

## MISCELLANEOUS OBSERVATIONS/NOTES

PID: 0.0  
Turbid → did not clean up  
Slight TP+ odor



## MONITORING WELL DEVELOPMENT LOG

Sampling Personnel: P. CAMPBELL  
Job Number: 000453103  
Weather: Cloudy

Well ID: PZ-61A-PR  
Date: 7/19/10  
Time In: \_\_\_\_\_ Time Out: \_\_\_\_\_

## WELL INFORMATION

|                          |  | TIC | B.TOC        | BGS |
|--------------------------|--|-----|--------------|-----|
| Well Depth (feet)        |  |     | <u>28.3</u>  |     |
| Water Table Depth (feet) |  |     | <u>14.51</u> |     |

check where appropriate

Well Type: Flushmount ☒ Stick-Up ☒  
Well Locked: Yes ☒ No ☒  
Measuring Point Marked: Yes ☒ No ☒  
Well Diameter: 1" ☐ 2" ☒ Other: \_\_\_\_\_

## WELL WATER INFORMATION

|                                |              |
|--------------------------------|--------------|
| Length of Water Column: (feet) | <u>13.79</u> |
| Volume of Water in Well: (gal) | <u>205</u>   |
| Pumping Rate of Pump: (mL/min) |              |
| Pumping Rate of Pump: (GPM)    | <u>2 GPM</u> |
| Minutes of Pumping: (min)      |              |
| Total Volume Removed: (gal)    |              |

## Conversion Factors

| gallons per foot of water column: | 1" ID | 2" ID | 4" ID | 6" ID |
|-----------------------------------|-------|-------|-------|-------|
|                                   | 0.041 | 0.163 | 0.653 | 1.469 |

1 gal = 3.785 L = 3785 mL = 0.1337 cubic ft.

Well Brushing Method and Duration: \_\_\_\_\_  
Well Screen Surging Method and Duration: Bailer, 27 min.

## EVACUATION INFORMATION

Evacuation Method: Bailer ☐ Peristaltic ☐ Grunfos ☒ WaTerra ☐ Other Pump ☐  
Tubing Used: Teflon ☐ Polyethylene ☒

Did well go dry?

Yes ☐No ☒Water Quality Meter Type: Level SOLINST

| Time Parameter           | 1            | 2            | 3            | 4            | 5            | 6            | 7            | 8 | 9 |
|--------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---|---|
|                          | <u>1102</u>  | <u>1111</u>  | <u>1116</u>  | <u>1118</u>  | <u>1128</u>  | <u>1135</u>  | <u>1137</u>  |   |   |
| Volume Purged (ml) (gal) | <u>4</u>     | <u>8</u>     | <u>13</u>    | <u>16</u>    | <u>20</u>    | <u>24</u>    | <u>28</u>    |   |   |
| Depth to Water (ft. TIC) | <u>16.10</u> | <u>16.75</u> | <u>16.40</u> | <u>17.03</u> | <u>17.10</u> | <u>17.05</u> | <u>16.55</u> |   |   |
| Temperature (°C)         |              |              |              |              |              |              |              |   |   |
| pH                       |              |              |              |              |              |              |              |   |   |
| Conductance (mS/cm)      |              |              |              |              |              |              |              |   |   |
| Dissolved Oxygen (mg/L)  |              |              |              |              |              |              |              |   |   |
| Turbidity (NTU)          |              |              |              |              |              |              |              |   |   |
| ORP (mV)                 |              |              |              |              |              |              |              |   |   |

| Time Parameter           | 10 | 11 | 12 | 13 | 14 |
|--------------------------|----|----|----|----|----|
| Volume Purged (ml)       |    |    |    |    |    |
| Depth to Water (ft. TIC) |    |    |    |    |    |
| Temperature (°C)         |    |    |    |    |    |
| pH                       |    |    |    |    |    |
| Conductance (mS/cm)      |    |    |    |    |    |
| Dissolved Oxygen (mg/L)  |    |    |    |    |    |
| Turbidity (NTU)          |    |    |    |    |    |
| ORP (mV)                 |    |    |    |    |    |

## MISCELLANEOUS OBSERVATIONS/NOTES

Water  
Clear



## MONITORING WELL DEVELOPMENT LOG

Sampling Personnel: J. Damquist  
Job Number: BD453613  
Weather: Fog 105 F

Well ID: MW-200  
Date: 8-12-10  
Time In: 0845 Time Out: 1140  
1055 → 1137

## WELL INFORMATION

|                          | TIC | TOC          | BGS |
|--------------------------|-----|--------------|-----|
| Well Depth (feet)        |     | <u>24.09</u> |     |
| Water Table Depth (feet) |     | <u>8.92</u>  |     |

check where appropriate

Well Type: Flushmount ☒ Stick-Up ☐  
Well Locked: Yes ☐ No ☐  
Measuring Point Marked: Yes ☐ No ☐  
Well Diameter: 1" ☐ 2" ☒ Other: 2 bolts missing

## WELL WATER INFORMATION

|                                |                 |
|--------------------------------|-----------------|
| Length of Water Column: (feet) | <u>15.17</u>    |
| Volume of Water in Well: (gal) | <u>2.42</u>     |
| Pumping Rate of Pump: (mL/min) | <u>14/min</u>   |
| Pumping Rate of Pump: (GPM)    |                 |
| Minutes of Pumping: (min)      | <u>2h 10min</u> |
| Total Volume Removed: (gal)    | <u>7 gal</u>    |

## Conversion Factors

| gallons per foot of water column: | 1" ID | 2" ID        | 4" ID | 6" ID |
|-----------------------------------|-------|--------------|-------|-------|
|                                   | 0.041 | <u>0.163</u> | 0.653 | 1.469 |

1 gal = 3.785 L = 3785 mL = 0.1337 cubic ft.

Well Brushing Method and Duration:  
Well Screen Surging Method and Duration:

## EVACUATION INFORMATION

Evacuation Method: Bailer ☒ Peristaltic ☒ Grunfos ☐ WaTerra ☐ Other Pump ☐  
Tubing Used: Teflon ☐ Polyethylene ☐

Did well go dry?

Yes ☐No ☐

Water Quality Meter Type:

YSI 550 MPS

| Time                     | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--------------------------|-----------------|---|---|---|---|---|---|---|---|
| Parameter                | <u>Initial</u>  |   |   |   |   |   |   |   |   |
| Volume Purged (ml)       | <u>0</u>        |   |   |   |   |   |   |   |   |
| Depth to Water (ft. TIC) | <u>9.17</u>     |   |   |   |   |   |   |   |   |
| Temperature (°C)         | <u>15°C</u>     |   |   |   |   |   |   |   |   |
| pH                       | <u>6.03</u>     |   |   |   |   |   |   |   |   |
| Conductance (mS/cm)      | <u>314/2555</u> |   |   |   |   |   |   |   |   |
| Dissolved Oxygen (mg/L)  | <u>2.95</u>     |   |   |   |   |   |   |   |   |
| Turbidity (NTU)          | <u>—</u>        |   |   |   |   |   |   |   |   |
| ORP (mV)                 | <u>-23.5</u>    |   |   |   |   |   |   |   |   |

| Time                     | 10 | 11 | 12 | 13 | 14 |
|--------------------------|----|----|----|----|----|
| Parameter                |    |    |    |    |    |
| Volume Purged (ml)       |    |    |    |    |    |
| Depth to Water (ft. TIC) |    |    |    |    |    |
| Temperature (°C)         |    |    |    |    |    |
| pH                       |    |    |    |    |    |
| Conductance (mS/cm)      |    |    |    |    |    |
| Dissolved Oxygen (mg/L)  |    |    |    |    |    |
| Turbidity (NTU)          |    |    |    |    |    |
| ORP (mV)                 |    |    |    |    |    |

## MISCELLANEOUS OBSERVATIONS/NOTES

PID 0.0PID = 0.0, stableSurge 10min, pump 10Surge 10, pump24-24 Fine TD



## MONITORING WELL DEVELOPMENT LOG

Sampling Personnel: A. Rangvist  
Job Number: 30045303  
Weather: Sun 80F

Well ID: MW-207  
Date: 8-11-10  
Time In: 1445 Time Out: 1435

## WELL INFORMATION

|                          | TIC | TOC          | BGS |
|--------------------------|-----|--------------|-----|
| Well Depth (feet)        |     | <u>19.01</u> |     |
| Water Table Depth (feet) |     | <u>10.08</u> |     |

check where appropriate

Well Type: Flushmount ☒ Stick-Up ☐  
Well Locked: Yes ☒ No ☐  
Measuring Point Marked: Yes ☐ No ☒  
Well Diameter: 1" ☐ 2" ☒ Other: 1 bolt missing

## WELL WATER INFORMATION

|                                |                 |
|--------------------------------|-----------------|
| Length of Water Column: (feet) | <u>8.92</u>     |
| Volume of Water in Well: (gal) | <u>1.4</u>      |
| Pumping Rate of Pump: (mL/min) | <u>1.25</u>     |
| Pumping Rate of Pump: (GPM)    |                 |
| Minutes of Pumping: (min)      | <u>1.25 min</u> |
| Total Volume Removed: (gal)    | <u>3</u>        |

## Conversion Factors

| gallons per foot | 1" ID | 2" ID | 4" ID | 6" ID |
|------------------|-------|-------|-------|-------|
| of water column: | 0.041 | 0.163 | 0.653 | 1.469 |

1 gal = 3.785 L = 3.785 mL = 0.1337 cubic ft.

|                                          |  |
|------------------------------------------|--|
| Well Brushing Method and Duration:       |  |
| Well Screen Surging Method and Duration: |  |

## EVACUATION INFORMATION

Evacuation Method: Bailer ☐ Peristaltic ☒ Grunfos ☐ WaTerra ☐ Other Pump ☐  
Tubing Used: Teflon ☐ Polyethylene ☐

Did well go dry?

Yes ☐No ☒

Water Quality Meter Type: \_\_\_\_\_

| Time                     | 1                | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--------------------------|------------------|---|---|---|---|---|---|---|---|
| Parameter                | <u>Initial</u>   |   |   |   |   |   |   |   |   |
| Volume Purged (ml)       | <u>3 gal</u>     |   |   |   |   |   |   |   |   |
| Depth to Water (ft. TIC) | <u>10.91</u>     |   |   |   |   |   |   |   |   |
| Temperature (°C)         | <u>17.87</u>     |   |   |   |   |   |   |   |   |
| pH                       | <u>7.95</u>      |   |   |   |   |   |   |   |   |
| Conductance (mS/cm)      | <u>1385/1585</u> |   |   |   |   |   |   |   |   |
| Dissolved Oxygen (mg/L)  | <u>4.71</u>      |   |   |   |   |   |   |   |   |
| Turbidity (NTU)          |                  |   |   |   |   |   |   |   |   |
| ORP (mV)                 | <u>12.18</u>     |   |   |   |   |   |   |   |   |

| Time                     | 10 | 11 | 12 | 13 | 14 |
|--------------------------|----|----|----|----|----|
| Parameter                |    |    |    |    |    |
| Volume Purged (ml)       |    |    |    |    |    |
| Depth to Water (ft. TIC) |    |    |    |    |    |
| Temperature (°C)         |    |    |    |    |    |
| pH                       |    |    |    |    |    |
| Conductance (mS/cm)      |    |    |    |    |    |
| Dissolved Oxygen (mg/L)  |    |    |    |    |    |
| Turbidity (NTU)          |    |    |    |    |    |
| ORP (mV)                 |    |    |    |    |    |

## MISCELLANEOUS OBSERVATIONS/NOTES

Shen PID = 0.0  
TPH order



## MONITORING WELL DEVELOPMENT LOG

Sampling Personnel: D. Ramquist  
Job Number: 20045363  
Weather: pt. Sun 70F

Well ID: 20045363  
Date: 8.11.10  
Time In: 1145 Time Out: 1430

## WELL INFORMATION

|                          | TIC | TOC          | BGS |
|--------------------------|-----|--------------|-----|
| Well Depth (feet)        |     | <u>27.33</u> |     |
| Water Table Depth (feet) |     | <u>10.0</u>  |     |

check where appropriate

Well Type: Flushmount ☒ Stick-Up ☐  
Well Locked: Yes ☒ No ☐  
Measuring Point Marked: Yes ☐ No ☒  
Well Diameter: 1" ☐ 2" ☒ Other: ☐

## WELL WATER INFORMATION

|                                |               |
|--------------------------------|---------------|
| Length of Water Column: (feet) | <u>17.33</u>  |
| Volume of Water in Well: (gal) | <u>2.77</u>   |
| Pumping Rate of Pump: (mL/min) | <u>16/min</u> |
| Pumping Rate of Pump: (GPM)    |               |
| Minutes of Pumping:            |               |
| Total Volume Removed: (gal)    | <u>7 gal</u>  |

## Conversion Factors

| gallons per foot of water column: | 1" ID | 2" ID        | 4" ID | 6" ID |
|-----------------------------------|-------|--------------|-------|-------|
|                                   | 0.041 | <u>0.163</u> | 0.653 | 1.459 |

1 gal = 3.785 L = 3785 mL = 0.1337 cubic ft.

Well Brushing Method and Duration:

Well Screen Surging Method and Duration:

## EVACUATION INFORMATION

Evacuation Method: Bailer ☒ Peristaltic ☒ Grunfos ☐ WaTerra ☐ Other Pump ☐  
Tubing Used: Teflon ☐ Polyethylene ☐

Surge, pump

Did well go dry?

Yes ☐No ☒

Water Quality Meter Type:

YSI 550 MPS

| Time                     | 1                  | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--------------------------|--------------------|---|---|---|---|---|---|---|---|
| Parameter                | Initial            |   |   |   |   |   |   |   |   |
| Volume Purged (mL)       | <u>750</u>         |   |   |   |   |   |   |   |   |
| Depth to Water (ft. TIC) | <u>10.10</u>       |   |   |   |   |   |   |   |   |
| Temperature (°C)         | <u>15.10</u>       |   |   |   |   |   |   |   |   |
| pH                       | <u>8.54</u>        |   |   |   |   |   |   |   |   |
| Conductance (mS/cm)      | <u>27355/22355</u> |   |   |   |   |   |   |   |   |
| Dissolved Oxygen (mg/L)  | <u>3.20</u>        |   |   |   |   |   |   |   |   |
| Turbidity (NTU)          |                    |   |   |   |   |   |   |   |   |
| ORP (mV)                 | <u>-64.3</u>       |   |   |   |   |   |   |   |   |

| Time                     | 10 | 11 | 12 | 13 | 14 |
|--------------------------|----|----|----|----|----|
| Parameter                |    |    |    |    |    |
| Volume Purged (mL)       |    |    |    |    |    |
| Depth to Water (ft. TIC) |    |    |    |    |    |
| Temperature (°C)         |    |    |    |    |    |
| pH                       |    |    |    |    |    |
| Conductance (mS/cm)      |    |    |    |    |    |
| Dissolved Oxygen (mg/L)  |    |    |    |    |    |
| Turbidity (NTU)          |    |    |    |    |    |
| ORP (mV)                 |    |    |    |    |    |

## MISCELLANEOUS OBSERVATIONS/NOTES

1220 start pumping  
1240 sep tubing closed  
1355 start w/ larger tubing  
want pump  
1345 back to new smaller  
-1430 sep pumping tubing



## MONITORING WELL DEVELOPMENT LOG

Sampling Personnel: P. Campbell  
Job Number: \_\_\_\_\_  
Weather: Clear

Well ID: MW-203  
Date: 7/21/10  
Time In: 18:30 Time Out: \_\_\_\_\_

## WELL INFORMATION

|                   |        | TIC | TOC          | BGS |
|-------------------|--------|-----|--------------|-----|
| Well Depth        | (feet) |     | <u>25.0</u>  |     |
| Water Table Depth | (feet) |     | <u>12.59</u> |     |

check where appropriate

Well Type: Flushmount ☐ Stick-Up ☐  
Well Locked: Yes ☐ No ☐  
Measuring Point Marked: Yes ☐ No ☐  
Well Diameter: 1" ☐ 2" ☒ Other: \_\_\_\_\_

## WELL WATER INFORMATION

|                          |          |                           |
|--------------------------|----------|---------------------------|
| Length of Water Column:  | (feet)   | <u>PL</u><br><u>12.41</u> |
| Volume of Water in Well: | (gal)    | <u>0.5 GAL</u>            |
| Pumping Rate of Pump:    | (mL/min) |                           |
| Pumping Rate of Pump:    | (GPM)    | <u>1 GPM</u>              |
| Minutes of Pumping:      | (min)    | <u>5</u>                  |
| Total Volume Removed:    | (gal)    | <u>6.0 GAL</u>            |

## Conversion Factors

| gallons per foot | 1" ID | 2" ID | 4" ID | 6" ID |
|------------------|-------|-------|-------|-------|
| of water column: | 0.041 | 0.163 | 0.653 | 1.469 |

1 gal = 3.785 L = 3785 mL = 0.1337 cubic ft.

Well Brushing Method and Duration: \_\_\_\_\_  
Well Screen Surging Method and Duration: Poly Digger - 20 minutes

58.5 HEAD SPACE

## EVACUATION INFORMATION

Evacuation Method: Bailer ☐ Peristaltic ☐ Grunfos ☒ WaTerra ☐ Other Pump ☐  
Tubing Used: Teflon ☒ Polyethylene ☐

Did well go dry?

Yes ☐No ☒

Water Quality Meter Type: \_\_\_\_\_

| Time                     | 1                       | 2            | 3            | 4            | 5 | 6 | 7 | 8 | 9 |
|--------------------------|-------------------------|--------------|--------------|--------------|---|---|---|---|---|
| Parameter                | <u>16:35</u><br>Initial | <u>16:38</u> | <u>16:39</u> | <u>16:40</u> |   |   |   |   |   |
| Volume Purged (ml)       | <u>0</u>                | <u>2.5</u>   | <u>5</u>     | <u>6.0</u>   |   |   |   |   |   |
| Depth to Water (ft. TIC) | <u>12.59</u>            | <u>15.9</u>  | <u>17.2</u>  | <u>17.8</u>  |   |   |   |   |   |
| Temperature (°C)         |                         |              |              |              |   |   |   |   |   |
| pH                       |                         |              |              |              |   |   |   |   |   |
| Conductance (mS/cm)      |                         |              |              |              |   |   |   |   |   |
| Dissolved Oxygen (mg/L)  |                         |              |              |              |   |   |   |   |   |
| Turbidity (NTU)          |                         |              |              |              |   |   |   |   |   |
| ORP (mV)                 |                         |              |              |              |   |   |   |   |   |

| Time                     | 10 | 11 | 12 | 13 | 14 |
|--------------------------|----|----|----|----|----|
| Parameter                |    |    |    |    |    |
| Volume Purged (ml)       |    |    |    |    |    |
| Depth to Water (ft. TIC) |    |    |    |    |    |
| Temperature (°C)         |    |    |    |    |    |
| pH                       |    |    |    |    |    |
| Conductance (mS/cm)      |    |    |    |    |    |
| Dissolved Oxygen (mg/L)  |    |    |    |    |    |
| Turbidity (NTU)          |    |    |    |    |    |
| ORP (mV)                 |    |    |    |    |    |

## MISCELLANEOUS OBSERVATIONS/NOTES

WATER CLEARED  
QUICKLY @  
AROUND 4.5 GALLONS



## MONITORING WELL DEVELOPMENT LOG

Sampling Personnel: D. Rammert  
Job Number: 80045363  
Weather: Sun @ slight breeze

Well ID: MW-205  
Date: 8.13.10  
Time In: 1045 Time Out: 1030

## WELL INFORMATION

|                          | TK | TOC          | BCS |
|--------------------------|----|--------------|-----|
| Well Depth (feet)        |    | <u>36.0</u>  |     |
| Water Table Depth (feet) |    | <u>22.31</u> |     |

check where appropriate

Well Type: Flushmount ☒ Stick-Up ☐  
Well Locked: Yes ☒ No ☐  
Measuring Point Marked: Yes ☐ No ☒  
Well Diameter: 1" ☐ 2" ☒ Other: ☐

## WELL WATER INFORMATION

|                                |              |
|--------------------------------|--------------|
| Length of Water Column: (feet) | <u>13.82</u> |
| Volume of Water in Well: (gal) | <u>2.21</u>  |
| Pumping Rate of Pump: (mL/min) | <u>5</u>     |
| Pumping Rate of Pump: (GPM)    | <u>NA</u>    |
| Minutes of Pumping: (min)      | <u>1hr</u>   |
| Total Volume Removed: (gal)    | <u>5</u>     |

## Conversion Factors

|                                   | 1" ID | 2" ID        | 4" ID | 6" ID |
|-----------------------------------|-------|--------------|-------|-------|
| gallons per foot of water column: | 0.041 | <u>0.163</u> | 0.653 | 1.469 |

1 gal = 3.785 L = 3785 mL = 0.1337 cubic ft.

Well Brushing Method and Duration:

Well Screen Surging Method and Duration:

## EVACUATION INFORMATION

Evacuation Method: Bailer ☒ Peristaltic ☒ Grunfos ☐ WaTerra ☐ Other Pump ☐  
Tubing Used: Teflon ☐ Polyethylene ☐

Did well go dry?

Yes ☐No ☒

Water Quality Meter Type:

YSI 550C MPS

|                          |               |   |   |   |   |   |   |   |   |
|--------------------------|---------------|---|---|---|---|---|---|---|---|
| Time                     | 1             | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Parameter                | Initial       |   |   |   |   |   |   |   |   |
| Volume Purged (ml)       | <u>550</u>    |   |   |   |   |   |   |   |   |
| Depth to Water (ft. TIC) | <u>22.45</u>  |   |   |   |   |   |   |   |   |
| Temperature (°C)         | <u>24.38</u>  |   |   |   |   |   |   |   |   |
| pH                       | <u>7.76</u>   |   |   |   |   |   |   |   |   |
| Conductance (mS/cm)      | <u>84/795</u> |   |   |   |   |   |   |   |   |
| Dissolved Oxygen (mg/L)  | <u>7.8</u>    |   |   |   |   |   |   |   |   |
| Turbidity (NTU)          | <u>—</u>      |   |   |   |   |   |   |   |   |
| ORP (mV)                 | <u>23.5</u>   |   |   |   |   |   |   |   |   |

|                          |    |    |    |    |    |
|--------------------------|----|----|----|----|----|
| Time                     | 10 | 11 | 12 | 13 | 14 |
| Parameter                |    |    |    |    |    |
| Volume Purged (ml)       |    |    |    |    |    |
| Depth to Water (ft. TIC) |    |    |    |    |    |
| Temperature (°C)         |    |    |    |    |    |
| pH                       |    |    |    |    |    |
| Conductance (mS/cm)      |    |    |    |    |    |
| Dissolved Oxygen (mg/L)  |    |    |    |    |    |
| Turbidity (NTU)          |    |    |    |    |    |
| ORP (mV)                 |    |    |    |    |    |

## MISCELLANEOUS OBSERVATIONS/NOTES

ADDD

2" Bailer obstructed @ 8'  
Surge w/ 3/4" bailer  
0915  
Pump w/ 3/4" tubing



## MONITORING WELL DEVELOPMENT LOG

Sampling Personnel: D. Zamgash  
Job Number: B0045363  
Weather: Sun 80°

Well ID: MW-206  
Date: 1500 8.11.10  
Time In: 1500 Time Out: 1730

## WELL INFORMATION

|                          | TIC | TOC         | BGS |
|--------------------------|-----|-------------|-----|
| Well Depth (feet)        |     | <u>24.5</u> |     |
| Water Table Depth (feet) |     | <u>12.1</u> |     |

check where appropriate

Well Type: Flushmount ☒ Stick-Up ☐  
Well Locked: Yes ☒ No ☐  
Measuring Point Marked: Yes ☐ No ☒  
Well Diameter: 1" ☐ 2" ☒ Other: belts stripped

## WELL WATER INFORMATION

|                                |                 |
|--------------------------------|-----------------|
| Length of Water Column: (feet) | <u>11.4</u>     |
| Volume of Water in Well: (gal) | <u>1.82</u>     |
| Pumping Rate of Pump: (mL/min) | <u>1 L/min</u>  |
| Pumping Rate of Pump: (GPM)    |                 |
| Minutes of Pumping: (min)      | <u>2h 10min</u> |
| Total Volume Removed: (gal)    | <u>10 gal</u>   |

## Conversion Factors

| gallons per foot of water column: | 1" ID | 2" ID | 4" ID | 6" ID |
|-----------------------------------|-------|-------|-------|-------|
|                                   | 0.041 | 0.163 | 0.653 | 1.469 |

1 gal = 3.785 L = 3785 mL = 0.1337 cubic ft.

Well Brushing Method and Duration:

Well Screen Surging Method and Duration:

## EVACUATION INFORMATION

Evacuation Method: Bailer ☒ Peristaltic ☒ Grunfos ☐ WaTerra ☐ Other Pump ☐  
Tubing Used: Teflon ☐ Polyethylene ☐

Did well go dry? Yes ☐ No ☒ Water Quality Meter Type: YSI SSO MOS

| Time                     | 1                     | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--------------------------|-----------------------|---|---|---|---|---|---|---|---|
| Parameter                | <u>Initial</u>        |   |   |   |   |   |   |   |   |
| Volume Purged (ml)       | <u>10 gal</u>         |   |   |   |   |   |   |   |   |
| Depth to Water (ft. TIC) | <u>10.6</u>           |   |   |   |   |   |   |   |   |
| Temperature (°C)         | <u>15.62</u>          |   |   |   |   |   |   |   |   |
| pH                       | <u>7.49</u>           |   |   |   |   |   |   |   |   |
| Conductance (mS/cm)      | <u>413.4 / 350.22</u> |   |   |   |   |   |   |   |   |
| Dissolved Oxygen (mg/L)  | <u>3.01</u>           |   |   |   |   |   |   |   |   |
| Turbidity (NTU)          | <u>—</u>              |   |   |   |   |   |   |   |   |
| ORP (mV)                 | <u>27.7</u>           |   |   |   |   |   |   |   |   |

| Time                     | 10 | 11 | 12 | 13 | 14 |
|--------------------------|----|----|----|----|----|
| Parameter                |    |    |    |    |    |
| Volume Purged (ml)       |    |    |    |    |    |
| Depth to Water (ft. TIC) |    |    |    |    |    |
| Temperature (°C)         |    |    |    |    |    |
| pH                       |    |    |    |    |    |
| Conductance (mS/cm)      |    |    |    |    |    |
| Dissolved Oxygen (mg/L)  |    |    |    |    |    |
| Turbidity (NTU)          |    |    |    |    |    |
| ORP (mV)                 |    |    |    |    |    |

## MISCELLANEOUS OBSERVATIONS/NOTES

AD-0.0  
bailer - surge - pump  
1510 pumping 1:22  
turbid  
1615-1730 take parameters



## MONITORING WELL DEVELOPMENT LOG

Sampling Personnel: D. Ramquist  
Job Number: B045303  
Weather: Sunny 60F

Well ID: MW-207  
Date: 8.13.10  
Time In: 1330 Time Out: 1530

## WELL INFORMATION

|                          | TIC | TOC          | BGS |
|--------------------------|-----|--------------|-----|
| Well Depth (feet)        |     | <u>23.4</u>  |     |
| Water Table Depth (feet) |     | <u>12.52</u> |     |

check where appropriate

Well Type: Flushmount ☒ Stick-Up ☐  
Well Locked: Yes ☐ No ☒  
Measuring Point Marked: Yes ☐ No ☒  
Well Diameter: 1" ☐ 2" ☒ Other: ☐

## WELL WATER INFORMATION

|                                |                 |
|--------------------------------|-----------------|
| Length of Water Column: (feet) | <u>10.05</u>    |
| Volume of Water in Well: (gal) | <u>1.74</u>     |
| Pumping Rate of Pump: (mL/min) | <u>1.4/min</u>  |
| Pumping Rate of Pump: (GPM)    |                 |
| Minutes of Pumping: (min)      | <u>1-10 min</u> |
| Total Volume Removed: (gal)    | <u>10</u>       |

## Conversion Factors

| gallons per foot | 1" ID | 2" ID | 4" ID | 6" ID |
|------------------|-------|-------|-------|-------|
| of water column: | 0.041 | 0.163 | 0.653 | 1.469 |

1 gal = 3.785 L = 3785 mL = 0.1337 cubic ft

Well Brushing Method and Duration:

Well Screen Surging Method and Duration:

## EVACUATION INFORMATION

Evacuation Method: Bailer ☒ Peristaltic ☒ Grunfos ☐ WaTerra ☐ Other Pump ☐  
Tubing Used: Teflon ☐ Polyethylene ☒

Did well go dry?

Yes ☐No ☒

Water Quality Meter Type:

YSI 55amps

| Time                     | 1                 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--------------------------|-------------------|---|---|---|---|---|---|---|---|
| Parameter                | <u>Initial</u>    |   |   |   |   |   |   |   |   |
| Volume Purged (mL)       | <u>10561</u>      |   |   |   |   |   |   |   |   |
| Depth to Water (ft. TIC) | <u>13.2</u>       |   |   |   |   |   |   |   |   |
| Temperature (°C)         | <u>18.4</u>       |   |   |   |   |   |   |   |   |
| pH                       | <u>6.47</u>       |   |   |   |   |   |   |   |   |
| Conductance (mS/cm)      | <u>3053/24003</u> |   |   |   |   |   |   |   |   |
| Dissolved Oxygen (mg/L)  | <u>6.02</u>       |   |   |   |   |   |   |   |   |
| Turbidity (NTU)          |                   |   |   |   |   |   |   |   |   |
| ORP (mV)                 | <u>-43.6</u>      |   |   |   |   |   |   |   |   |

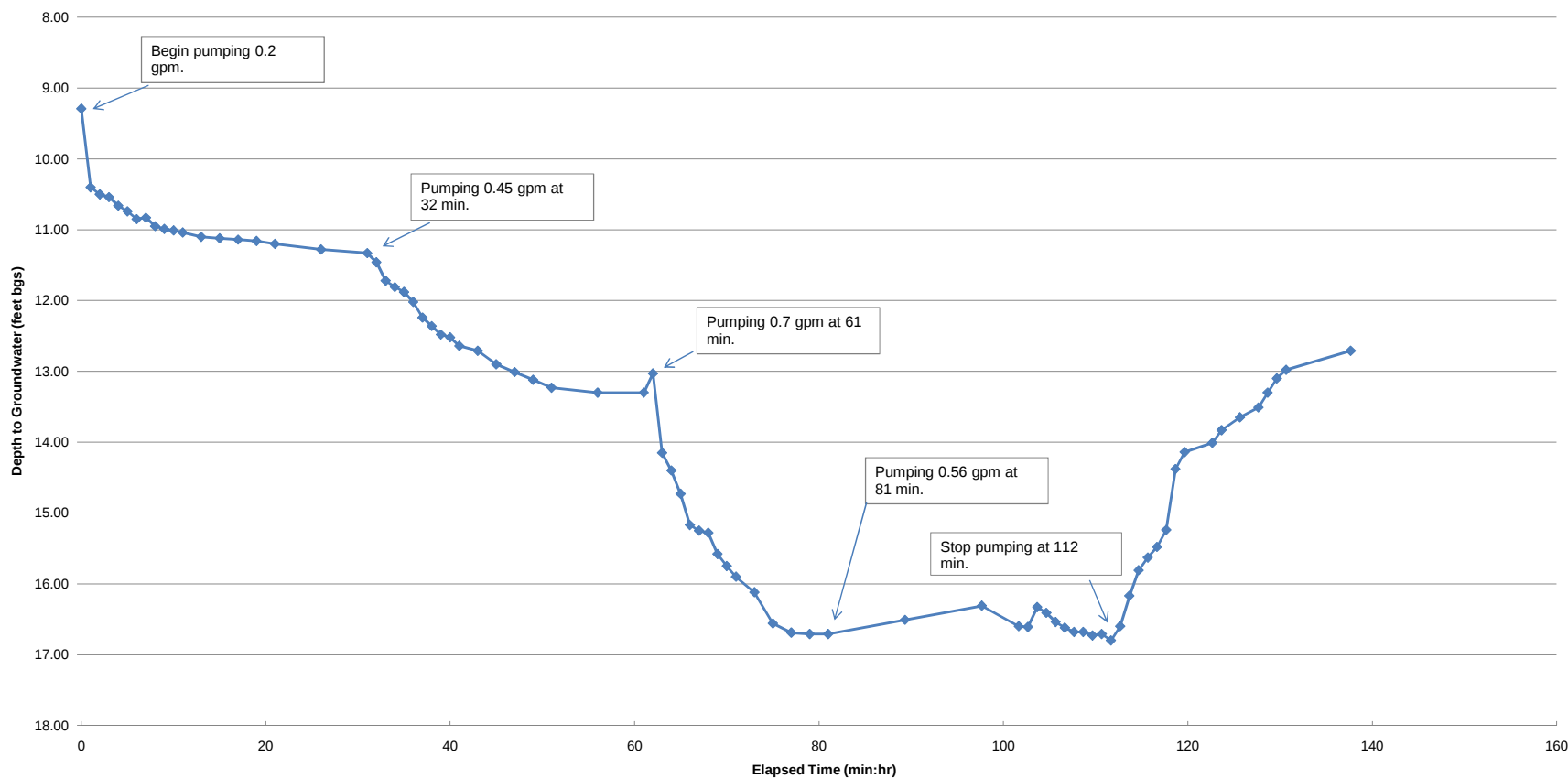
| Time                     | 10 | 11 | 12 | 13 | 14 |
|--------------------------|----|----|----|----|----|
| Parameter                |    |    |    |    |    |
| Volume Purged (mL)       |    |    |    |    |    |
| Depth to Water (ft. TIC) |    |    |    |    |    |
| Temperature (°C)         |    |    |    |    |    |
| pH                       |    |    |    |    |    |
| Conductance (mS/cm)      |    |    |    |    |    |
| Dissolved Oxygen (mg/L)  |    |    |    |    |    |
| Turbidity (NTU)          |    |    |    |    |    |
| ORP (mV)                 |    |    |    |    |    |

## MISCELLANEOUS OBSERVATIONS/NOTES

Single 21 bailer  
1405 begin pumping

**Appendix I**

Step Down Test Data



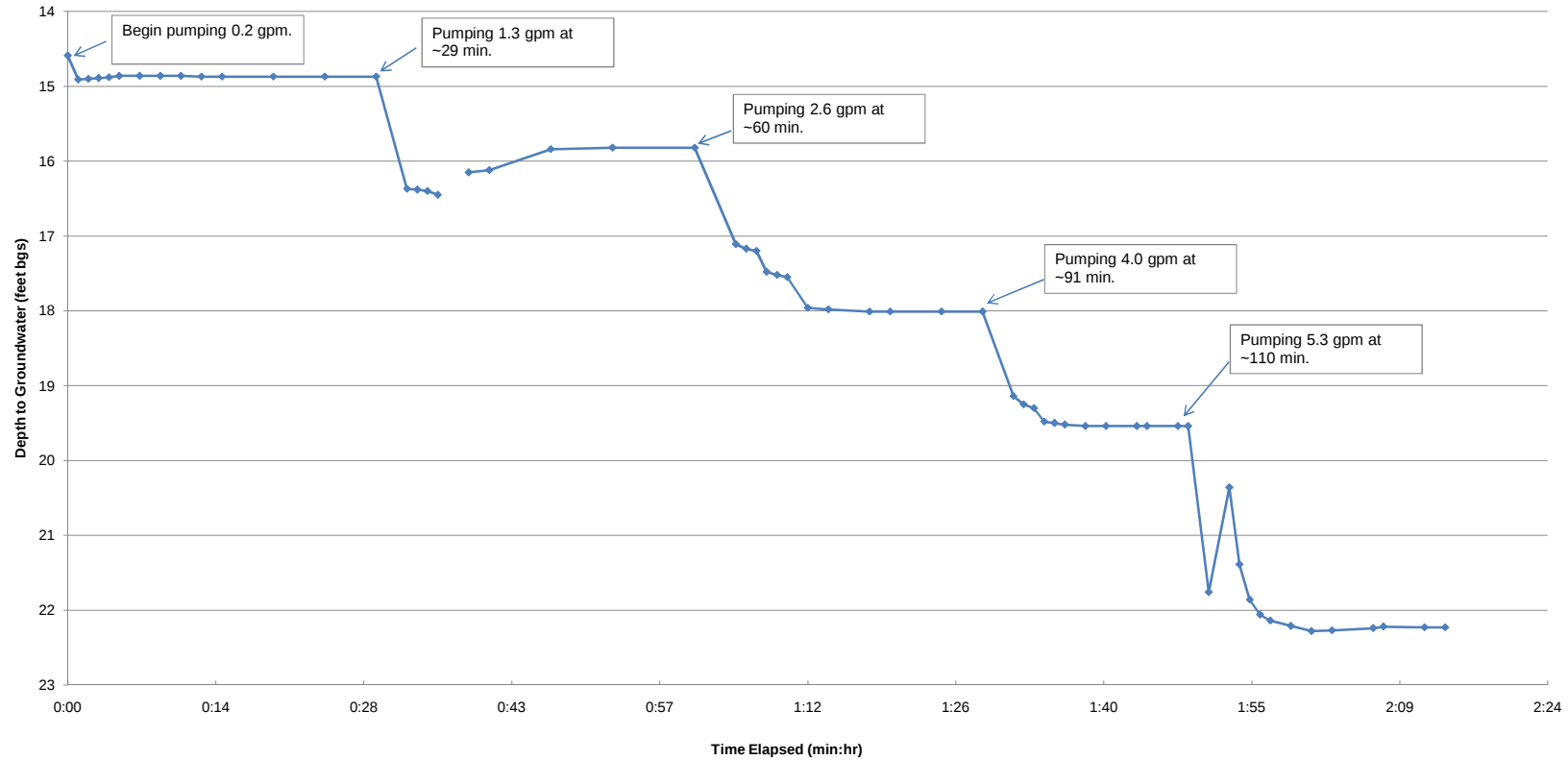
NOTES:  
bgs = below ground surface  
min:hr = minutes:hours  
min. = minutes  
gpm = gallons per minutes

FORMER UNOCAL SEATTLE MARKETING TERMINAL  
3001 ELLIOTT AVENUE, SEATTLE, WASHINGTON  
2010 SUMMARY REPORT AND RISK EVALUATION

WELL RW-3 STEP TEST



FIGURE



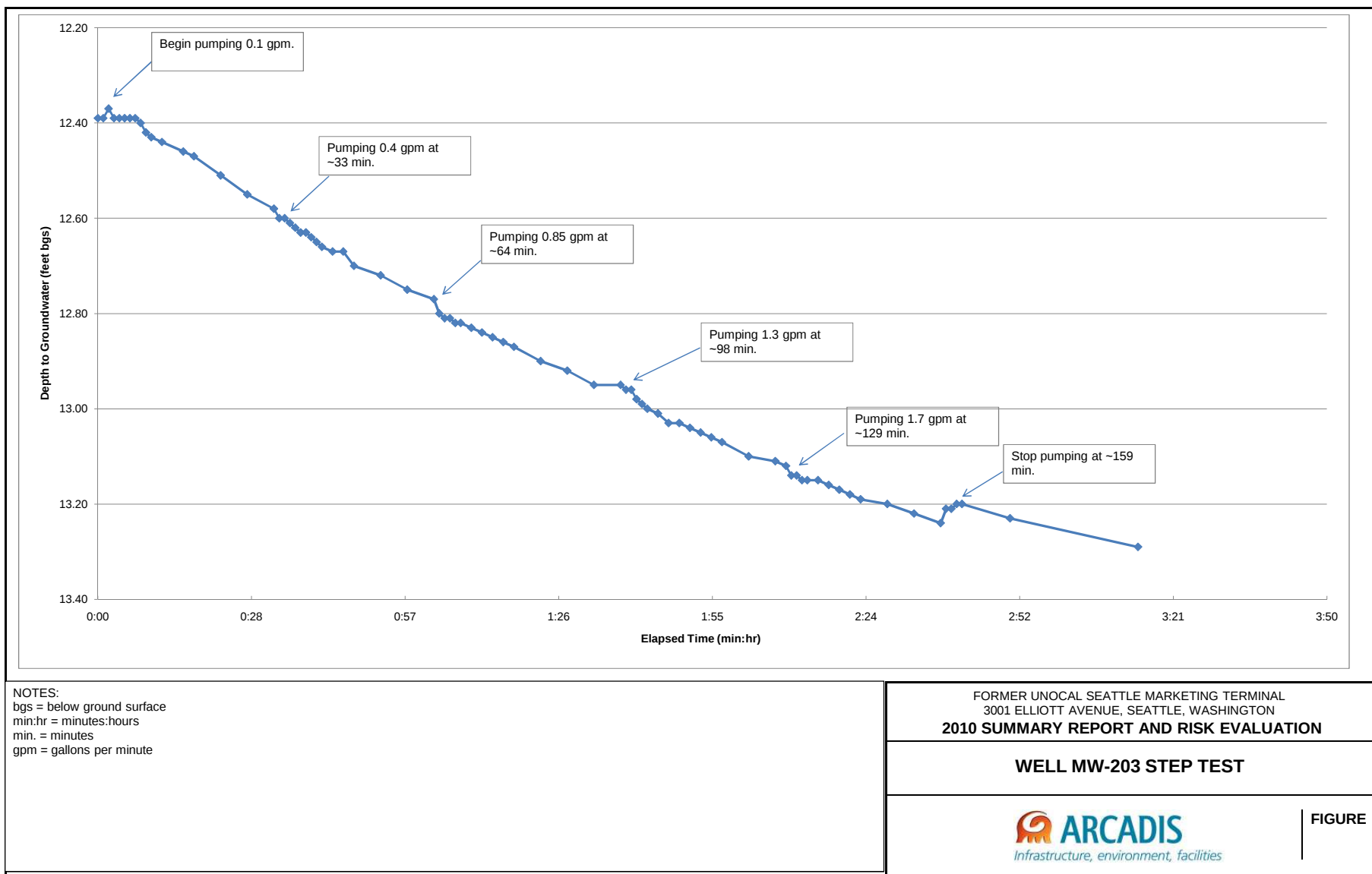
NOTES:  
bgs = below ground surface  
min:hr = minutes:hours  
min. = minutes  
gpm = gallons per minute

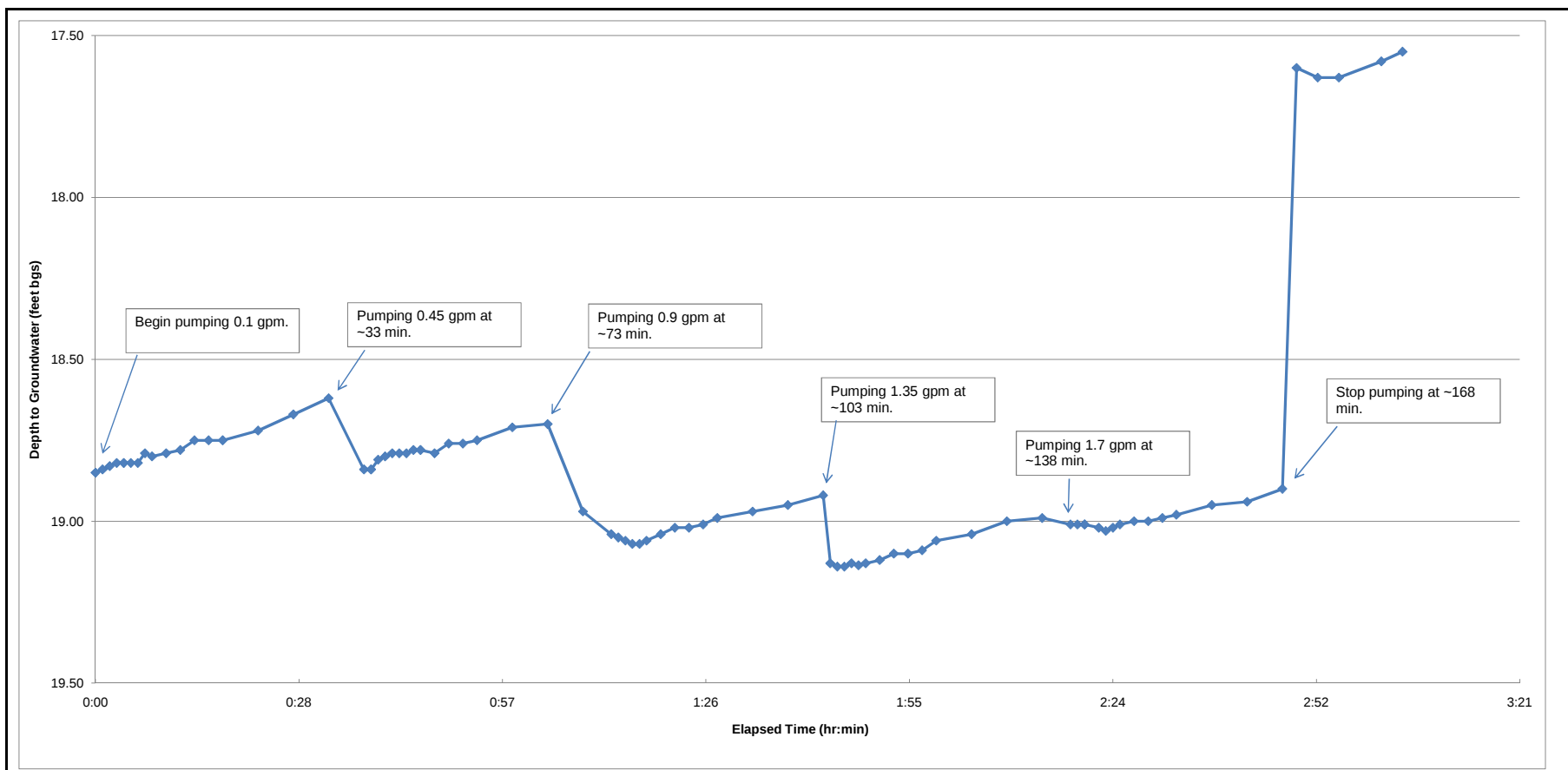
FORMER UNOCAL SEATTLE MARKETING TERMINAL  
3001 ELLIOTT AVENUE, SEATTLE, WASHINGTON  
**2010 SUMMARY REPORT AND RISK EVALUATION**

### WELL MW-61A-R STEP TEST



FIGURE





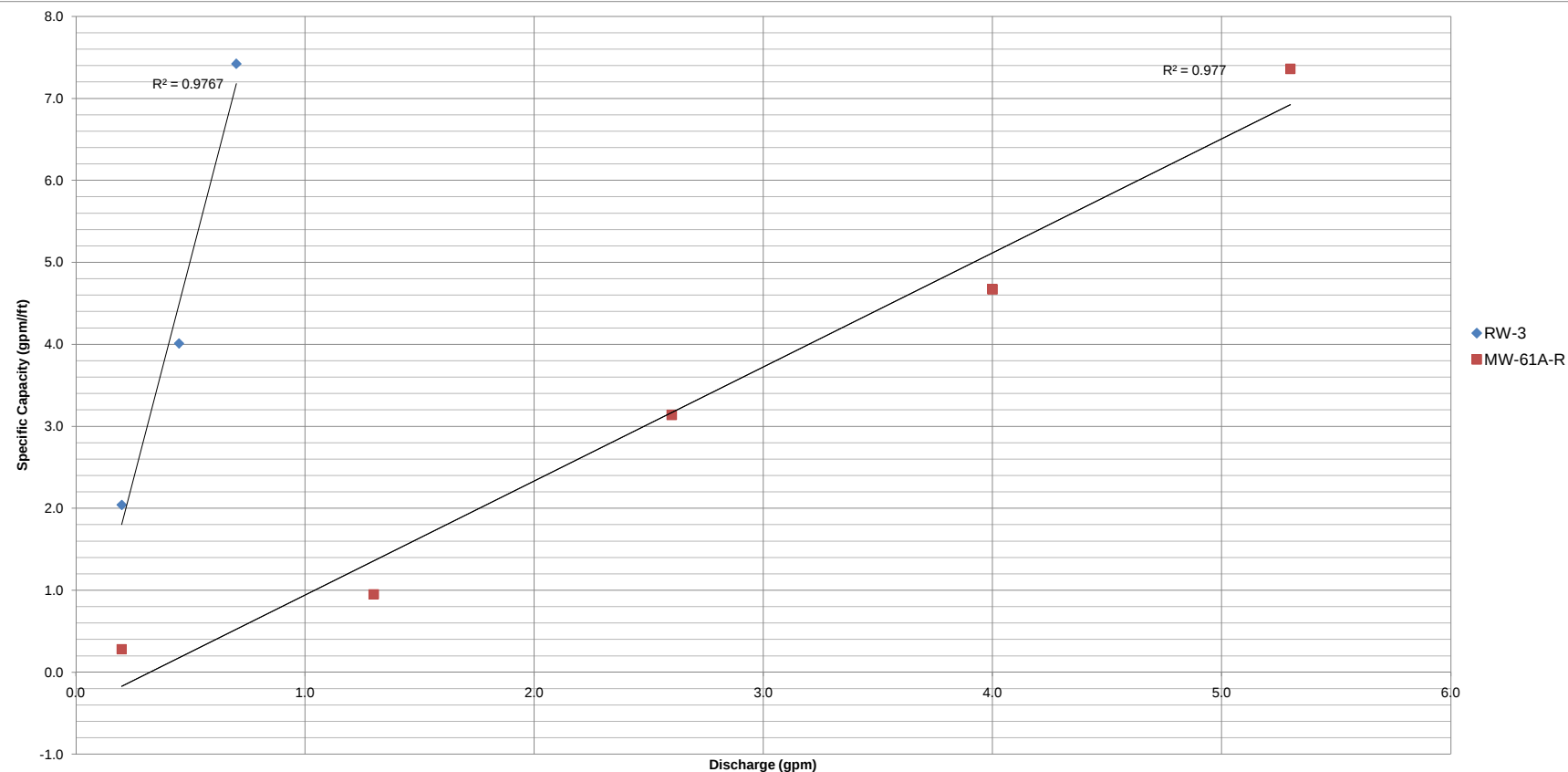
NOTES:  
bgs = below ground surface  
min:hr = minutes:hours  
min. = minutes  
gpm = gallons per minute

FORMER UNOCAL SEATTLE MARKETING TERMINAL  
3001 ELLIOTT AVENUE, SEATTLE, WASHINGTON  
**2010 SUMMARY REPORT AND RISK EVALUATION**

### WELL MW-204 STEP TEST



FIGURE



NOTES:  
 gpm = gallons per minutes  
 gpm/ft = gpm per foot of groundwater drawdown

FORMER UNOCAL SEATTLE MARKETING TERMINAL  
 3001 ELLIOTT AVENUE, SEATTLE, WASHINGTON  
**2010 SUMMARY REPORT AND RISK EVALUATION**

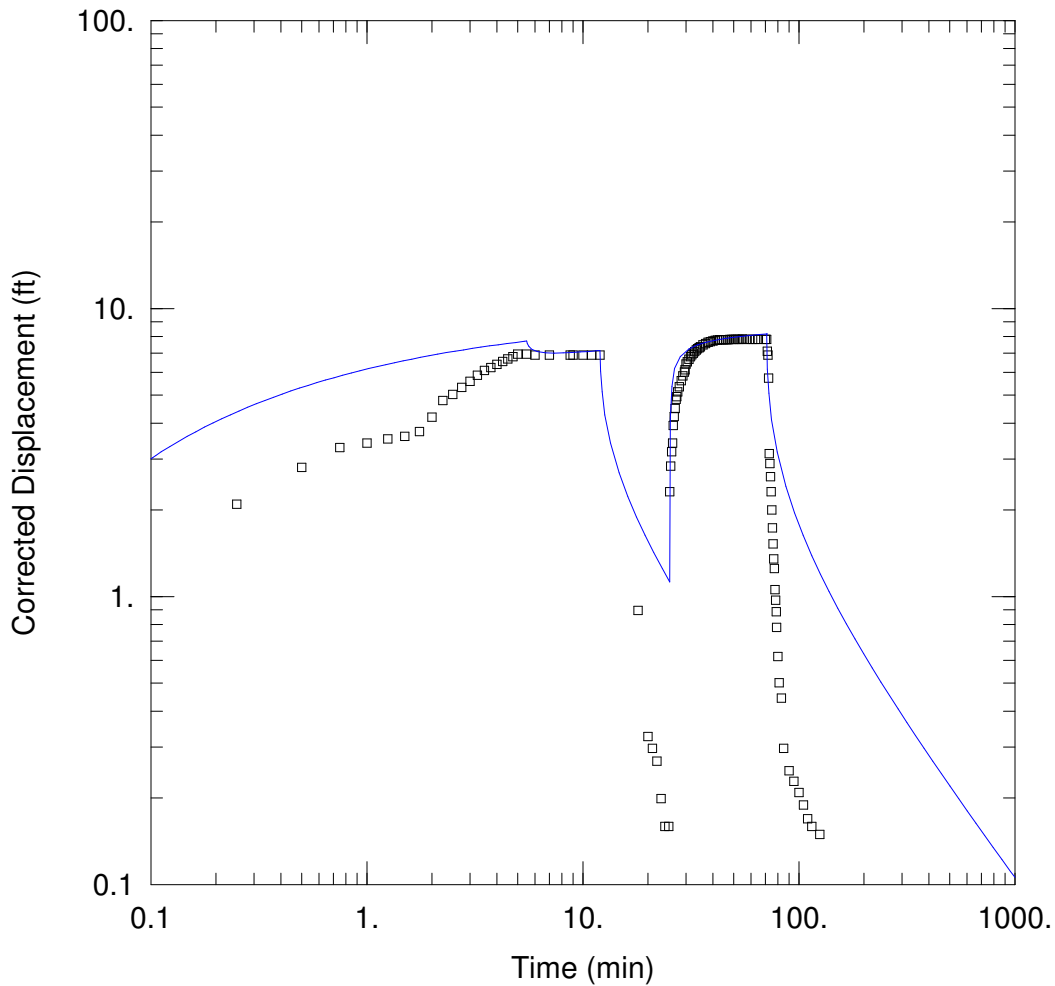
**STEP TEST SPECIFIC CAPACITY VS. DISCHARGE**



FIGURE

**Appendix J**

All AQTESOLV Outputs



### CONSTANT DISCHARGE PUMPING TEST: MW-30

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-30.aqt

Date: 11/02/10

Time: 08:53:59

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-30

Test Date: 08/13/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-30     | 0      | 0.1667 |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-30   | 0      | 0.1667 |

### SOLUTION

Aquifer Model: Unconfined

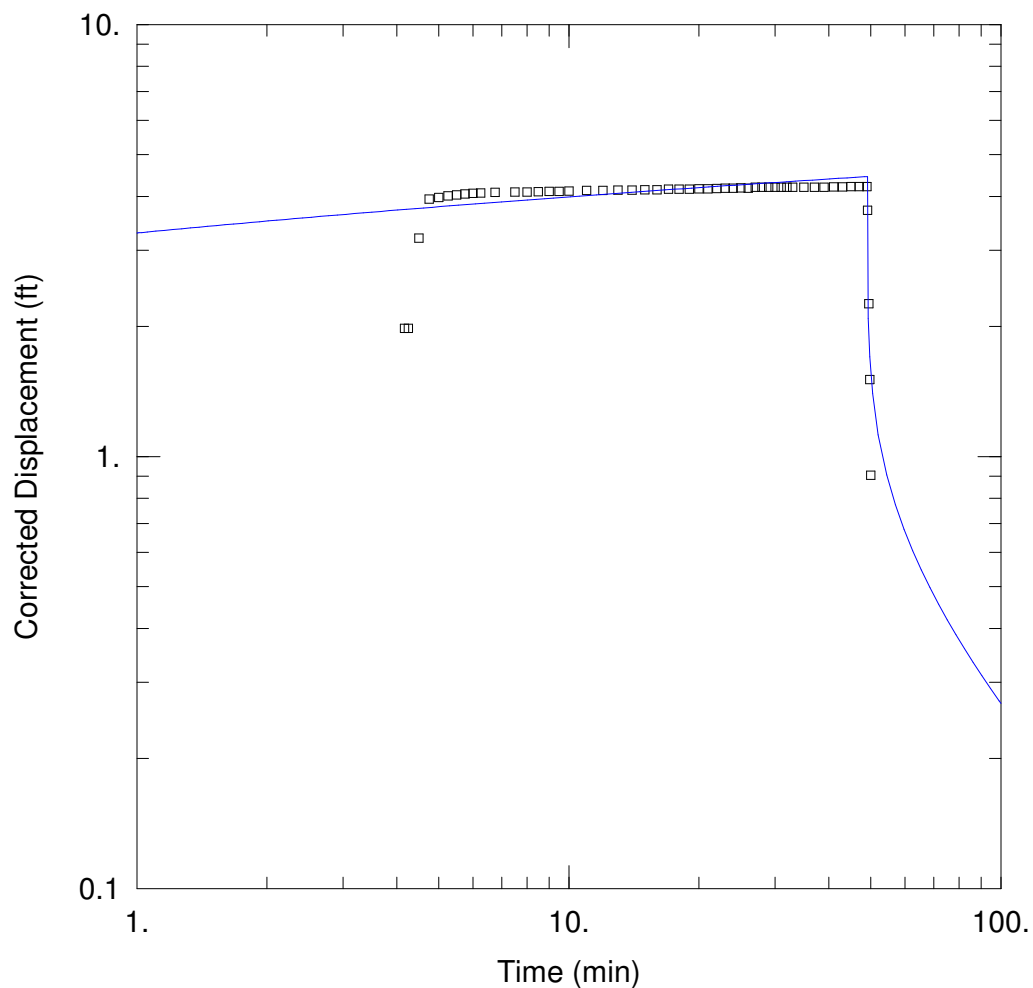
Solution Method: Theis

T = 29. ft<sup>2</sup>/day

S = 0.01

Kz/Kr = 0.1

b = 17.09 ft



### CONSTANT DISCHARGE PUMPING TEST: MW-61AR

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-61AR.aqt

Date: 11/02/10

Time: 08:53:40

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-61AR

Test Date: 08/13/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-61AR   | 0      | 0.0833 |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-61AR | 0      | 0.0833 |

### SOLUTION

Aquifer Model: Unconfined

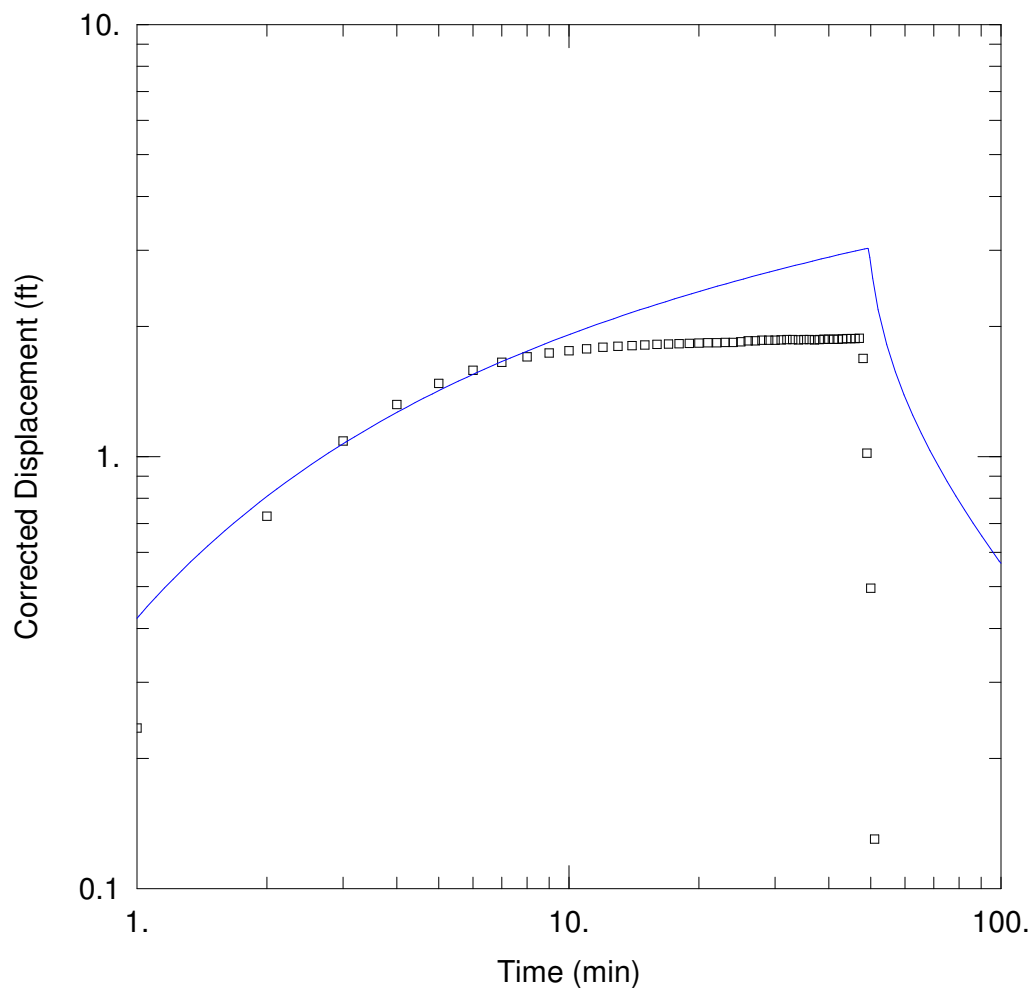
Solution Method: Theis

T = 161. ft<sup>2</sup>/day

S = 0.0004

Kz/Kr = 0.1

b = 17.33 ft



### PZ-61AR RESPONSE TO CONSTANT DISCHARGE PUMPING TEST AT MW-61AR

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\PZ-61AR during MW-61AR.aqt

Date: 11/02/10

Time: 08:57:37

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-61AR

Test Date: 08/13/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-61AR   | 0      | 0      |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ PZ-61AR | 0      | 3.4    |

### SOLUTION

Aquifer Model: Unconfined

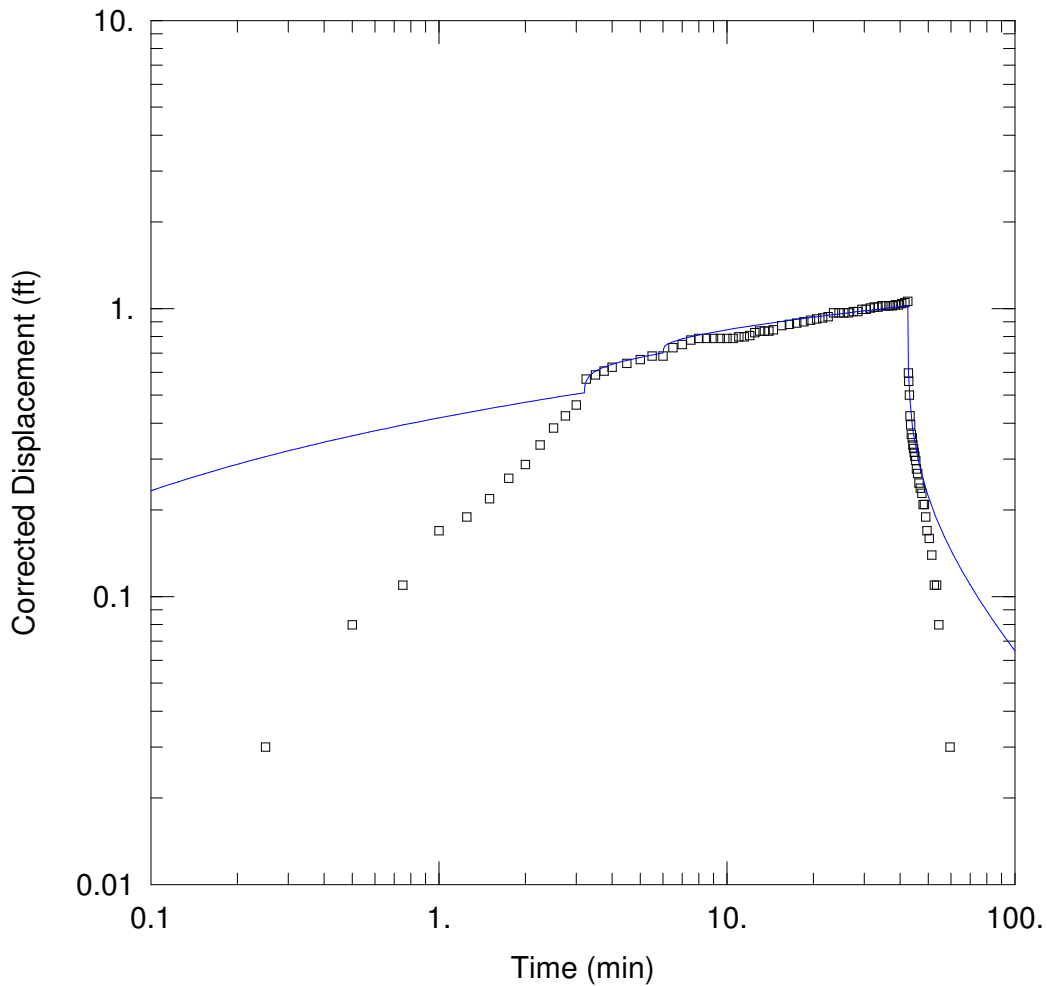
Solution Method: Theis

T = 75. ft<sup>2</sup>/day

S = 0.01

Kz/Kr = 0.1

b = 17.33 ft



### CONSTANT DISCHARGE PUMPING TEST: MW-200

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-200.aqt

Date: 11/02/10

Time: 09:00:16

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-200

Test Date: 09/14/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-200    | 0      | 0.0833 |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-200  | 0      | 0.0833 |

### SOLUTION

Aquifer Model: Unconfined

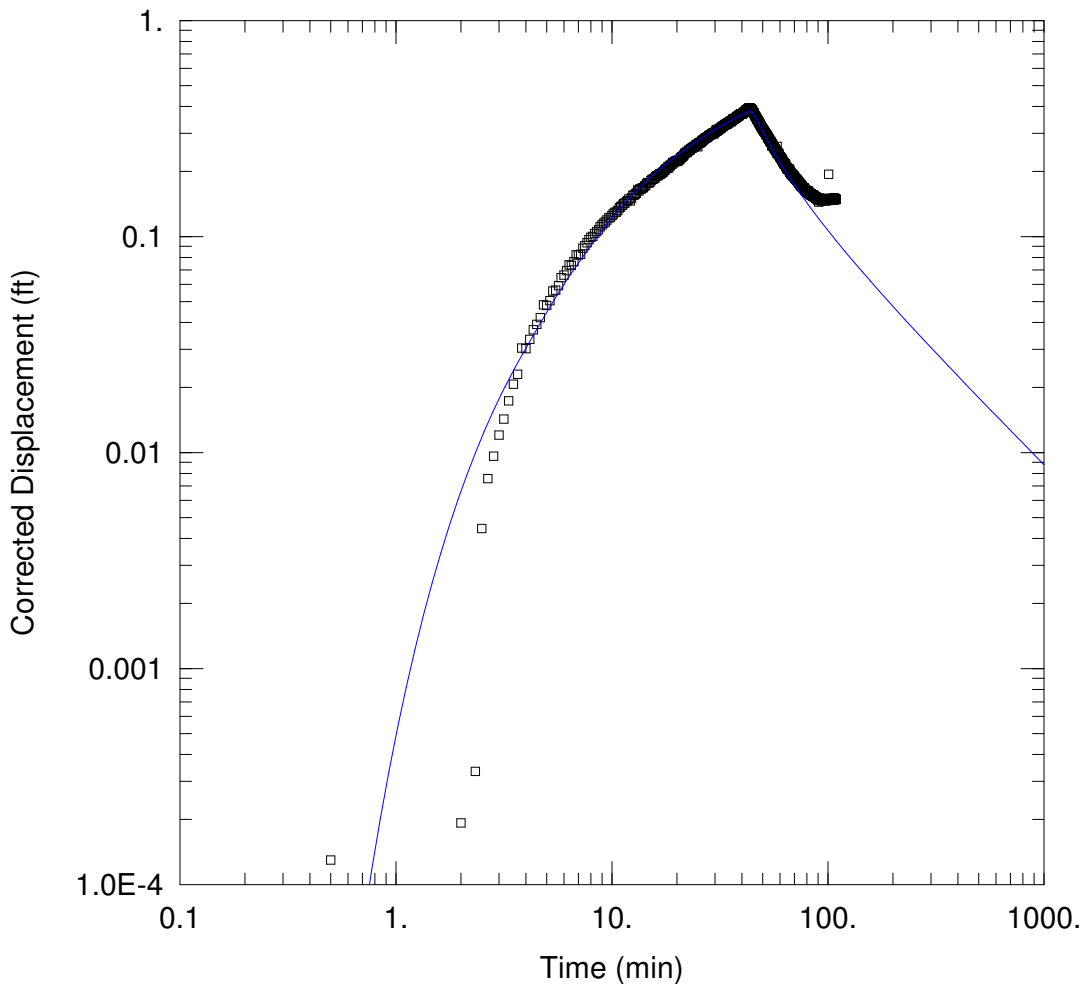
Solution Method: Theis

T = 573. ft<sup>2</sup>/day

S = 0.05

Kz/Kr = 0.1

b = 14.6 ft



#### MW-201 RESPONSE TO CONSTANT DISCHARGE PUMPING TEST AT MW-200

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-201 during MW-200.aqt

Date: 11/02/10

Time: 09:00:01

#### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-200

Test Date: 09/14/2010

#### WELL DATA

##### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-200    | 0      | 0      |

##### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-201  | 0      | 25     |

#### SOLUTION

Aquifer Model: Unconfined

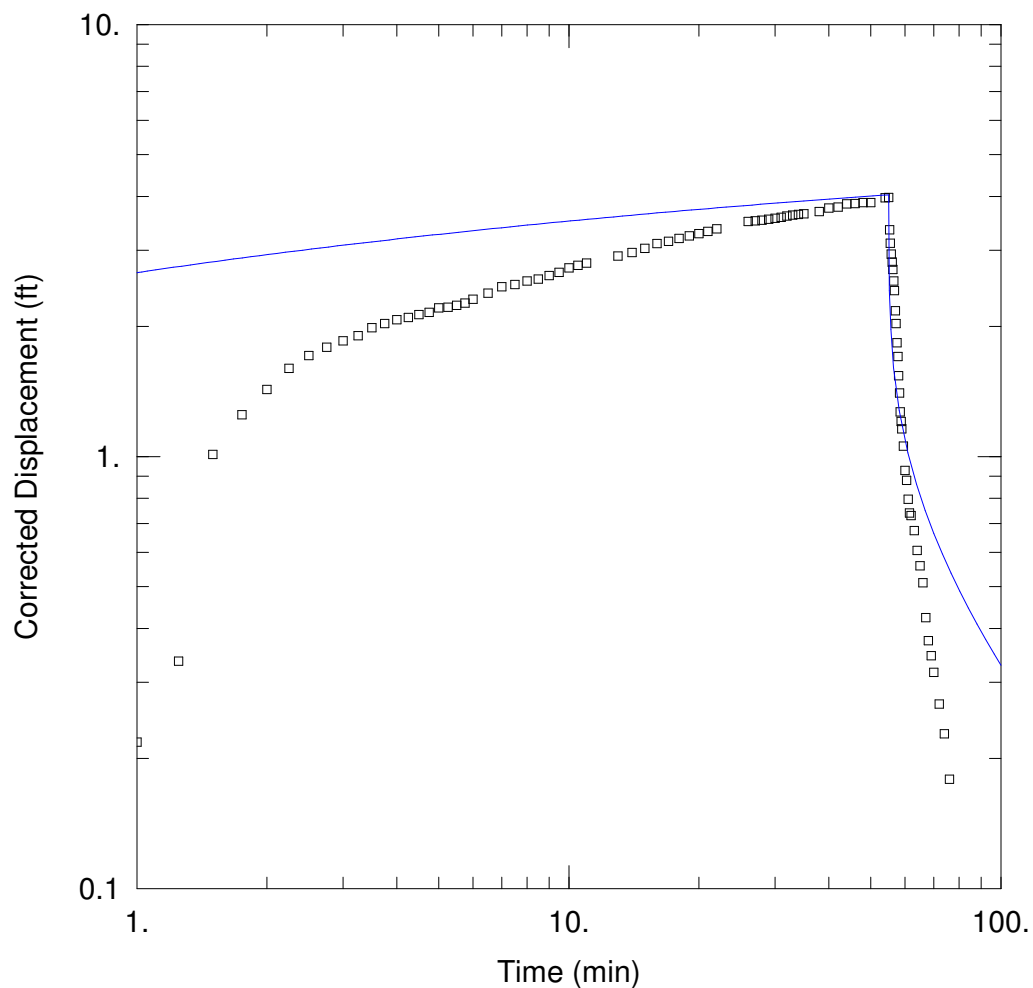
Solution Method: Theis

T = 329. ft<sup>2</sup>/day

S = 0.006

Kz/Kr = 0.1

b = 14.6 ft



### CONSTANT DISCHARGE PUMPING TEST: MW-201

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-201.aqt

Date: 11/02/10

Time: 08:59:45

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-201

Test Date: 09/15/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-201    | 0      | 0.0833 |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-201  | 0      | 0.0833 |

### SOLUTION

Aquifer Model: Unconfined

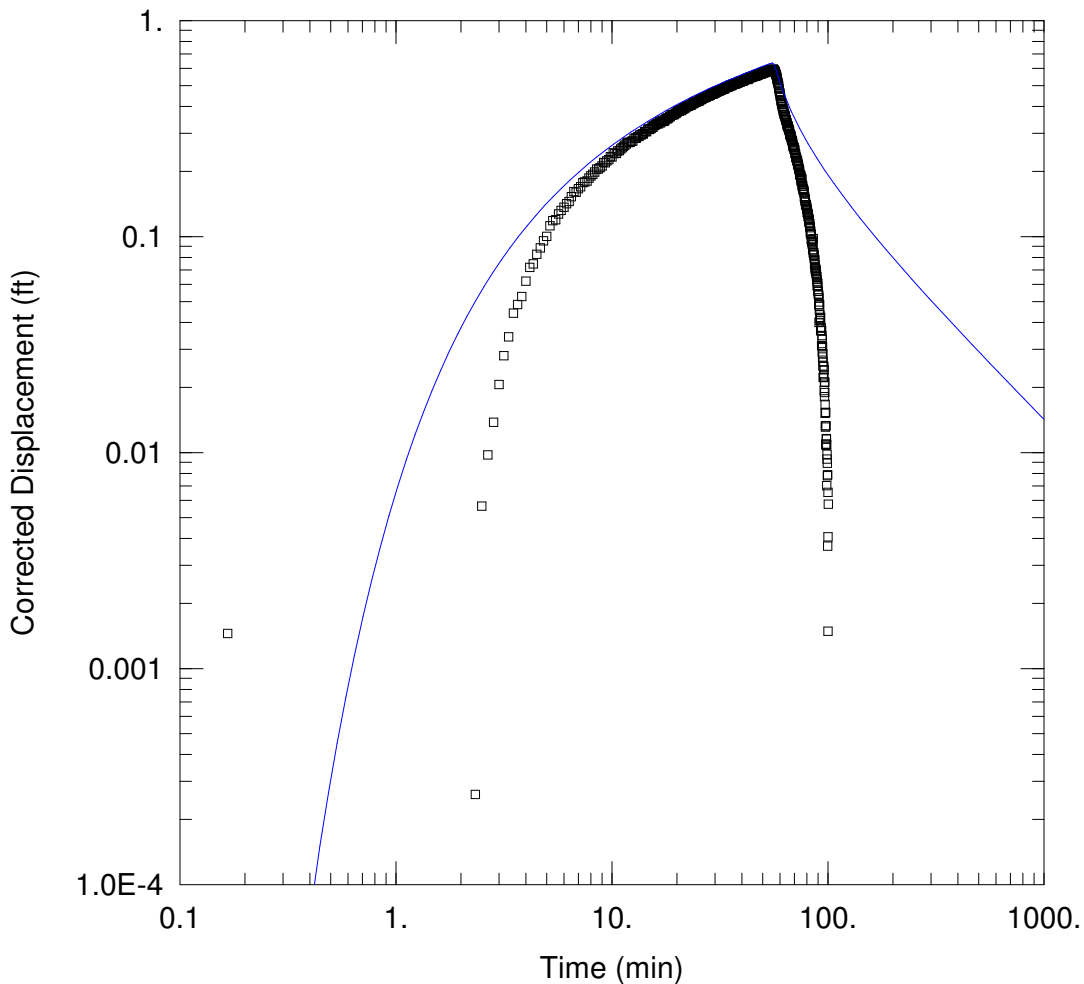
Solution Method: Theis

T = 253. ft<sup>2</sup>/day

S = 0.01

Kz/Kr = 0.01

b = 14.3 ft



### MW-200 RESPONSE TO CONSTANT DISCHARGE PUMPING TEST AT MW-201

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-200 during MW-201.aqt

Date: 11/02/10

Time: 08:53:31

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-201

Test Date: 09/15/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-201    | 0      | 0      |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-200  | 0      | 25     |

### SOLUTION

Aquifer Model: Unconfined

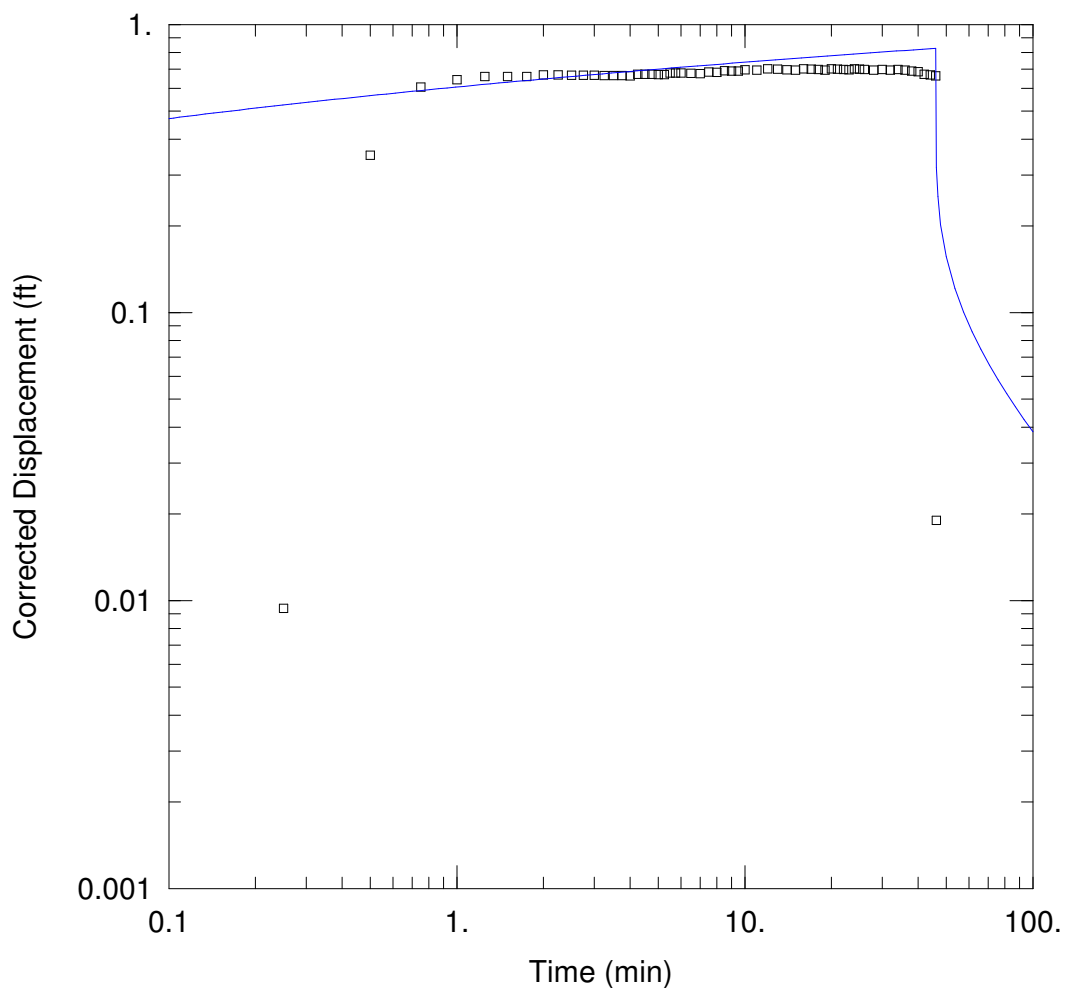
Solution Method: Theis

T = 363. ft<sup>2</sup>/day

S = 0.004

Kz/Kr = 0.1

b = 14.3 ft



### CONSTANT DISCHARGE PUMPING TEST: MW-202

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-202.aqt

Date: 11/02/10

Time: 08:59:34

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-202

Test Date: 09/17/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-202    | 0      | 0.833  |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-202  | 0      | 0.833  |

### SOLUTION

Aquifer Model: Unconfined

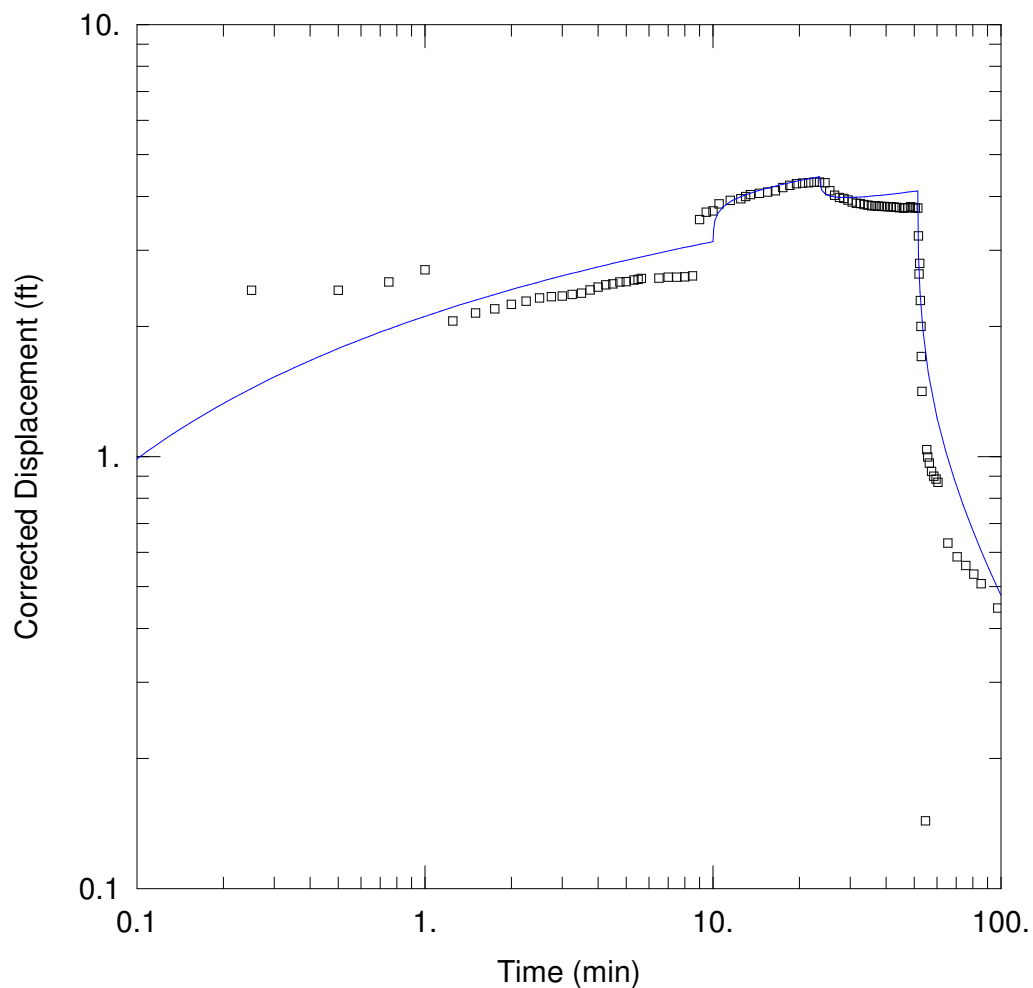
Solution Method: Theis

T = 1271. ft<sup>2</sup>/day

S = 0.0008

Kz/Kr = 0.1

b = 8.97 ft



### CONSTANT DISCHARGE PUMPING TEST: MW-204

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-204.aqt

Date: 11/02/10

Time: 14:22:13

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-204

Test Date: 08/12/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-204    | 0      | 0.0833 |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-204  | 0      | 0.0833 |

### SOLUTION

Aquifer Model: Unconfined

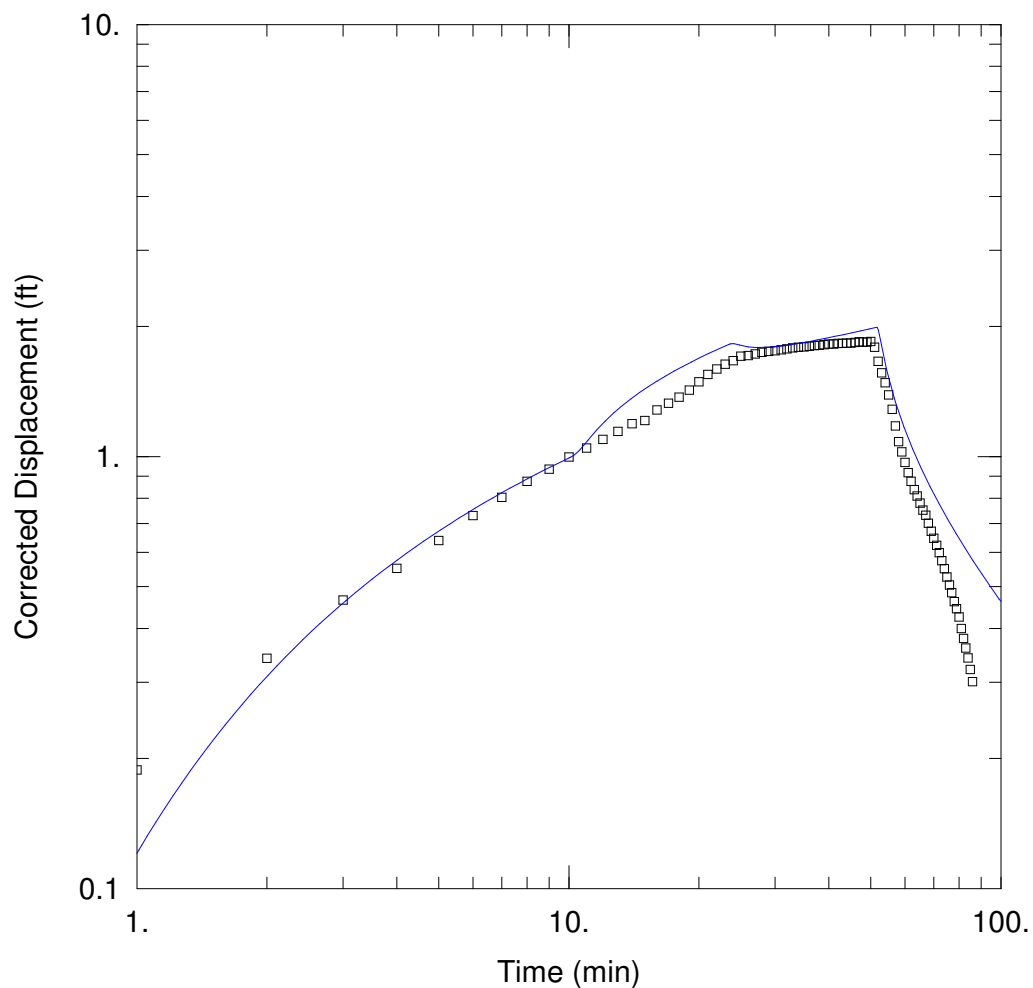
Solution Method: Theis

T = 105. ft<sup>2</sup>/day

S = 0.05

Kz/Kr = 0.1

b = 13.02 ft



### PZ-204 RESPONSE TO CONSTANT DISCHARGE PUMPING TEST AT MW-204

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\PZ-204 during MW-204.aqt

Date: 11/02/10

Time: 14:21:53

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-204

Test Date: 08/12/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-204    | 0      | 0      |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ PZ-204  | 0      | 4.5    |

### SOLUTION

Aquifer Model: Unconfined

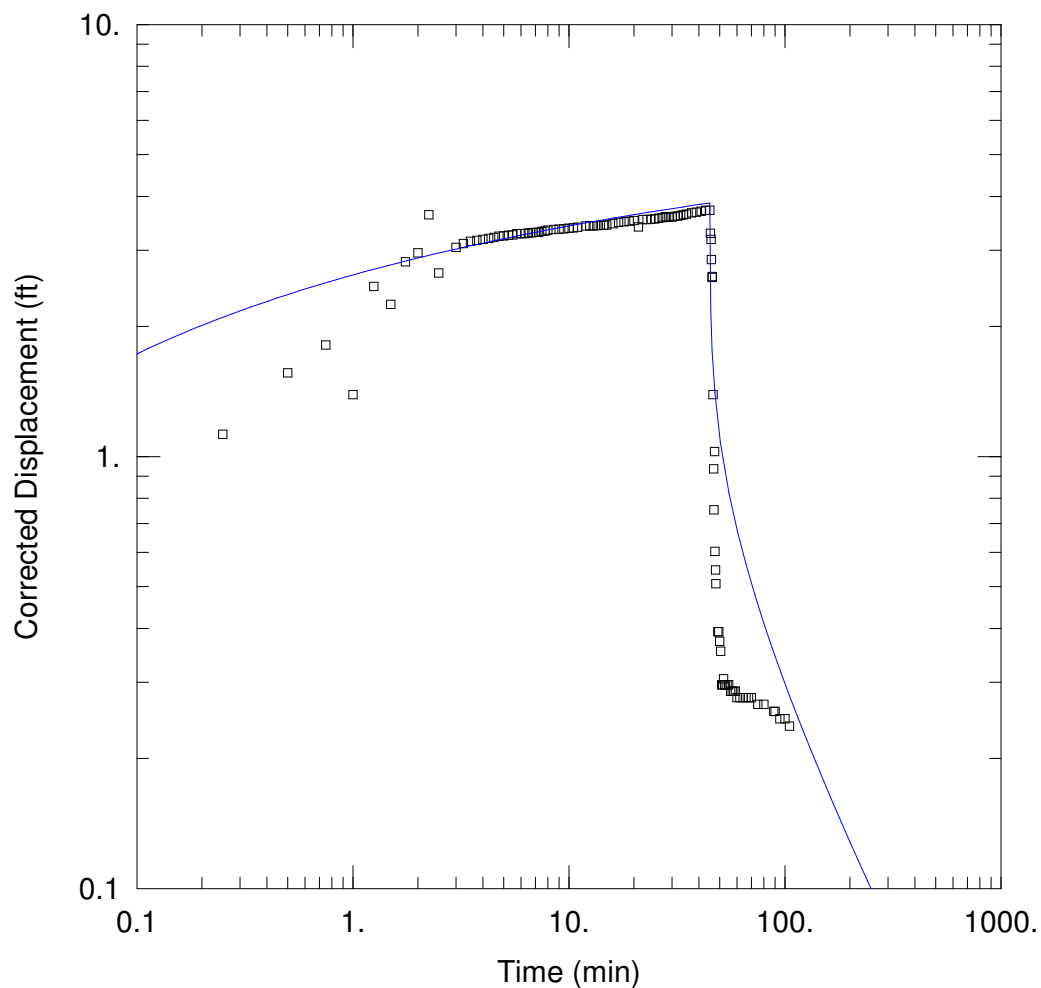
Solution Method: Theis

T = 107. ft<sup>2</sup>/day

S = 0.015

Kz/Kr = 0.1

b = 13.02 ft



### CONSTANT DISCHARGE PUMPING TEST: MW-204

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-204\_2.aqt

Date: 11/02/10

Time: 14:22:04

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-204

Test Date: 09/16/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-204    | 0      | 0.0833 |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-204  | 0      | 0.0833 |

### SOLUTION

Aquifer Model: Unconfined

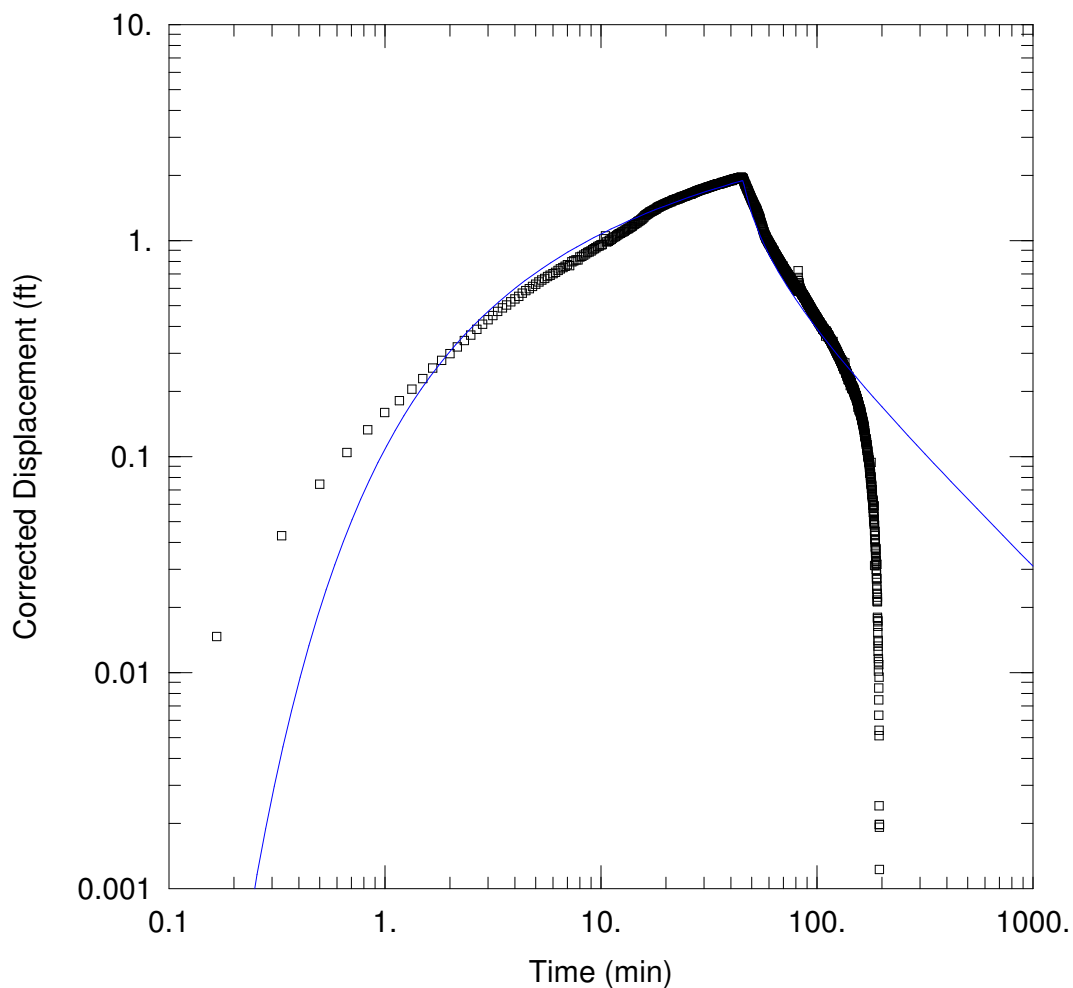
Solution Method: Theis

T = 163. ft<sup>2</sup>/day

S = 0.01

Kz/Kr = 0.1

b = 11.1 ft



### PZ-204 RESPONSE TO CONSTANT DISCHARGE PUMPING TEST AT MW-204

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\PZ-204 during MW-204\_2.aqt

Date: 11/02/10

Time: 14:22:21

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-204

Test Date: 09/16/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-204    | 0      | 0      |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ PZ-204  | 0      | 4.5    |

### SOLUTION

Aquifer Model: Unconfined

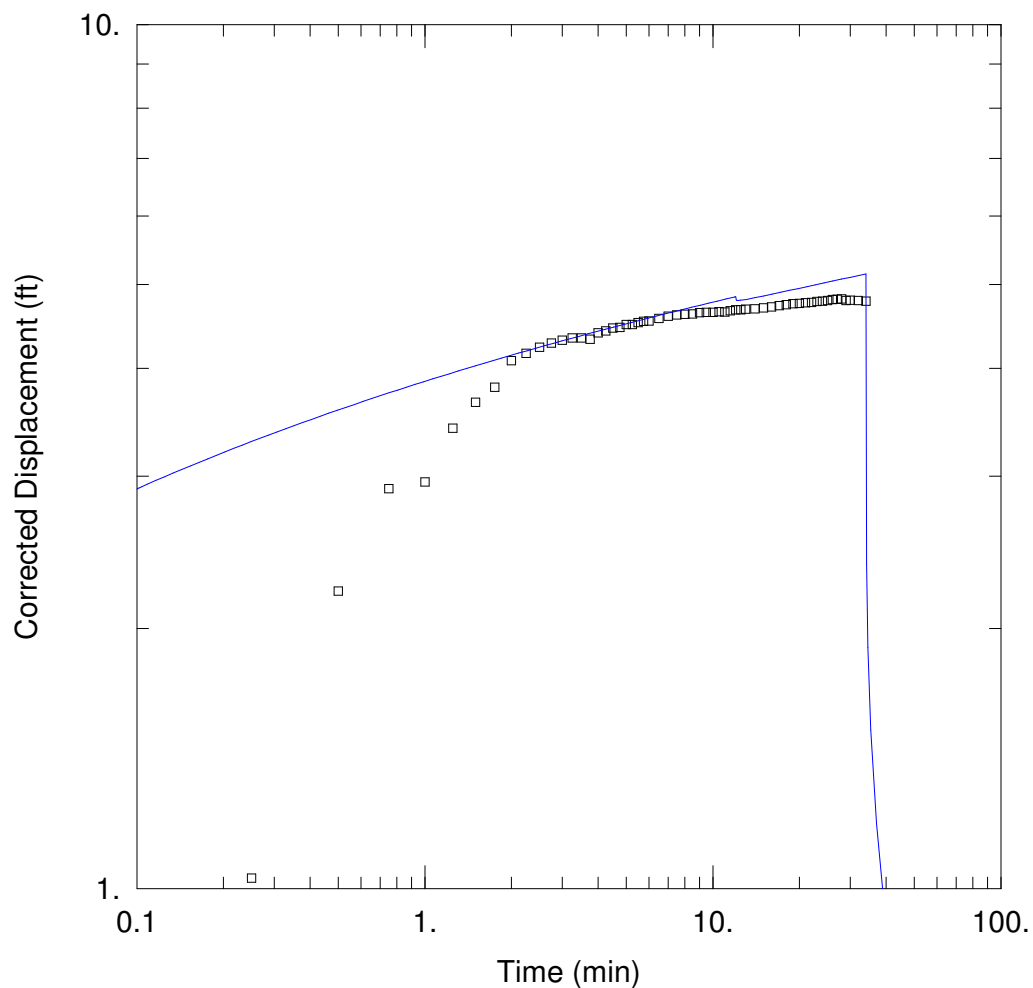
Solution Method: Theis

T = 122. ft<sup>2</sup>/day

S = 0.02

Kz/Kr = 0.1

b = 11.09 ft



### CONSTANT DISCHARGE PUMPING TEST: MW-205

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-205.aqt

Date: 11/02/10

Time: 08:58:09

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-205

Test Date: 09/17/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-205    | 0      | 0.0833 |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-205  | 0      | 0.0833 |

### SOLUTION

Aquifer Model: Unconfined

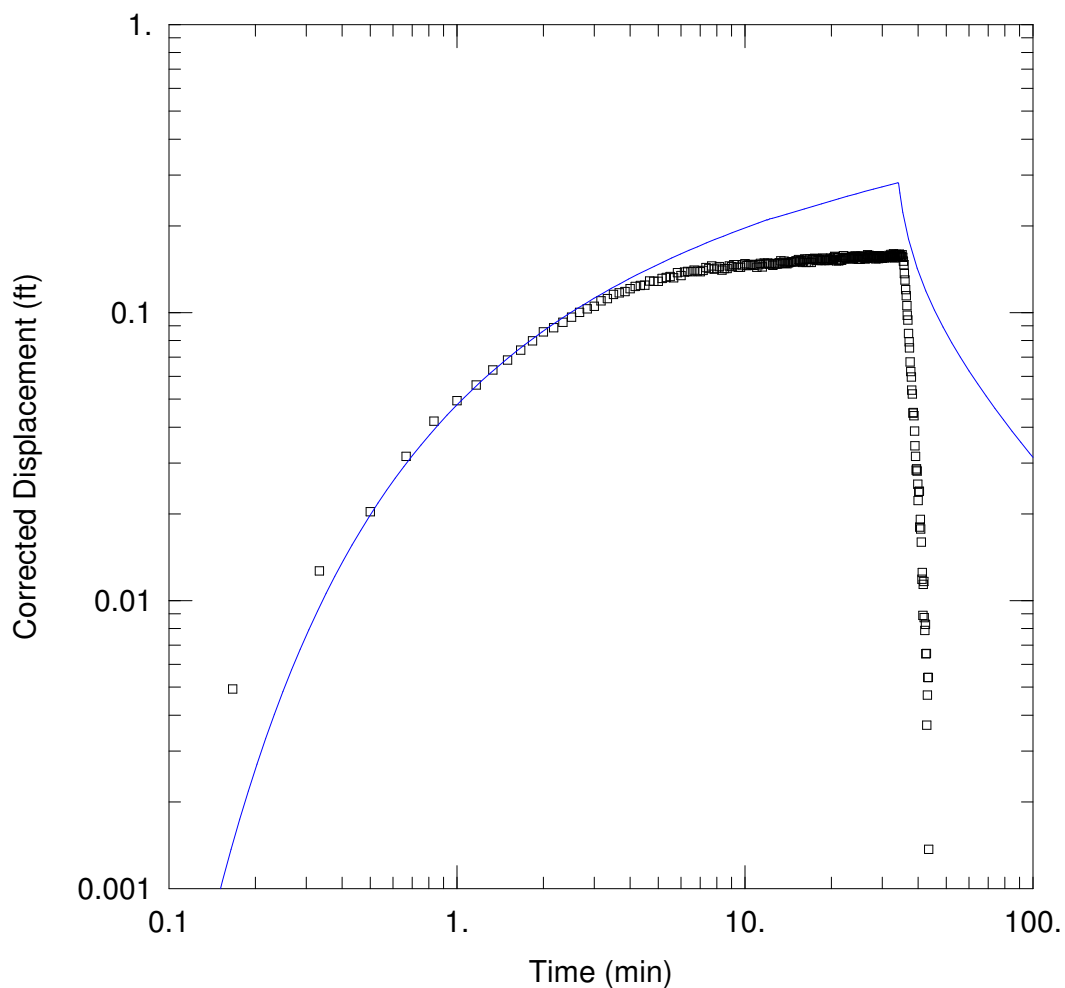
Solution Method: Theis

T = 152. ft<sup>2</sup>/day

S = 0.0004

Kz/Kr = 0.1

b = 23.9 ft



### MW-204 RESPONSE TO CONSTANT DISCHARGE PUMPING TEST AT MW-205

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-204 during MW-205.aqt

Date: 11/02/10

Time: 08:59:25

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-205

Test Date: 09/17/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-205    | 0      | 0      |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-204  | 0      | 32     |

### SOLUTION

Aquifer Model: Unconfined

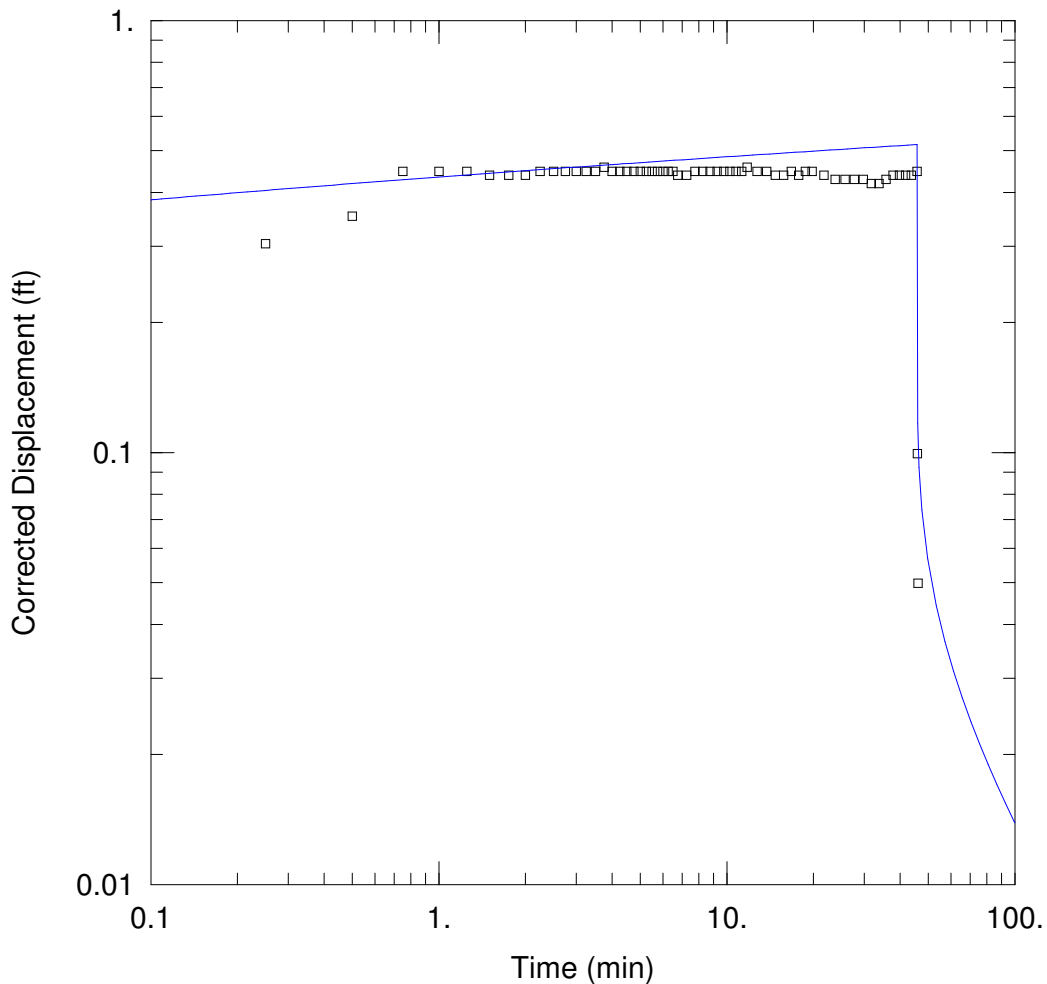
Solution Method: Theis

T = 973. ft<sup>2</sup>/day

S = 0.0012

Kz/Kr = 0.1

b = 23.9 ft



### CONSTANT DISCHARGE PUMPING TEST: MW-206

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-206.aqt

Date: 11/02/10

Time: 08:58:00

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-206

Test Date: 09/17/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-206    | 0      | 0.0833 |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-206  | 0      | 0.0833 |

### SOLUTION

Aquifer Model: Unconfined

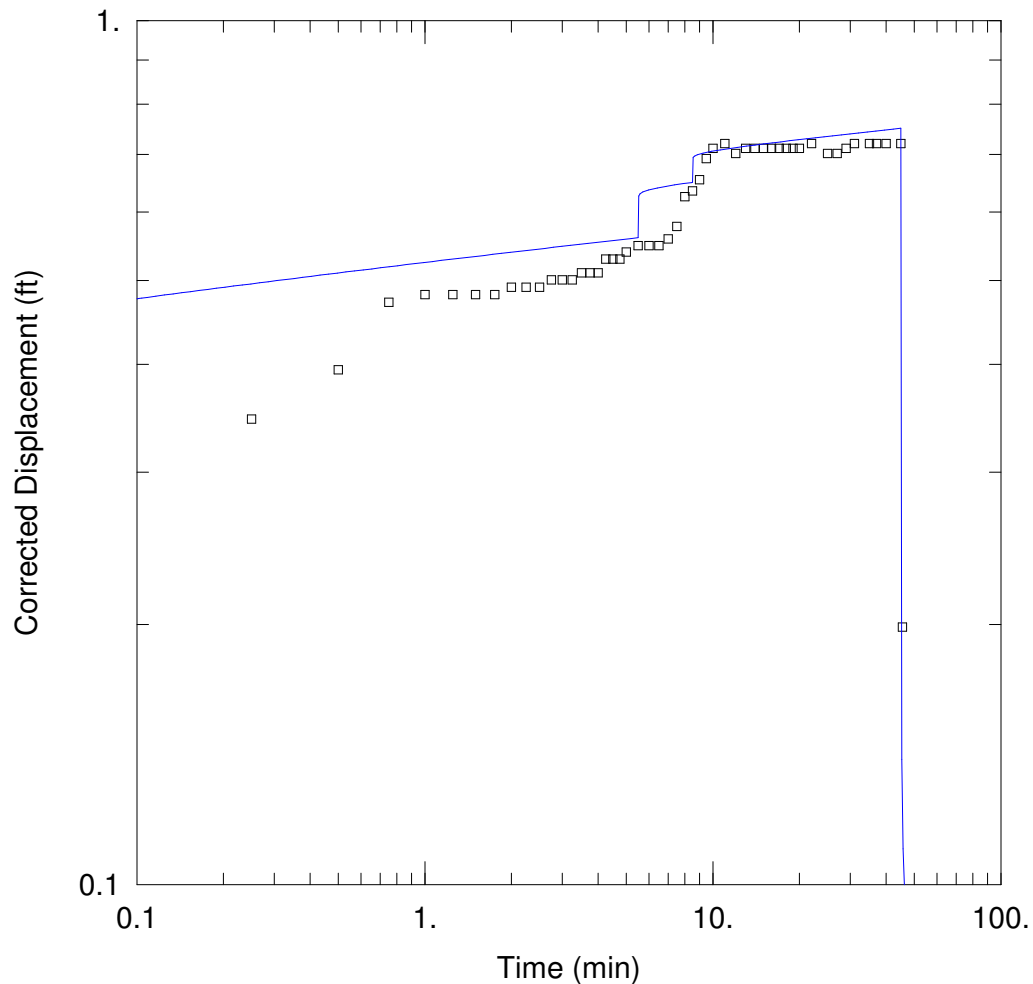
Solution Method: Theis

T = 3709. ft<sup>2</sup>/day

S = 1.577E-7

Kz/Kr = 0.1

b = 8.69 ft



### CONSTANT DISCHARGE PUMPING TEST: MW-207

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\MW-207.aqt

Date: 11/02/10

Time: 08:57:50

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: MW-207

Test Date: 08/16/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| MW-207    | 0      | 0.0833 |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ MW-207  | 0      | 0.0833 |

### SOLUTION

Aquifer Model: Unconfined

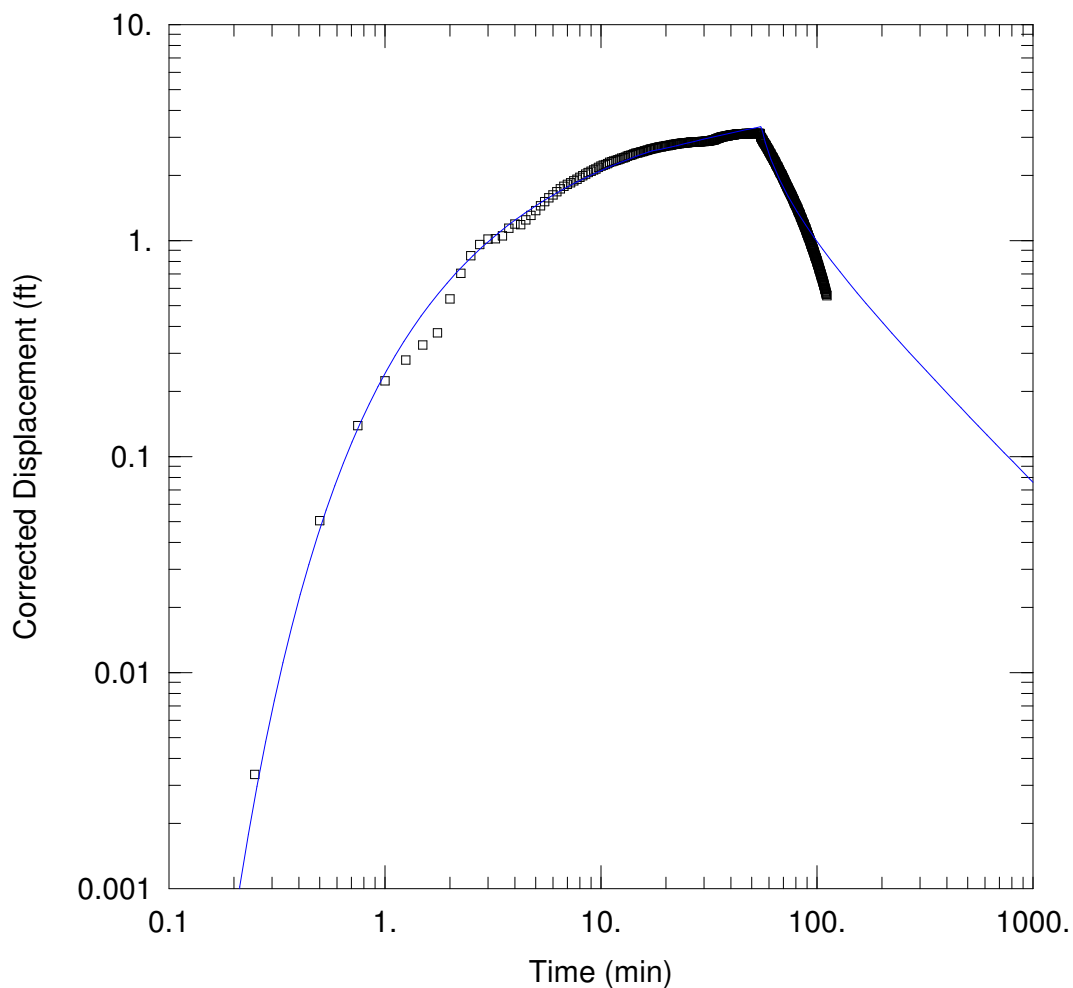
Solution Method: Theis

T = 2815. ft<sup>2</sup>/day

S = 1.498E-9

Kz/Kr = 0.1

b = 14.2 ft



### CONSTANT DISCHARGE PUMPING TEST: RW-3

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\RW-3.aqt

Date: 11/02/10

Time: 08:55:48

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: RW-3

Test Date: 09/02/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| RW-3      | 0      | 0.1667 |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ RW-3    | 0      | 0.1667 |

### SOLUTION

Aquifer Model: Unconfined

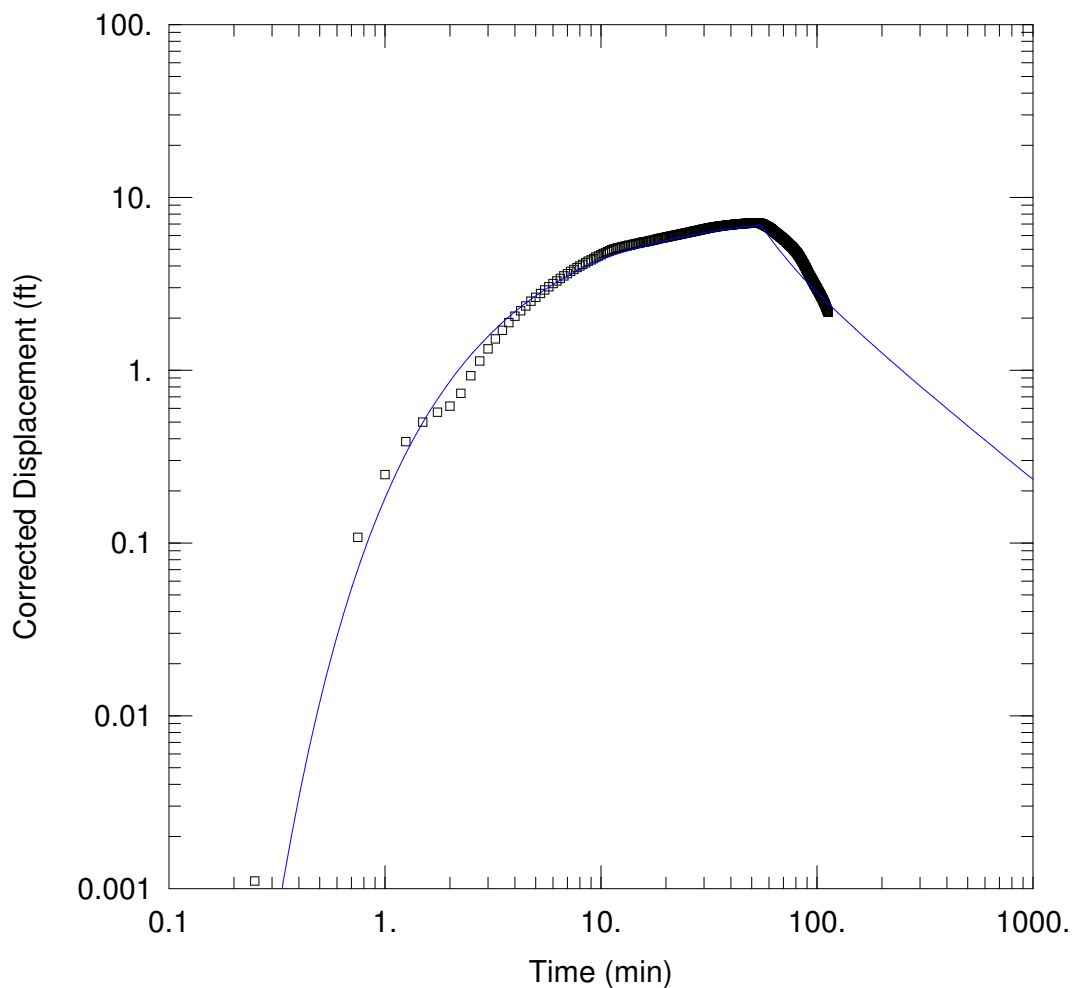
Solution Method: Theis

T = 4.5 ft<sup>2</sup>/day

S = 0.13

Kz/Kr = 0.1

b = 9.18 ft



### CONSTANT DISCHARGE PUMPING TEST: RW-21

Data Set: G:\Common\Aaron Kempf\Chevron\AQTESOLV\RW-21.aqt

Date: 11/02/10

Time: 08:54:19

### PROJECT INFORMATION

Company: ARCADIS

Client: Former Unocal Terminal

Project: RC000699.0048

Location: Seattle, WA

Test Well: RW-21

Test Date: 09/03/2010

### WELL DATA

#### Pumping Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| RW-21     | 0      | 0.1667 |

#### Observation Wells

| Well Name | X (ft) | Y (ft) |
|-----------|--------|--------|
| □ RW-21   | 0      | 0.1667 |

### SOLUTION

Aquifer Model: Unconfined

Solution Method: Theis

T = 4. ft<sup>2</sup>/day

S = 0.22

Kz/Kr = 0.1

b = 14.45 ft