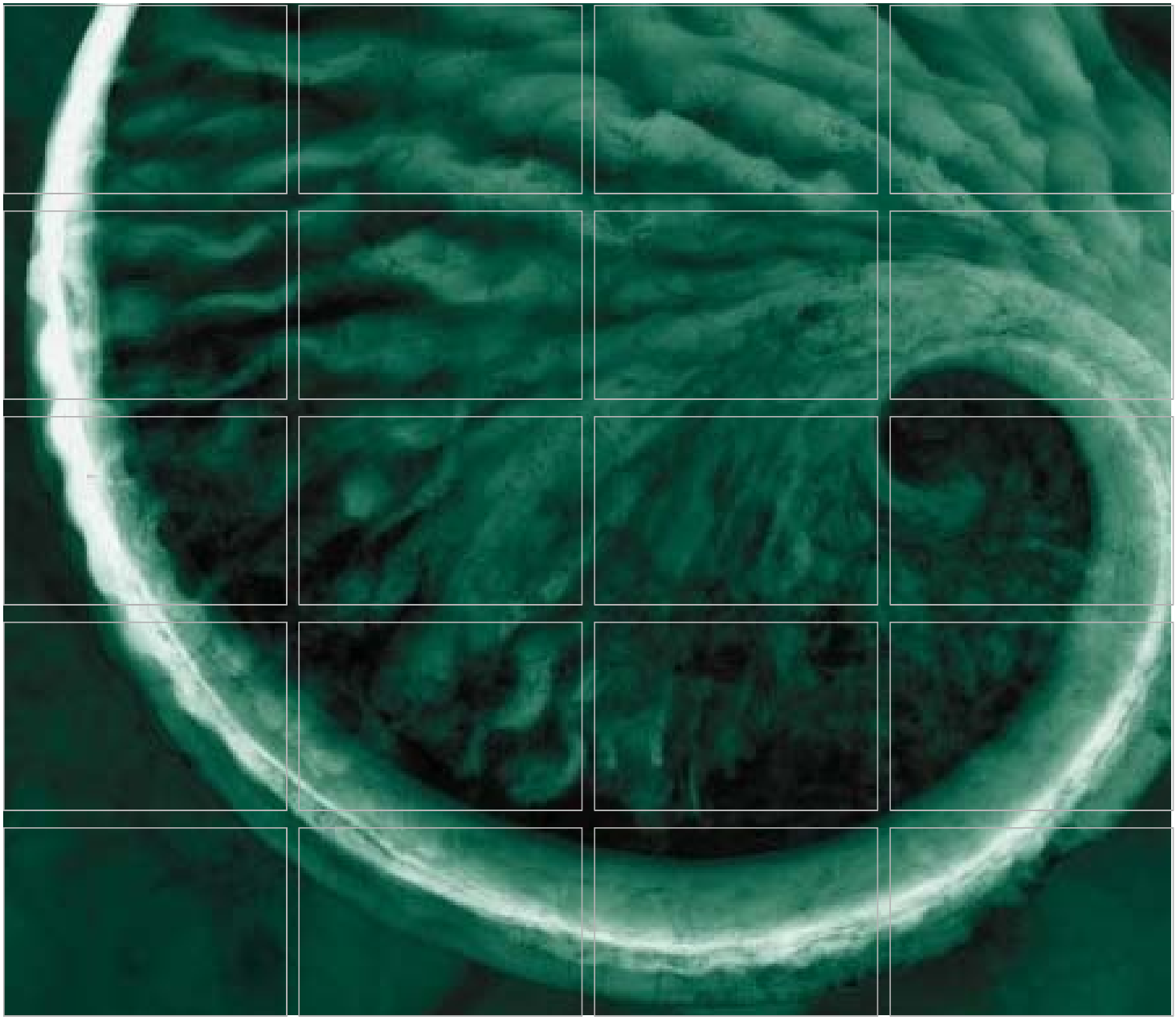

Final Aquifer Testing Program Report

52nd Street Superfund Site Operable Unit 3
Phoenix, Arizona

March 2013

Prepared for:
Motorola 52nd Street
Superfund Site
Operable Unit 3
Working Group

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Superfund Site Operable Unit 3
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Project No. 96498

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LIST OF ACRONYMS AND ABBREVIATIONS

µg/L	Microgram(s) per liter
ADEQ	Arizona Department of Environmental Quality
AWQS	Aquifer Water Quality Standard (Arizona)
bgs	below ground surface
CSM	Conceptual Site Model
D	Deep Zone
DTW	depth-to-water
ERM	Environmental Resources Management
ft	feet
ft/day	feet per day
ft^2/day	square feet per day
ft^2/min	square feet per minute
gpm	gallons per minute
L-SRG	Lower Salt River Gravels Sub-unit
M	First Intermediate Zone
M2	Second Intermediate Zone
OU	Operable Unit
psi	pound(s) per square inch
PVC	Polyvinyl chloride
S	Shallow Zone
SRG	Salt River Gravels
U-SRG	Upper Salt River Gravels Sub-unit
US EPA	United States Environmental Protection Agency

1.0 INTRODUCTION

This report summarizes the aquifer testing activities performed in September and November 2011 at the Motorola 52nd Street Superfund Site – Operable Unit (OU) 3 in Phoenix, Arizona.

Field activities were performed in accordance with the August 2010 *Final OU3 Remedial Investigation Feasibility Study Work Plan*, approved by the United States Environmental Protection Agency (US EPA) on 15 July 2010 (Environmental Resources Management [ERM] 2010a), and the *Technical Memorandum No. 3 – Aquifer Test Work Plan* (ERM 2011), approved by the US EPA on 21 July 2011 (collectively referred to as the Work Plans).

The Work Plans were developed in accordance with the requirements set forth in the Administrative Order on Consent (US EPA 2010), entered into between the OU3 Working Group (Working Group)—which is comprised of Honeywell International, Inc. (Honeywell) and Arizona Public Service Company, a subsidiary of Pinnacle West—and the US EPA, Docket No. 2008-17, with an effective date of 23 September 2009.

1.1 SITE LOCATION

Figure 1 provides a site location map of the Motorola 52nd Street Superfund Site OUs. The Motorola 52nd Street Superfund Site covers approximately 7,800 acres and consists of three adjoining groundwater OUs described as follows:

OU1, covering approximately 1,000 acres, is the easternmost OU and contains the former Motorola 52nd Street semiconductor plant. The boundaries of OU1 are 52nd Street to the east, Palm Lane to the north, Roosevelt Street to the south, and 44th Street to the west.

OU2, covering approximately 3,800 acres, lies west of OU1 and contains the OU2 Groundwater Extraction System and several OU2 potentially responsible party facilities, including the Honeywell 34th Street facility. The approximate boundaries of OU2 are Roosevelt Street to the north, 44th Street to the east, Buckeye Road to the south, and 18th Street to the west. The OU2 Groundwater Extraction System is located along 20th Street.

OU3, covering approximately 3,000 acres, lies west of OU2. The boundaries of OU3 are McDowell Road to the north, 20th Street to the east, Buckeye Road to the south, and 7th Avenue to the west.

The Arizona Department of Environmental Quality (ADEQ) is the lead regulatory agency for OU1 and OU2, and the US EPA is the lead regulatory agency for OU3.

1.2 *OU3 HYDROGEOLOGY*

OU3 groundwater occurs primarily within the unconsolidated regional upper alluvial aquifer. Groundwater within the alluvial aquifer flows toward the west and southwest (Shaw 2009). Four hydrostratigraphic zones (Shallow [S], First Intermediate [M], Second Intermediate [M2], and Deep [D]) were originally designated in OU3 (US EPA 2009).

Following the agreement with ADEQ and US EPA during a technical working group meeting in January 2011, the hydrostratigraphic nomenclature for OU3 was revised to be more consistent with OU1 and OU2 and the overall Motorola 52nd Street Superfund Site. The former S, M, and M2 zones correlate to the Salt River Gravels (SRG) Sub-unit, which was further divided into the Upper SRG Sub-unit (U-SRG) and the Lower SRG Sub-unit (L-SRG). The former D zone correlates to the Basin Fill Sub-unit. Table 1 provides a description, including lithology, of these hydrostratigraphic zones.

Table 1 OU3 Hydrostratigraphic Zones

Aquifer Unit	Original Hydrostratigraphic Zone	Revised Hydrostratigraphic Zone	Description
Upper Alluvial Aquifer	Shallow Zone (S)	Upper Salt River Gravels Sub-unit	Coarse-grained Salt River gravels, including minor amounts of interbedded and laterally discontinuous fine-grained deposits.
	First Intermediate Zone (M)	Lower Salt River Gravels Sub-unit	Coarse-grained deposits dominated by gravel similar to Salt River gravels. Base of zone commonly includes a fine-grained layer.
	Second Intermediate Zone (M2)	Lower Salt River Gravels Sub-unit	Coarse-grained deposits dominated by gravel similar to Salt River gravels.
Middle Alluvial Aquifer	Deep Zone (D)	Basin Fill Sub-unit	Basin fill deposits consisting of an upper fine-grained layer with an underlying interval of interbedded fines and sand.

Based on data gathered during the drilling of the Phase III monitoring wells and the aquifer test wells, it appears that discontinuous fine-grained layers are present within OU3 that may have the ability to influence groundwater flow and could create a "localized semi-confined" condition in the areas where they are present. An updated Conceptual Site Model (CSM) reflecting these laterally discontinuous fine-grained layers is presented as Figure 3.

1.3 *PURPOSE AND BACKGROUND*

The aquifer testing program was conducted to estimate the hydraulic parameters of the U-SRG and L-SRG hydrostratigraphic zones identified in OU3. These hydraulic parameters are necessary to augment the limited data available for the U-SRG and L-SRG and provide estimates of hydraulic conductivity, storage coefficient, and transmissivity that will be used in the Feasibility Study to evaluate remedial alternatives for groundwater.

The aquifer testing program included the following activities:

- Installation of aquifer test well OU3-AT to refine the CSM at the constant-rate discharge test location and analyze the differences in the hydraulic parameters of the U-SRG and L-SRG;
- Slug testing of wells screened in both the U-SRG and L-SRG; and
- Constant-rate discharge testing by pumping of wells OU3-5SR and OU3-AT-M2 in the U-SRG and L-SRG. The purpose of these tests was to calculate hydraulic parameters averaged over a pumping-induced cone of depression created in the U-SRG and L-SRG.

1.4 *CONSTANT-RATE DISCHARGE TEST MONITORING WELL LOCATION*

The Work Plans stipulated that well OU3-AT be installed near groundwater monitoring wells OU3-5SR, OU3-5MR, and OU3-5M2, which are screened within the SRG Sub-unit of the upper alluvial aquifer. This location was selected based upon its proximity to several existing groundwater monitoring wells that could be used to monitor the aquifer discharge tests.

Well OU3-AT was installed within 40 to 80 feet (ft) of the selected wells to allow for the collection of groundwater elevation data during the constant-rate discharge tests. Figure 2 shows the aquifer test well locations and Figure 3 provides the CSM used for the constant-rate discharge tests. Well OU3-AT was installed in the City of Phoenix (City) right-of-way.

1.5 SLUG TEST LOCATIONS

Table 2 lists the wells included in the slug testing program.

Table 2 Wells Selected for Slug Testing

Testing in U-SRG		
EW-20S	OU3-8S	OU3-16S
EW-22S	OU3-10S	OU3-17S
OU3-5SR	OU3-11S	SC-MW-1D
Testing in L-SRG		
OU3-1M	OU3-8M2	OU3-12M
OU3-5MR	OU3-10M	OU3-13M
OU3-5M2	OU3-10M2	OU3-16M
OU3-6M	OU3-11M	OU3-19M

The locations of the selected wells are presented on Figure 2.

2.0 PLANNING

2.1 MONITORING WELL PERMITS

ERM coordinated the aquifer testing locations and well installation schedule with the City and the US EPA, and obtained the following permits:

- City of Phoenix revocable right-of-way work permits;
- Arizona Department of Water Resources Notice of Intent to Drill Environmental Well (DWR 55-44A); and
- City of Phoenix sanitary sewer discharge permits.

Copies of these permits are provided in Appendix A.

2.2 PUBLIC NOTICES

The Working Group assisted the US EPA with the preparation of informational flyers for each well location, written in both English and Spanish. On 23 September 2011, these flyers were distributed by the ADEQ prior to well installation activities in applicable neighborhoods. Copies of these flyers also were available on site to distribute to members of the public that may have had questions about the field activities. A copy of the flyer for the OU3-AT location is provided in Appendix B.

2.3 UTILITY CLEARANCE AND NOTIFICATION

The OU3-AT location was cleared for subsurface utilities by notifying the Arizona One-Call Utility Notification Center operated by Arizona Blue Stake, Inc. Each utility company located and marked their lines near the drilling location.

Prior to drilling, the borehole was air-knifed by Boart Longyear of Peoria, Arizona (Boart), from ground surface to approximately 10 ft below ground surface (bgs), to physically clear the location of identified utility lines. The process included removing the ground surface cover (i.e., concrete or asphalt), as needed, by saw cutting and then excavating the underlying soil utilizing air-knife technology, which uses high-pressure air to remove the soil without disturbing utilities. The soil was then vacuumed out of the drilling location and stored in a drum or hopper, and a steel trench plate was placed over the location until drilling began.

3.0 INSTALLATION PROCEDURES

OU3-AT was installed between 27 September and 4 October 2011 at the location depicted on Figure 4. Installation procedures are described in the following sections.

3.1 DRILLING PROCEDURES

The borehole was advanced with a sonic drill rig from ground surface to the total depth. Sonic drilling alternately advances concentric hollow drill stems using rotation in conjunction with axial vibration of the drill stem. After each stage of drill stem advancement, the inner string is removed with a core of drill cuttings, while the outer string remains to hold the borehole open.

OU3-AT was advanced to a depth of 215 ft bgs. Continuous core soil samples were collected and screened with a photoionization detector. A photographic log of the site setup, drilling activities, and well installation is provided in Appendix C. OU3-AT screen intervals were selected based upon a review of lithologic logs, screened intervals, and depth-to-water (DTW) measurements of nearby wells.

3.2 CONSTRUCTION PROCEDURES

OU3-AT was constructed as a nested well containing two wells within a single borehole, with each well terminating at a different depth in the SRG Sub-unit. The wells were designated "S" and "M2," in order of increasing depth. Well OU3-AT-S terminated at approximately 120 ft bgs in the U-SRG and well OU3-AT-M2 terminated at approximately 211 ft bgs in the L-SRG. Well OU3-AT-M2 was constructed with a 4-inch Schedule 40 polyvinyl chloride (PVC) blank well casing terminating in a 35-foot-long section of 0.020-inch slot PVC screen. Well OU3-AT-S was built with a 2-inch Schedule 40 PVC blank well casing terminating in a 50-foot-long section of 0.020-inch slot PVC screen. Centralizers were attached to the screened intervals to provide a uniform filter pack while lowering the casing into the borehole.

The annular spacing between the well screen and the borehole wall was filled with a filter pack of 10-20 Colorado silica sand from the total depth of the borehole to approximately 2 to 5 ft above the screened interval. The filter pack was placed in accordance with the Work Plans.

Bentonite pellets were placed on top of the filter pack and were allowed approximately 30 minutes to fully hydrate and form an annular seal before construction began on the next nested portion of OU3-AT.

After the final bentonite pellet seal was placed above the screened interval of well OU3-AT-S and allowed to hydrate, a bentonite grout mixture was placed on top of the seal, to approximately 20 ft bgs.

Finally, a cement-bentonite grout seal was placed from 20 ft bgs to ground surface at the well location. The well was completed with a flush-mounted, traffic-rated well vault set in concrete dyed to match the surrounding pavement. The OU3-AT well installation details are listed in Table 3 and illustrated on Figure 5. The edited OU3-AT boring log is provided as Appendix D.

3.3 MONITORING WELL DEVELOPMENT AND SURVEY

Development of wells OU3-AT-S, OU3-AT-M2, and OU3-5SR was completed on 26 and 27 October 2011. Well development procedures consisted of repeated bailing and swabbing (utilizing a surge block) of the well in 10- to 15-minute intervals, followed by pumping the groundwater out of the well. Temperature, conductivity, pH, oxidation-reduction potential, and turbidity of the purge water were measured during development. Development of each well continued until the water was relatively free of sand and silt. Well development forms are provided as Appendix E.

OU3-AT-S and OU3-AT-M2 were surveyed by Lemme Engineering, Inc., on 27 November 2011. The survey data is provided in Appendix E.

4.0 AQUIFER TEST PROCEDURES

4.1 SLUG TESTING

Slug testing was conducted between 1 and 9 November 2011. The purpose of the slug testing was to estimate the variability of horizontal hydraulic conductivity across the U-SRG and L-SRG in OU3. Slug testing was conducted at the 21 wells listed in Table 1. The U-SRG wells with partially saturated screen intervals were tested using a rising head (slug out) method. The L-SRG wells were tested using rising (slug out) and falling (slug in) methods, as their screens were fully saturated. The slug used during the testing was constructed from 2-inch Schedule 40 PVC and was 8.4 ft long, with an outside diameter of 2.375 inches. The calculated displacement of the slug was 0.26 ft^3. The slug was filled with clean sand and weighed 24.5 pounds.

Water level data was collected during each slug test using the procedures described in Section 4.1 of *Technical Memorandum #3* (ERM 2011). Once the pressure transducer/data logger was secured in each well and readied for data collection, the slug was attached to a wire line and lowered/removed from the well. The slug was raised and lowered in each well using a portable tripod with an electronic winch attached to the wire line. For the falling head tests, the slug was dropped from approximately 5 ft above the static water level and entered the water at 17 ft/second. For the rising head tests, the slug was removed from the water with an electric winch at approximately 3 ft/second. Therefore, the slug was introduced and removed from the water column within 2.5 seconds.

Throughout the rising head or falling head tests, water level displacements were recorded by a factory-calibrated Level TROLL 700™ (30 pounds per square inch [psi]) pressure transducer/data logger and by hand-gauging the water level in the well as it recovered. Upon completion of the test, the pressure transducer data was saved to the computer and cross-checked with the manual measurements recorded on the slug test data collection forms; these forms are presented as Appendix F.

4.2 CONSTANT-RATE DISCHARGE TEST

The OU3 constant-rate discharge tests were conducted between 14 and 17 November 2011. These tests consisted of two 12-hour constant-rate discharge tests, one in the U-SRG and one in the L-SRG, at the wells selected in Section 2.2 of *Technical Memorandum #3* (ERM 2011). The range of pumping rates and observation well placement for the constant-rate

discharge tests were determined using the Win Theis One-Dimensional Analytical Groundwater Flow Model (ERM 2011). Drawdowns versus distance from the pumping well was predicted for a range of expected SRG hydraulic conductivities (1 to 500 ft/day) and a range of pumping rates (15 to 35 gpm). The model predicted pumping well drawdowns ranged from 0.4 to 44 ft, and observation well drawdowns of approximately 0.1 ft. Although typical in very high conductivity basin fill aquifer systems, these small displacements may increase the uncertainty associated with measuring the response curves as the total displacement approaches the sensitivity and precision of the water level measuring devices. As described in Section 4.3 below, the displacements measured during the OU3 aquifer test are well within the precision of the water level transducers used for the test. The pumping rates required to create significantly greater displacements in the SRG observation wells (i.e. greater than 1 ft) were not practical because the existing 4-inch pumping wells could not accommodate a submersible pump capable of rates greater than 100-gpm.

Before each constant-rate discharge test, a step discharge test was performed to determine the optimal pumping rate for the test. A step discharge test consists of evaluating different pumping rates over time to determine the pumping rate that will produce the maximum sustainable drawdown. This rate was then selected for the constant-rate discharge test. After the step discharge test was completed, the aquifer was allowed to recover to static conditions. During the constant-rate discharge tests, groundwater elevation measurements were collected from both the pumping well and the observation wells. The Work Plans stipulated that the constant-rate discharge tests would be continued for a minimum of 12 hours, or until a response was measured in the observation wells, up to a 24-hour maximum. Because responses were measured in observation wells during both the U-SRG and L-SRG tests during the initial period, both tests were terminated after 12 hours of pumping. After pumping was stopped, recovery data was collected from all test wells until water levels returned to static conditions.

4.3 CONSTANT-RATE DISCHARGE DATA COLLECTION

On 14 November 2011, ERM placed transducers in OU3-5SR, OU3-5MR, OU3-5M2, OU3-AT-S, and OU3-AT-M2 (Figure 4) to collect 24 hours of background data before beginning the constant-rate discharge testing. Water level displacements in the pumping wells and L-SRG monitoring wells were recorded by factory-calibrated Level TROLL 700™ pressure transducer/data loggers with a 100-psi pressure rating and a resolution of

± 0.01 ft or better. Water level displacements in the U-SRG monitoring well (OU3-AT-S) were recorded by factory-calibrated Level TROLL 700™ pressure transducer/data logger with a 30-psi pressure rating and a resolution of ± 0.0035 ft or better. Manual DTW was recorded using a Herron water level indicator. Plots of the water level data collected by the transducers are provided in Appendix M. Water level displacement measurements were recorded by the transducers at 30-second intervals for the duration of the test. The displacement in several of the constant-rate discharge test monitoring wells approached the pressure fluctuation attributed to transducer noise. Therefore, the water level data plots provided in Appendix M include a statistical summary of data fluctuation in each well, such that the displacement due to pumping could be differentiated from transducer noise. This summary includes the number of data points, minimum and maximum values, the standard deviation and standard error, the maximum and average fluctuation, and the 95 percent confidence values for average fluctuation.

On 15 November 2011, equipment was mobilized for the constant-rate discharge test of U-SRG well OU3-5SR. Static water levels were collected manually before beginning the step discharge test at well OU3-5SR, which was initiated at 12:04 and ended at 15:21 on 15 November 2011. DTW data was recorded by both the water level indicator and transducers set up in the pumping and observation wells. Pumping rates were measured using a digital flow meter in gallons per minute (gpm) and a totalizer. The calibration of the flow meter was checked prior to use by the drilling contractor. Pumping rate and manual drawdown data collected during the U-SRG step discharge test are presented in Appendix G.

Flow rates and water levels were recorded for each step in the step discharge test (Appendix M). The step discharge test was continued at each pumping rate until the drawdown had stabilized, as stipulated in the Work Plans. The U-SRG step discharge rate test included flow rates of 5, 10, 15, 25, and 28 gpm. The 5-, 10-, 15-, and 25-gpm step discharge tests were run for approximately 90, 60, 30, and 20 minutes, respectively. The pump discharge valve was then fully opened and the maximum flow rate, measured at 28 gpm, was maintained for approximately 10 minutes.

A pumping rate of 25 gpm was chosen for the U-SRG test. Although this flow rate did not optimally stress the U-SRG aquifer system, it was selected because it was near the maximum rate achievable with the submersible pump, and it exceeded the range stipulated in the Work Plans. A larger pump could not be placed in OU3-5SR due to a defect in the carbon steel casing near the surface. The 25-gpm pumping rate also created measurable drawdown in the pumping and observation wells (i.e.,

greater than the background variation in water levels [noise]). The aquifer was allowed to recover to static levels before beginning the constant-rate discharge test. The U-SRG constant-rate discharge test began on 15 November 2011 at 17:11 and ended on 16 November 2011 at 05:13. The test was discontinued after 12 hours of pumping because measureable drawdown was observed in well OU3-AT-S, 58 ft away from the pumping well. The displacement measured in OU3-AT-S during the U-SRG test was approximately 0.08 ft, which was more than an order of magnitude greater than the average noise in the data, which was calculated to be 0.003 ft with a confidence level of 95 percent. The measured displacement was also well within the ± 0.0035-ft resolution of the transducer. Therefore, these data were determined to be suitable to evaluate the U-SRG aquifer parameters, as stipulated in the Work Plans. The recovery test began immediately after the discharge test ended. The aquifer was fully recovered by 08:46 on 16 November 2011. Data was downloaded from all transducers and then the test equipment was removed from the well and decontaminated.

On 16 November 2011, equipment was mobilized for the constant-rate discharge test of L-SRG well OU3-AT-M2. Static water levels were collected manually before beginning the step discharge test in this well, which was initiated at 18:49 and ended at 21:34 on 16 November 2011. DTW data were recorded by both the water level indicator and transducers set up in pumping and observation wells. Field checks of the flow rate identified a malfunction of the digital flow meter during the step rate test. The malfunctioning flow meter was different from the one used during the U-SRG test; therefore, L-SRG pumping rates were measured with a totalizer and a stopwatch and checked periodically during the test by timing discharge into a 5-gallon bucket. Pumping rate and manual drawdown data collected during the L-SRG step rate test are presented in Appendix H.

Flow rates and water levels were recorded for each step in the step discharge test (see Appendix M for plots of these data). The step discharge test was stopped after the drawdown had stabilized, per *Technical Memorandum #3* (ERM 2011), and the aquifer was allowed to recover to static levels before beginning the constant-rate discharge test. The L-SRG step discharge test included flow rates of 10, 15, 25, and 35 gpm, run for approximately 20, 30, 20, and 60 minutes, respectively. The 35-gpm step discharge test produced approximately 33 ft of sustainable drawdown. Based on these results, 35 gpm was chosen as the pumping rate for the L-SRG test. L-SRG pumping rates were measured as described above.

The pumping rate was adjusted as needed, using a gate valve on the discharge assembly, to maintain a constant discharge. The L-SRG discharge test began on 16 November 2011 at 22:45 and ended on 17 November 2011 at 10:48 after measurable drawdown was observed in the L-SRG observation wells OU3-5M2 (approximately 0.15 feet) and OU3-5MR (approximately 0.05 feet), located 47 and 77 ft, respectively, from the pumping well. The recovery test began immediately after the discharge test ended and the aquifer was fully recovered by 14:48 on 17 November 2011. Data was downloaded from all transducers and then the test equipment was removed from the well and decontaminated.

4.4 *WATER QUALITY ANALYSIS*

At the start of constant-rate discharge test, and at intervals during purging, DTW and water quality parameters—including pH, temperature, conductivity, dissolved oxygen, and oxidation-reduction potential—were measured at the pumping well. Water quality parameters were measured in the field with a Horiba U-52 multi-meter. DTW, flow rate, and water quality parameters were recorded on the aquifer test field data collection forms provided in Appendices G and H.

During the constant-rate discharge test, groundwater samples were collected from the sampling port on the conveyance piping. A sample label containing a unique identification number was attached to each sample container and the sample was recorded on a chain-of-custody form. Samples were collected in 40-milliliter vials pre-preserved with hydrochloric acid. All sample containers were provided by TestAmerica, Inc., an Arizona-certified laboratory (Arizona Department of Health Services # AZ0728). Samples were immediately placed in a cooler containing ice. In addition, a trip blank prepared by the laboratory was placed in the cooler.

ERM field personnel were responsible for providing proper preservation, packaging, labeling, documentation, storage, handling, and transportation of groundwater samples collected during this sampling event. Groundwater samples were hand-delivered daily, using standard chain-of-custody procedures, to TestAmerica, Inc.'s facility in Phoenix, Arizona. All samples were received in accordance with the requirements of Section 3.3.3 of the *Quality Management Plan* (ERM 2010b).

Groundwater samples collected during the U-SRG and L-SRG constant-rate discharge tests were analyzed for volatile organic compounds by US EPA Test Method 8260B. All analyses were performed by TestAmerica, Inc.

4.5 DECONTAMINATION

Cross-contamination between aquifer test locations was prevented by decontaminating aquifer testing equipment after each test. Disposable equipment intended for one-time use was not decontaminated, but was packaged for appropriate disposal after use. Decontamination of each piece of equipment occurred prior to and after usage.

4.5.1 Slug Test Equipment

All slug-testing equipment was decontaminated according to the following procedures:

1. The slug and pressure transducer were placed on a piece of Visqueen film and then washed with Alconox.
2. The submerged portion of the wire line was washed with Alconox.
3. The Alconox-covered equipment was then rinsed twice using distilled water and allowed to air dry.

4.5.2 Constant-Rate Discharge Test Equipment

Non-dedicated testing equipment was decontaminated according to the following procedures:

1. The exterior of the pump or other non-dedicated equipment was placed on a piece of Visqueen film and then washed with a power washer or equivalent.
2. The exterior of the pump or other non-dedicated equipment was then washed with Alconox. Alconox was sprayed on both the exterior and interior of any piping/tubing used.
3. The Alconox-covered equipment was washed by the power washer. All piping for the non-dedicated pump was washed both inside and out.
4. The pump was then placed in a container containing distilled water only and rinsed. The pump was allowed to run until approximately 5 gallons of rinse water had passed through the pump.

The electronic water level indicator and transducers used for collecting water levels were sprayed with a mixture of potable water and Alconox. The water-level indicator/transducer were given a clean rinse using distilled water and allowed to air dry.

4.6 *INVESTIGATION-DERIVED WASTE*

Soil generated during drilling activities was containerized in two 20-cubic-yard roll-off bins temporarily stored at the Red J Environmental yard located at 3215 South 7th Street in Phoenix, Arizona. Soil samples were collected from five locations within the roll-offs and composited into a single representative sample. The composite sample was submitted to TestAmerica, Inc., for the following waste characterization analyses:

- Volatile organic compounds using US EPA Test Method 8260B;
- Polynuclear aromatic hydrocarbons using US EPA Test Method 8310;
- Resource Conservation and Recovery Act Eight Metals, plus boron, copper, manganese, and zinc, using US EPA Test Method 6010B/7471A;
- Polychlorinated biphenyls using US EPA Test Method 8082;
- Organochlorine pesticides using US EPA Test Method 8081A;
- Hexavalent chromium using US EPA Test Method 7196; and
- Cyanide using US EPA Test Method 9010B (ERM 2010).

Laboratory data sheets for the waste characterization analysis are located in Appendix I. Table I-1 provides a summary of all compounds detected in the waste characterization sample.

The laboratory analytical results were submitted to Waste Management, Inc., to establish a disposal profile for waste disposal authorization at a US EPA-approved facility. Upon approval of the waste profile, Red J Environmental transported both 20-cubic-yard roll-off bins to Butterfield Station Landfill, located at 40404 South 99th Avenue in Mobile, Arizona on 19 December 2011. Waste manifest forms confirming transport to the Butterfield Station Landfill are located in Appendix J. All investigation-derived waste generated was classified as Solid Waste (i.e., no hazardous or special waste was generated).

5.0 *RESULTS AND DISCUSSION*

Aquifer test data were analyzed using the AQTESOLV computer program, version 4.5 (Duffield 2007). AQTESOLV features a number of analytical solutions for determining aquifer properties from constant-rate discharge and slug tests. The appropriate analytical solutions were selected based on the hydrogeologic CSM and the slug and constant-rate discharge test conditions.

- Assumptions for the OU3 hydrogeologic CSM (Figure 3) that were used to select the appropriate analysis methods are listed below and are consistent with the Work Plans:

- Unconfined aquifer conditions at OU3 are predominant in both the U-SRG and L-SRG;

- Localized semi-confined aquifer conditions exist in the L-SRG, particularly in the area that the constant-rate discharge test was conducted;

- Semi-confined aquifer conditions exist in the Basin Fill;

- The aquifers are homogeneous, anisotropic, and have uniform thickness over the area influenced by the aquifer test;

- The aquifers are not bounded laterally by low- or no-flow boundaries of impermeable material;

- The aquifers do not contain lateral recharge boundaries;

- The test wells do not penetrate the entire thickness of the aquifers (i.e., the well screens extend over a portion of the aquifers' saturated thickness);

- Flow to the test wells will occur over the entire thickness of the aquifers; and

- Flow to the test wells will occur under non-steady-state conditions during the constant-rate discharge tests.

Assumptions specific to the analysis procedures used to estimate aquifer parameters are discussed in detail in Subsections 5.1 and 5.3 below.

5.1 SLUG TEST ANALYSIS PROCEDURES

Slug tests were performed on nine wells in the U-SRG and twelve wells in the L-SRG. The slug test data were analyzed using the following methods:

- Bouwer-Rice (1976, 1989) method was used for determining the hydraulic conductivity of unconfined and confined aquifers. Analysis involves matching a straight-line solution to water-level displacement data collected during an overdamped (non-oscillatory) slug test.

- Hvorslev (1951) method was used for determining the appropriate estimates of the hydraulic conductivity for overdamped tests in unconfined aquifers.

- Springer-Gelhar (1991) method was used to determine the hydraulic conductivity of unconfined aquifers. The method accounts for inertial effects in the well and oscillatory slug test response in a high-hydraulic conductivity aquifer.

Slug test analysis using the Springer-Gelhar method was not included in the Work Plans; however, the use of this method was determined to be appropriate due to oscillation of the groundwater measured in several test wells and the high conductivity of the aquifer material.

AQTESOLV uses recommended head ranges, as specified by Butler (1998), to reduce ambiguity when matching the straight-line solutions (Bouwer-Rice, Hvorslev) to concave slug test data. These recommended head ranges for the methods listed above are presented as dashed blue lines in the AQTESOLV output plots provided as Appendix K.

5.2 SLUG TEST RESULTS

Table 4 provides the aquifer thickness, saturated screen intervals, and rising head test results from each U-SRG well tested. Table 5 provides the aquifer thickness, saturated screen intervals, and results for rising head tests from each analysis method and each test well in the L-SRG. Both rising and falling head test were performed on each L-SRG well, however due to significant oscillation effects during falling head tests, which likely impacted the quality of the data, only the results from rising head data are reported and discussed in this section.

Hydraulic conductivity values estimated from U-SRG slug test data ranged from 24 (OU3-17S) to 1,000 ft per day (ft/day) (OU3-8S). Hydraulic conductivities estimated from L-SRG slug test data ranged from 10 (OU3-13M) to 470 (OU3-1M) ft/day. The relatively narrow range of conductivity values estimated from the slug tests (i.e., they are all less than two orders of magnitude), along with the similarity in values estimated for the U-SRG and L-SRG, indicate that relatively uniform SRG aquifer conditions are present throughout OU3.

The areal distribution of U-SRG and L-SRG conductivity values (rising head Bouwer-Rice results) within OU-3 are presented as Figure 6 and Figure 7, respectively. These distributions indicate that there are no predominant zones of high or low conductivity that would create significant preferential groundwater flow paths. However, given that there was minimal water displacement during many of the slug tests, these results are considered semi-qualitative and may not be adequate to develop detailed localized conceptual hydrogeologic models. However the purpose of this slug test program was to evaluate geographical variability in conductivity to support the evaluation of general groundwater remediation technology types, such as pump-and-treat, chemical oxidation, and monitored natural attenuation. This data is of adequate quality to be used for this purpose.

The OU3 slug test results are consistent with OU2 SRG slug test results, which ranged from 3.4 to 281.3 ft/day (CH2M HILL 2005). A summary of OU2 SRG conductivities and a map of test locations are provided in Appendix P.

5.3 *CONSTANT-RATE DISCHARGE TEST ANALYSIS PROCEDURES*

Constant-rate discharge tests were performed on well OU5-5SR in the U-SRG and well OU3-AT-M2 in the L-SRG. Due to rapid recovery in both the U-SRG and L-SRG, relatively few early time data points were recorded, and the later time recover data points exhibited a significant amount of scatter. Therefore, the recovery data was determined not to be amenable to recovery data analysis methods and were not included in this evaluation.

5.3.1 *U-SRG Analysis Methods*

As described in the hydrogeologic CSM, water table aquifer conditions exist in the U-SRG; therefore, analytical solutions for unconfined aquifers were used to analyze the U-SRG constant-rate aquifer test data. An aquifer

thickness of 30 ft was used to convert transmissivity values into conductivity values. The following solutions were used:

The Razack and Huntly (1991) empirical relationship between transmissivity and specific capacity was used to obtain a preliminary estimate of conductivity in order to assist in optimizing the visual curve matching procedure for each type of curve solution described below. The following method assumption was determined, based on professional judgment, to be adequately satisfied during the U-SRG constant-rate discharge test, unless qualified in parentheses following the assumption:

- The pumping well is 100 percent efficient. (This assumption is probably not valid, but given the small amount of drawdown during the U-SRG test, the well losses are likely to be minimal and insignificant.)

The Cooper-Jacob (1946) solution for a pump test in an unconfined aquifer was used to estimate the U-SRG aquifer parameters by fitting a straight line to a plot of the distance versus drawdown data for the observation wells. The following method assumptions were determined, based on professional judgment, to be adequately satisfied during the U-SRG constant-rate discharge test, unless qualified in parentheses following the assumption:

- The aquifer has an infinite areal extent.
- The aquifer is homogeneous, isotropic, and of uniform thickness. (The aquifer that underlies OU3 is anisotropic and heterogeneous and does not completely satisfy this assumption.)
- The pumping well is fully penetrating. (This assumption was not completely satisfied by well OU5-5SR, where, once pumping began, dewatering of the upper portion of the formation decreased the saturated thickness.)
- Flow to pumping well is horizontal. (Because the wells are partially penetrating, this assumption was not satisfied.)
- The aquifer is unconfined.
- Flow is unsteady.
- Water is released instantaneously from storage with decline of hydraulic head.
- The diameter of the pumping well is very small so that storage in the well can be neglected.

- Distance from pumping well is small and time is large (i.e., u is less than 0.1).
- No delayed gravity response in aquifer. (A delayed gravity response is common in unconfined aquifers and therefore, this assumption was not satisfied.)
- Low velocity is proportional to tangent of the hydraulic gradient.
- Flow is horizontal and uniform in a vertical section through the axis of the well.
- Displacement is small relative to the saturated thickness of the aquifer.

The Neuman (1974) solution for unsteady flow to a fully or partially penetrating well in a homogeneous, anisotropic, unconfined aquifer with delayed gravity response was also used to estimate the U-SRG aquifer parameters. The solution Type A curves were used to match to early-time data. The following method assumptions were determined, based on professional judgment, to be adequately satisfied during the U-SRG constant-rate discharge aquifer test:

- The aquifer has infinite areal extent.
- The aquifer is homogeneous and has uniform thickness.
- The aquifer potentiometric surface is initially horizontal.
- The pumping well is fully or partially penetrating.
- The aquifer is unconfined with delayed gravity response.
- Flow is unsteady.
- The diameter of the pumping well is very small so that storage in the well can be neglected.

5.3.2 *L-SRG Analysis Methods*

As described in the hydrogeologic CSM, localized semi-confined aquifer conditions can exist in the L-SRG, particularly in the area that the constant-rate discharge test was conducted. Therefore, analytical solutions for confined and leaky-confined aquifers were used to analyze the L-SRG constant-rate discharge test data. An aquifer thickness of 100 ft was used to convert transmissivity values into conductivity values. The following solutions were used:

The Razack and Huntly (1991) empirical relationship between transmissivity and specific capacity was used to obtain a preliminary

estimate of conductivity in order to assist in optimizing the visual curve matching procedure for each type of curve solution described below. The following method assumption was determined, based on professional judgment, to be adequately satisfied during the L-SRG constant-rate discharge test, unless qualified in parentheses following the assumption:

- The pumping well is 100 percent efficient. (This assumption is probably not valid based on a comparison of the amount of drawdown observed in the pumping well verses the observed drawdown in the L-SRG observation wells.)

The Cooper-Jacob (1946) solution for a pump test in a confined aquifer was used to estimate the L-SRG aquifer parameters by fitting a straight line to a plot of the distance versus drawdown data for the observation wells. The following method assumptions were determined, based on professional judgment, to be adequately satisfied during the L-SRG constant-rate discharge test, unless qualified in parentheses following the assumption:

- The aquifer has an infinite areal extent.
- The aquifer is homogeneous, isotropic, and of uniform thickness. (The L-SRG in the constant-rate discharge test area is anisotropic and heterogeneous and does not completely satisfy the assumption.)
- The pumping well is fully penetrating. (This assumption was not completely satisfied by well OU5-AT-M2, which was completed with only 1/3 of the aquifer thickness screened.)
- Flow to the pumping well is horizontal. (Because the well is partially penetrating, this assumption was not completely satisfied.)
- The aquifer is confined. (This assumption was not completely satisfied because the aquifer is most likely semi-confined, due to the lateral discontinuity in the fine-grained layers present at this location.)
- Flow is unsteady.
- Water is released instantaneously from storage with decline of hydraulic head (i.e., there is no delayed gravity response). (Because laterally discontinuous thin layers of fine-grained material are present in this aquifer, there is the potential for slow/delayed gravity drainage and not satisfy this assumption.)
- The diameter of the pumping well is very small so that storage in the well can be neglected.

- Distance from the pumping well is small and time is large.
- Low velocity is proportional to tangent of the hydraulic gradient.
- Flow is horizontal and uniform in a vertical section through the axis of the well.
- Displacement is small relative to the saturated thickness of aquifer.

The Theis (1935) and Hantush (1961) solutions for a pumping test in a confined aquifer were used for analysis of L-SRG tests. Theis (1935) derived a solution for unsteady flow to a fully penetrating well in a confined aquifer. Hantush extended the Theis method to correct for partially penetrating wells. The following method assumptions were determined, based on professional judgment, to be adequately satisfied during the L-SRG constant-rate discharge test, unless qualified in parentheses following the assumption:

- The aquifer has infinite areal extent.
- The aquifer is homogeneous and of uniform thickness.
- The pumping well is fully or partially penetrating.
- The aquifer is confined. (The L-SRG was observed to behave like a semi-confined aquifer in the area around well OU5-5SR because minimal response was observed in U-SRG wells during the L-SRG test.)
- Flow is unsteady.
- Water is released instantaneously from storage with decline of hydraulic head.
- The diameter of the pumping well is very small so that storage in the well can be neglected.

The Hantush (1961) solution was used to estimate the transmissivity and storativity of the wells in the L-SRG since the aquifer was assumed to be semi-confined at this location. The following method assumptions were determined, based on professional judgment, to be adequately satisfied during the L-SRG constant-rate discharge test, unless qualified in parentheses following the assumption:

- The aquifer has infinite areal extent.
- The aquifer is homogeneous and of uniform thickness. (This assumption is not satisfied, as the fine-grained layers in the L-SRG vary in thickness and are laterally discontinuous.)
- The pumping well is fully or partially penetrating.

- Flow to pumping well is horizontal when the pumping well is fully penetrating. (Because the well is partially penetrating, this assumption is not completely satisfied.)
- The aquifer is leaky-confined.
- Flow is unsteady.
- Water is released instantaneously from storage with decline of hydraulic head.
- The diameter of the pumping well is very small so that storage in the well can be neglected.
- The confining bed(s) has infinite areal extent, uniform vertical hydraulic conductivity, and uniform thickness. (This assumption is not satisfied, as the L-SRG confining layers are thin and discontinuous.)
- The confining bed(s) is overlain or underlain by an infinite constant-head plane source.
- Flow is vertical in the aquitard(s).

5.4 CONSTANT-RATE DISCHARGE TEST RESULTS

Hydraulic parameters of the U-SRG and L-SRG were estimated, according to the appropriate method, using the AQTESOLV program and refined using the methods described below:

- Reasonable values for aquifer properties were obtained from literature and preliminary transmissivity estimates based on the specific capacities calculated for each pumping test.

- Visual curve matching and parameter adjustment were performed to obtain a preliminary best fit of type curves to a given data set in order to obtain reasonable starting values prior to performing automatic curve matching.

- A sensitivity analysis was also performed with the parameter tweaking tool to qualitatively evaluate the effect of data scatter on different aquifer parameter values (i.e., adjusting the curve fit throughout the range of scatter and evaluating the change in aquifer parameters).

- Automatic curve matching was then used to refine aquifer property estimates using the nonlinear least-squares fitting procedure included in the AQTESOLV program.

- Finally, professional judgment was used to determine the best curve fit and the reasonableness of the calculated aquifer parameters.

Hydraulic parameters estimated from the constant-rate discharge tests are provided in Table 5 and Table 6. AQTESOLV outputs for each analysis are provided as Appendix L.

U-SRG transmissivity ranged from 9,112 square ft per day (ft^2/day) (OU3-5SR) to 31,248 ft^2/day (OU3-AT-S). Storativity estimates ranged from 0.063 to 0.17 in well OU3-AT-S. These values are within the typical 0.1 to 0.3 range for unconfined aquifers, where changes in storage are predominantly due to gravity drainage. Hydraulic conductivity was calculated from the U-SRG transmissivity values and a saturated aquifer thickness of 30 ft, and ranged from 304 ft/day (OU3-5SR) to 1,042 ft/day (OU3-AT-S).

L-SRG transmissivity ranged from 205 ft^2/day (OU3-AT-M2) to 136,800 ft^2/day (OU3-5MR). Storativity estimates ranged from 8.6×10^{-6} to 1.12×10^{-8}. These values are below the typical 10^{-3} to 10^{-5} range for confined aquifers, where changes in storage are predominantly due compression of the aquifer material, which would be expected to be negligible, given the coarse-grained aquifer material. Hydraulic conductivity was calculated from the L-SRG transmissivity values and a saturated aquifer thicknesses of 100 ft, and ranged from 2 ft/day (OU3-AT-M2) to 1,368 ft/day (OU3-5MR).

The average hydraulic conductivity values from the constant-rate discharge tests were 624 ft/day (U-SRG) and 434 ft/day (L-SRG). The average hydraulic conductivity in the L-SRG is skewed low due to the values calculated from data collected from the pumping well (OU3-AT-M2). The hydraulic conductivity values calculated for OU3-AT-M2 were significantly lower than the values calculated from data collected from L-SRG observation wells.

Anomalous conductivity values are often estimated from data collected from pumping wells due to low well efficiencies caused by inadequate well development, fine screen slot sizes and filter pack, and the distortion of flow paths created near small-diameter and partially penetrating wells (Driscol 2003). These factors often result in conductivity values estimated

from pumping well data to be an order of magnitude or more lower than the values estimated from observation well data. This is evident in the L-SRG constant-rate discharge test results, where the pumping well conductivities were 0.25 to 3 percent of the observation well conductivities. Therefore, the conductivities values for OU3-AT-M2 listed in Table 6 are likely not representative of the L-SRG as a whole. Omitting OU3-AT-M2 values from the L-SRG average hydraulic conductivity results in an average of 786 ft/day, which is similar to the average estimated for the U-SRG, and is likely a more representative value. These results suggest that although the SRG has been subdivided into upper and lower units within OU3, there appears to be little difference between their hydrologic properties. The U-SRG pumping well (OU3-5SR) efficiency appears to be higher than OU3-AT-M2, based on the small amount of observed drawdown and relatively strong correlation of the calculated conductivity values. U-SRG pumping well conductivities are 30 to 50 percent of the observation well conductivity values.

The conductivity values estimated from the constant-rate discharge tests are consistent with the values derived from pump tests reported for the SRG Sub-unit by Reynolds and Bartlett (2002) of 200 to 450 ft/day, and the Honeywell 34th Street Facility (CH2M HILL 2005) of 196 ft/day to 514 ft/day. The lithologic description of the SRG associated with these conductivity values is given by Reynolds and Bartlett, and is provided in Appendix P. A table of conductivity values estimated from aquifer tests conducted in the OU2 and OU3 areas extracted from CH2M HILL 2005 is provided in Appendix Q as Tables Q-4 through Q-6.

These aquifer test results will be used to support the effectiveness evaluation of remedial alternatives for OU3 groundwater. Conceptual designs will be developed for each remedial alternative evaluated based on a range of site conditions generated from site-specific testing where possible (e.g., aquifer tests). Due to the limited displacement achieved during these aquifer tests the results are considered semi qualitative and may not be adequate to complete a full-scale remedial action designs. However, these aquifer test results are considered to be adequate to evaluate the general groundwater remediation technology types, such as pump-and-treat, chemical oxidation, and monitored natural attenuation. However, the data is not likely of sufficient accuracy to be used for OU-wide bulk groundwater velocity calculations where regional values should be used.

5.5 *GROUNDWATER ANALYTICAL RESULTS SUMMARY*

A summary of analytes detected during the November 2011 aquifer test sampling event is provided in Table 7.

The following analytes were detected above the Arizona Aquifer Water Quality Standard (AWQS) during the aquifer test sampling event:

Trichloroethene was detected above the AWQS of 5 micrograms per liter (µg/L) in samples collected from wells OU3-5SR and OU3-AT-M2, at concentrations ranging from 29 (OU3-5SR) to 110 µg/L (OU3-AT-M2).

1,1-Dichloroethene was detected above the AWQS of 7 µg/L in samples collected from well OU3-AT-M2, at concentrations ranging from 7.6 to 9.0 µg/L.

During the constant-rate discharge test sampling events, the detected analyte concentrations exhibited less than a 10 percent change over time. The analytical laboratory results are provided as Appendix N.

5.6 *DATA VALIDATION*

Laboratory Data Consultants, Inc., conducted a Tier 4 data validation on 10 percent of the data. Tier 4 data validation entails recalculation of laboratory results and includes calibration verification data. The calibration evaluation resulted in four sample results in four separate samples to be qualified as estimated (J/UJ). No other data collected during the aquifer test were qualified. The complete data validation report for the November 2011 aquifer test sampling event is provided in Appendix O.

6.0 *FIELD VARIANCES*

The following deviations to the approved Work Plan methodology were noted:

Well OU3-2M could not be tested due to the presence of a shallow obstruction approximately 8 ft bgs that prohibited the slug from being lowered into the well (Photo 9, Appendix C). Well OU3-19M, located approximately 1,980 ft away, was tested instead.

Well EW-21S could not be tested due to insufficient water in the well. Well EW-20, located approximately 1,767 ft away, was tested instead.

OU3-AT was to be drilled using an air rotary casing hammer rig; however, due to a scheduling issue, the rotosonic drilling method was used to install the well.

OU3-5SR had a defect at the top of the carbon steel casing that would not allow for a 4-inch pump to be placed in to this well for the constant rate pump test.

All other procedures stipulated in the Work Plan were followed and documented during the aquifer test well installation, slug testing, and constant-rate discharge events.

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Figures

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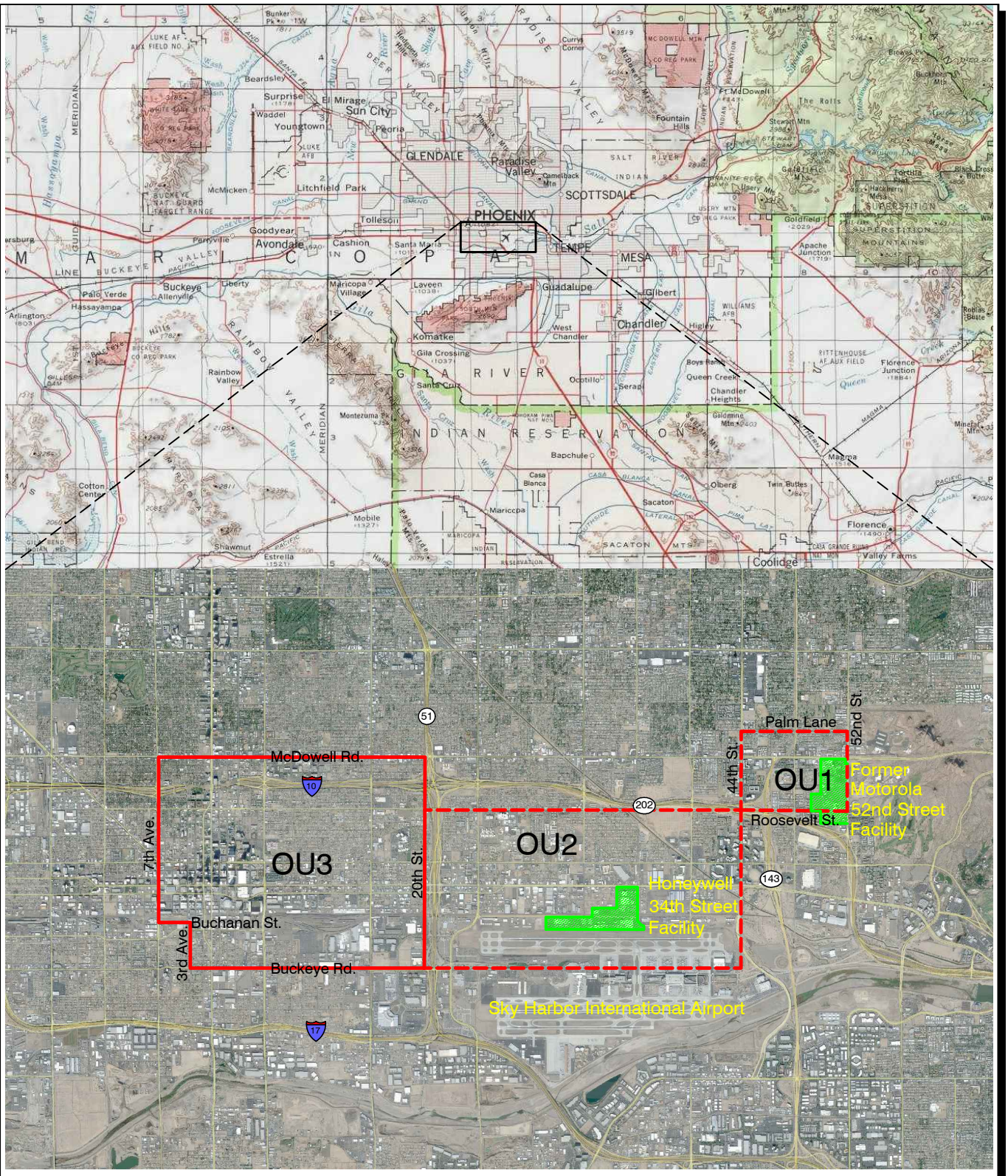

LEGEND

OU3 Boundary

OU1 and OU2 Boundary

References:
TOPO!® Software
U.S.G.S. 500k Map Series; Phoenix, Arizona
Aerial Photo Source: © 2009 Google
Earth Pro Ver 5.0.11733.9347

Figure 1
Site Location Map
Operable Unit 3
Motorola 52nd Street Superfund Site
Phoenix, Arizona

ERM 02/12

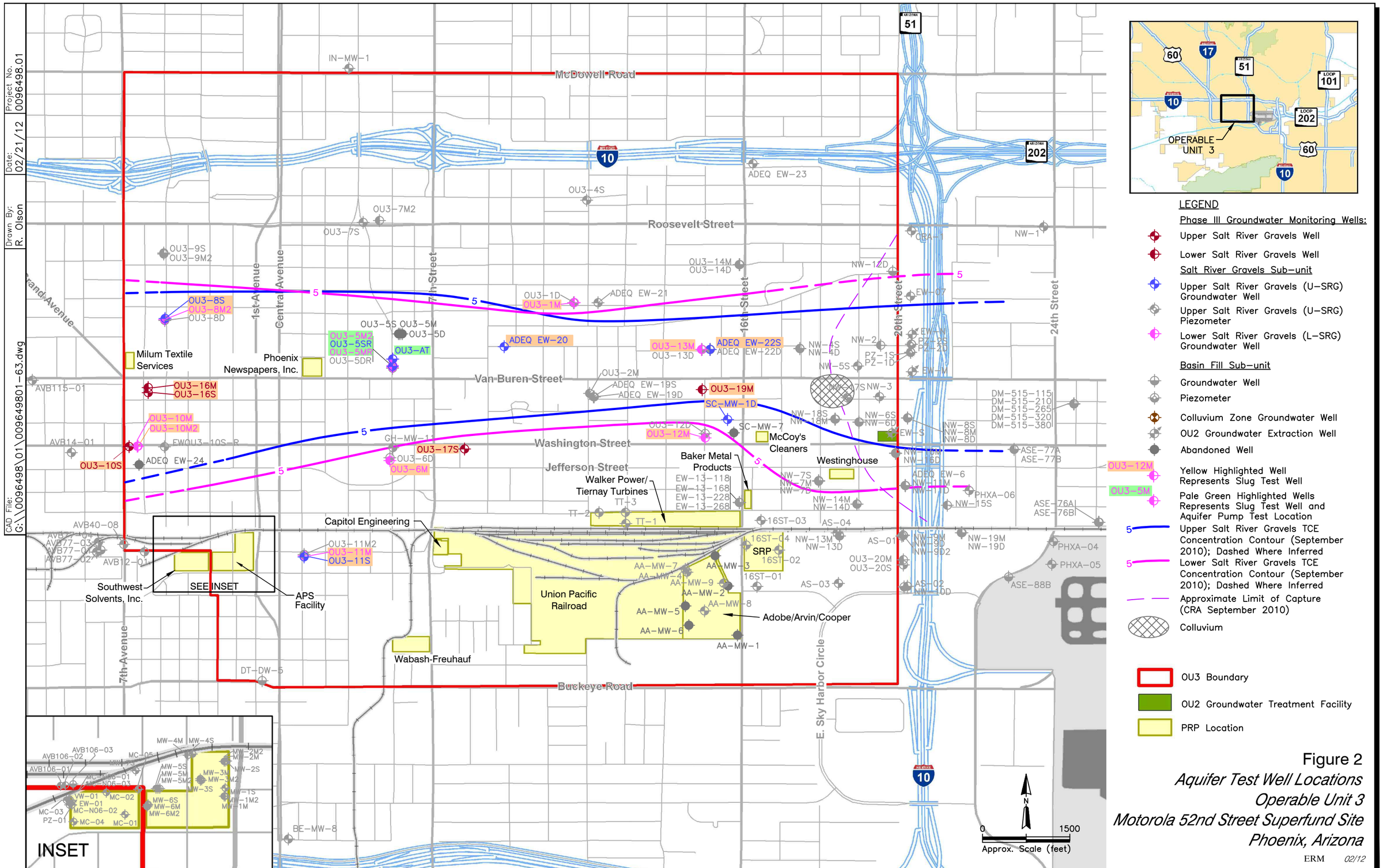

Figure 2
Aquifer Test Well Locations
Operable Unit 3
Motorola 52nd Street Superfund Site
Phoenix, Arizona

ERM 02/12

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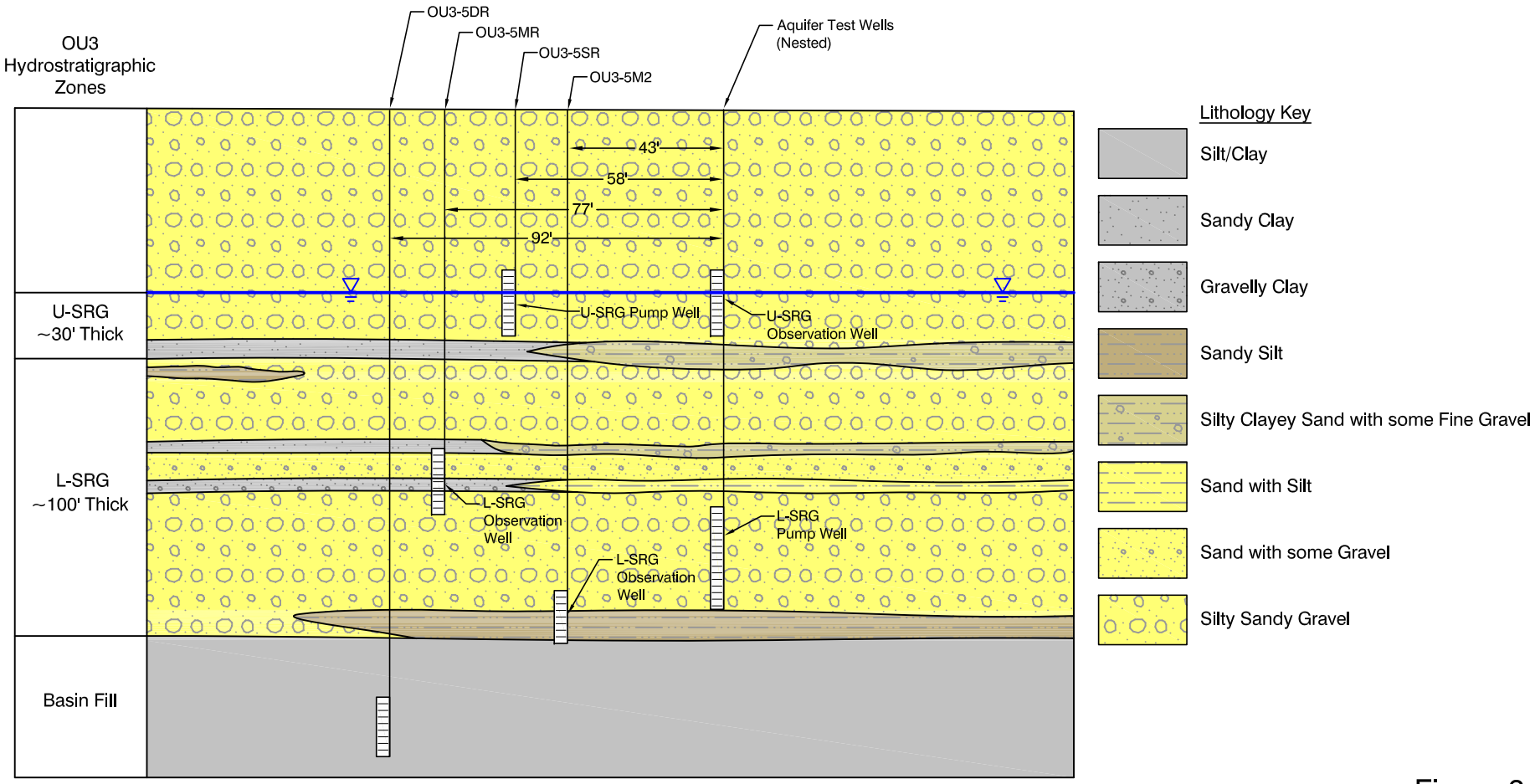

U-SRG Upper Salt River Gravels
L-SRG Lower Salt River Gravels

NOT TO SCALE

Figure 3
Conceptual Site Model
OU3 Pump Test
Operable Unit 3
Motorola 52nd Street Superfund Site
Phoenix, Arizona

ERM *03/12*

Project: 0096498.020

Date: 3/16/2012

Created By: mike.appel

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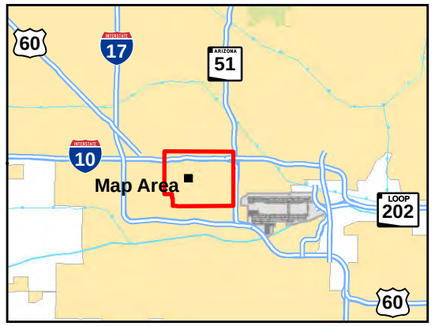

Legend

- Aquifer Test Well
- Soil Vapor Monitoring Well
- OU3 Boundary

Salt River Gravels Sub-unit

- U-SRG Groundwater Monitoring Well
- L-SRG Groundwater Monitoring Well

Basin Fill Sub-unit

- Groundwater Monitoring Well

Notes:
OU3-AT is a nested well set consisting of OU3-AT-S and OU3-AT-M2.

U-SRG = Upper Salt River Gravels
L-SRG = Lower Salt River Gravels

N

0 50 100 Feet

Figure 4
Constant Rate Discharge Test Locations
OU3-5 Area
Operable Unit 3
Motorola 52nd Street Superfund site
Phoenix, AZ

Aerial Photo:
Flood Control District of Maricopa County, 10/26/2007.

ERM *12/11*

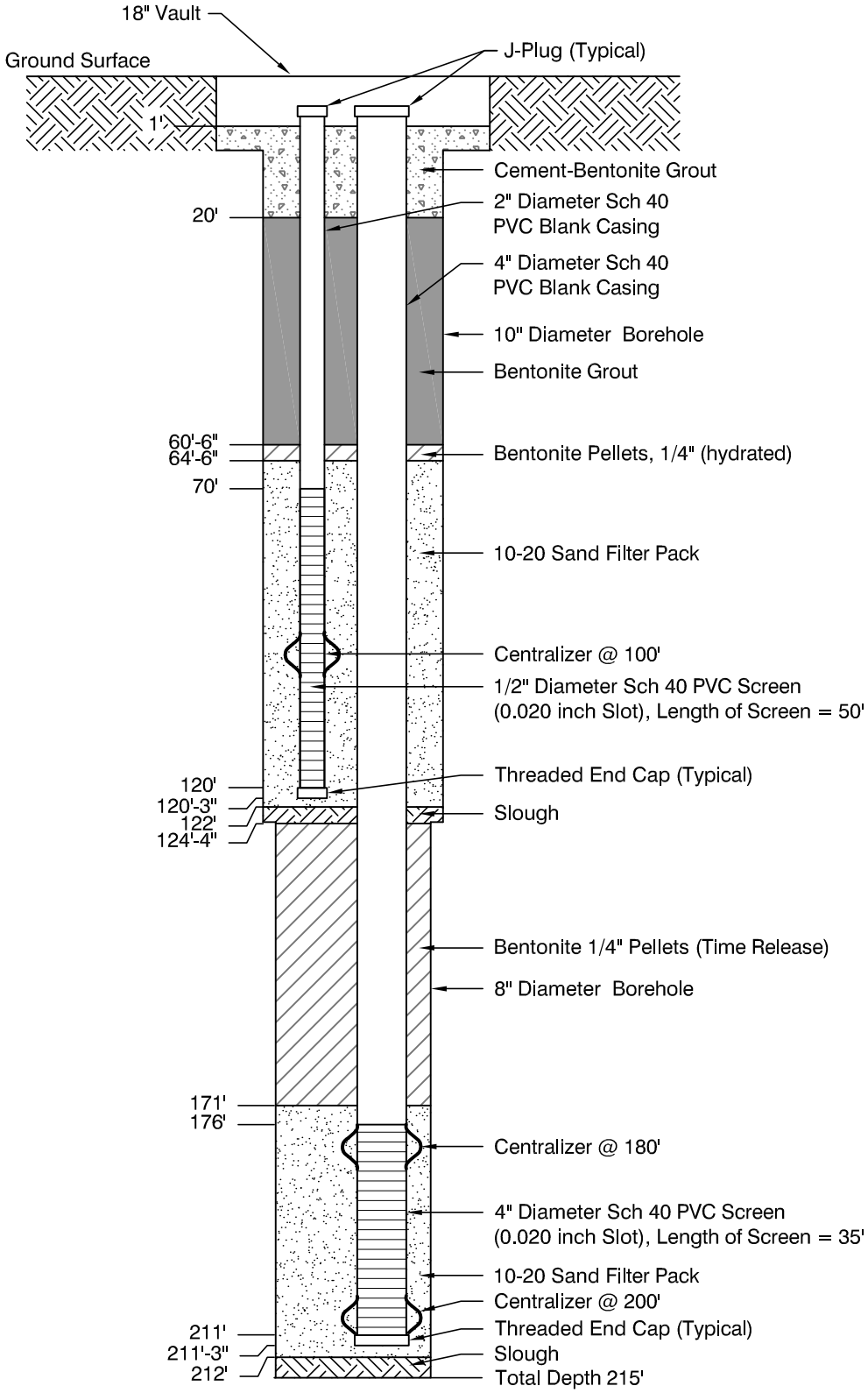

Figure 5

Nested Well Construction Diagram

OU3-AT

Operable Unit 3

Motorola 52nd Street Superfund Site

Phoenix, Arizona

NOT TO SCALE

ERM 01/12

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Drawn By: R. Olson

Date: 01/10/12

Project No. 0096498.020

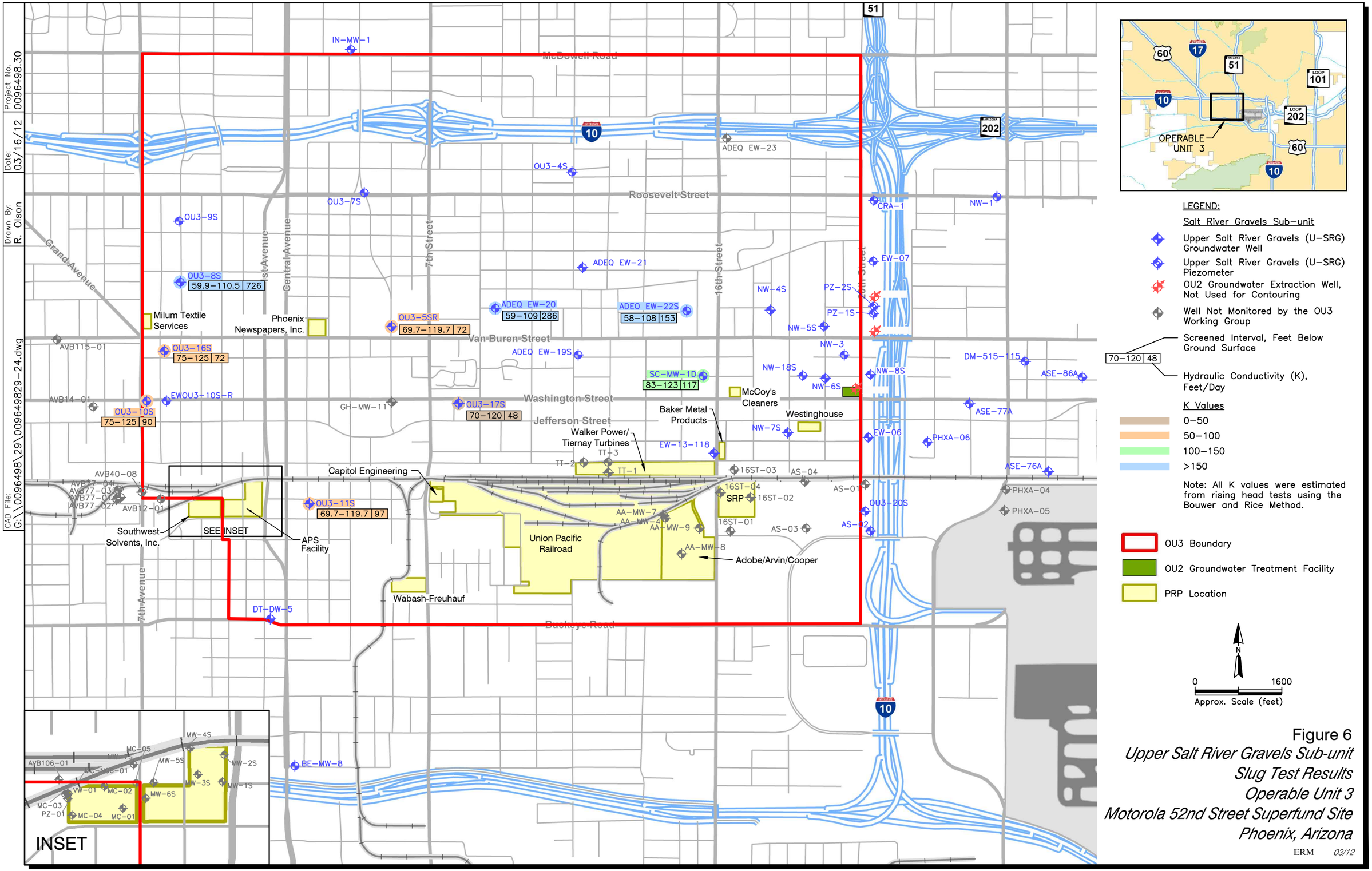

Figure 6
Upper Salt River Gravels Sub-unit
Slug Test Results
Operable Unit 3
Motorola 52nd Street Superfund Site
Phoenix, Arizona

ERM 03/12

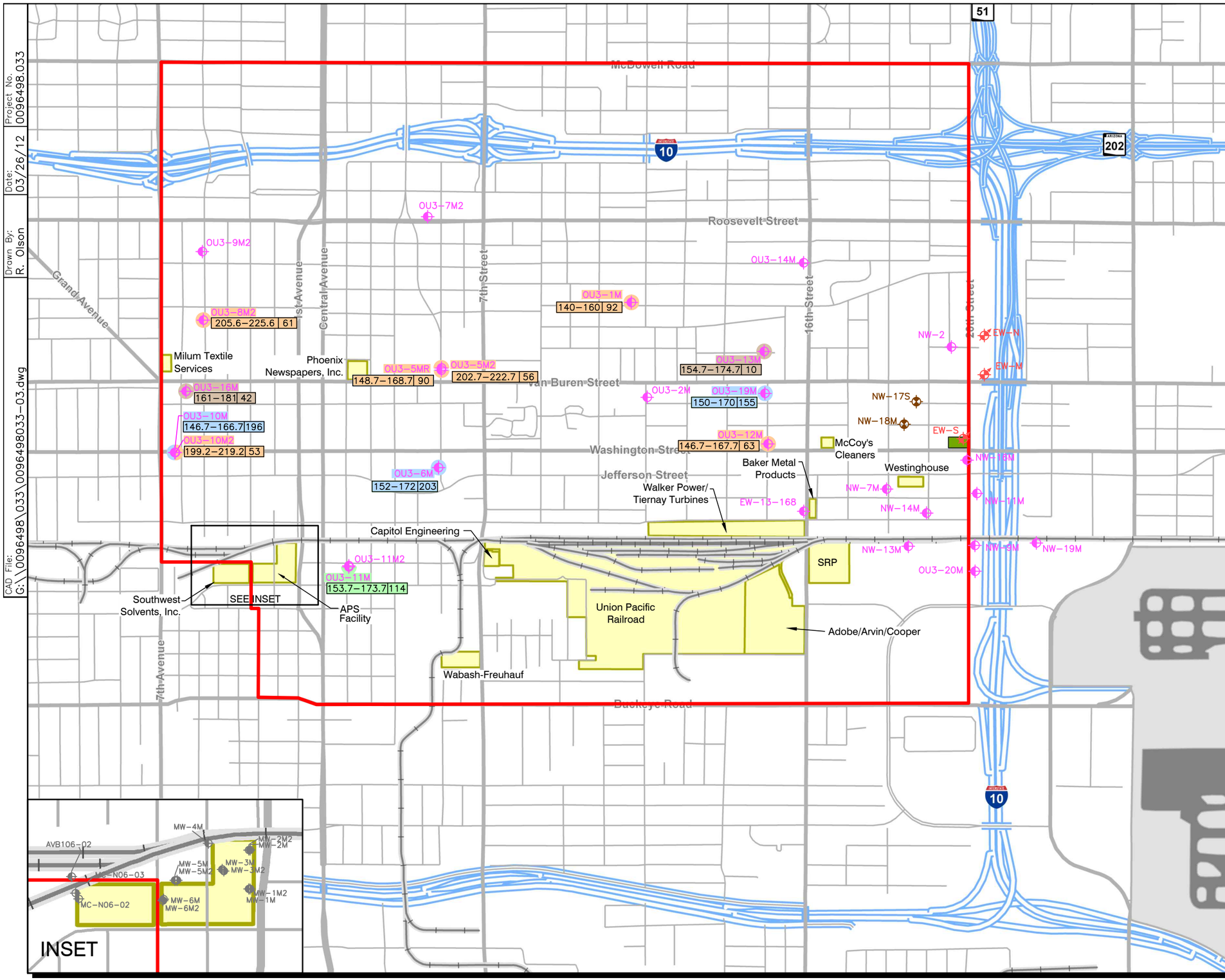

Figure 7
Lower Salt River Gravels Sub-unit
Slug Test Results
Operable Unit 3
Motorola 52nd Street Superfund Site
Phoenix, Arizona

ERM 03/12

Tables

Table 3

Aquifer Test Well Installation
Groundwater Elevation Summary
Operable Unit 3
Motorola 52nd Street Superfund Site
nix, Arizona

Well ID	Hydrostratigraphic Zone	Latitude	Longitude	Top of Casing Elevation*	Top of Screen	Bottom of Screen	Total Depth Drilled	Well Diameter	Gauging Date	Depth-to-Water	Groundwater Elevation
Units				ft amsl	ft bgs	ft bgs	ft bgs	inches		ft bgs	ft amsl
OU3-AT-S**	U-SRG	33°27'06.34196'	112°04'02.69939"	1087.35	70	120	215	2	10/26/2011	92.47	994.88
OU3-AT-M2*	L-SRG	33°27'06.77075'	112°04'02.69939"	1087.35	176	211	215	4	10/26/2011	92.70	994.65

Notes:

amsl = above mean sea level
bgs = below ground surface
ft = feet

U-SRG = Upper Salt River Gravels Sub-unit
L-SRG = Lower Salt River Gravels Sub-unit

*Survey to top of "pipe" per Lemme Engineering survey.
**OU3-AT is a nested well that contains both OU3-AT-S and OU3-AT-M2.

Table 4

U-SRG Hydraulic Conductivity Values
Slug Test Data Summary
Operable Unit 3
Motorola 52nd Street Superfund Site
Phoenix, Arizona

Well ID	Screened Interval	Aquifer Thickness	Saturated Screen Length	Slug Test	Bouwer-Rice	Hvorslev	Springer-Gelhar
units		(ft)	(ft)		K (ft/day)		
EW-20S	59-109	30	17.32	rising head	286	387	155
EW-22S	58-108	30	18.49	rising head	153	153	153
OU3-10S	75-125	30	25.73	rising head	90	130	68
OU3-16S	75-125	30	26.83	rising head	72	79	39
OU3-8S	59.9-110.5	30	14.99	rising head	726	1000	412
OU3-5SR	69.7-119.7	30	26.4	rising head	70	77	53
OU3-11S	69.7-119.7	30	29.62	rising head	97	287	97
OU3-17S	70-120	35	34.18	rising head	48	58	24
SC-MW-1D	83-123	38	37.62	rising head	117	179	66
				K range from each method	48 - 726	58 - 1000	24 - 412

Notes:

ft/day = feet per day

U-SRG = Upper Salt River Gravels Sub-unit

K = hydraulic conductivity

Table 5

L-SRG Hydraulic Conductivity Values
Slug Test Data Summary
Operable Unit 3
Motorola 52nd Street Superfund Site
Phoenix, Arizona

Well ID	Screened Interval	Saturated Thickness	Saturated Screen Length	Slug Test	Aquifer Conditions*	Bouwer-Rice	Hvorslev	Springer-Gelhar
units		(ft)	(ft)			K (ft/day)		
OU3-1M	140-160	130	20	rising head	U	92	136	470
OU3-5M2	202.7-222.7	100	20	rising head	C	56	50	n/a
OU3-5MR	148.7-168.7	100	20	rising head	C	90	146	n/a
OU3-6M	152-172	130	20	rising head	U	203	227	81
OU3-8M2	205.6-225.6	100	20	rising head	C	61	67	n/a
OU3-10M	146.7-166.7	130	20	rising head	U	196	253	99
OU3-10M2	199.2-219.2	130	20	rising head	U	53	59	29
OU3-11M	153.7-173.7	130	20	rising head	U	114	131	55
OU3-12M	146.7-167.7	130	20	rising head	U	63	76	33
OU3-13M	154.7-174.7	100	20	rising head	C	10	13	n/a
OU3-16M	161-181	130	20	rising head	U	42	48	21
OU3-19M	150-170	130	20	rising head	U	155	186	85
				K range from each method	rising head	10 - 203	13 - 253	21 - 470

Stdev (p)	90.71134
Stdev (s)	92.16282
Median	79
Mean	106
Cv	1.171367
Max	470
Min	10

Notes:

ft/day = feet per day
L-SRG = Lower Salt River Gravels Sub-unit
K = hydraulic conductivity
n/a = Springer-Gelhar is not applicable in confined aquifer settings

In = slug in/falling head
Out = slug out/rising head
U*= unconfined (based on the absence of a fine grained layer at the boundary of U-SRG and L-SRG)
C* = confined (based on the presence of a fine grained layer at the boundary of U-SRG and L-SRG)

Table 6

U-SRG and L-SRG Hydraulic Parameters
Constant-Rate Discharge Test
Operable Unit 3
Motorola 52nd Street Superfund Site
Phoenix, Arizona

U-SRG Test Well IDs	**Hydrostratigraphic Zone**	**Pump Rate**	**Screened Interval**	**Saturated Thickness**	**Razack-Huntley***			**Cooper-Jacob**			**Neuman**		
units		(ft^3/day)	(ft)	(ft)	T (ft^2/day)	K (ft/day)	S	T (ft^2/day)	K (ft/day)	S	T (ft^2/day)	K (ft/day)	S
OU3-5SR (pumping well)	U-SRG	4813	69-119	30	9853	328	na	14800	493	**	9112	304	**
OU3-AT-S	U-SRG	na	70-120	30	na	na	na	31270	1042	0.063	28760	959	0.170

L-SRG Test Well IDs	**Hydrostratigraphic Zone**	**Pump Rate**	**Screened Interval**	**Saturated Thickness**				**Cooper-Jacob**			**Hantush**			**Theis**		
units		(ft^3/day)		(ft)	**Razack-Huntley***			T (ft^2/day)	K (ft/day)	S	T (ft^2/day)	K (ft/day)	S	T (ft^2/day)	K (ft/day)	S
OU3-AT-M2 (pumping well)***	L-SRG	7123	175 - 205	100	1101	11	na	478	5	**	205	2	**	765	8	**
OU3-5MR	L-SRG	na	148.7-168.7	100	na	na	na	99660	997	9.30E-04	78090	781	8.60E-04	136800	1368	1.34E-04
OU3-5M2	L-SRG	na	202.7-222.7	100	na	na	na	61060	611	5.60E-09	34680	347	3.90E-06	61200	612	1.12E-08
OU3-AT-M2, OU3-5M2, OU3-5MR****	L-SRG	na	as above	100	na	na	na	3307	33	na	na	na	na	na	na	na

Notes:

ft/day = feet per day
ft^2/min = square feet per day
U-SRG = Upper Salt River Gravels
L-SRG = Lower Salt River Gravels
n/a = not applicable
-- = not calculated

T = transmissivity (ft^2/day)
K = hydraulic conductivity (ft/day)
* $T=33.6\ (Q/(h_o-h))^{0.67}$, where Q= pump rate in ft^3/day and h_o-h is drawdown in feet
**S = storativity (not calculated for pumping wells)
*** T and K values estimated from the displacement data collected from these locations is anomolus due to low well efficiency and are not representative of the L-SRG
**** Cooper-Jacob distance drawdown solution

Table 7

Aquifer Testing Samples
Analytical Data Summary
Operable Unit 3
Motorola 52nd Street Superfund Site
Phoenix, Arizona

Well ID	Sample ID	Hydrostratigraphic Zone	Sample Date	Sample Time	Screened Interval	TCE	PCE	cis-1,2-DCE	1,1-DCA	1,1-DCE
Units						µ/L	µ/L	µ/L	µ/L	µ/L
AWQS						**5**	**5**	**70**	**NA**	**7**
OU3-5SR	AT-OU3-5SR-S-111511-1742-1	U-SRG	11/15/2011	1742	69.7-119.7	**29**	1.5	5.8	3.5	4.2
OU3-5SR	AT-OU3-5SR-S-111511-2311-2	U-SRG	11/15/2011	2311	69.7-119.7	**29**	1.5	5.8	3.4	4.3
OU3-5SR	AT-OU3-5SR-S-111611-0511-3	U-SRG	11/16/2011	0511	69.7-119.7	**30**	1.5	5.5	3.4	4.0
OU3-AT-M2	AT-OU3-AT-M-111611-2315-1	L-SRG	11/16/2011	2315	176-211	**100**	3.7	17	6.4	**7.6**
OU3-AT-M2	AT-OU3-AT-M-111711-0445-2	L-SRG	11/17/2011	0445	176-211	**110**	3.8	18	6.7	**9.0**
OU3-AT-M2	AT-OU3-AT-M-111711-1045-3	L-SRG	11/17/2011	1045	176-211	**96**	3.6	16	6.2	**7.6**

Notes:

1,1-DCA = 1,1-Dichloroethane
1,1-DCE = 1,1-Dichloroethene
1,2-DCE = cis-1,2-Dichloroethene
AWQS = Aquifer Water Quality Standard (Arizona)
BOLD = greater than or equal to the AWQS
U-SRG = Upper Salt River Gravels
L-SRG = Lower Salt River Gravels
µg/L = micrograms per liter
PCE = Tetrachloroethylene
TCE = Trichloroethylene

Appendix A
Permits

City of Phoenix

TEMPORARY DISCHARGE & MANHOLE ENTRY PERMIT

The City of Phoenix, acting through the Water Services Department, hereby issues a temporary discharge manhole entry permit to:

Environmental Resources Management
7272 East Indian School Road, Suite 100
Scottsdale, Arizona 85251

hereinafter called Permittee, for the purpose of entering a City of Phoenix Manhole No. 412 in Quarter Section 11-29; Manhole No. 221 in Quarter Section 9-28; Manhole No.106 in Quarter Section11-27; Manhole No. 434 in Quarter Section 11-28, and Manhole No. 433 in Quarter Section 11-28, in Phoenix, Arizona.

The permit is issued in accordance with Phoenix City Code Chapter 28 Sections 28-8 and 28-27 and subject to the following conditions:

1. That the only activities authorized by the permit are for the disposal of wastewater generated from Motorola 52nd Street Superfund Site, Operable Unit 3, extraction wells located in Phoenix, Arizona. The Permittee shall conduct no other activity while entering upon the public property authorized by this permit.

2. That the Permittee's activities be conducted only within the time period of September 5, 2011 through September 30, 2011, unless authorized in writing by the Water Services Director for an extension of time, or unless revoked earlier, and that the Permittee notify the Water Services Department in advance of each separate entry.

3. Permittee shall measure and record the flow of the wastewater discharged to Manhole No. 412 in Quarter Section 11-29; Manhole No. 221 in Quarter Section 9-28; Manhole No.106 in Quarter Section11-27; Manhole No. 434 in Quarter Section 11-28, and Manhole No. 433 in Quarter Section 11-28. All flow data recorded shall be submitted to the Environmental Services Division within ten (10) days of completion.

4. Permittee shall measure and record the pH of the wastewater discharged to Manhole No. 412 in Quarter Section 11-29; Manhole No. 221 in Quarter Section 9-28; Manhole No.106 in Quarter Section11-27; Manhole No. 434 in Quarter Section 11-28, and Manhole No. 433 in Quarter Section 11-28. All pH data recorded shall be submitted to the Environmental Services Division within ten (10) days of completion.

5. Permittee shall incur costs of $2.52 per one hundred cubic feet (or current rate as established by water accounting) of ground water discharged.

6. That the Permittee obtain a street closure permit for restrictions of all streets, sidewalks, and alleys. Manholes located in major streets require street closure. Contact City of Phoenix Street Transportation (602-262-6235) for street closure procedures and permit.

7. That the Permittee, when finished with the removal and discharge activities, replace to the satisfaction of the Water Services Director, any manhole covers or other disturbances to the City of Phoenix sewer lines that Permittee caused during the course of Permittee activities. That the Permittee agrees to save and hold harmless, the City, any of its departments, agencies, officers or employees from all costs and damages occurred by any of the above from any damage to any person or property whatsoever which is caused by the activity, condition or event arising out of the negligent performance or nonperformance of any of the provisions of this permit by the Permittee, any of the Permittee's agents, or any of the Permittee's independent contractors. The above costs incurred by the City, any of its departments, agencies, officers or employees shall include in the event of any action, court cost, expensive litigation and reasonable attorney fees. When any of the above costs and/or damages occurs as aforesaid, the Permittee assumes the burden of proof that the negligent activity, condition or event did not cause such cost damage or other expense the City may incur.

The Permittee agrees to the conditions set forth in this permit, and understands that all activities conducted under the conditions of this permit should conform to the laws of the City of Phoenix and the State of Arizona.

Dated this 24th day of August, 2011.

_____, Environmental Resources Managememt

Permittee

Dated this 19th day of August, 2011.

CITY OF PHOENIX,
a municipal corporation

By: _____
Marji Dukowitz
Chief Water Quality Inspector
Water Services Department

City of Phoenix
WATER SERVICES DEPARTMENT
ENVIRONMENTAL SERVICES DIVISION

August 17, 2011

Mr. Jason Hilker
Geologist
Environmental Resources Management
7272 East Indian School Road, Suite. 100
Scottsdale, Arizona 85251

RE: Temporary Discharge Permit Request for Discharge of Purge Water from Motorola 52nd Street Superfund Site, Operable Unit (OU-3) Study Area. Phoenix, Arizona-September 5, 2011 through September 30, 2011.

Dear Mr. Hilker:

The Environmental Services Division (ESD) received your e-mail Discharge Request Application Form dated August 4, 2011, requesting permission to discharge approximately 9,000 gallons of wastewater to the City Of Phoenix sanitary sewer. The purge water will be discharged into five city manholes located in Phoenix, Arizona. The purge water will be generated during groundwater sampling to characterize the extent and contamination of groundwater with volatile organic chemicals (VOC), particularly trichloroethene (TCE). The sampling is conducted for the U.S. Environmental Protection Agency (EPA) Region 9.

Approval is hereby granted for the discharge of approximately 9,000 gallons of purged groundwater from Operable Unit (OU-3) study area into the City of Phoenix sanitary sewer system. This discharge, via City of Phoenix MH # 412 in QS 11-29; MH #221 in QS 9-28; MH #106 in QS 11-27; MH #434 in QS 11-28; and MH #433 in QS 11-28 is expected to occur some time during the time period of September 9, 2011 through September 30, 2011. In order to avoid hydraulic overloading of the sewer mains in the area, this discharge shall not exceed a flow rate of 50 gallons per minute.

This approval is based on the laboratory analytical data from the June 2011 sampling events that represent the above requested discharges. The analytical results comply with the Phoenix City Code Chapter 28-8 Instantaneous Effluent Limitations. Environmental Resources Management is not required to sample cyanide or sulfides.

It appears that the approximately 9,000 gallons of wastewater meets the requirements under Chapter 28 of the Phoenix City Code. The wastewater is also determined not to be of sufficient quantity to injure or interfere with any sewage treatment process, cause corrosive structural damage, constitute a hazard to humans, or create any hazard to the sewer system, or in the receiving waters of the sewage treatment plant.

Please submit a final status report to ESD within 10 (ten) days of discharge. This report shall include the date of discharge, time of day the discharge occurred, and the total gallons of wastewater discharged.

Should you have any questions, contact me at 602-534-2910. My office hours are 6:00 a.m. to 4:30 p.m., Monday through Thursday.

Sincerely,

Joe Dominguez

Joe Dominguez
Senior Water Quality Inspector

Enclosure:

c: Marji Dukowitz

W:\Comm.\Corres.Log\ERM-11PC-38

City of Phoenix
WATER SERVICES DEPARTMENT
ENVIRONMENTAL SERVICES DIVISION

TEMPORARY DISCHARGE & MANHOLE ENTRY PERMIT

The City of Phoenix, acting through the Water Services Department, hereby issues a temporary discharge manhole entry permit to:

Environmental Resources Management
7272 East Indian School Road, Suite 100
Scottsdale, Arizona 85251

hereinafter called Permittee, for the purpose of entering a City of Phoenix Manhole No. 433 in Quarter Section 11-29, in Phoenix, Arizona.

The permit is issued in accordance with Phoenix City Code Chapter 28 Sections 28-8 and 28-27 and subject to the following conditions:

1. That the only activities authorized by the permit are for the disposal of wastewater generated from Motorola 52nd Street Superfund Site, Operable Unit 3, extraction wells located in Phoenix, Arizona. The Permittee shall conduct no other activity while entering upon the public property authorized by this permit.

2. That the Permittee's activities be conducted only within the time period of October 24, 2011 through November 23, 2011, unless authorized in writing by the Water Services Director for an extension of time, or unless revoked earlier, and that the Permittee notify the Water Services Department in advance of each separate entry.

3. Permittee shall measure and record the flow of the wastewater discharged to Manhole No. 433 in Quarter Section 11-29. All flow data recorded shall be submitted to the Environmental Services Division within ten (10) days of completion.

4. Permittee shall measure and record the pH of the wastewater discharged to Manhole No. 433 in Quarter Section 11-29. All pH data recorded shall be submitted to the Environmental Services Division within ten (10) days of completion.

5. Permittee shall incur costs of $2.52 per one hundred cubic feet (or current rate as established by water accounting) of ground water discharged.

6. That the Permittee obtain a street closure permit for restrictions of all streets, sidewalks, and alley. Manholes located in major streets require street closure. Contact City of Phoenix Street Transportation (602-262-6235) for street closure procedures and permit.

7. That the Permittee, when finished with the removal and discharge activities, replace to the satisfaction of the Water Services Director, any manhole covers or other disturbances to the City of Phoenix sewer lines that Permittee caused during the course of Permittee activities. That the Permittee agrees to save and hold harmless,

the City, any of its departments, agencies, officers or employees from all costs and damages occurred by any of the above from any damage to any person or property whatsoever which is caused by the activity, condition or event arising out of the negligent performance or nonperformance of any of the provisions of this permit by the Permittee, any of the Permittee's agents, or any of the Permittee's independent contractors. The above costs incurred by the City, any of its departments, agencies, officers or employees shall include in the event of any action, court cost, expensive litigation and reasonable attorney fees. When any of the above costs and/or damages occurs as aforesaid, the Permittee assumes the burden of proof that the negligent activity, condition or event did not cause such cost damage or other expense the City may incur.

The Permittee agrees to the conditions set forth in this permit, and understands that all activities conducted under the conditions of this permit should conform to the laws of the City of Phoenix and the State of Arizona.

Dated this 17th day of October, 2011.

_____, Environmental Resources Management

Permittee

Dated this 14th day of October, 2011.

CITY OF PHOENIX,
a municipal corporation

By: _____
Marj Dukowitz
Chief Water Quality Inspector
Water Services Department

City of Phoenix
WATER SERVICES DEPARTMENT
ENVIRONMENTAL SERVICES DIVISION

October 14, 2011

Mr. Jason Hilker
Geologist
Environmental Resources Management
7272 East Indian School Road, Suite. 100
Scottsdale, Arizona 85251

RE: Temporary Discharge Permit Request for Discharge of Purge Water from Motorola 52nd Street Superfund Site, Operable Unit (OU-3) Study Area, Phoenix, Arizona

Dear Mr. Hilker:

The Environmental Services Division (ESD) received your e-mailed Temporary Discharge/Manhole Entry Application dated September 22, 2011, requesting permission to discharge approximately 65,000 gallons of wastewater to the City Of Phoenix sanitary sewer into Manhole № 11-29-433. The purge water will be generated during aquifer testing and sampling and will be discharged directly into the sanitary sewer at a flow rate of no more than 50 gpm. ERM will keep a running total of the volume of purge water discharged during pumping and sampling while the aquifer testing is occurring. Testing and sampling are being conducted for the U.S. Environmental Protection Agency (EPA) Region 9.

Approval is hereby granted for the discharge of approximately 65,000 gallons of purged groundwater from Operable Unit (OU-3) study area into the City of Phoenix sanitary sewer system. This discharge, via City of Phoenix Manhole № 11-29-433 is expected to occur some time during the time period of October 24, 2011 through November 23, 2011. In order to avoid hydraulic overloading of the sewer mains in the area, this discharge shall not exceed a flow rate of 50 gallons per minute.

This approval is based on the historical laboratory analytical data from the September 2011-sampling events and represents the above requested discharges. The analytical results comply with the Phoenix City Code Chapter 28-8 Effluent Limitations. Environmental Resources Management is not required to sample cyanide or sulfides.

It appears that the approximately 65,000 gallons of wastewater meets the requirements under Chapter 28 of the Phoenix City Code. The wastewater is also determined not to be of sufficient quantity to injure or interfere with any sewage treatment process, cause corrosive structural damage, constitute a hazard to humans, or create any hazard to the sewer system, or in the receiving waters of the sewage treatment plant.

Please submit a final status report to ESD within 10 (ten) days of discharge. This report shall include the date of discharge, time of day the discharge occurred, and the total gallons of wastewater discharged.

Should you have any questions, contact me at 602-534-2910. My office hours are 6:00 a.m. to 4:30 p.m., Tuesday through Friday.

Sincerely,

Christy Fix

Christy Fix
Senior Water Quality Inspector

Enclosure:

c: Marji Dukowitz

S:\EMS\Comm.\Corres.Log\ERM-11PC-45

DRILLERS ADDRESS LABEL PAGE

BOART LONGYEAR COMPANY
7773 W SELDON LANE
PEORIA, AZ 85345

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

REISSUE

Notice! This well is located in or near an area of groundwater contamination (WQARF/CERCLA/DOD or Other). Be advised that **special requirements may apply.** Please refer to the attached letter(s) to the well owner for details.

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-220930 OU3-AT

AUTHORIZED DRILLER: BOART LONGYEAR COMPANY LICENSE NO: 83

NOTICE OF INTENTION TO DRILL A MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: US EPA REGION 9 75 HAWTHORN STREET (SFD-8-2) ATTN: JANET ROSATI, REMEDIAL PROJECT MGR SAN FRANCISCO, CA 94105

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

SE ¼ OF THE SE ¼ OF THE SE ¼ SECTION 5 TOWNSHIP 1 NORTH RANGE 3 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 111-46-151A

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 21ST DAY OF AUGUST, 2012

Stella Murillo

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
Hydrology WQARF Unit
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

JANICE K. BREWER
Governor

SANDRA A. FABRITZ-WHITNEY
Director

Registration No. 55-220930
File No. A(1-3) 5 DDD

Attn: Well Owner & Well Driller

The Department of Water Resources recently approved the Notice of Intent (NOI) to drill for your proposed well(s), which is/are located in or near the M52 WITH LUST National Priorities List and Leaking Underground Storage Tanks site area of contaminated groundwater (see enclosed map). Due to the fact that groundwater contamination conditions may exist at or near your proposed well site(s), the Department's minimum well construction standards may not adequately protect the aquifer, and special well construction requirements apply when drilling in this area to avoid possible vertical cross-contamination between aquifers. A copy of these special requirements may be downloaded from the ADWR Internet site at:

<http://www.water.az.gov/wqarf/content/WQARFInfo/Drill_guide.pdf>

If you filed your NOI using paper forms, the drilling authorization that has been approved for your well(s) was granted based on a determination that the proposed well design that was submitted with your NOI complies with the Department's minimum well construction standards and any special well construction standards that may be required to protect the aquifer from vertical cross-contamination, or other special aquifer conditions. Therefore, you are required to construct the well(s) as shown on the proposed design, unless the Department approves a modification to the proposed design. A request for modification to the proposed design must be submitted in writing to the Department for approval.

If you filed your NOI using the electronic (E-NOI) system, the drilling authorization that has been approved for your well(s) was based on your driller's certification that your well(s) shall be constructed in compliance with the Department's minimum well construction standards and any special well construction requirements that may be required to protect the aquifer from vertical cross-contamination, or other special aquifer conditions. Therefore, you are required to construct the well(s) consistent with the driller's certification, unless the Department approves a variance from the drilling requirements. A request for a variance from the drilling requirements must be submitted in writing to the Department for approval.

Please be aware that groundwater produced from the proposed well(s) may not meet applicable federal, state, county or local water quality standards.

ARIZONA DEPARTMENT OF WATER RESOURCES
Information Management Unit
P.O. Box 36020, Phoenix, Arizona 85067-3589
(602) 771-8527 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

FILE NUMBER: A(1-3) 5 DDD
WELL REGISTRATION NUMBER: 55- 220930
PERMIT NUMBER (IF ISSUED)

- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. DRILLING AUTHORIZATION

Mail To:

Drilling Firm

NAME	DWR LICENSE NUMBER
BOART LONGYEAR COMPANY	83
ADDRESS: 7773 W SELDON LANE	TELEPHONE NUMBER: 623-935-0124
CITY/STATE/ZIP: PEORIA, AZ 85345	FAX

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: US EPA REGION 9

MAILING ADDRESS: 75 HAWTHORN STREET (SFD-8-2) ATTN: JANET ROSATI,

CITY / STATE / ZIP: SAN FRANCISCO, CA 94105

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 415-972-3165

FAX:

WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.):

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			1/4	1/4	1/4

LATITUDE			LONGITUDE		
° Degrees	' Minutes	"N Seconds	° Degrees	' Minutes	"W Seconds

METHOD OF LATITUDE / LONGITUDE (CHECK ONE)
☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE)
☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE)
☐ NAD-83 ☐ Other (please specify):

COUNTY:

ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
111	46	151A

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE
- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☐ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Condition of Well

CHECK ONE
- ☐ Capped
- ☐ Pump Installed

Construction Dates

DATE WELL CONSTRUCTION STARTED:

DATE WELL CONSTRUCTION COMPLETED:

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 220930

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING	DEPTH OF COMPLETED WELL
Feet Below Land Surface	Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
Feet Below Land Surface			☐ Valve ☐ Other:

Borehole			Installed Casing													
DEPTH FROM SURFACE		BOREHOLE DIAMETER (inches)	DEPTH FROM SURFACE		OUTER DIAMETER (inches)	MATERIAL TYPE (X)				PERFORATION TYPE (X)						SLOT SIZE IF ANY (inches)
FROM (feet)	TO (feet)		FROM (feet)	TO (feet)		STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	

Installed Annular Material											
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
						BENTONITE						
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 220930

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE		DESCRIPTION	Check (X) every interval where water was encountered
FROM (feet)	TO (feet)	Describe material, grain size, color, etc.	

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 220930

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
US EPA REGION 9	111	46	151A

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.

1" = _____ ft

WELL NAME: 003-A7

Arizona Department of Water Resources
Water Management Division
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8527 • www.azwater.gov

RECEIVED SEP 7 2011 WATER MGMT

Request to Change Well Information

FILE NUMBER: A(1-3)5 DDD
WELL REGISTRATION NUMBER: 55 - 220930

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s).
- Authority for fee: A.R.S. § 45-113 and A.A.C. R12-15-104

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: US EPA Region 9

MAILING ADDRESS: 75 Hawthorn Street (SFD-8-2)

CITY / STATE / ZIP CODE: San Francisco, CA 94105

CONTACT PERSON NAME AND TITLE: Janet Rosati, Remedial Project Manager

TELEPHONE NUMBER: 415-972-3165 FAX: 415-947-3526

Location of Well

WELL LOCATION ADDRESS (IF ANY): 394 North 5th St (COP right of way)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
1N	3E	05	SE ¼	SE ¼	SE ¼

LATITUDE ° Degrees	' Minutes	"N Seconds	LONGITUDE ° Degrees	' Minutes	"W Seconds

METHOD OF LATITUDE/LONGITUDE (CHECK ONE): ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☐ NAD-83 ☐ Other (*please specify*):

COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 111 MAP 46 PARCEL 151A

COUNTY WHERE WELL IS LOCATED: Maricopa

Type of Request (CHECK ONE)

☒ Change of Well Drilling Contractor (*Fill out Section 2*) ☐ Change of Well Ownership (*Fill out Section 3*) ☐ Change of Well Information (location, use, etc.) (*Fill out Section 4*)

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR

FEE $120 per Well

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Yellow Jacket Drilling

DWR LICENSE NUMBER: 78

TELEPHONE NUMBER: 602-453-3252 FAX: 602-453-3258

New Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Boart Longyear

DWR LICENSE NUMBER: 83 ROC LICENSE CATEGORY: A-4

TELEPHONE NUMBER: 623-935-0124 FAX: 623-935-9302

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP

FEE $30 per Well

-

Previous Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE:

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: FAX:

New Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE:

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: FAX:

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN:

SECTION 5. OPTIONAL BY PROPERTY OWNER AND WELL OWNER ONLY

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. (*See instructions.*)

SECTION 6. WELL OWNER SIGNATURE

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Janet Rosati, Remedial Project Manager

SIGNATURE OF WELL OWNER: Janet Rosati DATE: 8/31/11

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-115623
REV2

Status:
Approved

Your request for this TRACS permit has been Approved. If you have any questions please contact ().

It is imperative that you note the stipulations listed in this permit, as they are required by the approving agent. Otherwise, you will be subject to violations in accordance with City Code: Article XV.

STIPULATIONS:

Issue Date: 09/26/2011 **Expires:** 10/05/2011

Daytime Work Hours: 06:00 am - 06:00 pm

Nighttime Work Hours: No

Weekend Work Hours: No

Project Location: 5TH ST from VAN BUREN ST to FILLMORE ST

Hotline #:

Will Police be on site for traffic control? No

Description of work: well installation

Will emergency access be maintained? Yes

Comments: well installation - 150

Permit/ project numbers: / /

STREET RESTRICTIONS

Start & End Dates: 09/26/2011 - 10/05/2011

Daytime Closure Hours: 06:00 am - 06:00 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

Is this a 24 hour setup? Yes

Lanes restricted: NB #3 Ln & Parking Ln

Lanes maintained: NB=2 + parking ln

Misc Info:

Will there be a Speed Reduction? No Speed Reduction Authorized On This Permit

SIDEWALK RESTRICTIONS

Start & End Dates: 09/26/2011 - 10/05/2011

Daytime Closure Hours: 06:00 am - 06:00 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-115623
REV2

Status:
Approved

Pedestrian access: Closed

Sidewalk details:

24 Hour Sidewalk Setup: Yes

METER HOODING

Hooding dates: 09/26/2011 06:00am to 10/05/2011 02:00pm **Recurring?** No

# of Hooded Meters: 5 **# of Blocked meters:** 1 **# of days:** 8

Meters to hood: 141-82,141-83,141-84,141-85,141-78

PERMITEE INFORMATION

Permitee Name: Environmental Protection Agency (EPA)

Permitee Project Contact Name and Phone: , **Fax:**

Permitee Address: 75 Hawthorne St (SFD-8-2) **City/St/Zip:** San Francisco,CA 94105

CONTRACTOR INFORMATION

Primary Contractor: ERM Environmental Resources Management

Primary Contractor Project Contact Name & Phone Number: Jason Hilker- (480)998-2401 **Fax:** (480)998-2106

Contractor Address: 7272 E Indian School Rd **City/St/Zip:** Scottsdale Ste#100,AZ 85251

CONTRACTOR INSURANCE INFORMATION

Insurance Company:

State Fund Insurance: No **Expires:**

BARRICADING COMPANY INFORMATION

SETUP Company: Highway Technologies Inc.

TAKEDOWN Company: Highway Technologies Inc.

RECIPIENTS OF PERMITS

Reviewed by: Sheila Ralston (602)320-7651

Sent To:
Environmental Protection Agency (EPA), , Rosati.Janet@epamail.epa.gov, :
ERM Environmental Resources Management, (480)998-2106, jason.hilker@erm.com:
, , :
Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com:
Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com:
Jason Hilker-, (480)998-2106, jason.hilker@erm.com:

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-115623 REV2

Status:
Approved

This Right-of-Way TRACS permit has been issued to the City Contact, Primary Contractor and Barricade Company listed above. The Primary Contractor and Barricade Company will be responsible for any civil sanctions issued as a result of their actions or the actions of their subcontractors. Violations are subject to fine.

INDEMNITY CLAUSE

"In consideration of and as a condition to the grant of this permit, Permitee, Primary Contractor and Barricade Company (collectively "Permit Holders") shall indemnify, defend, save and hold harmless the City of Phoenix and its officers, officials, agents, and employees (hereinafter referred to as "City") from and against any and all claims, actions, liabilities, damages, losses, or expenses (including court costs, attorneys' fees, and costs of claim processing, investigation and litigation) (hereinafter referred to as "Claims") for bodily injury or personal injury (including death), or loss or damage to tangible or intangible property, or loss of business or economic loss, caused, or alleged to be caused, in whole or in part, by the negligent or willful acts or omissions of Permit Holders or any of their owners, officers, directors, agents, employees or contractors, arising out of or related to Permit Holders' occupancy and use of the public right-of-way and this permit. It is the specific intention of the parties that the City shall, in all instances, except for Claims arising solely from the negligent or willful acts or omissions of the City, be indemnified by Permit Holders from and against any and all claims. It is agreed that Permit Holders will be responsible for primary loss investigation, defense and judgment costs where this indemnification is applicable. In consideration for the use and occupancy of the public right-of-way and grant of this permit, the Permit Holders agree to waive all rights of subrogation against the City, its officers, officials, agents and employees for losses arising from the use, occupancy or condition of the public right-of-way and this permit"

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117064

Status:
Approved with Stipulations

Your request for this TRACS permit has been Approved, with stipulations. If you have any questions please contact ().

It is imperative that you note the stipulations listed in this permit, as they are required by the approving agent. Otherwise, you will be subject to violations in accordance with City Code: Article XV.

STIPULATIONS: MAINTAIN THE BUS STOP AT ALL TIMES

Issue Date: 10/26/2011 **Expires:** 10/27/2011

Daytime Work Hours: 07:00 am - 05:00 pm

Nighttime Work Hours: No

Weekend Work Hours: No

Project Location: 5TH ST from VAN BUREN ST to FILLMORE ST

Hotline #:

Will Police be on site for traffic control? No

Description of work: monitoring well development

Will emergency access be maintained? Yes

Comments: monitoring well development

Permit/ project numbers: //

STREET RESTRICTIONS

Start & End Dates: 10/26/2011 - 10/27/2011

Daytime Closure Hours: 08:30 am - 04:00 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

Is this a 24 hour setup? No

Lanes restricted: E SD parking ln & NB #3 Ln

Lanes maintained: NB=2, WS Prkng Ln

Misc Info:

Will there be a Speed Reduction? No Speed Reduction Authorized On This Permit

SIDEWALK RESTRICTIONS

NO SIDEWALK RESTRICTIONS

Daytime Closure Hours: NONE

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117064

Status:
Approved with Stipulations

Pedestrian access:

Sidewalk details:

Is this a 24 hour setup?

METER HOODING

Hooding dates: 10/26/2011 06:00am to 10/27/2011 02:00pm **Recurring?** No

# of Hooded Meters: 5 **# of Blocked meters:** 1 **# of days:** 2

Meters to hood: 141-82,141-83,141-84,141-85,141-78

PERMITEE INFORMATION

Permitee Name:

Permitee Project Contact Name and Phone: , **Fax:**

Permitee Address: **City/St/Zip:**

CONTRACTOR INFORMATION

Primary Contractor: ERM Environmental Resources Management

Primary Contractor Project Contact Name & Phone Number: Jason Hilker- (480)998-2401 **Fax:** (480)998-2106

Contractor Address: 7272 E Indian School Rd **City/St/Zip:** Scottsdale Ste#100,AZ 85251

CONTRACTOR INSURANCE INFORMATION

Insurance Company:

State Fund Insurance: No **Expires:**

BARRICADING COMPANY INFORMATION

SETUP Company: Highway Technologies Inc.

TAKEDOWN Company: Highway Technologies Inc.

RECIPIENTS OF PERMITS

Reviewed by: Sheila Ralston (602)320-7651

Sent To:
:
ERM Environmental Resources Management, (480)998-2106, jason.hilker@erm.com:
, , :
Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com:
Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com:
Jason Hilker-, (480)998-2106, jason.hilker@erm.com:

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117064

Status:
Approved with Stipulations

This Right-of-Way TRACS permit has been issued to the City Contact, Primary Contractor and Barricade Company listed above. The Primary Contractor and Barricade Company will be responsible for any civil sanctions issued as a result of their actions or the actions of their subcontractors. Violations are subject to fine.

INDEMNITY CLAUSE

"In consideration of and as a condition to the grant of this permit, Permitee, Primary Contractor and Barricade Company (collectively "Permit Holders") shall indemnify, defend, save and hold harmless the City of Phoenix and its officers, officials, agents, and employees (hereinafter referred to as "City") from and against any and all claims, actions, liabilities, damages, losses, or expenses (including court costs, attorneys' fees, and costs of claim processing, investigation and litigation) (hereinafter referred to as "Claims") for bodily injury or personal injury (including death), or loss or damage to tangible or intangible property, or loss of business or economic loss, caused, or alleged to be caused, in whole or in part, by the negligent or willful acts or omissions of Permit Holders or any of their owners, officers, directors, agents, employees or contractors, arising out of or related to Permit Holders' occupancy and use of the public right-of-way and this permit. It is the specific intention of the parties that the City shall, in all instances, except for Claims arising solely from the negligent or willful acts or omissions of the City, be indemnified by Permit Holders from and against any and all claims. It is agreed that Permit Holders will be responsible for primary loss investigation, defense and judgment costs where this indemnification is applicable. In consideration for the use and occupancy of the public right-of-way and grant of this permit, the Permit Holders agree to waive all rights of subrogation against the City, its officers, officials, agents and employees for losses arising from the use, occupancy or condition of the public right-of-way and this permit"

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117305

Status:
Approved

Your request for this TRACS permit has been Approved. If you have any questions please contact ().

It is imperative that you note the stipulations listed in this permit, as they are required by the approving agent. Otherwise, you will be subject to violations in accordance with City Code: Article XV.

STIPULATIONS:

Issue Date: 11/02/2011 **Expires:** 11/02/2011

Daytime Work Hours: 07:00 am - 04:00 pm

Nighttime Work Hours: No

Weekend Work Hours: No

Project Location: 8TH ST from WASHINGTON ST to JEFFERSON ST

Hotline #:

Will Police be on site for traffic control? No

Description of work: monitoring well sampling

Will emergency access be maintained? Yes

Comments: monitoring well sampling

Permit/ project numbers: //

STREET RESTRICTIONS

Start & End Dates: 11/02/2011 - 11/02/2011

Daytime Closure Hours: 07:00 am - 04:00 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

Is this a 24 hour setup? No

Lanes restricted: SB #1 Ln & no ltrn onto 8th st from Washington St

Lanes maintained: NB=1

Misc Info: see tcp

Will there be a Speed Reduction? No Speed Reduction Authorized On This Permit

SIDEWALK RESTRICTIONS

NO SIDEWALK RESTRICTIONS

Daytime Closure Hours: NONE

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117305

Status:
Approved

Pedestrian access:
Sidewalk details:
Is this a 24 hour setup?
METER HOODING
NO METER HOODINGS
# of Hooded Meters: # of Blocked meters: # of days:
Meters to hood:
PERMITEE INFORMATION
Permitee Name: United States, Environmental Protection Agency
Permitee Project Contact Name and Phone: Janet Rosati,(415)972-3165 **Fax:** (415)947-3526
Permitee Address: 75 Hawthorne St. (SFD-8-2) **City/St/Zip:** San Francisco,CA 94105
CONTRACTOR INFORMATION
Primary Contractor: ERM Environmental Resources Management
Primary Contractor Project Contact Name & Phone Number: Jason Hilker- (480)998-2401 **Fax:** (480)998-2106
Contractor Address: 7272 E Indian School Rd **City/St/Zip:** Scottsdale Ste#100,AZ 85251
CONTRACTOR INSURANCE INFORMATION
Insurance Company:
State Fund Insurance: No **Expires:**
BARRICADING COMPANY INFORMATION
SETUP Company: Highway Technologies Inc.
TAKEDOWN Company: Highway Technologies Inc.
RECIPIENTS OF PERMITS
Reviewed by: Sheila Ralston (602)320-7651
Sent To: United States, Environmental Protection Agency, (415)947-3526, janet.rosati@epa.gov, : Janet Rosati, (415)947-3526, janet.rosati@epa.gov, : ERM Environmental Resources Management, (480)998-2106, jason.hilker@erm.com: , , : Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com: Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com: Jason Hilker-, (480)998-2106, jason.hilker@erm.com:

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117305

Status:
Approved

This Right-of-Way TRACS permit has been issued to the City Contact, Primary Contractor and Barricade Company listed above. The Primary Contractor and Barricade Company will be responsible for any civil sanctions issued as a result of their actions or the actions of their subcontractors. Violations are subject to fine.

INDEMNITY CLAUSE

"In consideration of and as a condition to the grant of this permit, Permitee, Primary Contractor and Barricade Company (collectively "Permit Holders") shall indemnify, defend, save and hold harmless the City of Phoenix and its officers, officials, agents, and employees (hereinafter referred to as "City") from and against any and all claims, actions, liabilities, damages, losses, or expenses (including court costs, attorneys' fees, and costs of claim processing, investigation and litigation) (hereinafter referred to as "Claims") for bodily injury or personal injury (including death), or loss or damage to tangible or intangible property, or loss of business or economic loss, caused, or alleged to be caused, in whole or in part, by the negligent or willful acts or omissions of Permit Holders or any of their owners, officers, directors, agents, employees or contractors, arising out of or related to Permit Holders' occupancy and use of the public right-of-way and this permit. It is the specific intention of the parties that the City shall, in all instances, except for Claims arising solely from the negligent or willful acts or omissions of the City, be indemnified by Permit Holders from and against any and all claims. It is agreed that Permit Holders will be responsible for primary loss investigation, defense and judgment costs where this indemnification is applicable. In consideration for the use and occupancy of the public right-of-way and grant of this permit, the Permit Holders agree to waive all rights of subrogation against the City, its officers, officials, agents and employees for losses arising from the use, occupancy or condition of the public right-of-way and this permit"

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117306

Status:
Approved

Your request for this TRACS permit has been Approved. If you have any questions please contact ().

It is imperative that you note the stipulations listed in this permit, as they are required by the approving agent. Otherwise, you will be subject to violations in accordance with City Code: Article XV.

STIPULATIONS:

Issue Date: 11/02/2011 **Expires:** 11/02/2011

Daytime Work Hours: 07:00 am - 04:00 pm

Nighttime Work Hours: No

Weekend Work Hours: No

Project Location: 5th st from WASHINGTON ST to JEFFERSON ST

Hotline #:

Will Police be on site for traffic control? No

Description of work: monitoring well sampling

Will emergency access be maintained? Yes

Comments: monitoring well sampling

Permit/ project numbers: //

STREET RESTRICTIONS

Start & End Dates: 11/02/2011 - 11/02/2011

Daytime Closure Hours: 07:00 am - 04:00 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

Is this a 24 hour setup? No

Lanes restricted: NB #3 Ln

Lanes maintained: NB=2

Misc Info: see TCP

Will there be a Speed Reduction? No Speed Reduction Authorized On This Permit

SIDEWALK RESTRICTIONS

NO SIDEWALK RESTRICTIONS

Daytime Closure Hours: NONE

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117306

Status:
Approved

Pedestrian access:
Sidewalk details:
Is this a 24 hour setup?
METER HOODING
NO METER HOODINGS
# of Hooded Meters: # of Blocked meters: # of days:
Meters to hood:
PERMITEE INFORMATION
Permitee Name: United States, Environmental Protection Agency
Permitee Project Contact Name and Phone: Janet Rosati,(415)972-3165 **Fax:** (415)947-3526
Permitee Address: 75 Hawthorne St. (SFD-8-2) **City/St/Zip:** San Francisco,CA 94105
CONTRACTOR INFORMATION
Primary Contractor: ERM Environmental Resources Management
Primary Contractor Project Contact Name & Phone Number: Jason Hilker- (480)998-2401 **Fax:** (480)998-2106
Contractor Address: 7272 E Indian School Rd **City/St/Zip:** Scottsdale Ste#100,AZ 85251
CONTRACTOR INSURANCE INFORMATION
Insurance Company:
State Fund Insurance: No **Expires:**
BARRICADING COMPANY INFORMATION
SETUP Company: Highway Technologies Inc.
TAKEDOWN Company: Highway Technologies Inc.
RECIPIENTS OF PERMITS
Reviewed by: Sheila Ralston (602)320-7651
Sent To: United States, Environmental Protection Agency, (415)947-3526, janet.rosati@epa.gov, : Janet Rosati, (415)947-3526, janet.rosati@epa.gov, : ERM Environmental Resources Management, (480)998-2106, jason.hilker@erm.com: , , : Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com: Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com: Jason Hilker-, (480)998-2106, jason.hilker@erm.com:

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117306

Status:
Approved

This Right-of-Way TRACS permit has been issued to the City Contact, Primary Contractor and Barricade Company listed above. The Primary Contractor and Barricade Company will be responsible for any civil sanctions issued as a result of their actions or the actions of their subcontractors. Violations are subject to fine.

INDEMNITY CLAUSE

"In consideration of and as a condition to the grant of this permit, Permitee, Primary Contractor and Barricade Company (collectively "Permit Holders") shall indemnify, defend, save and hold harmless the City of Phoenix and its officers, officials, agents, and employees (hereinafter referred to as "City") from and against any and all claims, actions, liabilities, damages, losses, or expenses (including court costs, attorneys' fees, and costs of claim processing, investigation and litigation) (hereinafter referred to as "Claims") for bodily injury or personal injury (including death), or loss or damage to tangible or intangible property, or loss of business or economic loss, caused, or alleged to be caused, in whole or in part, by the negligent or willful acts or omissions of Permit Holders or any of their owners, officers, directors, agents, employees or contractors, arising out of or related to Permit Holders' occupancy and use of the public right-of-way and this permit. It is the specific intention of the parties that the City shall, in all instances, except for Claims arising solely from the negligent or willful acts or omissions of the City, be indemnified by Permit Holders from and against any and all claims. It is agreed that Permit Holders will be responsible for primary loss investigation, defense and judgment costs where this indemnification is applicable. In consideration for the use and occupancy of the public right-of-way and grant of this permit, the Permit Holders agree to waive all rights of subrogation against the City, its officers, officials, agents and employees for losses arising from the use, occupancy or condition of the public right-of-way and this permit"

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117354

Status:
Approved with Stipulations

Your request for this TRACS permit has been Approved, with stipulations. If you have any questions please contact ().

It is imperative that you note the stipulations listed in this permit, as they are required by the approving agent. Otherwise, you will be subject to violations in accordance with City Code: Article XV.

STIPULATIONS: MAINTAIN THE BUS STOP AT ALL TIMES

Issue Date: 11/03/2011 **Expires:** 11/03/2011

Daytime Work Hours: 07:00 am - 03:00 pm

Nighttime Work Hours: No

Weekend Work Hours: No

Project Location: 5TH ST from VAN BUREN ST to FILLMORE ST

Hotline #:

Will Police be on site for traffic control? No

Description of work: monitoring well development

Will emergency access be maintained? Yes

Comments: monitoring well development

Permit/ project numbers: / /

STREET RESTRICTIONS

Start & End Dates: 11/03/2011 - 11/03/2011

Daytime Closure Hours: 07:00 am - 03:00 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

Is this a 24 hour setup? No

Lanes restricted: E SD parking ln & NB #3 Ln

Lanes maintained: NB=2, WS Prkng Ln

Misc Info:

Will there be a Speed Reduction? No Speed Reduction Authorized On This Permit

SIDEWALK RESTRICTIONS

NO SIDEWALK RESTRICTIONS

Daytime Closure Hours: NONE

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117354

Status:
Approved with Stipulations

Pedestrian access:

Sidewalk details:

Is this a 24 hour setup?

METER HOODING

Hooding dates: 11/03/2011 06:00am to 11/03/2011 02:00pm **Recurring?** No

# of Hooded Meters: 105 **# of Blocked meters:** 1 **# of days:** 1

Meters to hood: 141-82,141-83,141-84,141-85,141-78

PERMITEE INFORMATION

Permitee Name: United States, Environmental Protection Agency

Permitee Project Contact Name and Phone: Janet Rosati,(415)972-3165 **Fax:** (415)947-3526

Permitee Address: 75 Hawthorne St. (SFD-8-2) **City/St/Zip:** San Francisco,CA 94105

CONTRACTOR INFORMATION

Primary Contractor: ERM Environmental Resources Management

Primary Contractor Project Contact Name & Phone Number: Jason Hilker- (480)998-2401 **Fax:** (480)998-2106

Contractor Address: 7272 E Indian School Rd **City/St/Zip:** Scottsdale Ste#100,AZ 85251

CONTRACTOR INSURANCE INFORMATION

Insurance Company:

State Fund Insurance: No **Expires:**

BARRICADING COMPANY INFORMATION

SETUP Company: Highway Technologies Inc.

TAKEDOWN Company: Highway Technologies Inc.

RECIPIENTS OF PERMITS

Reviewed by: Sheila Ralston (602)320-7651

Sent To:
United States, Environmental Protection Agency, (415)947-3526, janet.rosati@epa.gov, :
Janet Rosati, (415)947-3526, janet.rosati@epa.gov, :
ERM Environmental Resources Management, (480)998-2106, jason.hilker@erm.com:
, , :
Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com:
Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com:
Jason Hilker-, (480)998-2106, jason.hilker@erm.com:

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117354

Status:
Approved with Stipulations

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INDEMNITY CLAUSE

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City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117453

Status:
Approved

Your request for this TRACS permit has been Approved. If you have any questions please contact ().

It is imperative that you note the stipulations listed in this permit, as they are required by the approving agent. Otherwise, you will be subject to violations in accordance with City Code: Article XV.

STIPULATIONS:

Issue Date: 11/08/2011 **Expires:** 11/08/2011

Daytime Work Hours: 07:00 am - 04:00 pm

Nighttime Work Hours: No

Weekend Work Hours: No

Project Location: WASHINGTON ST from 6TH AVE to 7TH AVE

Hotline #:

Will Police be on site for traffic control? No

Description of work: monitor well sampling

Will emergency access be maintained? Yes

Comments: 200' w/o 6th Ave

Permit/ project numbers: / /

STREET RESTRICTIONS

Start & End Dates: 11/08/2011 - 11/08/2011

Daytime Closure Hours: 07:00 am - 04:00 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

Is this a 24 hour setup? No

Lanes restricted: Wb #1 + pking ln

Lanes maintained: Wb=5 one way street

Misc Info:

Will there be a Speed Reduction? No Speed Reduction Authorized On This Permit

SIDEWALK RESTRICTIONS

Start & End Dates: 11/08/2011 - 11/08/2011

Daytime Closure Hours: 08:00 am - 01:00 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117453

Status:
Approved

Pedestrian access: Maintain a 36" ADA accessible path on all pedestrian walkways within the Permit/project boundaries at all times.

Sidewalk details: ped access around work zone on s-walk

24 Hour Sidewalk Setup: No

METER HOODING

Hooding dates: 11/08/2011 06:00am to 11/08/2011 02:00pm **Recurring?** No

# of Hooded Meters: 16 **# of Blocked meters:** 1 **# of days:** 1

Meters to hood: 71-10,71-11,71-12,71-13,71-9

PERMITEE INFORMATION

Permitee Name: United States, Environmental Protection Agency

Permitee Project Contact Name and Phone: Janet Rosati,(415)972-3165 **Fax:** (415)947-3526

Permitee Address: 75 Hawthorne St. (SFD-8-2) **City/St/Zip:** San Francisco,CA 94105

CONTRACTOR INFORMATION

Primary Contractor: ERM Environmental Resources Management

Primary Contractor Project Contact Name & Phone Number: Jason Hilker- (480)998-2401 **Fax:** (480)998-2106

Contractor Address: 7272 E Indian School Rd **City/St/Zip:** Scottsdale Ste#100,AZ 85251

CONTRACTOR INSURANCE INFORMATION

Insurance Company:

State Fund Insurance: No **Expires:**

BARRICADING COMPANY INFORMATION

SETUP Company: Highway Technologies Inc.

TAKEDOWN Company: Highway Technologies Inc.

RECIPIENTS OF PERMITS

Reviewed by: Sheila Ralston (602)320-7651

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117453

Status:
Approved

Sent To:	United States, Environmental Protection Agency, (415)947-3526, janet.rosati@epa.gov, : Janet Rosati, (415)947-3526, janet.rosati@epa.gov, : ERM Environmental Resources Management, (480)998-2106, jason.hilker@erm.com: , , : Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com: Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com: Jason Hilker-, (480)998-2106, jason.hilker@erm.com:

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City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117454

Status:
Approved

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STIPULATIONS:

Issue Date: 11/07/2011 **Expires:** 11/07/2011

Daytime Work Hours: 07:00 am - 04:00 pm

Nighttime Work Hours: No

Weekend Work Hours: No

Project Location: 6TH AVE from MONROE ST to VAN BUREN ST

Hotline #:

Will Police be on site for traffic control? No

Description of work: monitor well sampling

Will emergency access be maintained? Yes

Comments: grounwater sampling

Permit/ project numbers: / /

STREET RESTRICTIONS

Start & End Dates: 11/07/2011 - 11/07/2011

Daytime Closure Hours: 07:00 am - 04:00 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

Is this a 24 hour setup? No

Lanes restricted: SB ln + Nb ln + ES & WS pking lns

Lanes maintained: 1 & 1 pushing traffic to W SD of street

Misc Info:

Will there be a Speed Reduction? No Speed Reduction Authorized On This Permit

SIDEWALK RESTRICTIONS

Start & End Dates: 11/07/2011 - 11/07/2011

Daytime Closure Hours: 08:30 am - 04:00 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117454

Status:
Approved

Pedestrian access: Maintain a 36" ADA accessible path on all pedestrian walkways within the Permit/project boundaries at all times.

Sidewalk details: ped detour in closed bk ln

24 Hour Sidewalk Setup: No

METER HOODING

Hooding dates: 11/07/2011 06:00am to 11/07/2011 02:00pm **Recurring?** No

# of Hooded Meters: 6 **# of Blocked meters:** 2 **# of days:** 1

Meters to hood: 97-42,97-43,97-44,97-45,98-22,97-41

PERMITEE INFORMATION

Permitee Name: United States, Environmental Protection Agency

Permitee Project Contact Name and Phone: Janet Rosati,(415)972-3165 **Fax:** (415)947-3526

Permitee Address: 75 Hawthorne St. (SFD-8-2) **City/St/Zip:** San Francisco,CA 94105

CONTRACTOR INFORMATION

Primary Contractor: ERM Environmental Resources Management

Primary Contractor Project Contact Name & Phone Number: Jason Hilker- (480)998-2401 **Fax:** (480)998-2106

Contractor Address: 7272 E Indian School Rd **City/St/Zip:** Scottsdale Ste#100,AZ 85251

CONTRACTOR INSURANCE INFORMATION

Insurance Company:

State Fund Insurance: No **Expires:**

BARRICADING COMPANY INFORMATION

SETUP Company: Highway Technologies Inc.

TAKEDOWN Company: Highway Technologies Inc.

RECIPIENTS OF PERMITS

Reviewed by: Sheila Ralston (602)320-7651

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117454

Status:
Approved

Sent To:	United States, Environmental Protection Agency, (415)947-3526, janet.rosati@epa.gov, : Janet Rosati, (415)947-3526, janet.rosati@epa.gov, : ERM Environmental Resources Management, (480)998-2106, jason.hilker@erm.com: , , : Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com: Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com: Jason Hilker-, (480)998-2106, jason.hilker@erm.com:

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INDEMNITY CLAUSE

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City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117455

Status:
Approved with Stipulations

Your request for this TRACS permit has been Approved, with stipulations. If you have any questions please contact ().

It is imperative that you note the stipulations listed in this permit, as they are required by the approving agent. Otherwise, you will be subject to violations in accordance with City Code: Article XV.

STIPULATIONS: MAINTAIN THE BUS STOP AT ALL TIMES

Issue Date: 11/07/2011 **Expires:** 11/07/2011

Daytime Work Hours: 07:00 am - 04:00 pm

Nighttime Work Hours: No

Weekend Work Hours: No

Project Location: 5TH ST from VAN BUREN ST to FILLMORE ST

Hotline #:

Will Police be on site for traffic control? No

Description of work: monitoring well sampling

Will emergency access be maintained? Yes

Comments:

Permit/ project numbers: / /

STREET RESTRICTIONS

Start & End Dates: 11/07/2011 - 11/07/2011

Daytime Closure Hours: 07:00 am - 04:00 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

Is this a 24 hour setup? No

Lanes restricted: Sb bk ln

Lanes maintained: Sb=2 one way street

Misc Info:

Will there be a Speed Reduction? No Speed Reduction Authorized On This Permit

SIDEWALK RESTRICTIONS

Start & End Dates: 11/07/2011 - 11/07/2011

Daytime Closure Hours: 07:00 am - 04:00 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

Pedestrian access: Maintain a 36" ADA accessible path on all pedestrian walkways within the Permit/project boundaries at all times.
Sidewalk details: ped detour in bk ln
24 Hour Sidewalk Setup: No
METER HOODING
NO METER HOODINGS
# of Hooded Meters: # of Blocked meters: # of days:
Meters to hood:
PERMITEE INFORMATION
Permitee Name: United States, Environmental Protection Agency
Permitee Project Contact Name and Phone: Janet Rosati,(415)972-3165 **Fax:** (415)947-3526
Permitee Address: 75 Hawthorne St. (SFD-8-2) **City/St/Zip:** San Francisco,CA 94105
CONTRACTOR INFORMATION
Primary Contractor: ERM Environmental Resources Management
Primary Contractor Project Contact Name & Phone Number: Jason Hilker- (480)998-2401 **Fax:** (480)998-2106
Contractor Address: 7272 E Indian School Rd **City/St/Zip:** Scottsdale Ste#100,AZ 85251
CONTRACTOR INSURANCE INFORMATION
Insurance Company:
State Fund Insurance: No **Expires:**
BARRICADING COMPANY INFORMATION
SETUP Company: Highway Technologies Inc.
TAKEDOWN Company: Highway Technologies Inc.
RECIPIENTS OF PERMITS
Reviewed by: Sheila Ralston (602)320-7651

City of Phoenix
Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235
POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117455

Status:
Approved with Stipulations

Sent To:	United States, Environmental Protection Agency, (415)947-3526, janet.rosati@epa.gov, : Janet Rosati, (415)947-3526, janet.rosati@epa.gov, : ERM Environmental Resources Management, (480)998-2106, jason.hilker@erm.com: , , : Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com: Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com: Jason Hilker-, (480)998-2106, jason.hilker@erm.com:

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City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117600 REV1

Status:
Approved with Stipulations

Your request for this TRACS permit has been Approved, with stipulations. If you have any questions please contact ().

It is imperative that you note the stipulations listed in this permit, as they are required by the approving agent. Otherwise, you will be subject to violations in accordance with City Code: Article XV.

STIPULATIONS: MAINTAIN THE BUS STOP AT ALL TIMES

Issue Date: 11/15/2011 **Expires:** 11/21/2011

Daytime Work Hours: 12:01 am - 11:59 pm

Nighttime Work Hours: No

Weekend Work Hours: No

Project Location: 5TH ST from VAN BUREN ST to FILLMORE ST

Hotline #:

Will Police be on site for traffic control? No

Description of work: aquifer testing

Will emergency access be maintained? Yes

Comments: aquifer testing

Permit/ project numbers: / /

STREET RESTRICTIONS

Start & End Dates: 11/15/2011 - 11/20/2011

Daytime Closure Hours: 12:01 am - 11:59 pm

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

Is this a 24 hour setup? Yes

Lanes restricted: Nb #1 & #2 + Nb & Sb pking lns

Lanes maintained: Nb=1 one way street

Misc Info:

Will there be a Speed Reduction? No Speed Reduction Authorized On This Permit

SIDEWALK RESTRICTIONS

NO SIDEWALK RESTRICTIONS

Daytime Closure Hours: NONE

Nighttime Closure Hours: NONE

Weekend Closure Hours: NONE

City of Phoenix

Street Transportation Department
Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117600 REV1

Status:
Approved with Stipulations

Pedestrian access:
Sidewalk details:
Is this a 24 hour setup?
METER HOODING
Hooding dates: 11/15/2011 06:00am to 11/21/2011 06:00am **Recurring?** No
# of Hooded Meters: 105 **# of Blocked meters:** 2 **# of days:** 7
Meters to hood: 141-82,141-83,141-84,141-85,131-48,131-49,131-50,131-51,131-52,131-53,131-45,131-46,131-47,141-78
PERMITEE INFORMATION
Permitee Name: United States, Environmental Protection Agency
Permitee Project Contact Name and Phone: Janet Rosati,(415)972-3165 **Fax:** (415)947-3526
Permitee Address: 75 Hawthorne St. (SFD-8-2) **City/St/Zip:** San Francisco,CA 94105
CONTRACTOR INFORMATION
Primary Contractor: ERM Environmental Resources Management
Primary Contractor Project Contact Name & Phone Number: Jason Hilker- (480)998-2401 **Fax:** (480)998-2106
Contractor Address: 7272 E Indian School Rd **City/St/Zip:** Scottsdale Ste#100,AZ 85251
CONTRACTOR INSURANCE INFORMATION
Insurance Company:
State Fund Insurance: No **Expires:**
BARRICADING COMPANY INFORMATION
SETUP Company: Highway Technologies Inc.
TAKEDOWN Company: Highway Technologies Inc.
RECIPIENTS OF PERMITS
Reviewed by: Sheila Ralston (602)320-7651

City of Phoenix

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Right-of-Way Management
1101 East Jefferson Street
Phoenix, Arizona 85034
Closure Line 602-262-6235

POST THIS PERMIT ON JOB SITE

TRACS PERMIT-
C-11-117600 REV1

Status:
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Sent To:	United States, Environmental Protection Agency, (415)947-3526, janet.rosati@epa.gov, : Janet Rosati, (415)947-3526, janet.rosati@epa.gov, : ERM Environmental Resources Management, (480)998-2106, jason.hilker@erm.com: , , : Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com: Matt Grotts, 480-477-5862, mgrotts@hwy-tech.com: Jason Hilker-, (480)998-2106, jason.hilker@erm.com:

This Right-of-Way TRACS permit has been issued to the City Contact, Primary Contractor and Barricade Company listed above. The Primary Contractor and Barricade Company will be responsible for any civil sanctions issued as a result of their actions or the actions of their subcontractors. Violations are subject to fine.

INDEMNITY CLAUSE

"In consideration of and as a condition to the grant of this permit, Permitee, Primary Contractor and Barricade Company (collectively "Permit Holders") shall indemnify, defend, save and hold harmless the City of Phoenix and its officers, officials, agents, and employees (hereinafter referred to as "City") from and against any and all claims, actions, liabilities, damages, losses, or expenses (including court costs, attorneys' fees, and costs of claim processing, investigation and litigation) (hereinafter referred to as "Claims") for bodily injury or personal injury (including death), or loss or damage to tangible or intangible property, or loss of business or economic loss, caused, or alleged to be caused, in whole or in part, by the negligent or willful acts or omissions of Permit Holders or any of their owners, officers, directors, agents, employees or contractors, arising out of or related to Permit Holders' occupancy and use of the public right-of-way and this permit. It is the specific intention of the parties that the City shall, in all instances, except for Claims arising solely from the negligent or willful acts or omissions of the City, be indemnified by Permit Holders from and against any and all claims. It is agreed that Permit Holders will be responsible for primary loss investigation, defense and judgment costs where this indemnification is applicable. In consideration for the use and occupancy of the public right-of-way and grant of this permit, the Permit Holders agree to waive all rights of subrogation against the City, its officers, officials, agents and employees for losses arising from the use, occupancy or condition of the public right-of-way and this permit"

Appendix B
Public Involvement Flyer

Motorola 52nd Street Superfund Site
Operable Unit Three Study Area

The U.S. Environmental Protection Agency (EPA), in coordination with the Arizona Department of Environmental Quality (ADEQ), is investigating groundwater contamination in the Operable Unit Three (OU3) Study Area. An aquifer test will be conducted as part of this investigation.

How Does This Affect You?

A groundwater monitoring well will be installed during normal business hours, Monday – Friday, 6AM – 6PM, near your business beginning approximately on:

26th September 2011

Drilling/installations will take place near the following intersection:

N. 5th Street and E. Van Buren Street

Well installation will create noise and may impact traffic in your area; however, the work site will be roped off to protect the public from construction hazards. The well installations near you will take approximately one week to complete. In addition, you may hear noise from generators as well development and aquifer testing activities occur.

Activities and Approximate Schedule

New well installation: 26th through 30th of September 2011
Aquifer testing: Mid-October 2011

Approximate Well Location

Project Background

This work is part of the on-going investigation and clean-up of the Motorola 52nd Street Superfund site. The site is divided into three Operable Units or OUs. The boundaries of OU3 are 20th Street to the east, 7th Avenue to the west, McDowell Road to the north and Buckeye Road to the south.

The aquifer test data is needed to help EPA evaluate the hydraulic parameters of the aquifer that is present in OU3.

Aquifer characterization data is planned to be collected in October 2011. EPA and ADEQ will use this information to guide the next phase of work at the site.

Approximate OU3 Aquifer Test Well Installation Schedule

Well Name	Number of Work Days Required	Approximate Start Date	Approximate Finish Date
OU3-AT	5 days	September 26, 2011	September 30, 2011

To obtain more information about the site, the OU3 groundwater investigation, or to report concerns, please contact:

EPA CONTACTS:

Leana Rosetti
Community Involvement Coordinator
(415) 972-3070 or toll-free (800) 231-3075
Email: Rosetti.Leana@epa.gov

Janet Rosati
Remedial Project Manager
(415) 972-3165
Email: Rosati.Janet@epa.gov

EPA's Motorola 52nd Street website address:
www.epa.gov/region09/Motorola52ndSt

ADEQ CONTACTS:

ADEQ Project Manager
Travis Barnum
(602) 771-4710
Email: Barnum.Travis@azdeq.gov

Community Involvement Coordinator
Felicia Calderon
(602) 771-4167
Email: Calderon.Felicia@azdeq.gov

ADEQ's website address for Motorola Site Narrative:
http://www.azdeq.gov/environ/waste/sps/phxsites.html#mot52a

Appendix C
Photographic Log

Photographic Log
OU3 Working Group
52nd Street Superfund Site Operable Unit 3
Phoenix, Arizona

Photograph 1: OU3-AT drilling location on 5th St and Van Buren.

Photograph 2: Tripping in 4″ PVC screen.

Photograph 3: Attaching centralizers to OU3-AT-M2 screen.

Photograph 4: Washing filter pack down tremie for OU3-AT-M2.

Photograph 5: Tagging bentonite chip seal while constructing OU3-AT-M2.

Photograph 6: Attaching centralizer to OU3-AT-S.

Photograph 7: Setting up on SC-MW-1D location.

Photograph 8: Slug testing set up on OU3-10S, readying for a slug out test.

Photograph 9: Debris in well OU3-2M.

Photograph 10: OU3-5SR constant rate discharge test set up.

Photograph 11: OU3-5SR constant rate test during the midnight shift.

Photograph 12: Tripping out OU3-5SR constant rate conveyance piping after recovery has been completed.

Photograph 13: OU3-AT-M2 pump.

Photograph 14: OU3-AT-M2 constant rate test location at night.

Photograph 15: OU3-AT-M2 constant rate discharge test set up.

Photograph 16: Tripping out OU3-AT-M2 conveyance piping after recovery had been completed.

Photograph 17: Traffic control over the discharge location, open City of Phoenix sanitary sewer, during the OU3-AT-M2 test.

Appendix D
Edited Boring Log

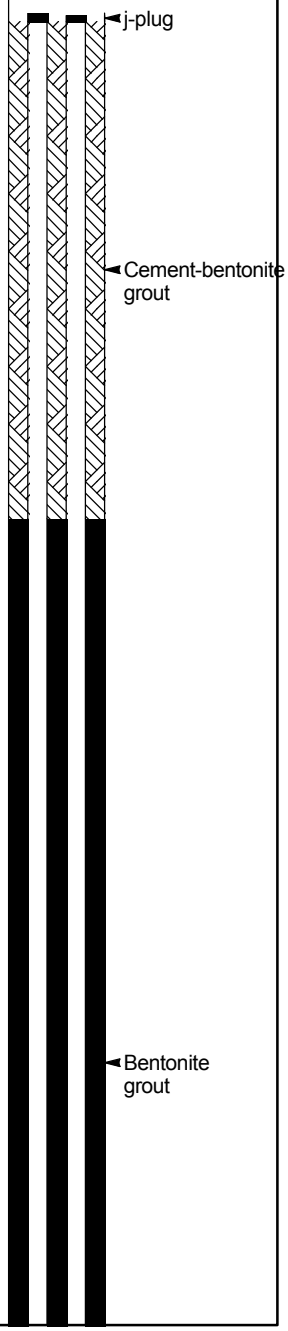
ERM-West, Inc
7272 E. Indian School Rd., Suite 100
Phoenix, AZ 85251
Telephone: 480-998-2401
Fax: 480-998-2106

OU3-AT

CLIENT OU3 Working Group
PROJECT NAME Motorola 52nd Street Superfund Site - OU3
PROJECT NUMBER 0096498
PROJECT LOCATION Phoenix, Arizona
DATE STARTED 9/27/11 **COMPLETED** 10/4/11
GROUND ELEVATION ---- **HOLE SIZE** 8"
DRILLING CONTRACTOR Boart Longyear
GROUND WATER LEVELS:
DRILLING METHOD Sonic
AT TIME OF DRILLING 93.00 ft
LOGGED BY J. Hilker **CHECKED BY** R. Livermore
AT END OF DRILLING ---
NOTES ADWR # : 55-220930. Top 10 feet of boring was airknifed to 10 ft bgs.
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA
0				0.7 ASPHALT. Top 10 feet air-knifed.	
		ML		(ML) SILT WITH SAND: (~60%) silt, (~40%) sand, very fine to fine, brown to light reddish-brown, dry, weak cementation.	
				8.0	
		ML		(ML) SILT WITH SAND: (~60%) silt, (~40%) sand, very fine to fine, light reddish-brown, dry, weak cementation, trace caliche nodules.	
10				10.0	
		ML		(ML) SILT WITH SAND: (~60%) silt, (~40%) sand, moderate cementation, trace caliche nodules.	PID = 2.6
				15.0 @ 14.5 feet - Driller added 1 gallon of water	PID = 2.1
		SP		(SP) POORLY GRADED SAND: (~85%) sand, (~10%) gravel, (~5%) silt. Sand is fine to medium-grained, subangular, reddish-brown to tan, gravel is fine, subrounded, dry.	
				17.0	
		SM		(SM) SILTY SAND: (~80%) sand, (~20%) silt, sand is fine to medium-grained, subrounded, light brown, damp.	
20				19.0	
		GW		(GW) WELL GRADED GRAVEL: (~65%) gravel, (~20%) cobbles, (~10%) sand, (~5%) silt, gravel is fine to coarse, subrounded, cobbles up to 5 inches in diameter, sand is medium grained, subrounded, trace silt, reddish-brown, dry.	PID = 2.4
				25.0	
		GW		(GW) WELL GRADED GRAVEL: (~60%) gravel, (~25%) cobbles, (~10%) sand, (~5%) fines, gravel is fine to coarse, subrounded, cobbles up to 6 inches in diameter, sand is fine to medium-grained, subangular, light reddish-brown to tan, weak cementation, trace fines, dry.	PID = 2.4
30					
				@ 34 feet - Sample bag broke - lost approximately 1 foot of sample	PID = 1.2
40					PID = 2.7
				@ 45 feet - color change - tan to medium brown.	PID = 4.3
50					

WELL DIAGRAM



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ERM-West, Inc
7272 E. Indian School Rd., Suite 100
Phoenix, AZ 85251
Telephone: 480-998-2401
Fax: 480-998-2106

CLIENT OU3 Working Group **PROJECT NAME** Motorola 52nd Street Superfund Site - OU3

PROJECT NUMBER 0096498 **PROJECT LOCATION** Phoenix, Arizona

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	WELL DIAGRAM
50		GW	52.0		PID = 2.3	
		GW-GM	57.0	(GW-GM) WELL GRADED GRAVEL WITH SILT AND SAND: (~60%) gravel, (~20%) sand, (~10%) cobbles, (~10%) fines, silt, fine to coarse gravel, subrounded, sand is fine to medium-grained.	PID = 2	
		SP	58.0	(SP) POORLY GRADED SAND: 1 foot sand seam, fine to medium-grained, reddish-brown, dry.		
60		GW-GM	64.0	(GW-GM) WELL GRADED GRAVEL WITH SILT AND SAND: (~60%) gravel, (~20%) sand, (~10%) cobbles, (~10%) fines, silt, fine to coarse gravel, subrounded, sand is fine to medium-grained.		1/4" time release bentonite chips(hydrated)
		SM	66.0	(SM) SILTY SAND: (~40%) sand, (~30%) silt, (~20%) gravel, (~5%) cobbles, sand is fine to medium-grained, subangular, gravel is fine to coarse, subrounded, silt is reddish-brown, nonplastic, dry, cobbles up to 4 inches in diameter.	PID = 1.9	
		GW-GM	70.0	(GW-GM) WELL GRADED GRAVEL WITH SILT AND SAND: (~45%) gravel, (~40%) sand, (~10%) cobbles, (~5%) silty fines, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, cobbles up to 5 inches in diameter, damp.		
70		GM	70.5	(GM) SILTY GRAVEL: Gravel with black silt, sand, damp to dry.	PID = 2.1	
		GW-GM	80.0	(GW-GM) WELL GRADED GRAVEL WITH SILT AND SAND: (~50%) gravel, (~30%) sand, (~10%) cobbles, (~10%) silty fines, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, tan to reddish-brown, cobbles up to 5 inches in diameter, damp.	PID = 0.9	
80		GM	85.0	(GM) SILTY GRAVEL: Gravel with black silt, sand - Fines increase to ~15%, sand decrease to ~25%, damp to dry.	PID = 1.1	
		GM	90.0	(GM) SILTY GRAVEL: (~55%) gravel, (~20%) sand, (~10%) cobbles, and (~15%) silt, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, cobbles up to 6 inches in diameter, silt nonplastic, reddish-brown, no cementation, damp.	PID = 0.9	
90		GW-GM	101.0	(GW-GM) WELL GRADED GRAVEL WITH SILT AND SAND: (~55%) gravel, (~25%) sand, (~10%) cobbles, (~10%) silty fines, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, tan to reddish-brown, cobbles up to 5 inches in diameter, damp. ∇ @ 93 feet - Wet.	PID = 1.2	10-20 Silica sand; 0.020" screen 2" SCH-40 PVC
100		GW	102.0	(GW) WELL GRADED GRAVEL WITH SAND: (~80%) gravel, (~10%) sand, (~5%) fines, (~5%) cobbles, gravel fine to coarse, subrounded, sand is fine-grained, trace fines, cobbles up to 4 inches in diameter, wet.		
		GW-GM		(GW-GM) WELL GRADED GRAVEL WITH SILT AND SAND:: (~65%) gravel, (~10%) cobbles, (~15%) sand, (~10%) silt, Gravel is fine to coarse, subrounded, cobbles up to 6 inches in diameter, sand is fine to coarse-grained,		

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ERM-West, Inc
7272 E. Indian School Rd., Suite 100
Phoenix, AZ 85251
Telephone: 480-998-2401
Fax: 480-998-2106

CLIENT OU3 Working Group **PROJECT NAME** Motorola 52nd Street Superfund Site - OU3

PROJECT NUMBER 0096498 **PROJECT LOCATION** Phoenix, Arizona

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	WELL DIAGRAM
		GW-GM		subangular, fines are reddish-brown, no cementation, wet.		
110		SP	109.0	(SP) POORLY GRADED SAND: (~80%) sand, (~10%) silt, (~10%) gravel, sand is medium to fine-grained, subangular, silt is reddish-brown, nonplastic, gravel is fine to coarse, subrounded, wet.		
		GW-GM	112.0	(GW-GM) WELL GRADED GRAVEL WITH SILT AND SAND: (~60%) gravel with (~10%) cobbles, (~10%) silt, (~20%) sand, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, cobbles up to 6 inches in diameter, silt is reddish-brown, nonplastic.		
		SP	117.0			
		GW-GM	118.0	(SP) POORLY GRADED SAND: (~80%) sand, (~10%) silt, (~10%) gravel, sand is medium to fine-grained, subangular, silt is reddish-brown, nonplastic, gravel is fine to coarse, subrounded, wet.		
120		SC-SM	120.0	(GW-GM) WELL GRADED GRAVEL WITH SILT AND SAND: (~60%) gravel with (~10%) cobbles, (~10%) silt, (~20%) sand, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, cobbles up to 6 inches in diameter, silt is reddish-brown, nonplastic.		Threaded end cap
		GW-GM	123.0	(SC-SM) SILTY CLAYEY SAND: (~60%) sand, (~20%) silt, (~15%) clay, (~5%) gravel, sand is fine to medium-grained, silt and clay are reddish-brown, trace gravel, damp to wet, low plasticity.		Slough
130		GP-GM	130.0	(GW-GM) WELL GRADED GRAVEL WITH SILT AND SAND: (~60%) gravel with (~10%) cobbles, (~10%) silt, (~20%) sand, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, cobbles up to 4-5 inches in diameter, silt is reddish-brown, nonplastic.		
		SP	132.0	(GP-GM) WELL GRADED GRAVEL WITH SILT AND SAND: (~60%) gravel, (~20%) sand, (~10%) silt, (~10%) cobbles, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, silt is reddish-brown, nonplastic, cobbles up to 6 inches in diameter, wet.		
		GW-GM	133.0	(SP) POORLY GRADED SAND: (~80%) sand, (~10%) silt, (~10%) gravel, sand is medium to fine-grained, subangular, silt is reddish-brown, nonplastic, gravel is fine to coarse, subrounded, wet.		
		SP	135.0	(GW-GM) WELL GRADED GRAVEL WITH SILT AND SAND: (~60%) gravel, (~20%) sand, (~10%) silt, (~10%) cobbles, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, silt is reddish-brown, nonplastic, cobbles up to 6 inches in diameter, wet.		
140		GW-GM	137.0	(SP) POORLY GRADED SAND: (~80%) sand, (~10%) silt, (~10%) gravel, sand is medium to fine-grained, subangular, silt is reddish-brown, nonplastic, gravel is fine to coarse, subrounded, wet.		
			147.0	(GW-GM) WELL GRADED GRAVEL WITH SILT AND SAND: (~60%) gravel, (~20%) sand, (~10%) silt, (~10%) cobbles, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, silt is reddish-brown, nonplastic, cobbles up to 6 inches in diameter, wet.		
150		GC	148.0	(GC) CLAYEY GRAVEL: (~60%) gravel, (~20%) clay, (~15%) sand, (~5%) cobbles, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, clay is reddish-brown, low plasticity, cobbles up to 6 inches in diameter, wet.		1/4" time release bentonite chips(hydrated)
		SP	152.0	(SP) POORLY GRADED SAND: (~80%) sand, (~10%) silt, (~10%) gravel, sand is medium to fine-grained, subangular, silt is reddish-brown, nonplastic, gravel is fine to coarse, subrounded, wet.		
		GW-GM	154.5	(GW-GM) WELL GRADED GRAVEL WITH SILT AND SAND: (~60%) gravel, (~30%) sand, (~5%) silt, (~5%) cobbles, gravel is fine to coarse, subrounded, sand is fine to coarse-grained, subangular, silt is reddish-brown, nonplastic, cobbles up to 6 inches in diameter, wet.		
		SP	155.5	(SP) POORLY GRADED SAND: (~80%) sand, (~10%) silt, (~10%) gravel, sand is medium to fine-grained, subangular, silt is reddish-brown, nonplastic, gravel is fine to coarse, subrounded, wet.		
160		GW-GC	162.0	(GW-GC) WELLGRADED GRAVEL WITH CLAY: (~60%) gravel with (~10%) cobbles, (~10%) silt, (~10%) clay, gravel is fine to coarse, subrounded, cobbles up to 4-5 inches in diameter, silt and clay are reddish-brown, nonplastic.		
		SP				

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CLIENT OU3 Working Group **PROJECT NAME** Motorola 52nd Street Superfund Site - OU3

PROJECT NUMBER 0096498 **PROJECT LOCATION** Phoenix, Arizona

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	WELL DIAGRAM
		SC	165.0–166.0	(SP) POORLY GRADED SAND: (~85%) sand, (~10%) gravel, (~5%) silt, sand is fine to medium-grained, subangular, reddish-brown, gravel is fine to coarse, subrounded, wet. *(continued)*		
		SP	166.0–169.0	(SC) CLAYEY SAND: Clayey sand with gravel, sand is fine to medium-grained, subangular, clay has low plasticity, gravel is fine, subrounded, wet.		
170		SW	169.0–170.0	(SP) POORLY GRADED SAND: (~90%) sand, (~10%) gravel, sand is fine to medium-grained, subangular, gravel is fine to coarse, subrounded, wet.		
		SC	170.0–173.0	(SW) CLAYEY SAND: (~35%) clay, (~55%) sand, (~10%) gravel, sand is fine to medium-grained, subangular, clay, reddish-brown, low plasticity, gravel is fine to coarse, weak cementation, damp to wet.		
		SW	173.0–178.0	@ 172 feet - Gravel increase to ~30%. (SC) CLAYEY SAND: (~35%) clay, (~55%) sand, (~10%) gravel, sand is fine to medium-grained, subangular, clay, reddish-brown, low plasticity, gravel is fine to coarse, weak cementation, damp to wet. (SW) WELL GRADED SAND: (~90%) sand, (~10%) gravel, sand is fine to coarse-grained, subangular, gravel is fine to coarse, subrounded, wet.		
180		SP-SM	178.0–182.0	(SP-SM) POORLY GRADED SAND WITH SILT: (~90%) sand with (~10%) fines, sand is fine to medium-grained, subangular, fines are reddish-brown, wet.		
		SP-SC	182.0–185.0	(SP-SC) @ 182 feet - loss due to bag break on deck - appears to be (~25%) gravel, (~70%) sand, (~5%) fines, sand is fine to medium-grained, subangular, brown, gravel is fine to coarse, subrounded, wet.		
		GW	185.0–187.5	(GW) WELL GRADED GRAVEL WITH SAND: (~60%) gravel, (~40%) sand, gravel is fine to coarse, subrounded, sand is fine to medium-grained, brown, wet.		
		SP	187.5–188.0	(SP) POORLY GRADED SAND: (~90%) sand, (~10%) gravel, sand is fine to medium-grained, subangular, gravel is fine to coarse, subrounded, wet.		
190		GW	188.0–192.5	(GW) WELL GRADED GRAVEL WITH SAND: (~70%) gravel, (~20%) sand, (~5%) fines, (~5%) cobbles, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, fine, brown, no to low plasticity, wet.		◄ 10-20 Silica sand
		SP	192.5–193.0	(SP) POORLY GRADED SAND: (~90%) sand, (~10%) gravel, sand is fine to medium-grained, subangular, gravel is fine to coarse, subrounded, wet.		◄ 0.020" screen 4" SCH-40 PVC
200		GW-GC	193.0–200.0	(GW-GC) WELL GRADED GRAVEL WITH CLAY: (~50%) gravel, (~30%) sand, (~10%) clay, (~10%) cobbles, gravel is fine to coarse, subrounded, sand is fine to medium-grained, subangular, clay has low plasticity, cobbles up to 5 inches in diameter, wet.		
		GW-GC	200.0–205.0	(GW-GC) WELL GRADED GRAVEL WITH CLAY: (~65%) gravel, (~20%) sand, (~10%) clay, (~5%) cobbles, gravel is fine to coarse, subrounded, sand is fine-grained, subangular, clay, brown, low plasticity, cobbles up to 6 inches in diameter, wet.		
		SP-SM	205.0–208.0	(SP-SM) POORLY GRADED SAND WITH SILT: (~90%) sand, (~5%) silt, (~5%) gravel, sand is fine to medium-grained, silt is brown, nonplastic, gravel is fine, subrounded, loose, wet.		
210		SC-SM	208.0–210.0	(SC-SM) SILTY CLAYEY SAND: sand is fine-grained, subangular, clayey silt is brown, damp to wet, occasional cemented nodules.		
		CL-ML	210.0–215.0	(CL-ML) SILTY CLAY: (~70%) silt, (~25%) clay, (~5%) sand, sand is very fine to fine-grained, brown to tan, weak cementation, no to low plasticity, stiff, damp to dry. @ 211 feet - Moderate cementation, increase in caliche nodules, up to 3 inches in diameter, damp to dry.		◄ Threaded end cap

Bottom of borehole at 215.0 feet.

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Appendix E
Well Development Field Forms and Survey Data

120 − 70
DTW = 92'
118'
110'
100'

Well Development / Purge Form

Project	OU3	Total Depth	120.11 Pre / 120.11 Post	Depth. Ind. S/N	north side
Project No.	0096498.020	Depth to Water	92.45 / 92.47	Weather	sunny 65-83°
Location	5th	Water Column (ft. h.)	27.66		
Date	10-26-11	Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)	~ 4.42 gallons		
Well Number	OU3-AT (2")	Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	~ 20.19 gallons		
Method		Total Gallons Removed	~180 + 20 = 200 gallons		
Field Personnel	J. Hilla	Sample Number & Time	n/a		

Time	Duration (Minutes) Surge	Pump	Bail	Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µS/mS)	pH	ORP/ REDOX (ReL. MV)	Turbidity (NTU)	Remarks
9:23	n/a		n/a								Due to ~~[illegible]~~ bend in well, unable to set surge block or bailer to water.
9:35											try to set pump to bottom of 2" well
9:47	start pump 9:52	@ 118'		— surge pump flow out down for 15 mins to work free out of filterpack							Pump set ~2' off bottom (Hurricane pump) @ 118'
	DTW 92.54		10:02	20	24.45	5.02	2.17	5.93	161	17.5	5 gallons in ~~[illegible]~~ 2min 24 sec ~2.2 gallon a min
	DTW 92.55		10:12	40	24.50	4.75	2.18	6.70	58	3.9	
	DTW 92.65		10:22	60	24.61	4.52	2.19	6.79	52	4.4	
SK				~~80~~			move	pump up to ~~[illegible]~~	~110 feet		

Sample Analytes: BTEX, Napthalene (8020), TVPH (gas) 8015mod, TEPH (diesel) 8015 mod, Napthalene (8270), PAHs (610), Nitrate, Glycols, RCRA Metals F N/F, VOC (8260), Semi-Volatiles (8270)

General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

1 of 2

Well Development / Purge Form

Project	See page 1	Total Depth	Depth. Ind. S/N
Project No.		Depth to Water	Weather
Location		Water Column (ft. h.)	See page 1
Date		Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)	
Well Number		Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	
Method		Total Gallons Removed	
Field Personnel		Sample Number & Time	

2" PVC well

Time	Duration (Minutes) Surge	Pump	Bail	Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond (µs/ms)	pH	ORP/ REDOX (ReL. MV)	Turbidity (NTU)	2" well Remarks
@110 Start 10:25			stop 10:30	n/a							@ 110 pump flow up + down to fines → surge ~~pump flow up~~ + surge ~~down~~ out of filter pack
	DTW 92.53		10:40	20	24.43	4.36	2.17	6.90	57	65.7	@ 110 → flow @ ~2.2 gpm
	5ft DTW 92.54		10:50	40	24.18	4.98	2.19	7.02	54	13.3	
	DTW 92.55		11:00	60	24.38	5.41	2.18	7.05	50	6.8	
@100	DTW 92.55		11:10	20	24.19	4.99	2.19	7.12	66	56.4	→ surge pump speed for 5 mins → flow set @ ~2.2 gpm
	DTW 92.55		11:20	40	24.72	4.51	2.17	7.10	57	6.5	
	DTW 92.55		11:30	60	24.39	4.38	2.18	7.09	28	1.8	

Sample Analytes: BTEX, Napthalene (8020), TVPH (gas) 8015mod, TEPH (diesel) 8015 mod, Napthalene (8270), PAHs (610), Nitrate, Glycols, RCRA Metals F N/F, VOC (8260), Semi-Volatiles (8270)

General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

Well Development / Purge Form Pre Post

Project	OU3	Total Depth	211.21 / 211.31
Project No.	0096498.020	Depth to Water	92.65 / 92.70
Location	Phx, AZ	Water Column (ft. h.)	118.56
Date	10-26-11	Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)	≈ 78.25 (Σ 34.75 = 3 vol)
Well Number	OU3-AT (4")	Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	≈ 136.34
Method	surge, bail, pump	Total Gallons Removed	~6
Field Personnel	J. Hillman	Sample Number & Time	n/a

Depth. Ind. S/N: north

Weather: 65-83°

Time	Duration (Minutes) Surge	Pump	Bail	Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond (µs/ms)	pH	ORP/ REDOX (ReL. MV)	Turbidity (NTU)	Remarks
11:48											Begin surging stop surge 12:12
12:13				24							Start bailing @ 12:13 stop @ 12:47
13:32	start	DTW = 93.62		—	24.67	4.75	2.12	7.44	-1	742	setting pump @ 208- 9.73 spm
	13:44	DTW = 93.61		~100	24.78	4.34	2.16	7.56	-6	395	@ 9.73
	13:54	DTW = 93.58		~200	24.89	4.82	2.18	7.34	19	151	@ 9.73 start @ 13:54
dump	14:10	DTW = 93.98		~471	24.86	4.18	2.18	7.35	22	142	~~spm~~ @ 13:56
	14:20	DTW = 93.99		~607	24.74	4.81	2.18	7.33	12	79.4	- Stopped pump @ 14:22

Sample Analytes: BTEX, Napthalene (8020), TVPH (gas) 8015mod, TEPH (diesel) 8015 mod, Napthalene (8270), PAHs (610), Nitrate, Glycols, RCRA Metals F N/F, VOC (8260), Semi-Volatiles (8270)

General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

@ 14:22 - pulling pump up 10 ft.

Well Development / Purge Form

Project	see page 1	Total Depth	
Project No.		Depth. Ind. S/N	~~see~~ 1
Location		Depth to Water	
Date		Weather	
Well Number		Water Column (ft. h.)	see page 1
Method		Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)	
Field Personnel		Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	
		Total Gallons Removed	
		Sample Number & Time	

Time	Duration (Minutes) Surge	Pump	Bail	Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond (µs/ms)	pH	ORP/ REDOX (ReL. MV)	Turbidity (NTU)	Remarks
14:30	/		/	—	—						start @ 14:30 pump set @ 200- pump @ 13.81 gpm
	14:40	DTW =	93.81	~138.1	24.74	2.15	2.18	7.34	26	104	
dump @ 14:50	14:50	DTW =	93.81	~276.2	24.42	4.59	2.19	7.37	29	63.1	
	15:00	DTW =	93.81	~415	24.51	4.51	2.19	7.37	51	51.9	stop pump @ 15:02
15:10	/		/								pump set @ 190- pump @ ≈14 gpm
dump @ 15:30	15:20	DTW =	93.81	~140	24.61	4.08	2.19	7.41	78	74.1	
	15:30	DTW =	93.81	~280	24.59	4.12	2.19	7.41	83	63.1	

Sample Analytes: BTEX Napthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Napthalene (8270) PAHs (610)
Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)
General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

PS2 d3

Well Development / Purge Form

Project		Total Depth see page 7	Depth. Ind. S/N
Project No.	see page 7	Depth to Water	Weather
Location		Water Column (ft. h.)	
Date		Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)	
Well Number		Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	
Method		Total Gallons Removed	
Field Personnel		Sample Number & Time	

Time	Duration (Minutes) Surge	Pump	Bail	Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/ REDOX (ReL. MV)	Turbidity (NTU)	Remarks
15:40	DTW	≈ 93.79		≈420	24.67	4.10	2.18	7.37	85	52.4	pump @ 190- pump off @ 15:42
15:50	/	DTW ≈ 93.75	/								pump @ 180- pump @ ≈14 gpm
	16:00	DTW ≈ 93.75		≈140	24.51	3.27	2.18	7.46	90	59.6	
	16:10	DTW ≈ 93.75		≈280	24.53	3.43	2.18	7.44	95	46.1	
						stop	pumping	@ 16:12			
						- pulling pump + piping	from	OU3-AT (4")			
						- 16:50	offsite				

Dump @ 16:12

Sample Analytes: BTEX Napthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Napthalene (8270) PAHs (610)
Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)
General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

Well Development / Purge Form

Project	OU3	Total Depth	118.47
Project No.	0096498.020	Depth to Water	92.57
Location	Phx, AZ	Water Column (ft. h.)	25.9
Date	10-27-11	Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)	~17.1
Well Number	OU3-55R	Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	~29.8
Method	surge, bail, pump.	Total Gallons Removed	
Field Personnel	J. Hill	Sample Number & Time	n/a

Depth. Ind. S/N: N

Weather: sunny 65-83°

Time	Duration (Minutes) Surge	Pump	Bail	Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/ REDOX (ReL. MV)	Turbidity (NTU)	Remarks
7:40	X	/	/								surge stop @ 8:02
8:05	/	/	X	~30							start bailing stop @ 8:44
9:09											pump @ 118 pump @ 5gpm
	9:19	X	DTW = 92.79	~50	23.71	* 36.07	1.95	6.01	305	119	
	9:29	X	DTW = 92.79	~100	24.55	* 21.77	1.96	6.76	216	28.1	
	9:39		DTW = 92.95	~200	24.37	* 17.74	1.94	6.80	200	19.2	pump @ 10gpm
	9:49		DTW = 92.95	~300	24.59	* 15.35	1.95	6.95	191	1.4	pump off @ 9:53

Sample Analytes: BTEX, Napthalene (8020), TVPH (gas) 8015mod, TEPH (diesel) 8015 mod, Napthalene (8270), PAHs (610), Nitrate, Glycols, RCRA Metals F N/F, VOC (8260), Semi-Volatiles (8270)

General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

* ~DO is acting funny

1 of

*- DO acting funny

Well Development / Purge Form

Project	See pge 7	Total Depth	
Project No.		Depth Ind. S/N	OW3-55R
Location		Depth to Water	
Date	10-27-11	Weather	
Well Number		Water Column (ft. h.)	
Method		Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)	
Field Personnel		Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	
		Total Gallons Removed	
		Sample Number & Time	

Time	Duration (Minutes) Surge	Pump	Bail	Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond (µs/ms)	pH	ORP/ REDOX (ReL. MV)	Turbidity (NTU)	Remarks
9:58	/		/								pump @ ~110- pump @ ~10gpm
	10:08	DTW =	92.90	~100	24.52	13.05*	1.96	6.94	185	9.8	
	10:18	DTW =	92.90	~200	24.27	14.95*	1.97	6.95	179	9.4	
	10:28	DTW =	92.90	~300	24.60	12.32*	1.94	6.96	170	3.7	
		Stop pump @ 10:30									move pump to ~100ft

Sample Analytes: BTEX Napthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Napthalene (8270) PAHs (610)
Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)
General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

*-

Well Development / Purge Form

Project		Total Depth	Depth. Ind. S/N
Project No.		Depth to Water	Weather 003-5SR
Location		Water Column (ft. h.)	
Date	10-27-11	Casing Volume (gal) (2" = 0.16h, 4" = 0.66h)	
Well Number		Borehole Volume (gal) (2" = 0.73h, 4" = 1.15h)	
Method		Total Gallons Removed	
Field Personnel		Sample Number & Time	

Time	Duration (Minutes) Surge	Pump	Bail	Volume (gallons)	Temp (°C)	DO (mg/L)	Spec Cond. (µs/ms)	pH	ORP/ REDOX (ReL. MV)	Turbidity (NTU)	Remarks
10:36	✓		✓								pump set @ 100ft pump @ 10 gpm
	10:46	DTW =	92.90	2100	24.66	22.46*	1.94	6.97	167	1.8	
	10:56	DTW =	92.90	2200	24.89	13.46*	1.93	6.97	147	0.9	
	11:06	DTW =	92.90	2300	24.73	11.06*	1.94	6.98	129	0.1	
							stop pump @		11:11		

Sample Analytes: BTEX Napthalene (8020) TVPH (gas) 8015mod TEPH (diesel) 8015 mod Napthalene (8270) PAHs (610)
Nitrate Glycols RCRA Metals F N/F VOC (8260) Semi-Volatiles (8270)
General Water Chemistry (cations plus manganese, anions, chloride, sulfate, bicarbonate, and total alkalinity)

GIS DATALGPS TRIMBLE R8
DATA IS AZ SP GRID

COMPANY PROJECT NAME ERM 5TH ST VAN BUREN
LEI WO # 11-739

NGVD29
NAD83

NORTHING IFT	EASTING IFT	LATITUDE	LONGITUDE	ASSIGNED PT#	ASSIGNED DESCRIPTION	DATE LOGGED	ELEV GROUND	ELEV N. RIM	ELEV N. PIPE
891975.409	654021.934	33°27'06.77075" N	112°04'02.68802" W	71	CHECK OU3-5SR	10/27/2011			1087.30
892033.142	654021.055	33°27'07.34196" N	112°04'02.69939" W	72	OU3-A7	10/27/2011	1087.66	1087.69	1087.35
892039.138	654021.138	33°27'07.40128" N	112°04'02.69814" W	70	SVMW-2	10/27/2011	1087.63	1087.64	NA

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
45721
TIMOTHY J
GAUDETTE
Exp 12-31-12
Date Signed 11-8-2011
ARIZONA U.S.A.

GIS DATALGPS TRIMBLE R8
DATA IS AZ SP GRID

COMPANY PROJECT NAME ERM 14TH ST & POLK
LEI WO # 11-739

NGVD29
NAD83

NORTHING IFT	EASTING IFT	LATITUDE	LONGITUDE	ASSIGNED PT#	ASSIGNED DESCRIPTION	DATE LOGGED	ELEV GROUND	ELEV N. RIM	ELEV N. PIPE
892264.184	659441.625	33°27'09.70113" N	112°02'58.72289" W		CHECK EW-22D	10/27/2011			1095.79
892265.875	659446.914	33°27'09.71792" N	112°02'58.66048" W		SVMW-3	10/27/2011	1096.37	1096.35	NA

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
45721
TIMOTHY J
GAUDETTE
Date Signed 11-8-2011
ARIZONA U.S.A.
12-31-12

GIS DATALGPS TRIMBLE R8
DATA IS AZ SP GRID

COMPANY PROJECT NAME ERM 6TH AV &MONROE
LEI WO # 11-739

NGVD29
NAD83

NORTHING IFT	EASTING IFT	LATITUDE	LONGITUDE	ASSIGNED PT#	ASSIGNED DESCRIPTION	DATE LOGGED	ELEV GROUND	ELEV N. RIM	ELEV N. PIPE
891531.512	649755.617	33°27'02.31470" N	112°04'53.03572" W		CHECK OU3-16S	10/27/2011			1082.18
891519.688	649755.815	33°27'02.19772" N	112°04'53.03315" W		SVMW-1	10/27/2011	1082.69	1082.69	NA

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
45721
TIMOTHY J
GAUDETTE
EXP 12-31-12
Date Signed 11-8-2011
ARIZONA U.S.A.

Appendix F
Slug Test Field Forms

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-1-11
Set up time: 13:20
Weather: Sunny, 65-85
Field Staff: J. Hilk / T. Schumacher

as measured.
DTW = 86.39
TD = 166.41

WELL # OU3-12M

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 170
Screened Interval (feet): 146.7 - 166.7
Equipment Manufacturer: ~~In-Situ~~
Depth pressure transducer set at: 120'

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	86.39	
Final Depth to Water (feet):		
Height of Water Column (feet):	80.02	

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0	86.39		Start @ 14:15 (slug - in)
60	86.40	n/a	
			2:15 re-do - data recorded started too late
0	86.39	n/a	start @ 14:31 (slug - in)
40	86.40	n/a	
180	86.40	n/a	
3min	86.40	n/a	
4min	86.40	n/a	
5min	86.40	n/a	
6min		- missed -	JH
7min	86.39	—	
8min	86.39	—	
9min	86.39		
10min	86.39		stop test @ 14:42 (slug - in)
0	86.39		slug out test @ 14:47
60	86.41		
~~130~~ 90	86.41		
120	86.40		
	86.40		2:30
	86.40		3:00
4min	86.39		

FIELD OBSERVATIONS (Well condition, repairs needed)
slug-in - manual
slug-out -

time	DTW	comments
5	86.39	
6	86.39	
7	86.39	
8	86.39	
9	86.39	
10	86.39	stop test @ 14:57

Other notes:
n/a

Sampler Signature(s) :
J. Hilk

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11/2/2011
Set up time: 1320
Weather:
Field Staff:

WELL # OU3 - 1M

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 75.7
Screened Interval (feet):
Equipment Manufacturer:
Depth pressure transducer set at: 130

Slug construction Details:
Length (ft)
Width (in)
Weight (lbs)
Material:

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		92.14
Final Depth to Water (feet):		
Height of Water Column (feet):		

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
1410	0	92.14		Slug in 37.675
	60	92.13		
	90	92.13		
	120	92.13		
	3 min	92.13		
	4 min	92.13		
	5 min	92.13		
	6 min	92.13		
	7 min	92.13		
	8 min	92.13		
	9 min	92.13		
	10 min	92.13		
1425	0	92.13		Slug out
	60 sec	92.13		
	90 sec	92.13		
	120 sec	92.13		
	3 min	92.13		
	4 min	92.13		
	5 min	92.13		
	6 min	92.13		
	7 min	92.13		
	8 min	92.13		

FIELD OBSERVATIONS (Well condition, repairs needed)
9 min 92.13
10 min 92.13

Other notes:

Sampler Signature(s) :

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 1/12/2011
Set up time: 0950
Weather: Sunny, clear
Field Staff: T. Schmachtenberg K. Johnson

WELL # OU3-6M

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): ~127
Screened Interval (feet):
Equipment Manufacturer:
Depth pressure transducer set at: 130 39.35

Slug construction Details:
Length (ft) 8.4
Width (in) 0.33'
Weight (lbs)
Material:

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	40.42	
Final Depth to Water (feet):		
Height of Water Column (feet):		

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
1130	0	90.42		Slug-in
	60	90.41		
	90	90.41		
	130	90.41		
	3 min	90.41		
	4 min	90.42		
	5 min	90.42		
	6 min	90.42		
	7 min	90.42		
	8 min	90.41		
	9 min	90.41		
	10 min	90.41		
1145	0	90.41		Slug out 39.364
	90	90.41		
	120	90.41		
	3 min	90.41		
	4 min	90.41		
	5 min	90.41		
	6 min	90.41		
	7 min	90.41		
	8 min	90.41		
	9 min	90.41		
	10 min	90.41		

FIELD OBSERVATIONS (Well condition, repairs needed)

Other notes:

Sampler Signature(s) :

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 1/5/-011
Set up time: 0750
Weather: Sunny, clear
Field Staff: T. Schimacher K. Johnson

WELL # ~~MW-175~~ OU3-175

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 119.76
Screened Interval (feet):
Equipment Manufacturer:
Depth pressure transducer set at: ~117

Slug construction Details:
Length (ft) 8.9
Width (in) 0.3
Weight (lbs)
Material:

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		85.82
Final Depth to Water (feet):		85.82
Height of Water Column (feet):		34

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0856	85.82		
0858	85.82		
0900	85.82		
60	85.83		
90	85.83		
120	85.83		
3 min	85.83		
4 min	85.83		
5 min	85.83		
6 min	85.83		
7 min	85.83		
8 min	85.83		
9 min	85.83		
10 min	85.82		

FIELD OBSERVATIONS (Well condition, repairs needed)

Other notes:

Sampler Signature(s) :

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-1-11
Set up time: 10:20
Weather: sunny 65-85
Field Staff: J. Hilker, T. Schumacher

WELL # SC-MW-1D

Location: OU3 - Superfund Site
Construction:

measured TD 124.95 DTW =87.33

Construction Depth (feet): 125
Screened Interval (feet): 83-123
Equipment Manufacturer: In-situ
Depth pressure transducer set at: ~122

Slug construction Details:
Length (ft) 8.4
Width (in) 0.23
Weight (lbs) 24.5
Material: PVC, filled w/ sand

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		87.33
Final Depth to Water (feet):		87.32
Height of Water Column (feet):		37.62

No falling head due to shallow well w/ un saturated screen

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0	87.33	n/a	initial (before slug entered)
10:59 0	87.31	n/a	after slug entered (before test)
0			Start test @ 11:08
40	87.35	n/a	
90	87.33		
120	87.33		
3min 15sec	87.33		
240	87.33		
300	87.33		
7min	87.32		
8min	87.32		
9min	87.32		
10min	~~87.32~~ 87.32		
11min	87.32		
12min	87.32		Stop manual test

FIELD OBSERVATIONS (Well condition, repairs needed)
Manual test - generator would not start, so unable to use motor. Will try again if generator starts.

Other notes:
Well vault + j-plug OK.

Sampler Signature(s): J. Hilker

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 1/26/2004
Set up time:
Weather:
Field Staff:

WELL # APER-EW-21

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet):
Screened Interval (feet):
Equipment Manufacturer:
Depth pressure transducer set at:

Slug construction Details:
Length (ft)
Width (in)
Weight (lbs)
Material:

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		92.15
Final Depth to Water (feet):		
Height of Water Column (feet):		

TD - 100.49

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0	92.15		

FIELD OBSERVATIONS (Well condition, repairs needed)

Other notes:

Sampler Signature(s) :

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-3-11
Set up time: 7:50
Weather: sunny - 55-75°
Field Staff: J. Hilka / T. Schumacher

WELL # OU3-5MR

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): TD = 168.54
Screened Interval (feet): 148 - 168
Equipment Manufacturer: In-situ
Depth pressure transducer set at: @130 ft

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	92.80	92.81
Final Depth to Water (feet):	92.80	
Height of Water Column (feet):	75.74	

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = ~24.5
Material: PVC

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
8:07	0	92.80	n/a	Pre slug in gauging
8:26	0	92.80	n/a	stand. test - slug in
8:27	60	SH ~~92.80~~ 92.81	n/a	
8:28	120	SH ~~92.80~~ 92.81	n/a	
8:29	180	SH ~~92.80~~ 92.81	n/a	
8:30		92.81	n/a	
8:31		92.81	n/a	
8:32		92.81	n/a	
8:33		92.81	n/a	
8:34		92.81	n/a	
8:35		92.81		
8:36		92.80		
				stop test

FIELD OBSERVATIONS (Well condition, repairs needed)
slug - in

Other notes:
- replaced J-plug

Sampler Signature(s): J. Hilka

OU3
Motorola 52nd St Superfund Site
Aquifer Testing – Slug Test
Field Notes / ERM

Date: 11-3-11
Set up time: 8:38
Weather: sunny, 55-75
Field Staff: J. Hilk / M. Schumacher

WELL # OU3-5mR

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 168.54 = TD (measured)
Screened Interval (feet): 148 – 168
Equipment Manufacturer: Dn-Situ
Depth pressure transducer set at: 130 ft

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: PVC

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	92.80	
Final Depth to Water (feet):	92.80	
Height of Water Column (feet):	75.74	

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
	0.	92.80	n/a	slug out – pre-gauging
8:49	0	92.80		start slug out test
	30	92.84		
	60	92.82		
	120	92.82		
8:52	180	92.81		
8:53	240	92.81		
8:54	300	92.81		
8:55	360	92.81		
8:56	420	92.81		
8:57	480	92.81		
8:58	520	92.81		
8:59	580	92.80		
				stop test @ 8:59

FIELD OBSERVATIONS (Well condition, repairs needed)
n/a

Other notes:
n/a

Sampler Signature(s) :
J. Hilk

OU3
Motorla 52nd St Superfund Site
Aquifer Testing – Slug Test
Field Notes / ERM

Date: 11-3-11
Set up time: 9:18
Weather: sunny, 65-79
Field Staff: J. Hilker, T. Schumacher

WELL # OU3-55R

measure TD = 119.30

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet):
Screened Interval (feet):
Equipment Manufacturer: In-situ
Depth pressure transducer set at: ~~120~~ ~~130~~ 116.3

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		92.60
Final Depth to Water (feet):		92.60
Height of Water Column (feet):		26.70

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
	01	92.60	n/a	Pre-slug ~~out~~ in measurement
	02	92.63	n/a	Pre-slug out measurement
	0			
	30	92.68	n/a	@ ~~9:45~~ JH 9:43
	60	92.64	n/a	
	120	92.61	n/a	
	180	92.60	n/a	
	240	92.60	n/a	
5min	300	92.60	n/a	
	360	92.60	n/a	
	420	92.60	n/a	
	480	92.60	n/a	
	540	92.60	n/a	
10min	600	92.60	n/a	
				Stop test @ 9:54

FIELD OBSERVATIONS (Well condition, repairs needed)

slug-out test only - shallow well w/ open screen

Other notes:

Sampler Signature(s) :

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-3-11
Set up time: 10:12
Weather: Sunny, 65-79
Field Staff: J. Hilla / T. Schumacher

WELL # OU3 - 5MZ

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): ~~229~~ 221.30 measured TD = 221.30
Screened Interval (feet): ~~214-229~~ JH → 202-222.
Equipment Manufacturer: In-Situ
Depth pressure transducer set at: ~~130~~ 129.7 = ~130

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	92.73	
Final Depth to Water (feet):	92.73	
Height of Water Column (feet):	128.57	

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
	0	92.73	n/a	Pre-slug in test
10:32	0	92.73	n/a	start slug in test
	30	92.78	n/a	
	60	92.74	n/a	
	120	92.74	n/a	
	180	92.74	n/a	
	240	92.74	n/a	
JMA	300	92.74	n/a	
	360	92.74	n/a	
	420	92.73	n/a	
	480	92.73	n/a	
	540	92.73	n/a	
10:42	600	92.73	n/a	Stop test @ 10:42

FIELD OBSERVATIONS (Well condition, repairs needed)

slug-in test
~~[illegible]~~ -JH

Other notes:
→ needs 3/4 in bolts for well vault. ~~well vault stripped out~~ JH,
Well vault may be stripped out.

Sampler Signature(s):
J. Hilla,

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-3-11
Set up time: 10:42
Weather: sunny, 65-79
Field Staff: J. Hiller / T. Schumacher

WELL # OU3-5M2

measured TD = 221.30

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet):
Screened Interval (feet): 202 - 222
Equipment Manufacturer: In-situ
Depth pressure transducer set at: 129.7 = ~130 ft

Slug construction Details:
Length (ft) = 8.4
Width (in) = ~~[illegible]~~ IN 0.23
Weight (lbs) = 24.5
Material: = PVC

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	92.73	
Final Depth to Water (feet):		
Height of Water Column (feet):	128.57	

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
	0,	92.73	n/a	Pre-slug out water level
10:49	0	92.73	n/a	Start slug-out test
	30	92.78	n/a	
	60	92.75	n/a	
	120	92.74	n/a	
	180	92.74	n/a	
	240	92.74	n/a	
5	300	92.74	n/a	
	360	92.74	n/a	
	420	92.74	n/a	
	480	92.74	n/a	
	540	92.74	n/a	
10	600	92.74	n/a	
				stop time @ ~~[illegible]~~ 11:00

FIELD OBSERVATIONS (Well condition, repairs needed)

slug-out test

Other notes:
n/a

Sampler Signature(s) :
J. Hiller

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-3-11
Set up time: 12:15
Weather: sunny, 65-79
Field Staff: J. Hilker / T. Schumacher

WELL # EW - 22S

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 109.84
Screened Interval (feet):
Equipment Manufacturer: DN-Situ
Depth pressure transducer set at: 106.97

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Slug Test Set-up	~~Falling Head~~	Rising Head
Initial Depth to Water (feet):		~~91.15~~ 91.35
Final Depth to Water (feet):		
Height of Water Column (feet):		18.49

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
	O_1	91.35	n/a	Pre-slug placed test
	O_2	91.40	n/a	before After slug in
	O_3	91.41	after slug-in	~~start slug test~~ SH
12:44	0	91.41	—	start test
	30	91.36	n/a	
	60	91.36	n/a	
	120	91.36	n/a	
	180	91.36	n/a	
	240	91.36	n/a	
5	300	91.36	n/a	
	360	91.35	n/a	
	420	91.35	n/a	
	480	91.35	n/a	
	540	91.35	n/a	
10	600	91.35	n/a	
				end test

FIELD OBSERVATIONS (Well condition, repairs needed)

Slug-out only - shallow well w/ exposed screen.

Other notes:
- unable to ~~[illegible]~~ ~~[illegible]~~ OU3-13M due to truck parked over well. will return a later date to perform slug testing.

Sampler Signature(s) :

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-3-11
Set up time: 13:22
Weather: sunny, 65-79
Field Staff: J. Hilke / T. Schumacher

WELL # OU3-2M

TD measured = 170.02

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet):
Screened Interval (feet): 150-170
Equipment Manufacturer: In-situ
Depth pressure transducer set at: →129.7 = ~130

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	87.16	
Final Depth to Water (feet):		
Height of Water Column (feet):	82.86	

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0,	87.16	n/a	pre-slug in
0			start test

FIELD OBSERVATIONS (Well condition, repairs needed)

Slug-in test only

Upon attempting to place slug into well - slug became lodged in top 8ft of casing. slug would have to be forced through the potential opening. Upon bringing the slug to the surface, soil appears to be present on the lower 4" of the slug. See photograph in file.

Other notes:
vault looks ok

Sampler Signature(s) :
J. Hilke

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-7-11
Set up time: 7:45
Weather: sunny
Field Staff: 46 - 65
J. Hilk / T. Shumacher

WELL # OU3-165

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 125.37 - measured
Screened Interval (feet): 75-125
Equipment Manufacturer: In-situ
Depth pressure transducer set at:
@ 122.8 = ~123ft

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		98.17
Final Depth to Water (feet):		98.18
Height of Water Column (feet):		27.2

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
	0	98.17	n/a	Before slug-in
8:20	02	98.23	n/a	after slug-in
	03	98.23	n/a	Before start of test
8:26	0	98.23	n/a	start test
	20	98.35		
	30	98.20		
	60	98.20		
	120	98.19		
	180	98.19		
	240	98.19		
Sw	300	98.19		
	360	98.19		
	420	98.19		
	480	98.18		
	540	98.18		
10m	600	98.18		
				Stop test ~8:37

FIELD OBSERVATIONS (Well condition, repairs needed)

Shallow well - ~~[illegible]~~ only!
slug-out

Other notes:
well vault o/c

Sampler Signature(s) :
J. Hilk

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-1-11
Set up time: 9:11
Weather: Partly cloudy, 49-65
Field Staff: J. Hilka / T. Schumacher

WELL # OU3-16M

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 181.5 = measured depth
Screened Interval (feet): 161-181
Equipment Manufacturer: In-situ
Depth pressure transducer set at: 129.734 = 2130

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	98.38	
Final Depth to Water (feet):	98.38	
Height of Water Column (feet):	83.12	

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0,	98.38	N/A	pre-slug in
~~9:21~~ 0	98.38		Start test
30	97.80		
60	98.30		
120	~~98.38~~ 98.37	N/A	
180	98.37		
240	98.38		
300	98.38		
360	98.38		
420	98.38		
480	98.38		
540	98.38		
600	98.38		
			Start : 9:21
			Stop : 9:31

FIELD OBSERVATIONS (Well condition, repairs needed)

slug-in

Other notes:
n/a

Sampler Signature(s) :
J. Hilka

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-1-11
Set up time: 9:33
Weather: pdly cloudy, slight wind, 49-65
Field Staff: J. Hilker, T. Schumacher

WELL # OU3-16M

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 181.5
Screened Interval (feet): 161-181
Equipment Manufacturer: In-situ
Depth pressure transducer set at: @129.75 = ~130

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		98.38
Final Depth to Water (feet):		98.38
Height of Water Column (feet):		83.12

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
	0	98.38	n/a	pre-start check
9:38	0	98.38	n/a	Start test
	60	98.41		
	120	98.40		
	180	98.39		
5min	240	98.39		
	300	98.39		
	360	98.38		
	420	98.38		
	480	98.38		
	540	98.38		
10min	600	98.38		
				~~9:48~~ end 9:48

FIELD OBSERVATIONS (Well condition, repairs needed)

slug-out test

Other notes:
well vault ok

Sampler Signature(s) :
J. Hilk.

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-7-11
Set up time: 10:30
Weather: partly cloudy, light wind, 49-65
Field Staff: J. Hiller, D. Schumacher

WELL # OU3-13 M

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 174.80 = measured
Screened Interval (feet): 154 - 174
Equipment Manufacturer: In-situ
Depth pressure transducer set at:
e = 130.617 = ~130'

Slug construction Details:
Length (ft) - 8.4
Width (in) - 0.23
Weight (lbs) - 24.5
Material: - PVC

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet): 91.41	~~[illegible]~~ JH	
Final Depth to Water (feet):		
Height of Water Column (feet):	~~[illegible]~~ JH	
	83.39	

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
	0	~~92.41~~ 91.41 JH	n/a	pre-test gauging
	0	~~92.41~~ 91.41 JH	n/a	" "
	20	~~92.41~~ 91.41 JH	n/a	Start test 10:52
	45	90.55	n/a	
	60	91.22	n/a	
	120	91.41	n/a	
	180	91.41	n/a	
	240	91.41	n/a	
5min	300	91.41	n/a	
	360	91.41	n/a	
	420	91.41		
	480	91.41		
	540	91.41		
10min	600	91.41		
				end test 11:02 JH

FIELD OBSERVATIONS (Well condition, repairs needed)

slug-in

Other notes:

well vault bolts stripped out

Sampler Signature(s) :

J. Hill

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-8-11
Set up time: 7:58
Weather: sunny - 49.75
Field Staff: J. Hilk / T. Schumer

WELL # OU3-105

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 124.45
Screened Interval (feet): 74 - 124
Equipment Manufacturer: In-Situ
Depth pressure transducer set at: @120.71 = 2121

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Slug Test Set-up
Initial Depth to Water (feet): 98.72
Final Depth to Water (feet): 98.75
Height of Water Column (feet): 25.73

~~Falling Head~~ ~~Rising Head~~

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0₁	98.72	n/a	pre-slug in
0₂	98.78	n/a	after slug in well
0			start 8:18
30	98.80	n/a	
60	98.80		
120	98.80		
180	98.79		
240	98.79		
300	98.77		
360	98.77		
420	98.77		
480	98.76		
540	98.76		
600	98.75		
			stop 8:29

FIELD OBSERVATIONS (Well condition, repairs needed)

slug-out test only

Other notes:

well locked

Sampler Signature(s) :

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-8-11
Set up time: 8:40
Weather: sunny, light breeze, 45-75
Field Staff: J. Hilke / T. Schumach

WELL # OU3-10M

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 166.95 = measured depth
Screened Interval (feet): ~~[illegible]~~ 146.7 – 166.7
Equipment Manufacturer: In-situ
Depth pressure transducer set at: @ 129.77 = 2430

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	99.17	
Final Depth to Water (feet):	99.16	
Height of Water Column (feet):	67.78	

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0,	99.17	n/a	pre-slug in
0	99.17		start test 9:00
30	99.15		
60	99.15		
120	99.15		
180	99.16		
240	99.16		
300	99.16		
360	99.16		
420	99.16		
480	99.16		
540	99.16		
600	99.16		
			Stop @ 9:11

FIELD OBSERVATIONS (Well condition, repairs needed)

Slug in test.

Other notes:
n/c

Sampler Signature(s) :
J Hilke

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-8-11
Set up time: 9:15
Weather: sunny, light wind, 45-75
Field Staff: J. Hilliker / T. Schumacher

WELL # OU3-10M

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 166.95 = ~~measured depth~~
Screened Interval (feet): 146.7 - 166.7
Equipment Manufacturer: In-situ
Depth pressure transducer set at:
@ 129.77 e = ~130-

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		99.15
Final Depth to Water (feet):		99.15
Height of Water Column (feet):		67.78

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0,	99.15	n/a	pre-slug out test
0		n/a	start test: 9:23
30	99.16		
60	99.16		
120	99.16		
180	99.16		
240	99.16		
300	99.16		
360	99.16		
420	99.15		
480	99.15		
540	99.15		
600	99.15		
			end test: 9:35

FIELD OBSERVATIONS (Well condition, repairs needed)

Slug-out test

Other notes:
n/a

Sampler Signature(s) :
J Hilliker

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-8-11
Set up time: 9:50
Weather: sunny, slight breeze, @45-75
Field Staff: J. Hilla / T. Schumacher

WELL # OU3-10M2

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 218.86 = measured depth
Screened Interval (feet): 199-219
Equipment Manufacturer: In-situ
Depth pressure transducer set at: @ 129.865 = 2130

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	98.95	
Final Depth to Water (feet):	98.95	
Height of Water Column (feet):	119.91	

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0	98.95	—	initial Sample
0	98.95	—	Start test: 10:10
30	98.65	—	
45	98.94	—	
60	98.94	—	
120	98.94	—	
180	98.95	—	
240	98.95	—	
300	98.95	—	
360	98.95	—	
420	98.95	—	
480	98.95	—	
540	98.95	—	
600	98.95		
			Stop: 10:22

FIELD OBSERVATIONS (Well condition, repairs needed)

Slug in test

Other notes:

n/a

Sampler Signature(s) :

J. Hilla

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-8-11
Set up time: 10:25
Weather: Sunny, slight breeze, 45-75
Field Staff: J. Hilliker / T. Schumacher

WELL # OU3-10M2

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 218.86 - measured depth
Screened Interval (feet): 199-219
Equipment Manufacturer: In-situ
Depth pressure transducer set at:
@ 129.865 = ~130

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		98.95
Final Depth to Water (feet):		98.95
Height of Water Column (feet):		119.91

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0,	98.95	—	Pre-slug out elevation
0			start test: 10:36
30	99.40		
45	99.00		
60	99.03		
120	98.95		
180	98.95		
240	98.95		
300	98.95		
360	98.95		
420	98.95		
480	98.95		
540	98.95		
600	98.95		
			end test: 10:47

FIELD OBSERVATIONS (Well condition, repairs needed)

Slug-out

Other notes:

Sampler Signature(s) :

OU3
Motorla 52nd St Superfund Site
Aquifer Testing – Slug Test
Field Notes / ERM

11-8-11

Date:
Set up time: 12:15
Weather: sunny, 49-75
Field Staff: J. Hilth, T. Schumacher

WELL # OU3-8S

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 109.71
Screened Interval (feet): 59 – 109
Equipment Manufacturer: In-situ
Depth pressure transducer set at: 106.16

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		94.01
Final Depth to Water (feet):		94.01
Height of Water Column (feet):		15.7

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0	94.01	n/a	pre-slug in
0	94.05		after slug in
0			start test: 12:55
45	94.01		
60	94.01		
120	94.01		
180	94.01		
240	94.01		
300	94.01		
360	94.01		
420	94.01		
480	94.01		
540	94.01		
600	94.01		
			stop test: 13:06

FIELD OBSERVATIONS (Well condition, repairs needed)

slug-out only

Other notes:

Sampler Signature(s) :

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-8-11
Set up time: 13:07
Weather: Sunny light breeze, 45-75
Field Staff: J. Hillin / T. Schumacher

WELL # OU3-8M2

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 225.25 - measured at time
Screened Interval (feet): 205-225
Equipment Manufacturer: In-situ
Depth pressure transducer set at: @ 129.78 = ~130

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	93.71	
Final Depth to Water (feet):	93.72	
Height of Water Column (feet):	131.52	

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0,	93.71	n/a	Pre-gauging
0			Start test 13:38
30	93.65		
60	93.72		
120	93.72		
180	93.72		
240	93.72		
300	93.72		
360	93.72		
420	93.72		
480	93.72		
540	93.72		
600	93.72		
			Stop: 13:49

FIELD OBSERVATIONS (Well condition, repairs needed)

Slug-in

Other notes:

Sampler Signature(s) :

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-8-11
Set up time: 13:55
Weather:
Field Staff:

WELL # OU3-8M2

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 225.25 - measured in field
Screened Interval (feet): 205-225
Equipment Manufacturer: In-situ
Depth pressure transducer set at:
@ 129.78 = 2130

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		93.72
Final Depth to Water (feet):		93.72
Height of Water Column (feet):		131.53

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0	93.72	n/a	Pre start gauging
0			Start test: 13:59
45	93.80		
60	93.75		
120	93.73		
180	93.73		
240	93.73		
300	93.73		
360	93.72		
420	93.72		
480	93.72		
540	93.72		
600	93.72		
			Stop test: 14:10

FIELD OBSERVATIONS (Well condition, repairs needed)

slug - out

Other notes:
n/a

Sampler Signature(s) :
[signature]

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-7-11
Set up time: 10:40
Weather: partly cloudy, windy, 49-65
Field Staff: J. Hilka, J. Schumacher

WELL # OU3-13M

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 174.80 - measured
Screened Interval (feet): 154-174
Equipment Manufacturer: In-situ
Depth pressure transducer set at:
@ 130.617 = 2130

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		91.41
Final Depth to Water (feet):		
Height of Water Column (feet):		83.39

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
	0	91.41	n/a	Pre-sounded before slug out test
	0		n/a	start test @ 11:15
	20	93.00	n/a	
	45	92.01	n/a	
	60	91.78		
	120	91.45		
	180	91.43		
	240	91.43		
5min -	300	91.43		
	360	91.43		
	420	91.42		
	480	91.42		
	540	91.42		
10min -	600	91.41		
				stop test @ : 11:25

FIELD OBSERVATIONS (Well condition, repairs needed)

Slug-out

Other notes:
n/e

Sampler Signature(s) :

J. Hilka

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-9-11
Set up time: 6:50
Weather: sunny 49-75
Field Staff: J. Hill / J. Schumacher

WELL # OU3-115

Location: OU3 - Superfund Site
Construction:

measured TD
Construction Depth (feet): ≈ 118.52
Screened Interval (feet): ≈ 69-119
Equipment Manufacturer: Dn - site
Depth pressure transducer set at: @ 113.36 = ~113

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		88.90
Final Depth to Water (feet):		
Height of Water Column (feet):		29.62

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
O_1	88.90	—	Pre - slug in
O_2	88.89	—	Post - slug in
0			start test 7:23
45	88.90		
60	88.90		
120	88.90		
180	88.90		
240	88.90		
300	88.90		
360	88.90		
420	88.90		
480	88.90		
540	88.90		
600	88.90		
			Stop test 7:33

FIELD OBSERVATIONS (Well condition, repairs needed)

slug-out only test.

Other notes:

Sampler Signature(s) :

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

11-9-11

Date:
Set up time: 7:50
Weather: sunny, 49-75
Field Staff:

WELL # OU3-11M

TD measured = 165.26

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet):
Screened Interval (feet): 153-173
Equipment Manufacturer: Insitu
Depth pressure transducer set at:
@ 129.739 ≈ 130'

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	89.00	
Final Depth to Water (feet):		
Height of Water Column (feet):	76.26	

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0	89.00	—	Pre-slug in depth
0			start test: 8:13
60	89.00	—	
120	89.00	—	
180	89.00	—	
240	89.00	—	
300	89.00	—	
360	89.00	—	
420	89.00	—	
480	89.00	—	
540	89.00	—	
600	89.00	—	
			stop test: 8:23

FIELD OBSERVATIONS (Well condition, repairs needed)

slug-in

→ TD measured @ 165.26. Records show ~~[illegible]~~ well is screened from 153-173.

Other notes:

well vault ok

Sampler Signature(s):

J Heller

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-9-11
Set up time: 8:23
Weather: sunny.
Field Staff: D. Schumach / J. Hilk

WELL # OU3-11M

TD = 165.26

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet):
Screened Interval (feet): 153-173
Equipment Manufacturer: In-situ
Depth pressure transducer set at:
@ 129.739 = ~130

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		~~89.60~~ 88.95
Final Depth to Water (feet):		
Height of Water Column (feet):		76.26

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0,	~~88.9~~ 88.15	—	Pre-slug out test
0			Start test: 8:34
60	88.95	—	
120	88.95	—	
180	88.95	—	
240	88.95	—	
300	88.95	—	
360	88.95		
420	88.96		
480	88.97		
540	88.97		
300	88.97		
			Stop test: 8:47

FIELD OBSERVATIONS (Well condition, repairs needed)

slug-out

Other notes:
MG

Sampler Signature(s) :

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-9-11
Set up time: 9:25
Weather: Sunny, 45-75
Field Staff: J. Hilly / T. Schumacher.

WELL # EW-20

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): ~~[illegible]~~ 111.00 - TD measured
Screened Interval (feet): =
Equipment Manufacturer: = In-situ
Depth pressure transducer set at: = @ 106.2' = ~106'

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		93.68
Final Depth to Water (feet):		93.67
Height of Water Column (feet):		17.32

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
01	93.68	—	Pre-slug in
02	93.68	—	after slug-in
0			Start test:
		→ unable	to take water level
			readings during recovery due to
			in-ability to get ~~[illegible]~~ water level indicator
			past slug in well. ←
240	93.65	—	got water level past slug!
300	93.66	—	
360	93.66	—	
420	93.66	—	
480	93.67		
540	93.67		
600	93.67		
			- stop test:

FIELD OBSERVATIONS (Well condition, repairs needed)

Slug-out only! - shallow well w/ exposed screen.

Other notes:
~~[illegible]~~ - no well vault bolts. Vault right next to sprinkler.

Sampler Signature(s) :

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-9-11
Set up time: 10:40
Weather: Sunny, 45-72
Field Staff: J. Hillen / T. Schumacher

WELL # OU3-19M

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 170.5 = measured depth
Screened Interval (feet): 150 - 170
Equipment Manufacturer: In-situ
Depth pressure transducer set at: @ 130.25 = ~130

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):	86.85	
Final Depth to Water (feet):	86.85	
Height of Water Column (feet):	83.65	

	Time (sec)	Depth to Water (ft)	Visual Observation	Comments
	0,	86.85	—	Pre - slug in test
	0	86.85		Start test: 10:56
	30	86.80	—	
	60	86.82	—	
	120	86.83	—	
	180	86.83	—	
	240	86.84	—	
5min	300	86.84	—	
	360	86.84	—	
	420	86.84	—	
	480	86.84	—	
	540	86.85	—	
10min	600	86.85	—	
				Stop test: 11:07

FIELD OBSERVATIONS (Well condition, repairs needed)

Slug-in

→ ~~Water~~ transducer slipped down ~5" during test. Transducer re-secured for slug out test.

Other notes:
N/A

Sampler Signature(s) : J. Hillen

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Slug Test
Field Notes / ERM

Date: 11-9-11
Set up time:
Weather: sunny, 45-72
Field Staff: J. Hilton / T. Schumacher

WELL # OU3-19M

Location: OU3 - Superfund Site
Construction:

Construction Depth (feet): 170.5 measure depth
Screened Interval (feet): 150-170
Equipment Manufacturer: In-situ
Depth pressure transducer set at: @130.25 = ~130

Slug construction Details:
Length (ft) = 8.4
Width (in) = 0.23
Weight (lbs) = 24.5
Material: = PVC

Slug Test Set-up	Falling Head	Rising Head
Initial Depth to Water (feet):		86.85
Final Depth to Water (feet):		
Height of Water Column (feet):		

Time (sec)	Depth to Water (ft)	Visual Observation	Comments
0	86.85	—	Pre-slug out
0			Start test: 11:19
60	86.83	—	
120	86.84	—	
180	86.84	—	
240	86.84	—	
300	86.84	—	
360	86.84	—	
420	86.85	—	
480	86.85	—	
540	86.85	—	
600	86.85	—	
			Stop test: 11:29

FIELD OBSERVATIONS (Well condition, repairs needed)

Slug-out test

Other notes: n/a

Sampler Signature(s): J. Hilton

Appendix G
U-SRG Constant-Rate
Discharge Test Forms

OU-3 Daily Log

15

Personnel: J. Hilk, T. Schumacher **Date:** 11-8-11

Weather: **Project:** 96498.000

Time:	Activities
7:00	Mob to lab to pick-up sample jars
7:40	onsite. Traffic control is wrong. Call HWY-TECH to get them to fix it. HWY-TECH says they are trying to get someone out. ASAP to fix the set-up.
8:00	HWY-TECH hope to get some one onsite to fix barricade by 9:30 or sooner. Boart & ERM on hold until then.
8:45	ERM calibrate Horiba for job. Low HAS w/ Boart.
9:34	HWY-TECH onsite to move barricades.
10:10	Traffic control being moved into right place
10:15	Boart setting up on OU3-SSR.
10:18	ERM start data collection @ OU3-SSR - white tape
10:28	ERM downloads data for OU3-SMR - green tape
10:38	ERM downloads data for OU3-SM2 - yellow tape
10:40	Boart setting OU3-SSR pump for step test.
10:42	ERM down load data for OU3-AT-S(2") - blue tape
10:45	ERM down load data for OU3-AT-M(4") - red tape
11:50	OU3-SMR = 92.59 (Drain DTW)
	OU3-SM2 = 92.57
	OU3-AT-2" = 92.31
	OU3-AT-4" = 92.50

background data download.

OU-3 Daily Log

Personnel:

Date: 11-~~8~~ 15-11

Weather:

Project: 96498.000

Time:	Activities		
11:55	check on flow meter - must be		
12:26	Doug w/ Shaw onsite		DTW
12:45	OU3-5M2	=	92.54
	OU3-5MR	=	92.59
	OU3 AT-2"	=	92.31
	- " - 4"	=	92.51
12:52	Doug w/ Shaw offsite.		
			DTW
13:45	OU3-5M2	=	92.50
	OU3-5MR	=	92.59
	OU3-AT-2"	=	92.30
	OU3-AT-4"	=	92.51
14:04	Incr flow to 10 gpm.		
14:21	~~Gauge wells~~		
	~~OU3-5M2 =~~		
	~~OU3-5MR =~~		
	~~OU3-AT-2" =~~		
	~~OU3-AT-4" =~~		
14:40	David w/ ERM onsite		
14:50	Move to 15 gpm.		
15:03	move to 25 gpm		
15:41	Stop test. ERM will use 25 gpm for David A of ERM. Letting wells recover before starting constant rate test.		

OU-3 Daily Log

Personnel:		**Date:**	11-15-11
Weather:		**Project:**	96498.000

Time:	Activities	
~~12:26~~	~~Doug w/ shaw onsite. Talk about test~~	
17:02	Begin prep for OU3-55R constant rate test.	
		DTW
18:04	OU3-SM2 →	92.50
	OU3-SMR →	92.59
	OU3-AT-2" →	92.32
	OU3-AT-4" →	92.50
		DTW
19:05	OU3-SM2 →	92.50
	OU3-SMR →	92.59
	OU3-AT-2" →	92.34
	OU3-AT-4" →	92.50
19:35	Jason offsite	
20:05	OU3-SMR -	92.59
	OU3 SM2	92.50
	OU3-AT-2"	92.34
	OU3-AT-4"	92.50
21:10	OU3-SMR	92.59
	OU3-SM2	92.50
	2"	92.35
	4"	92.50
22:29	SMR	92.58
	SM2	92.50
	2"	92.34
	4"	92.50

OU-3 Daily Log

Personnel:

Date: ~~11-15 to 11-9-11~~ 11-15 to 11-16-11

Weather:

Project: 96498.000

Time:		Activities
2311	SMR	92.60
	SM2	92.50
	AT - 2"	92.34
	AT - 4"	92.50
2411	SMR	92.60
	SM2	92.50
	AT 2"	92.34
	AT 4"	92.50
11-9-11		
0111	SMR	92.66
	SM2	92.50
	AT 2"	92.34
	AT 4"	92.50
0211	SMR	92.59
	SM2	92.50
	AT 2"	92.35
	AT 4"	92.50
0311	SMR	92.60
	SM2	92.50
	AT 2"	92.35
	AT 4"	92.50
0413	OU3-SMR	= 92.59
	OU3-SM2	= 92.50
	" - AT-2"	= 92.36
	" - AT-4"	= 92.51
	Tim offsite.	

OU3
Motorla 52nd St Superfund Site
Aquifer Testing - Constant Discharge Test
Field Notes / ERM

Date: 11-15-11
Set up time: 10:40
Weather: Sunny, 55-75
Field Staff: J. Hill, D. Schumer

WELL # OU3-5SR

Location: OU3 - Superfund Site
step test

Construction Depth (feet): 119.30
Screened Interval (feet): 69-119
Pump Intake Depth (feet): ~~114.00~~ 115.5
Transducer depth (feet):

Depth to Water (feet): 92.38 (intal)
Final Depth to Water (feet):
Height of Water Column (feet): 26.92

Purge Start Time: 12.04 / 14.04 /
Purge End Time:
Discharge Rate (gal/min): 5.16 / 10.03 /

Time (min/hours)	Volume (gal)	DTW (ft)	Temp. (°C)	pH (pH)	EC (~~µS~~/cm) mS/cm	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	~~Visual Observation~~ flow rate	Sample No.
2 min		92.52								
5 min		92.55								
10		92.55							5.07	
18 min		92.55	25.46	8.02	1.75	4.73	226	13.2	5.07	
21 min		92.55							5.07	
32 min		92.55								
41		92.55							5.14	
55 min		92.59	24.52	7.92	1.66	5.24	248	0.0	5.06	
1.25 hr		92.59	24.39	8.00	1.58	4.76	226	0.0	5.09	
1.5 hr	450	92.59							5.09	
10 2 hr		92.79							10.03	
2 hr 15 min		92.79	23.96	8.00	1.71	4.92	242	0.0	10.05	
2:30 min	300	92.79							10.05	
2:50		93.00							15.35	
3:05	225	93.00							15.35	
15 gpm 3:07		93.33							25.35	
25 gpm 3:17	250	93.40							25.35	

total = 1225 gallons

ANALYSES REQUIRED	CONTAINER TYPE	FILTRATION?
VOC 8260B	3-40ml VOA	n/a

Sample ID:
~~QA/QC:~~
QA/QC Sample ID and Time:
no sample taken

FIELD OBSERVATIONS (Well condition, repairs needed)
In-DTW @ 10gpm => 92.59
In-DTW @ 15gpm => 92.79

Purge water disposal: poly tank storage/pump into City of Phoeinx Sanitary Sewer system
Sample collected with: Bailer____ Pump x

Other notes:
GPI - Digital flow meter model # A1096GMW100NA1

Sampler Signature(s):

2:50 - 15 hr

B 1/2

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Constant Discharge Test
Field Notes / ERM

Date:
Set up time:
Weather:
Field Staff:

WELL # OU3-5SR

Location: OU3 - Superfund Site

Construction Depth (feet):
Screened Interval (feet):
Pump Intake Depth (feet):
Transducer depth (feet):

~~Start test recovery~~

Depth to Water (feet):
Final Depth to Water (feet):
Height of Water Column (feet):

Purge Start Time:
Purge End Time:
Discharge Rate (gal/min):

Time (min/hours)	Volume (gal)	DTW (ft)	Temp. (°C)	pH (pH)	EC (µS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	pump rate ~~Visual Observation~~	Sample No.
3.5	140	93.52							28.38	
									- stop pump - recover	
34.35		97.50							~~28.38~~	

total pumped = 1465

ANALYSES REQUIRED	CONTAINER TYPE	FILTRATION?
VOC 8260B	3-40ml VOA	

Sample ID: _____
QA/QC: _____
QA/QC Sample ID and Time: _____

FIELD OBSERVATIONS (Well condition, repairs needed)

Purge water disposal: poly tank storage/pump into City of Phoeinx Sanitary Sewer system
Sample collected with: Bailer____ Pump _x_

Other notes:

Sampler Signature(s) :

RJ [illegible]

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Constant Discharge Test
Field Notes / ERM

Date: 11-15-11
Set up time: 17:05
Weather:
Field Staff: J. Hilk / T. Schumacher

WELL # OU3-55R

Location: OU3 - Superfund Site
Constant Rate Test

Construction Depth (feet): 119.30
Screened Interval (feet): 62-119
Pump Intake Depth (feet): 115.5
Transducer depth (feet): ~109

Depth to Water (feet): 92.35 initial
Final Depth to Water (feet):
Height of Water Column (feet): 26.94

Purge Start Time: 17:11 (11-~~15~~-11)
Purge End Time: 05:13 (11-~~16~~-11)
Discharge Rate (gal/min): 25 gpm

Time (min/hours)	Volume (gal)	DTW (ft)	Temp. (°C)	pH (pH)	EC (µS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	~~Visual Observation~~ flow rate	Sample No.
30 sec		93.30	—	—	—	—	—	—	25.78	—
60 min		93.35	—	—	—	—	—	—	25.75	—
180 m		93.37	—	—	—	—	—	—	25.78	—
5 min		93.40	—	—	—	—	—	—	25.78	—
10 min		93.40	—	—	—	—	—	—	25.78	—
13 min		93.40	23.89	8.0	1.73	5.91	275	0.0	25.78	—
15 min		93.40	—	—	—	—	—	—	~~25.80~~ 25.78	—
20 min		93.40	—	—	—	—	—	—	—	n/a
25 min		93.41	—	—	—	—	—	—	25.71	—
17:42 30 min		93.43	23.87	8.1	1.75	4.30	273	3.5	25.71	1
45 min		93.43	—	—	—	—	—	—	25.78	—
50		93.43	—	—	—	—	—	—	~~25~~ 25.71	—
55		93.43	—	—	—	—	—	—	25.81	—
60		93.43	—	—	—	—	—	—	~~25~~ 25.83	—
70		93.43	—	—	—	—	—	—	25.83	—
80		93.44	—	—	—	—	—	—	25.83	—
90		93.44	—	—	—	—	—	—	25.83	—
100		93.44	—	—	—	—	—	—	25.86	—

Sample
#1 → 30 mins → 17:42
#2 → 6 hrs → 23:11
#3 → 12 hrs →

ANALYSES REQUIRED	CONTAINER TYPE	FILTRATION?
VOC 8260B	3-40ml VOA	n/a

Sample ID: See below
QA/QC: n/a
QA/QC Sample ID and Time: n/a

FIELD OBSERVATIONS (Well condition, repairs needed)
→ note pump type - and model for (shallow test)
Grundfos ⇒

Purge water disposal: poly tank storage/pump into City of Phoeinx Sanitary Sewer system
Sample collected with: Bailer____ Pump x

Other notes:
Sample #1 → ~~OU3~~ AT-OU3-55R-S-111511-17:42-1
Sam #2 → AT-OU3-55R-S-111511-23:11-2
Sampl #3 → AT-OU3-55R-S-111611-0511-3

Sampler Signature(s):

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Constant Discharge Test
Field Notes / FRM

Date: 11-15 to 11-16-11
Set up time:
Weather:
Field Staff:

WELL # OU3-55R

Location: OU3 - Superfund Site
Constant Rate Test

Construction Depth (feet):
Screened Interval (feet):
Pump Intake Depth (feet):
Transducer depth (feet):

Depth to Water (feet):
Final Depth to Water (feet):
Height of Water Column (feet):

Purge Start Time:
Purge End Time:
Discharge Rate (gal/min):

Time (min/hours)	Volume (gal)	DTW (ft)	Temp. (°C)	pH (pH)	EC (µS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Visual Observation	Sample No.
110	—	9344	—	—	—	—	—	—	25.86	—
120	—	9342	—	—	—	—	—	—	25.80	—
140		93.42	23.43	6.57	1800	4.20	308	0.0	25.86	—
~~180~~ 160		93.42	—	8.00	—	—	—	—	25.86	—
~~220~~ 180		93.42	—	—	—	—	—	—	25.78	—
~~260~~ 200		9346	22.69	8.00	1730	4.88	285	0.5	25.80	—
~~300~~ 220		93.46	—	—	—	—	—	—	25.78	—
240		93.46	—	—	—	—	—	—	25.80	—
260		93.44	22.70	8.00	1750	4.28	267	5.7	25.80	—
280		93.43	—	—	—	—	—	—	25.78	—
300		93.42	—	—	—	—	—	—	25.81	—
320		93.46	22.44	8.00	1790	3.79	245	10.6	25.81	—
340		93.45	—	—	—	—	—	—	25.81	—
360		9345								2
380		9342								
400		9343								
420		9345								
440		9345								

sample

ANALYSES REQUIRED	CONTAINER TYPE	FILTRATION?
VOC 8260B	3-40ml VOA	

Sample ID: _____
QA/QC: _____
QA/QC Sample ID and Time: _____

FIELD OBSERVATIONS (Well condition, repairs needed)

Purge water disposal: poly tank storage/pump into City of Phoeinx Sanitary Sewer system
Sample collected with: Bailer____ Pump x

Other notes:

Sampler Signature(s) :

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Constant Discharge Test
Field Notes / ERM

Date: 11-16-11
Set up time:
Weather:
Field Staff:

WELL # OU3-55R

Location: OU3 - Superfund Site
constant rate test

Construction Depth (feet):
Screened Interval (feet):
Pump Intake Depth (feet):
Transducer depth (feet):

Depth to Water (feet):
Final Depth to Water (feet):
Height of Water Column (feet):

Purge Start Time:
Purge End Time: 0513 (11-16-11)
Discharge Rate (gal/min): ~25 gpm

Time (min/hours)	Volume (gal)	DTW (ft)	Temp. (°C)	pH (pH)	EC (µS/cm) mS/cm	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Visual Observation	Sample No.
460		93.44								
480		93.43								
500		93.43								
520		93.45								
540		93.46	22.09	8.0	181.0	4.04	256	6.4	25.91	
560		93.46							25.89	
580		93.42							25.90	
600		93.42							25.91	
620		93.43								
640		93.42								
660		93.43	21.92	8.0	180	4.75	251	6.2	25.91	
680		93.43							25.91	
700		93.43							25.91	
720		93.43	22.98	8.0	180	4.29	245	10.0	25.91	3
Pump off @ 0513										
30 sec		93.10								
45 sec		92.95								
60 sec		92.50								

ANALYSES REQUIRED	CONTAINER TYPE	FILTRATION?
VOC 8260B	3-40ml VOA	

Sample ID:
QA/QC:
QA/QC Sample ID and Time:

FIELD OBSERVATIONS (Well condition, repairs needed)

Purge water disposal: poly tank storage/pump into City of Phoeinx Sanitary Sewer system
Sample collected with: Bailer____ Pump x

Other notes:

Sampler Signature(s) :

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Constant Discharge Test
Field Notes / FRM

Date:
Set up time:
Weather:
Field Staff:

WELL # OU3-55R

Location: OU3 - Superfund Site
constant test - recovery

Construction Depth (feet):
Screened Interval (feet):
Pump Intake Depth (feet):
Transducer depth (feet):

Depth to Water (feet):
Final Depth to Water (feet):
Height of Water Column (feet):

Purge Start Time:
Purge End Time:
Discharge Rate (gal/min):

Time (min/hours)	Volume (gal)	DTW (ft)	Temp. (°C)	pH (pH)	EC (µS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Visual Observation	Sample No.
2		92.50								
3		92.48								
4		92.48								
5		92.48								
6		92.48								
7										
8		92.48								
9		92.48								
10		92.45								
15		92.44								
20		92.44								
25		~~92.42~~	92.42							
30		92.42								
35		92.41								
40		92.41								
45		92.41								
50		92.41								
55		92.40								

ANALYSES REQUIRED	CONTAINER TYPE	FILTRATION?
VOC 8260B	3-40ml VOA	

Sample ID: _____
QA/QC: _____
QA/QC Sample ID and Time: _____

FIELD OBSERVATIONS (Well condition, repairs needed)

Purge water disposal: poly tank storage/pump into City of Phoeinx Sanitary Sewer system
Sample collected with: Bailer_____ Pump x

Other notes:

Sampler Signature(s) :

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Constant Discharge Test
Field Notes / ERM

Date: 11-16-11
Set up time:
Weather:
Field Staff:

WELL # OU3 - 55R

Location: OU3 - Superfund Site
constant rate - recovery test

Construction Depth (feet):
Screened Interval (feet):
Pump Intake Depth (feet):
Transducer depth (feet):

Depth to Water (feet):
Final Depth to Water (feet):
Height of Water Column (feet):

Purge Start Time:
Purge End Time:
Discharge Rate (gal/min):

	Time (min/hours)	Volume (gal)	DTW (ft)	Temp. (°C)	pH (pH)	EC (µS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Visual Observation	Sample No.
	60	92.40									
	70	92.40									
	80	92.40									
	90	92.40									
	100	92.40									
	110	92.39									
2hrs -	120	92.39									
	140	92.39									
	160	92.39									
3hrs -	180	92.39									
	200	92.39									
	220	92.39	- Stop recovery test Per David w/ ERM.								
4hrs -	240										
	260										
	280										
5hrs -	300										

ANALYSES REQUIRED	CONTAINER TYPE	FILTRATION?
VOC 8260B	3-40ml VOA	

Sample ID: _____
QA/QC: _____
QA/QC Sample ID and Time: _____

FIELD OBSERVATIONS (Well condition, repairs needed)

Purge water disposal: poly tank storage/pump into City of Phoeinx Sanitary Sewer system
Sample collected with: Bailer____ Pump _x_

Other notes:

Sampler Signature(s) :

5 of 5

OU-3 Daily Log

Personnel:

Date: 11-16-11

Weather:

Project: 96498.000

Time:	Activities
0500	OU3-5MR = 92.59
	OU3-5M2 = 92.50
	OU3-AT-2" = 92.36
	" - " - 4" = 92.51
0511	talk 3rd gw sample
0513	Stop pumping on OU3-5SR. Start recovery
6:15	OU3-5MR = 92.59
	OU3-5M2 = 92.50
	OU3-AT-2" = 92.32
	OU3-AT-4" = 92.50
7:32	OU3-5MR = 92.59
	OU3-5M2 = 92.50
	OU3-AT-2" = 92.32
	OU3-AT-4" = 92.50
7:40	Talk to shaw + David w/ ERM about testout recovery stage.
8:34	OU3-5MR = 92.59
	OU3-5M2 = 92.50
	OU3-AT-2" = 92.31
	" - " - 4" = 92.50
8:46	Update David w/ ERM about recovery status. David says it has received. Boat can pull pump + pipin.
8:50	Shutting down data loggers.
9:24	total gallon pumped 20,117. Pulling pump
10:30	mob to lab.
10:45	@ lab drop off sampler.

Appendix H
L-SRG Constant-Rate
Discharge Test Forms

OU-3 Daily Log

Personnel:		**Date:**	11-16-11
Weather:		**Project:**	96498.000

Time:	Activities
15:08	Boat onsite, setting up on OU3-AT (4")
16:37	~~Having wiring issue~~ Pump in well. lower & attaching transducer
17:00	Wiring up to generator
18:28	Having box/wiring issues - Boar wire wire directly to generator
~~19~~ 18:42	start Step test.
19:10	Not sure if flow meter is right
19:22	Do 5 gallon bucket test actual pump ~ 27 sec for 5 gallon = 10 gpm. psi = 60
19:43	Do 5 gallon buck test vs flow meter ~ 15 sec for 5 gallons = 20 gpm psi = 50
19:46	Do 5 gallon buck test ~ 12 sec for 5 gallons = ~25 gpm = psi = 45
19:49	Pump set @ ~25 gpm psi = 45
20:02	Stop step test, re-calibrate flow meter, re-wire ~~box~~ pump through ~~box~~ ~~control~~ breaker box ~~into~~ into generator.
20:16	Restart pump w/ 25 gpm (~45 psi).
20:19	Buckle check @ ~9 sec for 5 gallons (psi = 30) = 35 gpm
20:28	Unable to gage DTW manually. Cannot get pass ~430 feet due to amount of equipment in well.

OU-3 Daily Log

Personnel: _____

Date: 11-16-11 — 11-17-11

Weather: _____

Project: 96498.000

Time:	Activities
20:44	Called David w/ ERM. David was ok w/ using transducer data due to inability to gauge DTW during ~35gpm rate at OU3-AT (4"). David said to figure out flow rate w/ analog gauge, due to Doc's digital flow meter not being accurate. Doc off site to get ~~[illegible]~~ analog meter. ERM will record pressure rates during constant rate test.
21:12	3 bucket test - fill 3 in 27 secs ~~[illegible]~~ ~33gpm @ 48PSI
21:13	Stop pump. Awaiting analog gauge and aquifer recovery
21:30	Analog flow meter installed.
21:45	Jason offsite
	- monitor transducer data to determine aquifer recovery
2245	Start pump Test
	Flow rate ≈ 38 gpm
	- collect gw parameters
2315	Collect Sample #1
	MR - 92.59 M2 - 92.67
	SR - 92.37 AT2" - 92.26
	60-min flow rate check - 36.1 gpm
2345	MR - 92.62 M2 - 92.67
	SR - 92.41 AT2" - 92.30
2405	MR - 92.58 M2 - 92.70
	SR - 92.42 AT2" - 92.35
0145	MR - 92.60 M2 - 92.71
	SR - 92.41 AT2" 92.30

OU-3 Daily Log

Personnel: _____ **Date:** 11-17-11

Weather: _____ **Project:** 96498.000

Time:	Activities
2:45	OU3-5MR = 92.60
	OU3-5SR = 92.39
	OU3-5MZ = 92.65
	OU3-AT-2" = 92.30
3:45	OU3-5MR = 92.60
	OU3-5SR = 92.39
	OU3-5MZ = 92.68
	OU3-AT-2" = 92.30
4:48	OU3-5MR = 92.66
	OU3-5SR = 92.39
	OU3-5MZ = 92.68
	OU3-AT-2" = 92.30
	10-min flowrate check - 36.6 gpm
~~5:45~~	~~OU3-5MR~~
5:30	Sean outside
5:45	Tim outside
	OU3-5MR = 92.62
	OU3-5SR = 92.40
	OU3-5MZ = 92.68
	OU3-AT-2" = 92.30
	10 min check = 367 gpm = 36.7 gpm
6:45	OU3-5MR = 92.62
	OU3-5SR = 92.40
	OU3-5MZ = 92.69
	OU3-AT-2" = 92.30
	10 min check = 3666 so 36.6 gpm

OU-3 Daily Log

Personnel:		**Date:**	11-17-11
Weather:		**Project:**	96498.000

Time:	Activities
7:45	OU3-5M2 = 92.62
	OU3-5SR = 92.42
	OU3-5M2 = 92.69
	OU3-AT-2" = 92.30
	10 min check @ 36.7 gallon = 36.7 gpm
8:37 ~~8:45~~	closed up OU3-5M2 due to ~~building~~ ASU/VA building coming out & says they will be getting a delivery in the next ~3 hrs. all cables inside well vault. will not gauge until after delivery occurs.
8:45	OU3-5M2 = 92.62
	OU3-5M2 = unable to gauge due to builds request to keep access open
	OU3-5SR = 92.40
	OU3-AT-2" = 92.30
	10min test 36.6 gallon = 36.6 gpm
9:45	OU3-5M2 = 92.61
	OU3-5M2 = unable to gauge due to buildings request to keep access open
	OU3-5SR = 92.40
	OU3-AT-2" = 92.30
	10min test = 36.6 ≈ 36.6 gpm
10:15	Call David w/ ERM w/ results from test so far. David says to stop @ ~~2 hrs~~ 12 hrs due to response in both M + M2 wells.
10:45	take last sample for OU3-AT-M constant test.
10:48	Shut off pump. Recovery begins now

OU-3 Daily Log

Personnel:		**Date:**	11-17-11
Weather:		**Project:**	96498.000

Time:	Activities
11:48	OU3-5MR = 92.55
	OU3-5SR = 92.40
	OU3-5M2 = unable to gauge due request by building owner for access
	OU3-AT-2" = 92.30
	~~OU3-AT-2"~~
12:35	OU3-5MR = 92.55
	OU3-5SR = 92.40
	OU3-5M2 = same as 11:48
	OU3-AT-2 = 92.30
13:00	offsite to lab to drop off samples.
13:41	Back on site gage wells
	OU3-5MR = 92.55
	OU3-5SR = 92.40
	OU3-5M2 = unable to gage due to request by buildg
	OU3-AT-2" = 92.30
14:52	stop recovery test. Stopping all ~~meters~~ OH transducers + downloading data
15:41	Pulling pump + piping. Cleaning + winding up all transducers
16:04	All transducers pulled up except OU3-AT-2". Will pull after all piping has been pulled from well
17:00	Site cleared up, mob to office.

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Constant Discharge Test
Field Notes / ERM

Date: 11-16-11
Set up time:
Weather: sunny, 55-75
Field Staff: J. Hill, T. Schumacher

WELL # OU3 - AT (4")

Location: OU3 - Superfund Site
Step test

Construction Depth (feet): ~~211.04~~ 211.31
Screened Interval (feet): 76-211
Pump Intake Depth (feet): 205
Transducer depth (feet): 198.518 = ~198

Depth to Water (feet): 92.50
Final Depth to Water (feet):
Height of Water Column (feet):

Purge Start Time: 6:49
Purge End Time:
Discharge Rate (gal/min): 15, 25, 35, 45

Time (min/hours)	Volume (gal)	DTW (ft)	Temp. (°C)	pH (pH)	EC (µS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Visual Observation	Sample No.
1		95.5								
5		94.9								
10		94.85								
15		94.73								
20		104.60								
25		103.40							60 psi	
30		103.50							60 psi	
35		103.50								
40										
45		103.50							60 psi	
60		112.92							45 psi	
65		113.20							45 psi	
70		113.23								
8:21									38 psi = 35 gpm	
8:28	→ unable to manually check sw data - cannot get same pass 1280									
8:54									38 psi	

10 ~~15~~ gpm
10 gpm
~~25~~
9:26
25 gpm
8:17

So = 60 psi = 10 gpm
45 psi = 25 gpm
38 psi = 35 gpm - use this on flow rate

ANALYSES REQUIRED	CONTAINER TYPE	FILTRATION?
VOC 8260B	3-40ml VOA	

- no samples taken

Sample ID:
QA/QC:
QA/QC Sample ID and Time:
- no sample take

FIELD OBSERVATIONS (Well condition, repairs needed)

Purge water disposal: poly tank storage/pump into City of Phoeinx Sanitary Sewer system
Sample collected with: Bailer____ Pump x

Other notes:
Great Plains Industries
G2S15N09GMB

Sampler Signature(s) :

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Constant Discharge Test
Field Notes / ERM

Date: 11-16-11
Set up time:
Weather: 55-75
Field Staff: J. Hill, T. Schumacher

WELL # OU3-AT-M

Location: OU3 - Superfund Site
constant rate test

Construction Depth (feet): 211.31
Screened Interval (feet): 76-211
Pump Intake Depth (feet): 205
Transducer depth (feet): ~~198~~ 198

Depth to Water (feet): → start 92.50
Final Depth to Water (feet):
Height of Water Column (feet): 118.81

Purge Start Time: 22:45 (11-16-11)
Purge End Time: 10:48
Discharge Rate (gal/min): 35 gpm = actual ~37

PSI (Head)/Flow (2)

Time (min/hours)	Volume (gal)	DTW (ft)	Temp. (°C)	pH (pH)	EC (µS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Visual Observation PSI	Visual Observation gpm	Sample No.
22:45 0		—	20.22	7.42	1820	4.49	209	14.6	35	35	
0.5	8400								35	37	1
1	9200		20.75	7.41	1820	3.31	198	6.4	35	37	
2	11600		21.72	7.46	1850	3.38	204	11.5	35	37	
3	13800								35	37	
4	16000								35	37	
5	18200								35	37	
4:45 6	20300		20.32	7.49	1810	3.02	210	5.3	35	37	2
7	22520								35	37	
5:45 8	24600		21.16	7.38	1830	4.12	223	10.3	35	37	
6:45 9	26830		20.81	7.36	1850	4.47	225	4.7	35	37	
7:45 10	29215		21.05	7.38	1860	4.08	210	4.7	35	37	
8:45 11	31330								35	37	
9:45 12	33510								35	37	
10:12	stop pump @ 10:48			total in reel 32017 — recovery begins							
10:49		93.00									
10:50		92.58									
10:51		92.52									

1min
2min
3min

ANALYSES REQUIRED	CONTAINER TYPE	FILTRATION?
VOC 8260B	3-40ml VOA	n/a

Samples time
#1 = 2315
#2 = 0445
#3 = 10:45

Sample ID: ~~AT-OU3-AT-M-111611-2315~~ = 1
QA/QC:
QA/QC Sample ID and Time: ~~n/a~~ - M QA/QC

FIELD OBSERVATIONS (Well condition, repairs needed)
Sample #1 → AT-OU3-AT-M-111611-2315-1
" #2 → AT-OU3-AT-M-111711-0445-2
" #3 → AT-OU3-AT-M-111711-1045-3

Purge water disposal: poly tank storage/pump into City of Phoeinx Sanitary Sewer system
Sample collected with: Bailer____ Pump x

Other notes:
* unable to manually gauge OU3-AT-4' during test due to amount of equipment in well during constant rate test and depth of drawdown. ~128 ft appear to be the limit.

** — actual volumes will be computing using data + flow rate. Driller says it was a 7 ga

Sampler Signature(s) :

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Constant Discharge Test
Field Notes / ERM

Date: 11-17-11
Set up time:
Weather:
Field Staff:

WELL # OU3-AT-M

Location: OU3 - Superfund Site

Construction Depth (feet):
Screened Interval (feet):
Pump Intake Depth (feet):
Transducer depth (feet):

~~recovery~~ recovery data

Depth to Water (feet):
Final Depth to Water (feet):
Height of Water Column (feet):

Purge Start Time:
Purge End Time:
Discharge Rate (gal/min): ~37

	Time (min/hours)	Volume (gal)	DTW (ft)	Temp. (°C)	pH (pH)	EC (µS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Visual Observation	Sample No.
4min	10:52		92.52								
	5		92.52								
	6		92.52								
	7		92.52								
	8		92.51								
	9		92.51								
10:58	10		92.51								
11:03	15		92.51								
11:08	20		92.51								
11:13	25		92.50								
11:18	30										
11:23	35		92.50								
11:28	40		92.50								
11:33	45		92.50								
11:38	50		92.50								
11:43	55		92.50								
11:48	60		92.50								
11:58	70		92.50								

ANALYSES REQUIRED	CONTAINER TYPE	FILTRATION?
VOC 8260B	3-40ml VOA	

Sample ID:
QA/QC:
QA/QC Sample ID and Time:

FIELD OBSERVATIONS (Well condition, repairs needed)

Purge water disposal: poly tank storage/pump into City of Phoeinx Sanitary Sewer system
Sample collected with: Bailer____ Pump x

Other notes:

Sampler Signature(s) :

OU-3 Daily Log

Personnel:		**Date:**	11-16-11
Weather:		**Project:**	96498.000

Time:	Activities
11:00	mob to office for more paperwork & up date David on plan.
12:00	Back onsite
12:33	Base line gw levels (DTW is in ft)
	OU3-5MR = 92.58
	OU3-5M2 = ~~92.44~~ JH 92.50
	OU3-5SR = 92.41
	OU3-AT-2" = 92.31
	OU3-AT-4" = 92.50
13:05	Program transducers & pull transducer for OU3-AT-4".
13:15	Board onsite. Setting up for step test in OU3-AT-4"
13:30	Board forgot litters to move piping for pump. Calling office to see if somebody can bring them by, ~~of~~ no one @ office. Running back to get them.
13:31	After pulling transducer from OU3-AT-4", ERM notices that protective plastic cap over threads is missing.
13:41	Board off to get litters for 2" pipe.
14:45	2nd round of baseline gauging (DTW in ft)
	OU3-5MR = 92.57
	OU3-5M2 = 92.50
	OU3-5SR = 92.40
	OU3-AT-2" = 92.30
	OU3-AT-4" = 92.50 (transducer out)

OU3
Motorola 52nd St Superfund Site
Aquifer Testing - Constant Discharge Test
Field Notes / ERM

Date: 11-17-11
Set up time:
Weather:
Field Staff:

WELL # OU3-AT-4"

Location: OU3 - Superfund Site
recovery

Construction Depth (feet):
Screened Interval (feet):
Pump Intake Depth (feet):
Transducer depth (feet):

Depth to Water (feet):
Final Depth to Water (feet):
Height of Water Column (feet):

Purge Start Time:
Purge End Time:
Discharge Rate (gal/min):

	Time (min/hours)	Volume (gal)	DTW (ft)	Temp. (°C)	pH (pH)	EC (µS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Visual Observation	Sample No.
12:08	80	92.50									
12:18	90	92.50									
12:28	100	92.50									
12:48	120	92.50	2hrs								
	140	— offsite @ lab									
	160	— offsite @ lab									
13:48	180	92.50	3hrs								
	200	92.50									
14:28	220	92.50									
14:48	240	92.50	4hrs	— Stop recov test @ 14:52							
	260										
	280										
15:48	300										

ANALYSES REQUIRED	CONTAINER TYPE	FILTRATION?
VOC 8260B	3-40ml VOA	

Sample ID: _____
QA/QC: _____
QA/QC Sample ID and Time: _____

FIELD OBSERVATIONS (Well condition, repairs needed)

→ water @ top of conveyance piping when PSI gauge removed, so check valve worked!

Purge water disposal: poly tank storage/pump into City of Phoeinx Sanitary Sewer system
Sample collected with: Bailer____ Pump _x_

Other notes:

Sampler Signature(s) :

Appendix I
Investigation-Derived Waste Laboratory Analytical Report

4625 East Cotton Center Blvd. Ste 189, Phoenix, AZ 85040 (602) 437-3340 Fax:(602) 454-9303

LABORATORY REPORT

Prepared For: Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project: OU3/0096498.020

Sampled: 10/07/11
Received: 10/07/11
Issued: 11/03/11 15:38

NELAP #01109CA Arizona DHS#AZ0728

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain(s) of Custody, 2 pages, are included and are an integral part of this report.
This entire report was reviewed and approved for release.

CASE NARRATIVE

LABORATORY ID	CLIENT ID	MATRIX
PUJ0446-01	IDW-1-S-100711	Soil
PUJ0446-02	IDW-2-S-100711	Soil
PUJ0446-03	IDW-100711-TB	Water

TestAmerica Phoenix

Kylie Emily
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

SAMPLE RECEIPT:	Samples were received intact, at 1°C, on ice and with chain of custody documentation.
HOLDING TIMES:	All samples were analyzed within prescribed holding times and/or in accordance with the TestAmerica Sample Acceptance Policy unless otherwise noted in the report.
PRESERVATION:	Samples requiring preservation were verified prior to sample analysis.
QA/QC CRITERIA:	All analyses met method criteria, except as noted in the report with data qualifiers. N1-The Matrix Spike/Matrix Spike Duplicate recovered high and outside of the project specific control limits for Iodomethane Iodomethane was also recovered above the project specific limits in the Laboratory Control Sample and Laboratory Control Sample Duplicate. All recoveries were within the laboratory's historical acceptance limits. N1a-The RPD exceeded the acceptance limit due to sample matrix effects. L3-Laboratory Control Sample and/or Laboratory Control Sample Duplicate recovery was above the acceptance limits. Analyte not detected, data not impacted.
COMMENTS:	No significant observations were made.
SUBCONTRACTED:	Refer to the last page for specific subcontract laboratory information included in this report.

Reviewed By:

TestAmerica Phoenix

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Project Manager

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OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: PUJ0446-01 (IDW-1-S-100711 - Soil)								
Reporting Units: ug/kg								
Acetone	EPA 8260B	11J0318	500	ND	1.05	10/8/2011	10/11/2011	
Benzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Bromobenzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Bromochloromethane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Bromodichloromethane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Bromoform	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Bromomethane	EPA 8260B	11J0318	250	ND	1.05	10/8/2011	10/11/2011	
2-Butanone (MEK)	EPA 8260B	11J0318	500	ND	1.05	10/8/2011	10/11/2011	
n-Butylbenzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
sec-Butylbenzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
tert-Butylbenzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Carbon tetrachloride	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Chlorobenzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Chloroethane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Chloroform	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Chloromethane	EPA 8260B	11J0318	250	ND	1.05	10/8/2011	10/11/2011	
2-Chlorotoluene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
4-Chlorotoluene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Dibromochloromethane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,2-Dibromoethane (EDB)	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,2-Dichlorobenzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,3-Dichlorobenzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,4-Dichlorobenzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Dichlorodifluoromethane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,1-Dichloroethane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,2-Dichloroethane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,1-Dichloroethene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
cis-1,2-Dichloroethene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
trans-1,2-Dichloroethene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,2-Dichloropropane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,3-Dichloropropane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
2,2-Dichloropropane	EPA 8260B	11J0318	100	ND	1.05	10/8/2011	10/11/2011	
1,1-Dichloropropene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
cis-1,3-Dichloropropene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
trans-1,3-Dichloropropene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Ethylbenzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
2-Hexanone	EPA 8260B	11J0318	250	ND	1.05	10/8/2011	10/11/2011	
p-Isopropyltoluene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Methylene Chloride	EPA 8260B	11J0318	100	ND	1.05	10/8/2011	10/11/2011	
4-Methyl-2-pentanone (MIBK)	EPA 8260B	11J0318	250	ND	1.05	10/8/2011	10/11/2011	

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Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: PUJ0446-01 (IDW-1-S-100711 - Soil) - cont.								
Reporting Units: ug/kg								
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
n-Propylbenzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Styrene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,1,2,2-Tetrachloroethane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Tetrachloroethene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Toluene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,2,3-Trichlorobenzene	EPA 8260B	11J0318	100	ND	1.05	10/8/2011	10/11/2011	
1,1,1-Trichloroethane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,1,2-Trichloroethane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Trichloroethene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Trichlorofluoromethane	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,2,3-Trichloropropane	EPA 8260B	11J0318	100	ND	1.05	10/8/2011	10/11/2011	
1,2,4-Trimethylbenzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
1,3,5-Trimethylbenzene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Vinyl Acetate	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Vinyl chloride	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
m,p-Xylenes	EPA 8260B	11J0318	100	ND	1.05	10/8/2011	10/11/2011	
o-Xylene	EPA 8260B	11J0318	50	ND	1.05	10/8/2011	10/11/2011	
Surrogate: Dibromofluoromethane (60-130%)				*85 %*				
Surrogate: Toluene-d8 (65-125%)				*84 %*				
Surrogate: 4-Bromofluorobenzene (65-125%)				*89 %*				

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Sampled: 10/07/11
Received: 10/07/11

OXYGENATES BY GC/MS (EPA 5035/8260B)

Sample ID: PUJ0446-02 (IDW-2-S-100711 - Soil)

Reporting Units: ug/kg

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Acetone	EPA 8260B	11J0318	590	ND	1.18	10/8/2011	10/11/2011	
Benzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Bromobenzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Bromochloromethane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Bromodichloromethane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Bromoform	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Bromomethane	EPA 8260B	11J0318	300	ND	1.18	10/8/2011	10/11/2011	
2-Butanone (MEK)	EPA 8260B	11J0318	590	ND	1.18	10/8/2011	10/11/2011	
n-Butylbenzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
sec-Butylbenzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
tert-Butylbenzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Carbon tetrachloride	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Chlorobenzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Chloroethane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Chloroform	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Chloromethane	EPA 8260B	11J0318	300	ND	1.18	10/8/2011	10/11/2011	
2-Chlorotoluene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
4-Chlorotoluene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Dibromochloromethane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,2-Dibromoethane (EDB)	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,2-Dichlorobenzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,3-Dichlorobenzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,4-Dichlorobenzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Dichlorodifluoromethane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,1-Dichloroethane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,2-Dichloroethane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,1-Dichloroethene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
cis-1,2-Dichloroethene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
trans-1,2-Dichloroethene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,2-Dichloropropane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,3-Dichloropropane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
2,2-Dichloropropane	EPA 8260B	11J0318	120	ND	1.18	10/8/2011	10/11/2011	
1,1-Dichloropropene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
cis-1,3-Dichloropropene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
trans-1,3-Dichloropropene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Ethylbenzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
2-Hexanone	EPA 8260B	11J0318	300	ND	1.18	10/8/2011	10/11/2011	
p-Isopropyltoluene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Methylene Chloride	EPA 8260B	11J0318	120	ND	1.18	10/8/2011	10/11/2011	
4-Methyl-2-pentanone (MIBK)	EPA 8260B	11J0318	300	ND	1.18	10/8/2011	10/11/2011	

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OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: PUJ0446-02 (IDW-2-S-100711 - Soil) - cont.								
Reporting Units: ug/kg								
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
n-Propylbenzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Styrene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,1,2,2-Tetrachloroethane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Tetrachloroethene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Toluene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,2,3-Trichlorobenzene	EPA 8260B	11J0318	120	ND	1.18	10/8/2011	10/11/2011	
1,1,1-Trichloroethane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,1,2-Trichloroethane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Trichloroethene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Trichlorofluoromethane	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,2,3-Trichloropropane	EPA 8260B	11J0318	120	ND	1.18	10/8/2011	10/11/2011	
1,2,4-Trimethylbenzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
1,3,5-Trimethylbenzene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Vinyl Acetate	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Vinyl chloride	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
m,p-Xylenes	EPA 8260B	11J0318	120	ND	1.18	10/8/2011	10/11/2011	
o-Xylene	EPA 8260B	11J0318	59	ND	1.18	10/8/2011	10/11/2011	
Surrogate: Dibromofluoromethane (60-130%)				*95 %*				
Surrogate: Toluene-d8 (65-125%)				*93 %*				
Surrogate: 4-Bromofluorobenzene (65-125%)				*93 %*				

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VOLATILE ORGANICS BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: PUJ0446-03 (IDW-100711-TB - Water)								
Reporting Units: ug/l								
Acetone	EPA 8260B	11J0482	10	ND	1	10/12/2011	10/12/2011	
Benzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Bromobenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Bromochloromethane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Bromodichloromethane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Bromoform	EPA 8260B	11J0482	1.0	ND	1	10/12/2011	10/12/2011	
Bromomethane	EPA 8260B	11J0482	1.0	ND	1	10/12/2011	10/12/2011	
2-Butanone (MEK)	EPA 8260B	11J0482	2.5	ND	1	10/12/2011	10/12/2011	
n-Butylbenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
sec-Butylbenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
tert-Butylbenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Carbon disulfide	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Carbon tetrachloride	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Chlorobenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Chloroethane	EPA 8260B	11J0482	1.0	ND	1	10/12/2011	10/12/2011	
Chloroform	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Chloromethane	EPA 8260B	11J0482	1.0	ND	1	10/12/2011	10/12/2011	
2-Chlorotoluene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
4-Chlorotoluene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Dibromochloromethane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,2-Dibromo-3-chloropropane	EPA 8260B	11J0482	2.5	ND	1	10/12/2011	10/12/2011	
1,2-Dibromoethane (EDB)	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Dibromomethane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,2-Dichlorobenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,3-Dichlorobenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,4-Dichlorobenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Dichlorodifluoromethane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,1-Dichloroethane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,2-Dichloroethane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,1-Dichloroethene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
cis-1,2-Dichloroethene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
trans-1,2-Dichloroethene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,2-Dichloropropane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,3-Dichloropropane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
2,2-Dichloropropane	EPA 8260B	11J0482	1.0	ND	1	10/12/2011	10/12/2011	
1,1-Dichloropropene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
cis-1,3-Dichloropropene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
trans-1,3-Dichloropropene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Ethylbenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Hexachlorobutadiene	EPA 8260B	11J0482	1.0	ND	1	10/12/2011	10/12/2011	

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Environmental Resources Management Inc.-West
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Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

VOLATILE ORGANICS BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: PUJ0446-03 (IDW-100711-TB - Water) - cont.								
Reporting Units: ug/l								
2-Hexanone	EPA 8260B	11J0482	2.5	ND	1	10/12/2011	10/12/2011	
Iodomethane	EPA 8260B	11J0482	2.5	ND	1	10/12/2011	10/12/2011	L3
Isopropylbenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
p-Isopropyltoluene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Methylene Chloride	EPA 8260B	11J0482	1.0	ND	1	10/12/2011	10/12/2011	
4-Methyl-2-pentanone (MIBK)	EPA 8260B	11J0482	2.5	ND	1	10/12/2011	10/12/2011	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Naphthalene	EPA 8260B	11J0482	2.5	ND	1	10/12/2011	10/12/2011	
n-Propylbenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Styrene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,1,1,2-Tetrachloroethane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,1,2,2-Tetrachloroethane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Tetrachloroethene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Toluene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,2,3-Trichlorobenzene	EPA 8260B	11J0482	1.0	ND	1	10/12/2011	10/12/2011	
1,2,4-Trichlorobenzene	EPA 8260B	11J0482	1.0	ND	1	10/12/2011	10/12/2011	
1,1,1-Trichloroethane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,1,2-Trichloroethane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Trichloroethene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Trichlorofluoromethane	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,2,3-Trichloropropane	EPA 8260B	11J0482	1.0	ND	1	10/12/2011	10/12/2011	
1,2,4-Trimethylbenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
1,3,5-Trimethylbenzene	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Vinyl Acetate	EPA 8260B	11J0482	1.0	ND	1	10/12/2011	10/12/2011	
Vinyl chloride	EPA 8260B	11J0482	0.50	ND	1	10/12/2011	10/12/2011	
Xylenes, Total	EPA 8260B	11J0482	1.5	ND	1	10/12/2011	10/12/2011	
Freon 113	EPA 8260B	11J0482	2.0	ND	1	10/12/2011	10/12/2011	
Surrogate: Dibromofluoromethane (80-130%)				*96 %*				
Surrogate: Toluene-d8 (80-120%)				*101 %*				
Surrogate: 4-Bromofluorobenzene (80-125%)				*99 %*				

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Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

POLYNUCLEAR AROMATIC HYDROCARBONS (EPA 3545/8310)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: PUJ0446-01 (IDW-1-S-100711 - Soil)								
Reporting Units: mg/kg								
Naphthalene	EPA 8310	11J0345	0.20	ND	0.999	10/10/2011	10/14/2011	
Acenaphthylene	EPA 8310	11J0345	0.30	ND	0.999	10/10/2011	10/14/2011	
Acenaphthene	EPA 8310	11J0345	0.20	ND	0.999	10/10/2011	10/14/2011	
Fluorene	EPA 8310	11J0345	0.030	ND	0.999	10/10/2011	10/14/2011	
Phenanthrene	EPA 8310	11J0345	0.030	ND	0.999	10/10/2011	10/14/2011	
Anthracene	EPA 8310	11J0345	0.020	ND	0.999	10/10/2011	10/14/2011	
Fluoranthene	EPA 8310	11J0345	0.030	ND	0.999	10/10/2011	10/14/2011	
Pyrene	EPA 8310	11J0345	0.020	ND	0.999	10/10/2011	10/14/2011	
Benzanthracene	EPA 8310	11J0345	0.010	ND	0.999	10/10/2011	10/14/2011	
Chrysene	EPA 8310	11J0345	0.020	ND	0.999	10/10/2011	10/14/2011	
Benzo(b)fluoranthene	EPA 8310	11J0345	0.020	ND	0.999	10/10/2011	10/14/2011	
Benzo(k)fluoranthene	EPA 8310	11J0345	0.010	ND	0.999	10/10/2011	10/14/2011	
Benzo(a)pyrene	EPA 8310	11J0345	0.010	ND	0.999	10/10/2011	10/14/2011	
Dibenz(a,h)anthracene	EPA 8310	11J0345	0.010	ND	0.999	10/10/2011	10/14/2011	
Benzo(g,h,i)perylene	EPA 8310	11J0345	0.030	ND	0.999	10/10/2011	10/14/2011	
Indeno(1,2,3-cd)pyrene	EPA 8310	11J0345	0.010	ND	0.999	10/10/2011	10/14/2011	
Surrogate: 2-Chloroanthracene (23.5-125%)				*77 %*				
Sample ID: PUJ0446-02 (IDW-2-S-100711 - Soil)								
Reporting Units: mg/kg								
Naphthalene	EPA 8310	11J0345	0.20	ND	0.995	10/10/2011	10/14/2011	
Acenaphthylene	EPA 8310	11J0345	0.30	ND	0.995	10/10/2011	10/14/2011	
Acenaphthene	EPA 8310	11J0345	0.20	ND	0.995	10/10/2011	10/14/2011	
Fluorene	EPA 8310	11J0345	0.030	ND	0.995	10/10/2011	10/14/2011	
Phenanthrene	EPA 8310	11J0345	0.030	ND	0.995	10/10/2011	10/14/2011	
Anthracene	EPA 8310	11J0345	0.020	ND	0.995	10/10/2011	10/14/2011	
Fluoranthene	EPA 8310	11J0345	0.030	ND	0.995	10/10/2011	10/14/2011	
Pyrene	EPA 8310	11J0345	0.020	ND	0.995	10/10/2011	10/14/2011	
Benzanthracene	EPA 8310	11J0345	0.010	ND	0.995	10/10/2011	10/14/2011	
Chrysene	EPA 8310	11J0345	0.020	ND	0.995	10/10/2011	10/14/2011	
Benzo(b)fluoranthene	EPA 8310	11J0345	0.020	ND	0.995	10/10/2011	10/14/2011	
Benzo(k)fluoranthene	EPA 8310	11J0345	0.010	ND	0.995	10/10/2011	10/14/2011	
Benzo(a)pyrene	EPA 8310	11J0345	0.010	ND	0.995	10/10/2011	10/14/2011	
Dibenz(a,h)anthracene	EPA 8310	11J0345	0.010	ND	0.995	10/10/2011	10/14/2011	
Benzo(g,h,i)perylene	EPA 8310	11J0345	0.030	ND	0.995	10/10/2011	10/14/2011	
Indeno(1,2,3-cd)pyrene	EPA 8310	11J0345	0.010	ND	0.995	10/10/2011	10/14/2011	
Surrogate: 2-Chloroanthracene (23.5-125%)				*74 %*				

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Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

ORGANOCHLORINE PESTICIDES BY GC (EPA 3545/8081A)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: PUJ0446-01 (IDW-1-S-100711 - Soil)								
Reporting Units: mg/kg								
alpha-BHC	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
gamma-BHC (Lindane)	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
beta-BHC	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
Heptachlor	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
delta-BHC	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
Aldrin	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
Heptachlor epoxide	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
Endosulfan I	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
4,4'-DDE	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
Dieldrin	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
Endrin	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
4,4'-DDD	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
Endosulfan II	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
4,4'-DDT	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
Endrin aldehyde	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
Endosulfan sulfate	EPA 8081A	11J0406	0.0050	ND	0.992	10/11/2011	10/12/2011	
Methoxychlor	EPA 8081A	11J0406	0.010	ND	0.992	10/11/2011	10/12/2011	
Toxaphene	EPA 8081A	11J0406	0.10	ND	0.992	10/11/2011	10/12/2011	
Chlordane	EPA 8081A	11J0406	0.050	ND	0.992	10/11/2011	10/12/2011	
Surrogate: Tetrachloro-m-xylene (40-145%)				*75 %*				
Surrogate: Decachlorobiphenyl (30-150%)				*97 %*				

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Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

ORGANOCHLORINE PESTICIDES BY GC (EPA 3545/8081A)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: PUJ0446-02 (IDW-2-S-100711 - Soil)								
Reporting Units: mg/kg								
alpha-BHC	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
gamma-BHC (Lindane)	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
beta-BHC	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
Heptachlor	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
delta-BHC	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
Aldrin	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
Heptachlor epoxide	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
Endosulfan I	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
4,4'-DDE	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
Dieldrin	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
Endrin	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
4,4'-DDD	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
Endosulfan II	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
4,4'-DDT	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
Endrin aldehyde	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
Endosulfan sulfate	EPA 8081A	11J0406	0.0050	ND	0.994	10/11/2011	10/12/2011	
Methoxychlor	EPA 8081A	11J0406	0.010	ND	0.994	10/11/2011	10/12/2011	
Toxaphene	EPA 8081A	11J0406	0.10	ND	0.994	10/11/2011	10/12/2011	
Chlordane	EPA 8081A	11J0406	0.050	ND	0.994	10/11/2011	10/12/2011	
Surrogate: Tetrachloro-m-xylene (40-145%)				*93 %*				
Surrogate: Decachlorobiphenyl (30-150%)				*120 %*				

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Sampled: 10/07/11
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POLYCHLORINATED BIPHENYLS (EPA 3545/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: PUJ0446-01 (IDW-1-S-100711 - Soil)								
Reporting Units: mg/kg								
Aroclor 1016	EPA 8082	11J0406	0.050	ND	0.992	10/11/2011	10/12/2011	
Aroclor 1221	EPA 8082	11J0406	0.050	ND	0.992	10/11/2011	10/12/2011	
Aroclor 1232	EPA 8082	11J0406	0.050	ND	0.992	10/11/2011	10/12/2011	
Aroclor 1242	EPA 8082	11J0406	0.050	ND	0.992	10/11/2011	10/12/2011	
Aroclor 1248	EPA 8082	11J0406	0.050	ND	0.992	10/11/2011	10/12/2011	
Aroclor 1254	EPA 8082	11J0406	0.050	ND	0.992	10/11/2011	10/12/2011	
Aroclor 1260	EPA 8082	11J0406	0.050	ND	0.992	10/11/2011	10/12/2011	
Surrogate: Decachlorobiphenyl (11-131%)				*105 %*				
Surrogate: Tetrachloro-m-xylene (29-147%)				*79 %*				
Sample ID: PUJ0446-02 (IDW-2-S-100711 - Soil)								
Reporting Units: mg/kg								
Aroclor 1016	EPA 8082	11J0406	0.050	ND	0.994	10/11/2011	10/12/2011	
Aroclor 1221	EPA 8082	11J0406	0.050	ND	0.994	10/11/2011	10/12/2011	
Aroclor 1232	EPA 8082	11J0406	0.050	ND	0.994	10/11/2011	10/12/2011	
Aroclor 1242	EPA 8082	11J0406	0.050	ND	0.994	10/11/2011	10/12/2011	
Aroclor 1248	EPA 8082	11J0406	0.050	ND	0.994	10/11/2011	10/12/2011	
Aroclor 1254	EPA 8082	11J0406	0.050	ND	0.994	10/11/2011	10/12/2011	
Aroclor 1260	EPA 8082	11J0406	0.050	ND	0.994	10/11/2011	10/12/2011	
Surrogate: Decachlorobiphenyl (11-131%)				*128 %*				
Surrogate: Tetrachloro-m-xylene (29-147%)				*96 %*				

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Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

TOTAL METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: PUJ0446-01 (IDW-1-S-100711 - Soil)								
Reporting Units: mg/kg								
Arsenic	EPA 6010B	11J0444	5.0	ND	0.99	10/12/2011	10/12/2011	
Barium	EPA 6010B	11J0444	5.0	**51**	0.99	10/12/2011	10/12/2011	
Boron	EPA 6010B	11J0444	10	**15**	0.99	10/12/2011	10/12/2011	
Cadmium	EPA 6010B	11J0444	0.50	ND	0.99	10/12/2011	10/12/2011	
Chromium	EPA 6010B	11J0444	2.0	**15**	0.99	10/12/2011	10/12/2011	
Copper	EPA 6010B	11J0444	5.0	**5.3**	0.99	10/12/2011	10/13/2011	
Lead	EPA 6010B	11J0444	5.0	ND	0.99	10/12/2011	10/12/2011	
Manganese	EPA 6010B	11J0444	2.0	**160**	0.99	10/12/2011	10/12/2011	
Mercury	EPA 7471A	11J0443	0.10	ND	1.05	10/12/2011	10/13/2011	
Selenium	EPA 6010B	11J0444	5.0	ND	0.99	10/12/2011	10/12/2011	
Silver	EPA 6010B	11J0444	2.5	ND	0.99	10/12/2011	10/12/2011	
Zinc	EPA 6010B	11J0444	10	**11**	0.99	10/12/2011	10/12/2011	
Sample ID: PUJ0446-02 (IDW-2-S-100711 - Soil)								
Reporting Units: mg/kg								
Arsenic	EPA 6010B	11J0444	5.0	**6.2**	0.961	10/12/2011	10/12/2011	
Barium	EPA 6010B	11J0444	5.0	**46**	0.961	10/12/2011	10/12/2011	
Boron	EPA 6010B	11J0444	10	**14**	0.961	10/12/2011	10/12/2011	
Cadmium	EPA 6010B	11J0444	0.50	ND	0.961	10/12/2011	10/12/2011	
Chromium	EPA 6010B	11J0444	2.0	**16**	0.961	10/12/2011	10/12/2011	
Copper	EPA 6010B	11J0444	5.0	**9.9**	0.961	10/12/2011	10/13/2011	
Lead	EPA 6010B	11J0444	5.0	ND	0.961	10/12/2011	10/12/2011	
Manganese	EPA 6010B	11J0444	2.0	**210**	0.961	10/12/2011	10/12/2011	
Mercury	EPA 7471A	11J0443	0.090	ND	0.901	10/12/2011	10/13/2011	
Selenium	EPA 6010B	11J0444	5.0	ND	0.961	10/12/2011	10/12/2011	
Silver	EPA 6010B	11J0444	2.5	ND	0.961	10/12/2011	10/12/2011	
Zinc	EPA 6010B	11J0444	10	**12**	0.961	10/12/2011	10/12/2011	

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Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: PUJ0446-01 (IDW-1-S-100711 - Soil)								
Reporting Units: mg/kg								
Cyanide	SW 9010C/9014	11J0548	0.40	ND	0.985	10/13/2011	10/13/2011	
Sample ID: PUJ0446-02 (IDW-2-S-100711 - Soil)								
Reporting Units: mg/kg								
Cyanide	SW 9010C/9014	11J0548	0.40	ND	1.01	10/13/2011	10/13/2011	

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Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: PUJ0446-01 (IDW-1-S-100711 - Soil)								
Reporting Units: mg/kg								
Chromium VI	EPA 7196A	11J1848	0.99	ND	0.992	10/14/2011	10/17/2011	MC6
Sample ID: PUJ0446-02 (IDW-2-S-100711 - Soil)								
Reporting Units: mg/kg								
Chromium VI	EPA 7196A	11J1848	1.0	ND	1	10/14/2011	10/17/2011	

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SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: IDW-1-S-100711 (PUJ0446-01) - Soil					
EPA 8260B	2	10/07/2011 11:01	10/07/2011 12:09	10/08/2011 10:52	10/11/2011 13:21
Sample ID: IDW-2-S-100711 (PUJ0446-02) - Soil					
EPA 8260B	2	10/07/2011 11:06	10/07/2011 12:09	10/08/2011 10:52	10/11/2011 13:54

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METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0318 Extracted: 10/08/11										
Blank Analyzed: 10/08/2011 (11J0318-BLK1)										
Acetone	ND	500	ug/kg							
Benzene	ND	50	ug/kg							
Bromobenzene	ND	50	ug/kg							
Bromochloromethane	ND	50	ug/kg							
Bromodichloromethane	ND	50	ug/kg							
Bromoform	ND	50	ug/kg							
Bromomethane	ND	250	ug/kg							
2-Butanone (MEK)	ND	500	ug/kg							
n-Butylbenzene	ND	50	ug/kg							
sec-Butylbenzene	ND	50	ug/kg							
tert-Butylbenzene	ND	50	ug/kg							
Carbon tetrachloride	ND	50	ug/kg							
Chlorobenzene	ND	50	ug/kg							
Chloroethane	ND	50	ug/kg							
Chloroform	ND	50	ug/kg							
Chloromethane	ND	250	ug/kg							
2-Chlorotoluene	ND	50	ug/kg							
4-Chlorotoluene	ND	50	ug/kg							
Dibromochloromethane	ND	50	ug/kg							
1,2-Dibromoethane (EDB)	ND	50	ug/kg							
1,2-Dichlorobenzene	ND	50	ug/kg							
1,3-Dichlorobenzene	ND	50	ug/kg							
1,4-Dichlorobenzene	ND	50	ug/kg							
Dichlorodifluoromethane	ND	50	ug/kg							
1,1-Dichloroethane	ND	50	ug/kg							
1,2-Dichloroethane	ND	50	ug/kg							
1,1-Dichloroethene	ND	50	ug/kg							
cis-1,2-Dichloroethene	ND	50	ug/kg							
trans-1,2-Dichloroethene	ND	50	ug/kg							
1,2-Dichloropropane	ND	50	ug/kg							
1,3-Dichloropropane	ND	50	ug/kg							
2,2-Dichloropropane	ND	100	ug/kg							
1,1-Dichloropropene	ND	50	ug/kg							
cis-1,3-Dichloropropene	ND	50	ug/kg							
trans-1,3-Dichloropropene	ND	50	ug/kg							

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METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0318 Extracted: 10/08/11										
Blank Analyzed: 10/08/2011 (11J0318-BLK1)										
Ethylbenzene	ND	50	ug/kg							
2-Hexanone	ND	250	ug/kg							
p-Isopropyltoluene	ND	50	ug/kg							
Methylene Chloride	ND	100	ug/kg							
4-Methyl-2-pentanone (MIBK)	ND	250	ug/kg							
Methyl-tert-butyl Ether (MTBE)	ND	50	ug/kg							
n-Propylbenzene	ND	50	ug/kg							
Styrene	ND	50	ug/kg							
1,1,2,2-Tetrachloroethane	ND	50	ug/kg							
Tetrachloroethene	ND	50	ug/kg							
Toluene	ND	50	ug/kg							
1,2,3-Trichlorobenzene	ND	100	ug/kg							
1,1,1-Trichloroethane	ND	50	ug/kg							
1,1,2-Trichloroethane	ND	50	ug/kg							
Trichloroethene	ND	50	ug/kg							
Trichlorofluoromethane	ND	50	ug/kg							
1,2,3-Trichloropropane	ND	100	ug/kg							
1,2,4-Trimethylbenzene	ND	50	ug/kg							
1,3,5-Trimethylbenzene	ND	50	ug/kg							
Vinyl Acetate	ND	50	ug/kg							
Vinyl chloride	ND	50	ug/kg							
m,p-Xylenes	ND	100	ug/kg							
o-Xylene	ND	50	ug/kg							
Surrogate: Dibromofluoromethane	*1240*		*ug/kg*	*1250*		*100*	*60-130*			
Surrogate: Toluene-d8	*1300*		*ug/kg*	*1250*		*105*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*1250*		*ug/kg*	*1250*		*100*	*65-125*			
LCS Analyzed: 10/08/2011 (11J0318-BS1)										
Acetone	1560	500	ug/kg	1260		124	10-150			
Benzene	1230	50	ug/kg	1260		97	75-120			
Bromobenzene	1160	50	ug/kg	1260		93	80-120			
Bromochloromethane	1170	50	ug/kg	1260		93	75-125			
Bromodichloromethane	1310	50	ug/kg	1260		104	75-120			
Bromoform	963	50	ug/kg	1260		77	60-120			
Bromomethane	966	250	ug/kg	1260		77	20-140			
2-Butanone (MEK)	1330	500	ug/kg	1260		106	40-150			

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METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0318 Extracted: 10/08/11										
LCS Analyzed: 10/08/2011 (11J0318-BS1)										
n-Butylbenzene	1410	50	ug/kg	1260		112	65-130			
sec-Butylbenzene	1320	50	ug/kg	1260		105	75-125			
tert-Butylbenzene	1320	50	ug/kg	1260		105	80-120			
Carbon tetrachloride	1510	50	ug/kg	1260		120	70-130			
Chlorobenzene	1170	50	ug/kg	1260		93	80-120			
Chloroethane	1080	50	ug/kg	1260		86	10-130			
Chloroform	1200	50	ug/kg	1260		96	75-120			
Chloromethane	957	250	ug/kg	1260		76	25-140			
2-Chlorotoluene	1240	50	ug/kg	1260		98	80-120			
4-Chlorotoluene	1190	50	ug/kg	1260		94	80-120			
Dibromochloromethane	1160	50	ug/kg	1260		92	75-120			
1,2-Dibromoethane (EDB)	1170	50	ug/kg	1260		93	70-120			
1,2-Dichlorobenzene	1160	50	ug/kg	1260		92	80-120			
1,3-Dichlorobenzene	1180	50	ug/kg	1260		94	80-120			
1,4-Dichlorobenzene	1160	50	ug/kg	1260		92	80-120			
Dichlorodifluoromethane	770	50	ug/kg	1260		61	10-150			
1,1-Dichloroethane	1210	50	ug/kg	1260		96	70-125			
1,2-Dichloroethane	1300	50	ug/kg	1260		104	70-130			
1,1-Dichloroethene	1170	50	ug/kg	1260		93	50-135			
cis-1,2-Dichloroethene	1210	50	ug/kg	1260		97	70-125			
trans-1,2-Dichloroethene	1210	50	ug/kg	1260		96	70-130			
1,2-Dichloropropane	1170	50	ug/kg	1260		93	80-120			
1,3-Dichloropropane	1210	50	ug/kg	1260		96	70-120			
2,2-Dichloropropane	1220	100	ug/kg	1260		97	65-130			
1,1-Dichloropropene	1400	50	ug/kg	1260		111	75-120			
cis-1,3-Dichloropropene	1270	50	ug/kg	1260		101	75-125			
trans-1,3-Dichloropropene	1270	50	ug/kg	1260		101	65-130			
Ethylbenzene	1270	50	ug/kg	1260		101	80-120			
2-Hexanone	1210	250	ug/kg	1260		96	20-150			
p-Isopropyltoluene	1340	50	ug/kg	1260		107	75-130			
Methylene Chloride	1130	100	ug/kg	1260		90	65-125			
4-Methyl-2-pentanone (MIBK)	1160	250	ug/kg	1260		92	50-130			
Methyl-tert-butyl Ether (MTBE)	1190	50	ug/kg	1260		94	65-130			
n-Propylbenzene	1320	50	ug/kg	1260		105	75-130			
Styrene	1230	50	ug/kg	1260		98	80-120			

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METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0318 Extracted: 10/08/11										
LCS Analyzed: 10/08/2011 (11J0318-BS1)										
1,1,2,2-Tetrachloroethane	1080	50	ug/kg	1260		86	60-125			
Tetrachloroethene	1280	50	ug/kg	1260		102	70-130			
Toluene	1300	50	ug/kg	1260		104	75-120			
1,2,3-Trichlorobenzene	1110	100	ug/kg	1260		88	55-140			
1,1,1-Trichloroethane	1290	50	ug/kg	1260		103	75-120			
1,1,2-Trichloroethane	1260	50	ug/kg	1260		100	65-125			
Trichloroethene	1340	50	ug/kg	1260		106	80-120			
Trichlorofluoromethane	1400	50	ug/kg	1260		112	50-150			
1,2,3-Trichloropropane	1070	100	ug/kg	1260		85	60-130			
1,2,4-Trimethylbenzene	1250	50	ug/kg	1260		99	75-120			
1,3,5-Trimethylbenzene	1270	50	ug/kg	1260		101	80-130			
Vinyl Acetate	1310	50	ug/kg	1260		104	35-150			
Vinyl chloride	868	50	ug/kg	1260		69	10-150			
m,p-Xylenes	1190	100	ug/kg	1260		95	60-140			
o-Xylene	1270	50	ug/kg	1260		101	80-120			
Surrogate: Dibromofluoromethane	*1200*		*ug/kg*	*1260*		*95*	*60-130*			
Surrogate: Toluene-d8	*1240*		*ug/kg*	*1260*		*99*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*1200*		*ug/kg*	*1260*		*96*	*65-125*			
LCS Dup Analyzed: 10/08/2011 (11J0318-BSD1)										
Acetone	1550	500	ug/kg	1260		123	10-150	0.7	35	
Benzene	1160	50	ug/kg	1260		92	75-120	5	15	
Bromobenzene	1200	50	ug/kg	1260		95	80-120	3	20	
Bromochloromethane	1220	50	ug/kg	1260		97	75-125	4	20	
Bromodichloromethane	1260	50	ug/kg	1260		100	75-120	4	15	
Bromoform	1010	50	ug/kg	1260		80	60-120	4	25	
Bromomethane	1010	250	ug/kg	1260		80	20-140	5	35	
2-Butanone (MEK)	1280	500	ug/kg	1260		102	40-150	4	35	
n-Butylbenzene	1310	50	ug/kg	1260		104	65-130	8	20	
sec-Butylbenzene	1240	50	ug/kg	1260		98	75-125	6	15	
tert-Butylbenzene	1270	50	ug/kg	1260		101	80-120	4	15	
Carbon tetrachloride	1320	50	ug/kg	1260		105	70-130	14	20	
Chlorobenzene	1250	50	ug/kg	1260		99	80-120	7	15	
Chloroethane	1040	50	ug/kg	1260		83	10-130	3	30	
Chloroform	1160	50	ug/kg	1260		92	75-120	4	20	
Chloromethane	885	250	ug/kg	1260		70	25-140	8	35	

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METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0318 Extracted: 10/08/11										
LCS Dup Analyzed: 10/08/2011 (11J0318-BSD1)										
2-Chlorotoluene	1210	50	ug/kg	1260		96	80-120	2	15	
4-Chlorotoluene	1160	50	ug/kg	1260		92	80-120	2	15	
Dibromochloromethane	1270	50	ug/kg	1260		101	75-120	10	20	
1,2-Dibromoethane (EDB)	1250	50	ug/kg	1260		99	70-120	6	20	
1,2-Dichlorobenzene	1170	50	ug/kg	1260		93	80-120	0.6	20	
1,3-Dichlorobenzene	1180	50	ug/kg	1260		94	80-120	0.4	15	
1,4-Dichlorobenzene	1160	50	ug/kg	1260		92	80-120	0.1	15	
Dichlorodifluoromethane	719	50	ug/kg	1260		57	10-150	7	35	
1,1-Dichloroethane	1150	50	ug/kg	1260		91	70-125	5	20	
1,2-Dichloroethane	1290	50	ug/kg	1260		103	70-130	0.8	20	
1,1-Dichloroethene	1130	50	ug/kg	1260		90	50-135	3	20	
cis-1,2-Dichloroethene	1150	50	ug/kg	1260		92	70-125	5	15	
trans-1,2-Dichloroethene	1100	50	ug/kg	1260		87	70-130	10	20	
1,2-Dichloropropane	1220	50	ug/kg	1260		97	80-120	4	20	
1,3-Dichloropropane	1300	50	ug/kg	1260		103	70-120	7	20	
2,2-Dichloropropane	1150	100	ug/kg	1260		91	65-130	6	20	
1,1-Dichloropropene	1230	50	ug/kg	1260		98	75-120	13	15	
cis-1,3-Dichloropropene	1320	50	ug/kg	1260		105	75-125	4	15	
trans-1,3-Dichloropropene	1290	50	ug/kg	1260		102	65-130	2	20	
Ethylbenzene	1300	50	ug/kg	1260		103	80-120	3	15	
2-Hexanone	1420	250	ug/kg	1260		113	20-150	16	35	
p-Isopropyltoluene	1250	50	ug/kg	1260		99	75-130	7	15	
Methylene Chloride	1080	100	ug/kg	1260		86	65-125	4	20	
4-Methyl-2-pentanone (MIBK)	1350	250	ug/kg	1260		107	50-130	15	35	
Methyl-tert-butyl Ether (MTBE)	1280	50	ug/kg	1260		101	65-130	7	20	
n-Propylbenzene	1250	50	ug/kg	1260		99	75-130	5	15	
Styrene	1280	50	ug/kg	1260		102	80-120	4	15	
1,1,2,2-Tetrachloroethane	1140	50	ug/kg	1260		91	60-125	5	30	
Tetrachloroethene	1150	50	ug/kg	1260		91	70-130	10	15	
Toluene	1270	50	ug/kg	1260		100	75-120	3	15	
1,2,3-Trichlorobenzene	1140	100	ug/kg	1260		90	55-140	2	25	
1,1,1-Trichloroethane	1260	50	ug/kg	1260		100	75-120	2	15	
1,1,2-Trichloroethane	1240	50	ug/kg	1260		98	65-125	2	30	
Trichloroethene	1260	50	ug/kg	1260		100	80-120	6	15	
Trichlorofluoromethane	1220	50	ug/kg	1260		96	50-150	14	25	

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Sampled: 10/07/11
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METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0318 Extracted: 10/08/11										
LCS Dup Analyzed: 10/08/2011 (11J0318-BSD1)										
1,2,3-Trichloropropane	1270	100	ug/kg	1260		101	60-130	17	30	
1,2,4-Trimethylbenzene	1200	50	ug/kg	1260		95	75-120	4	15	
1,3,5-Trimethylbenzene	1290	50	ug/kg	1260		102	80-130	1	15	
Vinyl Acetate	1430	50	ug/kg	1260		114	35-150	9	35	
Vinyl chloride	735	50	ug/kg	1260		58	10-150	17	35	
m,p-Xylenes	1200	100	ug/kg	1260		96	60-140	1	15	
o-Xylene	1260	50	ug/kg	1260		100	80-120	1	15	
Surrogate: Dibromofluoromethane	*1150*		*ug/kg*	*1260*		*91*	*60-130*			
Surrogate: Toluene-d8	*1200*		*ug/kg*	*1260*		*95*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*1260*		*ug/kg*	*1260*		*100*	*65-125*			
Matrix Spike Analyzed: 10/08/2011 (11J0318-MS1)					**Source: PUJ0316-01**					
Acetone	1160	500	ug/kg	1260	ND	92	10-150			
Benzene	864	50	ug/kg	1260	ND	68	55-120			
Bromobenzene	964	50	ug/kg	1260	ND	76	60-125			
Bromochloromethane	749	50	ug/kg	1260	ND	59	50-135			
Bromodichloromethane	856	50	ug/kg	1260	ND	68	60-120			
Bromoform	711	50	ug/kg	1260	ND	56	40-125			
Bromomethane	562	250	ug/kg	1260	ND	44	10-140			
2-Butanone (MEK)	796	500	ug/kg	1260	ND	63	40-150			
n-Butylbenzene	1070	50	ug/kg	1260	ND	85	40-135			
sec-Butylbenzene	1060	50	ug/kg	1260	ND	84	50-130			
tert-Butylbenzene	1060	50	ug/kg	1260	ND	84	55-125			
Carbon tetrachloride	914	50	ug/kg	1260	ND	72	40-135			
Chlorobenzene	925	50	ug/kg	1260	ND	73	65-120			
Chloroethane	594	50	ug/kg	1260	ND	47	10-140			
Chloroform	752	50	ug/kg	1260	ND	60	60-125			
Chloromethane	497	250	ug/kg	1260	21.4	38	10-140			
2-Chlorotoluene	917	50	ug/kg	1260	ND	73	60-120			
4-Chlorotoluene	964	50	ug/kg	1260	ND	76	55-130			
Dibromochloromethane	792	50	ug/kg	1260	ND	63	55-125			
1,2-Dibromoethane (EDB)	806	50	ug/kg	1260	ND	64	55-120			
1,2-Dichlorobenzene	889	50	ug/kg	1260	ND	70	60-120			
1,3-Dichlorobenzene	932	50	ug/kg	1260	ND	74	60-120			
1,4-Dichlorobenzene	889	50	ug/kg	1260	ND	70	60-120			
Dichlorodifluoromethane	141	50	ug/kg	1260	ND	11	10-150			

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Environmental Resources Management Inc.-West
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Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0318 Extracted: 10/08/11										
Matrix Spike Analyzed: 10/08/2011 (11J0318-MS1)					**Source: PUJ0316-01**					
1,1-Dichloroethane	740	50	ug/kg	1260	ND	59	55-125			
1,2-Dichloroethane	781	50	ug/kg	1260	ND	62	55-130			
1,1-Dichloroethene	671	50	ug/kg	1260	ND	53	25-140			
cis-1,2-Dichloroethene	760	50	ug/kg	1260	ND	60	55-125			
trans-1,2-Dichloroethene	745	50	ug/kg	1260	ND	59	50-130			
1,2-Dichloropropane	850	50	ug/kg	1260	ND	67	60-120			
1,3-Dichloropropane	878	50	ug/kg	1260	ND	70	60-120			
2,2-Dichloropropane	876	100	ug/kg	1260	ND	69	45-130			
1,1-Dichloropropene	929	50	ug/kg	1260	ND	74	55-125			
cis-1,3-Dichloropropene	862	50	ug/kg	1260	ND	68	55-120			
trans-1,3-Dichloropropene	836	50	ug/kg	1260	ND	66	55-125			
Ethylbenzene	959	50	ug/kg	1260	ND	76	60-125			
2-Hexanone	944	250	ug/kg	1260	ND	75	20-150			
p-Isopropyltoluene	1030	50	ug/kg	1260	8.96	81	45-135			
Methylene Chloride	661	100	ug/kg	1260	ND	52	50-120			
4-Methyl-2-pentanone (MIBK)	798	250	ug/kg	1260	ND	63	40-130			
Methyl-tert-butyl Ether (MTBE)	726	50	ug/kg	1260	ND	57	50-130			
n-Propylbenzene	1010	50	ug/kg	1260	ND	80	55-130			
Styrene	933	50	ug/kg	1260	ND	74	55-125			
1,1,2,2-Tetrachloroethane	830	50	ug/kg	1260	ND	66	50-130			
Tetrachloroethene	954	50	ug/kg	1260	ND	76	60-130			
Toluene	915	50	ug/kg	1260	ND	72	55-125			
1,2,3-Trichlorobenzene	808	100	ug/kg	1260	ND	64	35-140			
1,1,1-Trichloroethane	828	50	ug/kg	1260	ND	66	50-125			
1,1,2-Trichloroethane	809	50	ug/kg	1260	45.8	60	55-120			
Trichloroethene	899	50	ug/kg	1260	ND	71	40-145			
Trichlorofluoromethane	540	50	ug/kg	1260	ND	43	20-150			
1,2,3-Trichloropropane	897	100	ug/kg	1260	ND	71	35-140			
1,2,4-Trimethylbenzene	959	50	ug/kg	1260	ND	76	50-130			
1,3,5-Trimethylbenzene	958	50	ug/kg	1260	ND	76	45-135			
Vinyl Acetate	651	50	ug/kg	1260	ND	52	10-150			
Vinyl chloride	383	50	ug/kg	1260	11.0	29	10-150			
m,p-Xylenes	910	100	ug/kg	1260	ND	72	55-125			
o-Xylene	930	50	ug/kg	1260	ND	74	60-125			
Surrogate: Dibromofluoromethane	*717*		*ug/kg*	*1260*		*57*	*60-130*			*S6*

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Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0318 Extracted: 10/08/11										
Matrix Spike Analyzed: 10/08/2011 (11J0318-MS1)					**Source: PUJ0316-01**					
Surrogate: Toluene-d8	*835*		*ug/kg*	*1260*		*66*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*834*		*ug/kg*	*1260*		*66*	*65-125*			
Matrix Spike Dup Analyzed: 10/08/2011 (11J0318-MSD1)					**Source: PUJ0316-01**					
Acetone	1230	500	ug/kg	1240	ND	99	10-150	6	35	
Benzene	835	50	ug/kg	1240	ND	67	55-120	3	25	
Bromobenzene	961	50	ug/kg	1240	ND	77	60-125	0.3	25	
Bromochloromethane	711	50	ug/kg	1240	ND	57	50-135	5	30	
Bromodichloromethane	824	50	ug/kg	1240	ND	66	60-120	4	20	
Bromoform	708	50	ug/kg	1240	ND	57	40-125	0.4	35	
Bromomethane	574	250	ug/kg	1240	ND	46	10-140	2	35	
2-Butanone (MEK)	763	500	ug/kg	1240	ND	62	40-150	4	35	
n-Butylbenzene	1080	50	ug/kg	1240	ND	87	40-135	0.8	25	
sec-Butylbenzene	1070	50	ug/kg	1240	ND	86	50-130	1	20	
tert-Butylbenzene	1060	50	ug/kg	1240	ND	86	55-125	0.3	25	
Carbon tetrachloride	942	50	ug/kg	1240	ND	76	40-135	3	30	
Chlorobenzene	933	50	ug/kg	1240	ND	75	65-120	0.8	20	
Chloroethane	648	50	ug/kg	1240	ND	52	10-140	9	35	
Chloroform	748	50	ug/kg	1240	ND	60	60-125	0.5	25	
Chloromethane	470	250	ug/kg	1240	21.4	36	10-140	6	35	
2-Chlorotoluene	945	50	ug/kg	1240	ND	76	60-120	3	20	
4-Chlorotoluene	958	50	ug/kg	1240	ND	77	55-130	0.6	20	
Dibromochloromethane	839	50	ug/kg	1240	ND	68	55-125	6	30	
1,2-Dibromoethane (EDB)	835	50	ug/kg	1240	ND	67	55-120	4	25	
1,2-Dichlorobenzene	888	50	ug/kg	1240	ND	72	60-120	0.1	25	
1,3-Dichlorobenzene	960	50	ug/kg	1240	ND	77	60-120	3	25	
1,4-Dichlorobenzene	893	50	ug/kg	1240	ND	72	60-120	0.4	20	
Dichlorodifluoromethane	156	50	ug/kg	1240	ND	13	10-150	10	35	
1,1-Dichloroethane	742	50	ug/kg	1240	ND	60	55-125	0.2	25	
1,2-Dichloroethane	773	50	ug/kg	1240	ND	62	55-130	1	25	
1,1-Dichloroethene	683	50	ug/kg	1240	ND	55	25-140	2	35	
cis-1,2-Dichloroethene	748	50	ug/kg	1240	ND	60	55-125	2	25	
trans-1,2-Dichloroethene	733	50	ug/kg	1240	ND	59	50-130	2	25	
1,2-Dichloropropane	802	50	ug/kg	1240	ND	65	60-120	6	25	
1,3-Dichloropropane	895	50	ug/kg	1240	ND	72	60-120	2	25	
2,2-Dichloropropane	834	100	ug/kg	1240	ND	67	45-130	5	25	

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Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0318 Extracted: 10/08/11										
Matrix Spike Dup Analyzed: 10/08/2011 (11J0318-MSD1)					**Source: PUJ0316-01**					
1,1-Dichloropropene	889	50	ug/kg	1240	ND	72	55-125	4	25	
cis-1,3-Dichloropropene	832	50	ug/kg	1240	ND	67	55-120	3	20	
trans-1,3-Dichloropropene	806	50	ug/kg	1240	ND	65	55-125	4	25	
Ethylbenzene	985	50	ug/kg	1240	ND	79	60-125	3	20	
2-Hexanone	889	250	ug/kg	1240	ND	72	20-150	6	35	
p-Isopropyltoluene	1000	50	ug/kg	1240	8.96	80	45-135	3	25	
Methylene Chloride	643	100	ug/kg	1240	ND	52	50-120	3	30	
4-Methyl-2-pentanone (MIBK)	760	250	ug/kg	1240	ND	61	40-130	5	30	
Methyl-tert-butyl Ether (MTBE)	726	50	ug/kg	1240	ND	59	50-130	0.06	35	
n-Propylbenzene	1080	50	ug/kg	1240	ND	87	55-130	7	20	
Styrene	907	50	ug/kg	1240	ND	73	55-125	3	20	
1,1,2,2-Tetrachloroethane	829	50	ug/kg	1240	ND	67	50-130	0.1	25	
Tetrachloroethene	974	50	ug/kg	1240	ND	79	60-130	2	20	
Toluene	886	50	ug/kg	1240	ND	71	55-125	3	35	
1,2,3-Trichlorobenzene	789	100	ug/kg	1240	ND	64	35-140	2	30	
1,1,1-Trichloroethane	843	50	ug/kg	1240	ND	68	50-125	2	15	
1,1,2-Trichloroethane	808	50	ug/kg	1240	45.8	61	55-120	0.07	25	
Trichloroethene	884	50	ug/kg	1240	ND	71	40-145	2	35	
Trichlorofluoromethane	556	50	ug/kg	1240	ND	45	20-150	3	35	
1,2,3-Trichloropropane	915	100	ug/kg	1240	ND	74	35-140	2	35	
1,2,4-Trimethylbenzene	934	50	ug/kg	1240	ND	75	50-130	3	20	
1,3,5-Trimethylbenzene	1000	50	ug/kg	1240	ND	81	45-135	4	20	
Vinyl Acetate	609	50	ug/kg	1240	ND	49	10-150	7	35	
Vinyl chloride	432	50	ug/kg	1240	11.0	34	10-150	12	35	
m,p-Xylenes	936	100	ug/kg	1240	ND	75	55-125	3	20	
o-Xylene	971	50	ug/kg	1240	ND	78	60-125	4	30	
Surrogate: Dibromofluoromethane	*633*		*ug/kg*	*1240*		*51*	*60-130*			*S6*
Surrogate: Toluene-d8	*712*		*ug/kg*	*1240*		*57*	*65-125*			*S6*
Surrogate: 4-Bromofluorobenzene	*780*		*ug/kg*	*1240*		*63*	*65-125*			*S6*

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Report Number: PUJ0446

Sampled: 10/07/11
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METHOD BLANK/QC DATA

VOLATILE ORGANICS BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0482 Extracted: 10/12/11										
Blank Analyzed: 10/12/2011 (11J0482-BLK1)										
Acetone	ND	10	ug/l							
Benzene	ND	0.50	ug/l							
Bromobenzene	ND	0.50	ug/l							
Bromochloromethane	ND	0.50	ug/l							
Bromodichloromethane	ND	0.50	ug/l							
Bromoform	ND	1.0	ug/l							
Bromomethane	ND	1.0	ug/l							
2-Butanone (MEK)	ND	2.5	ug/l							
n-Butylbenzene	ND	0.50	ug/l							
sec-Butylbenzene	ND	0.50	ug/l							
tert-Butylbenzene	ND	0.50	ug/l							
Carbon disulfide	ND	0.50	ug/l							
Carbon tetrachloride	ND	0.50	ug/l							
Chlorobenzene	ND	0.50	ug/l							
Chloroethane	ND	1.0	ug/l							
Chloroform	ND	0.50	ug/l							
Chloromethane	ND	1.0	ug/l							
2-Chlorotoluene	ND	0.50	ug/l							
4-Chlorotoluene	ND	0.50	ug/l							
Dibromochloromethane	ND	0.50	ug/l							
1,2-Dibromo-3-chloropropane	ND	2.5	ug/l							
1,2-Dibromoethane (EDB)	ND	0.50	ug/l							
Dibromomethane	ND	0.50	ug/l							
1,2-Dichlorobenzene	ND	0.50	ug/l							
1,3-Dichlorobenzene	ND	0.50	ug/l							
1,4-Dichlorobenzene	ND	0.50	ug/l							
Dichlorodifluoromethane	ND	0.50	ug/l							
1,1-Dichloroethane	ND	0.50	ug/l							
1,2-Dichloroethane	ND	0.50	ug/l							
1,1-Dichloroethene	ND	0.50	ug/l							
cis-1,2-Dichloroethene	ND	0.50	ug/l							
trans-1,2-Dichloroethene	ND	0.50	ug/l							
1,2-Dichloropropane	ND	0.50	ug/l							
1,3-Dichloropropane	ND	0.50	ug/l							
2,2-Dichloropropane	ND	1.0	ug/l							

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METHOD BLANK/QC DATA

VOLATILE ORGANICS BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0482 Extracted: 10/12/11										
Blank Analyzed: 10/12/2011 (11J0482-BLK1)										
1,1-Dichloropropene	ND	0.50	ug/l							
cis-1,3-Dichloropropene	ND	0.50	ug/l							
trans-1,3-Dichloropropene	ND	0.50	ug/l							
Ethylbenzene	ND	0.50	ug/l							
Hexachlorobutadiene	ND	1.0	ug/l							
2-Hexanone	ND	2.5	ug/l							
Iodomethane	ND	2.5	ug/l							
Isopropylbenzene	ND	0.50	ug/l							
p-Isopropyltoluene	ND	0.50	ug/l							
Methylene Chloride	ND	1.0	ug/l							
4-Methyl-2-pentanone (MIBK)	ND	2.5	ug/l							
Methyl-tert-butyl Ether (MTBE)	ND	0.50	ug/l							
Naphthalene	ND	2.5	ug/l							
n-Propylbenzene	ND	0.50	ug/l							
Styrene	ND	0.50	ug/l							
1,1,1,2-Tetrachloroethane	ND	0.50	ug/l							
1,1,2,2-Tetrachloroethane	ND	0.50	ug/l							
Tetrachloroethene	ND	0.50	ug/l							
Toluene	ND	0.50	ug/l							
1,2,3-Trichlorobenzene	ND	1.0	ug/l							
1,2,4-Trichlorobenzene	ND	1.0	ug/l							
1,1,1-Trichloroethane	ND	0.50	ug/l							
1,1,2-Trichloroethane	ND	0.50	ug/l							
Trichloroethene	ND	0.50	ug/l							
Trichlorofluoromethane	ND	0.50	ug/l							
1,2,3-Trichloropropane	ND	1.0	ug/l							
1,2,4-Trimethylbenzene	ND	0.50	ug/l							
1,3,5-Trimethylbenzene	ND	0.50	ug/l							
Vinyl Acetate	ND	1.0	ug/l							
Vinyl chloride	ND	0.50	ug/l							
Xylenes, Total	ND	1.5	ug/l							
Freon 113	ND	2.0	ug/l							
Surrogate: Dibromofluoromethane	*24.0*		*ug/l*	*25.0*		*96*	*80-130*			
Surrogate: Toluene-d8	*25.1*		*ug/l*	*25.0*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.9*		*ug/l*	*25.0*		*100*	*80-125*			

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METHOD BLANK/QC DATA

VOLATILE ORGANICS BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0482 Extracted: 10/12/11										
LCS Analyzed: 10/12/2011 (11J0482-BS1)										
Acetone	23.0	10	ug/l	25.0		92	10-150			
Benzene	28.0	0.50	ug/l	25.0		112	80-120			
Bromobenzene	25.7	0.50	ug/l	25.0		103	80-120			
Bromochloromethane	27.3	0.50	ug/l	25.0		109	80-125			
Bromodichloromethane	27.5	0.50	ug/l	25.0		110	80-120			
Bromoform	28.0	1.0	ug/l	25.0		112	75-130			
Bromomethane	27.9	1.0	ug/l	25.0		112	55-150			
2-Butanone (MEK)	30.6	2.5	ug/l	25.0		122	40-150			
n-Butylbenzene	26.2	0.50	ug/l	25.0		105	80-130			
sec-Butylbenzene	26.2	0.50	ug/l	25.0		105	80-125			
tert-Butylbenzene	25.8	0.50	ug/l	25.0		103	80-120			
Carbon disulfide	34.2	0.50	ug/l	25.0		137	70-140			
Carbon tetrachloride	29.4	0.50	ug/l	25.0		118	75-130			
Chlorobenzene	25.6	0.50	ug/l	25.0		102	80-120			
Chloroethane	27.7	1.0	ug/l	25.0		111	70-130			
Chloroform	25.4	0.50	ug/l	25.0		102	75-120			
Chloromethane	29.7	1.0	ug/l	25.0		119	60-140			
2-Chlorotoluene	24.4	0.50	ug/l	25.0		98	80-120			
4-Chlorotoluene	24.6	0.50	ug/l	25.0		99	80-120			
Dibromochloromethane	28.4	0.50	ug/l	25.0		114	80-120			
1,2-Dibromo-3-chloropropane	29.2	2.5	ug/l	25.0		117	50-150			
1,2-Dibromoethane (EDB)	27.1	0.50	ug/l	25.0		108	80-120			
Dibromomethane	27.5	0.50	ug/l	25.0		110	75-120			
1,2-Dichlorobenzene	25.4	0.50	ug/l	25.0		102	80-120			
1,3-Dichlorobenzene	25.4	0.50	ug/l	25.0		102	80-120			
1,4-Dichlorobenzene	24.6	0.50	ug/l	25.0		98	80-120			
Dichlorodifluoromethane	33.6	0.50	ug/l	25.0		134	60-150			
1,1-Dichloroethane	25.6	0.50	ug/l	25.0		102	70-125			
1,2-Dichloroethane	26.6	0.50	ug/l	25.0		106	75-130			
1,1-Dichloroethene	28.4	0.50	ug/l	25.0		113	75-125			
cis-1,2-Dichloroethene	26.6	0.50	ug/l	25.0		106	80-120			
trans-1,2-Dichloroethene	27.4	0.50	ug/l	25.0		109	80-120			
1,2-Dichloropropane	26.4	0.50	ug/l	25.0		106	80-120			
1,3-Dichloropropane	26.9	0.50	ug/l	25.0		108	80-120			
2,2-Dichloropropane	28.1	1.0	ug/l	25.0		112	75-130			

TestAmerica Phoenix

Kylie Emily
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

VOLATILE ORGANICS BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0482 Extracted: 10/12/11										
LCS Analyzed: 10/12/2011 (11J0482-BS1)										
1,1-Dichloropropene	28.0	0.50	ug/l	25.0		112	75-120			
cis-1,3-Dichloropropene	28.6	0.50	ug/l	25.0		114	80-120			
trans-1,3-Dichloropropene	28.2	0.50	ug/l	25.0		113	80-125			
Ethylbenzene	27.8	0.50	ug/l	25.0		111	80-120			
Hexachlorobutadiene	27.5	1.0	ug/l	25.0		110	40-150			
2-Hexanone	28.6	2.5	ug/l	25.0		115	20-150			
Iodomethane	38.1	2.5	ug/l	25.0		152	80-130			*L3*
Isopropylbenzene	28.6	0.50	ug/l	25.0		114	80-130			
p-Isopropyltoluene	25.6	0.50	ug/l	25.0		102	80-130			
Methylene Chloride	27.5	1.0	ug/l	25.0		110	70-120			
4-Methyl-2-pentanone (MIBK)	30.0	2.5	ug/l	25.0		120	60-135			
Methyl-tert-butyl Ether (MTBE)	27.1	0.50	ug/l	25.0		109	70-130			
Naphthalene	27.9	2.5	ug/l	25.0		112	40-150			
n-Propylbenzene	26.8	0.50	ug/l	25.0		107	75-130			
Styrene	28.3	0.50	ug/l	25.0		113	80-120			
1,1,1,2-Tetrachloroethane	27.0	0.50	ug/l	25.0		108	75-125			
1,1,2,2-Tetrachloroethane	27.1	0.50	ug/l	25.0		108	80-120			
Tetrachloroethene	27.1	0.50	ug/l	25.0		109	70-130			
Toluene	28.5	0.50	ug/l	25.0		114	80-120			
1,2,3-Trichlorobenzene	26.8	1.0	ug/l	25.0		107	55-150			
1,2,4-Trichlorobenzene	26.5	1.0	ug/l	25.0		106	50-150			
1,1,1-Trichloroethane	26.6	0.50	ug/l	25.0		107	75-125			
1,1,2-Trichloroethane	27.6	0.50	ug/l	25.0		111	80-120			
Trichloroethene	27.2	0.50	ug/l	25.0		109	80-120			
Trichlorofluoromethane	29.0	0.50	ug/l	25.0		116	70-150			
1,2,3-Trichloropropane	27.4	1.0	ug/l	25.0		110	70-130			
1,2,4-Trimethylbenzene	25.1	0.50	ug/l	25.0		100	80-120			
1,3,5-Trimethylbenzene	25.9	0.50	ug/l	25.0		104	80-130			
Vinyl Acetate	30.0	1.0	ug/l	25.0		120	40-150			
Vinyl chloride	28.1	0.50	ug/l	25.0		113	70-130			
Xylenes, Total	54.2	1.5	ug/l	50.0		108	60-140			
Freon 113	28.0	2.0	ug/l	25.0		112	60-140			
Surrogate: Dibromofluoromethane	*24.3*		*ug/l*	*25.0*		*97*	*80-130*			
Surrogate: Toluene-d8	*25.0*		*ug/l*	*25.0*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*26.2*		*ug/l*	*25.0*		*105*	*80-125*			

TestAmerica Phoenix

Kylie Emily
Project Manager

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Environmental Resources Management Inc.-West
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Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

VOLATILE ORGANICS BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0482 Extracted: 10/12/11										
LCS Dup Analyzed: 10/12/2011 (11J0482-BSD1)										
Acetone	22.8	10	ug/l	25.0		91	10-150	0.6	35	
Benzene	27.9	0.50	ug/l	25.0		112	80-120	0.4	15	
Bromobenzene	25.5	0.50	ug/l	25.0		102	80-120	0.6	15	
Bromochloromethane	26.7	0.50	ug/l	25.0		107	80-125	2	15	
Bromodichloromethane	27.5	0.50	ug/l	25.0		110	80-120	0.1	15	
Bromoform	26.8	1.0	ug/l	25.0		107	75-130	5	20	
Bromomethane	27.7	1.0	ug/l	25.0		111	55-150	0.7	20	
2-Butanone (MEK)	27.1	2.5	ug/l	25.0		108	40-150	12	35	
n-Butylbenzene	26.2	0.50	ug/l	25.0		105	80-130	0	15	
sec-Butylbenzene	26.6	0.50	ug/l	25.0		106	80-125	1	15	
tert-Butylbenzene	26.2	0.50	ug/l	25.0		105	80-120	2	15	
Carbon disulfide	33.8	0.50	ug/l	25.0		135	70-140	1	15	
Carbon tetrachloride	29.0	0.50	ug/l	25.0		116	75-130	2	20	
Chlorobenzene	25.7	0.50	ug/l	25.0		103	80-120	0.3	15	
Chloroethane	25.6	1.0	ug/l	25.0		102	70-130	8	15	
Chloroform	25.2	0.50	ug/l	25.0		101	75-120	0.9	15	
Chloromethane	27.3	1.0	ug/l	25.0		109	60-140	8	20	
2-Chlorotoluene	24.9	0.50	ug/l	25.0		99	80-120	2	15	
4-Chlorotoluene	25.1	0.50	ug/l	25.0		100	80-120	2	15	
Dibromochloromethane	27.8	0.50	ug/l	25.0		111	80-120	2	15	
1,2-Dibromo-3-chloropropane	27.9	2.5	ug/l	25.0		111	50-150	5	35	
1,2-Dibromoethane (EDB)	25.9	0.50	ug/l	25.0		103	80-120	5	15	
Dibromomethane	26.4	0.50	ug/l	25.0		106	75-120	4	15	
1,2-Dichlorobenzene	24.7	0.50	ug/l	25.0		99	80-120	3	15	
1,3-Dichlorobenzene	25.4	0.50	ug/l	25.0		101	80-120	0.2	15	
1,4-Dichlorobenzene	24.4	0.50	ug/l	25.0		98	80-120	0.7	15	
Dichlorodifluoromethane	31.7	0.50	ug/l	25.0		127	60-150	6	30	
1,1-Dichloroethane	25.0	0.50	ug/l	25.0		100	70-125	2	15	
1,2-Dichloroethane	25.8	0.50	ug/l	25.0		103	75-130	3	15	
1,1-Dichloroethene	27.6	0.50	ug/l	25.0		110	75-125	3	20	
cis-1,2-Dichloroethene	26.4	0.50	ug/l	25.0		106	80-120	0.8	15	
trans-1,2-Dichloroethene	27.1	0.50	ug/l	25.0		108	80-120	1	15	
1,2-Dichloropropane	26.4	0.50	ug/l	25.0		105	80-120	0.2	15	
1,3-Dichloropropane	26.0	0.50	ug/l	25.0		104	80-120	3	15	
2,2-Dichloropropane	27.5	1.0	ug/l	25.0		110	75-130	2	15	

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Environmental Resources Management Inc.-West
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Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

VOLATILE ORGANICS BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0482 Extracted: 10/12/11										
LCS Dup Analyzed: 10/12/2011 (11J0482-BSD1)										
1,1-Dichloropropene	27.6	0.50	ug/l	25.0		110	75-120	2	15	
cis-1,3-Dichloropropene	28.1	0.50	ug/l	25.0		112	80-120	2	15	
trans-1,3-Dichloropropene	27.4	0.50	ug/l	25.0		110	80-125	3	15	
Ethylbenzene	28.2	0.50	ug/l	25.0		113	80-120	1	15	
Hexachlorobutadiene	27.6	1.0	ug/l	25.0		110	40-150	0.3	35	
2-Hexanone	26.7	2.5	ug/l	25.0		107	20-150	7	35	
Iodomethane	38.1	2.5	ug/l	25.0		152	80-130	0.03	10	*L3*
Isopropylbenzene	28.6	0.50	ug/l	25.0		115	80-130	0.1	15	
p-Isopropyltoluene	25.7	0.50	ug/l	25.0		103	80-130	0.5	15	
Methylene Chloride	26.6	1.0	ug/l	25.0		107	70-120	3	15	
4-Methyl-2-pentanone (MIBK)	27.4	2.5	ug/l	25.0		110	60-135	9	25	
Methyl-tert-butyl Ether (MTBE)	24.8	0.50	ug/l	25.0		99	70-130	9	20	
Naphthalene	27.5	2.5	ug/l	25.0		110	40-150	1	30	
n-Propylbenzene	27.4	0.50	ug/l	25.0		109	75-130	2	15	
Styrene	28.6	0.50	ug/l	25.0		115	80-120	1	15	
1,1,1,2-Tetrachloroethane	27.0	0.50	ug/l	25.0		108	75-125	0	15	
1,1,2,2-Tetrachloroethane	25.4	0.50	ug/l	25.0		102	80-120	6	20	
Tetrachloroethene	27.3	0.50	ug/l	25.0		109	70-130	0.6	20	
Toluene	28.3	0.50	ug/l	25.0		113	80-120	0.7	15	
1,2,3-Trichlorobenzene	26.7	1.0	ug/l	25.0		107	55-150	0.6	35	
1,2,4-Trichlorobenzene	26.4	1.0	ug/l	25.0		105	50-150	0.6	30	
1,1,1-Trichloroethane	26.6	0.50	ug/l	25.0		106	75-125	0.3	15	
1,1,2-Trichloroethane	26.1	0.50	ug/l	25.0		104	80-120	6	15	
Trichloroethene	26.8	0.50	ug/l	25.0		107	80-120	1	15	
Trichlorofluoromethane	29.6	0.50	ug/l	25.0		118	70-150	2	25	
1,2,3-Trichloropropane	25.6	1.0	ug/l	25.0		102	70-130	7	20	
1,2,4-Trimethylbenzene	25.7	0.50	ug/l	25.0		103	80-120	2	15	
1,3,5-Trimethylbenzene	26.3	0.50	ug/l	25.0		105	80-130	2	15	
Vinyl Acetate	28.2	1.0	ug/l	25.0		113	40-150	6	25	
Vinyl chloride	26.1	0.50	ug/l	25.0		105	70-130	7	20	
Xylenes, Total	54.5	1.5	ug/l	50.0		109	60-140	0.6	15	
Freon 113	27.7	2.0	ug/l	25.0		111	60-140	1	15	
Surrogate: Dibromofluoromethane	*24.2*		*ug/l*	*25.0*		*97*	*80-130*			
Surrogate: Toluene-d8	*25.0*		*ug/l*	*25.0*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*26.2*		*ug/l*	*25.0*		*105*	*80-125*			

TestAmerica Phoenix

Kylie Emily
Project Manager

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

VOLATILE ORGANICS BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0482 Extracted: 10/12/11										
Matrix Spike Analyzed: 10/12/2011 (11J0482-MS1)					**Source: PUJ0293-02RE1**					
Acetone	ND	10	ug/l	25.0	ND		10-150			*M2*
Benzene	36.8	0.50	ug/l	25.0	12.2	99	70-125			
Bromobenzene	25.0	0.50	ug/l	25.0	ND	100	75-120			
Bromochloromethane	25.8	0.50	ug/l	25.0	ND	103	75-130			
Bromodichloromethane	26.9	0.50	ug/l	25.0	ND	108	75-125			
Bromoform	27.0	1.0	ug/l	25.0	ND	108	65-125			
Bromomethane	27.6	1.0	ug/l	25.0	ND	111	45-150			
2-Butanone (MEK)	177	2.5	ug/l	25.0	132	179	15-150			*M3*
n-Butylbenzene	28.2	0.50	ug/l	25.0	ND	113	70-130			
sec-Butylbenzene	27.0	0.50	ug/l	25.0	0.250	107	70-125			
tert-Butylbenzene	26.1	0.50	ug/l	25.0	ND	105	70-125			
Carbon disulfide	35.6	0.50	ug/l	25.0	ND	142	65-145			
Carbon tetrachloride	30.4	0.50	ug/l	25.0	ND	122	65-135			
Chlorobenzene	24.9	0.50	ug/l	25.0	ND	100	75-120			
Chloroethane	27.5	1.0	ug/l	25.0	ND	110	65-140			
Chloroform	25.1	0.50	ug/l	25.0	ND	100	70-130			
Chloromethane	28.4	1.0	ug/l	25.0	ND	114	55-145			
2-Chlorotoluene	24.5	0.50	ug/l	25.0	ND	98	70-125			
4-Chlorotoluene	24.8	0.50	ug/l	25.0	ND	99	70-125			
Dibromochloromethane	26.6	0.50	ug/l	25.0	ND	107	70-130			
1,2-Dibromo-3-chloropropane	27.9	2.5	ug/l	25.0	ND	112	50-150			
1,2-Dibromoethane (EDB)	25.0	0.50	ug/l	25.0	ND	100	70-125			
Dibromomethane	25.6	0.50	ug/l	25.0	ND	102	70-120			
1,2-Dichlorobenzene	24.7	0.50	ug/l	25.0	ND	99	75-120			
1,3-Dichlorobenzene	25.2	0.50	ug/l	25.0	ND	101	75-120			
1,4-Dichlorobenzene	23.9	0.50	ug/l	25.0	ND	96	70-125			
Dichlorodifluoromethane	33.6	0.50	ug/l	25.0	ND	134	60-150			
1,1-Dichloroethane	24.9	0.50	ug/l	25.0	ND	100	70-130			
1,2-Dichloroethane	24.9	0.50	ug/l	25.0	0.310	98	65-140			
1,1-Dichloroethene	28.6	0.50	ug/l	25.0	ND	115	70-130			
cis-1,2-Dichloroethene	26.1	0.50	ug/l	25.0	ND	104	70-125			
trans-1,2-Dichloroethene	27.2	0.50	ug/l	25.0	ND	109	75-125			
1,2-Dichloropropane	25.7	0.50	ug/l	25.0	ND	103	75-125			
1,3-Dichloropropane	24.6	0.50	ug/l	25.0	ND	99	70-120			
2,2-Dichloropropane	28.9	1.0	ug/l	25.0	ND	116	65-140			

TestAmerica Phoenix

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Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

VOLATILE ORGANICS BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0482 Extracted: 10/12/11										
Matrix Spike Analyzed: 10/12/2011 (11J0482-MS1)					**Source: PUJ0293-02RE1**					
1,1-Dichloropropene	29.0	0.50	ug/l	25.0	ND	116	65-130			
cis-1,3-Dichloropropene	27.6	0.50	ug/l	25.0	ND	111	75-130			
trans-1,3-Dichloropropene	27.5	0.50	ug/l	25.0	ND	110	70-130			
Ethylbenzene	29.2	0.50	ug/l	25.0	2.80	105	70-125			
Hexachlorobutadiene	31.3	1.0	ug/l	25.0	ND	125	40-150			
2-Hexanone	56.0	2.5	ug/l	25.0	27.0	116	20-150			
Iodomethane	38.0	2.5	ug/l	25.0	ND	152	60-150			*N1*
Isopropylbenzene	28.7	0.50	ug/l	25.0	ND	115	75-130			
p-Isopropyltoluene	26.4	0.50	ug/l	25.0	ND	105	70-130			
Methylene Chloride	25.3	1.0	ug/l	25.0	ND	101	65-130			
4-Methyl-2-pentanone (MIBK)	42.1	2.5	ug/l	25.0	11.6	122	55-135			
Methyl-tert-butyl Ether (MTBE)	84.9	0.50	ug/l	25.0	58.7	105	65-140			
Naphthalene	45.9	2.5	ug/l	25.0	24.0	87	40-150			
n-Propylbenzene	27.9	0.50	ug/l	25.0	0.570	109	70-130			
Styrene	27.3	0.50	ug/l	25.0	ND	109	55-135			
1,1,1,2-Tetrachloroethane	26.0	0.50	ug/l	25.0	ND	104	70-125			
1,1,2,2-Tetrachloroethane	24.4	0.50	ug/l	25.0	ND	98	70-125			
Tetrachloroethene	27.5	0.50	ug/l	25.0	ND	110	65-130			
Toluene	39.5	0.50	ug/l	25.0	17.8	87	70-125			
1,2,3-Trichlorobenzene	28.5	1.0	ug/l	25.0	ND	114	50-150			
1,2,4-Trichlorobenzene	28.3	1.0	ug/l	25.0	ND	113	50-150			
1,1,1-Trichloroethane	27.5	0.50	ug/l	25.0	ND	110	70-130			
1,1,2-Trichloroethane	26.1	0.50	ug/l	25.0	ND	104	75-125			
Trichloroethene	27.5	0.50	ug/l	25.0	ND	110	70-125			
Trichlorofluoromethane	31.2	0.50	ug/l	25.0	ND	125	65-150			
1,2,3-Trichloropropane	25.2	1.0	ug/l	25.0	ND	101	70-130			
1,2,4-Trimethylbenzene	29.2	0.50	ug/l	25.0	6.46	91	70-125			
1,3,5-Trimethylbenzene	26.8	0.50	ug/l	25.0	1.42	101	75-130			
Vinyl Acetate	28.9	1.0	ug/l	25.0	ND	116	40-150			
Vinyl chloride	28.4	0.50	ug/l	25.0	ND	113	60-140			
Xylenes, Total	61.2	1.5	ug/l	50.0	11.9	98	75-120			
Freon 113	28.8	2.0	ug/l	25.0	ND	115	65-140			
Surrogate: Dibromofluoromethane	*23.8*		*ug/l*	*25.0*		*95*	*80-130*			
Surrogate: Toluene-d8	*24.9*		*ug/l*	*25.0*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*25.3*		*ug/l*	*25.0*		*101*	*80-125*			

TestAmerica Phoenix

Kylie Emily
Project Manager

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Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

VOLATILE ORGANICS BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0482 Extracted: 10/12/11										
Matrix Spike Dup Analyzed: 10/12/2011 (11J0482-MSD1)					**Source: PUJ0293-02RE1**					
Acetone	ND	10	ug/l	25.0	ND		10-150		35	*M2*
Benzene	37.3	0.50	ug/l	25.0	12.2	100	70-125	1	25	
Bromobenzene	25.2	0.50	ug/l	25.0	ND	101	75-120	0.5	20	
Bromochloromethane	24.7	0.50	ug/l	25.0	ND	99	75-130	4	20	
Bromodichloromethane	27.3	0.50	ug/l	25.0	ND	109	75-125	1	20	
Bromoform	26.4	1.0	ug/l	25.0	ND	106	65-125	2	25	
Bromomethane	29.2	1.0	ug/l	25.0	ND	117	45-150	6	35	
2-Butanone (MEK)	164	2.5	ug/l	25.0	132	126	15-150	8	30	*M3*
n-Butylbenzene	28.7	0.50	ug/l	25.0	ND	115	70-130	1	30	
sec-Butylbenzene	27.4	0.50	ug/l	25.0	0.250	108	70-125	1	30	
tert-Butylbenzene	26.6	0.50	ug/l	25.0	ND	106	70-125	2	25	
Carbon disulfide	34.8	0.50	ug/l	25.0	ND	139	65-145	2	25	
Carbon tetrachloride	31.9	0.50	ug/l	25.0	ND	128	65-135	5	25	
Chlorobenzene	25.4	0.50	ug/l	25.0	ND	102	75-120	2	20	
Chloroethane	27.9	1.0	ug/l	25.0	ND	112	65-140	2	25	
Chloroform	24.9	0.50	ug/l	25.0	ND	100	70-130	0.5	20	
Chloromethane	28.9	1.0	ug/l	25.0	ND	115	55-145	2	35	
2-Chlorotoluene	25.2	0.50	ug/l	25.0	ND	101	70-125	3	25	
4-Chlorotoluene	25.2	0.50	ug/l	25.0	ND	101	70-125	1	25	
Dibromochloromethane	27.2	0.50	ug/l	25.0	ND	109	70-130	2	20	
1,2-Dibromo-3-chloropropane	26.6	2.5	ug/l	25.0	ND	107	50-150	5	30	
1,2-Dibromoethane (EDB)	24.9	0.50	ug/l	25.0	ND	100	70-125	0.2	20	
Dibromomethane	25.6	0.50	ug/l	25.0	ND	103	70-120	0.3	20	
1,2-Dichlorobenzene	24.5	0.50	ug/l	25.0	ND	98	75-120	0.8	20	
1,3-Dichlorobenzene	25.5	0.50	ug/l	25.0	ND	102	75-120	1	25	
1,4-Dichlorobenzene	24.0	0.50	ug/l	25.0	ND	96	70-125	0.4	20	
Dichlorodifluoromethane	34.5	0.50	ug/l	25.0	ND	138	60-150	2	30	
1,1-Dichloroethane	25.0	0.50	ug/l	25.0	ND	100	70-130	0.2	20	
1,2-Dichloroethane	25.3	0.50	ug/l	25.0	0.310	100	65-140	2	20	
1,1-Dichloroethene	28.3	0.50	ug/l	25.0	ND	113	70-130	1	25	
cis-1,2-Dichloroethene	25.6	0.50	ug/l	25.0	ND	103	70-125	2	20	
trans-1,2-Dichloroethene	26.7	0.50	ug/l	25.0	ND	107	75-125	2	25	
1,2-Dichloropropane	25.7	0.50	ug/l	25.0	ND	103	75-125	0.04	20	
1,3-Dichloropropane	24.9	0.50	ug/l	25.0	ND	99	70-120	0.9	20	
2,2-Dichloropropane	29.7	1.0	ug/l	25.0	ND	119	65-140	3	25	

TestAmerica Phoenix

Kylie Emily
Project Manager

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THE LEADER IN ENVIRONMENTAL TESTING

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

VOLATILE ORGANICS BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0482 Extracted: 10/12/11										
Matrix Spike Dup Analyzed: 10/12/2011 (11J0482-MSD1)					**Source: PUJ0293-02RE1**					
1,1-Dichloropropene	29.6	0.50	ug/l	25.0	ND	118	65-130	2	25	
cis-1,3-Dichloropropene	27.5	0.50	ug/l	25.0	ND	110	75-130	0.5	20	
trans-1,3-Dichloropropene	27.4	0.50	ug/l	25.0	ND	110	70-130	0.07	20	
Ethylbenzene	30.3	0.50	ug/l	25.0	2.80	110	70-125	4	25	
Hexachlorobutadiene	31.1	1.0	ug/l	25.0	ND	124	40-150	0.7	30	
2-Hexanone	57.6	2.5	ug/l	25.0	27.0	122	20-150	3	30	
Iodomethane	39.1	2.5	ug/l	25.0	ND	157	60-150	3	30	*N1*
Isopropylbenzene	29.6	0.50	ug/l	25.0	ND	118	75-130	3	25	
p-Isopropyltoluene	26.6	0.50	ug/l	25.0	ND	106	70-130	0.8	30	
Methylene Chloride	24.3	1.0	ug/l	25.0	ND	97	65-130	4	20	
4-Methyl-2-pentanone (MIBK)	41.3	2.5	ug/l	25.0	11.6	119	55-135	2	25	
Methyl-tert-butyl Ether (MTBE)	81.0	0.50	ug/l	25.0	58.7	89	65-140	5	25	
Naphthalene	46.1	2.5	ug/l	25.0	24.0	88	40-150	0.4	30	
n-Propylbenzene	28.1	0.50	ug/l	25.0	0.570	110	70-130	0.9	30	
Styrene	28.3	0.50	ug/l	25.0	ND	113	55-135	4	35	
1,1,1,2-Tetrachloroethane	26.6	0.50	ug/l	25.0	ND	107	70-125	2	20	
1,1,2,2-Tetrachloroethane	23.2	0.50	ug/l	25.0	ND	93	70-125	5	25	
Tetrachloroethene	28.7	0.50	ug/l	25.0	ND	115	65-130	4	25	
Toluene	40.3	0.50	ug/l	25.0	17.8	90	70-125	2	20	
1,2,3-Trichlorobenzene	28.2	1.0	ug/l	25.0	ND	113	50-150	1	35	
1,2,4-Trichlorobenzene	28.5	1.0	ug/l	25.0	ND	114	50-150	0.6	25	
1,1,1-Trichloroethane	28.4	0.50	ug/l	25.0	ND	113	70-130	3	25	
1,1,2-Trichloroethane	25.8	0.50	ug/l	25.0	ND	103	75-125	1	20	
Trichloroethene	27.9	0.50	ug/l	25.0	ND	112	70-125	2	25	
Trichlorofluoromethane	32.2	0.50	ug/l	25.0	ND	129	65-150	3	25	
1,2,3-Trichloropropane	24.0	1.0	ug/l	25.0	ND	96	70-130	5	25	
1,2,4-Trimethylbenzene	30.5	0.50	ug/l	25.0	6.46	96	70-125	4	30	
1,3,5-Trimethylbenzene	27.7	0.50	ug/l	25.0	1.42	105	75-130	3	25	
Vinyl Acetate	27.7	1.0	ug/l	25.0	ND	111	40-150	4	30	
Vinyl chloride	30.7	0.50	ug/l	25.0	ND	123	60-140	8	25	
Xylenes, Total	63.6	1.5	ug/l	50.0	11.9	103	75-120	4	15	
Freon 113	28.7	2.0	ug/l	25.0	ND	115	65-140	0.3	20	
Surrogate: Dibromofluoromethane	*23.5*		*ug/l*	*25.0*		*94*	*80-130*			
Surrogate: Toluene-d8	*25.2*		*ug/l*	*25.0*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*25.8*		*ug/l*	*25.0*		*103*	*80-125*			

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Kylie Emily
Project Manager

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

POLYNUCLEAR AROMATIC HYDROCARBONS (EPA 3545/8310)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0345 Extracted: 10/10/11										
Blank Analyzed: 10/14/2011 (11J0345-BLK1)										
Naphthalene	ND	0.20	mg/kg							
Acenaphthylene	ND	0.30	mg/kg							
Acenaphthene	ND	0.20	mg/kg							
Fluorene	ND	0.030	mg/kg							
Phenanthrene	ND	0.030	mg/kg							
Anthracene	ND	0.020	mg/kg							
Fluoranthene	ND	0.030	mg/kg							
Pyrene	ND	0.020	mg/kg							
Benzanthracene	ND	0.010	mg/kg							
Chrysene	ND	0.020	mg/kg							
Benzo(b)fluoranthene	ND	0.020	mg/kg							
Benzo(k)fluoranthene	ND	0.010	mg/kg							
Benzo(a)pyrene	ND	0.010	mg/kg							
Dibenz(a,h)anthracene	ND	0.010	mg/kg							
Benzo(g,h,i)perylene	ND	0.030	mg/kg							
Indeno(1,2,3-cd)pyrene	ND	0.010	mg/kg							
Surrogate: 2-Chloroanthracene	*0.401*		*mg/kg*	*0.417*		*96*	*23.5-125*			
LCS Analyzed: 10/14/2011 (11J0345-BS1)										
Naphthalene	0.144	0.20	mg/kg	0.167		87	49.2-105			
Acenaphthylene	0.310	0.30	mg/kg	0.333		93	45.8-111			
Acenaphthene	0.148	0.20	mg/kg	0.167		89	42.2-118			
Fluorene	0.0302	0.030	mg/kg	0.0333		90	51.7-111			
Phenanthrene	0.0158	0.030	mg/kg	0.0167		95	49.8-116			
Anthracene	0.0178	0.020	mg/kg	0.0167		107	47.4-143			
Fluoranthene	0.0327	0.030	mg/kg	0.0333		98	54.5-121			
Pyrene	0.0161	0.020	mg/kg	0.0167		97	52.6-128			
Benzanthracene	0.0171	0.010	mg/kg	0.0167		103	57-124			
Chrysene	0.0174	0.020	mg/kg	0.0167		104	57-126			
Benzo(b)fluoranthene	0.0350	0.020	mg/kg	0.0333		105	58.9-122			
Benzo(k)fluoranthene	0.0176	0.010	mg/kg	0.0167		106	52.4-131			
Benzo(a)pyrene	0.0169	0.010	mg/kg	0.0167		102	52.7-122			
Dibenz(a,h)anthracene	0.0356	0.010	mg/kg	0.0333		107	38.2-138			
Benzo(g,h,i)perylene	0.0349	0.030	mg/kg	0.0333		105	57.5-120			
Indeno(1,2,3-cd)pyrene	0.0173	0.010	mg/kg	0.0167		104	57.3-123			
Surrogate: 2-Chloroanthracene	*0.413*		*mg/kg*	*0.417*		*99*	*61.8-121*			

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METHOD BLANK/QC DATA

POLYNUCLEAR AROMATIC HYDROCARBONS (EPA 3545/8310)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0345 Extracted: 10/10/11										
LCS Dup Analyzed: 10/14/2011 (11J0345-BSD1)										
Naphthalene	0.130	0.20	mg/kg	0.167		78	49.2-105	11	35	
Acenaphthylene	0.285	0.30	mg/kg	0.333		85	45.8-111	8	35	
Acenaphthene	0.144	0.20	mg/kg	0.167		86	42.2-118	3	35	
Fluorene	0.0283	0.030	mg/kg	0.0333		85	51.7-111	6	35	
Phenanthrene	0.0151	0.030	mg/kg	0.0167		90	49.8-116	5	35	
Anthracene	0.0175	0.020	mg/kg	0.0167		105	47.4-143	2	35	
Fluoranthene	0.0319	0.030	mg/kg	0.0333		96	54.5-121	3	35	
Pyrene	0.0158	0.020	mg/kg	0.0167		95	52.6-128	2	35	
Benzanthracene	0.0171	0.010	mg/kg	0.0167		103	57-124	0.1	35	
Chrysene	0.0174	0.020	mg/kg	0.0167		104	57-126	0.2	35	
Benzo(b)fluoranthene	0.0356	0.020	mg/kg	0.0333		107	58.9-122	2	35	
Benzo(k)fluoranthene	0.0178	0.010	mg/kg	0.0167		107	52.4-131	1	35	
Benzo(a)pyrene	0.0172	0.010	mg/kg	0.0167		103	52.7-122	1	35	
Dibenz(a,h)anthracene	0.0378	0.010	mg/kg	0.0333		113	38.2-138	6	35	
Benzo(g,h,i)perylene	0.0355	0.030	mg/kg	0.0333		106	57.5-120	1	35	
Indeno(1,2,3-cd)pyrene	0.0176	0.010	mg/kg	0.0167		106	57.3-123	2	35	
Surrogate: 2-Chloroanthracene	*0.400*		*mg/kg*	*0.417*		*96*	*61.8-121*			
Matrix Spike Analyzed: 10/13/2011 (11J0345-MS1)					**Source: PUJ0446-01**					
Naphthalene	0.0989	0.20	mg/kg	0.166	ND	60	24.3-111			
Acenaphthylene	0.226	0.30	mg/kg	0.332	ND	68	18-140			
Acenaphthene	0.107	0.20	mg/kg	0.166	ND	64	24-121			
Fluorene	0.0218	0.030	mg/kg	0.0332	ND	66	21.7-115			
Phenanthrene	0.0114	0.030	mg/kg	0.0166	ND	69	36-154			
Anthracene	0.0134	0.020	mg/kg	0.0166	ND	81	24-124			
Fluoranthene	0.0240	0.030	mg/kg	0.0332	ND	72	18-149			
Pyrene	0.0119	0.020	mg/kg	0.0166	ND	72	24-144			
Benzanthracene	0.0130	0.010	mg/kg	0.0166	ND	78	12-150			
Chrysene	0.0131	0.020	mg/kg	0.0166	ND	79	24-128			
Benzo(b)fluoranthene	0.0262	0.020	mg/kg	0.0332	ND	79	12-138			
Benzo(k)fluoranthene	0.0128	0.010	mg/kg	0.0166	ND	77	20.6-131			
Benzo(a)pyrene	0.0238	0.010	mg/kg	0.0166	ND	143	12-158			
Dibenz(a,h)anthracene	0.0277	0.010	mg/kg	0.0332	ND	83	20.3-122			
Benzo(g,h,i)perylene	0.0262	0.030	mg/kg	0.0332	ND	79	18-141			
Indeno(1,2,3-cd)pyrene	0.0138	0.010	mg/kg	0.0166	ND	83	14.9-122			
Surrogate: 2-Chloroanthracene	*0.278*		*mg/kg*	*0.415*		*67*	*23.5-125*			

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Kylie Emily
Project Manager

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Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

POLYNUCLEAR AROMATIC HYDROCARBONS (EPA 3545/8310)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0345 Extracted: 10/10/11										
Matrix Spike Dup Analyzed: 10/13/2011 (11J0345-MSD1)					**Source: PUJ0446-01**					
Naphthalene	0.0989	0.20	mg/kg	0.166	ND	60	24.3-111	0.02	35	
Acenaphthylene	0.229	0.30	mg/kg	0.332	ND	69	18-140	1	35	
Acenaphthene	0.110	0.20	mg/kg	0.166	ND	66	24-121	2	35	
Fluorene	0.0230	0.030	mg/kg	0.0332	ND	69	21.7-115	6	35	
Phenanthrene	0.0130	0.030	mg/kg	0.0166	ND	78	36-154	13	35	
Anthracene	0.0153	0.020	mg/kg	0.0166	ND	92	24-124	13	35	
Fluoranthene	0.0281	0.030	mg/kg	0.0332	ND	85	18-149	15	35	
Pyrene	0.0140	0.020	mg/kg	0.0166	ND	85	24-144	16	35	
Benzanthracene	0.0147	0.010	mg/kg	0.0166	ND	88	12-150	12	35	
Chrysene	0.0148	0.020	mg/kg	0.0166	ND	89	24-128	12	35	
Benzo(b)fluoranthene	0.0297	0.020	mg/kg	0.0332	ND	89	12-138	12	35	
Benzo(k)fluoranthene	0.0143	0.010	mg/kg	0.0166	ND	86	20.6-131	11	35	
Benzo(a)pyrene	0.0207	0.010	mg/kg	0.0166	ND	125	12-158	14	35	
Dibenz(a,h)anthracene	0.0328	0.010	mg/kg	0.0332	ND	99	20.3-122	17	35	
Benzo(g,h,i)perylene	0.0355	0.030	mg/kg	0.0332	ND	107	18-141	30	35	
Indeno(1,2,3-cd)pyrene	0.0131	0.010	mg/kg	0.0166	ND	79	14.9-122	5	35	
Surrogate: 2-Chloroanthracene	*0.338*		*mg/kg*	*0.415*		*82*	*23.5-125*			

TestAmerica Phoenix

Kylie Emily
Project Manager

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Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES BY GC (EPA 3545/8081A)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0406 Extracted: 10/11/11										
Blank Analyzed: 10/12/2011 (11J0406-BLK1)										
alpha-BHC	ND	0.0050	mg/kg							
gamma-BHC (Lindane)	ND	0.0050	mg/kg							
beta-BHC	ND	0.0050	mg/kg							
Heptachlor	ND	0.0050	mg/kg							
delta-BHC	ND	0.0050	mg/kg							
Aldrin	ND	0.0050	mg/kg							
Heptachlor epoxide	ND	0.0050	mg/kg							
Endosulfan I	ND	0.0050	mg/kg							
4,4'-DDE	ND	0.0050	mg/kg							
Dieldrin	ND	0.0050	mg/kg							
Endrin	ND	0.0050	mg/kg							
4,4'-DDD	ND	0.0050	mg/kg							
Endosulfan II	ND	0.0050	mg/kg							
4,4'-DDT	ND	0.0050	mg/kg							
Endrin aldehyde	ND	0.0050	mg/kg							
Endosulfan sulfate	ND	0.0050	mg/kg							
Methoxychlor	ND	0.010	mg/kg							
Toxaphene	ND	0.10	mg/kg							
Chlordane	ND	0.050	mg/kg							
Surrogate: Tetrachloro-m-xylene	*0.0888*		*mg/kg*	*0.100*		*89*	*40-145*			
Surrogate: Decachlorobiphenyl	*0.114*		*mg/kg*	*0.100*		*114*	*30-150*			
LCS Analyzed: 10/12/2011 (11J0406-BS1)										
alpha-BHC	0.0975	0.0050	mg/kg	0.100		97	75-120			
gamma-BHC (Lindane)	0.0955	0.0050	mg/kg	0.100		96	75-125			
beta-BHC	0.0995	0.0050	mg/kg	0.100		99	80-125			
Heptachlor	0.102	0.0050	mg/kg	0.100		102	80-130			
delta-BHC	0.0944	0.0050	mg/kg	0.100		94	75-120			
Aldrin	0.0967	0.0050	mg/kg	0.100		97	80-120			
Heptachlor epoxide	0.0968	0.0050	mg/kg	0.100		97	75-125			
Endosulfan I	0.0981	0.0050	mg/kg	0.100		98	80-120			
4,4'-DDE	0.0977	0.0050	mg/kg	0.100		98	80-120			
Dieldrin	0.0983	0.0050	mg/kg	0.100		98	70-125			
Endrin	0.107	0.0050	mg/kg	0.100		107	80-130			
4,4'-DDD	0.0859	0.0050	mg/kg	0.100		86	80-130			
Endosulfan II	0.0984	0.0050	mg/kg	0.100		98	80-120			

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Project Manager

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Environmental Resources Management Inc.-West
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Scottsdale, AZ 85251
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Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES BY GC (EPA 3545/8081A)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0406 Extracted: 10/11/11										
LCS Analyzed: 10/12/2011 (11J0406-BS1)										
4,4'-DDT	0.108	0.0050	mg/kg	0.100		108	75-130			
Endrin aldehyde	0.0990	0.0050	mg/kg	0.100		99	65-125			
Endosulfan sulfate	0.0980	0.0050	mg/kg	0.100		98	80-125			
Methoxychlor	0.116	0.010	mg/kg	0.100		116	70-135			
Surrogate: Tetrachloro-m-xylene	*0.0949*		*mg/kg*	*0.100*		*95*	*75-125*			
Surrogate: Decachlorobiphenyl	*0.121*		*mg/kg*	*0.100*		*121*	*80-130*			
LCS Dup Analyzed: 10/12/2011 (11J0406-BSD1)										
alpha-BHC	0.0967	0.0050	mg/kg	0.100		97	75-120	0.8	20	
gamma-BHC (Lindane)	0.0957	0.0050	mg/kg	0.100		96	75-125	0.2	20	
beta-BHC	0.0992	0.0050	mg/kg	0.100		99	80-125	0.3	20	
Heptachlor	0.102	0.0050	mg/kg	0.100		102	80-130	0.1	20	
delta-BHC	0.0939	0.0050	mg/kg	0.100		94	75-120	0.5	20	
Aldrin	0.0960	0.0050	mg/kg	0.100		96	80-120	0.8	20	
Heptachlor epoxide	0.0965	0.0050	mg/kg	0.100		97	75-125	0.3	20	
Endosulfan I	0.0981	0.0050	mg/kg	0.100		98	80-120	0.05	20	
4,4'-DDE	0.0975	0.0050	mg/kg	0.100		98	80-120	0.2	20	
Dieldrin	0.0977	0.0050	mg/kg	0.100		98	70-125	0.6	20	
Endrin	0.109	0.0050	mg/kg	0.100		109	80-130	2	20	
4,4'-DDD	0.0848	0.0050	mg/kg	0.100		85	80-130	1	20	
Endosulfan II	0.0978	0.0050	mg/kg	0.100		98	80-120	0.6	20	
4,4'-DDT	0.110	0.0050	mg/kg	0.100		110	75-130	2	20	
Endrin aldehyde	0.101	0.0050	mg/kg	0.100		101	65-125	2	20	
Endosulfan sulfate	0.0991	0.0050	mg/kg	0.100		99	80-125	1	20	
Methoxychlor	0.118	0.010	mg/kg	0.100		118	70-135	1	20	
Surrogate: Tetrachloro-m-xylene	*0.0924*		*mg/kg*	*0.100*		*92*	*75-125*			
Surrogate: Decachlorobiphenyl	*0.118*		*mg/kg*	*0.100*		*118*	*80-130*			

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METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES BY GC (EPA 3545/8081A)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0406 Extracted: 10/11/11										
Matrix Spike Analyzed: 10/12/2011 (11J0406-MS1)					**Source: PUJ0446-02**					
alpha-BHC	0.0942	0.0050	mg/kg	0.0991	ND	95	30-150			
gamma-BHC (Lindane)	0.0934	0.0050	mg/kg	0.0991	ND	94	30-150			
beta-BHC	0.0969	0.0050	mg/kg	0.0991	ND	98	40-150			
Heptachlor	0.102	0.0050	mg/kg	0.0991	ND	103	40-155			
delta-BHC	0.0918	0.0050	mg/kg	0.0991	ND	93	20-160			
Aldrin	0.0958	0.0050	mg/kg	0.0991	ND	97	25-155			
Heptachlor epoxide	0.0957	0.0050	mg/kg	0.0991	ND	97	35-155			
Endosulfan I	0.0964	0.0050	mg/kg	0.0991	ND	97	30-160			
4,4'-DDE	0.0963	0.0050	mg/kg	0.0991	ND	97	30-165			
Dieldrin	0.0967	0.0050	mg/kg	0.0991	ND	98	25-165			
Endrin	0.107	0.0050	mg/kg	0.0991	ND	108	45-155			
4,4'-DDD	0.0868	0.0050	mg/kg	0.0991	ND	88	40-160			
Endosulfan II	0.0969	0.0050	mg/kg	0.0991	ND	98	30-160			
4,4'-DDT	0.111	0.0050	mg/kg	0.0991	ND	112	20-170			
Endrin aldehyde	0.101	0.0050	mg/kg	0.0991	ND	101	20-170			
Endosulfan sulfate	0.0982	0.0050	mg/kg	0.0991	ND	99	35-155			
Methoxychlor	0.118	0.010	mg/kg	0.0991	ND	119	35-170			
Surrogate: Tetrachloro-m-xylene	*0.0905*		*mg/kg*	*0.0991*		*91*	*40-145*			
Surrogate: Decachlorobiphenyl	*0.118*		*mg/kg*	*0.0991*		*119*	*30-150*			
Matrix Spike Dup Analyzed: 10/12/2011 (11J0406-MSD1)					**Source: PUJ0446-02**					
alpha-BHC	0.0964	0.0050	mg/kg	0.0992	ND	97	30-150	2	35	
gamma-BHC (Lindane)	0.0959	0.0050	mg/kg	0.0992	ND	97	30-150	3	35	
beta-BHC	0.0995	0.0050	mg/kg	0.0992	ND	100	40-150	3	35	
Heptachlor	0.105	0.0050	mg/kg	0.0992	ND	105	40-155	3	35	
delta-BHC	0.0941	0.0050	mg/kg	0.0992	ND	95	20-160	3	35	
Aldrin	0.0986	0.0050	mg/kg	0.0992	ND	99	25-155	3	35	
Heptachlor epoxide	0.0975	0.0050	mg/kg	0.0992	ND	98	35-155	2	35	
Endosulfan I	0.0988	0.0050	mg/kg	0.0992	ND	100	30-160	2	35	
4,4'-DDE	0.0987	0.0050	mg/kg	0.0992	ND	100	30-165	2	35	
Dieldrin	0.0989	0.0050	mg/kg	0.0992	ND	100	25-165	2	35	
Endrin	0.110	0.0050	mg/kg	0.0992	ND	111	45-155	2	35	
4,4'-DDD	0.0892	0.0050	mg/kg	0.0992	ND	90	40-160	3	35	
Endosulfan II	0.0992	0.0050	mg/kg	0.0992	ND	100	30-160	2	35	
4,4'-DDT	0.113	0.0050	mg/kg	0.0992	ND	114	20-170	2	35	
Endrin aldehyde	0.103	0.0050	mg/kg	0.0992	ND	104	20-170	2	35	

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Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES BY GC (EPA 3545/8081A)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0406 Extracted: 10/11/11										
Matrix Spike Dup Analyzed: 10/12/2011 (11J0406-MSD1)					**Source: PUJ0446-02**					
Endosulfan sulfate	0.100	0.0050	mg/kg	0.0992	ND	101	35-155	2	35	
Methoxychlor	0.121	0.010	mg/kg	0.0992	ND	122	35-170	3	35	
Surrogate: Tetrachloro-m-xylene	*0.0936*		*mg/kg*	*0.0992*		*94*	*40-145*			
Surrogate: Decachlorobiphenyl	*0.121*		*mg/kg*	*0.0992*		*122*	*30-150*			

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POLYCHLORINATED BIPHENYLS (EPA 3545/8082)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0406 Extracted: 10/11/11										
Blank Analyzed: 10/12/2011 (11J0406-BLK1)										
Aroclor 1016	ND	0.050	mg/kg							
Aroclor 1221	ND	0.050	mg/kg							
Aroclor 1232	ND	0.050	mg/kg							
Aroclor 1242	ND	0.050	mg/kg							
Aroclor 1248	ND	0.050	mg/kg							
Aroclor 1254	ND	0.050	mg/kg							
Aroclor 1260	ND	0.050	mg/kg							
Surrogate: Decachlorobiphenyl	*0.123*		*mg/kg*	*0.100*		*123*	*11-131*			
Surrogate: Tetrachloro-m-xylene	*0.0922*		*mg/kg*	*0.100*		*92*	*29-147*			
LCS Analyzed: 10/12/2011 (11J0406-BS2)										
Aroclor 1016	0.883	0.050	mg/kg	1.00		88	63-124			
Aroclor 1260	0.917	0.050	mg/kg	1.00		92	59-130			
Surrogate: Decachlorobiphenyl	*0.108*		*mg/kg*	*0.100*		*108*	*32-132*			
Surrogate: Tetrachloro-m-xylene	*0.0822*		*mg/kg*	*0.100*		*82*	*60-133*			
LCS Dup Analyzed: 10/12/2011 (11J0406-BSD2)										
Aroclor 1016	0.917	0.050	mg/kg	1.00		92	63-124	4	35	
Aroclor 1260	0.963	0.050	mg/kg	1.00		96	59-130	5	35	
Surrogate: Decachlorobiphenyl	*0.114*		*mg/kg*	*0.100*		*114*	*32-132*			
Surrogate: Tetrachloro-m-xylene	*0.0869*		*mg/kg*	*0.100*		*87*	*60-133*			
Matrix Spike Analyzed: 10/12/2011 (11J0406-MS2)					**Source: PUJ0446-02**					
Aroclor 1016	0.895	0.050	mg/kg	0.999	ND	90	31-139			
Aroclor 1260	0.955	0.050	mg/kg	0.999	ND	96	31-140			
Surrogate: Decachlorobiphenyl	*0.113*		*mg/kg*	*0.0999*		*113*	*11-131*			
Surrogate: Tetrachloro-m-xylene	*0.0846*		*mg/kg*	*0.0999*		*85*	*29-147*			

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Report Number: PUJ0446

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METHOD BLANK/QC DATA

POLYCHLORINATED BIPHENYLS (EPA 3545/8082)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0406 Extracted: 10/11/11										
Matrix Spike Dup Analyzed: 10/12/2011 (11J0406-MSD2)					**Source: PUJ0446-02**					
Aroclor 1016	0.966	0.050	mg/kg	0.998	ND	97	31-139	8	35	
Aroclor 1260	1.04	0.050	mg/kg	0.998	ND	105	31-140	9	35	
Surrogate: Decachlorobiphenyl	*0.124*		*mg/kg*	*0.0998*		*124*	*11-131*			
Surrogate: Tetrachloro-m-xylene	*0.0933*		*mg/kg*	*0.0998*		*93*	*29-147*			

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METHOD BLANK/QC DATA

TOTAL METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0443 Extracted: 10/12/11										
Blank Analyzed: 10/13/2011 (11J0443-BLK1)										
Mercury	ND	0.10	mg/kg							
LCS Analyzed: 10/13/2011 (11J0443-BS1)										
Mercury	1.53	0.10	mg/kg	1.67		92	80-120			
LCS Dup Analyzed: 10/13/2011 (11J0443-BSD1)										
Mercury	1.50	0.10	mg/kg	1.67		90	80-120	2	20	
Matrix Spike Analyzed: 10/13/2011 (11J0443-MS1)					**Source: PUJ0446-01**					
Mercury	1.61	0.10	mg/kg	1.81	0.0108	89	75-125			
Matrix Spike Analyzed: 10/13/2011 (11J0443-MS2)					**Source: PUJ0562-07**					
Mercury	1.53	0.10	mg/kg	1.61	ND	95	75-125			
Matrix Spike Dup Analyzed: 10/13/2011 (11J0443-MSD1)					**Source: PUJ0446-01**					
Mercury	1.62	0.10	mg/kg	1.75	0.0108	92	75-125	0.6	20	
Matrix Spike Dup Analyzed: 10/13/2011 (11J0443-MSD2)					**Source: PUJ0562-07**					
Mercury	1.31	0.089	mg/kg	1.49	ND	88	75-125	15	20	
Batch: 11J0444 Extracted: 10/12/11										
Blank Analyzed: 10/12/2011 (11J0444-BLK1)										
Arsenic	ND	5.0	mg/kg							
Barium	ND	5.0	mg/kg							
Boron	ND	10	mg/kg							
Cadmium	ND	0.50	mg/kg							
Chromium	ND	2.0	mg/kg							
Copper	ND	5.0	mg/kg							
Lead	ND	5.0	mg/kg							
Manganese	ND	2.0	mg/kg							
Selenium	ND	5.0	mg/kg							
Silver	ND	2.5	mg/kg							
Zinc	ND	10	mg/kg							

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METHOD BLANK/QC DATA

TOTAL METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0444 Extracted: 10/12/11										
LCS Analyzed: 10/12/2011 (11J0444-BS1)										
Arsenic	48.5	5.0	mg/kg	50.0		97	81-109			
Barium	48.6	5.0	mg/kg	50.0		97	87-114			
Boron	48.7	10	mg/kg	50.0		97	72-112			
Cadmium	47.6	0.50	mg/kg	50.0		95	83-110			
Chromium	48.6	2.0	mg/kg	50.0		97	86-112			
Copper	46.4	5.0	mg/kg	50.0		93	81-110			
Lead	47.5	5.0	mg/kg	50.0		95	83-113			
Manganese	48.5	2.0	mg/kg	50.0		97	87-112			
Selenium	51.1	5.0	mg/kg	50.0		102	78-110			
Silver	24.5	2.5	mg/kg	25.0		98	72-120			
Zinc	47.6	10	mg/kg	50.0		95	82-112			
LCS Dup Analyzed: 10/12/2011 (11J0444-BSD1)										
Arsenic	48.6	5.0	mg/kg	50.0		97	81-109	0.1	20	
Barium	50.2	5.0	mg/kg	50.0		100	87-114	3	20	
Boron	49.9	10	mg/kg	50.0		100	72-112	2	20	
Cadmium	49.0	0.50	mg/kg	50.0		98	83-110	3	20	
Chromium	49.9	2.0	mg/kg	50.0		100	86-112	3	20	
Copper	47.2	5.0	mg/kg	50.0		94	81-110	2	20	
Lead	47.9	5.0	mg/kg	50.0		96	83-113	0.9	20	
Manganese	49.8	2.0	mg/kg	50.0		100	87-112	3	20	
Selenium	50.0	5.0	mg/kg	50.0		100	78-110	2	20	
Silver	24.6	2.5	mg/kg	25.0		98	72-120	0.4	20	
Zinc	49.6	10	mg/kg	50.0		99	82-112	4	20	
Matrix Spike Analyzed: 10/12/2011 (11J0444-MS1)					**Source: PUJ0504-02**					
Arsenic	66.7	5.0	mg/kg	47.3	75.6	-19	75-125			*M2*
Barium	80.2	5.0	mg/kg	47.3	62.0	38	75-125			*M2*
Boron	54.3	10	mg/kg	47.3	15.6	82	75-125			
Cadmium	51.3	0.50	mg/kg	47.3	31.9	41	75-125			*M2*
Chromium	43.0	2.0	mg/kg	47.3	4.69	81	75-125			
Copper	92.0	5.0	mg/kg	47.3	153	-128	75-125			*M2*
Lead	54.8	5.0	mg/kg	47.3	51.9	6	75-125			*M2*
Manganese	151	2.0	mg/kg	47.3	165	-30	75-125			*M3*
Selenium	41.1	5.0	mg/kg	47.3	5.66	75	75-125			
Silver	21.4	2.5	mg/kg	23.6	ND	90	75-125			

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TOTAL METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0444 Extracted: 10/12/11										
Matrix Spike Analyzed: 10/12/2011 (11J0444-MS1)					**Source: PUJ0504-02**					
Zinc	77.9	10	mg/kg	47.3	93.7	-33	75-125			*M2*
Matrix Spike Dup Analyzed: 10/12/2011 (11J0444-MSD1)					**Source: PUJ0504-02**					
Arsenic	92.9	5.0	mg/kg	48.5	75.6	36	75-125	33	20	*M2, N1a*
Barium	117	5.0	mg/kg	48.5	62.0	113	75-125	37	20	*M2, N1a*
Boron	57.0	10	mg/kg	48.5	15.6	85	75-125	5	20	
Cadmium	61.8	0.50	mg/kg	48.5	31.9	62	75-125	18	20	*M2*
Chromium	43.1	2.0	mg/kg	48.5	4.69	79	75-125	0.2	20	
Copper	142	5.0	mg/kg	48.5	153	-22	75-125	43	20	*M2, N1a*
Lead	70.1	5.0	mg/kg	48.5	51.9	38	75-125	24	20	*M2, N1a*
Manganese	233	2.0	mg/kg	48.5	165	140	75-125	43	20	*M3, N1a*
Selenium	43.4	5.0	mg/kg	48.5	5.66	78	75-125	5	20	
Silver	21.5	2.5	mg/kg	24.2	ND	89	75-125	0.7	20	
Zinc	104	10	mg/kg	48.5	93.7	21	75-125	28	20	*M2, N1a*

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J0548 Extracted: 10/13/11										
Blank Analyzed: 10/13/2011 (11J0548-BLK1)										
Cyanide	ND	0.40	mg/kg							
LCS Analyzed: 10/13/2011 (11J0548-BS1)										
Cyanide	7.88	0.40	mg/kg	7.50		105	90-110			
LCS Dup Analyzed: 10/13/2011 (11J0548-BSD1)										
Cyanide	7.43	0.40	mg/kg	7.44		100	90-110	6	20	
Matrix Spike Analyzed: 10/13/2011 (11J0548-MS1)					**Source: PUJ0446-01**					
Cyanide	5.08	0.40	mg/kg	5.02	ND	101	80-120			
Matrix Spike Dup Analyzed: 10/13/2011 (11J0548-MSD1)					**Source: PUJ0446-01**					
Cyanide	5.05	0.40	mg/kg	4.80	ND	105	80-120	0.8	20	

TestAmerica Phoenix

Kylie Emily
Project Manager

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Sampled: 10/07/11
Received: 10/07/11

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11J1848 Extracted: 10/14/11										
Blank Analyzed: 10/17/2011 (11J1848-BLK1)										
Chromium VI	ND	1.0	mg/kg							
LCS Analyzed: 10/17/2011 (11J1848-BS1)										
Chromium VI	13.7	1.0	mg/kg	16.0		86	80-120			
Matrix Spike Analyzed: 10/17/2011 (11J1848-MS1)					**Source: PUJ0446-01**					
Chromium VI	14.1	1.0	mg/kg	16.0	ND	88	75-125			
Matrix Spike Analyzed: 10/17/2011 (11J1848-MS2)					**Source: PUJ0446-01**					
Chromium VI	1090	100	mg/kg	1350	ND	81	75-125			
Matrix Spike Dup Analyzed: 10/17/2011 (11J1848-MSD1)					**Source: PUJ0446-01**					
Chromium VI	13.1	1.0	mg/kg	16.0	ND	82	75-125	7	20	

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Sampled: 10/07/11
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DATA QUALIFIERS AND DEFINITIONS

L3	The associated blank spike recovery was above method acceptance limits.
M2	Matrix spike recovery was low; the associated blank spike recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated blank spike recovery was acceptable.
MC6	The sample matrix has been determined to be reductive in nature (having the potential to convert hexavalent chromium to trivalent chromium).
N1	See case narrative.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
RPD	Relative Percent Difference

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Attention: Jason Hilker

Project ID: OU3/0096498.020
Report Number: PUJ0446

Sampled: 10/07/11
Received: 10/07/11

Certification Summary

TestAmerica Phoenix

Method	Matrix	Nelac	Arizona
EPA 6010B	Soil	N/A	X
EPA 7471A	Soil		X
EPA 8081A	Soil		X
EPA 8082	Soil		X
EPA 8260B	Soil	X	X
EPA 8260B	Water	X	X
EPA 8310	Soil		X
SW 9010C/9014	Soil		X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

Subcontracted Laboratories

TestAmerica - Irvine, CA *NELAC Cert #01108CA, California Cert #1197, Arizona Cert #AZ0671, Nevada Cert #CA72-2002-63, ORELAP Cert #Text1*

17461 Derian Ave., Suite 100 - Irvine, CA 92614

Method Performed: EPA 7196A

Samples: PUJ0446-01, PUJ0446-02

TestAmerica Phoenix

Kylie Emily
Project Manager

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Subcontract Order - TestAmerica Phoenix (PUJ0446)

Please enter the following code into the Job PO Number field for automated UDZ transfer files: **Sub PHX PUJ0446**

SENDING LABORATORY:

TestAmerica Phoenix
4625 East Cotton Center Blvd. Ste 189
Phoenix, AZ 85040
Phone: (602) 437-3340
Fax: (602) 454-9303
Project Manager: Kylie Emily
Client: Environmental Resources Management Inc.-West

RECEIVING LABORATORY:

TestAmerica Irvine
17461 Derian Ave., Suite 100
Irvine, CA 92614
Phone :(949) 261-1022
Fax: (949) 261-1228
Project Location: Arizona
Receipt Temperature: 1.8 °C Ice: Y N

IW1085

Analysis	Units	Due	Expires	Interlab Price	Surch	Comments
Sample ID: PUJ0446-01 (IDW-1-S-100711 - Soil) Sampled: **10/07/11 11:01**						
Chromium VI (7196A, Sub)	mg/kg	10/17/11	11/06/11 11:01	$17.00	0%	
Containers Supplied: 4 oz Jar (F)						
Sample ID: PUJ0446-02 (IDW-2-S-100711 - Soil) Sampled: **10/07/11 11:06**						
Chromium VI (7196A, Sub)	mg/kg	10/17/11	11/06/11 11:06	$17.00	0%	
Containers Supplied: 4 oz Jar (F)						

10/10 12:44

Released By	Date/Time	Received By	Date/Time
	10/7/11 1700		10-07-11 17:00
Released By	Date/Time	Received By	Date/Time
			10/08/11 10:20

Environmental Resources Management

CHAIN OF CUSTODY RECORD

PUJ0446

NO: 3051

7272 E. Indian School Road, Suite 100 • Scottsdale, AZ • 85251 • (480) 998-2401 • FAX (480) 998-2106

PROJECT #: 0096498.020

PROJECT NAME: OU3

SAMPLER: (PRINT NAME): Kyle Johnson

(SIGNATURE): [signature]

RECEIVING LABORATORY: Test America, Phx

SAMPLE I.D.	DATE	TIME	COMP	GRAB	SAMPLING METHOD	PRESERVATIVE	ICE (Y/N)	SAMPLING VOLUME	# OF CONTAINERS	MATRIX: SOIL	MATRIX: WATER	MATRIX: GAS	VOC (8260B)	PAH (8310)	RCRA 8 + B, Li, Mn, Zn (6010B) (7471A)	PCB (8082)	Pesticide (8081A)	Cr VI (7196)	CN (9010B)				
IDW-1-S-100711	10/7/11	1101	x		-	-	Y	4oz / 5g	4 / 2	x			x	x	x	x	x	x	x			-	01
IDW-2-S-100711	10/7/11	1106	x		-	-	Y	4oz / 5g	4 / 2	x			x	x	x	x	x	x	x			-	02
IDW-100711-TB	10/7/11	—	—	—	—	HCl	Y	40mL	1		x		x	—	—	—	TRIP	BLANK	—	—	—	—	03

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	10/7/11	1200	[signature]	10/7/11	1209

FIELD REMARKS: 0.6°C

REMARKS ON SAMPLE RECEIPT

☐ BOTTLE INTACT ☐ CUSTODY SEALS ☐ CHILLED

☐ PRESERVED ☐ SEALS INTACT ☐ SEE REMARKS

ERM REMARKS

SEND REPORT TO: Jason.Hilker@ERM.com

WHITE – LABORATORY COPY CANARY – FIELD COPY PINK – DATABASE GOLD – PROJECT FILE

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THE LEADER IN ENVIRONMENTAL TESTING

4625 East Cotton Center Blvd. Ste 189, Phoenix, AZ 85040 (602) 437-3340 Fax:(602) 454-9303

LABORATORY REPORT

Prepared For: Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project: OU3 - 96498.020

Sampled: 11/22/11
Received: 11/22/11
Issued: 12/05/11 10:59

NELAP #01109CA Arizona DHS#AZ0728

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

CASE NARRATIVE

LABORATORY ID	CLIENT ID	MATRIX
PUK1426-01	IDW-S-112211-1	Soil

SAMPLE RECEIPT: Samples were received intact, at 2°C, on ice and with chain of custody documentation.

HOLDING TIMES: All samples were analyzed within prescribed holding times and/or in accordance with the TestAmerica Sample Acceptance Policy unless otherwise noted in the report.

PRESERVATION: Samples requiring preservation were verified prior to sample analysis.

QA/QC CRITERIA: All analyses met method criteria, except as noted in the report with data qualifiers.
N1-Source sample results were determined from the sample portion received in a Methonol Kit . The sample portions used for the MS/MSD were taken from a glass jar due to an insufficient number of Methaonl kits provided.

COMMENTS: No significant observations were made.

SUBCONTRACTED: No analyses were subcontracted to an outside laboratory.

Reviewed By:

TestAmerica Phoenix

Kylie Emily
Project Manager

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7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
Received: 11/22/11

OXYGENATES BY GC/MS (EPA 5035/8260B)

Sample ID: PUK1426-01 (IDW-S-112211-1 - Soil)

Reporting Units: ug/kg

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Acetone	EPA 8260B	11K0875	500	ND	1	11/23/2011	12/1/2011	
Benzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Bromobenzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Bromochloromethane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Bromodichloromethane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Bromoform	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Bromomethane	EPA 8260B	11K0875	250	ND	1	11/23/2011	12/1/2011	
2-Butanone (MEK)	EPA 8260B	11K0875	500	ND	1	11/23/2011	12/1/2011	
n-Butylbenzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
sec-Butylbenzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
tert-Butylbenzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Carbon tetrachloride	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Chlorobenzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Chloroethane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Chloroform	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Chloromethane	EPA 8260B	11K0875	250	ND	1	11/23/2011	12/1/2011	
2-Chlorotoluene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
4-Chlorotoluene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Dibromochloromethane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,2-Dibromoethane (EDB)	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,2-Dichlorobenzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,3-Dichlorobenzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,4-Dichlorobenzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Dichlorodifluoromethane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,1-Dichloroethane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,2-Dichloroethane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,1-Dichloroethene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
cis-1,2-Dichloroethene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
trans-1,2-Dichloroethene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,2-Dichloropropane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,3-Dichloropropane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
2,2-Dichloropropane	EPA 8260B	11K0875	100	ND	1	11/23/2011	12/1/2011	
1,1-Dichloropropene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
cis-1,3-Dichloropropene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
trans-1,3-Dichloropropene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Ethylbenzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
2-Hexanone	EPA 8260B	11K0875	250	ND	1	11/23/2011	12/1/2011	
p-Isopropyltoluene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Methylene Chloride	EPA 8260B	11K0875	100	ND	1	11/23/2011	12/1/2011	
4-Methyl-2-pentanone (MIBK)	EPA 8260B	11K0875	250	ND	1	11/23/2011	12/1/2011	

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Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
Received: 11/22/11

OXYGENATES BY GC/MS (EPA 5035/8260B)

Sample ID: PUK1426-01 (IDW-S-112211-1 - Soil) - cont.

Reporting Units: ug/kg

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
n-Propylbenzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Styrene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,1,2,2-Tetrachloroethane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Tetrachloroethene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Toluene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,2,3-Trichlorobenzene	EPA 8260B	11K0875	100	ND	1	11/23/2011	12/1/2011	
1,1,1-Trichloroethane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,1,2-Trichloroethane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Trichloroethene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Trichlorofluoromethane	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,2,3-Trichloropropane	EPA 8260B	11K0875	100	ND	1	11/23/2011	12/1/2011	
1,2,4-Trimethylbenzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
1,3,5-Trimethylbenzene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Vinyl Acetate	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Vinyl chloride	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
m,p-Xylenes	EPA 8260B	11K0875	100	ND	1	11/23/2011	12/1/2011	
o-Xylene	EPA 8260B	11K0875	50	ND	1	11/23/2011	12/1/2011	
Surrogate: Dibromofluoromethane (60-130%)				*81 %*				
Surrogate: Toluene-d8 (65-125%)				*85 %*				
Surrogate: 4-Bromofluorobenzene (65-125%)				*84 %*				

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Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
Received: 11/22/11

SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: IDW-S-112211-1 (PUK1426-01) - Soil					
EPA 8260B	2	11/22/2011 10:33	11/22/2011 12:03	11/23/2011 09:50	12/01/2011 16:15

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Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
Blank Analyzed: 11/29/2011 (11K0875-BLK1)										
Acetone	ND	500	ug/kg							
Benzene	ND	50	ug/kg							
Bromobenzene	ND	50	ug/kg							
Bromochloromethane	ND	50	ug/kg							
Bromodichloromethane	ND	50	ug/kg							
Bromoform	ND	50	ug/kg							
Bromomethane	ND	250	ug/kg							
2-Butanone (MEK)	ND	500	ug/kg							
n-Butylbenzene	ND	50	ug/kg							
sec-Butylbenzene	ND	50	ug/kg							
tert-Butylbenzene	ND	50	ug/kg							
Carbon tetrachloride	ND	50	ug/kg							
Chlorobenzene	ND	50	ug/kg							
Chloroethane	ND	50	ug/kg							
Chloroform	ND	50	ug/kg							
Chloromethane	ND	250	ug/kg							
2-Chlorotoluene	ND	50	ug/kg							
4-Chlorotoluene	ND	50	ug/kg							
Dibromochloromethane	ND	50	ug/kg							
1,2-Dibromoethane (EDB)	ND	50	ug/kg							
1,2-Dichlorobenzene	ND	50	ug/kg							
1,3-Dichlorobenzene	ND	50	ug/kg							
1,4-Dichlorobenzene	ND	50	ug/kg							
Dichlorodifluoromethane	ND	50	ug/kg							
1,1-Dichloroethane	ND	50	ug/kg							
1,2-Dichloroethane	ND	50	ug/kg							
1,1-Dichloroethene	ND	50	ug/kg							
cis-1,2-Dichloroethene	ND	50	ug/kg							
trans-1,2-Dichloroethene	ND	50	ug/kg							
1,2-Dichloropropane	ND	50	ug/kg							
1,3-Dichloropropane	ND	50	ug/kg							
2,2-Dichloropropane	ND	100	ug/kg							
1,1-Dichloropropene	ND	50	ug/kg							
cis-1,3-Dichloropropene	ND	50	ug/kg							
trans-1,3-Dichloropropene	ND	50	ug/kg							

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Project Manager

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Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
Blank Analyzed: 11/29/2011 (11K0875-BLK1)										
Ethylbenzene	ND	50	ug/kg							
2-Hexanone	ND	250	ug/kg							
p-Isopropyltoluene	ND	50	ug/kg							
Methylene Chloride	ND	100	ug/kg							
4-Methyl-2-pentanone (MIBK)	ND	250	ug/kg							
Methyl-tert-butyl Ether (MTBE)	ND	50	ug/kg							
n-Propylbenzene	ND	50	ug/kg							
Styrene	ND	50	ug/kg							
1,1,2,2-Tetrachloroethane	ND	50	ug/kg							
Tetrachloroethene	ND	50	ug/kg							
Toluene	ND	50	ug/kg							
1,2,3-Trichlorobenzene	ND	100	ug/kg							
1,1,1-Trichloroethane	ND	50	ug/kg							
1,1,2-Trichloroethane	ND	50	ug/kg							
Trichloroethene	ND	50	ug/kg							
Trichlorofluoromethane	ND	50	ug/kg							
1,2,3-Trichloropropane	ND	100	ug/kg							
1,2,4-Trimethylbenzene	ND	50	ug/kg							
1,3,5-Trimethylbenzene	ND	50	ug/kg							
Vinyl Acetate	ND	50	ug/kg							
Vinyl chloride	ND	50	ug/kg							
m,p-Xylenes	ND	100	ug/kg							
o-Xylene	ND	50	ug/kg							
Surrogate: Dibromofluoromethane	*1190*		*ug/kg*	*1260*		*95*	*60-130*			
Surrogate: Toluene-d8	*1080*		*ug/kg*	*1260*		*86*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*1130*		*ug/kg*	*1260*		*90*	*65-125*			
LCS Analyzed: 11/29/2011 (11K0875-BS1)										
Acetone	1080	500	ug/kg	1240		87	10-150			
Benzene	1100	50	ug/kg	1240		89	75-120			
Bromobenzene	1200	50	ug/kg	1240		97	80-120			
Bromochloromethane	1080	50	ug/kg	1240		87	75-125			
Bromodichloromethane	1090	50	ug/kg	1240		88	75-120			
Bromoform	1020	50	ug/kg	1240		82	60-120			
Bromomethane	1070	250	ug/kg	1240		86	20-140			
2-Butanone (MEK)	1050	500	ug/kg	1240		85	40-150			

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
LCS Analyzed: 11/29/2011 (11K0875-BS1)										
n-Butylbenzene	1170	50	ug/kg	1240		94	65-130			
sec-Butylbenzene	1150	50	ug/kg	1240		93	75-125			
tert-Butylbenzene	1200	50	ug/kg	1240		97	80-120			
Carbon tetrachloride	1160	50	ug/kg	1240		94	70-130			
Chlorobenzene	1150	50	ug/kg	1240		93	80-120			
Chloroethane	967	50	ug/kg	1240		78	10-130			
Chloroform	1010	50	ug/kg	1240		82	75-120			
Chloromethane	1020	250	ug/kg	1240		83	25-140			
2-Chlorotoluene	1090	50	ug/kg	1240		88	80-120			
4-Chlorotoluene	1110	50	ug/kg	1240		90	80-120			
Dibromochloromethane	1040	50	ug/kg	1240		84	75-120			
1,2-Dibromoethane (EDB)	1130	50	ug/kg	1240		91	70-120			
1,2-Dichlorobenzene	1200	50	ug/kg	1240		97	80-120			
1,3-Dichlorobenzene	1150	50	ug/kg	1240		93	80-120			
1,4-Dichlorobenzene	1160	50	ug/kg	1240		94	80-120			
Dichlorodifluoromethane	912	50	ug/kg	1240		74	10-150			
1,1-Dichloroethane	991	50	ug/kg	1240		80	70-125			
1,2-Dichloroethane	1120	50	ug/kg	1240		90	70-130			
1,1-Dichloroethene	1000	50	ug/kg	1240		81	50-135			
cis-1,2-Dichloroethene	1020	50	ug/kg	1240		82	70-125			
trans-1,2-Dichloroethene	1010	50	ug/kg	1240		81	70-130			
1,2-Dichloropropane	1140	50	ug/kg	1240		92	80-120			
1,3-Dichloropropane	1130	50	ug/kg	1240		92	70-120			
2,2-Dichloropropane	1050	100	ug/kg	1240		85	65-130			
1,1-Dichloropropene	1110	50	ug/kg	1240		90	75-120			
cis-1,3-Dichloropropene	1140	50	ug/kg	1240		92	75-125			
trans-1,3-Dichloropropene	1130	50	ug/kg	1240		91	65-130			
Ethylbenzene	1140	50	ug/kg	1240		92	80-120			
2-Hexanone	1150	250	ug/kg	1240		93	20-150			
p-Isopropyltoluene	1160	50	ug/kg	1240		93	75-130			
Methylene Chloride	960	100	ug/kg	1240		78	65-125			
4-Methyl-2-pentanone (MIBK)	1070	250	ug/kg	1240		86	50-130			
Methyl-tert-butyl Ether (MTBE)	1040	50	ug/kg	1240		84	65-130			
n-Propylbenzene	1180	50	ug/kg	1240		95	75-130			
Styrene	1180	50	ug/kg	1240		95	80-120			

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Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
LCS Analyzed: 11/29/2011 (11K0875-BS1)										
1,1,2,2-Tetrachloroethane	1110	50	ug/kg	1240		89	60-125			
Tetrachloroethene	1190	50	ug/kg	1240		96	70-130			
Toluene	1120	50	ug/kg	1240		90	75-120			
1,2,3-Trichlorobenzene	1230	100	ug/kg	1240		100	55-140			
1,1,1-Trichloroethane	1070	50	ug/kg	1240		87	75-120			
1,1,2-Trichloroethane	1170	50	ug/kg	1240		95	65-125			
Trichloroethene	1100	50	ug/kg	1240		89	80-120			
Trichlorofluoromethane	1280	50	ug/kg	1240		103	50-150			
1,2,3-Trichloropropane	1160	100	ug/kg	1240		94	60-130			
1,2,4-Trimethylbenzene	1120	50	ug/kg	1240		91	75-120			
1,3,5-Trimethylbenzene	1150	50	ug/kg	1240		93	80-130			
Vinyl Acetate	1040	50	ug/kg	1240		84	35-150			
Vinyl chloride	423	50	ug/kg	1240		34	10-150			
m,p-Xylenes	1110	100	ug/kg	1240		90	60-140			
o-Xylene	1180	50	ug/kg	1240		95	80-120			
Surrogate: Dibromofluoromethane	*1110*		*ug/kg*	*1240*		*90*	*60-130*			
Surrogate: Toluene-d8	*1160*		*ug/kg*	*1240*		*94*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*1150*		*ug/kg*	*1240*		*93*	*65-125*			
LCS Dup Analyzed: 11/29/2011 (11K0875-BSD1)										
Acetone	1240	500	ug/kg	1260		98	10-150	14	35	
Benzene	1130	50	ug/kg	1260		90	75-120	3	15	
Bromobenzene	1300	50	ug/kg	1260		103	80-120	9	20	
Bromochloromethane	1180	50	ug/kg	1260		94	75-125	9	20	
Bromodichloromethane	1160	50	ug/kg	1260		92	75-120	6	15	
Bromoform	1140	50	ug/kg	1260		90	60-120	11	25	
Bromomethane	1130	250	ug/kg	1260		89	20-140	5	35	
2-Butanone (MEK)	1110	500	ug/kg	1260		88	40-150	6	35	
n-Butylbenzene	1200	50	ug/kg	1260		95	65-130	3	20	
sec-Butylbenzene	1190	50	ug/kg	1260		95	75-125	4	15	
tert-Butylbenzene	1230	50	ug/kg	1260		97	80-120	2	15	
Carbon tetrachloride	1160	50	ug/kg	1260		92	70-130	0.4	20	
Chlorobenzene	1190	50	ug/kg	1260		95	80-120	3	15	
Chloroethane	991	50	ug/kg	1260		78	10-130	2	30	
Chloroform	1100	50	ug/kg	1260		87	75-120	8	20	
Chloromethane	1020	250	ug/kg	1260		81	25-140	0.5	35	

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Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
LCS Dup Analyzed: 11/29/2011 (11K0875-BSD1)										
2-Chlorotoluene	1190	50	ug/kg	1260		94	80-120	8	15	
4-Chlorotoluene	1180	50	ug/kg	1260		93	80-120	6	15	
Dibromochloromethane	1120	50	ug/kg	1260		89	75-120	7	20	
1,2-Dibromoethane (EDB)	1210	50	ug/kg	1260		96	70-120	7	20	
1,2-Dichlorobenzene	1300	50	ug/kg	1260		103	80-120	8	20	
1,3-Dichlorobenzene	1240	50	ug/kg	1260		98	80-120	7	15	
1,4-Dichlorobenzene	1240	50	ug/kg	1260		99	80-120	7	15	
Dichlorodifluoromethane	889	50	ug/kg	1260		70	10-150	2	35	
1,1-Dichloroethane	1040	50	ug/kg	1260		82	70-125	5	20	
1,2-Dichloroethane	1210	50	ug/kg	1260		96	70-130	8	20	
1,1-Dichloroethene	1020	50	ug/kg	1260		81	50-135	2	20	
cis-1,2-Dichloroethene	1080	50	ug/kg	1260		86	70-125	6	15	
trans-1,2-Dichloroethene	1050	50	ug/kg	1260		83	70-130	4	20	
1,2-Dichloropropane	1190	50	ug/kg	1260		94	80-120	4	20	
1,3-Dichloropropane	1200	50	ug/kg	1260		95	70-120	6	20	
2,2-Dichloropropane	1040	100	ug/kg	1260		83	65-130	0.5	20	
1,1-Dichloropropene	1160	50	ug/kg	1260		92	75-120	4	15	
cis-1,3-Dichloropropene	1200	50	ug/kg	1260		95	75-125	5	15	
trans-1,3-Dichloropropene	1230	50	ug/kg	1260		97	65-130	9	20	
Ethylbenzene	1160	50	ug/kg	1260		92	80-120	1	15	
2-Hexanone	1250	250	ug/kg	1260		99	20-150	8	35	
p-Isopropyltoluene	1210	50	ug/kg	1260		96	75-130	4	15	
Methylene Chloride	1010	100	ug/kg	1260		80	65-125	6	20	
4-Methyl-2-pentanone (MIBK)	1140	250	ug/kg	1260		90	50-130	7	35	
Methyl-tert-butyl Ether (MTBE)	1130	50	ug/kg	1260		90	65-130	9	20	
n-Propylbenzene	1230	50	ug/kg	1260		98	75-130	4	15	
Styrene	1210	50	ug/kg	1260		96	80-120	3	15	
1,1,2,2-Tetrachloroethane	1180	50	ug/kg	1260		93	60-125	6	30	
Tetrachloroethene	1190	50	ug/kg	1260		94	70-130	0.2	15	
Toluene	1170	50	ug/kg	1260		93	75-120	4	15	
1,2,3-Trichlorobenzene	1350	100	ug/kg	1260		107	55-140	9	25	
1,1,1-Trichloroethane	1140	50	ug/kg	1260		90	75-120	6	15	
1,1,2-Trichloroethane	1290	50	ug/kg	1260		102	65-125	9	30	
Trichloroethene	1170	50	ug/kg	1260		93	80-120	6	15	
Trichlorofluoromethane	1290	50	ug/kg	1260		102	50-150	1	25	

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Project Manager

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Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
LCS Dup Analyzed: 11/29/2011 (11K0875-BSD1)										
1,2,3-Trichloropropane	1310	100	ug/kg	1260		104	60-130	12	30	
1,2,4-Trimethylbenzene	1200	50	ug/kg	1260		95	75-120	7	15	
1,3,5-Trimethylbenzene	1200	50	ug/kg	1260		95	80-130	4	15	
Vinyl Acetate	1100	50	ug/kg	1260		87	35-150	5	35	
Vinyl chloride	452	50	ug/kg	1260		36	10-150	7	35	
m,p-Xylenes	1160	100	ug/kg	1260		92	60-140	4	15	
o-Xylene	1180	50	ug/kg	1260		93	80-120	0.3	15	
Surrogate: Dibromofluoromethane	*1170*		*ug/kg*	*1260*		*93*	*60-130*			
Surrogate: Toluene-d8	*1210*		*ug/kg*	*1260*		*96*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*1150*		*ug/kg*	*1260*		*91*	*65-125*			
Matrix Spike Analyzed: 11/29/2011 (11K0875-MS1)					**Source: PUK1307-02**					**N1**
Acetone	668	500	ug/kg	1260	ND	53	10-150			
Benzene	978	50	ug/kg	1260	ND	78	55-120			
Bromobenzene	1130	50	ug/kg	1260	ND	90	60-125			
Bromochloromethane	975	50	ug/kg	1260	ND	77	50-135			
Bromodichloromethane	971	50	ug/kg	1260	ND	77	60-120			
Bromoform	921	50	ug/kg	1260	ND	73	40-125			
Bromomethane	849	250	ug/kg	1260	ND	67	10-140			
2-Butanone (MEK)	782	500	ug/kg	1260	ND	62	40-150			
n-Butylbenzene	1090	50	ug/kg	1260	ND	86	40-135			
sec-Butylbenzene	1070	50	ug/kg	1260	ND	85	50-130			
tert-Butylbenzene	1120	50	ug/kg	1260	ND	89	55-125			
Carbon tetrachloride	1030	50	ug/kg	1260	ND	82	40-135			
Chlorobenzene	1030	50	ug/kg	1260	ND	82	65-120			
Chloroethane	780	50	ug/kg	1260	ND	62	10-140			
Chloroform	909	50	ug/kg	1260	ND	72	60-125			
Chloromethane	780	250	ug/kg	1260	ND	62	10-140			
2-Chlorotoluene	1030	50	ug/kg	1260	ND	82	60-120			
4-Chlorotoluene	1020	50	ug/kg	1260	ND	81	55-130			
Dibromochloromethane	935	50	ug/kg	1260	ND	74	55-125			
1,2-Dibromoethane (EDB)	976	50	ug/kg	1260	ND	77	55-120			
1,2-Dichlorobenzene	1120	50	ug/kg	1260	ND	89	60-120			
1,3-Dichlorobenzene	1070	50	ug/kg	1260	ND	85	60-120			
1,4-Dichlorobenzene	1090	50	ug/kg	1260	ND	87	60-120			
Dichlorodifluoromethane	510	50	ug/kg	1260	ND	40	10-150			

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Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
Matrix Spike Analyzed: 11/29/2011 (11K0875-MS1)					**Source: PUK1307-02**					**N1**
1,1-Dichloroethane	853	50	ug/kg	1260	ND	68	55-125			
1,2-Dichloroethane	970	50	ug/kg	1260	ND	77	55-130			
1,1-Dichloroethene	816	50	ug/kg	1260	ND	65	25-140			
cis-1,2-Dichloroethene	888	50	ug/kg	1260	ND	70	55-125			
trans-1,2-Dichloroethene	891	50	ug/kg	1260	ND	71	50-130			
1,2-Dichloropropane	986	50	ug/kg	1260	ND	78	60-120			
1,3-Dichloropropane	997	50	ug/kg	1260	ND	79	60-120			
2,2-Dichloropropane	949	100	ug/kg	1260	ND	75	45-130			
1,1-Dichloropropene	1010	50	ug/kg	1260	ND	80	55-125			
cis-1,3-Dichloropropene	986	50	ug/kg	1260	ND	78	55-120			
trans-1,3-Dichloropropene	1010	50	ug/kg	1260	ND	80	55-125			
Ethylbenzene	1020	50	ug/kg	1260	ND	81	60-125			
2-Hexanone	816	250	ug/kg	1260	ND	65	20-150			
p-Isopropyltoluene	1070	50	ug/kg	1260	ND	85	45-135			
Methylene Chloride	908	100	ug/kg	1260	ND	72	50-120			
4-Methyl-2-pentanone (MIBK)	911	250	ug/kg	1260	ND	72	40-130			
Methyl-tert-butyl Ether (MTBE)	900	50	ug/kg	1260	ND	71	50-130			
n-Propylbenzene	1100	50	ug/kg	1260	ND	87	55-130			
Styrene	1050	50	ug/kg	1260	ND	83	55-125			
1,1,2,2-Tetrachloroethane	1010	50	ug/kg	1260	ND	80	50-130			
Tetrachloroethene	1060	50	ug/kg	1260	ND	84	60-130			
Toluene	1000	50	ug/kg	1260	ND	80	55-125			
1,2,3-Trichlorobenzene	1110	100	ug/kg	1260	ND	88	35-140			
1,1,1-Trichloroethane	965	50	ug/kg	1260	ND	77	50-125			
1,1,2-Trichloroethane	1010	50	ug/kg	1260	ND	80	55-120			
Trichloroethene	998	50	ug/kg	1260	ND	79	40-145			
Trichlorofluoromethane	1060	50	ug/kg	1260	ND	84	20-150			
1,2,3-Trichloropropane	1030	100	ug/kg	1260	ND	82	35-140			
1,2,4-Trimethylbenzene	1070	50	ug/kg	1260	ND	85	50-130			
1,3,5-Trimethylbenzene	1080	50	ug/kg	1260	ND	85	45-135			
Vinyl Acetate	676	50	ug/kg	1260	ND	54	10-150			
Vinyl chloride	328	50	ug/kg	1260	ND	26	10-150			
m,p-Xylenes	996	100	ug/kg	1260	ND	79	55-125			
o-Xylene	1050	50	ug/kg	1260	ND	83	60-125			
Surrogate: Dibromofluoromethane	*997*		*ug/kg*	*1260*		*79*	*60-130*			

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Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
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METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
Matrix Spike Analyzed: 11/29/2011 (11K0875-MS1)					**Source: PUK1307-02**					**N1**
Surrogate: Toluene-d8	*1030*		*ug/kg*	*1260*		*82*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*1020*		*ug/kg*	*1260*		*81*	*65-125*			
Matrix Spike Dup Analyzed: 11/29/2011 (11K0875-MSD1)					**Source: PUK1307-02**					**N1**
Acetone	892	500	ug/kg	1260	ND	71	10-150	29	35	
Benzene	990	50	ug/kg	1260	ND	78	55-120	1	25	
Bromobenzene	1090	50	ug/kg	1260	ND	86	60-125	4	25	
Bromochloromethane	928	50	ug/kg	1260	ND	73	50-135	5	30	
Bromodichloromethane	979	50	ug/kg	1260	ND	78	60-120	0.9	20	
Bromoform	983	50	ug/kg	1260	ND	78	40-125	6	35	
Bromomethane	924	250	ug/kg	1260	ND	73	10-140	8	35	
2-Butanone (MEK)	985	500	ug/kg	1260	ND	78	40-150	23	35	
n-Butylbenzene	1150	50	ug/kg	1260	ND	91	40-135	5	25	
sec-Butylbenzene	1140	50	ug/kg	1260	ND	90	50-130	6	20	
tert-Butylbenzene	1160	50	ug/kg	1260	ND	92	55-125	4	25	
Carbon tetrachloride	1110	50	ug/kg	1260	ND	88	40-135	7	30	
Chlorobenzene	1050	50	ug/kg	1260	ND	83	65-120	2	20	
Chloroethane	822	50	ug/kg	1260	ND	65	10-140	5	35	
Chloroform	893	50	ug/kg	1260	ND	71	60-125	2	25	
Chloromethane	863	250	ug/kg	1260	ND	68	10-140	10	35	
2-Chlorotoluene	1050	50	ug/kg	1260	ND	83	60-120	1	20	
4-Chlorotoluene	1050	50	ug/kg	1260	ND	83	55-130	3	20	
Dibromochloromethane	926	50	ug/kg	1260	ND	73	55-125	1	30	
1,2-Dibromoethane (EDB)	1020	50	ug/kg	1260	ND	81	55-120	5	25	
1,2-Dichlorobenzene	1110	50	ug/kg	1260	ND	88	60-120	0.9	25	
1,3-Dichlorobenzene	1050	50	ug/kg	1260	ND	83	60-120	2	25	
1,4-Dichlorobenzene	1080	50	ug/kg	1260	ND	85	60-120	1	20	
Dichlorodifluoromethane	610	50	ug/kg	1260	ND	48	10-150	18	35	
1,1-Dichloroethane	854	50	ug/kg	1260	ND	68	55-125	0.08	25	
1,2-Dichloroethane	941	50	ug/kg	1260	ND	75	55-130	3	25	
1,1-Dichloroethene	887	50	ug/kg	1260	ND	70	25-140	8	35	
cis-1,2-Dichloroethene	912	50	ug/kg	1260	ND	72	55-125	3	25	
trans-1,2-Dichloroethene	909	50	ug/kg	1260	ND	72	50-130	2	25	
1,2-Dichloropropane	972	50	ug/kg	1260	ND	77	60-120	1	25	
1,3-Dichloropropane	995	50	ug/kg	1260	ND	79	60-120	0.2	25	
2,2-Dichloropropane	948	100	ug/kg	1260	ND	75	45-130	0.06	25	

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Kylie Emily
Project Manager

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
Matrix Spike Dup Analyzed: 11/29/2011 (11K0875-MSD1)					**Source: PUK1307-02**					**N1**
1,1-Dichloropropene	1060	50	ug/kg	1260	ND	84	55-125	5	25	
cis-1,3-Dichloropropene	989	50	ug/kg	1260	ND	78	55-120	0.3	20	
trans-1,3-Dichloropropene	973	50	ug/kg	1260	ND	77	55-125	3	25	
Ethylbenzene	1050	50	ug/kg	1260	ND	83	60-125	3	20	
2-Hexanone	1030	250	ug/kg	1260	ND	81	20-150	23	35	
p-Isopropyltoluene	1130	50	ug/kg	1260	ND	89	45-135	5	25	
Methylene Chloride	829	100	ug/kg	1260	ND	66	50-120	9	30	
4-Methyl-2-pentanone (MIBK)	1010	250	ug/kg	1260	ND	80	40-130	10	30	
Methyl-tert-butyl Ether (MTBE)	874	50	ug/kg	1260	ND	69	50-130	3	35	
n-Propylbenzene	1160	50	ug/kg	1260	ND	92	55-130	5	20	
Styrene	1040	50	ug/kg	1260	ND	83	55-125	0.6	20	
1,1,2,2-Tetrachloroethane	1060	50	ug/kg	1260	ND	84	50-130	5	25	
Tetrachloroethene	1120	50	ug/kg	1260	ND	88	60-130	5	20	
Toluene	1000	50	ug/kg	1260	ND	79	55-125	0.1	35	
1,2,3-Trichlorobenzene	1120	100	ug/kg	1260	ND	89	35-140	1	30	
1,1,1-Trichloroethane	990	50	ug/kg	1260	ND	78	50-125	3	15	
1,1,2-Trichloroethane	1040	50	ug/kg	1260	ND	83	55-120	3	25	
Trichloroethene	1040	50	ug/kg	1260	ND	83	40-145	4	35	
Trichlorofluoromethane	1130	50	ug/kg	1260	ND	89	20-150	6	35	
1,2,3-Trichloropropane	1110	100	ug/kg	1260	ND	88	35-140	8	35	
1,2,4-Trimethylbenzene	1040	50	ug/kg	1260	ND	83	50-130	2	20	
1,3,5-Trimethylbenzene	1090	50	ug/kg	1260	ND	87	45-135	2	20	
Vinyl Acetate	650	50	ug/kg	1260	ND	51	10-150	4	35	
Vinyl chloride	383	50	ug/kg	1260	ND	30	10-150	15	35	
m,p-Xylenes	1020	100	ug/kg	1260	ND	81	55-125	3	20	
o-Xylene	1070	50	ug/kg	1260	ND	85	60-125	2	30	
Surrogate: Dibromofluoromethane	*967*		*ug/kg*	*1260*		*77*	*60-130*			
Surrogate: Toluene-d8	*1040*		*ug/kg*	*1260*		*83*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*979*		*ug/kg*	*1260*		*78*	*65-125*			

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Kylie Emily
Project Manager

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Environmental Resources Management Inc.-West	Project ID: OU3 - 96498.020	
7272 E. Indian School Rd., Ste. 100		Sampled: 11/22/11
Scottsdale, AZ 85251	Report Number: PUK1426	Received: 11/22/11
Attention: Jason Hilker		

DATA QUALIFIERS AND DEFINITIONS

N1	See case narrative.
ND	Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
RPD	Relative Percent Difference

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Project Manager

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1426

Sampled: 11/22/11
Received: 11/22/11

Certification Summary

TestAmerica Phoenix

Method	Matrix	Nelac	Arizona
EPA 8260B	Soil	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

TestAmerica Phoenix

Kylie Emily
Project Manager

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TAL-0013-550 (10/10)

CHAIN OF CUSTODY FORM

[ ] Phoenix - 4625 E. Cotton Center Blvd., Suite 189, Phoenix, AZ 85040 (602) 437-3340 FAX (602) 454-9303
[ ] Tucson - 1870 W. Prince Road, Suite 59, Tucson, AZ 85705 (520) 807-3801 FAX (520) 807-3803
[ ] Las Vegas - 6000 S Eastern Ave., Suite 5E, Las Vegas, NV 89119 (702) 429-1264

Page 1 of 1

Client Name/Address: ERM, 7272 E Indian School Rd, Scottsdale AZ 85251

Project/PO Number: OU3 - 96498.020

Project Manager: Jason Hiller

Phone Number: 480-998-2401

Sampler: Kyle Johnson

Fax Number:

Analysis Required: 8260B VOC

PUK1426

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date	Sampling Time	Preservatives	8260B VOC									Special Instructions
IDW-S-112211-A	Soil	Encore	2	11/22/11	1033	-	X	KJ								
IDW-S-112211-B	↓	↓	↓	↓	1036	-	X									
IDW-S-112211-C	↓	↓	↓	↓	1039	-	X									
IDW-S-112211-D	↓	↓	↓	↓	1044	-	X									
IDW-S-112211-E	↓	↓	↓	↓	1049	-	X									
																8260 B run on
																composite sample
Composite A through E into "IDW-S-112211-1"							X							-01		only!

Relinquished By:	Date/Time:	Received By:	Date/Time:
[signature]	11/22/11 1203		
		Received in Lab By: [signature]	11/22/11 1203

Turnaround Time: (Check)
same day ____ 72 hours ____
24 hours ____ 5 days ____
48 hours ____ normal X

Sample Integrity: (Check)
intact X on ice X

Note: By relinquishing samples to TestAmerica, client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 30 days.

2.4°C

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

4625 East Cotton Center Blvd. Ste 189, Phoenix, AZ 85040 (602) 437-3340 Fax:(602) 454-9303

LABORATORY REPORT

Prepared For: Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project: OU3 - 96498.020

Sampled: 11/22/11
Received: 11/22/11
Issued: 12/05/11 11:09

NELAP #01109CA Arizona DHS#AZ0728

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

CASE NARRATIVE

LABORATORY ID	CLIENT ID	MATRIX
PUK1427-01	IDW-S-112211-2	Soil

SAMPLE RECEIPT: Samples were received intact, at 2°C, on ice and with chain of custody documentation.

HOLDING TIMES: All samples were analyzed within prescribed holding times and/or in accordance with the TestAmerica Sample Acceptance Policy unless otherwise noted in the report.

PRESERVATION: Samples requiring preservation were verified prior to sample analysis.

QA/QC CRITERIA: All analyses met method criteria, except as noted in the report with data qualifiers.
N1-Source sample results were determined from the sample portion received in a Methanol Kit. The sample portions used for the MS/MSD were taken from a glass jar due to an insufficient number of Methanol Kits provided.

COMMENTS: No significant observations were made.

SUBCONTRACTED: No analyses were subcontracted to an outside laboratory.

Reviewed By:

TestAmerica Phoenix

Kylie Emily
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

4625 East Cotton Center Blvd. Ste 189, Phoenix, AZ 85040 (602) 437-3340 Fax:(602) 454-9303

Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1427

Sampled: 11/22/11
Received: 11/22/11

OXYGENATES BY GC/MS (EPA 5035/8260B)

Sample ID: PUK1427-01 (IDW-S-112211-2 - Soil)

Reporting Units: ug/kg

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Acetone	EPA 8260B	11K0875	500	ND	0.992	11/23/2011	12/2/2011	
Benzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Bromobenzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Bromochloromethane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Bromodichloromethane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Bromoform	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Bromomethane	EPA 8260B	11K0875	250	ND	0.992	11/23/2011	12/2/2011	
2-Butanone (MEK)	EPA 8260B	11K0875	500	ND	0.992	11/23/2011	12/2/2011	
n-Butylbenzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
sec-Butylbenzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
tert-Butylbenzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Carbon tetrachloride	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Chlorobenzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Chloroethane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Chloroform	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Chloromethane	EPA 8260B	11K0875	250	ND	0.992	11/23/2011	12/2/2011	
2-Chlorotoluene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
4-Chlorotoluene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Dibromochloromethane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,2-Dibromoethane (EDB)	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,2-Dichlorobenzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,3-Dichlorobenzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,4-Dichlorobenzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Dichlorodifluoromethane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,1-Dichloroethane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,2-Dichloroethane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,1-Dichloroethene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
cis-1,2-Dichloroethene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
trans-1,2-Dichloroethene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,2-Dichloropropane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,3-Dichloropropane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
2,2-Dichloropropane	EPA 8260B	11K0875	100	ND	0.992	11/23/2011	12/2/2011	
1,1-Dichloropropene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
cis-1,3-Dichloropropene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
trans-1,3-Dichloropropene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Ethylbenzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
2-Hexanone	EPA 8260B	11K0875	250	ND	0.992	11/23/2011	12/2/2011	
p-Isopropyltoluene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Methylene Chloride	EPA 8260B	11K0875	100	ND	0.992	11/23/2011	12/2/2011	
4-Methyl-2-pentanone (MIBK)	EPA 8260B	11K0875	250	ND	0.992	11/23/2011	12/2/2011	

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Kylie Emily
Project Manager

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1427

Sampled: 11/22/11
Received: 11/22/11

OXYGENATES BY GC/MS (EPA 5035/8260B)

Sample ID: PUK1427-01 (IDW-S-112211-2 - Soil) - cont.

Reporting Units: ug/kg

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
n-Propylbenzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Styrene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,1,2,2-Tetrachloroethane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Tetrachloroethene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Toluene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,2,3-Trichlorobenzene	EPA 8260B	11K0875	100	ND	0.992	11/23/2011	12/2/2011	
1,1,1-Trichloroethane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,1,2-Trichloroethane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Trichloroethene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Trichlorofluoromethane	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,2,3-Trichloropropane	EPA 8260B	11K0875	100	ND	0.992	11/23/2011	12/2/2011	
1,2,4-Trimethylbenzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
1,3,5-Trimethylbenzene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Vinyl Acetate	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Vinyl chloride	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
m,p-Xylenes	EPA 8260B	11K0875	100	ND	0.992	11/23/2011	12/2/2011	
o-Xylene	EPA 8260B	11K0875	50	ND	0.992	11/23/2011	12/2/2011	
Surrogate: Dibromofluoromethane (60-130%)				*84 %*				
Surrogate: Toluene-d8 (65-125%)				*86 %*				
Surrogate: 4-Bromofluorobenzene (65-125%)				*82 %*				

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Kylie Emily
Project Manager

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1427

Sampled: 11/22/11
Received: 11/22/11

SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: IDW-S-112211-2 (PUK1427-01) - Soil					
EPA 8260B	2	11/22/2011 10:51	11/22/2011 12:03	11/23/2011 09:45	12/02/2011 00:34

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Project Manager

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1427

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
Blank Analyzed: 11/29/2011 (11K0875-BLK1)										
Acetone	ND	500	ug/kg							
Benzene	ND	50	ug/kg							
Bromobenzene	ND	50	ug/kg							
Bromochloromethane	ND	50	ug/kg							
Bromodichloromethane	ND	50	ug/kg							
Bromoform	ND	50	ug/kg							
Bromomethane	ND	250	ug/kg							
2-Butanone (MEK)	ND	500	ug/kg							
n-Butylbenzene	ND	50	ug/kg							
sec-Butylbenzene	ND	50	ug/kg							
tert-Butylbenzene	ND	50	ug/kg							
Carbon tetrachloride	ND	50	ug/kg							
Chlorobenzene	ND	50	ug/kg							
Chloroethane	ND	50	ug/kg							
Chloroform	ND	50	ug/kg							
Chloromethane	ND	250	ug/kg							
2-Chlorotoluene	ND	50	ug/kg							
4-Chlorotoluene	ND	50	ug/kg							
Dibromochloromethane	ND	50	ug/kg							
1,2-Dibromoethane (EDB)	ND	50	ug/kg							
1,2-Dichlorobenzene	ND	50	ug/kg							
1,3-Dichlorobenzene	ND	50	ug/kg							
1,4-Dichlorobenzene	ND	50	ug/kg							
Dichlorodifluoromethane	ND	50	ug/kg							
1,1-Dichloroethane	ND	50	ug/kg							
1,2-Dichloroethane	ND	50	ug/kg							
1,1-Dichloroethene	ND	50	ug/kg							
cis-1,2-Dichloroethene	ND	50	ug/kg							
trans-1,2-Dichloroethene	ND	50	ug/kg							
1,2-Dichloropropane	ND	50	ug/kg							
1,3-Dichloropropane	ND	50	ug/kg							
2,2-Dichloropropane	ND	100	ug/kg							
1,1-Dichloropropene	ND	50	ug/kg							
cis-1,3-Dichloropropene	ND	50	ug/kg							
trans-1,3-Dichloropropene	ND	50	ug/kg							

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Project Manager

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THE LEADER IN ENVIRONMENTAL TESTING

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1427

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
Blank Analyzed: 11/29/2011 (11K0875-BLK1)										
Ethylbenzene	ND	50	ug/kg							
2-Hexanone	ND	250	ug/kg							
p-Isopropyltoluene	ND	50	ug/kg							
Methylene Chloride	ND	100	ug/kg							
4-Methyl-2-pentanone (MIBK)	ND	250	ug/kg							
Methyl-tert-butyl Ether (MTBE)	ND	50	ug/kg							
n-Propylbenzene	ND	50	ug/kg							
Styrene	ND	50	ug/kg							
1,1,2,2-Tetrachloroethane	ND	50	ug/kg							
Tetrachloroethene	ND	50	ug/kg							
Toluene	ND	50	ug/kg							
1,2,3-Trichlorobenzene	ND	100	ug/kg							
1,1,1-Trichloroethane	ND	50	ug/kg							
1,1,2-Trichloroethane	ND	50	ug/kg							
Trichloroethene	ND	50	ug/kg							
Trichlorofluoromethane	ND	50	ug/kg							
1,2,3-Trichloropropane	ND	100	ug/kg							
1,2,4-Trimethylbenzene	ND	50	ug/kg							
1,3,5-Trimethylbenzene	ND	50	ug/kg							
Vinyl Acetate	ND	50	ug/kg							
Vinyl chloride	ND	50	ug/kg							
m,p-Xylenes	ND	100	ug/kg							
o-Xylene	ND	50	ug/kg							
Surrogate: Dibromofluoromethane	*1190*		*ug/kg*	*1260*		*95*	*60-130*			
Surrogate: Toluene-d8	*1080*		*ug/kg*	*1260*		*86*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*1130*		*ug/kg*	*1260*		*90*	*65-125*			
LCS Analyzed: 11/29/2011 (11K0875-BS1)										
Acetone	1080	500	ug/kg	1240		87	10-150			
Benzene	1100	50	ug/kg	1240		89	75-120			
Bromobenzene	1200	50	ug/kg	1240		97	80-120			
Bromochloromethane	1080	50	ug/kg	1240		87	75-125			
Bromodichloromethane	1090	50	ug/kg	1240		88	75-120			
Bromoform	1020	50	ug/kg	1240		82	60-120			
Bromomethane	1070	250	ug/kg	1240		86	20-140			
2-Butanone (MEK)	1050	500	ug/kg	1240		85	40-150			

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METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
LCS Analyzed: 11/29/2011 (11K0875-BS1)										
n-Butylbenzene	1170	50	ug/kg	1240		94	65-130			
sec-Butylbenzene	1150	50	ug/kg	1240		93	75-125			
tert-Butylbenzene	1200	50	ug/kg	1240		97	80-120			
Carbon tetrachloride	1160	50	ug/kg	1240		94	70-130			
Chlorobenzene	1150	50	ug/kg	1240		93	80-120			
Chloroethane	967	50	ug/kg	1240		78	10-130			
Chloroform	1010	50	ug/kg	1240		82	75-120			
Chloromethane	1020	250	ug/kg	1240		83	25-140			
2-Chlorotoluene	1090	50	ug/kg	1240		88	80-120			
4-Chlorotoluene	1110	50	ug/kg	1240		90	80-120			
Dibromochloromethane	1040	50	ug/kg	1240		84	75-120			
1,2-Dibromoethane (EDB)	1130	50	ug/kg	1240		91	70-120			
1,2-Dichlorobenzene	1200	50	ug/kg	1240		97	80-120			
1,3-Dichlorobenzene	1150	50	ug/kg	1240		93	80-120			
1,4-Dichlorobenzene	1160	50	ug/kg	1240		94	80-120			
Dichlorodifluoromethane	912	50	ug/kg	1240		74	10-150			
1,1-Dichloroethane	991	50	ug/kg	1240		80	70-125			
1,2-Dichloroethane	1120	50	ug/kg	1240		90	70-130			
1,1-Dichloroethene	1000	50	ug/kg	1240		81	50-135			
cis-1,2-Dichloroethene	1020	50	ug/kg	1240		82	70-125			
trans-1,2-Dichloroethene	1010	50	ug/kg	1240		81	70-130			
1,2-Dichloropropane	1140	50	ug/kg	1240		92	80-120			
1,3-Dichloropropane	1130	50	ug/kg	1240		92	70-120			
2,2-Dichloropropane	1050	100	ug/kg	1240		85	65-130			
1,1-Dichloropropene	1110	50	ug/kg	1240		90	75-120			
cis-1,3-Dichloropropene	1140	50	ug/kg	1240		92	75-125			
trans-1,3-Dichloropropene	1130	50	ug/kg	1240		91	65-130			
Ethylbenzene	1140	50	ug/kg	1240		92	80-120			
2-Hexanone	1150	250	ug/kg	1240		93	20-150			
p-Isopropyltoluene	1160	50	ug/kg	1240		93	75-130			
Methylene Chloride	960	100	ug/kg	1240		78	65-125			
4-Methyl-2-pentanone (MIBK)	1070	250	ug/kg	1240		86	50-130			
Methyl-tert-butyl Ether (MTBE)	1040	50	ug/kg	1240		84	65-130			
n-Propylbenzene	1180	50	ug/kg	1240		95	75-130			
Styrene	1180	50	ug/kg	1240		95	80-120			

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Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1427

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
LCS Analyzed: 11/29/2011 (11K0875-BS1)										
1,1,2,2-Tetrachloroethane	1110	50	ug/kg	1240		89	60-125			
Tetrachloroethene	1190	50	ug/kg	1240		96	70-130			
Toluene	1120	50	ug/kg	1240		90	75-120			
1,2,3-Trichlorobenzene	1230	100	ug/kg	1240		100	55-140			
1,1,1-Trichloroethane	1070	50	ug/kg	1240		87	75-120			
1,1,2-Trichloroethane	1170	50	ug/kg	1240		95	65-125			
Trichloroethene	1100	50	ug/kg	1240		89	80-120			
Trichlorofluoromethane	1280	50	ug/kg	1240		103	50-150			
1,2,3-Trichloropropane	1160	100	ug/kg	1240		94	60-130			
1,2,4-Trimethylbenzene	1120	50	ug/kg	1240		91	75-120			
1,3,5-Trimethylbenzene	1150	50	ug/kg	1240		93	80-130			
Vinyl Acetate	1040	50	ug/kg	1240		84	35-150			
Vinyl chloride	423	50	ug/kg	1240		34	10-150			
m,p-Xylenes	1110	100	ug/kg	1240		90	60-140			
o-Xylene	1180	50	ug/kg	1240		95	80-120			
Surrogate: Dibromofluoromethane	*1110*		*ug/kg*	*1240*		*90*	*60-130*			
Surrogate: Toluene-d8	*1160*		*ug/kg*	*1240*		*94*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*1150*		*ug/kg*	*1240*		*93*	*65-125*			
LCS Dup Analyzed: 11/29/2011 (11K0875-BSD1)										
Acetone	1240	500	ug/kg	1260		98	10-150	14	35	
Benzene	1130	50	ug/kg	1260		90	75-120	3	15	
Bromobenzene	1300	50	ug/kg	1260		103	80-120	9	20	
Bromochloromethane	1180	50	ug/kg	1260		94	75-125	9	20	
Bromodichloromethane	1160	50	ug/kg	1260		92	75-120	6	15	
Bromoform	1140	50	ug/kg	1260		90	60-120	11	25	
Bromomethane	1130	250	ug/kg	1260		89	20-140	5	35	
2-Butanone (MEK)	1110	500	ug/kg	1260		88	40-150	6	35	
n-Butylbenzene	1200	50	ug/kg	1260		95	65-130	3	20	
sec-Butylbenzene	1190	50	ug/kg	1260		95	75-125	4	15	
tert-Butylbenzene	1230	50	ug/kg	1260		97	80-120	2	15	
Carbon tetrachloride	1160	50	ug/kg	1260		92	70-130	0.4	20	
Chlorobenzene	1190	50	ug/kg	1260		95	80-120	3	15	
Chloroethane	991	50	ug/kg	1260		78	10-130	2	30	
Chloroform	1100	50	ug/kg	1260		87	75-120	8	20	
Chloromethane	1020	250	ug/kg	1260		81	25-140	0.5	35	

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Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1427

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
LCS Dup Analyzed: 11/29/2011 (11K0875-BSD1)										
2-Chlorotoluene	1190	50	ug/kg	1260		94	80-120	8	15	
4-Chlorotoluene	1180	50	ug/kg	1260		93	80-120	6	15	
Dibromochloromethane	1120	50	ug/kg	1260		89	75-120	7	20	
1,2-Dibromoethane (EDB)	1210	50	ug/kg	1260		96	70-120	7	20	
1,2-Dichlorobenzene	1300	50	ug/kg	1260		103	80-120	8	20	
1,3-Dichlorobenzene	1240	50	ug/kg	1260		98	80-120	7	15	
1,4-Dichlorobenzene	1240	50	ug/kg	1260		99	80-120	7	15	
Dichlorodifluoromethane	889	50	ug/kg	1260		70	10-150	2	35	
1,1-Dichloroethane	1040	50	ug/kg	1260		82	70-125	5	20	
1,2-Dichloroethane	1210	50	ug/kg	1260		96	70-130	8	20	
1,1-Dichloroethene	1020	50	ug/kg	1260		81	50-135	2	20	
cis-1,2-Dichloroethene	1080	50	ug/kg	1260		86	70-125	6	15	
trans-1,2-Dichloroethene	1050	50	ug/kg	1260		83	70-130	4	20	
1,2-Dichloropropane	1190	50	ug/kg	1260		94	80-120	4	20	
1,3-Dichloropropane	1200	50	ug/kg	1260		95	70-120	6	20	
2,2-Dichloropropane	1040	100	ug/kg	1260		83	65-130	0.5	20	
1,1-Dichloropropene	1160	50	ug/kg	1260		92	75-120	4	15	
cis-1,3-Dichloropropene	1200	50	ug/kg	1260		95	75-125	5	15	
trans-1,3-Dichloropropene	1230	50	ug/kg	1260		97	65-130	9	20	
Ethylbenzene	1160	50	ug/kg	1260		92	80-120	1	15	
2-Hexanone	1250	250	ug/kg	1260		99	20-150	8	35	
p-Isopropyltoluene	1210	50	ug/kg	1260		96	75-130	4	15	
Methylene Chloride	1010	100	ug/kg	1260		80	65-125	6	20	
4-Methyl-2-pentanone (MIBK)	1140	250	ug/kg	1260		90	50-130	7	35	
Methyl-tert-butyl Ether (MTBE)	1130	50	ug/kg	1260		90	65-130	9	20	
n-Propylbenzene	1230	50	ug/kg	1260		98	75-130	4	15	
Styrene	1210	50	ug/kg	1260		96	80-120	3	15	
1,1,2,2-Tetrachloroethane	1180	50	ug/kg	1260		93	60-125	6	30	
Tetrachloroethene	1190	50	ug/kg	1260		94	70-130	0.2	15	
Toluene	1170	50	ug/kg	1260		93	75-120	4	15	
1,2,3-Trichlorobenzene	1350	100	ug/kg	1260		107	55-140	9	25	
1,1,1-Trichloroethane	1140	50	ug/kg	1260		90	75-120	6	15	
1,1,2-Trichloroethane	1290	50	ug/kg	1260		102	65-125	9	30	
Trichloroethene	1170	50	ug/kg	1260		93	80-120	6	15	
Trichlorofluoromethane	1290	50	ug/kg	1260		102	50-150	1	25	

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Report Number: PUK1427

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METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
LCS Dup Analyzed: 11/29/2011 (11K0875-BSD1)										
1,2,3-Trichloropropane	1310	100	ug/kg	1260		104	60-130	12	30	
1,2,4-Trimethylbenzene	1200	50	ug/kg	1260		95	75-120	7	15	
1,3,5-Trimethylbenzene	1200	50	ug/kg	1260		95	80-130	4	15	
Vinyl Acetate	1100	50	ug/kg	1260		87	35-150	5	35	
Vinyl chloride	452	50	ug/kg	1260		36	10-150	7	35	
m,p-Xylenes	1160	100	ug/kg	1260		92	60-140	4	15	
o-Xylene	1180	50	ug/kg	1260		93	80-120	0.3	15	
Surrogate: Dibromofluoromethane	*1170*		*ug/kg*	*1260*		*93*	*60-130*			
Surrogate: Toluene-d8	*1210*		*ug/kg*	*1260*		*96*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*1150*		*ug/kg*	*1260*		*91*	*65-125*			
Matrix Spike Analyzed: 11/29/2011 (11K0875-MS1)					**Source: PUK1307-02**					**N1**
Acetone	668	500	ug/kg	1260	ND	53	10-150			
Benzene	978	50	ug/kg	1260	ND	78	55-120			
Bromobenzene	1130	50	ug/kg	1260	ND	90	60-125			
Bromochloromethane	975	50	ug/kg	1260	ND	77	50-135			
Bromodichloromethane	971	50	ug/kg	1260	ND	77	60-120			
Bromoform	921	50	ug/kg	1260	ND	73	40-125			
Bromomethane	849	250	ug/kg	1260	ND	67	10-140			
2-Butanone (MEK)	782	500	ug/kg	1260	ND	62	40-150			
n-Butylbenzene	1090	50	ug/kg	1260	ND	86	40-135			
sec-Butylbenzene	1070	50	ug/kg	1260	ND	85	50-130			
tert-Butylbenzene	1120	50	ug/kg	1260	ND	89	55-125			
Carbon tetrachloride	1030	50	ug/kg	1260	ND	82	40-135			
Chlorobenzene	1030	50	ug/kg	1260	ND	82	65-120			
Chloroethane	780	50	ug/kg	1260	ND	62	10-140			
Chloroform	909	50	ug/kg	1260	ND	72	60-125			
Chloromethane	780	250	ug/kg	1260	ND	62	10-140			
2-Chlorotoluene	1030	50	ug/kg	1260	ND	82	60-120			
4-Chlorotoluene	1020	50	ug/kg	1260	ND	81	55-130			
Dibromochloromethane	935	50	ug/kg	1260	ND	74	55-125			
1,2-Dibromoethane (EDB)	976	50	ug/kg	1260	ND	77	55-120			
1,2-Dichlorobenzene	1120	50	ug/kg	1260	ND	89	60-120			
1,3-Dichlorobenzene	1070	50	ug/kg	1260	ND	85	60-120			
1,4-Dichlorobenzene	1090	50	ug/kg	1260	ND	87	60-120			
Dichlorodifluoromethane	510	50	ug/kg	1260	ND	40	10-150			

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METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
Matrix Spike Analyzed: 11/29/2011 (11K0875-MS1)					**Source: PUK1307-02**					**N1**
1,1-Dichloroethane	853	50	ug/kg	1260	ND	68	55-125			
1,2-Dichloroethane	970	50	ug/kg	1260	ND	77	55-130			
1,1-Dichloroethene	816	50	ug/kg	1260	ND	65	25-140			
cis-1,2-Dichloroethene	888	50	ug/kg	1260	ND	70	55-125			
trans-1,2-Dichloroethene	891	50	ug/kg	1260	ND	71	50-130			
1,2-Dichloropropane	986	50	ug/kg	1260	ND	78	60-120			
1,3-Dichloropropane	997	50	ug/kg	1260	ND	79	60-120			
2,2-Dichloropropane	949	100	ug/kg	1260	ND	75	45-130			
1,1-Dichloropropene	1010	50	ug/kg	1260	ND	80	55-125			
cis-1,3-Dichloropropene	986	50	ug/kg	1260	ND	78	55-120			
trans-1,3-Dichloropropene	1010	50	ug/kg	1260	ND	80	55-125			
Ethylbenzene	1020	50	ug/kg	1260	ND	81	60-125			
2-Hexanone	816	250	ug/kg	1260	ND	65	20-150			
p-Isopropyltoluene	1070	50	ug/kg	1260	ND	85	45-135			
Methylene Chloride	908	100	ug/kg	1260	ND	72	50-120			
4-Methyl-2-pentanone (MIBK)	911	250	ug/kg	1260	ND	72	40-130			
Methyl-tert-butyl Ether (MTBE)	900	50	ug/kg	1260	ND	71	50-130			
n-Propylbenzene	1100	50	ug/kg	1260	ND	87	55-130			
Styrene	1050	50	ug/kg	1260	ND	83	55-125			
1,1,2,2-Tetrachloroethane	1010	50	ug/kg	1260	ND	80	50-130			
Tetrachloroethene	1060	50	ug/kg	1260	ND	84	60-130			
Toluene	1000	50	ug/kg	1260	ND	80	55-125			
1,2,3-Trichlorobenzene	1110	100	ug/kg	1260	ND	88	35-140			
1,1,1-Trichloroethane	965	50	ug/kg	1260	ND	77	50-125			
1,1,2-Trichloroethane	1010	50	ug/kg	1260	ND	80	55-120			
Trichloroethene	998	50	ug/kg	1260	ND	79	40-145			
Trichlorofluoromethane	1060	50	ug/kg	1260	ND	84	20-150			
1,2,3-Trichloropropane	1030	100	ug/kg	1260	ND	82	35-140			
1,2,4-Trimethylbenzene	1070	50	ug/kg	1260	ND	85	50-130			
1,3,5-Trimethylbenzene	1080	50	ug/kg	1260	ND	85	45-135			
Vinyl Acetate	676	50	ug/kg	1260	ND	54	10-150			
Vinyl chloride	328	50	ug/kg	1260	ND	26	10-150			
m,p-Xylenes	996	100	ug/kg	1260	ND	79	55-125			
o-Xylene	1050	50	ug/kg	1260	ND	83	60-125			
Surrogate: Dibromofluoromethane	*997*		*ug/kg*	*1260*		*79*	*60-130*			

TestAmerica Phoenix

Kylie Emily
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

4625 East Cotton Center Blvd. Ste 189, Phoenix, AZ 85040 (602) 437-3340 Fax:(602) 454-9303

Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1427

Sampled: 11/22/11
Received: 11/22/11

METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
Matrix Spike Analyzed: 11/29/2011 (11K0875-MS1)					**Source: PUK1307-02**					**N1**
Surrogate: Toluene-d8	*1030*		*ug/kg*	*1260*		*82*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*1020*		*ug/kg*	*1260*		*81*	*65-125*			
Matrix Spike Dup Analyzed: 11/29/2011 (11K0875-MSD1)					**Source: PUK1307-02**					**N1**
Acetone	892	500	ug/kg	1260	ND	71	10-150	29	35	
Benzene	990	50	ug/kg	1260	ND	78	55-120	1	25	
Bromobenzene	1090	50	ug/kg	1260	ND	86	60-125	4	25	
Bromochloromethane	928	50	ug/kg	1260	ND	73	50-135	5	30	
Bromodichloromethane	979	50	ug/kg	1260	ND	78	60-120	0.9	20	
Bromoform	983	50	ug/kg	1260	ND	78	40-125	6	35	
Bromomethane	924	250	ug/kg	1260	ND	73	10-140	8	35	
2-Butanone (MEK)	985	500	ug/kg	1260	ND	78	40-150	23	35	
n-Butylbenzene	1150	50	ug/kg	1260	ND	91	40-135	5	25	
sec-Butylbenzene	1140	50	ug/kg	1260	ND	90	50-130	6	20	
tert-Butylbenzene	1160	50	ug/kg	1260	ND	92	55-125	4	25	
Carbon tetrachloride	1110	50	ug/kg	1260	ND	88	40-135	7	30	
Chlorobenzene	1050	50	ug/kg	1260	ND	83	65-120	2	20	
Chloroethane	822	50	ug/kg	1260	ND	65	10-140	5	35	
Chloroform	893	50	ug/kg	1260	ND	71	60-125	2	25	
Chloromethane	863	250	ug/kg	1260	ND	68	10-140	10	35	
2-Chlorotoluene	1050	50	ug/kg	1260	ND	83	60-120	1	20	
4-Chlorotoluene	1050	50	ug/kg	1260	ND	83	55-130	3	20	
Dibromochloromethane	926	50	ug/kg	1260	ND	73	55-125	1	30	
1,2-Dibromoethane (EDB)	1020	50	ug/kg	1260	ND	81	55-120	5	25	
1,2-Dichlorobenzene	1110	50	ug/kg	1260	ND	88	60-120	0.9	25	
1,3-Dichlorobenzene	1050	50	ug/kg	1260	ND	83	60-120	2	25	
1,4-Dichlorobenzene	1080	50	ug/kg	1260	ND	85	60-120	1	20	
Dichlorodifluoromethane	610	50	ug/kg	1260	ND	48	10-150	18	35	
1,1-Dichloroethane	854	50	ug/kg	1260	ND	68	55-125	0.08	25	
1,2-Dichloroethane	941	50	ug/kg	1260	ND	75	55-130	3	25	
1,1-Dichloroethene	887	50	ug/kg	1260	ND	70	25-140	8	35	
cis-1,2-Dichloroethene	912	50	ug/kg	1260	ND	72	55-125	3	25	
trans-1,2-Dichloroethene	909	50	ug/kg	1260	ND	72	50-130	2	25	
1,2-Dichloropropane	972	50	ug/kg	1260	ND	77	60-120	1	25	
1,3-Dichloropropane	995	50	ug/kg	1260	ND	79	60-120	0.2	25	
2,2-Dichloropropane	948	100	ug/kg	1260	ND	75	45-130	0.06	25	

TestAmerica Phoenix

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Project Manager

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Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1427

Sampled: 11/22/11
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METHOD BLANK/QC DATA

OXYGENATES BY GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11K0875 Extracted: 11/23/11										
Matrix Spike Dup Analyzed: 11/29/2011 (11K0875-MSD1)					**Source: PUK1307-02**					**N1**
1,1-Dichloropropene	1060	50	ug/kg	1260	ND	84	55-125	5	25	
cis-1,3-Dichloropropene	989	50	ug/kg	1260	ND	78	55-120	0.3	20	
trans-1,3-Dichloropropene	973	50	ug/kg	1260	ND	77	55-125	3	25	
Ethylbenzene	1050	50	ug/kg	1260	ND	83	60-125	3	20	
2-Hexanone	1030	250	ug/kg	1260	ND	81	20-150	23	35	
p-Isopropyltoluene	1130	50	ug/kg	1260	ND	89	45-135	5	25	
Methylene Chloride	829	100	ug/kg	1260	ND	66	50-120	9	30	
4-Methyl-2-pentanone (MIBK)	1010	250	ug/kg	1260	ND	80	40-130	10	30	
Methyl-tert-butyl Ether (MTBE)	874	50	ug/kg	1260	ND	69	50-130	3	35	
n-Propylbenzene	1160	50	ug/kg	1260	ND	92	55-130	5	20	
Styrene	1040	50	ug/kg	1260	ND	83	55-125	0.6	20	
1,1,2,2-Tetrachloroethane	1060	50	ug/kg	1260	ND	84	50-130	5	25	
Tetrachloroethene	1120	50	ug/kg	1260	ND	88	60-130	5	20	
Toluene	1000	50	ug/kg	1260	ND	79	55-125	0.1	35	
1,2,3-Trichlorobenzene	1120	100	ug/kg	1260	ND	89	35-140	1	30	
1,1,1-Trichloroethane	990	50	ug/kg	1260	ND	78	50-125	3	15	
1,1,2-Trichloroethane	1040	50	ug/kg	1260	ND	83	55-120	3	25	
Trichloroethene	1040	50	ug/kg	1260	ND	83	40-145	4	35	
Trichlorofluoromethane	1130	50	ug/kg	1260	ND	89	20-150	6	35	
1,2,3-Trichloropropane	1110	100	ug/kg	1260	ND	88	35-140	8	35	
1,2,4-Trimethylbenzene	1040	50	ug/kg	1260	ND	83	50-130	2	20	
1,3,5-Trimethylbenzene	1090	50	ug/kg	1260	ND	87	45-135	2	20	
Vinyl Acetate	650	50	ug/kg	1260	ND	51	10-150	4	35	
Vinyl chloride	383	50	ug/kg	1260	ND	30	10-150	15	35	
m,p-Xylenes	1020	100	ug/kg	1260	ND	81	55-125	3	20	
o-Xylene	1070	50	ug/kg	1260	ND	85	60-125	2	30	
Surrogate: Dibromofluoromethane	*967*		*ug/kg*	*1260*		*77*	*60-130*			
Surrogate: Toluene-d8	*1040*		*ug/kg*	*1260*		*83*	*65-125*			
Surrogate: 4-Bromofluorobenzene	*979*		*ug/kg*	*1260*		*78*	*65-125*			

TestAmerica Phoenix

Kylie Emily
Project Manager

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Environmental Resources Management Inc.-West
7272 E. Indian School Rd., Ste. 100
Scottsdale, AZ 85251
Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1427

Sampled: 11/22/11
Received: 11/22/11

DATA QUALIFIERS AND DEFINITIONS

N1	See case narrative.
ND	Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
RPD	Relative Percent Difference

TestAmerica Phoenix

Kylie Emily
Project Manager

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Attention: Jason Hilker

Project ID: OU3 - 96498.020
Report Number: PUK1427

Sampled: 11/22/11
Received: 11/22/11

Certification Summary

TestAmerica Phoenix

Method	Matrix	Nelac	Arizona
EPA 8260B	Soil	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

TestAmerica Phoenix

Kylie Emily
Project Manager

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TAL-0013-550 (10/10)

CHAIN OF CUSTODY FORM

[ ] Phoenix - 4625 E. Cotton Center Blvd., Suite 189, Phoenix, AZ 85040 (602) 437-3340 FAX (602) 454-9303
[ ] Tucson - 1870 W. Prince Road, Suite 59, Tucson, AZ 85705 (520) 807-3801 FAX (520) 807-3803
[ ] Las Vegas - 6000 S Eastern Ave., Suite 5E, Las Vegas, NV 89119 (702) 429-1264

Page 1 of 1

Client Name/Address: ERM
7272 E Indian School Rd
Scottsdale AZ 85251

Project/PO Number: OU3 - ~~96498.020~~ 96498.020

Project Manager: Jason Hilker

Phone Number: 480-998-2401

Sampler: Kyle Johnson

Fax Number:

Analysis Required: 8260B (VOC)

PUK1427

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date	Sampling Time	Preservatives	8260B (VOC)									Special Instructions
IDW - S - 112211 - F	Soil	Encore	2	11/22/11	1051	-	X	KJ								
IDW - S - 112211 - G	↓	↓	↓	↓	1055	-	X									
IDW - S - 112211 - H	↓	↓	↓	↓	1059	-	X									
IDW - S - 112211 - I	↓	↓	↓	↓	1105	-	X									
IDW - S - 112211 - J	↓	↓	↓	↓	1108	-	X									
																8260 B run on
Composite F through J into "IDW-S-112211-2"							X							- 01		composite sample only!

Relinquished By:	Date/Time:	Received By:	Date/Time:
[signature]	11/22/11 1203	[signature]	
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received in Lab By: [signature]	Date/Time: 11/22/11 1203

Turnaround Time: (Check)
same day ____ 72 hours ____
24 hours ____ 5 days ____
48 hours ____ normal X

Sample Integrity: (Check)
intact X on ice X

Note: By relinquishing samples to TestAmerica, client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 30 days.

2.4°C

Table I-1

IDW Sample Results Summary
Operable Unit 3
Motorola 52nd Street Superfund Site
Phoenix, Arizona

Well ID	Sample Date	Arsenic				Barium				Boron				Chrome (III)			
		Residential			Non-Residential	Residential			Non-Residential	Residential			Non-Residential	Residential			Non-Residential
		Carcinogen		Non-carcinogen		Carcinogen		Non-carcinogen		Carcinogen		Non-carcinogen		Carcinogen		Non-carcinogen	
ADEQ SRL		10^{-5} Risk	10^{-6} Risk			10^{-5} Risk	10^{-6} Risk			10^{-5} Risk	10^{-6} Risk			10^{-5} Risk	10^{-6} Risk		
		mg/kg				mg/kg				mg/kg				mg/kg			
		10	**10**	**10**	**10**	**NA**	**NA**	**15,000**	**170,000**	**NA**	**NA**	**16,000**	**200,000**	**NA**	**NA**	**120,000**	**1,000,000**
IDW-1-S-100711	10/07/11	**ND**				**51**				**15**				**15**			
IDW-2-S-100711	10/07/11	**6.2**				**46**				**14**				**16**			

Well ID	Sample Date	Copper				Manganese				Zinc			
		Residential			Non-Residential	Residential			Non-Residential	Residential			Non-Residential
		Carcinogen		Non-carcinogen		Carcinogen		Non-carcinogen		Carcinogen		Non-carcinogen	
ADEQ SRL		10^{-5} Risk	10^{-6} Risk			10^{-5} Risk	10^{-6} Risk			10^{-5} Risk	10^{-6} Risk		
		mg/kg				mg/kg				mg/kg			
		NA	**NA**	**3,100**	**41,000**	**NA**	**NA**	**3,300**	**32,000**	**NA**	**NA**	**23,000**	**31,000**
IDW-1-S-100711	10/07/11	**5.3**				**160**				**11**			
IDW-2-S-100711	10/07/11	**9.9**				**210**				**12**			

Notes:

mg/kg = milligrams per kilogram
ADEQ = Arizona Department of Environmental Quality
SRL = Soil Remediation Levels

BOLD = greater than or equal to the ADEQ AWQS
NL = Not listed as an ADEQ SRL
NA = Not applicable

ND = Not detected

Appendix J
Investigation-Derived Waste Manifests

Total Tax
Total Ticket

Driver's Signature

Butterfield Station Landfill
40404 S. 99th Ave.
Mobile, AZ, 85239
Ph: 602-256-0630

Original
Ticket# 628981

Customer Name	ERM ERM West INC	Carrier	Red J Red J
Ticket Date	12/19/2011	Vehicle#	95
Payment Type	Credit Account	Container	
Manual Ticket#		Driver	
Hauling Ticket#		Check#	
Route		Billing #	0004083
State Waste Code		Gen EPA ID	
Manifest	219019		
Destination		Grid	
PO			
Profile	103088AZ (OU3 Working Group - Various Locations)		
Generator	160-OU3WORKINGGROUP OU3 Working Group		

Volume

	Time	Scale	Operator	Inbound		
In	12/19/2011 09:20:33	Inbound	valerie spires		Gross	31660 lb
Out	12/19/2011 09:42:53	Outbound	valerie spires		Tare	27000 lb
					Net	4660 lb
					Tons	2.33

Comments

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1 Cont Soil Sp. W.-T	100	2.33	Tons				AZ
2 FUEL-Fuel Surcharg	100		%				
3 EVP-Standard Env	100		%				
4 Dup-Work Fee	100	2.33	Tons				

"This is to certify that the following described merchandise was weighted and counted or measured by a public or deputy weighmaster, and when properly signed and sealed, shall be primafacie evidence of the accuracy of the weight shown prescribed by law"

"I certify that the waste I delivered to this facility on this date does not contain any regulated hazardous, toxic, radioactive waste or subtances, or other non-allowable wastes. I also agree to remove any non-allowable wastes I bring to this facility, or pay all costs for proper removal of such wastes, upon request from this facility."

DRIVER: PLEASE SIGN HERE

403WMFL-Butter

95 31660

WASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No. _____

Ticket No. _____

GENERATOR

WM- 219019

Name AVB Working Group (APS/Honeywell) Generating Location 5th St & Van Buren

Address AZ Center - APS PO Box 53999 PHX AZ

MS 9303 PHX, AZ 85021

Phone No. 602-250-3950 I.D. No. _____

BFS	103088	AZ	Drill Cuttings	20	Y

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

Chris Walker — AUTHORIZED AGENT'S NAME (PRINT)
12/14/11 — DATE
Chris Walker — SIGNATURE

CONTRACTOR

Name ERM Phone No. 480-998-2401

Address 7272 E. Indian School Rd #100 Scottsdale AZ

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

Robert Livermore — AUTHORIZED AGENT'S NAME (PRINT)
12-14-11 — DATE
[signature] — SIGNATURE

TRANSPORTER

Name Red J Environmental Phone No. 480-~~998~~-~~2106~~ 557-7371

Address 3215 S. 7th St Suite 10 Driver's Name Jean Sonu 29

PHX AZ Vehicle's No. 95

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

SHIPMENT DATE _____ DRIVER'S SIGNATURE _____ DELIVERY DATE 12/19/11 DRIVER'S SIGNATURE [signature]

DISPOSAL FACILITY

- [x] **BUTTERFIELD STATION FACILITY** • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
- [ ] **NORTHWEST REGIONAL LANDFILL** • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
- [ ] **PAINTED DESERT LANDFILL** • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3605
- [ ] **GRAY WOLF LANDFILL** • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
- [ ] **LONE CACTUS LANDFILL** • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
- [ ] **IRONWOOD LANDFILL** • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778
- [ ] _____

I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

Valerie Spires — NAME (PRINT)
12/19/11 — DATE
Valerie Spires — SIGNATURE

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD

Spires, Valerie

From: Pinkerton, Barbara
Sent: Monday, December 19, 2011 1:55 PM
To: Spires, Valerie
Subject: FW: waste manifest

Can I get manifest/ticket for load on 12/19? 103088AZ OU# working group/ ERM

Thanks,
Barbara Pinkerton

Technical Service Representative
2425 S 40th St, Phoenix, AZ 85034
ph: 602-454-2001 fax: 602-470-0692
bpinkert@wm.com

www.wmsolutions.com

From: Ron Brazeal [mailto:Ron.Brazeal@erm.com]
Sent: Monday, December 19, 2011 9:41 AM
To: Pinkerton, Barbara
Cc: Jason Hilker
Subject: waste manifest

Hi Barbara!
Can we (ERM) get a copy of the waste manifest after receipt signature from landfill pertaining to BFS 1030888 AZ.
Thanks!

Ron Brazeal, R.E.A
Senior Project Manager

Environmental Resources Management
7272 E. Indian School Road, Suite 100
Scottsdale, Arizona 85251

Direct Office 480-455-6078
Email ron.brazeal@erm.com

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Please visit ERM's web site: http://www.erm.com

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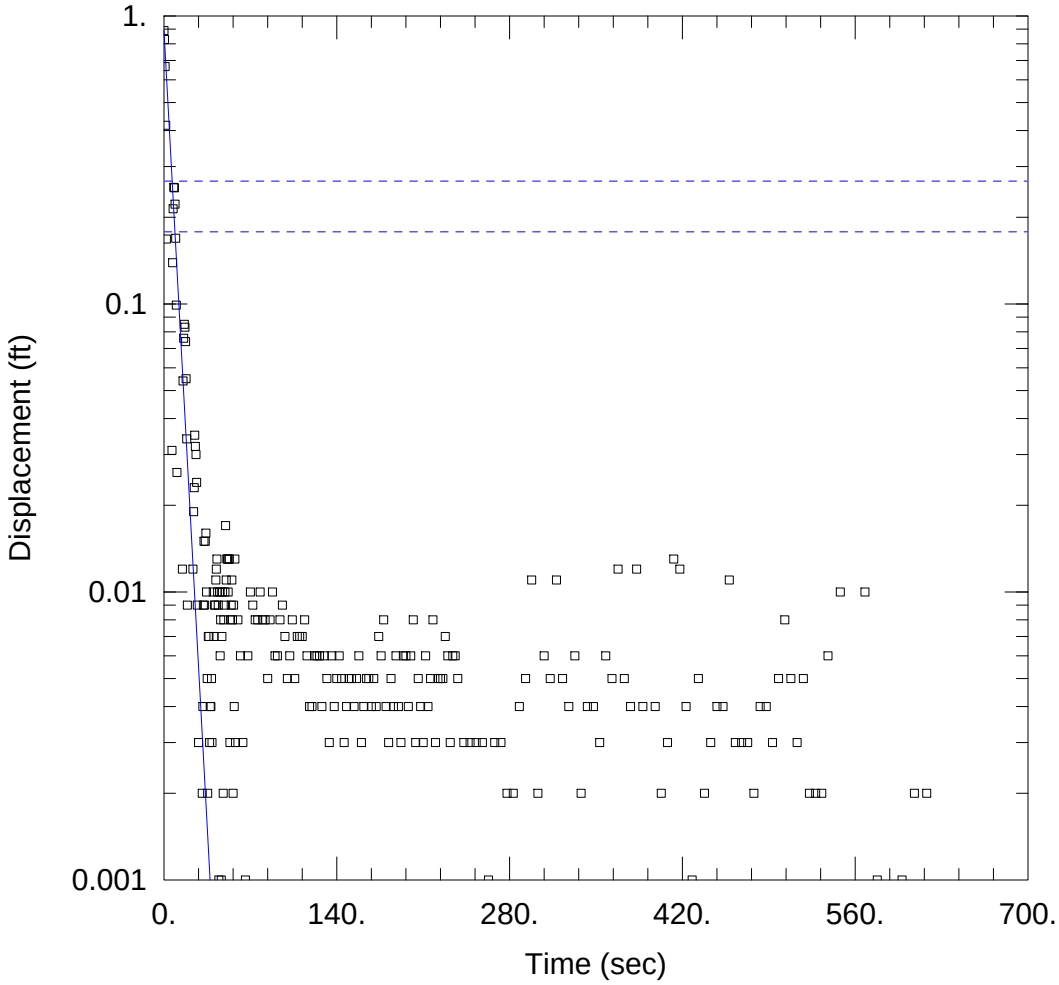
Please visit ERM's web site: http://www.erm.com

Appendix K
Slug Test AQTESOLV Output



WELL TEST ANALYSIS

Data Set: C:\...\OU3-1M slug out - BR unconfined - u and l srg combined.aqt
Date: 03/23/12 Time: 11:12:03

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-1M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

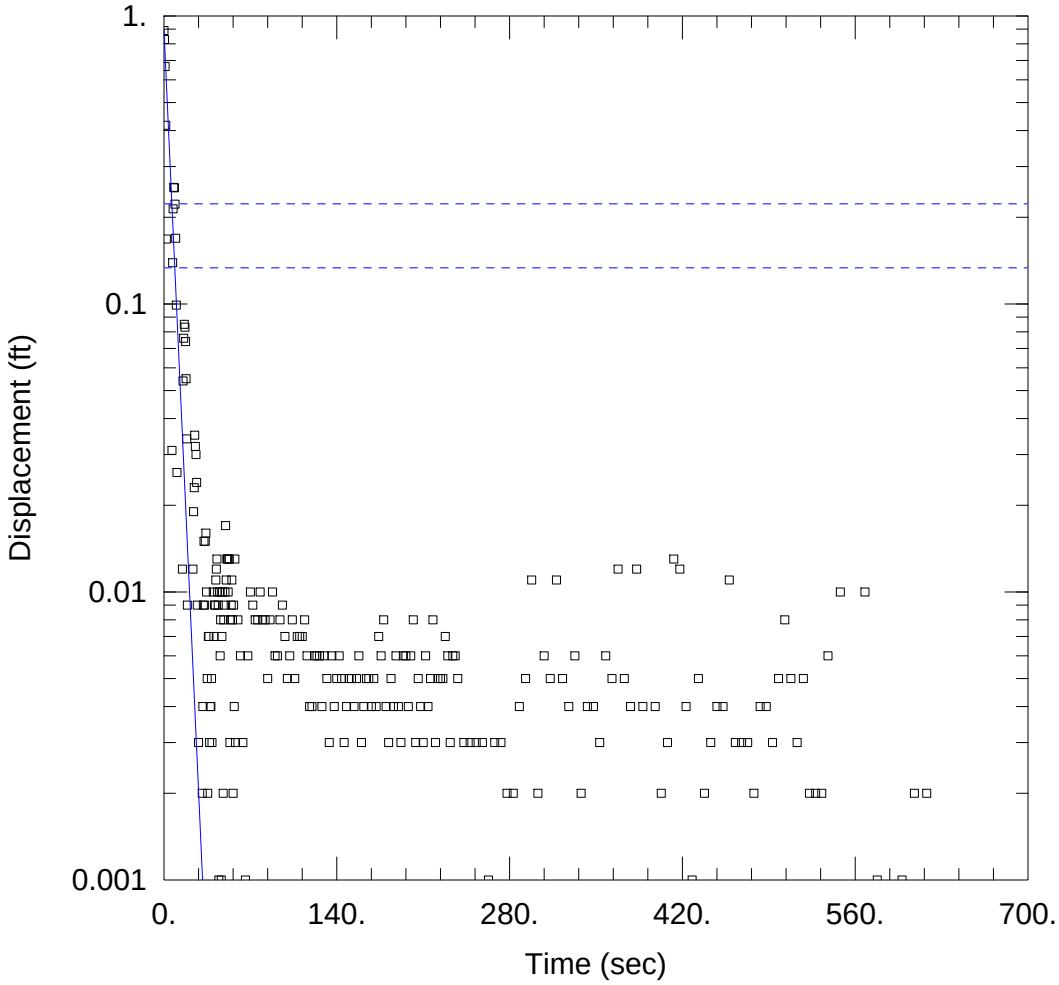
WELL DATA (OU3-1M - Slug out)

Initial Displacement: 0.89 ft
Total Well Penetration Depth: 67.86 ft
Casing Radius: 0.167 ft
Static Water Column Height: 74.86 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 91.68 ft/day
y0 = 0.89 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-1M slug out - HV unconfined - u and l srg combined.aqt
Date: 03/23/12 Time: 11:11:04

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-1M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

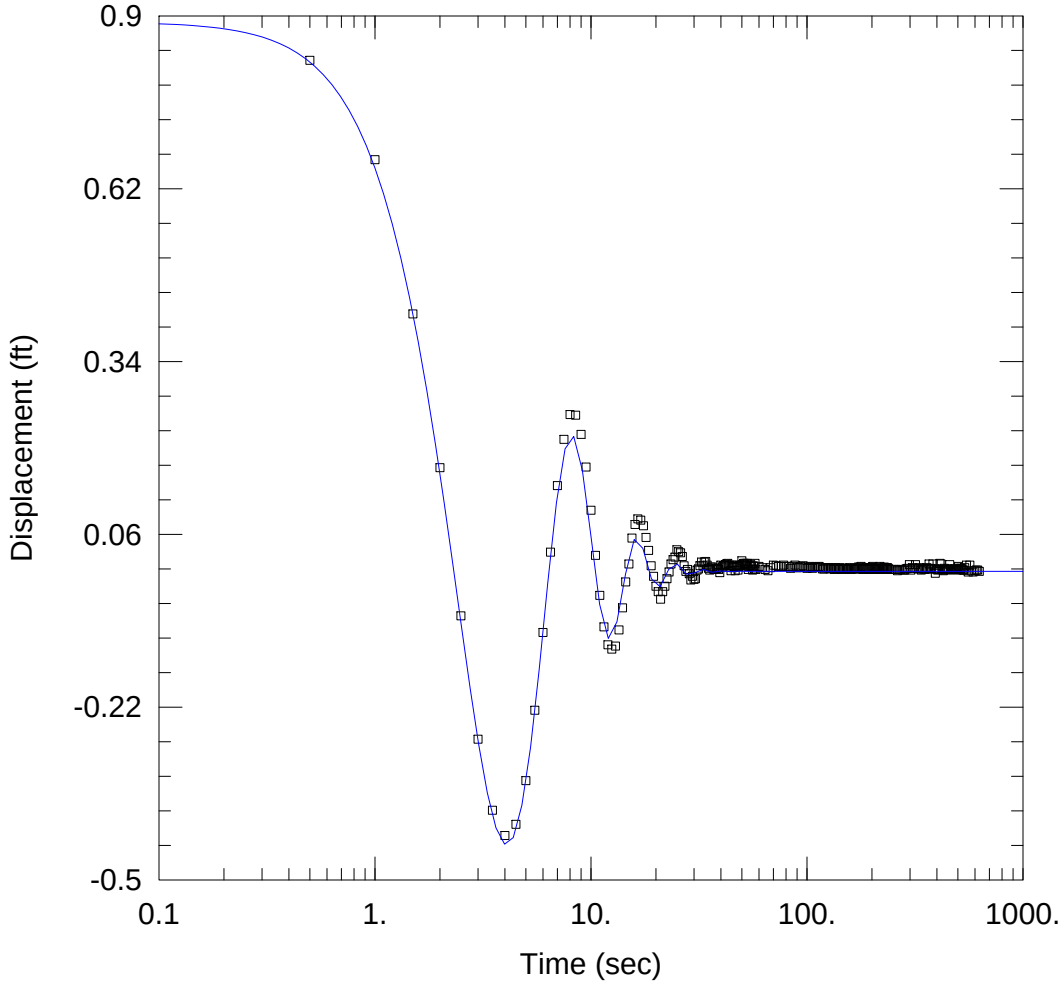
WELL DATA (OU3-1M - Slug out)

Initial Displacement: 0.89 ft
Total Well Penetration Depth: 67.86 ft
Casing Radius: 0.167 ft
Static Water Column Height: 74.86 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 136. ft/day
y0 = 0.89 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-1M slug out - SG unconfined - u and l srg combined.aqt
Date: 03/23/12 Time: 16:21:23

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-1M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

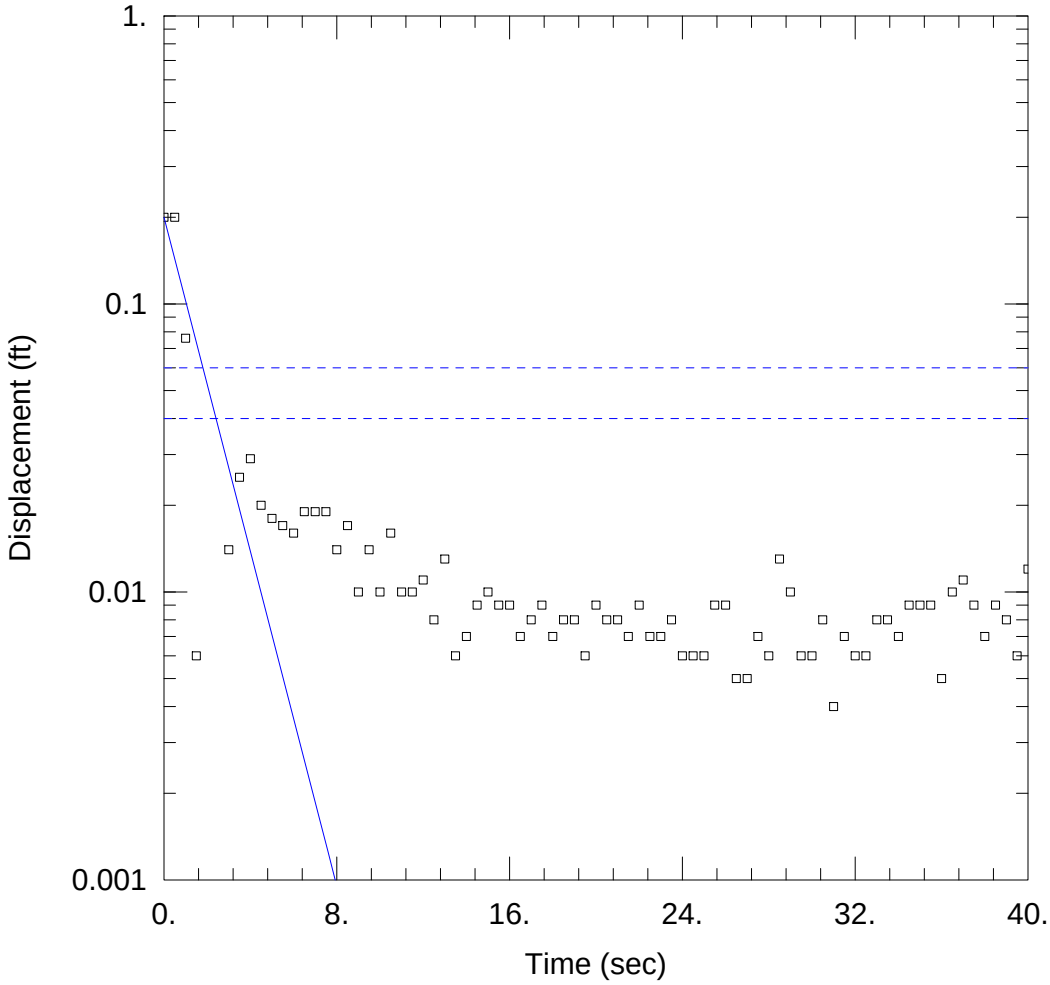
WELL DATA (OU3-1M - Slug out)

Initial Displacement: 0.89 ft
Total Well Penetration Depth: 67.86 ft
Casing Radius: 0.167 ft
Static Water Column Height: 74.86 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 470. ft/day
Le = 51.44 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-1M_slugin -BR unconfined - u and l srg combined.aqt
Date: 03/23/12 Time: 11:16:22

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-1M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

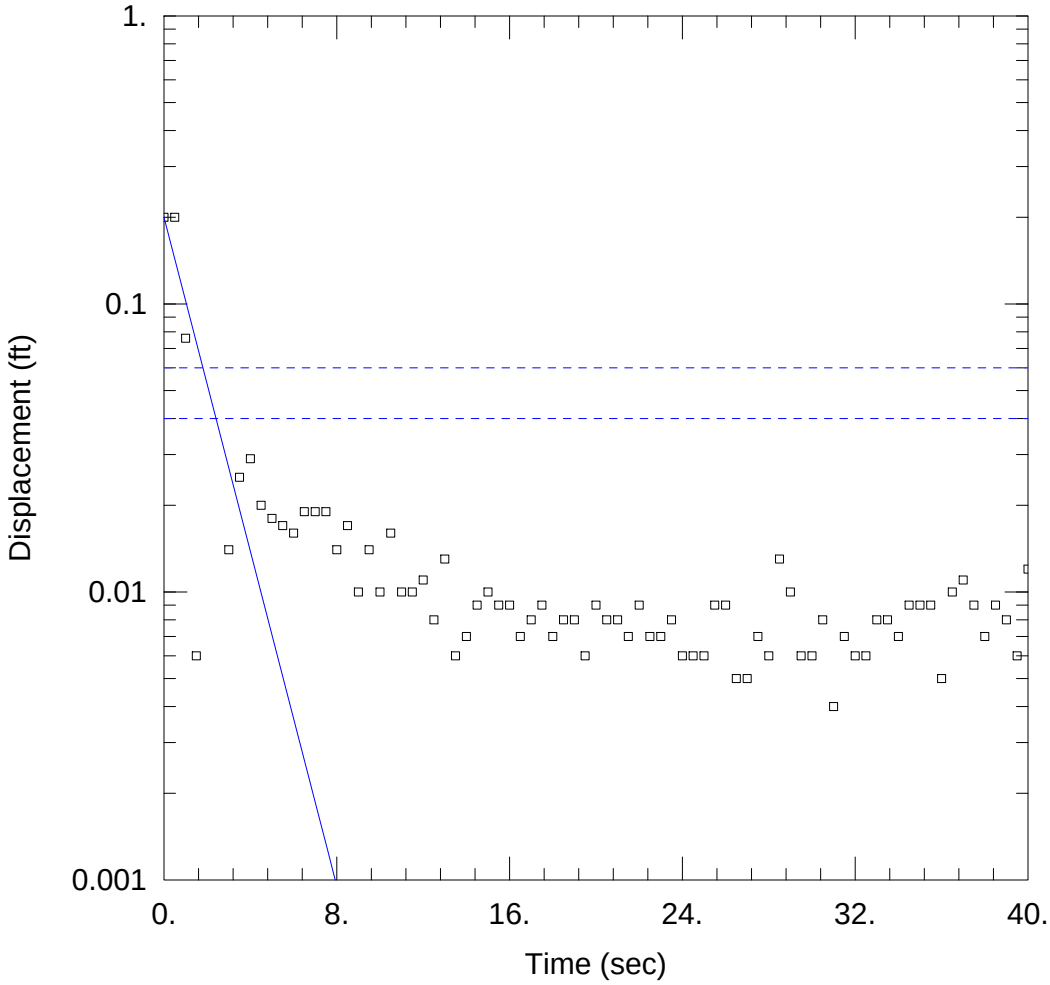
WELL DATA (OU3-1M-slug in)

Initial Displacement: 0.2 ft
Total Well Penetration Depth: 67.86 ft
Casing Radius: 0.167 ft
Static Water Column Height: 64.86 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 336.9 ft/day
y0 = 0.2 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-1M_slugin -HV unconfined - u and l srg combined.aqt
Date: 03/23/12 Time: 11:18:18

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-1M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

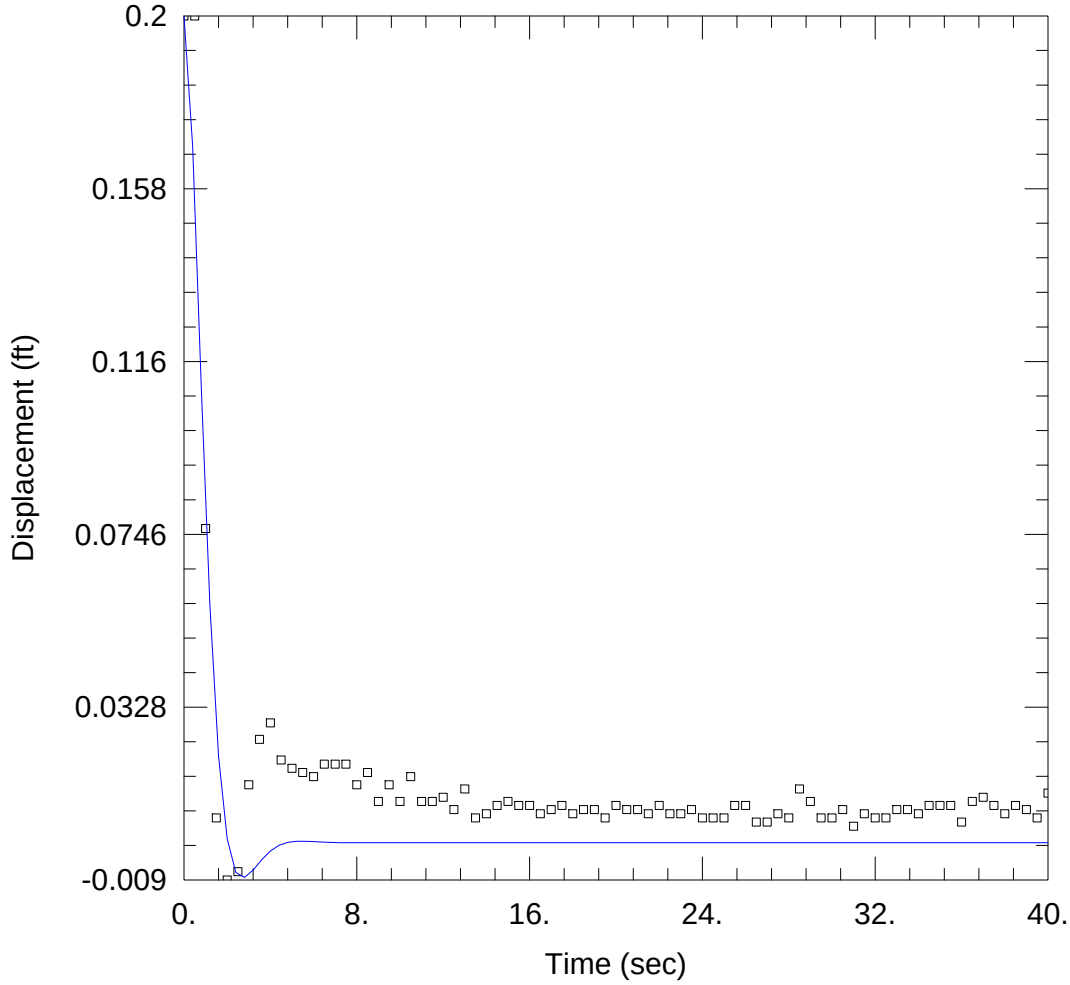
WELL DATA (OU3-1M-slug in)

Initial Displacement: 0.2 ft
Total Well Penetration Depth: 67.86 ft
Casing Radius: 0.167 ft
Static Water Column Height: 64.86 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 336.9 ft/day
y0 = 0.2 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-1M_slugin -SG unconfined - u and l srg combined.aqt
Date: 03/23/12 Time: 11:17:21

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-1M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

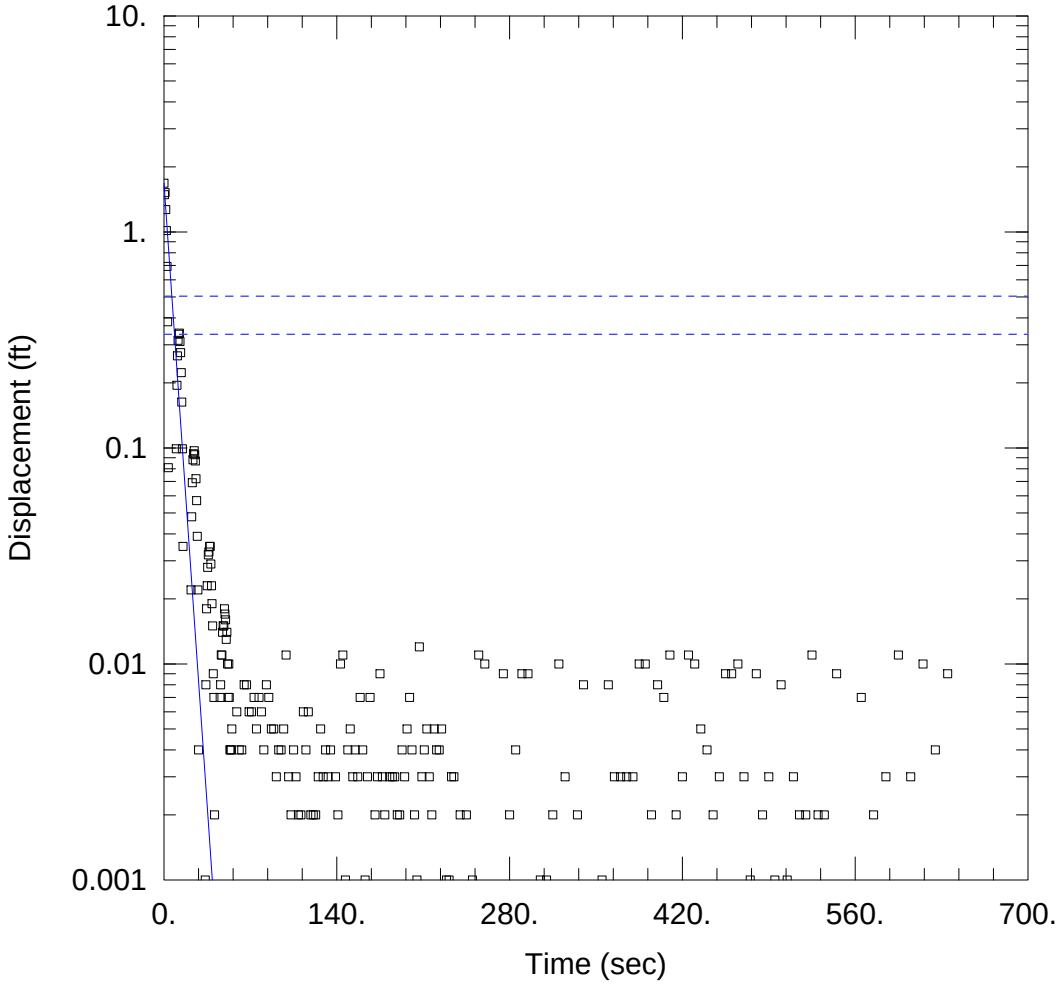
WELL DATA (OU3-1M-slug in)

Initial Displacement: 0.2 ft
Total Well Penetration Depth: 67.86 ft
Casing Radius: 0.167 ft
Static Water Column Height: 64.86 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 297.6 ft/day
Le = 11.85 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-5M2 - slug out - BR confined - L srg.aqt
Date: 03/23/12 Time: 11:05:41

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-5M2 - slug out

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

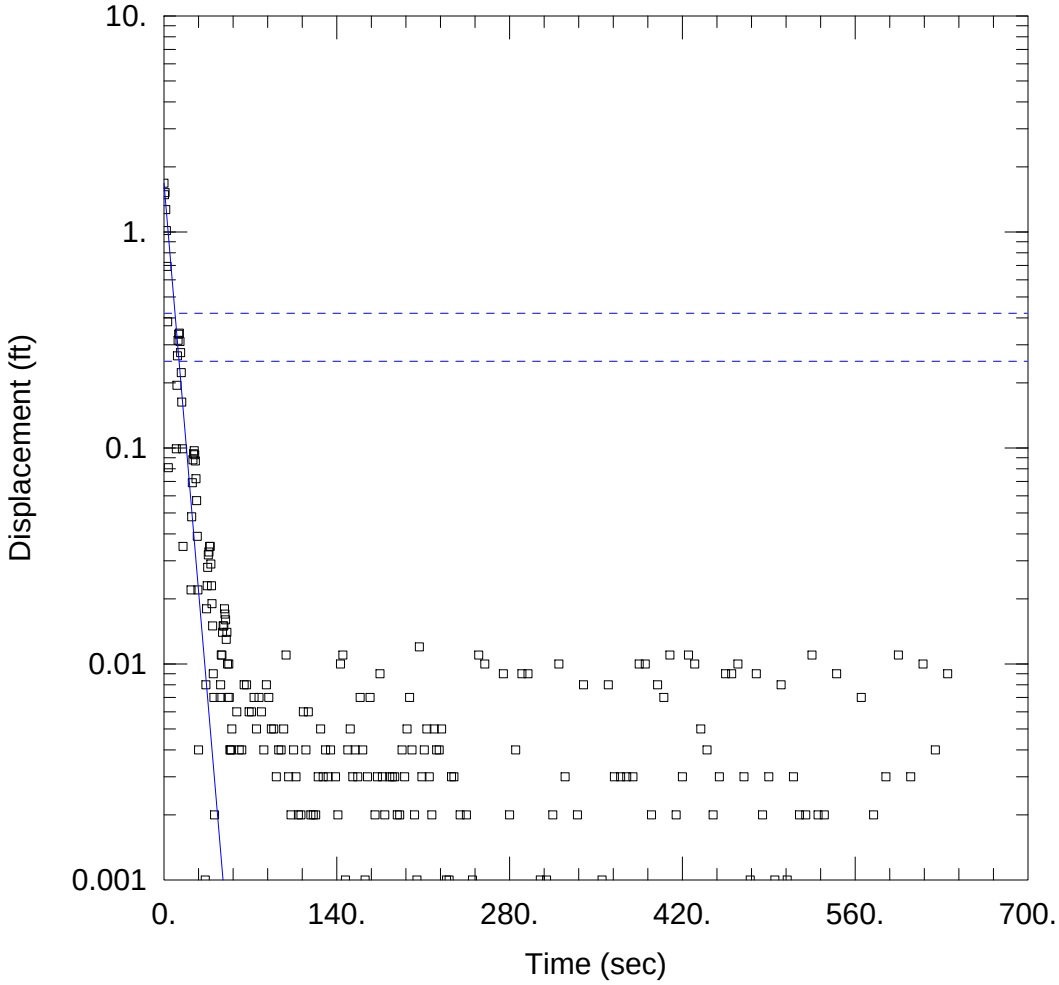
WELL DATA (OU3-5M2 - slug out)

Initial Displacement: 1.68 ft
Total Well Penetration Depth: 99. ft
Casing Radius: 0.1678 ft
Static Water Column Height: 128.6 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 56.1 ft/day
y0 = 1.68 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-5M2 - slug out - HV confined - L srg.aqt
Date: 03/23/12 Time: 11:04:31

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-5M2 - slug out

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

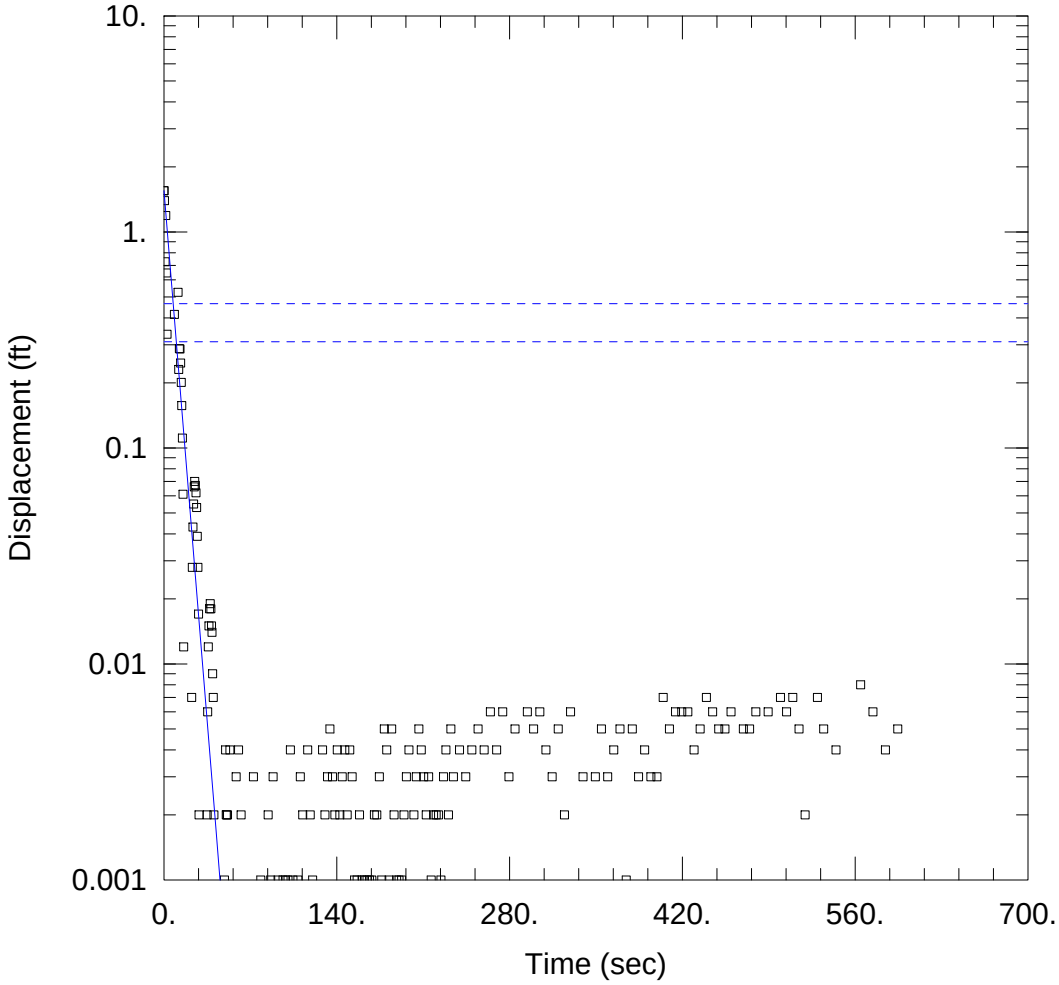
WELL DATA (OU3-5M2 - slug out)

Initial Displacement: 1.68 ft
Total Well Penetration Depth: 99. ft
Casing Radius: 0.1678 ft
Static Water Column Height: 128.6 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 49.51 ft/day
y0 = 1.68 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-5M2_slugin - BR confined - Lsrg.aqt
Date: 03/23/12 Time: 11:09:13

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-5M2 - slug in

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

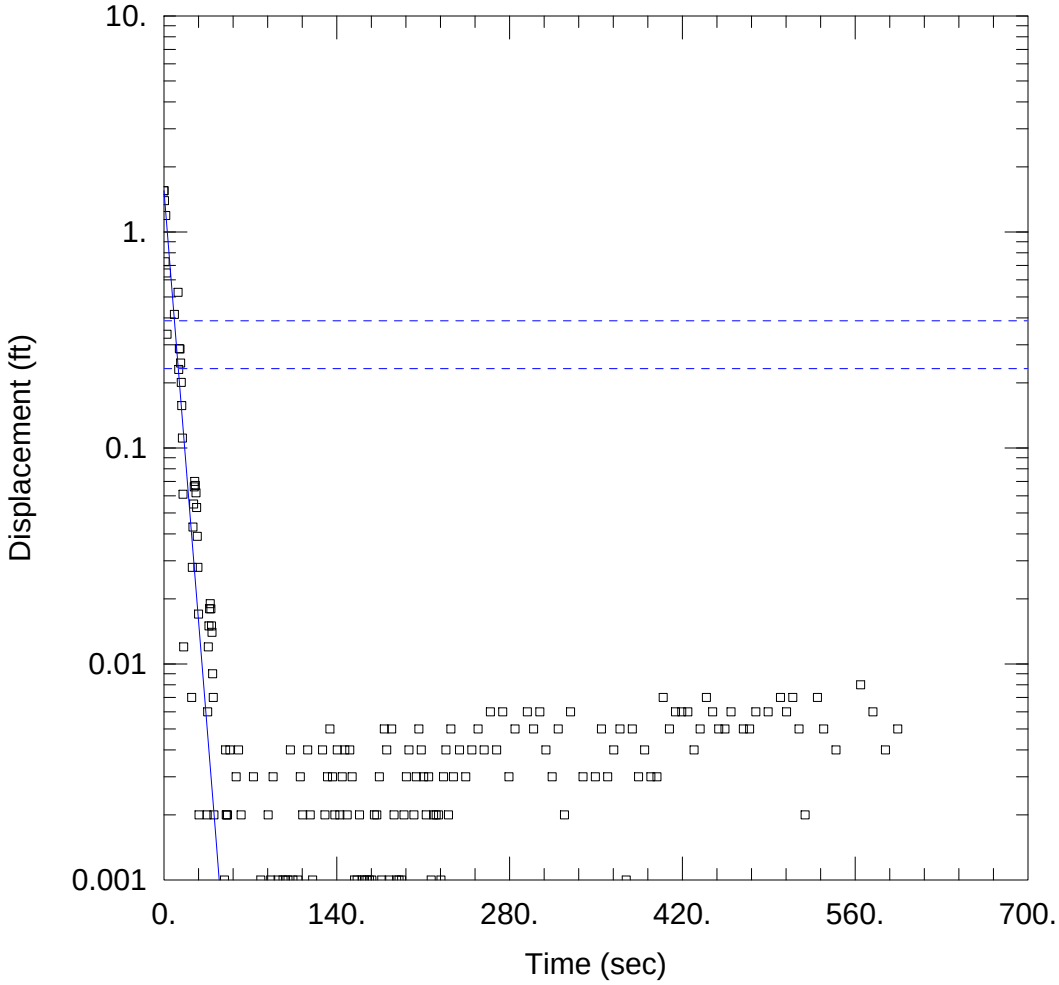
WELL DATA (OU3-5M2_slugin)

Initial Displacement: 1.551 ft
Total Well Penetration Depth: 99. ft
Casing Radius: 0.167 ft
Static Water Column Height: 130. ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 47.4 ft/day
y0 = 1.551 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-5M2_slugin - HV confined - Lsrg.aqt
Date: 03/23/12 Time: 11:07:59

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-5M2 - slug in

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

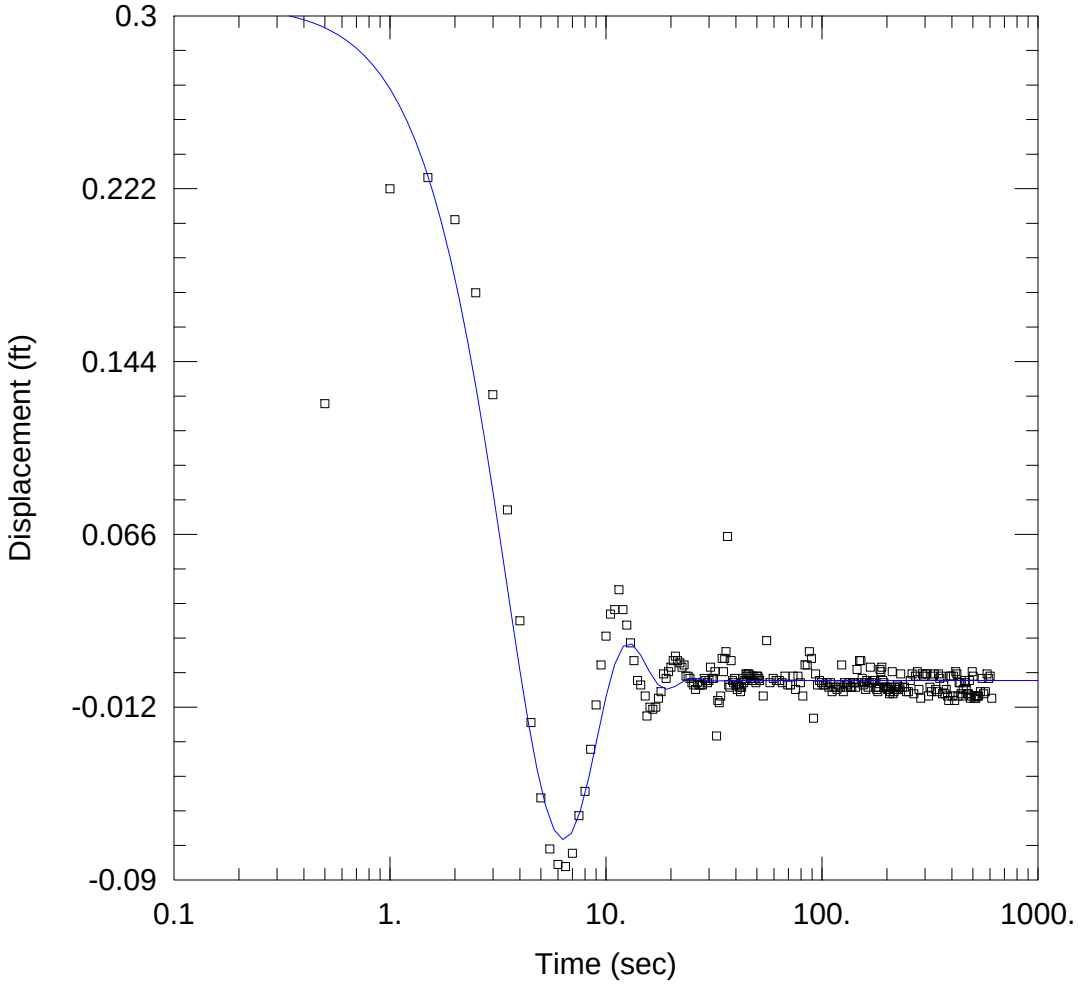
WELL DATA (OU3-5M2_slugin)

Initial Displacement: 1.551 ft
Total Well Penetration Depth: 99. ft
Casing Radius: 0.167 ft
Static Water Column Height: 130. ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 51.8 ft/day
y0 = 1.551 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-5MR - slug in - SG unconfined - u and L srg combined.aqt
Date: 03/23/12 Time: 11:00:37

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-5MR - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

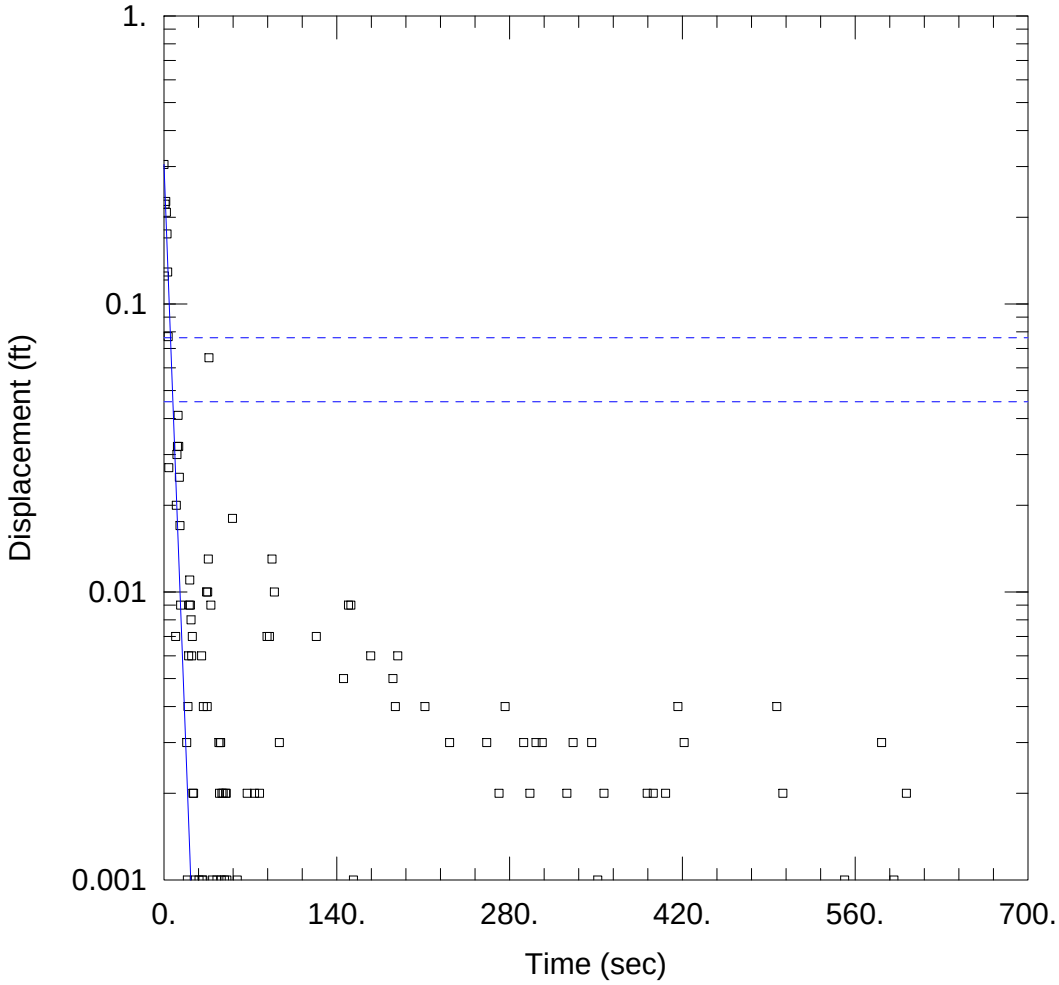
WELL DATA (OU3-5MR - slug in)

Initial Displacement: 0.305 ft
Total Well Penetration Depth: 75.63 ft
Casing Radius: 0.1678 ft
Static Water Column Height: 75.74 ft
Screen Length: 20. ft
Well Radius: 0.1678 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 197.6 ft/day
Le = 109.2 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-5MR - slug in -HV confined - L srg.aqt
Date: 03/23/12 Time: 10:59:41

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-5MR - slug in

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

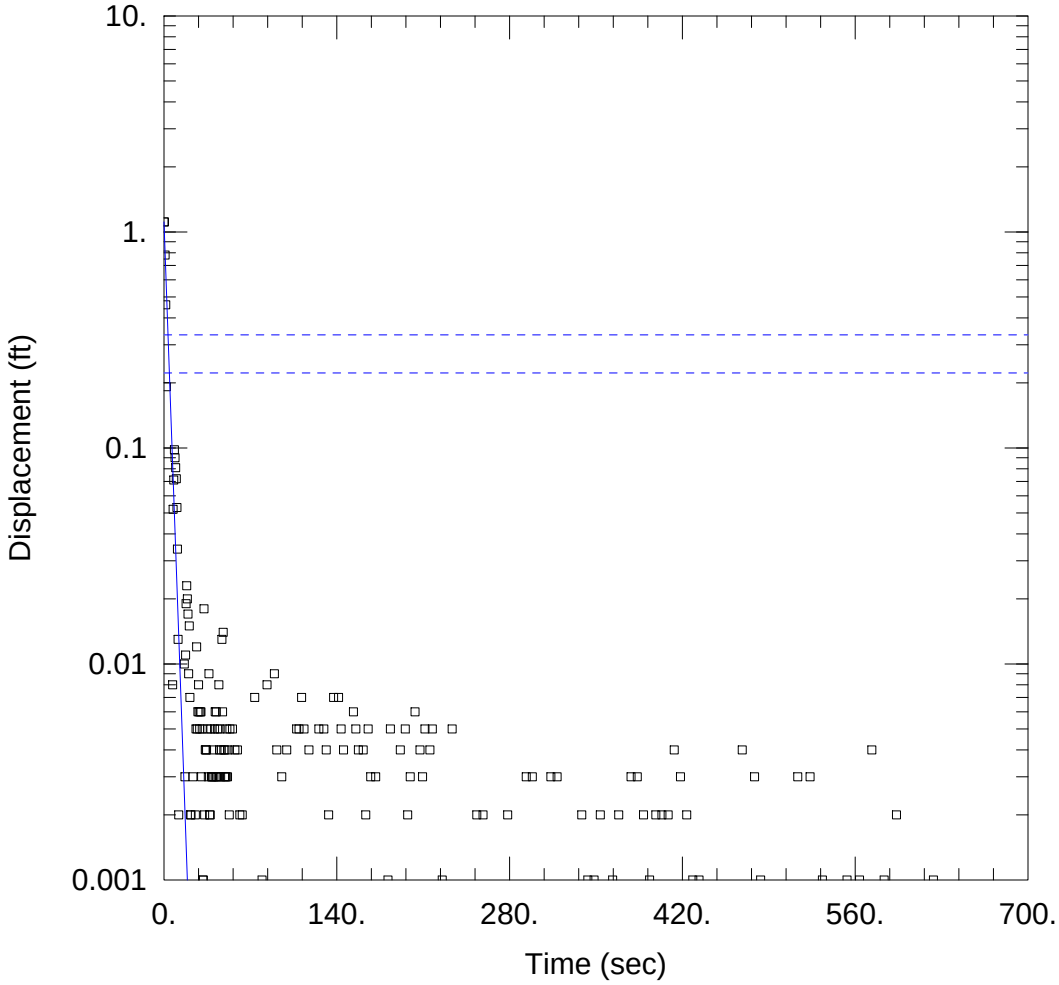
WELL DATA (OU3-5MR - slug in)

Initial Displacement: 0.305 ft
Total Well Penetration Depth: 45. ft
Casing Radius: 0.1678 ft
Static Water Column Height: 75.74 ft
Screen Length: 20. ft
Well Radius: 0.1678 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 94.56 ft/day
y0 = 0.305 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-5MR - slug out - BR confined - L SRG.aqt
Date: 03/23/12 Time: 10:58:51

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-5MR - slug out

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

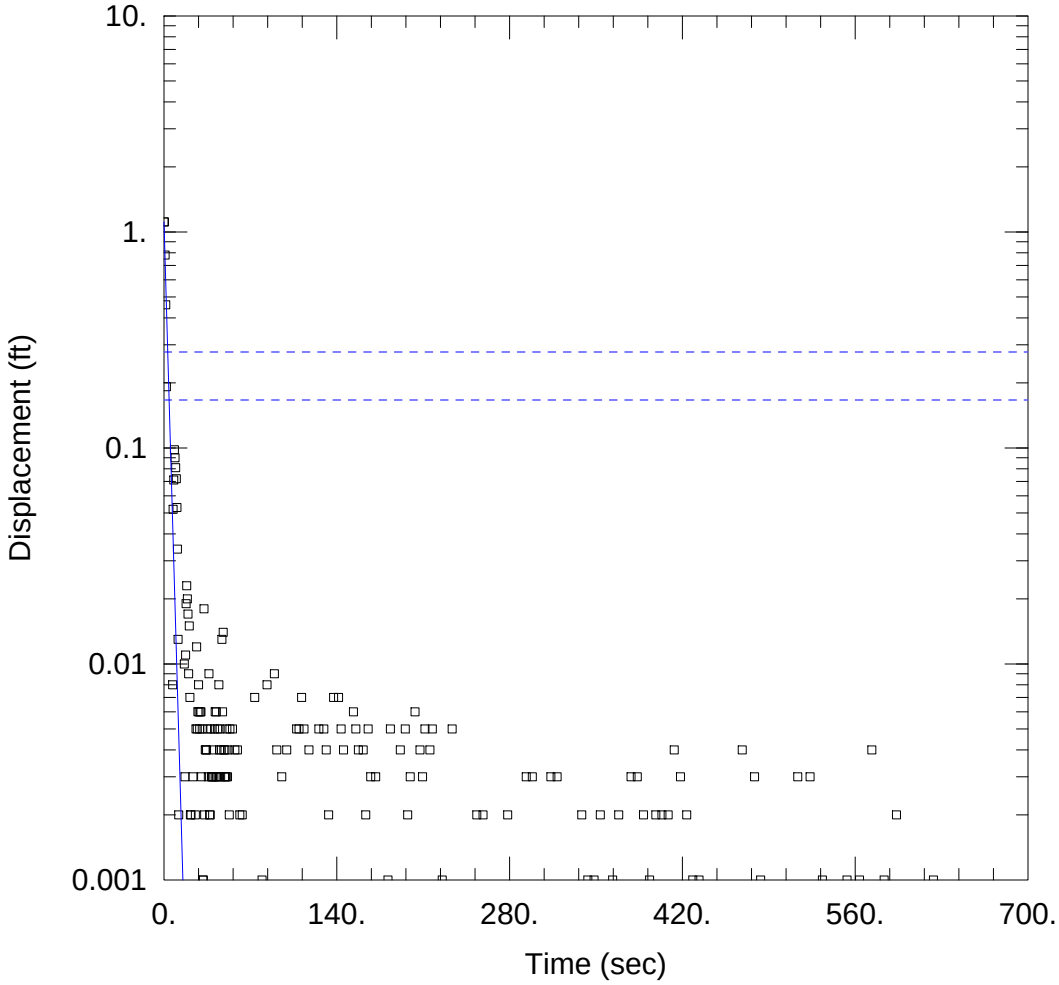
WELL DATA (OU3-5MR- slug out)

Initial Displacement: 1.112 ft
Total Well Penetration Depth: 45. ft
Casing Radius: 0.1678 ft
Static Water Column Height: 75.74 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 90.44 ft/day
y0 = 1.112 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-5MR - slug out - HV confined - L SRG.aqt
Date: 03/23/12 Time: 10:57:50

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-5MR -slug out

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

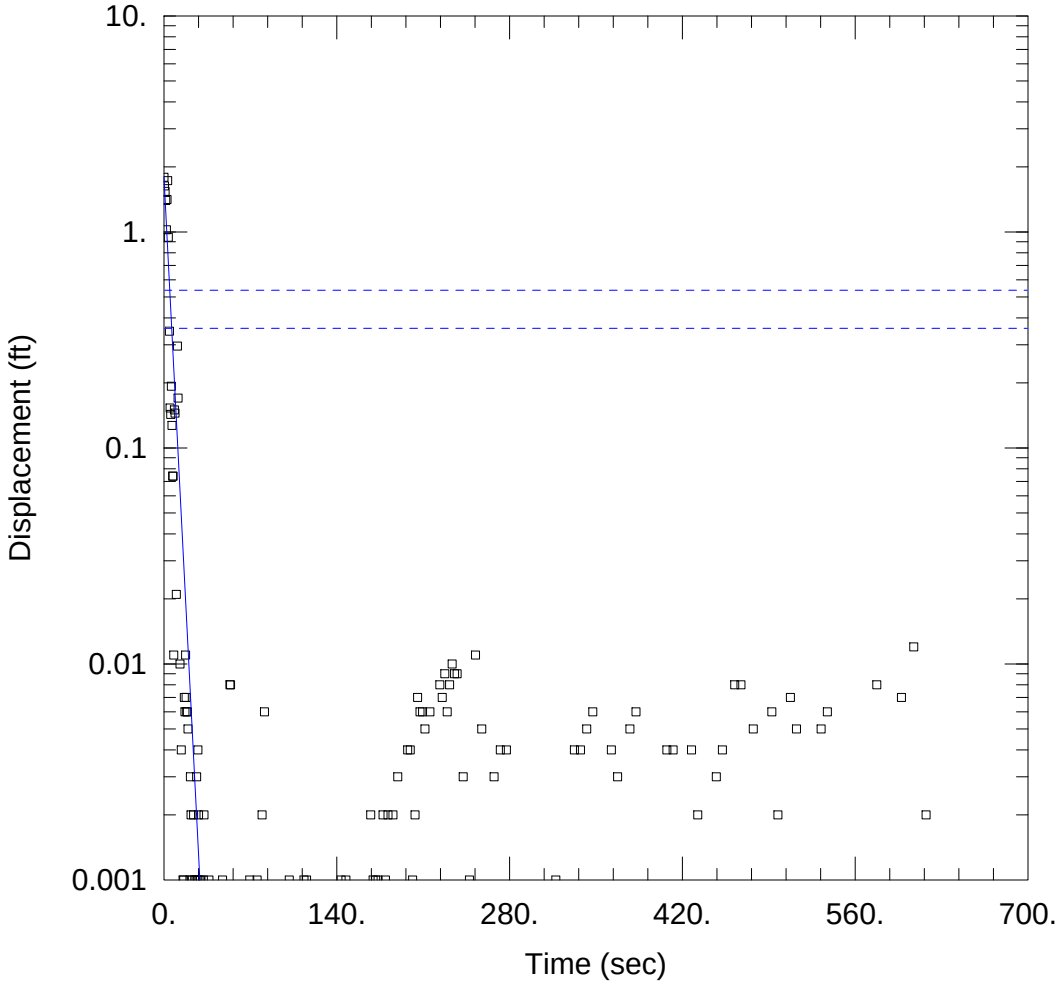
WELL DATA (OU3-5MR- slug out)

Initial Displacement: 1.112 ft
Total Well Penetration Depth: 45. ft
Casing Radius: 0.1678 ft
Static Water Column Height: 75.74 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 146. ft/day
y0 = 1.112 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-6M - slug-in - BR unconfined - U and L SRG combined.aqt
Date: 03/23/12 Time: 10:54:27

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-6M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

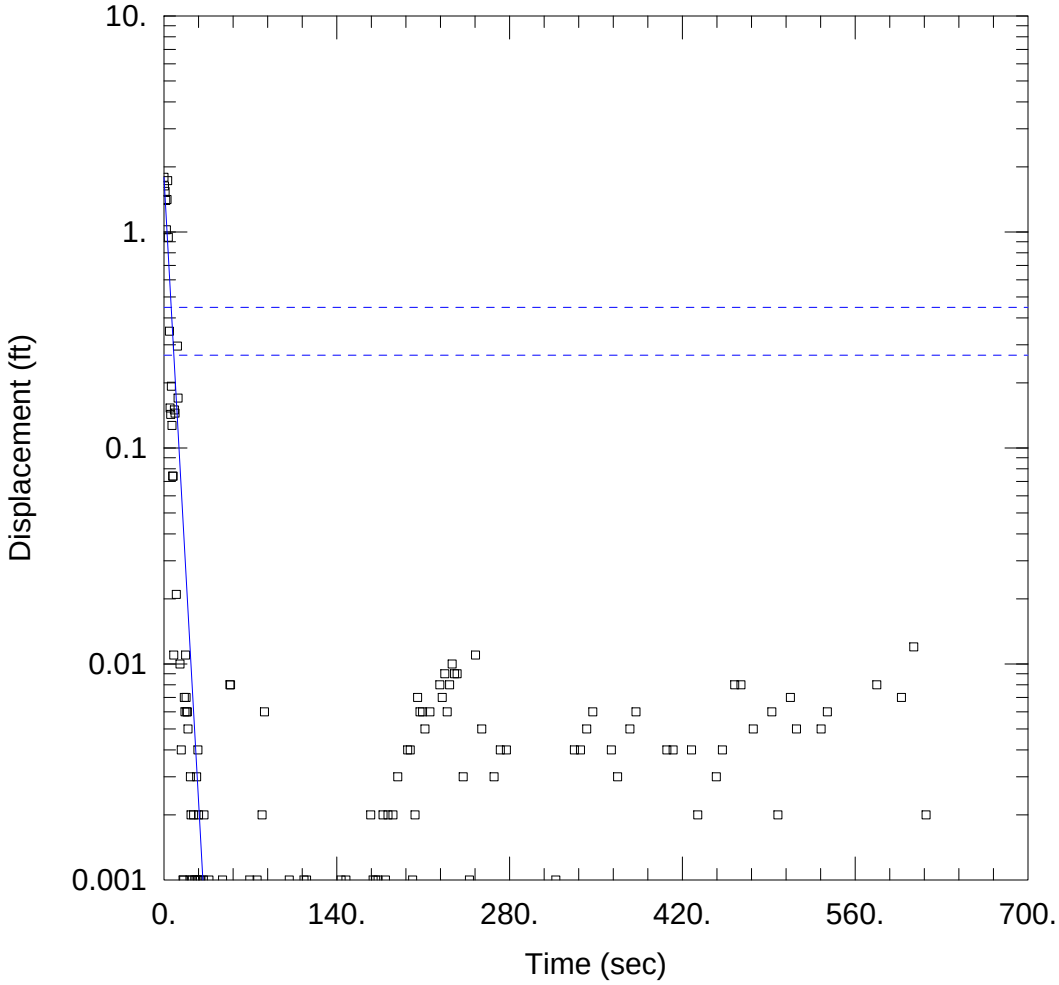
WELL DATA (OU3-6M - slug - in)

Initial Displacement: 1.79 ft
Total Well Penetration Depth: 81.58 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 90.92 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 132.5 ft/day
y0 = 1.79 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-6M - slug-in - HV unconfined - U and L SRG combined.aqt
Date: 03/23/12 Time: 10:53:27

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-6M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

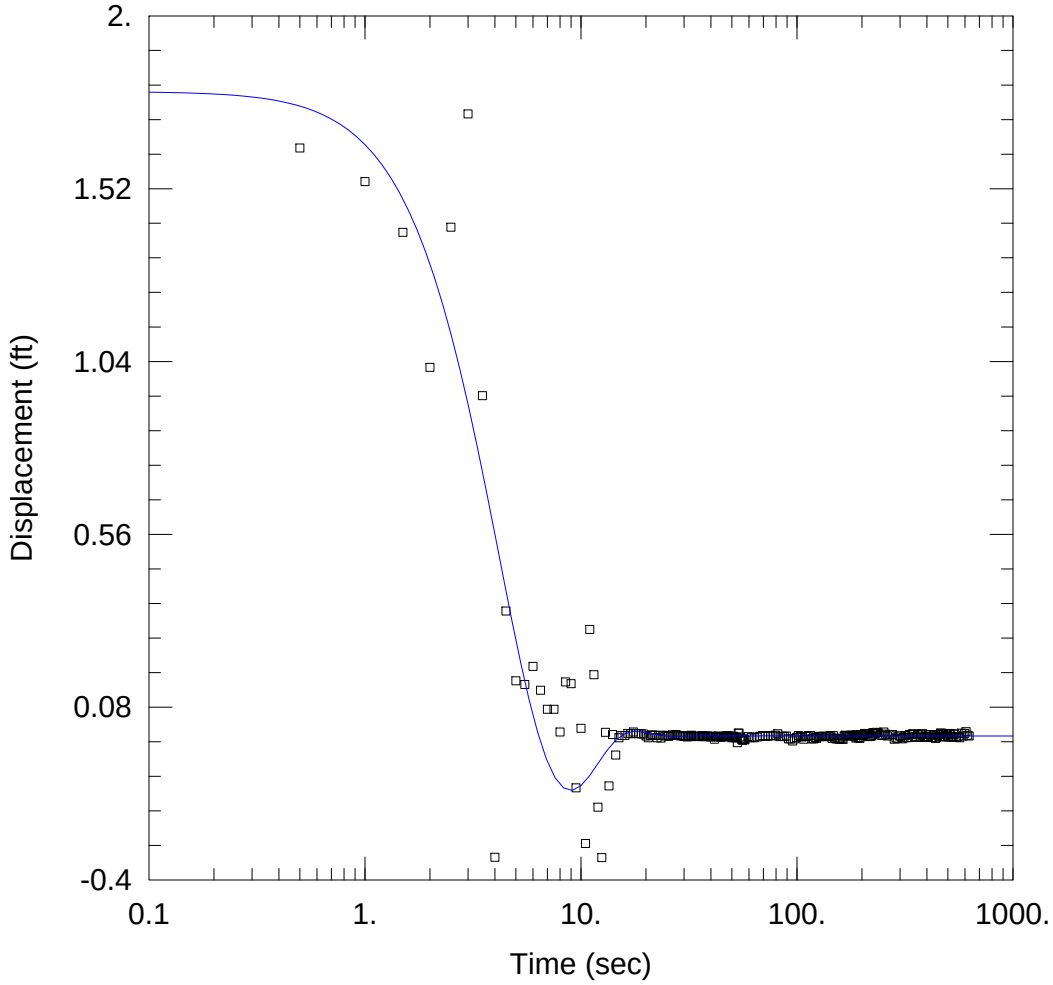
WELL DATA (OU3-6M - slug - in)

Initial Displacement: 1.79 ft
Total Well Penetration Depth: 81.58 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 90.92 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 148.6 ft/day
y0 = 1.79 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-6M - slug-in - SG unconfined - U and L SRG combined.aqt
Date: 03/23/12 Time: 10:52:59

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-6M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

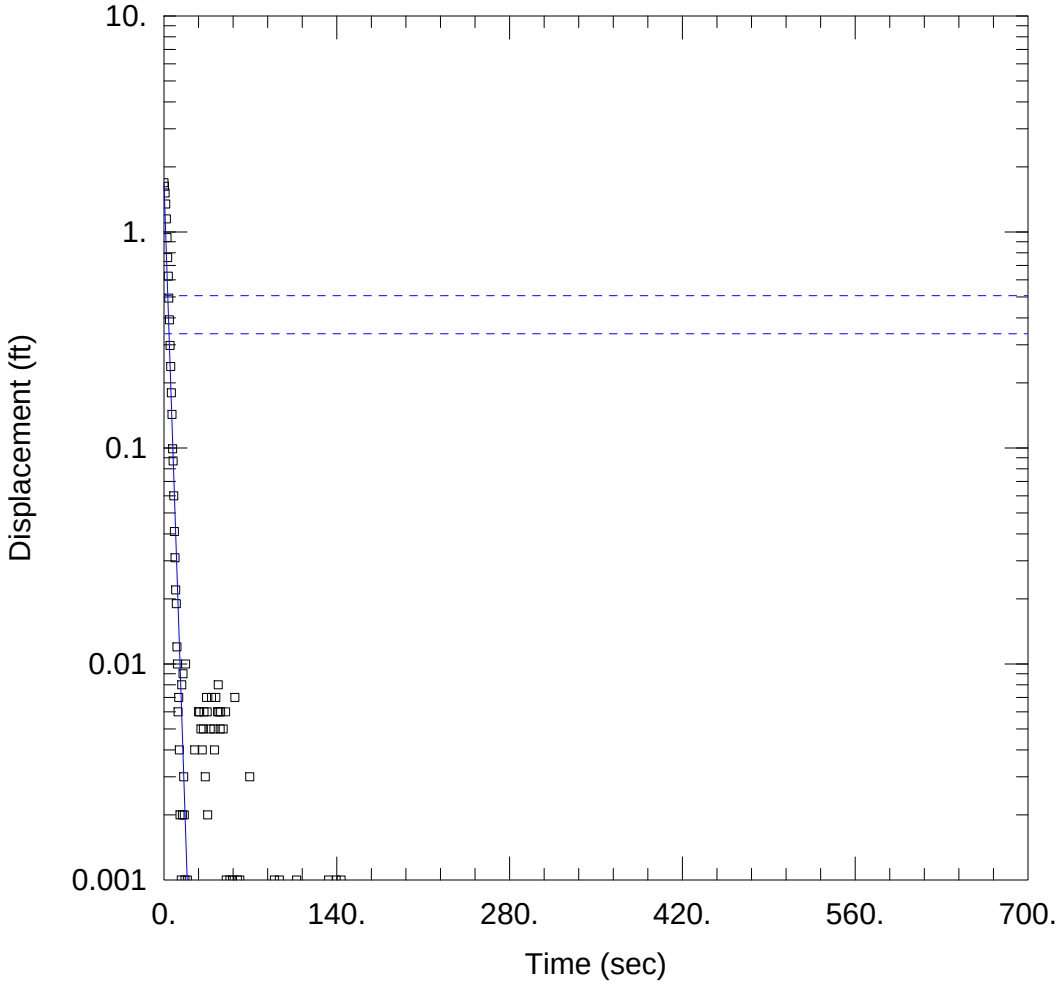
WELL DATA (OU3-6M - slug - in)

Initial Displacement: 1.79 ft
Total Well Penetration Depth: 81.58 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 90.92 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 93.77 ft/day
Le = 161.3 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-6M - slug-out - BR unconfined - U and L SRG combined.aqt
Date: 03/23/12 Time: 08:13:16

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-6M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

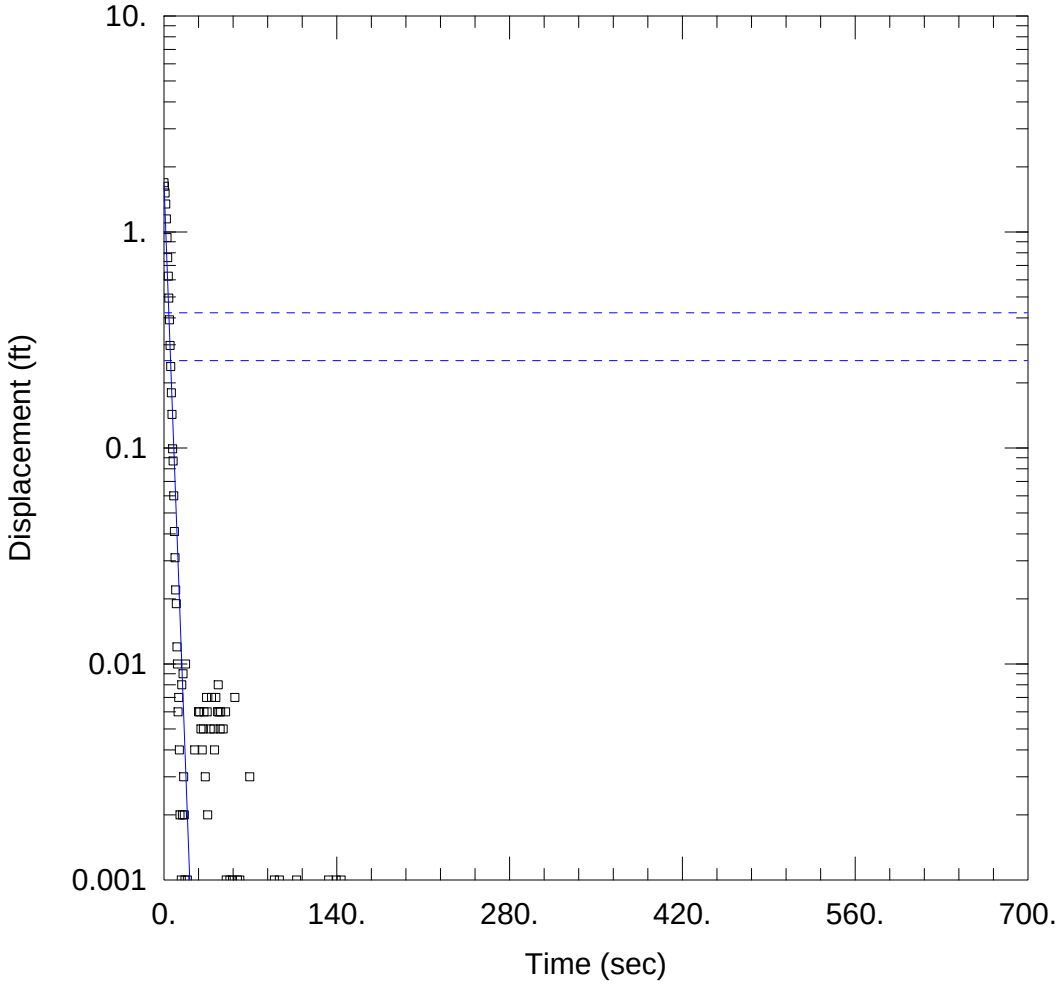
WELL DATA (OU3-6M -slug out)

Initial Displacement: 1.689 ft
Total Well Penetration Depth: 81.58 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 90.92 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 203. ft/day
y0 = 1.689 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-6M - slug-out - HV unconfined - U and L SRG combined.aqt
Date: 03/23/12 Time: 08:12:22

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-6M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

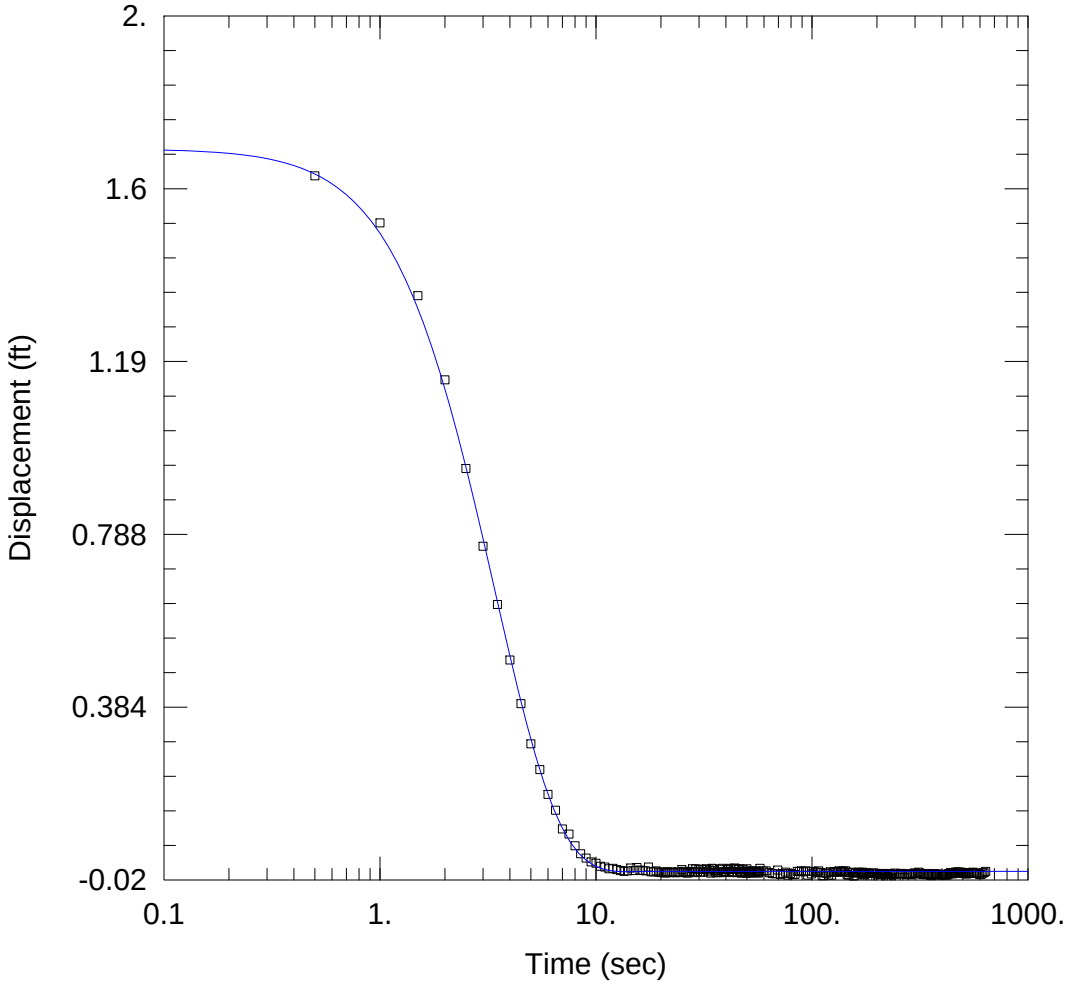
WELL DATA (OU3-6M -slug out)

Initial Displacement: 1.689 ft
Total Well Penetration Depth: 81.58 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 90.92 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 222.6 ft/day
y0 = 1.689 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-6M - slug-out - SG unconfined - U and L SRG combined.aqt
Date: 03/23/12 Time: 08:11:55

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-6M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

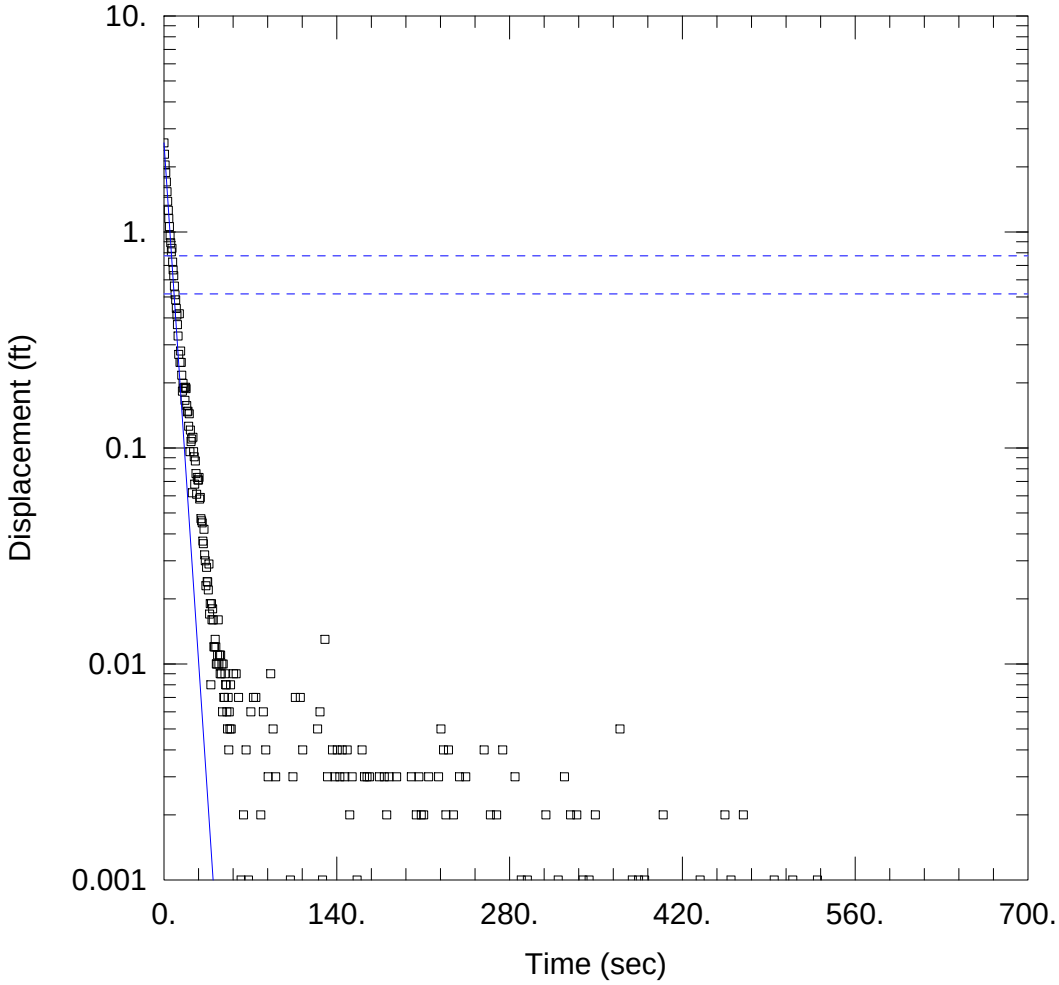
WELL DATA (OU3-6M -slug out)

Initial Displacement: 1.689 ft
Total Well Penetration Depth: 81.58 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 90.92 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 80.81 ft/day
Le = 96.95 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-8M2 - slug out - BR confined - L SRG.aqt
Date: 03/23/12 Time: 08:31:23

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-8M2 - slug out

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

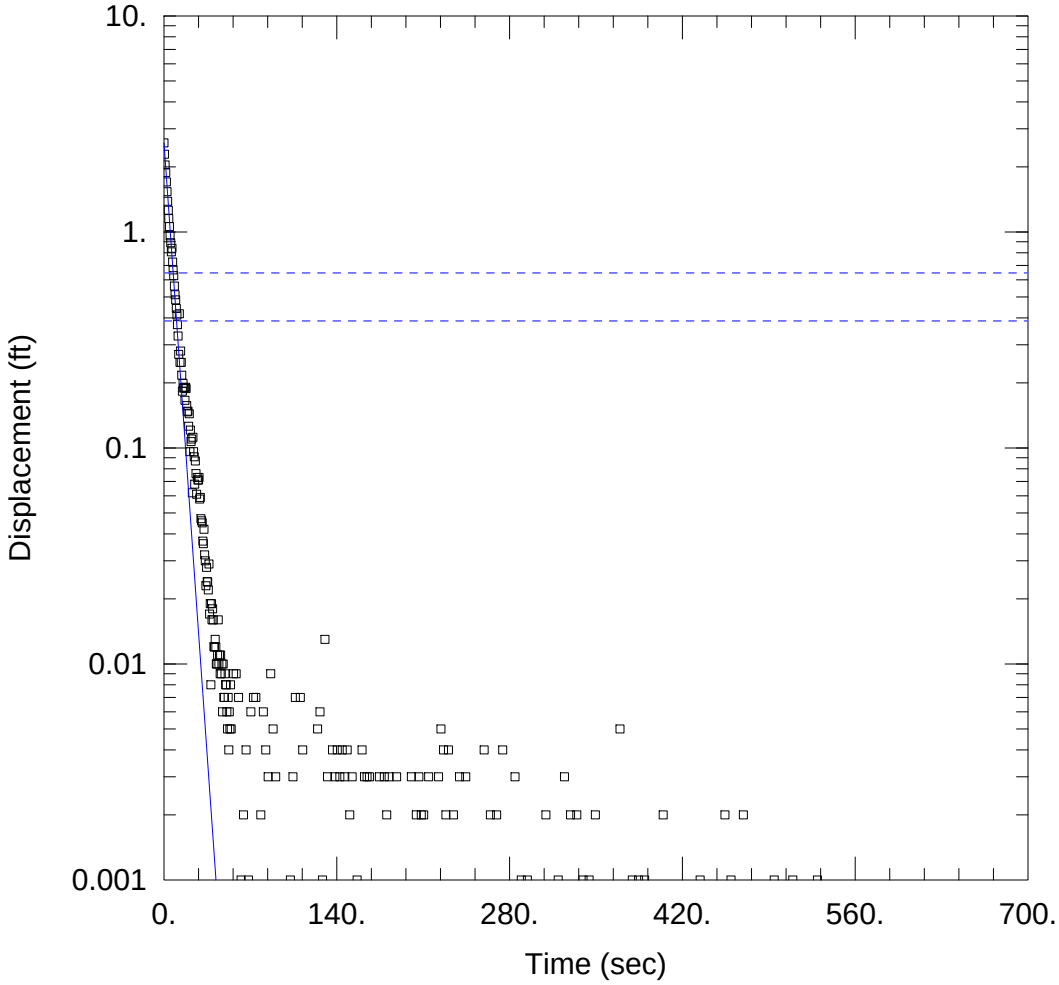
WELL DATA (OU3-8M2 - slug out)

Initial Displacement: 2.582 ft
Total Well Penetration Depth: 102. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 131.5 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 60.66 ft/day
y0 = 2.582 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-8M2 - slug out - HV confined - L SRG.aqt
Date: 03/23/12 Time: 08:30:29

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-8M2 - slug out

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

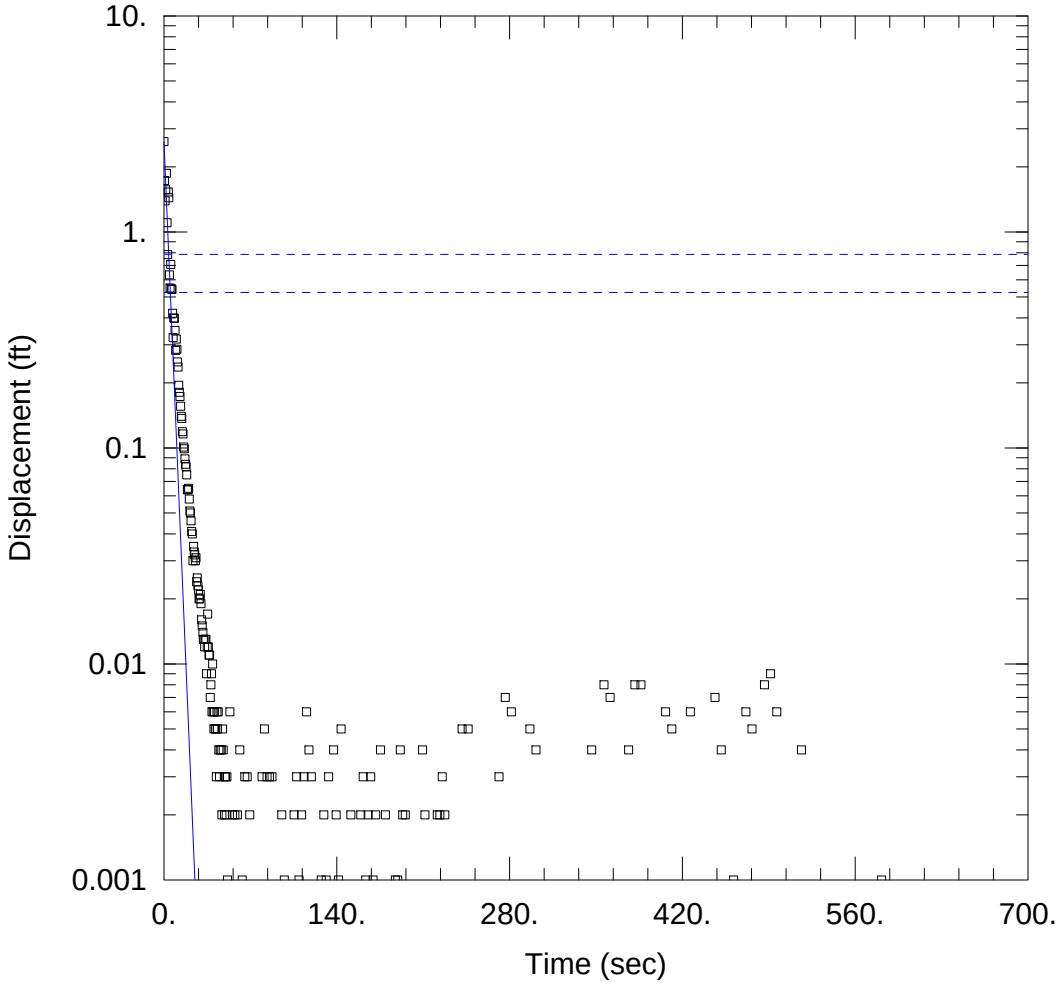
WELL DATA (OU3-8M2 - slug out)

Initial Displacement: 2.582 ft
Total Well Penetration Depth: 102. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 131.5 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 66.51 ft/day
y0 = 2.582 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-8M2 - slug-in - BR confined - L SRG.aqt
Date: 03/23/12 Time: 08:28:50

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-8M2 - slug in

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

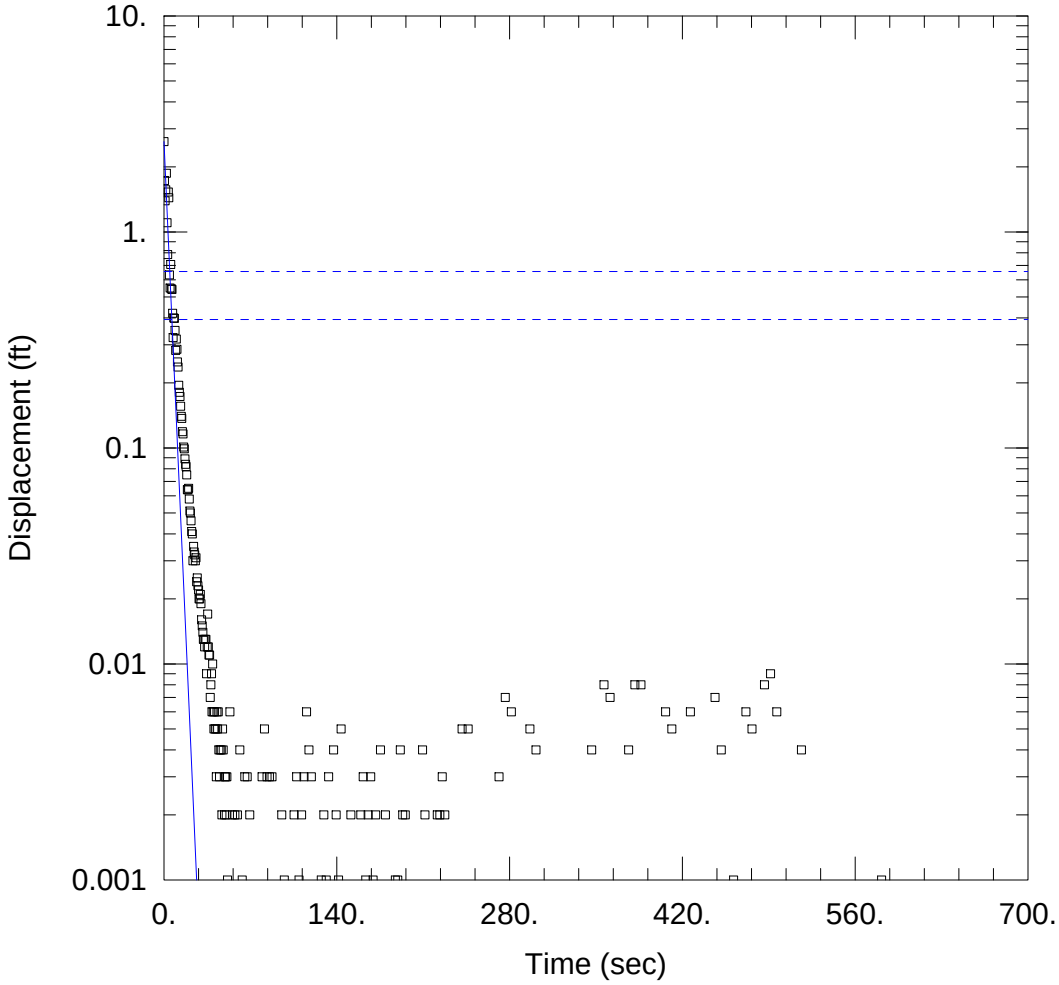
WELL DATA (OU3-8M2 - slug-in)

Initial Displacement: 2.621 ft
Total Well Penetration Depth: 102. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 131.5 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 96.54 ft/day
y0 = 2.621 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-8M2 - slug-in - HV confined - L SRG.aqt
Date: 03/23/12 Time: 08:28:26

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-8M2 - slug in

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

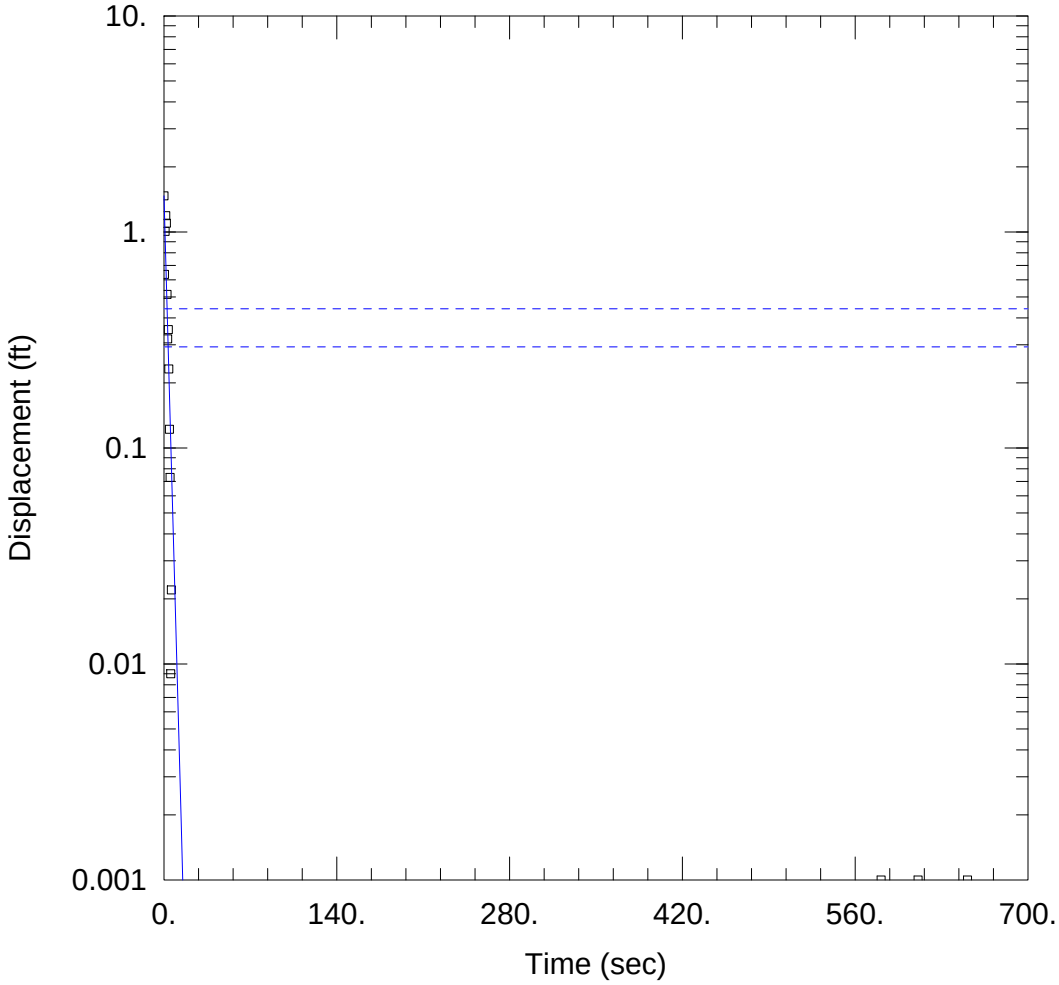
WELL DATA (OU3-8M2 - slug-in)

Initial Displacement: 2.621 ft
Total Well Penetration Depth: 102. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 131.5 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 105.9 ft/day
y0 = 2.621 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-10M slug-in - BR unconfined - U and L srg combined.aqt
Date: 03/23/12 Time: 08:33:19

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-10M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

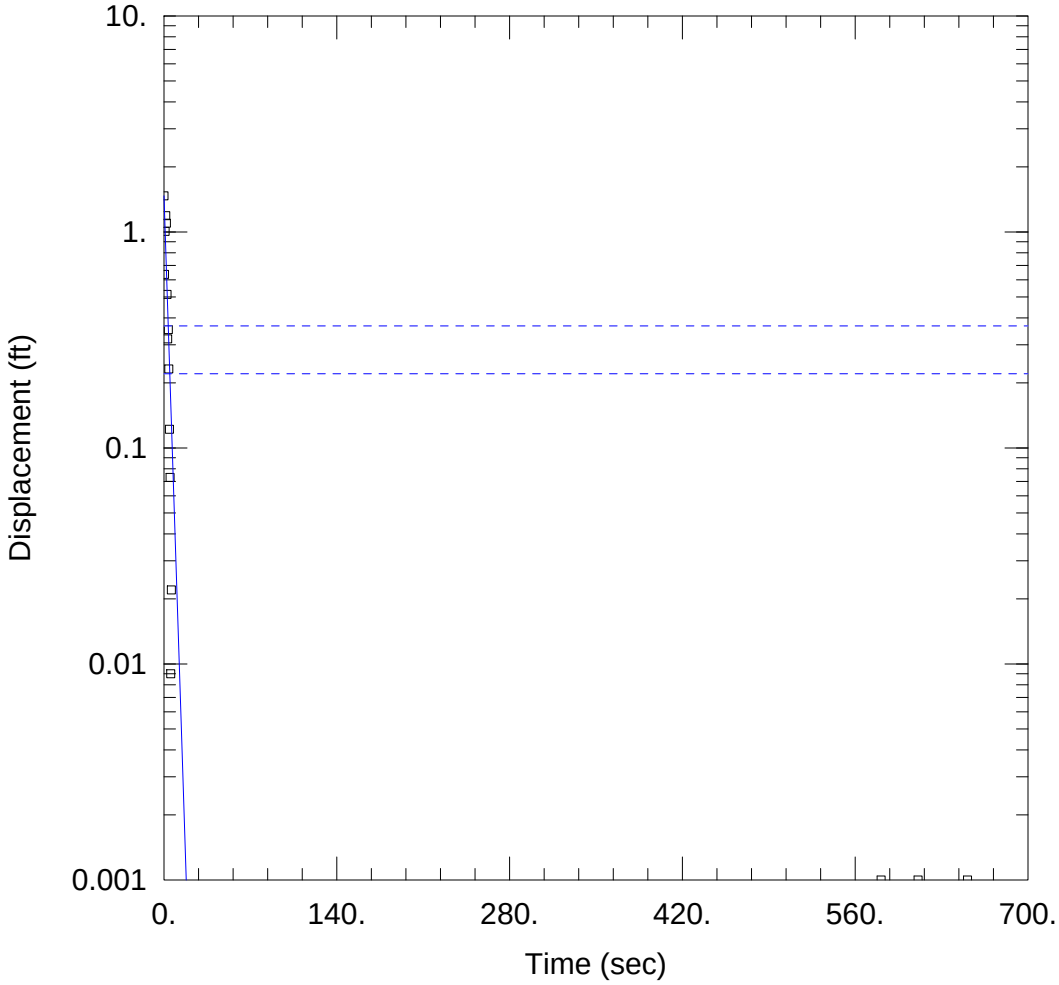
WELL DATA (OU3-10M - slug in)

Initial Displacement: 1.469 ft
Total Well Penetration Depth: 67.54 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 67.78 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 241. ft/day
y0 = 1.469 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-10M slug-in - HV unconfined - U and L srg combined.aqt
Date: 03/23/12 Time: 08:32:29

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-10M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

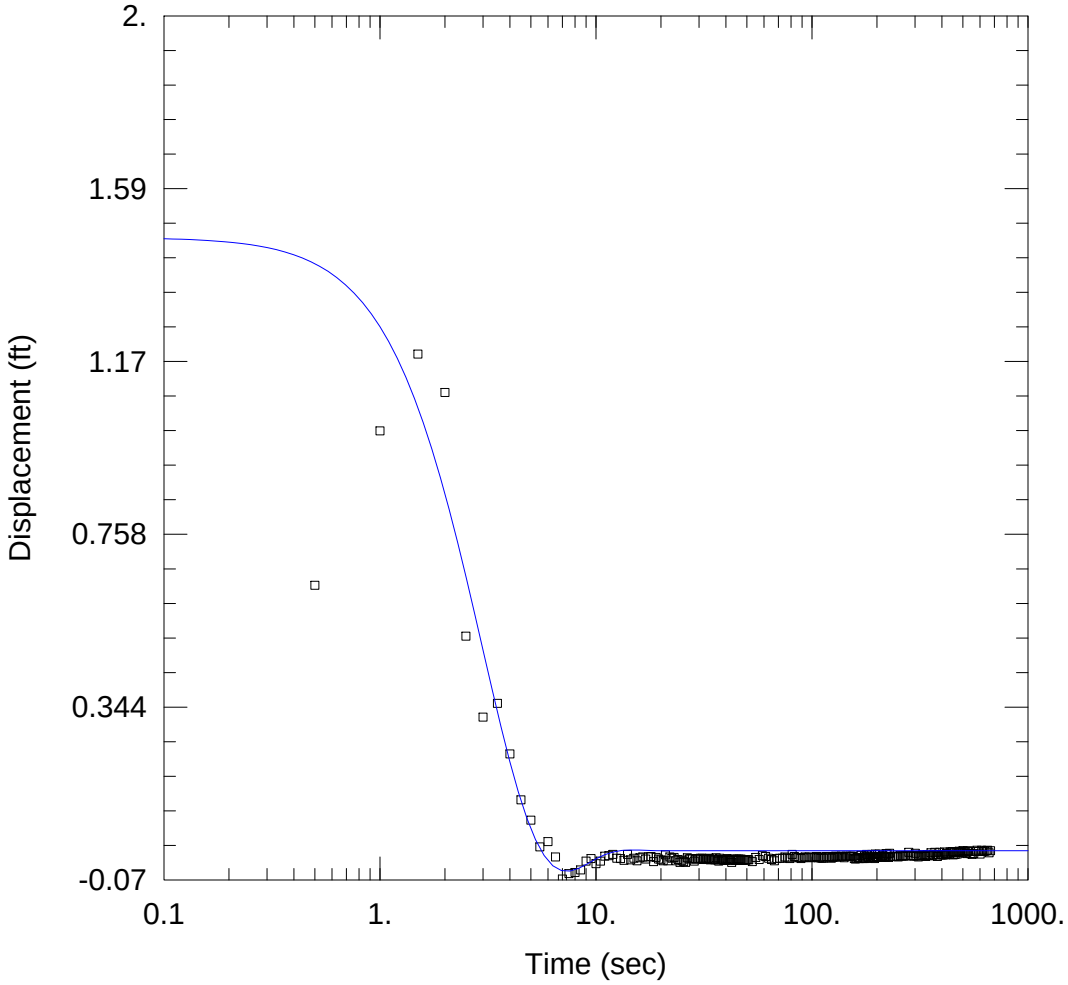
WELL DATA (OU3-10M - slug in)

Initial Displacement: 1.469 ft
Total Well Penetration Depth: 67.54 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 67.78 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 252.4 ft/day
y0 = 1.469 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-10M slug-in - SG unconfined - U and L srg combined.aqt
Date: 03/23/12 Time: 08:32:06

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-10M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

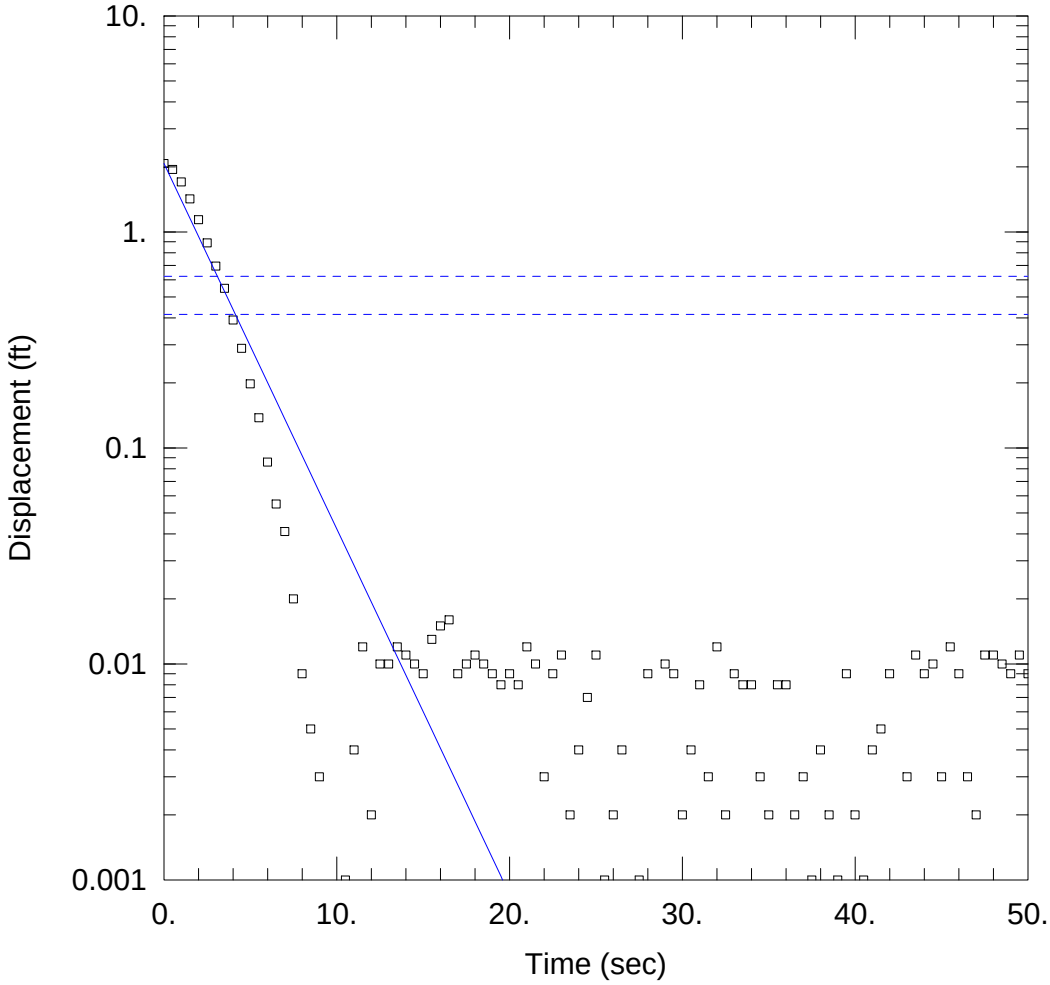
WELL DATA (OU3-10M - slug in)

Initial Displacement: 1.469 ft
Total Well Penetration Depth: 67.54 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 67.78 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 109.5 ft/day
Le = 80.46 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-10M slug-out - BR unconfined - u and L srg combined.aqt
Date: 03/23/12 Time: 10:46:03

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-10M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

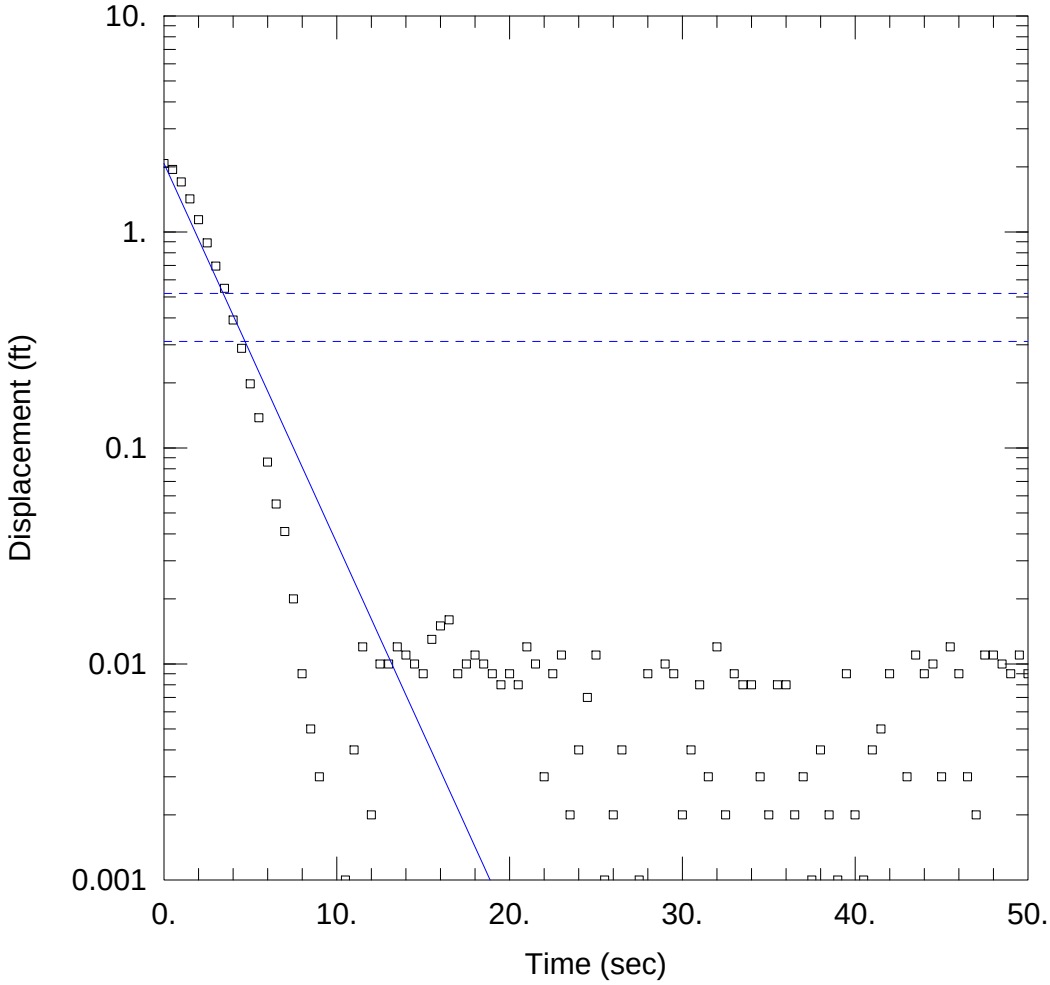
WELL DATA (OU3-10M - slug out)

Initial Displacement: 2.075 ft
Total Well Penetration Depth: 66.84 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 98.95 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 196. ft/day
y0 = 2.075 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-10M slug-out - HV unconfined - u and L srg combined.aqt
Date: 03/23/12 Time: 10:45:30

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-10M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

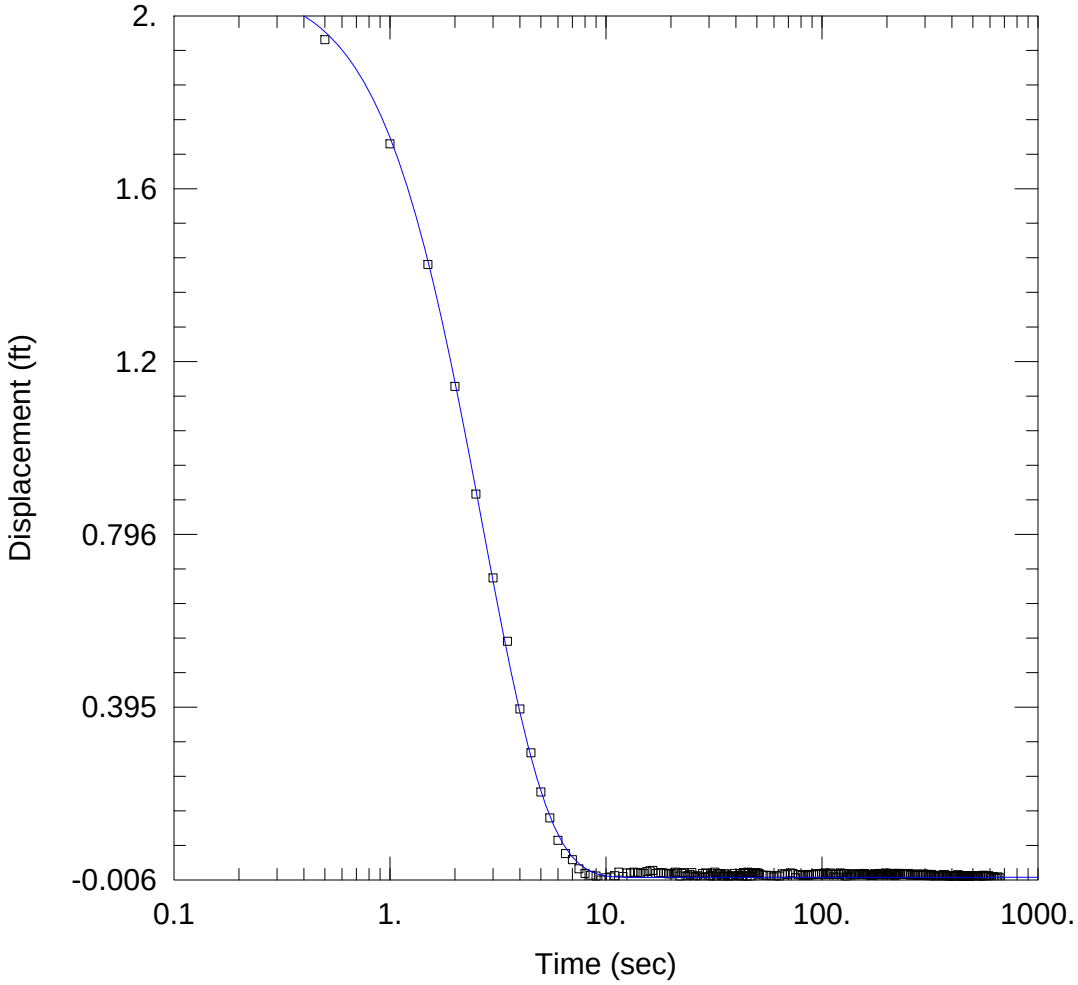
WELL DATA (OU3-10M - slug out)

Initial Displacement: 2.075 ft
Total Well Penetration Depth: 66.84 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 98.95 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 253.2 ft/day
y0 = 2.075 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-10M slug-out - SG unconfined - u and L srg combined.aqt
Date: 03/23/12 Time: 10:45:04

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-10M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

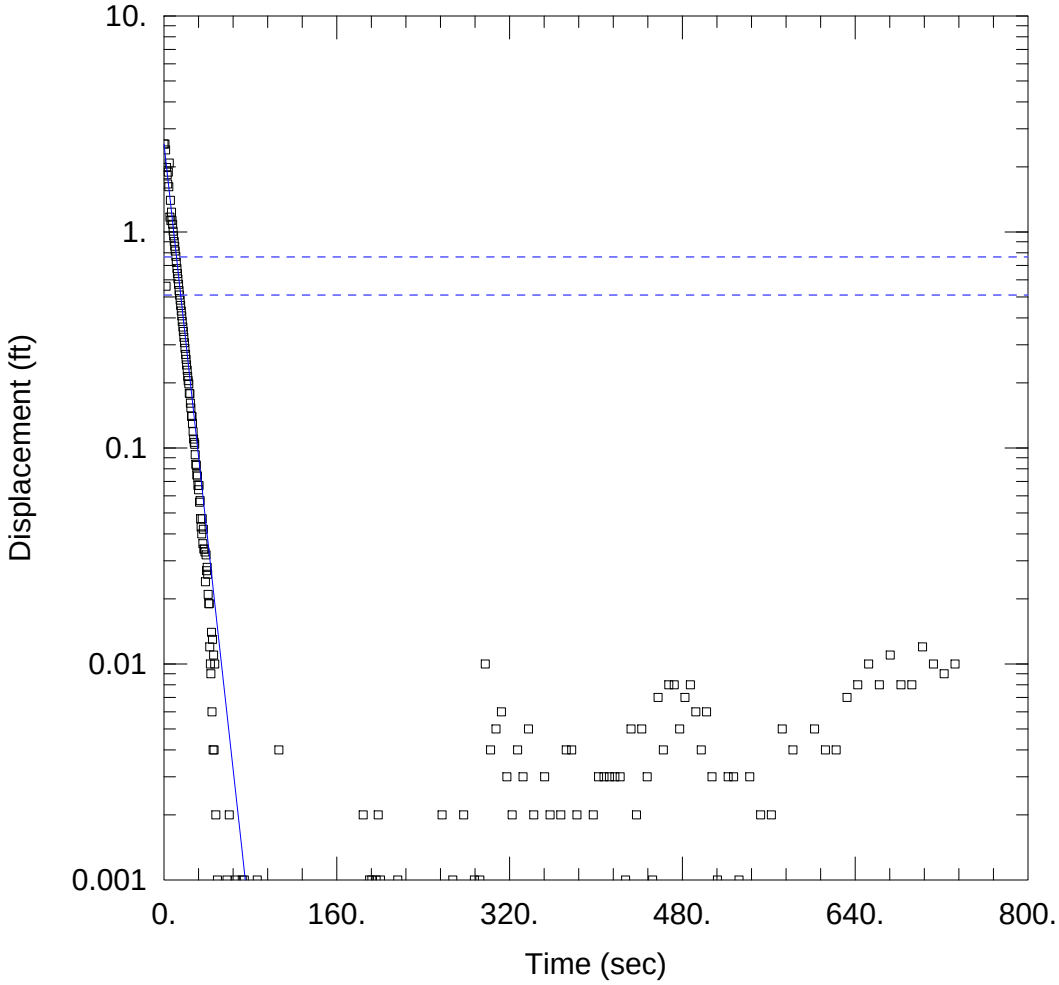
WELL DATA (OU3-10M - slug out)

Initial Displacement: 2.075 ft
Total Well Penetration Depth: 66.84 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 98.95 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 98.52 ft/day
Le = 59.19 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-10M2_slugin - BR unconfined - u and l srg combined.aqt
Date: 03/23/12 Time: 10:41:19

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-10M2 - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

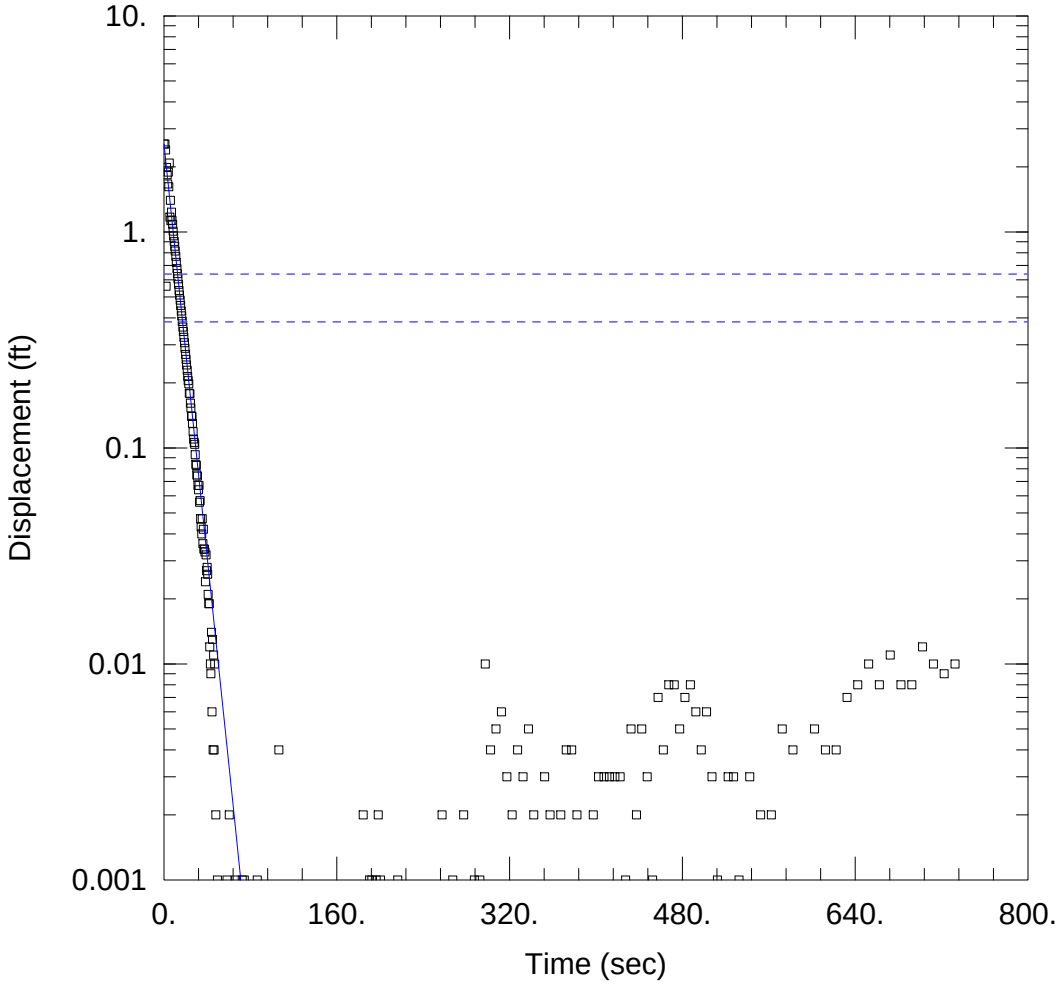
WELL DATA (OU3-10M2_slugin)

Initial Displacement: 2.553 ft
Total Well Penetration Depth: 120.1 ft
Casing Radius: 0.167 ft
Static Water Column Height: 119.9 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 58. ft/day
y0 = 2.553 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-10M2_slugin - HV unconfined - u and l srg combined.aqt
Date: 03/23/12 Time: 10:40:15

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-10M2 - slug in

AQUIFER DATA

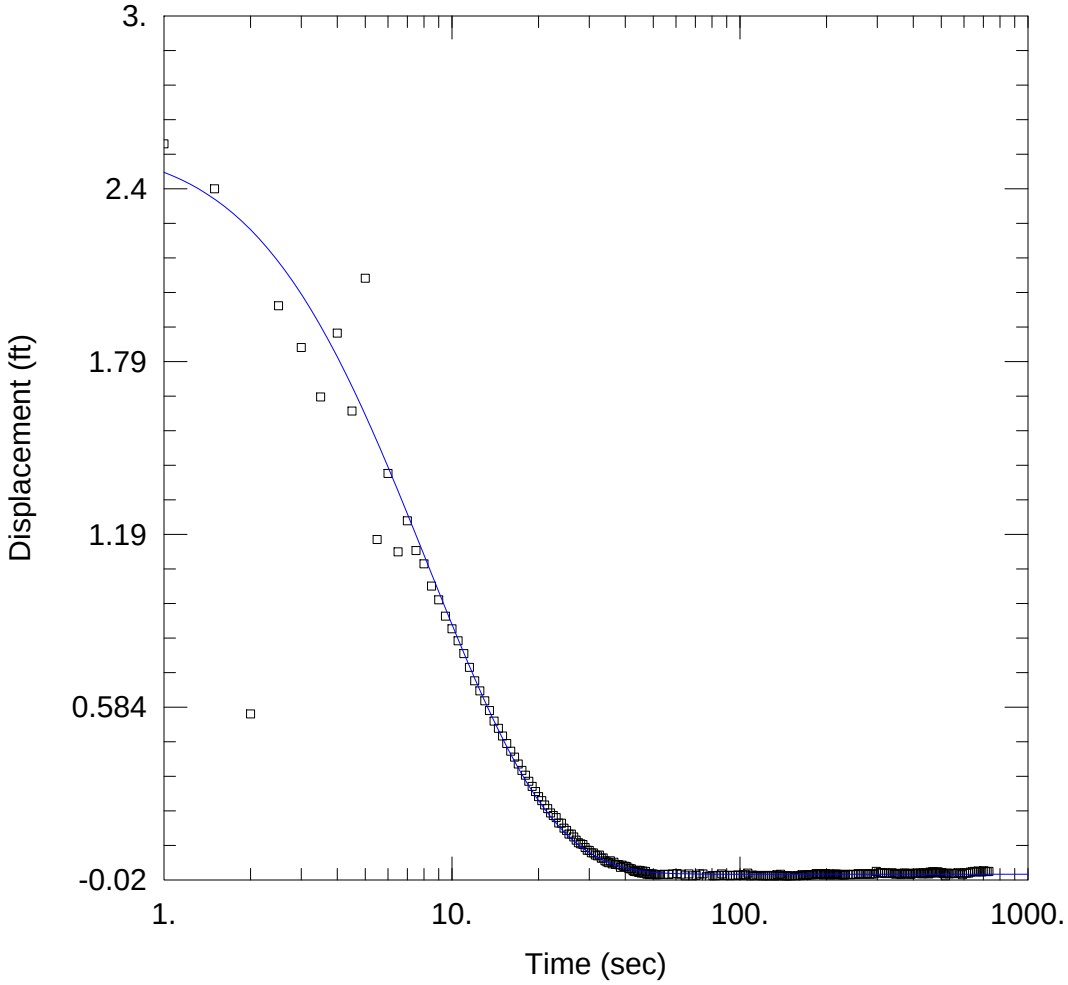
Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (OU3-10M2_slugin)

Initial Displacement: 2.553 ft
Total Well Penetration Depth: 120.1 ft
Casing Radius: 0.167 ft
Static Water Column Height: 119.9 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 69. ft/day
y0 = 2.553 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-10M2_slugin - SG unconfined - u and l srg combined.aqt
Date: 03/23/12 Time: 10:39:39

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-10M2 - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

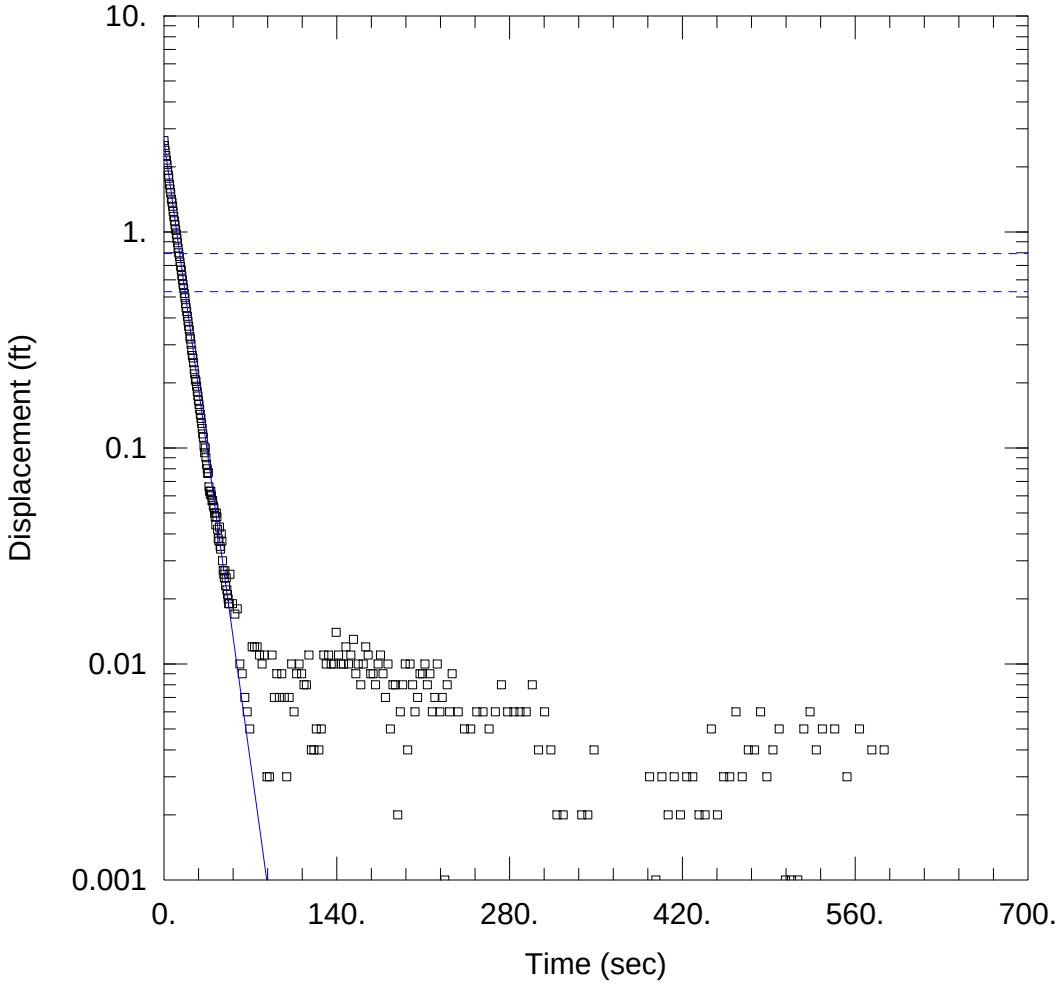
WELL DATA (OU3-10M2_slugin)

Initial Displacement: 2.553 ft
Total Well Penetration Depth: 120.1 ft
Casing Radius: 0.167 ft
Static Water Column Height: 119.9 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 30.2 ft/day
Le = 302. ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-10M2_slugout - BR unconfined - u and L SRG combined.aqt
Date: 03/23/12 Time: 10:32:54

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-10M2 - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

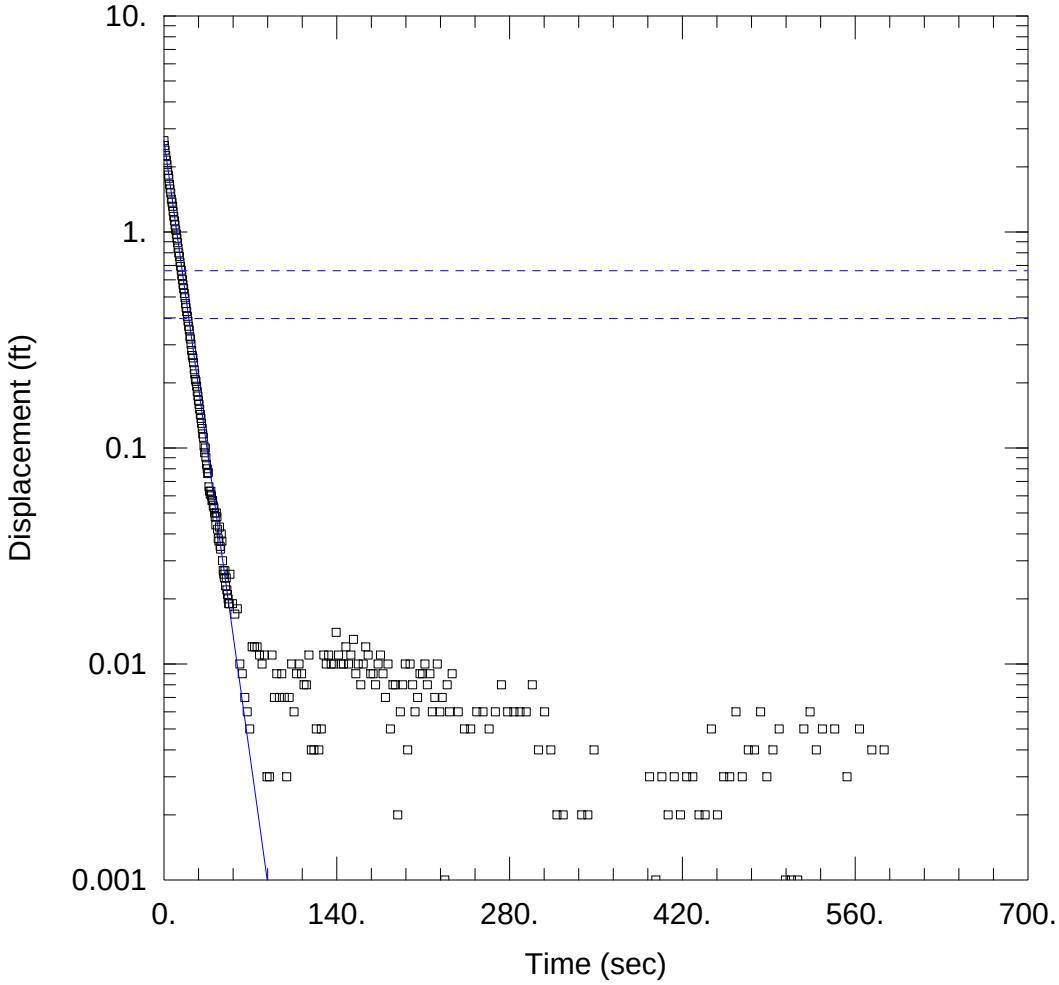
WELL DATA (OU3-10M2_slugout)

Initial Displacement: 2.646 ft
Total Well Penetration Depth: 120.5 ft
Casing Radius: 0.167 ft
Static Water Column Height: 119.9 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 52.74 ft/day
y0 = 2.646 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-10M2_slugout - HV unconfined - u and L SRG combined.aqt
Date: 03/23/12 Time: 10:31:49

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-10M2-slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

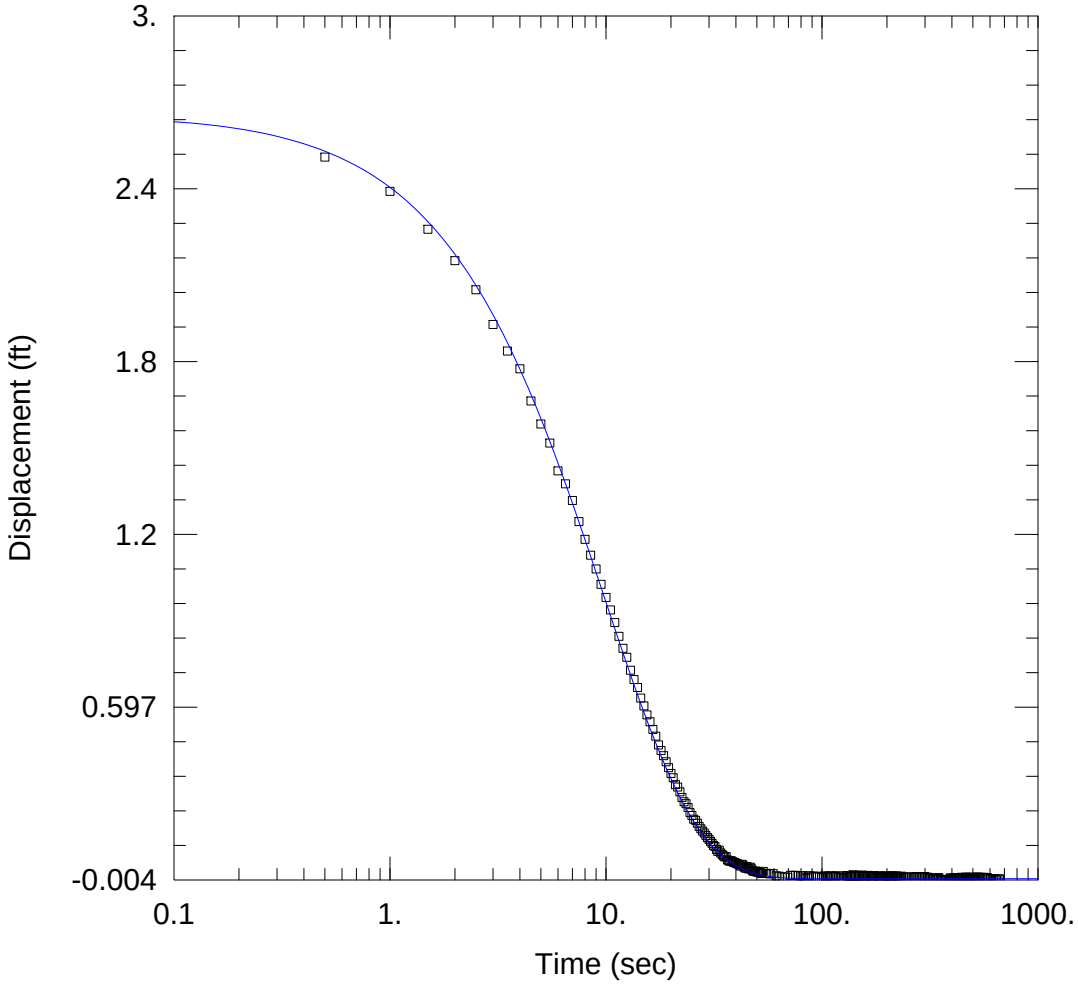
WELL DATA (OU3-10M2_slugout)

Initial Displacement: 2.646 ft
Total Well Penetration Depth: 120.5 ft
Casing Radius: 0.167 ft
Static Water Column Height: 119.9 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 58.97 ft/day
y0 = 2.646 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-10M2_slugout - SG unconfined - u and L SRG combined.aqt
Date: 03/23/12 Time: 10:31:13

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-10M2 - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

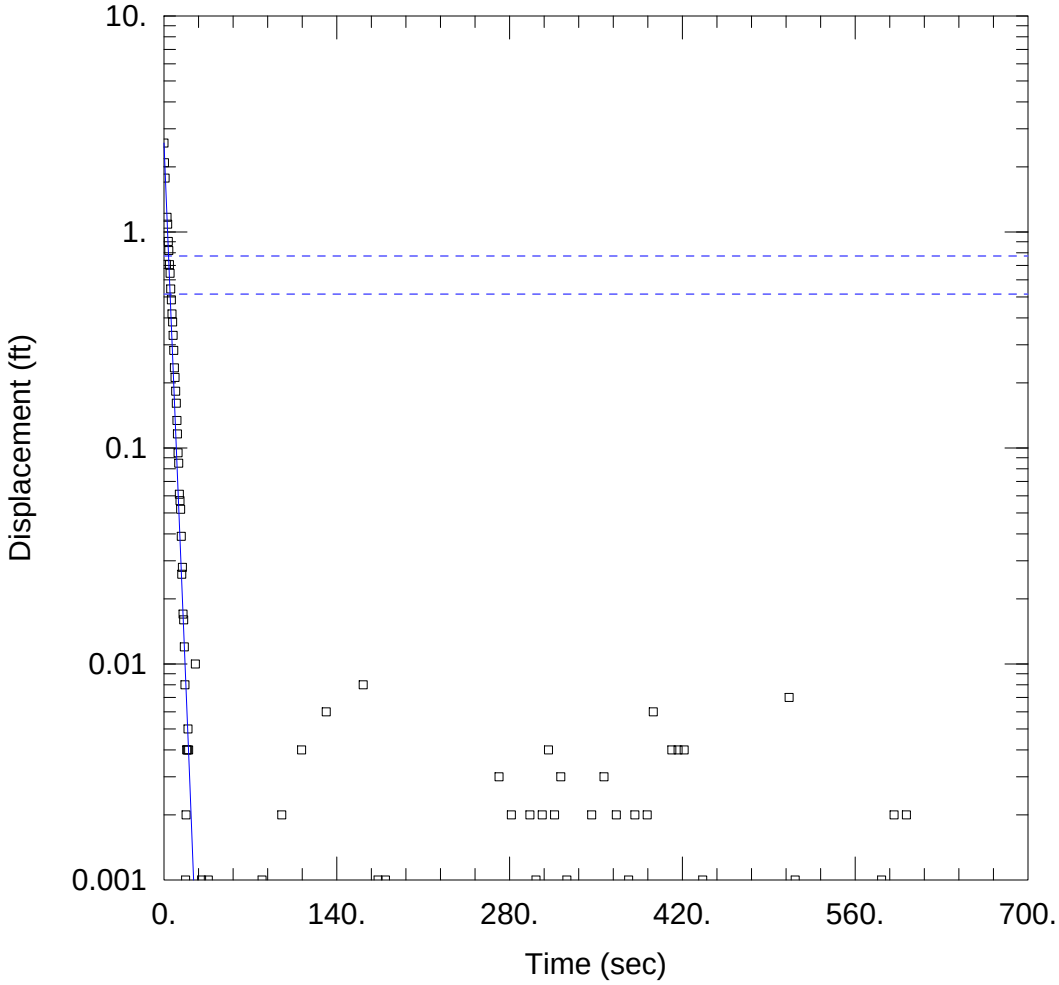
WELL DATA (OU3-10M2_slugout)

Initial Displacement: 2.646 ft
Total Well Penetration Depth: 120.5 ft
Casing Radius: 0.167 ft
Static Water Column Height: 119.9 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 28.52 ft/day
Le = 18.2 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-11M - slug-in - BR unconfined- u and L srg combined.aqt
Date: 03/23/12 Time: 08:41:01

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-11M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

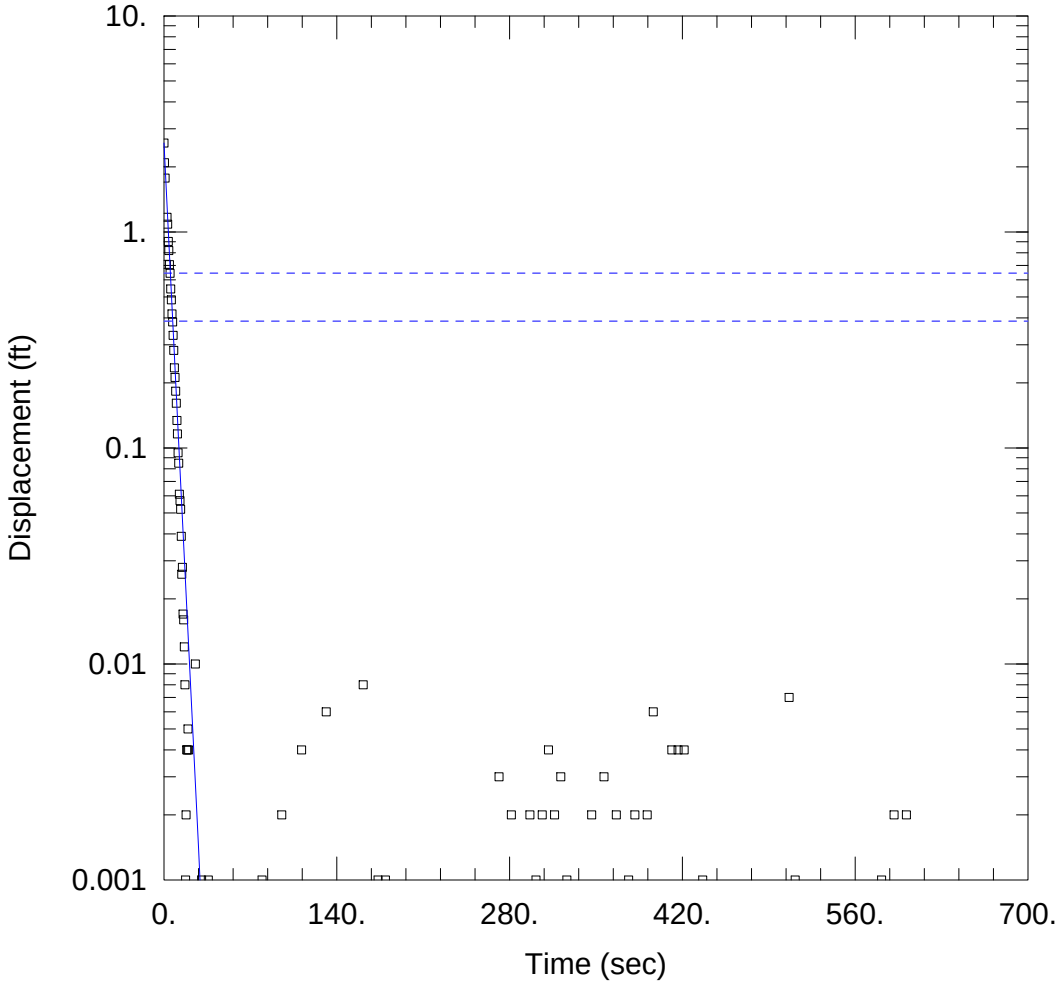
WELL DATA (OU3-11M -slug in)

Initial Displacement: 2.577 ft
Total Well Penetration Depth: 84. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 76.26 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 168. ft/day
y0 = 2.577 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-11M - slug-in - HV unconfined- u and L srg combined.aqt
Date: 03/23/12 Time: 08:40:33

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-11M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

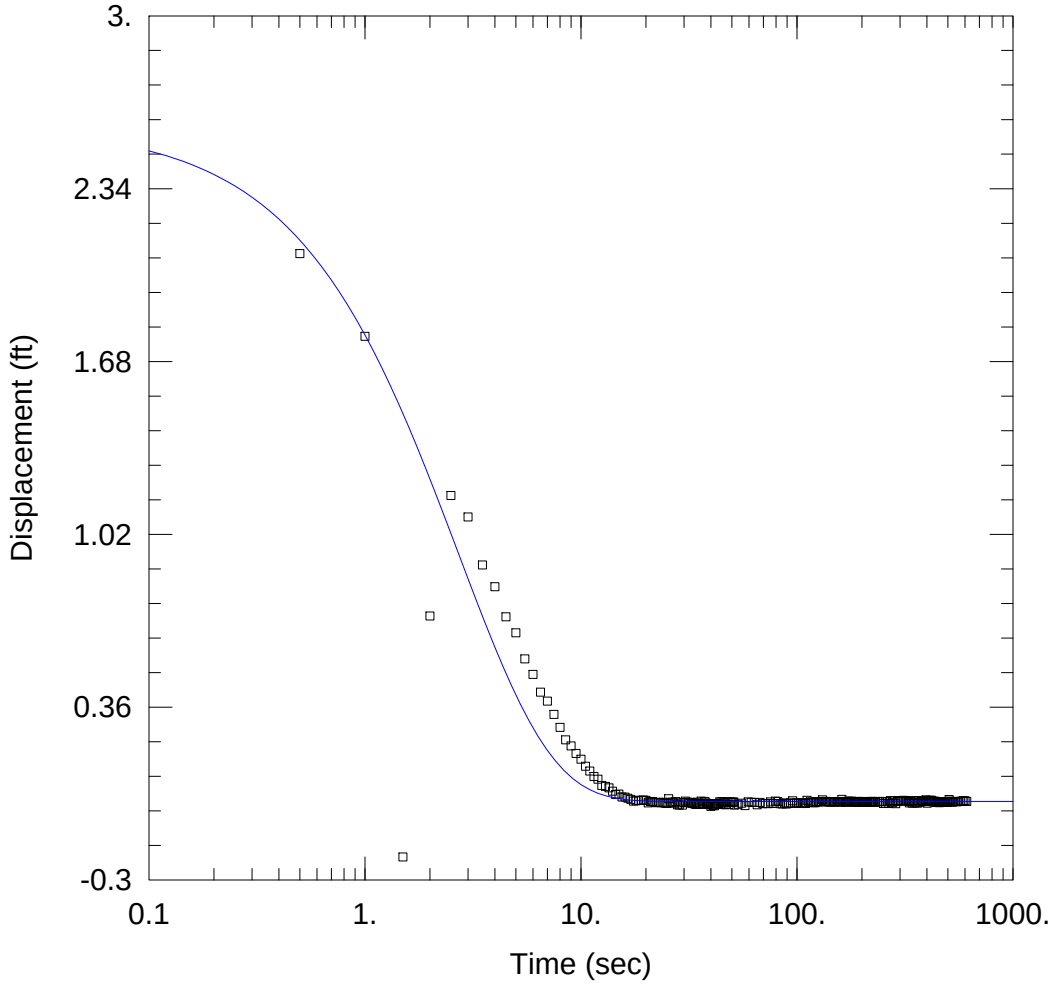
WELL DATA (OU3-11M -slug in)

Initial Displacement: 2.577 ft
Total Well Penetration Depth: 84. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 76.26 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 168. ft/day
y0 = 2.577 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-11M - slug-in - SG unconfined- u and L srg combined.aqt
Date: 03/23/12 Time: 08:40:24

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-11M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

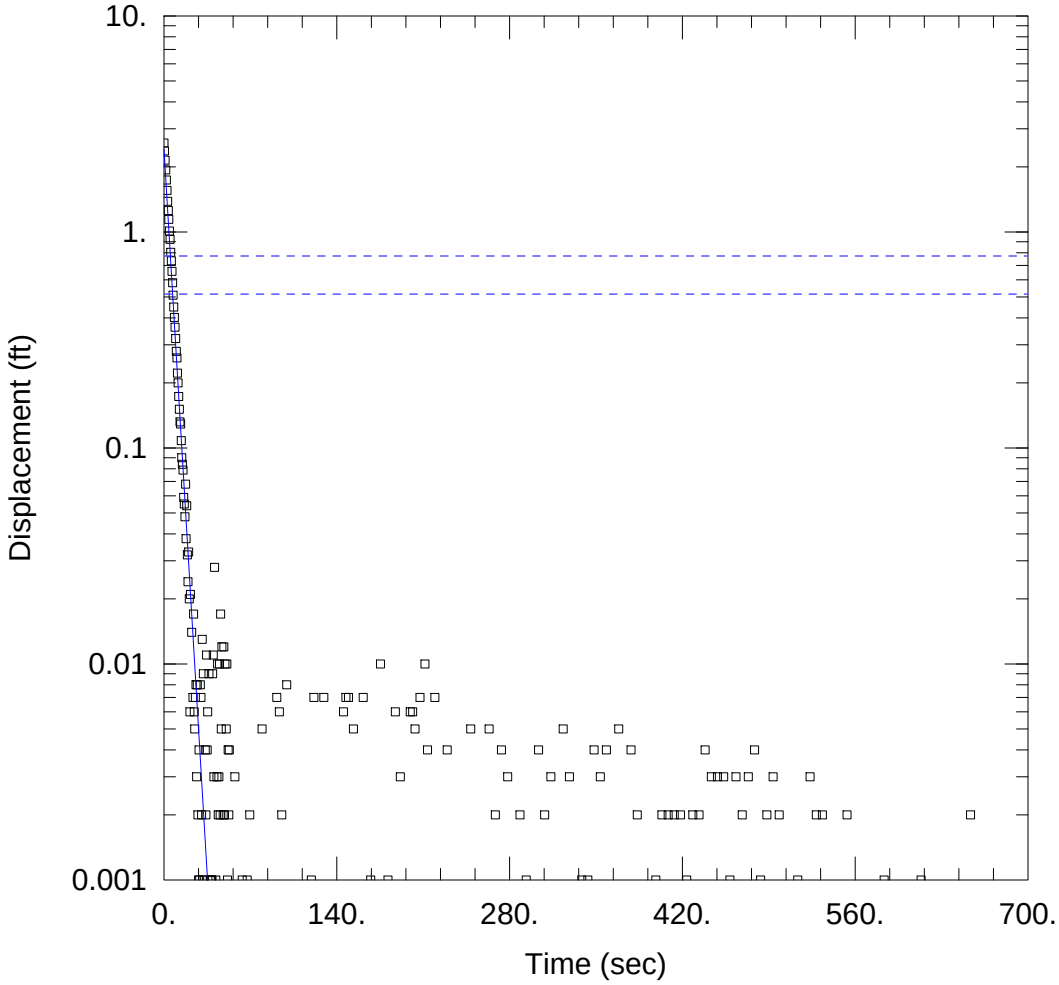
WELL DATA (OU3-11M -slug in)

Initial Displacement: 2.577 ft
Total Well Penetration Depth: 84. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 76.26 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 96.18 ft/day
Le = 0.1 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-11M - slug-out - BR unconfined - u and L srg combined.aqt
Date: 03/23/12 Time: 10:21:18

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-11M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

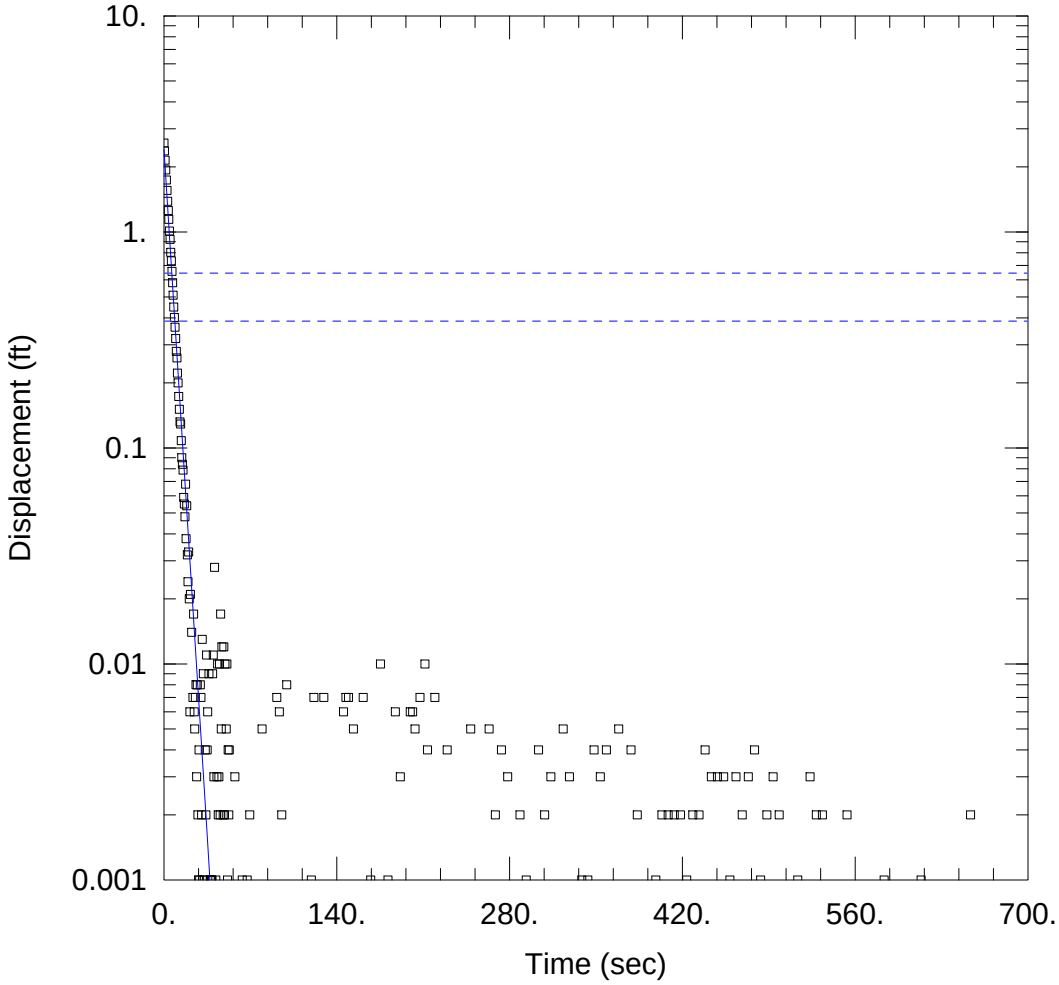
WELL DATA (OU3-11M -slug out)

Initial Displacement: 2.577 ft
Total Well Penetration Depth: 84. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 76.26 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 113.9 ft/day
y0 = 2.417 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-11M - slug-out - HV unconfined - u and L srg combined.aqt
Date: 03/23/12 Time: 10:20:25

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-11M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

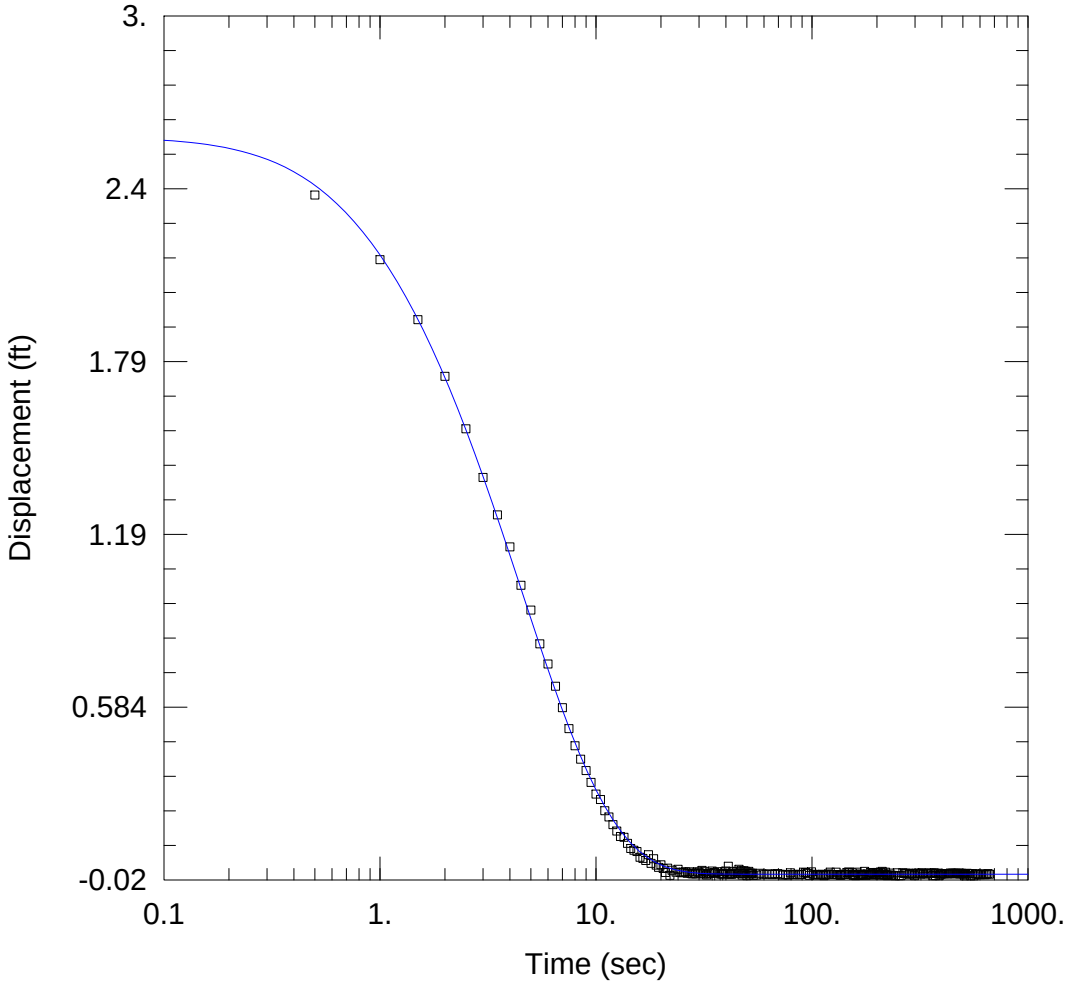
WELL DATA (OU3-11M -slug out)

Initial Displacement: 2.577 ft
Total Well Penetration Depth: 84. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 76.26 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 130.7 ft/day
y0 = 2.417 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-11M - slug-out - SG unconfined - u and L srg combined.aqt
Date: 03/23/12 Time: 10:19:55

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-11M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

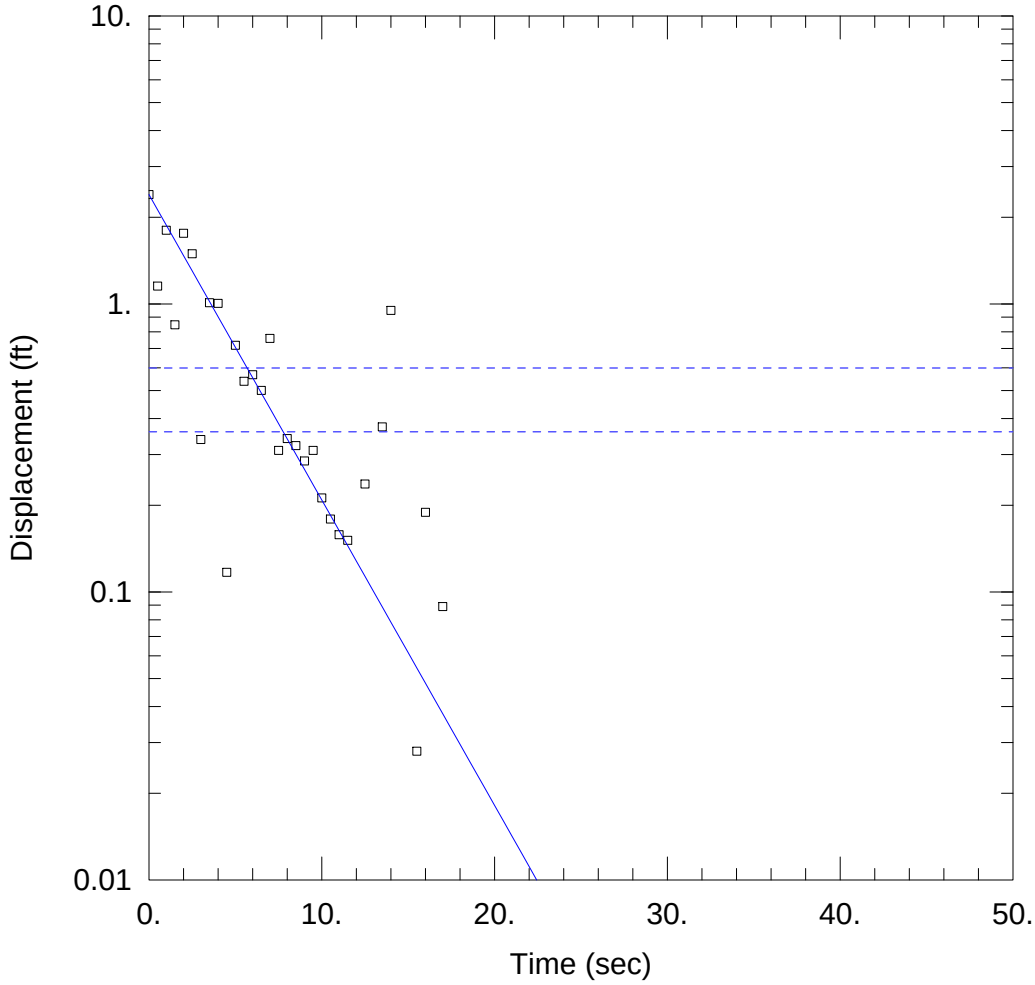
WELL DATA (OU3-11M -slug out)

Initial Displacement: 2.577 ft
Total Well Penetration Depth: 84. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 76.26 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 55.04 ft/day
Le = 30.53 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-12M - slug in - HV unconfined - u and L srg combined.aqt
Date: 03/23/12 Time: 08:44:29

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-12M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

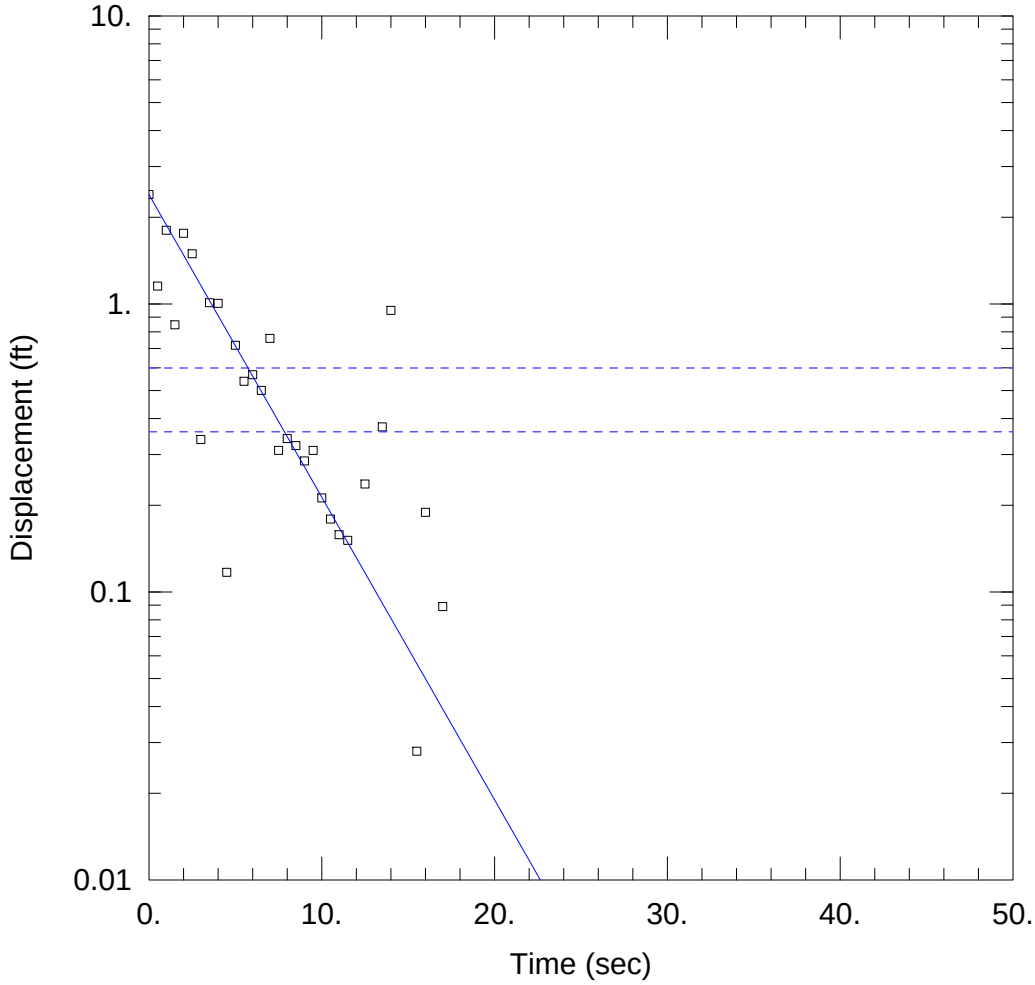
WELL DATA (OU3-12M - slug in)

Initial Displacement: 2.397 ft
Total Well Penetration Depth: 80.31 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 80.02 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 152.8 ft/day
y0 = 2.397 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-12M - slug in -HV confined - L srg.aqt
Date: 03/23/12 Time: 08:43:58

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-12M - slug in

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

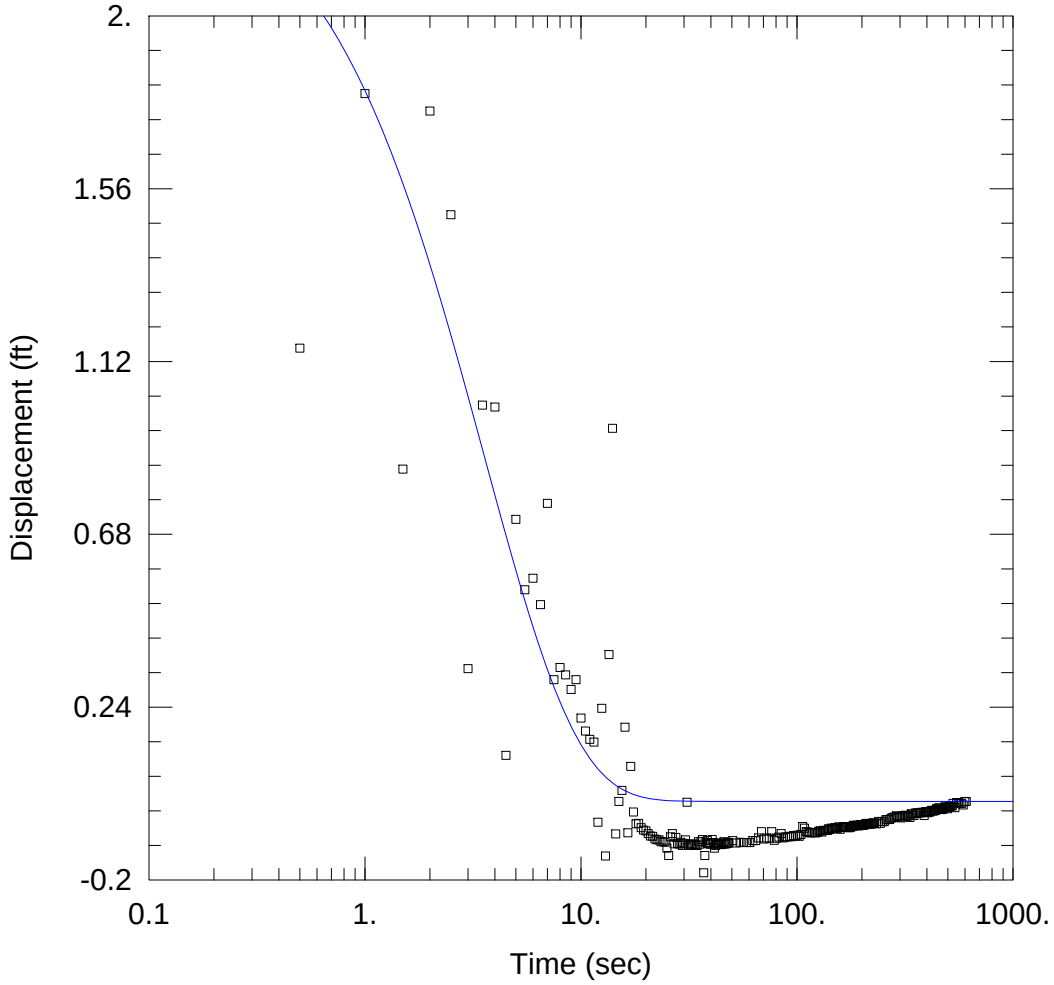
WELL DATA (OU3-12M - slug in)

Initial Displacement: 2.397 ft
Total Well Penetration Depth: 43. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 80.02 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 76.2 ft/day
y0 = 2.397 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-12M - slug in -SG unconfined - u and L srg combined.aqt
Date: 03/23/12 Time: 08:43:46

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-12M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

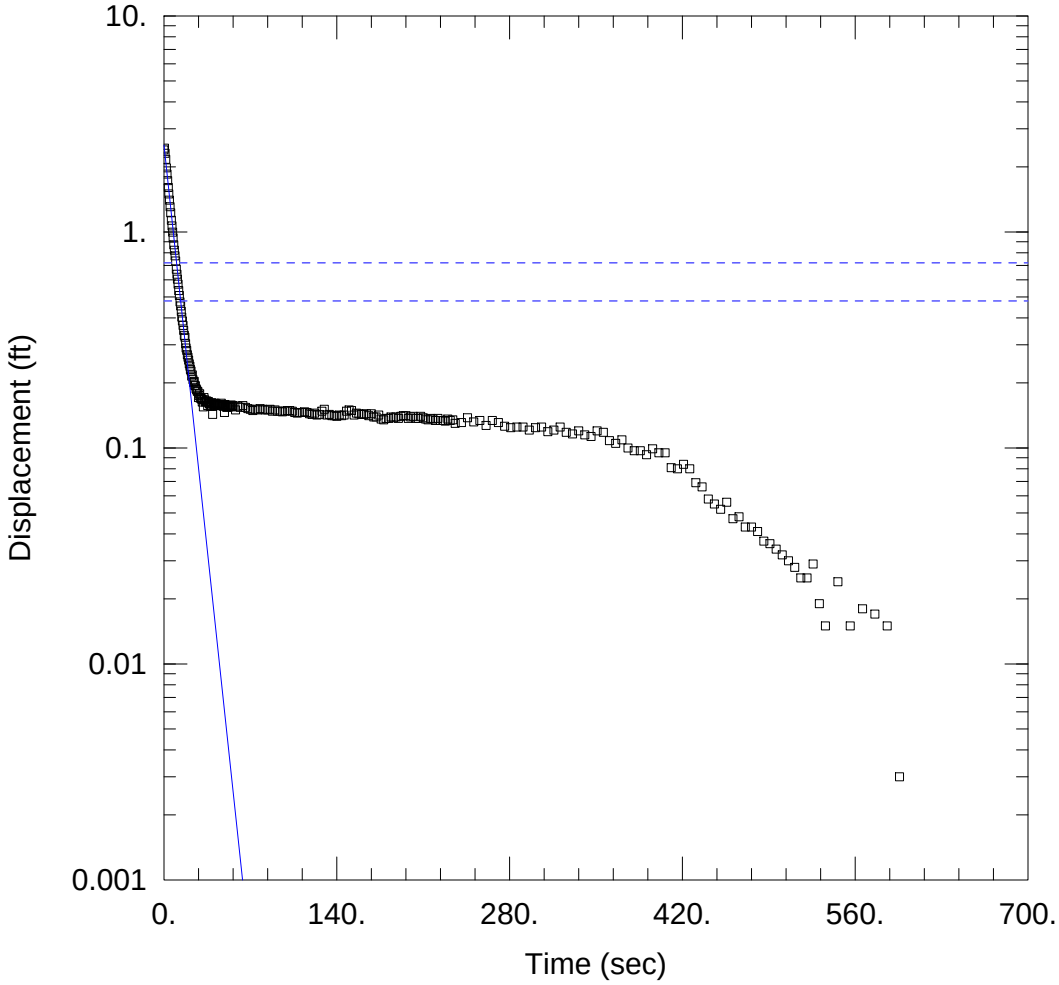
WELL DATA (OU3-12M - slug in)

Initial Displacement: 2.397 ft
Total Well Penetration Depth: 80.31 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 80.02 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 72.77 ft/day
Le = 0.1 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-12M - slug out - BR unconfined - u and L SRG combined.aqt
Date: 03/23/12 Time: 10:16:16

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-12M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

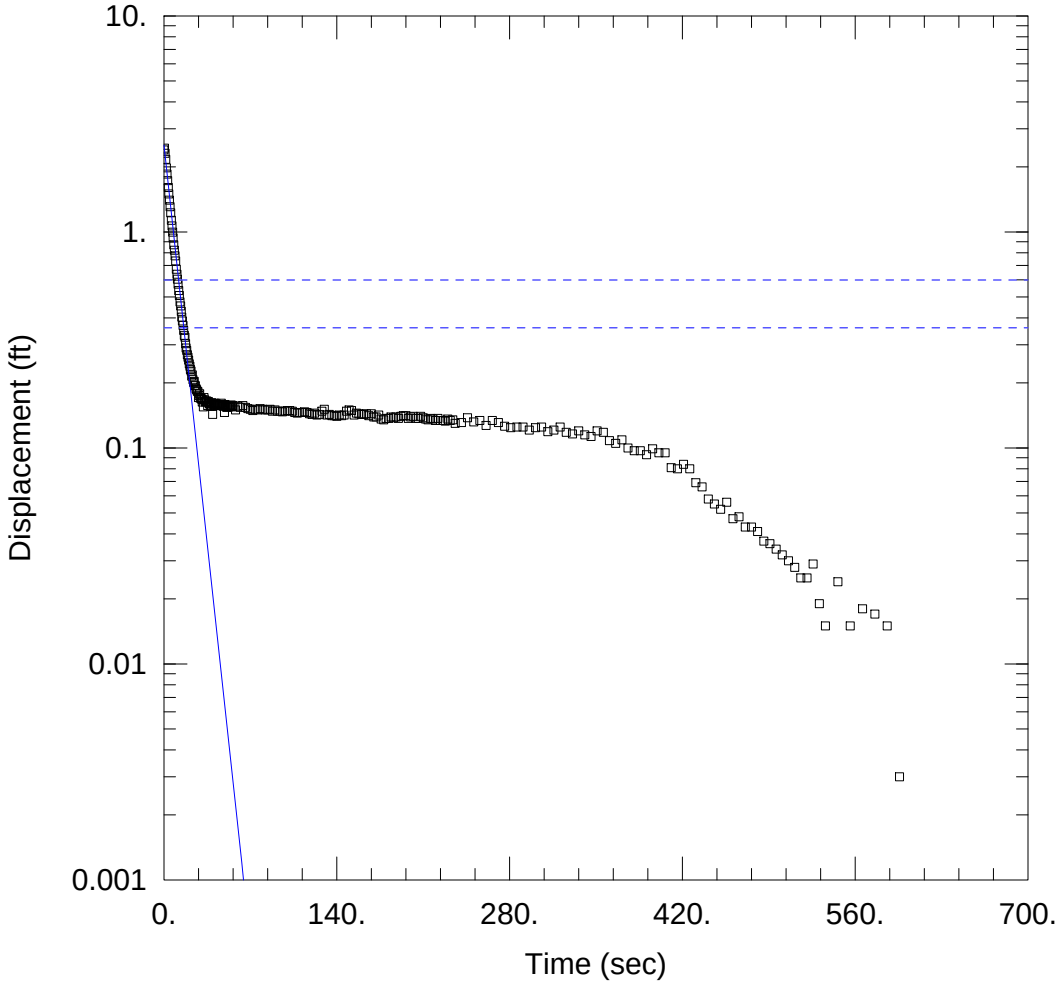
WELL DATA (OU3-12M - slug out)

Initial Displacement: 2.397 ft
Total Well Penetration Depth: 80.31 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 80.02 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 63.15 ft/day
y0 = 2.523 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-12M - slug out - HV unconfined - u and L SRG combined.aqt
Date: 03/23/12 Time: 10:15:15

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-12M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

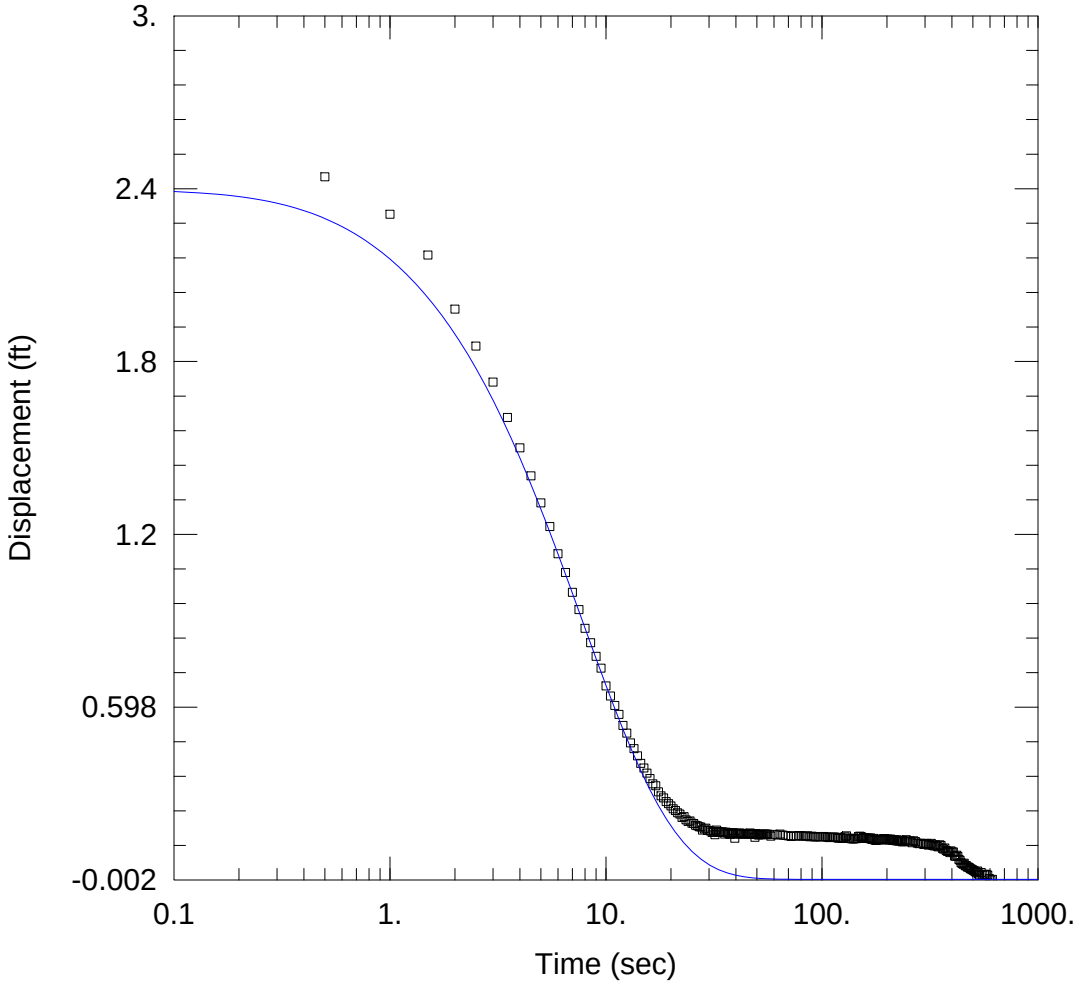
WELL DATA (OU3-12M - slug out)

Initial Displacement: 2.397 ft
Total Well Penetration Depth: 80.31 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 80.02 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 75.93 ft/day
y0 = 2.523 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-12M - slug out - SG unconfined - u and L SRG combined.aqt
Date: 03/23/12 Time: 10:14:47

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-12M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

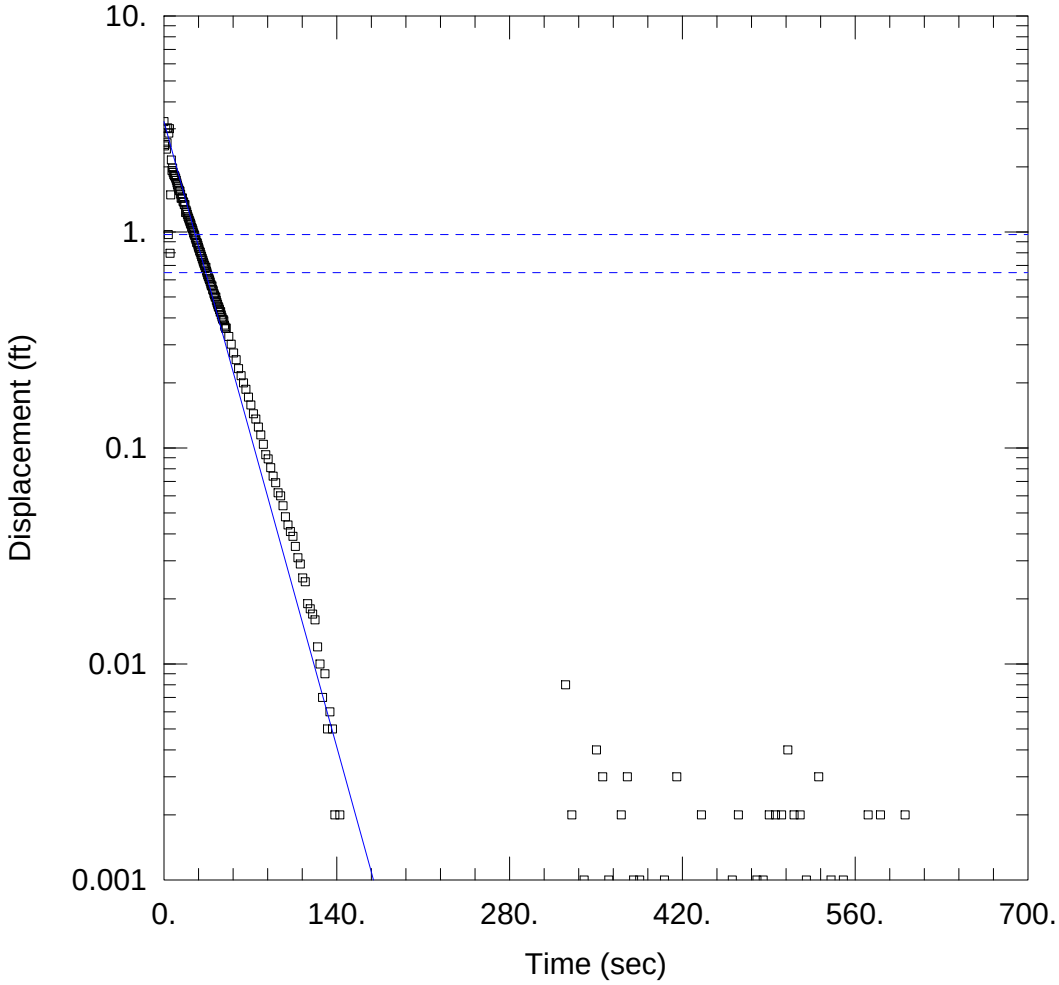
WELL DATA (OU3-12M - slug out)

Initial Displacement: 2.397 ft
Total Well Penetration Depth: 80.31 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 80.02 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 32.66 ft/day
Le = 43.63 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-13M - slug in - BR confined - L srg.aqt
Date: 03/23/12 Time: 09:12:53

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-13M - slug in

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

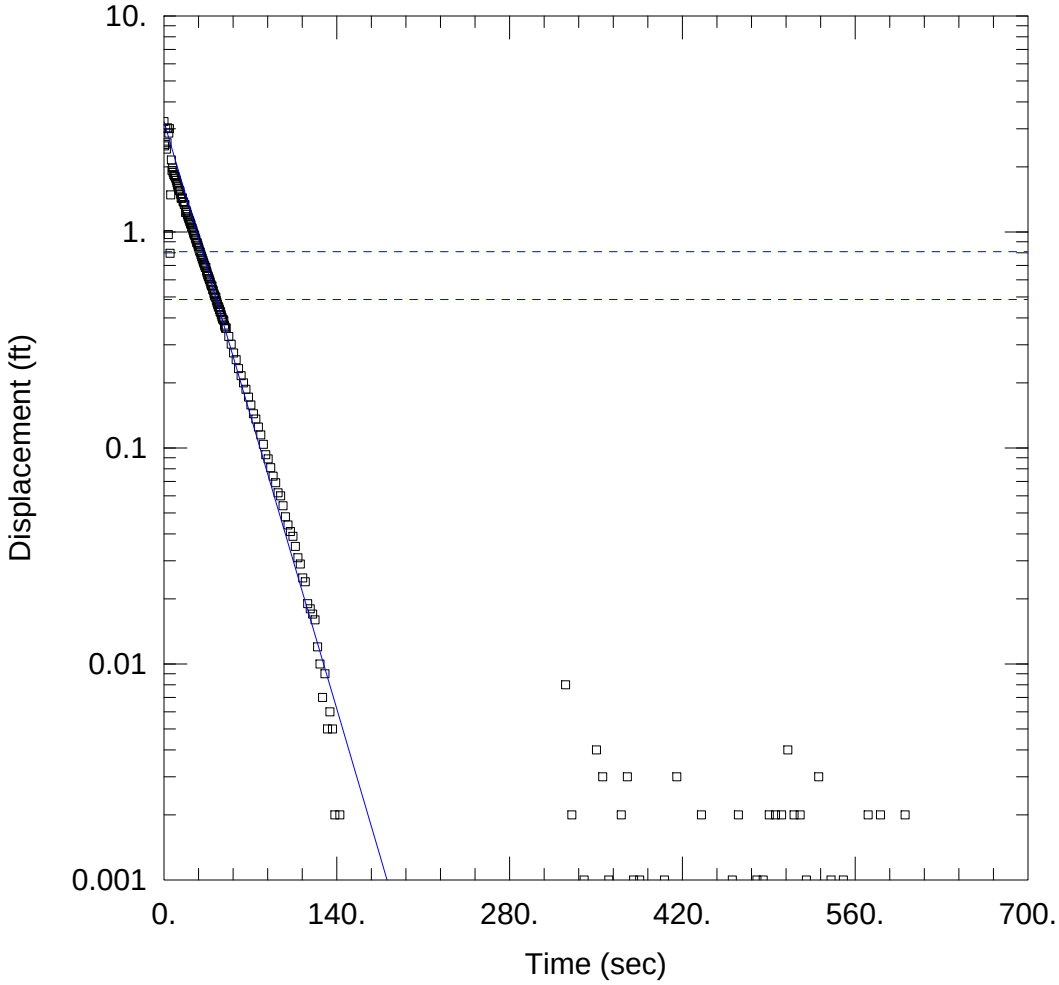
WELL DATA (OU3-13M - slug in)

Initial Displacement: 3.241 ft
Total Well Penetration Depth: 52. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.39 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 11.71 ft/day
y0 = 3.241 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-13M - slug in - HV confined - L srg.aqt
Date: 03/23/12 Time: 09:12:18

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-13M - slug in

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

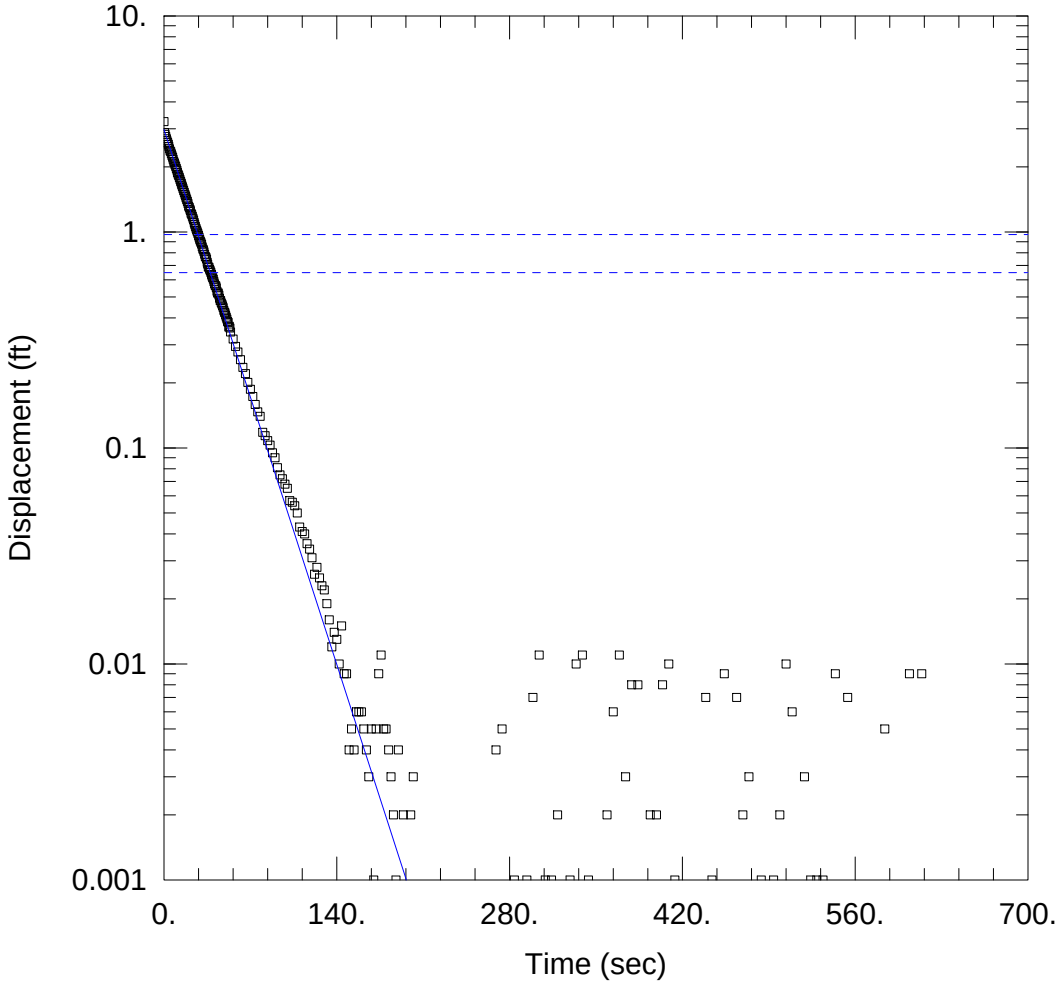
WELL DATA (OU3-13M - slug in)

Initial Displacement: 3.241 ft
Total Well Penetration Depth: 52. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.39 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 14.08 ft/day
y0 = 3.241 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-13M - slug out - BR confined - l srg.aqt
Date: 03/23/12 Time: 10:11:32

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-13M - slug out

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

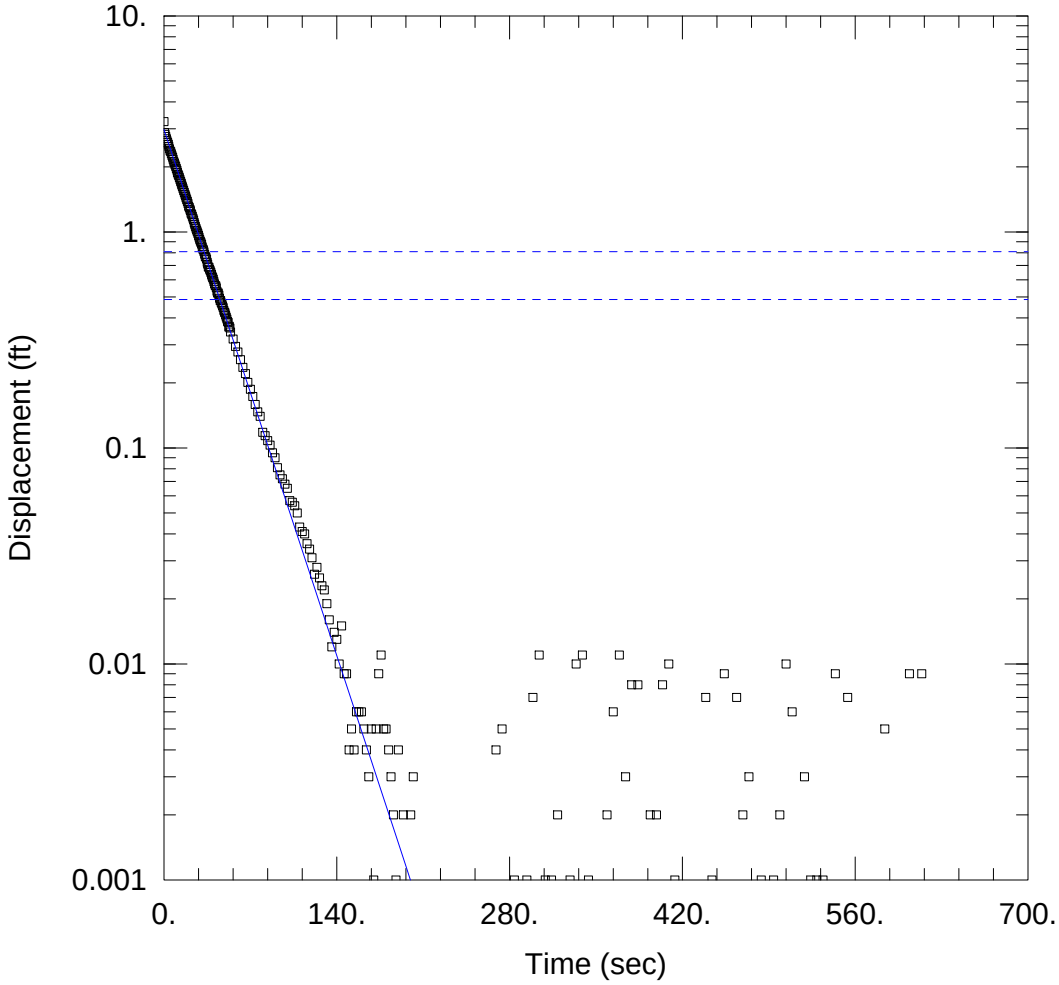
WELL DATA (OU3-13M - slug out)

Initial Displacement: 3.241 ft
Total Well Penetration Depth: 52. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.39 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 10.02 ft/day
y0 = 2.978 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-13M - slug out - HV confined - l srg.aqt
Date: 03/23/12 Time: 10:10:58

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-13M - slug out

AQUIFER DATA

Saturated Thickness: 100. ft
Anisotropy Ratio (Kz/Kr): 0.1

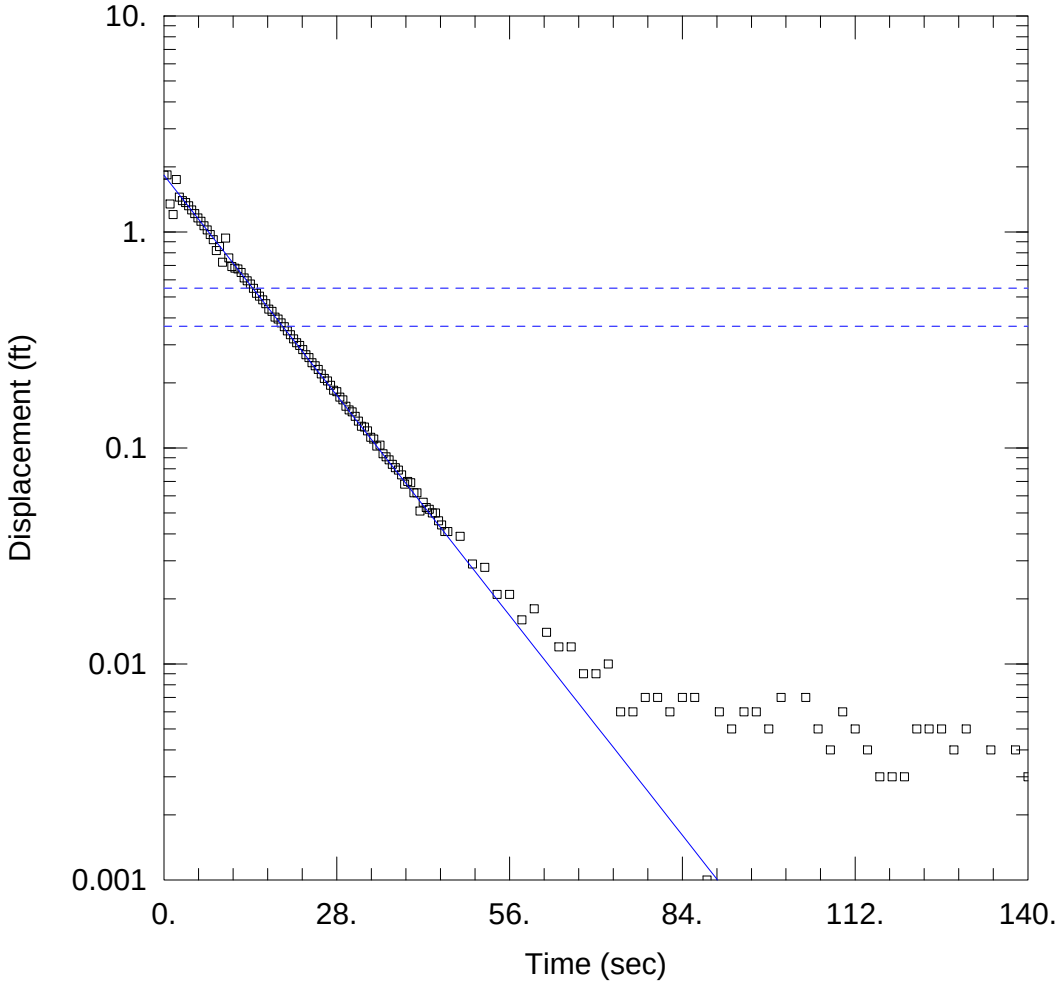
WELL DATA (OU3-13M - slug out)

Initial Displacement: 3.241 ft
Total Well Penetration Depth: 52. ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.39 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 12.61 ft/day
y0 = 2.978 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-16M - slug in - BR unconfined - u and L SRG combined.aqt
Date: 03/23/12 Time: 09:50:32

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-16M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

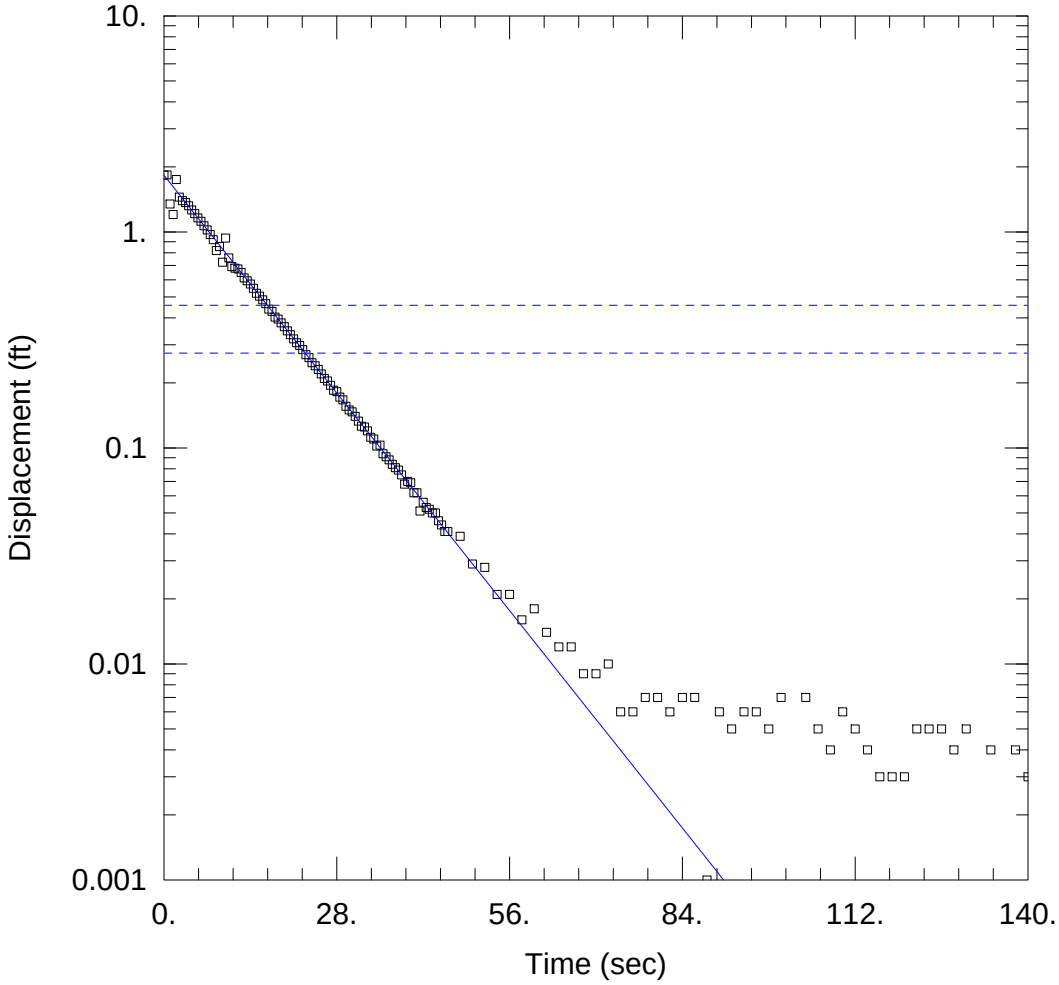
WELL DATA (OU3-16M -slug in)

Initial Displacement: 1.83 ft
Total Well Penetration Depth: 82.62 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.12 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 43.11 ft/day
y0 = 1.83 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-16M - slug in - HV unconfined - u and L SRG combined.aqt
Date: 03/23/12 Time: 09:49:49

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-16M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

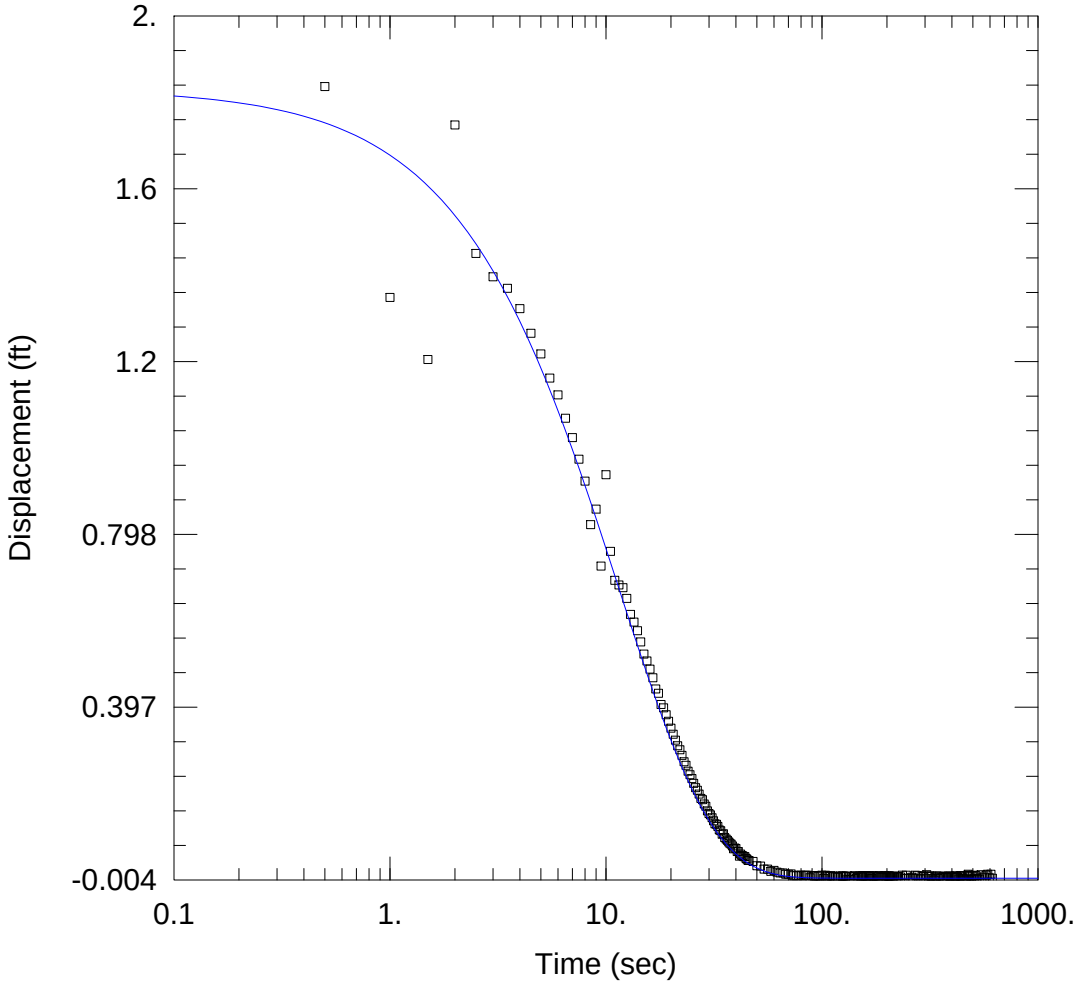
WELL DATA (OU3-16M -slug in)

Initial Displacement: 1.83 ft
Total Well Penetration Depth: 82.62 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.12 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 51.83 ft/day
y0 = 1.83 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-16M - slug in - SG unconfined - u and L SRG combined.aqt
Date: 03/23/12 Time: 09:49:31

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-16M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

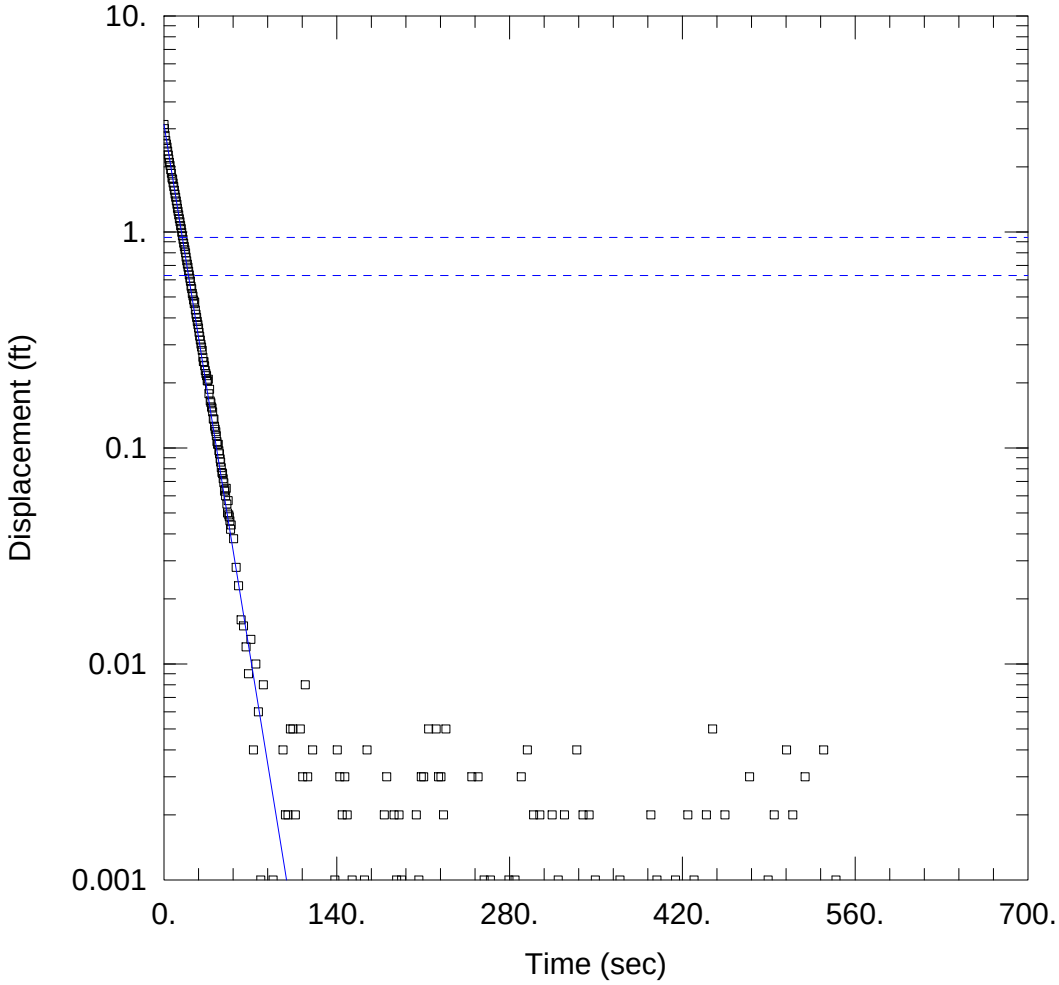
WELL DATA (OU3-16M -slug in)

Initial Displacement: 1.83 ft
Total Well Penetration Depth: 82.62 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.12 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 22.63 ft/day
Le = 0.138 ft



WELL TEST ANALYSIS

Data Set: C:\...\Ou3-16M - slug out - BR unconfined - u and L srg combined.aqt
Date: 03/23/12 Time: 09:52:17

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-16M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

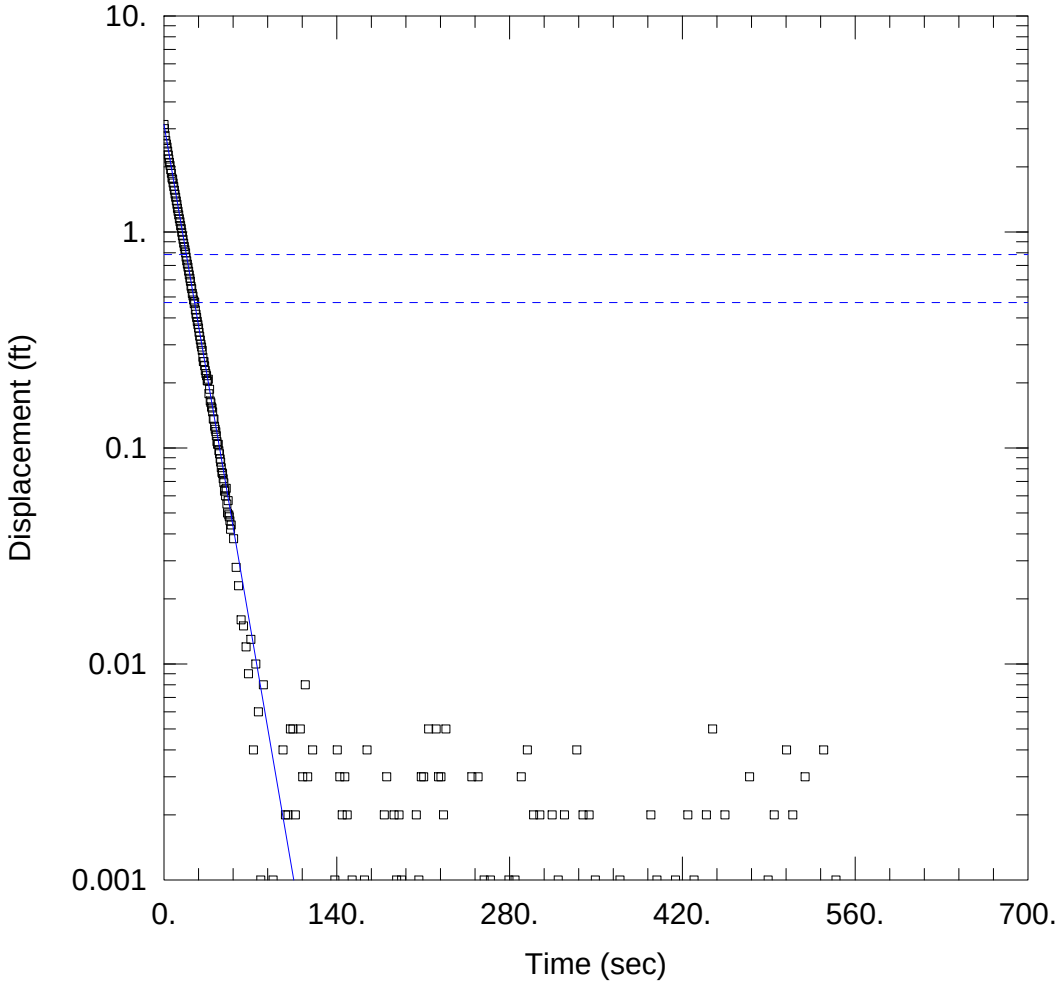
WELL DATA (OU3-16M - slug out)

Initial Displacement: 3.141 ft
Total Well Penetration Depth: 82.62 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.12 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 41.73 ft/day
y0 = 3.141 ft



WELL TEST ANALYSIS

Data Set: C:\...\Ou3-16M - slug out - HV unconfined - u and L srg combined.aqt
Date: 03/23/12 Time: 09:51:40

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-16M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

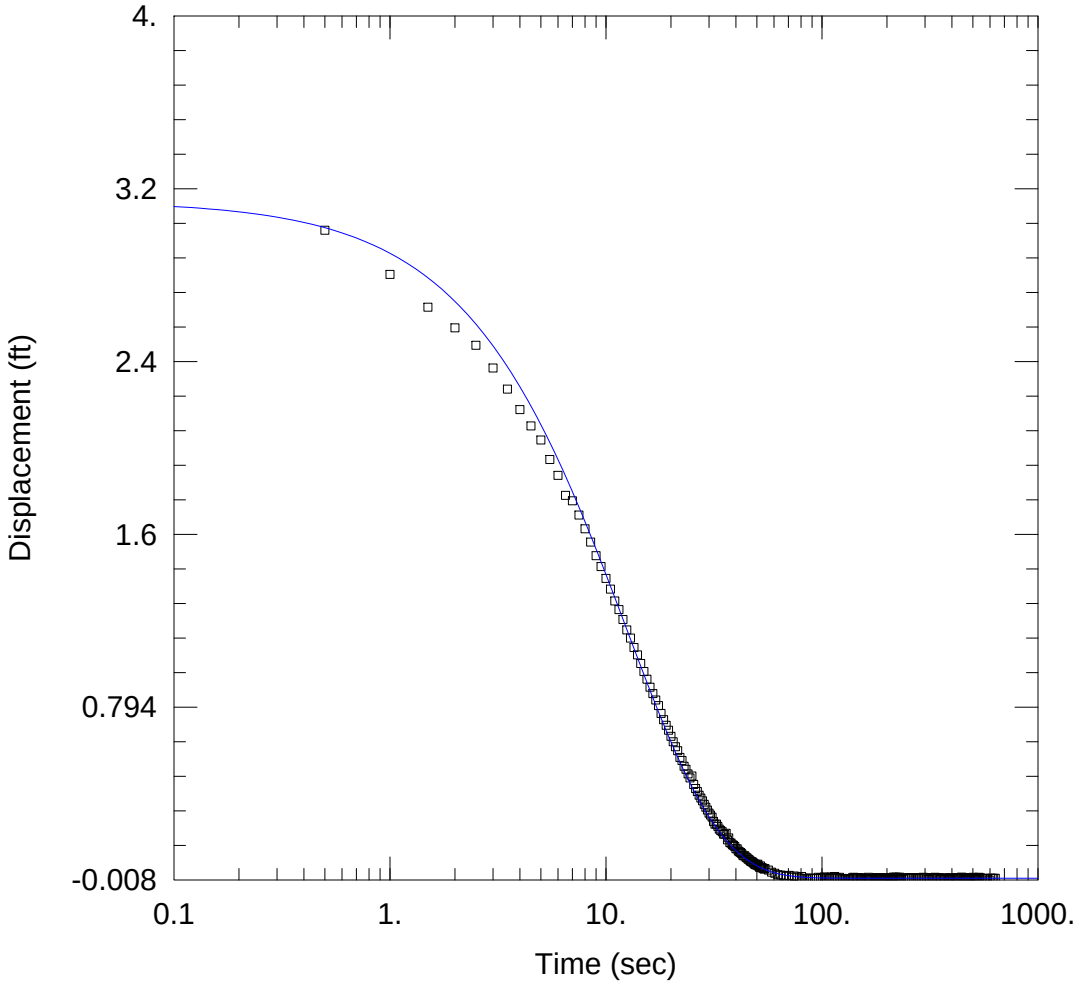
WELL DATA (OU3-16M - slug out)

Initial Displacement: 3.141 ft
Total Well Penetration Depth: 82.62 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.12 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 47.92 ft/day
y0 = 3.141 ft



WELL TEST ANALYSIS

Data Set: C:\...\Ou3-16M - slug out - SG unconfined - u and L srg combined.aqt
Date: 03/23/12 Time: 09:51:22

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-16M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

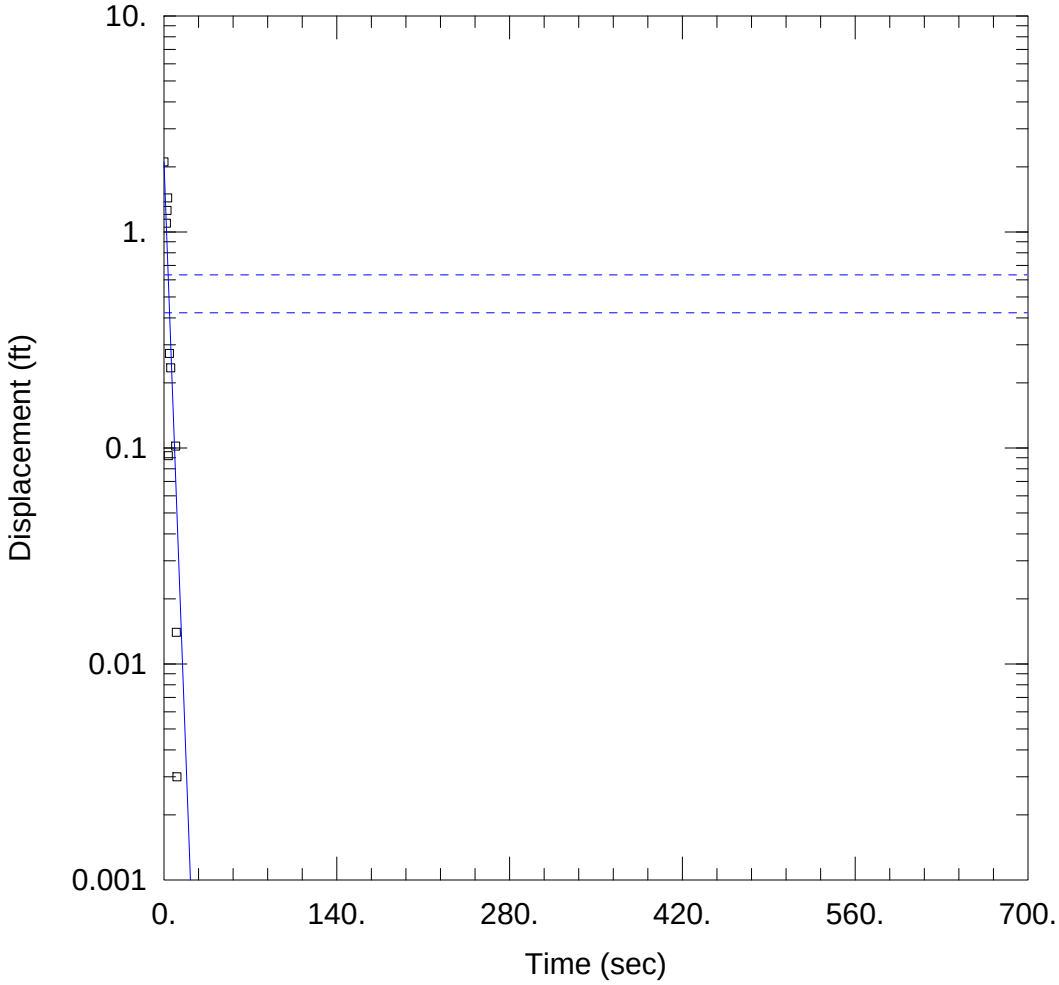
WELL DATA (OU3-16M - slug out)

Initial Displacement: 3.141 ft
Total Well Penetration Depth: 82.62 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.12 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 20.79 ft/day
Le = 0.1 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-19M - slug in - BR unconfined - u and l srg combined.aqt
Date: 03/23/12 Time: 09:54:25

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-19M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

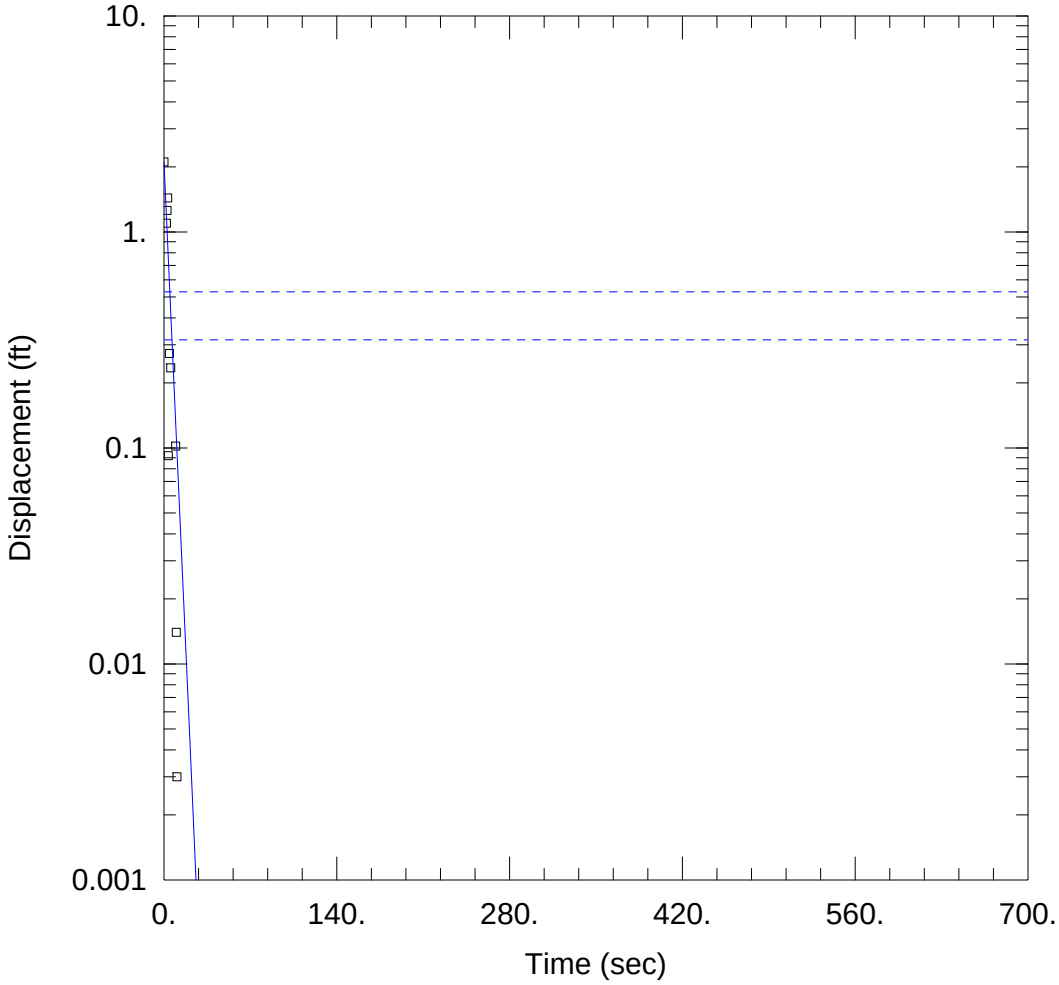
WELL DATA (OU3-19M - slug in)

Initial Displacement: 2.11 ft
Total Well Penetration Depth: 83.15 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.65 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 183.9 ft/day
y0 = 2.11 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-19M - slug in - HV unconfined - u and l srg combined.aqt
Date: 03/23/12 Time: 09:53:52

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-19M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

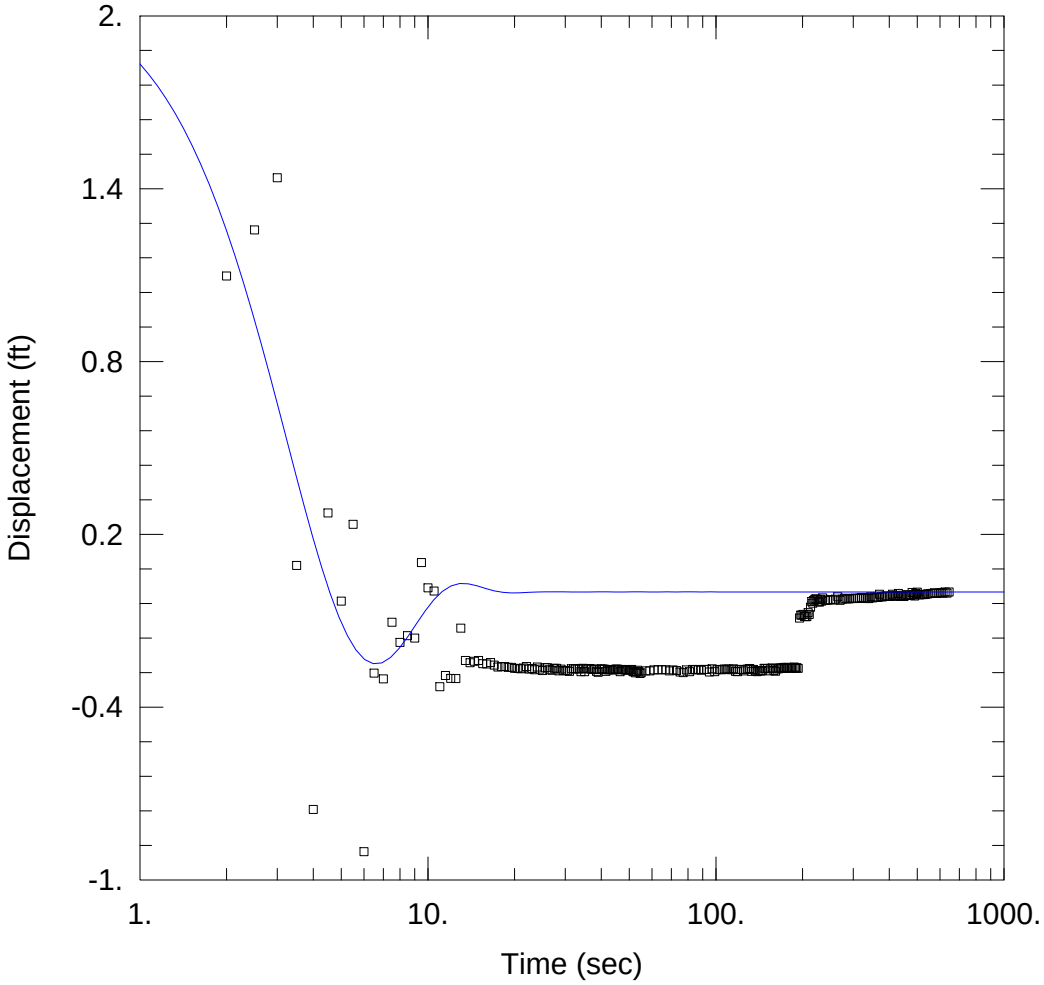
WELL DATA (OU3-19M - slug in)

Initial Displacement: 2.11 ft
Total Well Penetration Depth: 83.15 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.65 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 183.9 ft/day
y0 = 2.11 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-19M - slug in - SG unconfined - u and l srg combined.aqt
Date: 03/23/12 Time: 09:53:23

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-19M - slug in

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

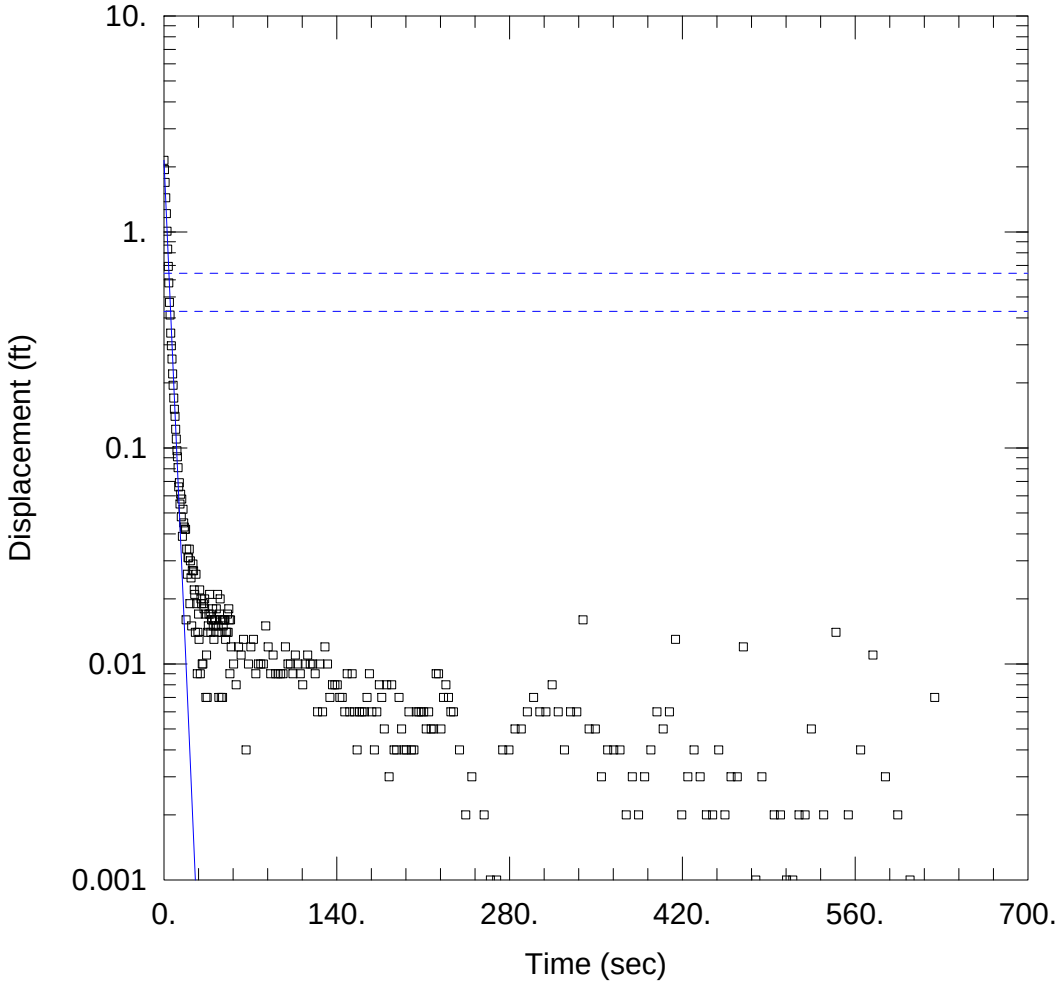
WELL DATA (OU3-19M - slug in)

Initial Displacement: 2.11 ft
Total Well Penetration Depth: 83.15 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.65 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 133.2 ft/day
Le = 97.27 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-19M - slug out - BR unconfined - u and L SRG.aqt
Date: 03/23/12 Time: 10:07:31

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-19M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

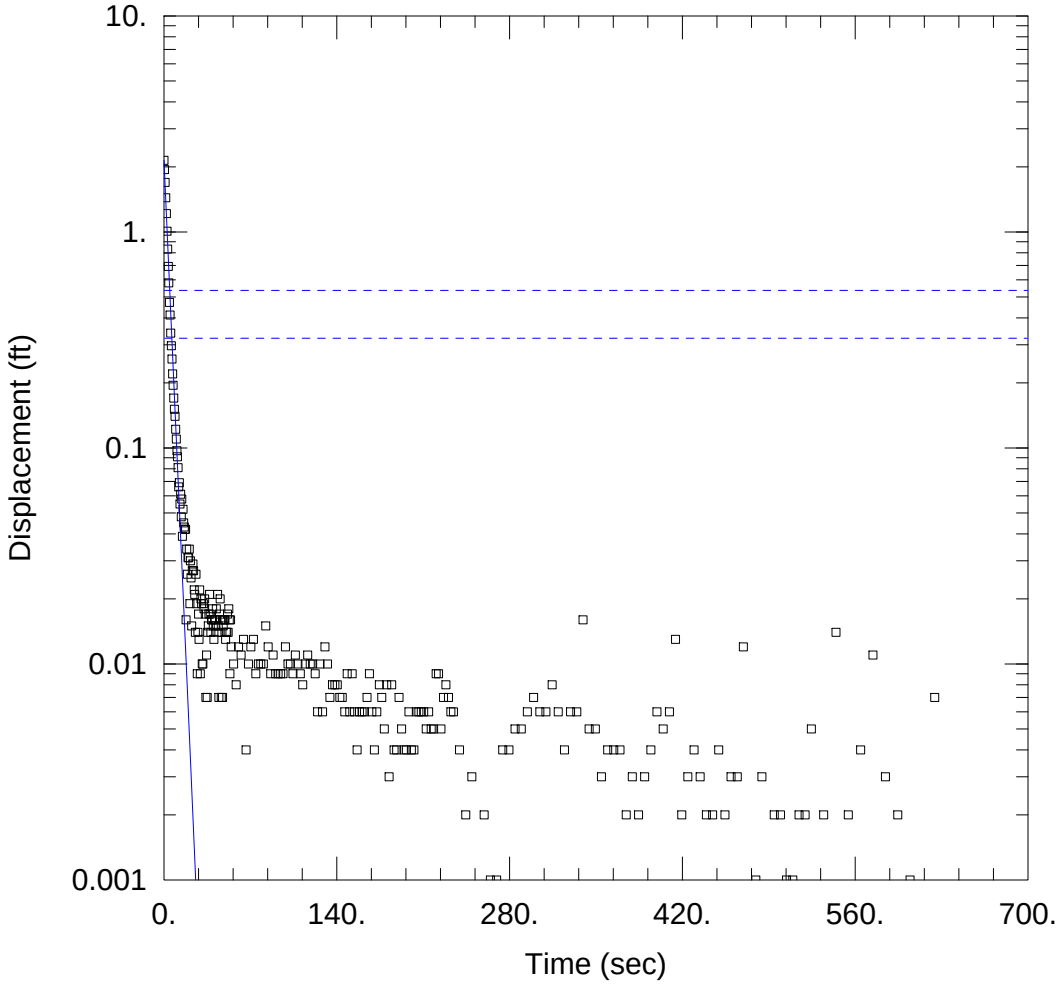
WELL DATA (OU3-19M - slug out)

Initial Displacement: 2.145 ft
Total Well Penetration Depth: 83.15 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.65 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 155. ft/day
y0 = 2.145 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-19M - slug out - HV unconfined - u and L SRG.aqt
Date: 03/23/12 Time: 10:06:33

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-19M - slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

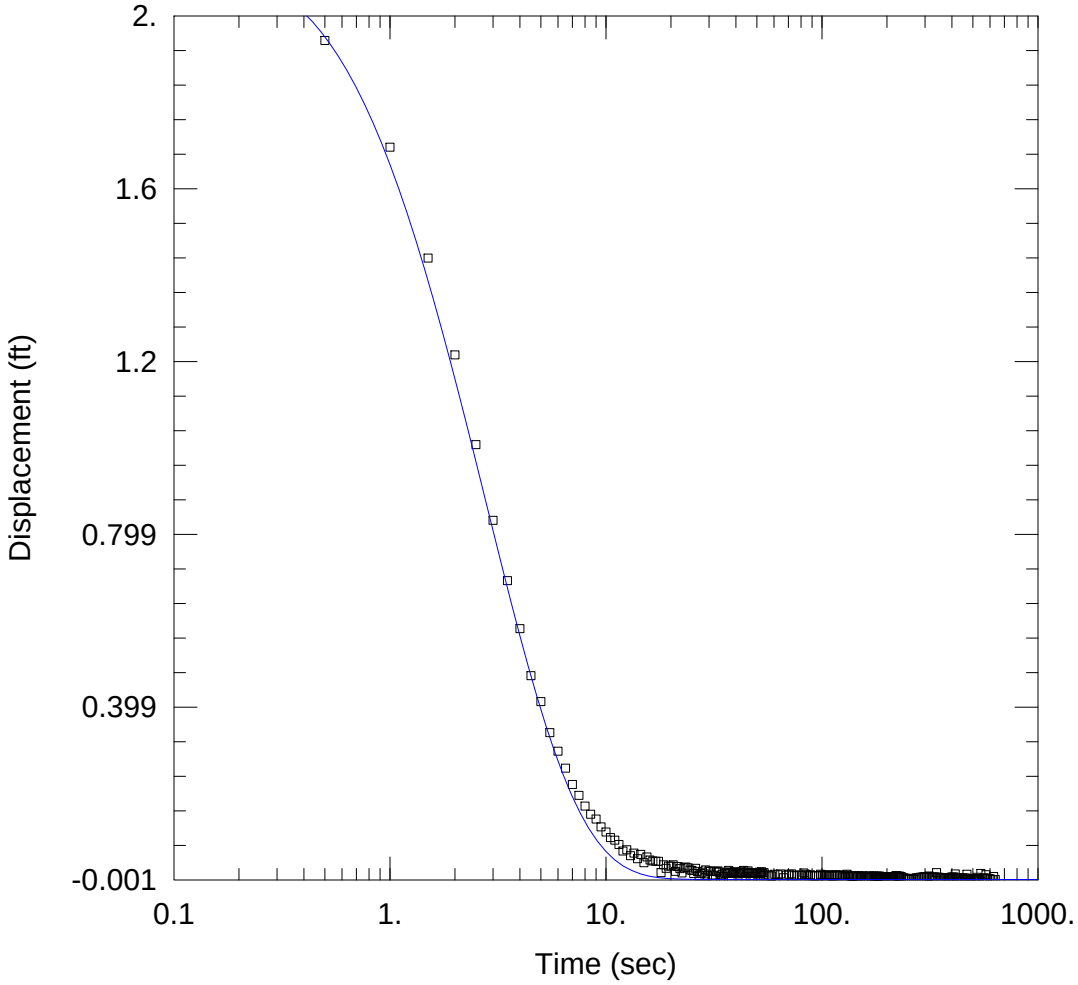
WELL DATA (OU3-19M - slug out)

Initial Displacement: 2.145 ft
Total Well Penetration Depth: 83.15 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.65 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 186.4 ft/day
y0 = 2.145 ft



WELL TEST ANALYSIS

Data Set: C:\...\OU3-19M - slug out - SG unconfined - u and L SRG.aqt
Date: 03/23/12 Time: 10:06:00

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-19M -slug out

AQUIFER DATA

Saturated Thickness: 130. ft
Anisotropy Ratio (Kz/Kr): 0.1

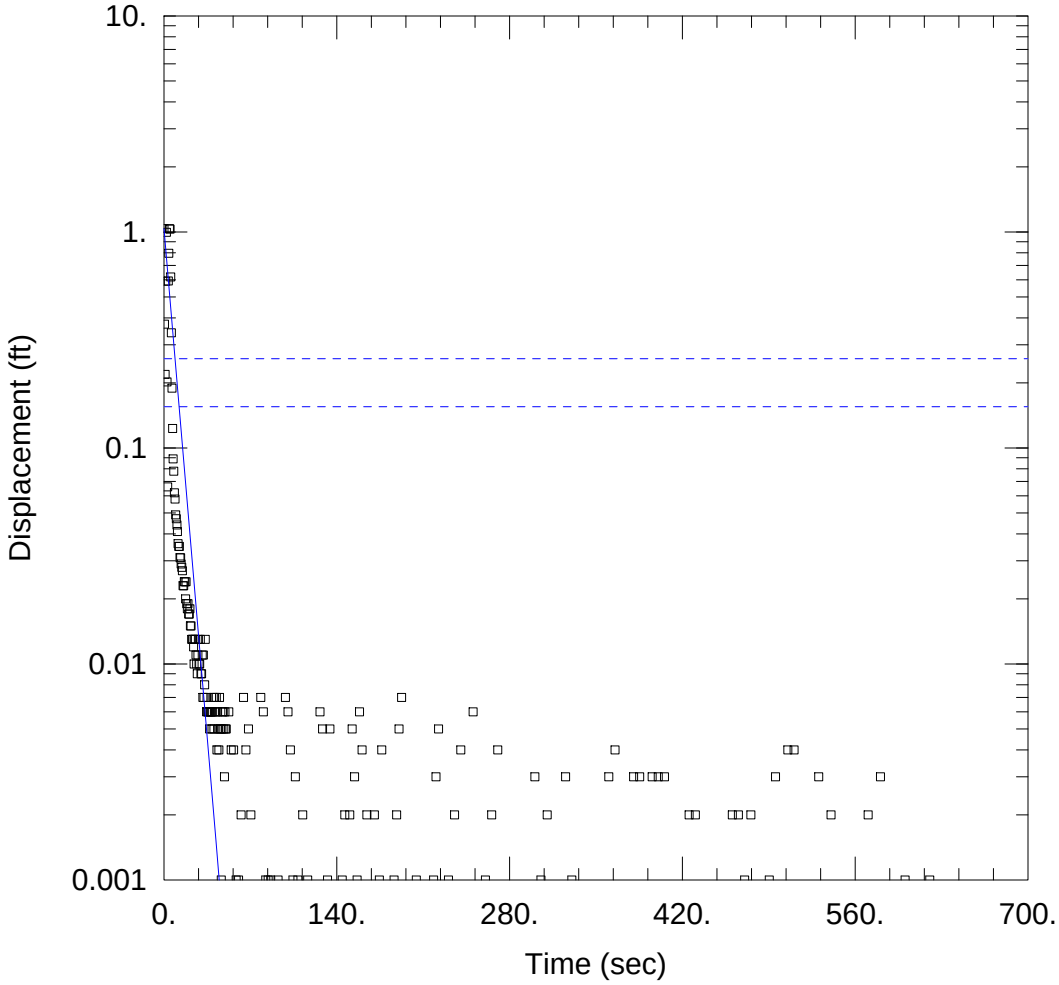
WELL DATA (OU3-19M - slug out)

Initial Displacement: 2.145 ft
Total Well Penetration Depth: 83.15 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 83.65 ft
Screen Length: 20. ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 85.2 ft/day
Le = 24.82 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-5SR.aqt
Date: 01/03/12 Time: 14:15:14

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-5SR

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

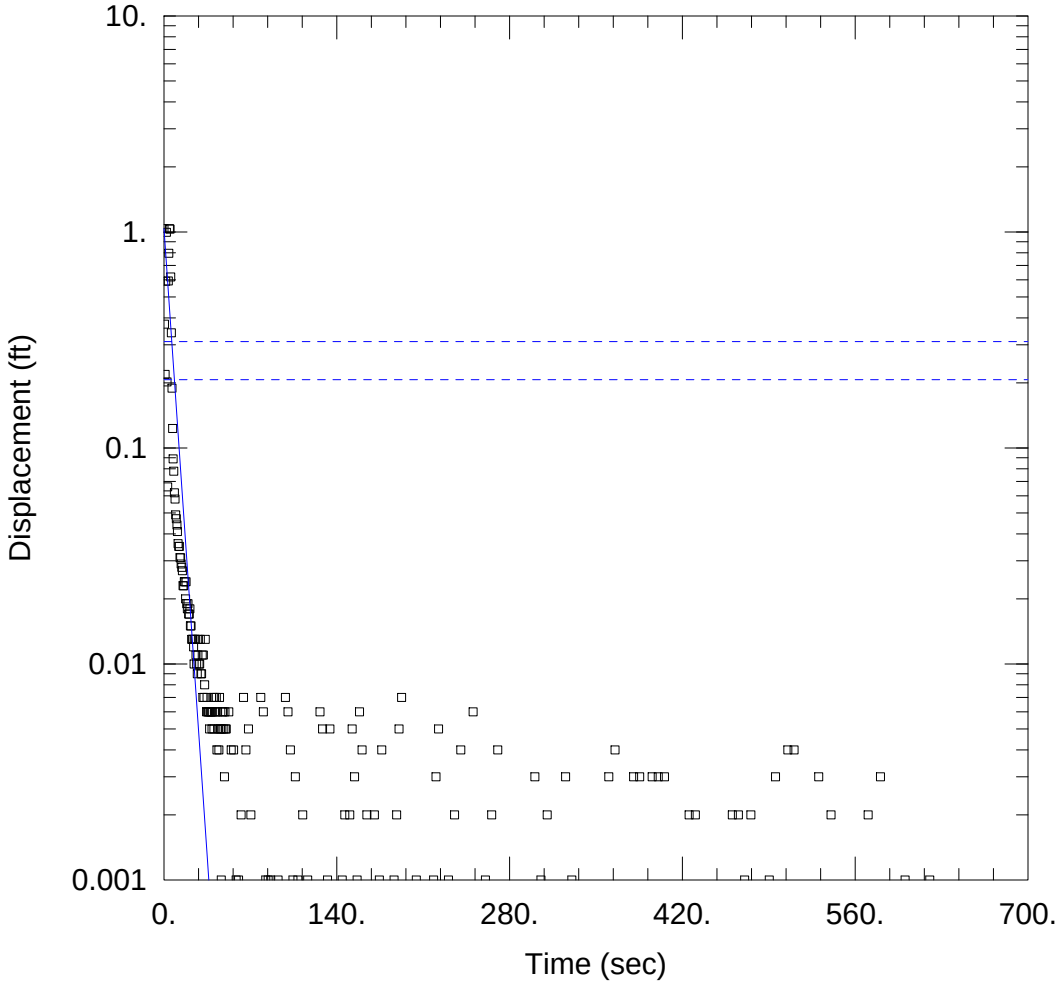
WELL DATA (OU3-5SR - slug out)

Initial Displacement: 1.035 ft
Total Well Penetration Depth: 26.4 ft
Casing Radius: 0.166 ft
Static Water Column Height: 26.7 ft
Screen Length: 26.4 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 77.1 ft/day y0 = 1.035 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-5SR.aqt
Date: 01/03/12 Time: 14:14:45

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-5SR

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

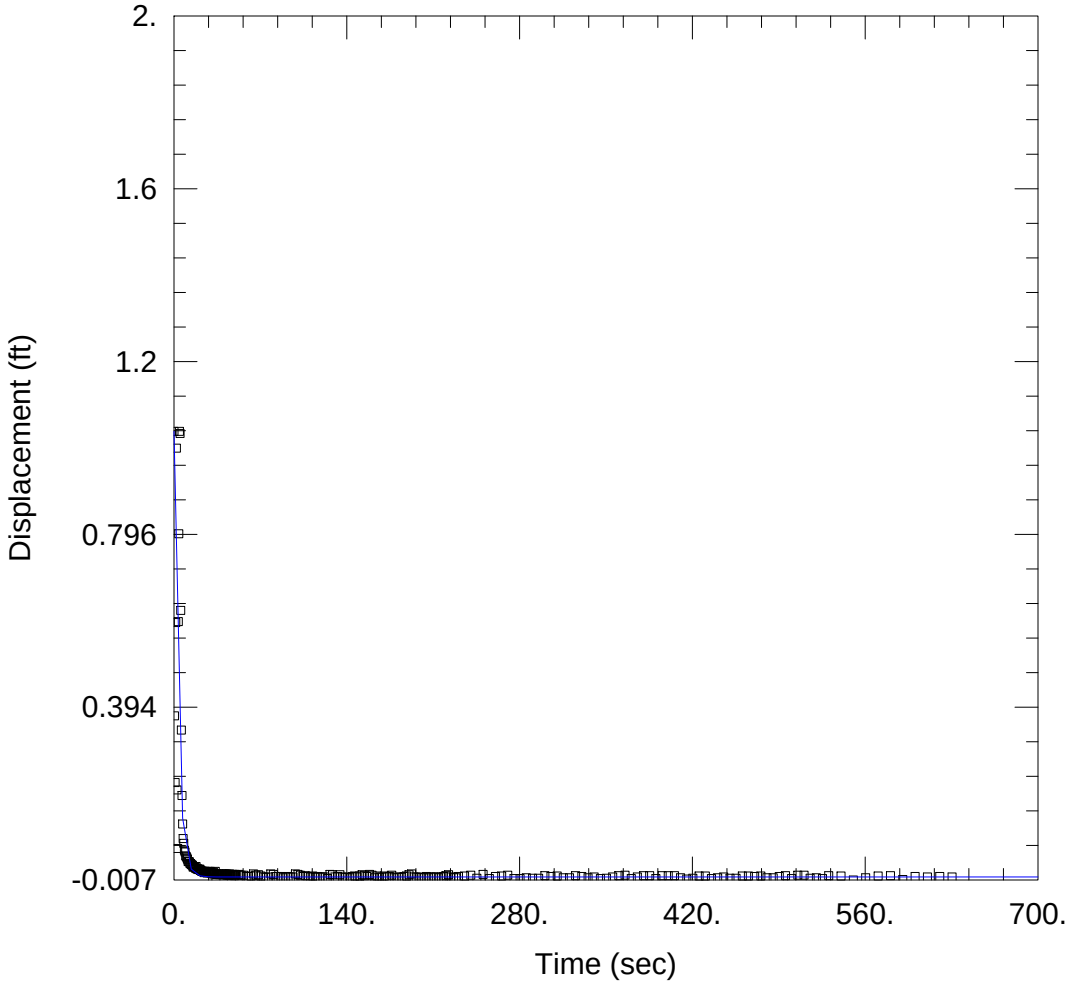
WELL DATA (OU3-5SR - slug out)

Initial Displacement: 1.035 ft
Total Well Penetration Depth: 26.4 ft
Casing Radius: 0.166 ft
Static Water Column Height: 26.7 ft
Screen Length: 26.4 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 70.32 ft/day y0 = 1.035 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-5SR.aqt
Date: 01/03/12 Time: 14:14:04

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-5SR

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

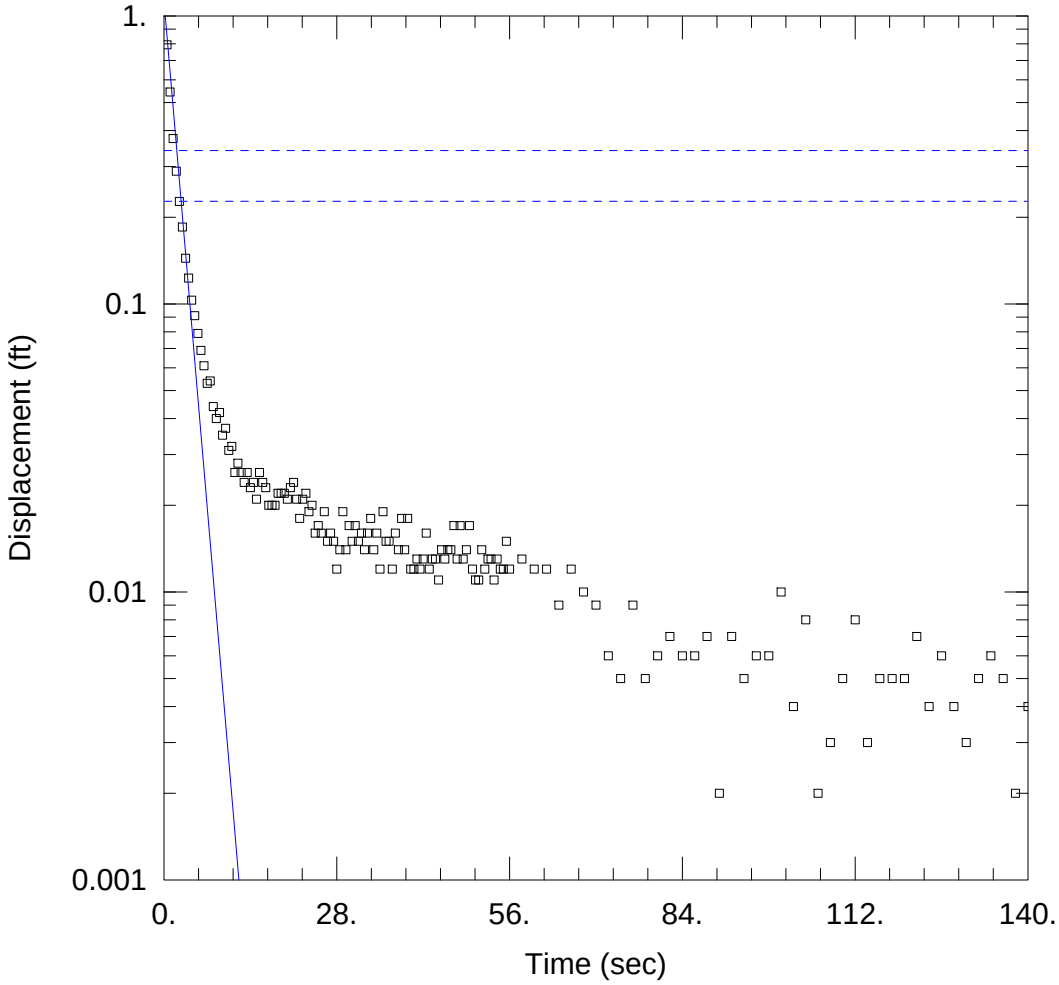
WELL DATA (OU3-5SR - slug out)

Initial Displacement: 1.035 ft
Total Well Penetration Depth: 26.4 ft
Casing Radius: 0.166 ft
Static Water Column Height: 26.7 ft
Screen Length: 26.4 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 53.34 ft/day
Le = 0.1 ft



WELL TEST ANALYSIS

Data Set: F:\...\EW-20S-slugout.aqt
Date: 01/04/12 Time: 10:18:50

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: EW-20S_slugout

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

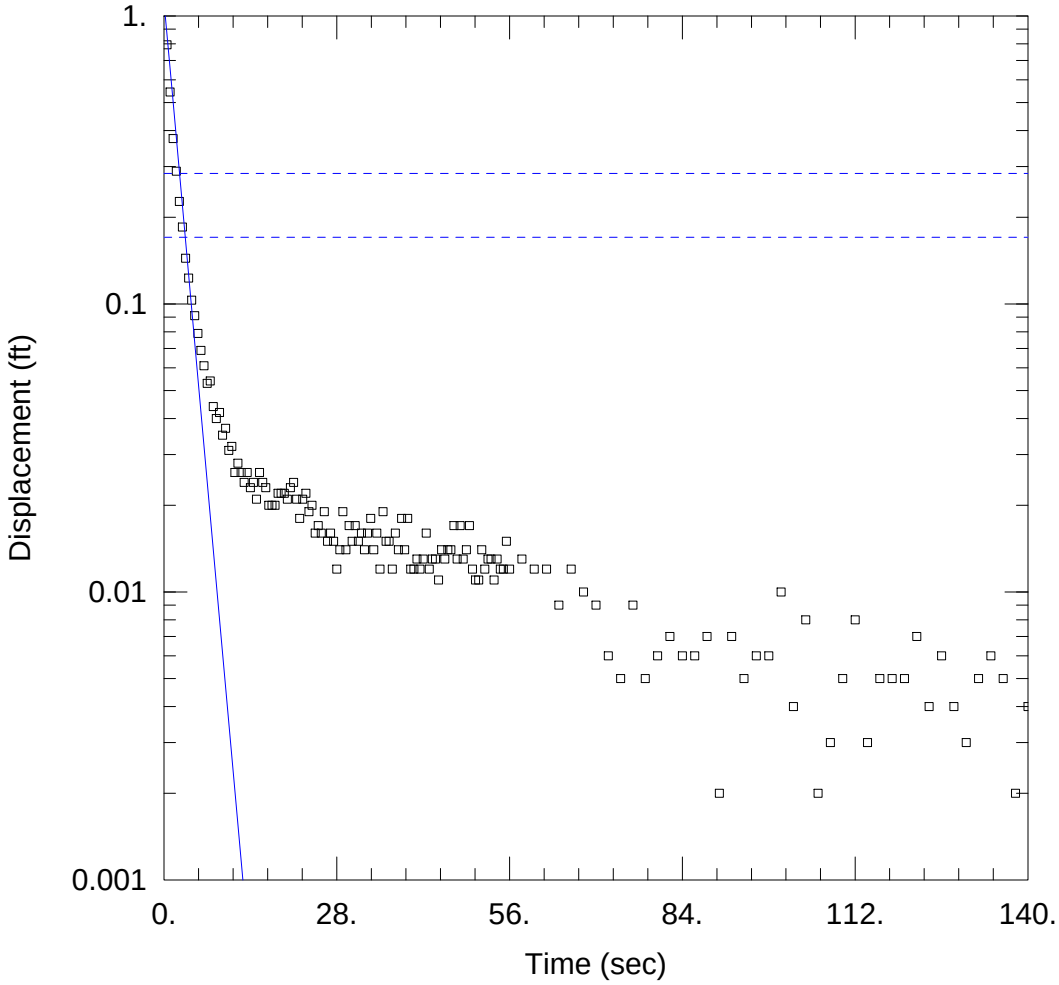
WELL DATA (EW-20 - slug out)

Initial Displacement: 1.136 ft
Total Well Penetration Depth: 17.32 ft
Casing Radius: 0.167 ft
Static Water Column Height: 17.32 ft
Screen Length: 17.32 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 286.2 ft/day
y0 = 1.136 ft



WELL TEST ANALYSIS

Data Set: F:\...\EW-20S-slugout.aqt
Date: 01/04/12 Time: 10:19:15

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: EW-20S_slugout

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

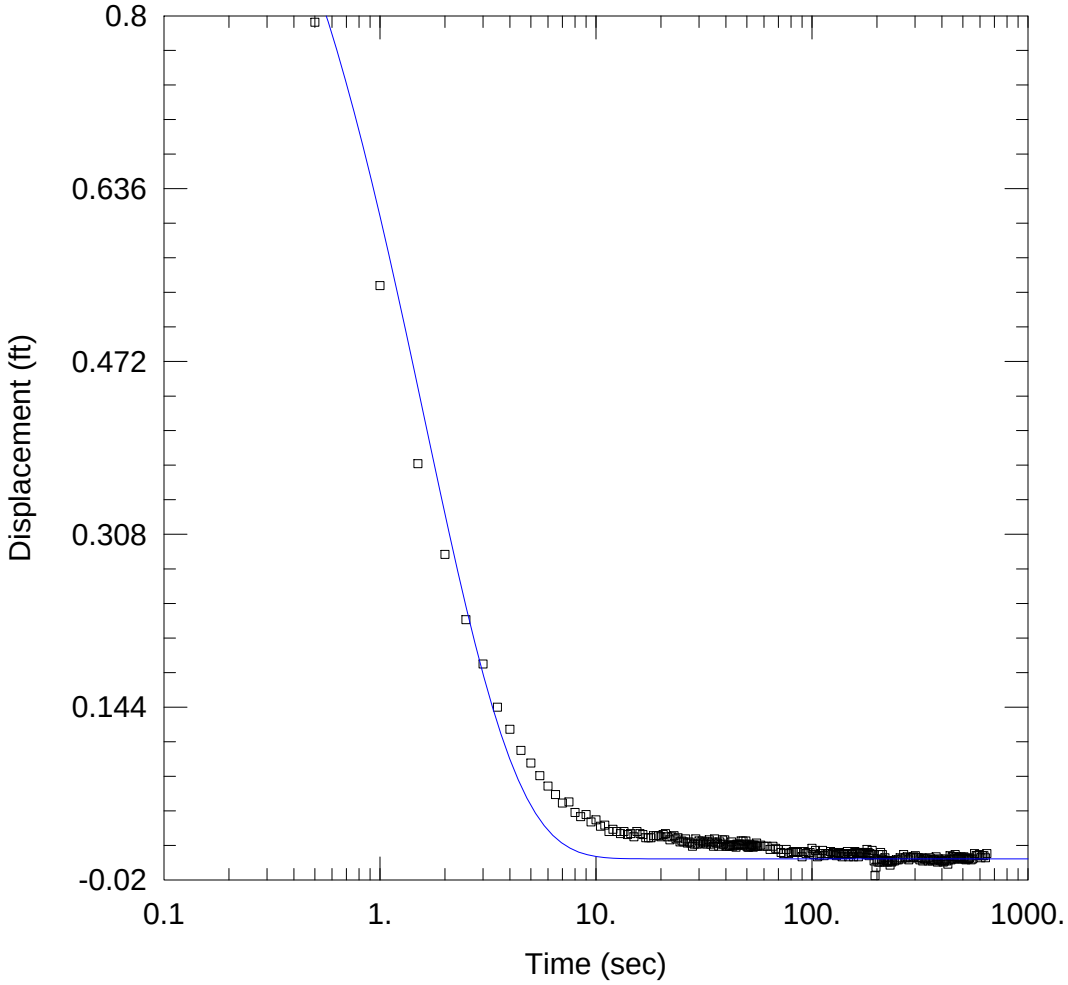
WELL DATA (EW-20 - slug out)

Initial Displacement: 1.136 ft
Total Well Penetration Depth: 17.32 ft
Casing Radius: 0.167 ft
Static Water Column Height: 17.32 ft
Screen Length: 17.32 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 387.2 ft/day
y0 = 1.136 ft



WELL TEST ANALYSIS

Data Set: F:\...\EW-20S-slugout.aqt
Date: 01/04/12 Time: 10:17:41

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: EW-20S_slugout

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

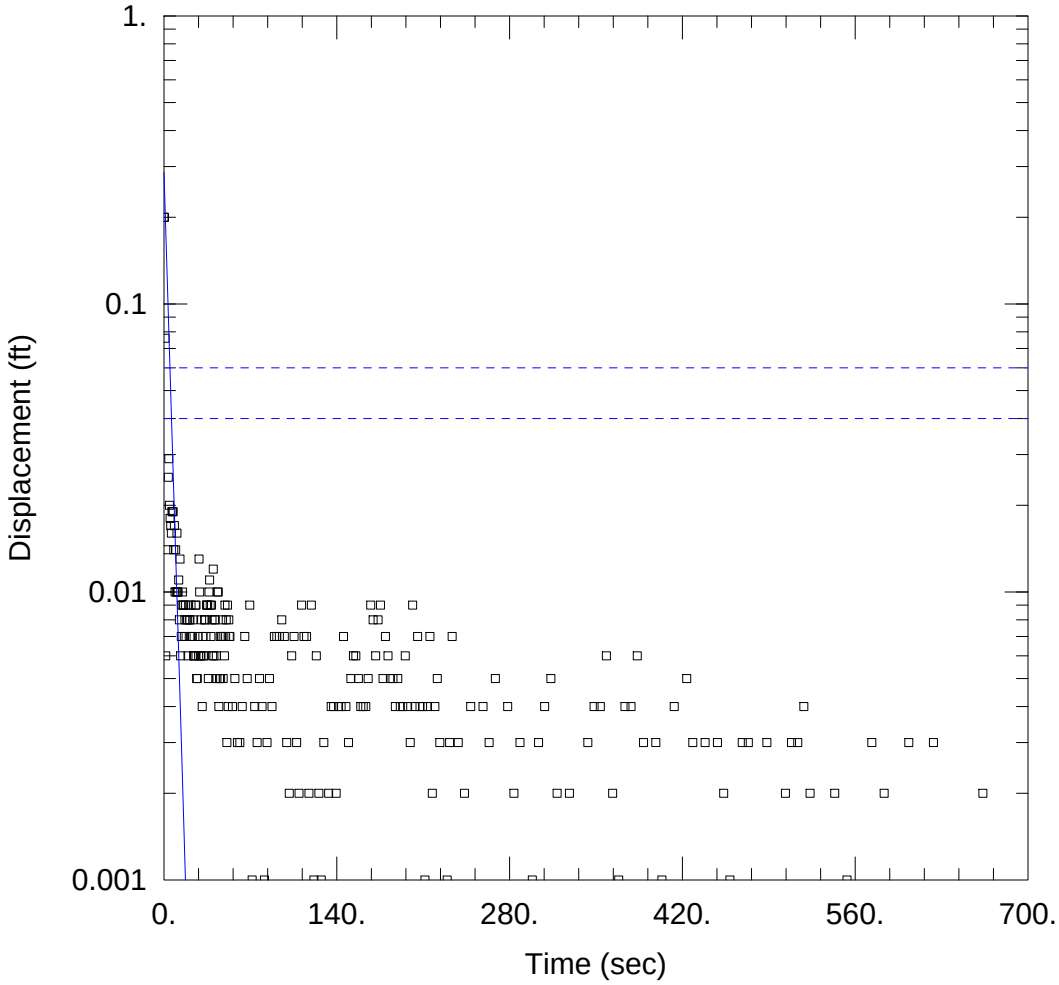
WELL DATA (EW-20 - slug out)

Initial Displacement: 1.136 ft
Total Well Penetration Depth: 17.32 ft
Casing Radius: 0.167 ft
Static Water Column Height: 17.32 ft
Screen Length: 17.32 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 155.1 ft/day
Le = 0.1 ft



WELL TEST ANALYSIS

Data Set: F:\...\EW-22S-slugout.aqt
Date: 01/04/12 Time: 09:59:29

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: EW-20S_slugout

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

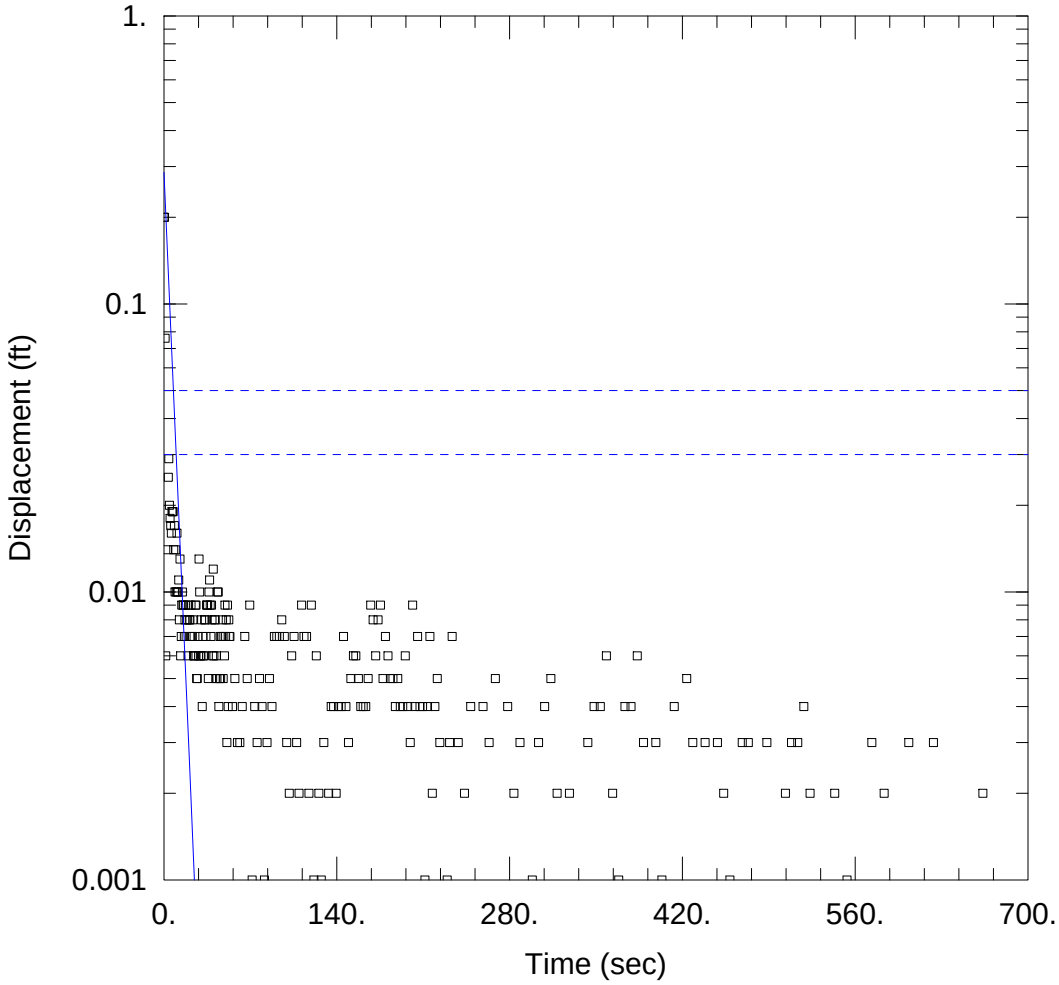
WELL DATA (EW-22S-slugout)

Initial Displacement: 0.2 ft
Total Well Penetration Depth: 18.49 ft
Casing Radius: 0.167 ft
Static Water Column Height: 18.49 ft
Screen Length: 18.49 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 152.5 ft/day y0 = 0.286 ft



WELL TEST ANALYSIS

Data Set: F:\...\EW-22S-slugout.aqt
Date: 01/04/12 Time: 09:59:47

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: EW-20S_slugout

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

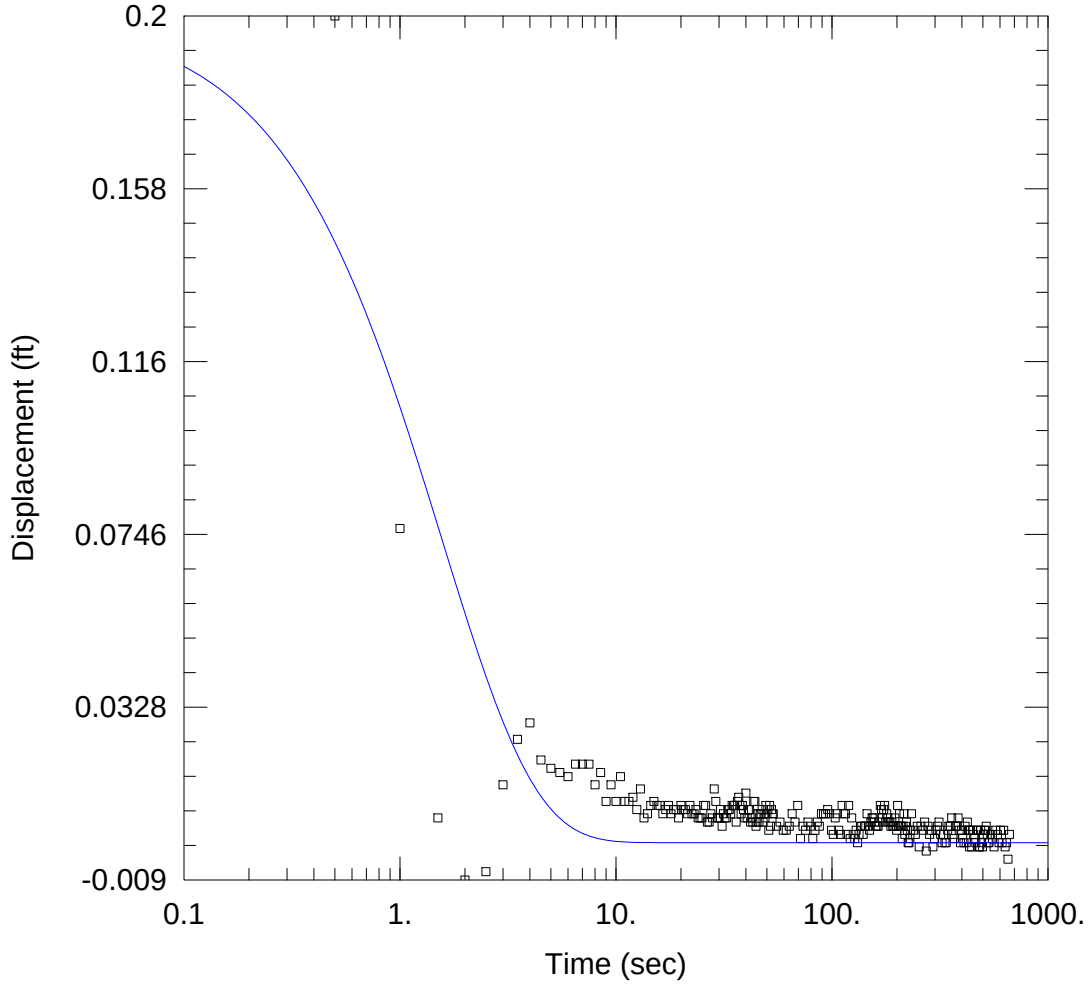
WELL DATA (EW-22S-slugout)

Initial Displacement: 0.2 ft
Total Well Penetration Depth: 18.49 ft
Casing Radius: 0.167 ft
Static Water Column Height: 18.49 ft
Screen Length: 18.49 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 152.5 ft/day y0 = 0.286 ft



WELL TEST ANALYSIS

Data Set: F:\...\EW-22S-slugout.aqt
Date: 01/04/12 Time: 09:59:08

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: EW-20S_slugout

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

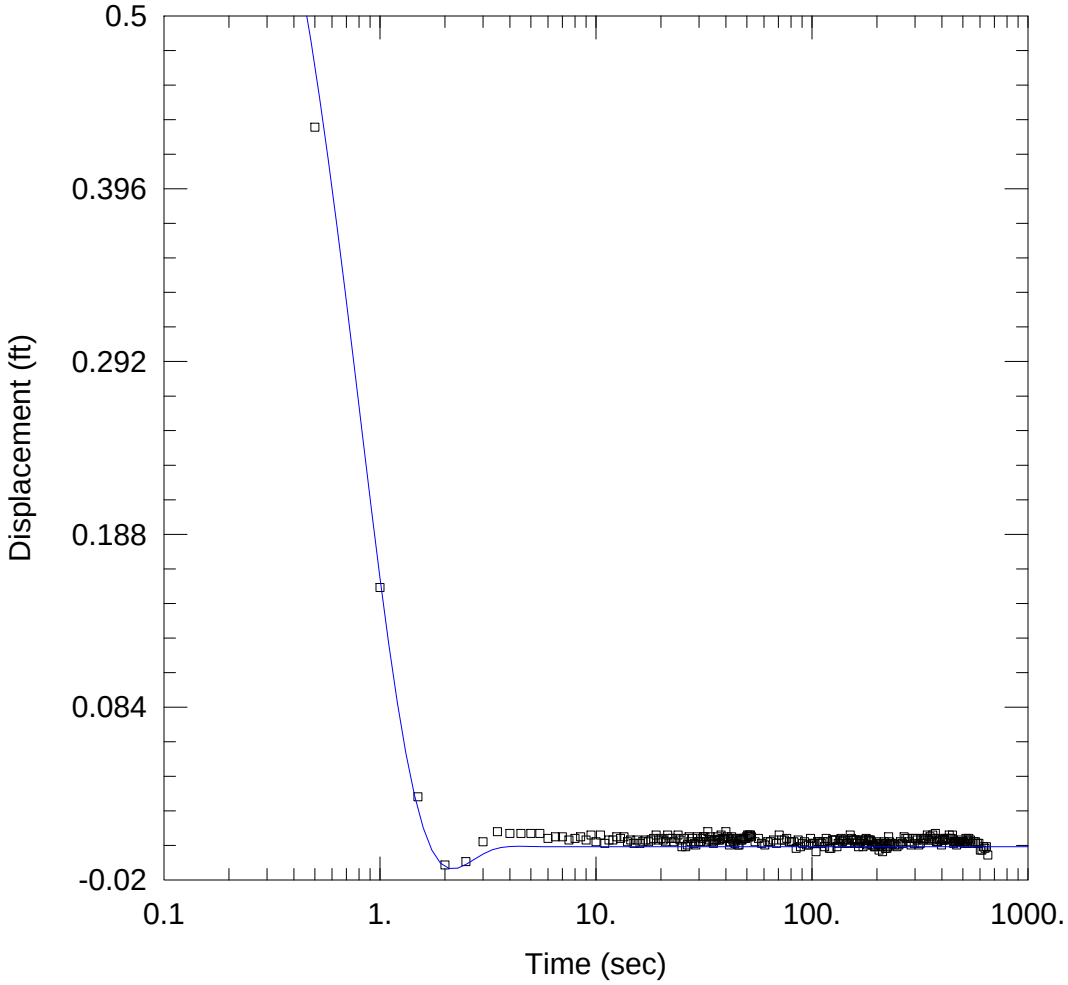
WELL DATA (EW-22S-slugout)

Initial Displacement: 0.2 ft
Total Well Penetration Depth: 18.49 ft
Casing Radius: 0.167 ft
Static Water Column Height: 18.49 ft
Screen Length: 18.49 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 152.5 ft/day
Le = 0.1 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-8S - slug out.aqt
Date: 01/04/12 Time: 08:59:02

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-8S - slug out

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

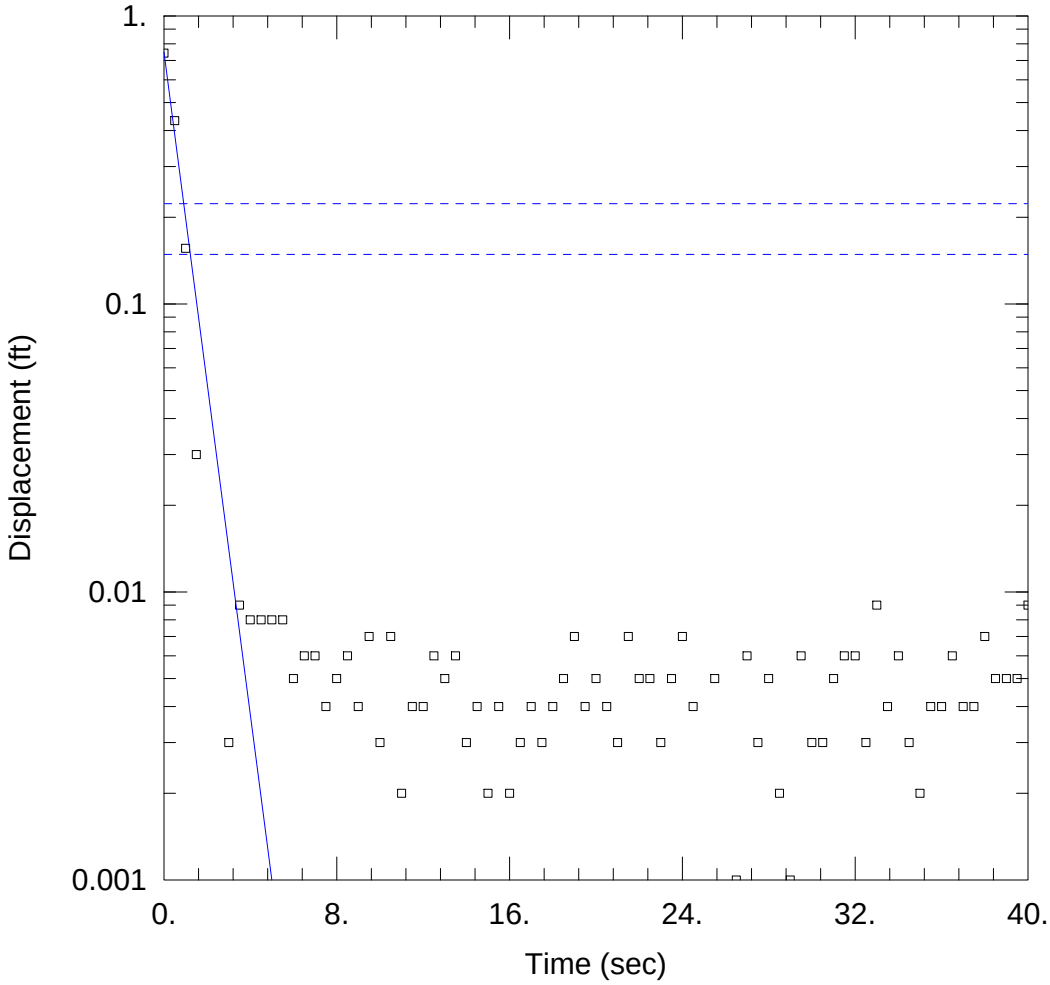
WELL DATA (OU3-8S - slug out)

Initial Displacement: 0.743 ft
Total Well Penetration Depth: 14.99 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 15.7 ft
Screen Length: 14.99 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 412. ft/day
Le = 5.806 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-8S - slug out.aqt
Date: 01/04/12 Time: 11:11:57

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-8S - slug out

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

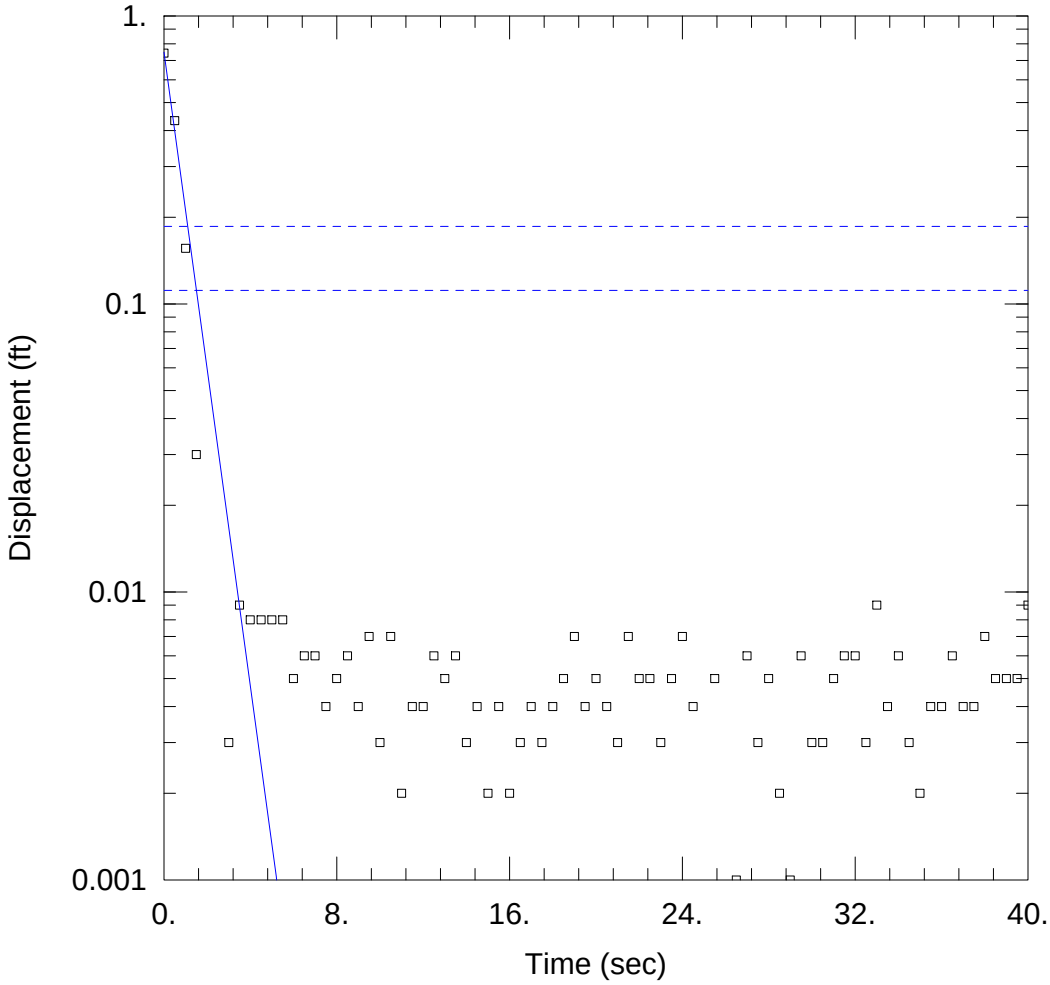
WELL DATA (OU3-8S - slug out)

Initial Displacement: 0.743 ft
Total Well Penetration Depth: 14.99 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 15.7 ft
Screen Length: 14.99 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 725.9 ft/day
y0 = 0.748 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-8S - slug out.aqt
Date: 01/04/12 Time: 11:12:23

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-8S - slug out

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

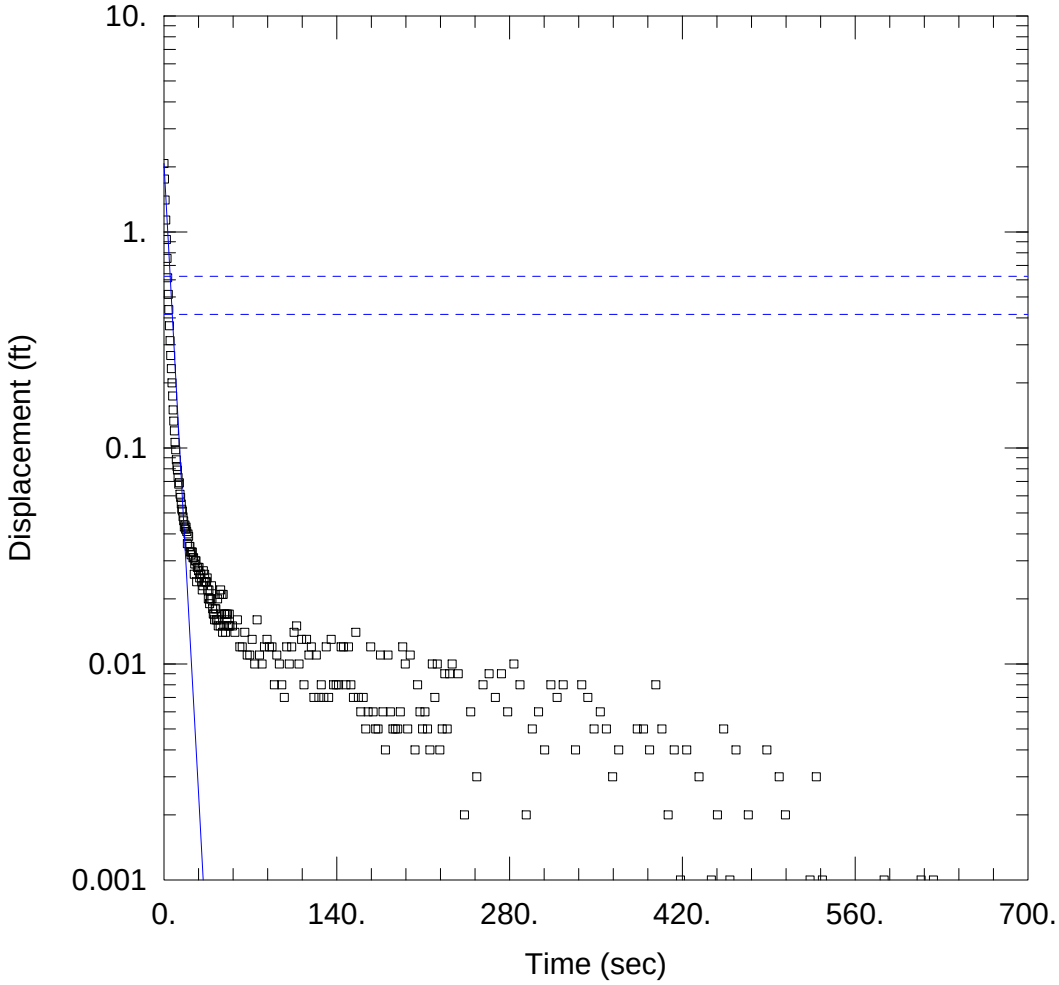
WELL DATA (OU3-8S - slug out)

Initial Displacement: 0.743 ft
Total Well Penetration Depth: 14.99 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 15.7 ft
Screen Length: 14.99 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 1000. ft/day
y0 = 0.748 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-10S - slug out.aqt
Date: 01/03/12 Time: 14:58:19

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-10S - slug out

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

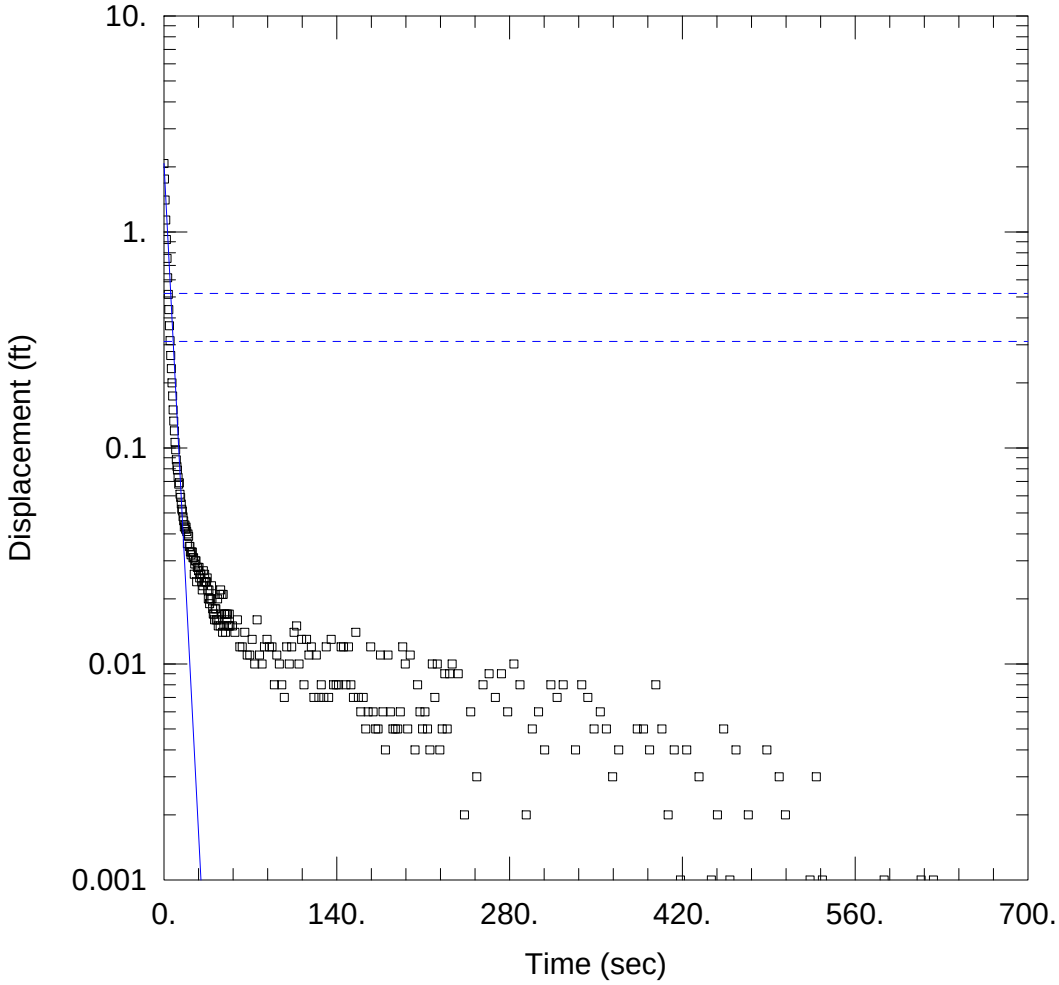
WELL DATA (OU3-10S - slug out)

Initial Displacement: 2.075 ft
Total Well Penetration Depth: 25.73 ft
Casing Radius: 0.166 ft
Static Water Column Height: 25.73 ft
Screen Length: 25.73 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 89.66 ft/day
y0 = 2.075 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-10S - slug out.aqt
Date: 01/03/12 Time: 14:58:52

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-10S - slug out

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

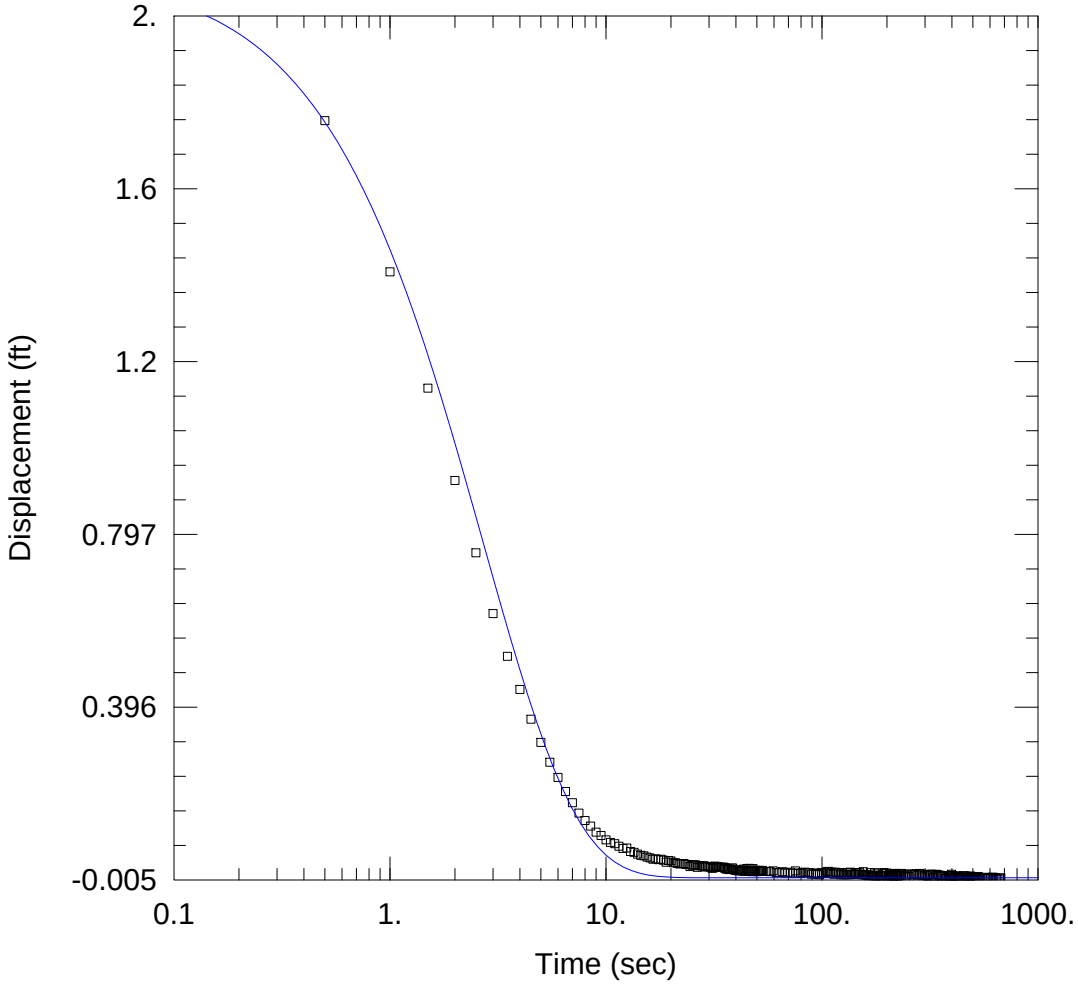
WELL DATA (OU3-10S - slug out)

Initial Displacement: 2.075 ft
Total Well Penetration Depth: 25.73 ft
Casing Radius: 0.166 ft
Static Water Column Height: 25.73 ft
Screen Length: 25.73 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 129.6 ft/day
y0 = 2.075 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-10S - slug out.aqt
Date: 01/03/12 Time: 14:57:31

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-10S - slug out

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

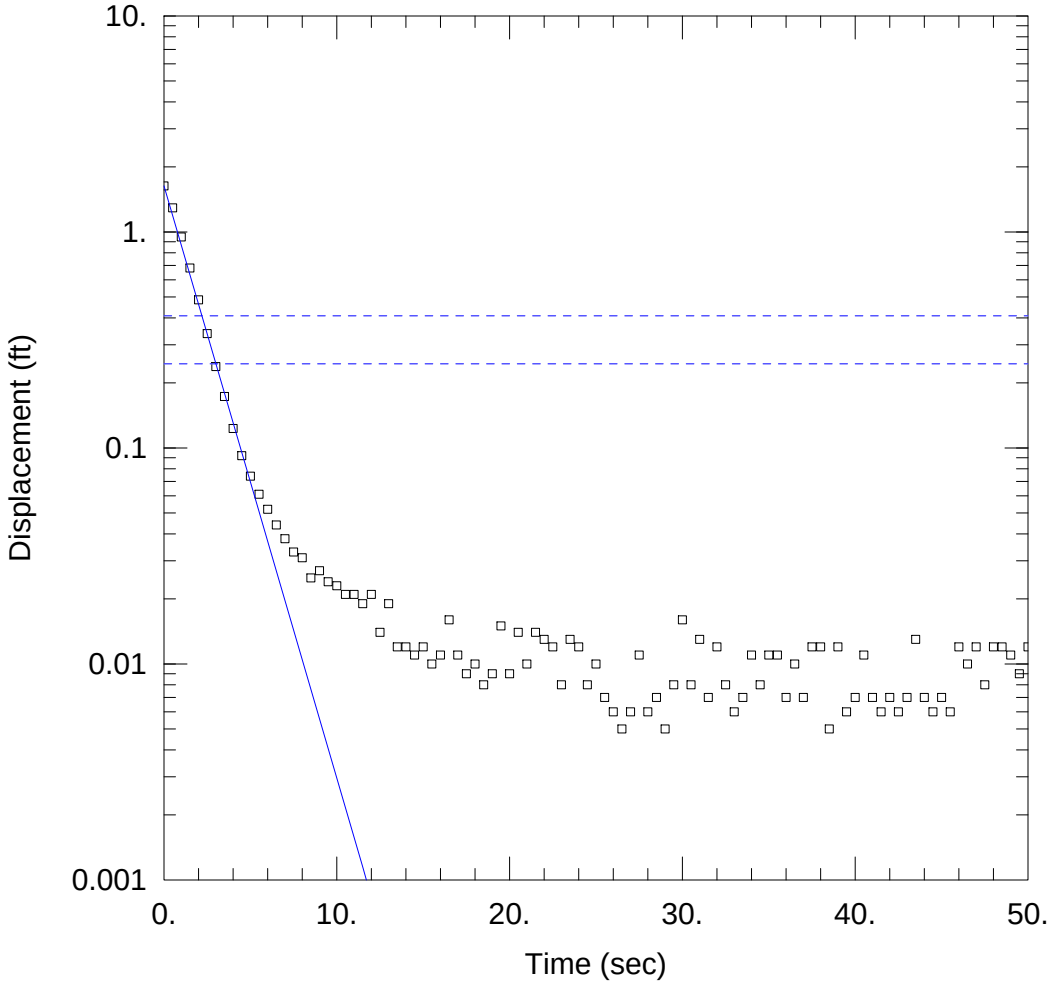
WELL DATA (OU3-10S - slug out)

Initial Displacement: 2.075 ft
Total Well Penetration Depth: 25.73 ft
Casing Radius: 0.166 ft
Static Water Column Height: 25.73 ft
Screen Length: 25.73 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 68.01 ft/day
Le = 3.802 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-11S -slugout.aqt
Date: 01/04/12 Time: 11:07:23

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-11S - slug out

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (OU3-11S - slug out)

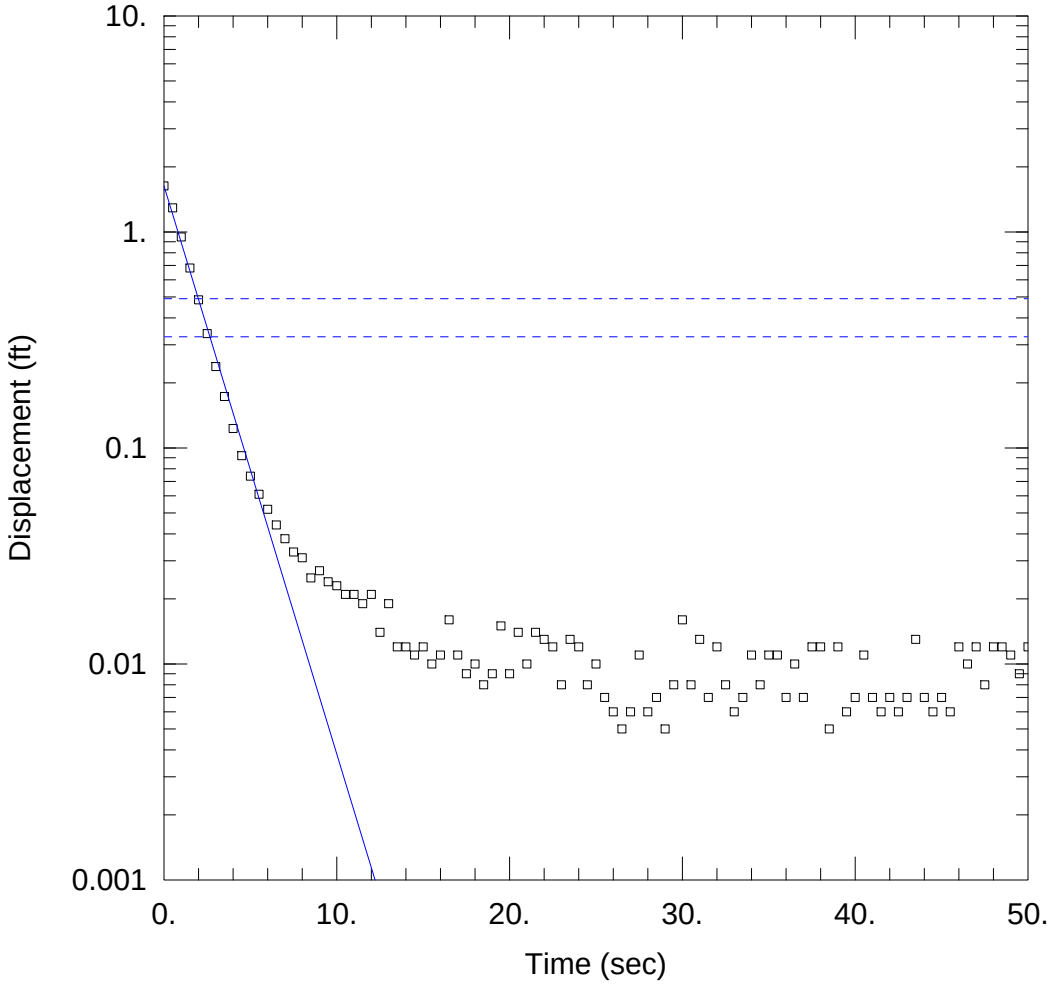
Initial Displacement: 1.634 ft
Total Well Penetration Depth: 29.62 ft
Casing Radius: 0.1667 ft

Static Water Column Height: 29.62 ft
Screen Length: 29.62 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 286.7 ft/day y0 = 1.634 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-11S -slugout.aqt
Date: 01/04/12 Time: 11:07:06

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-11S - slug out

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

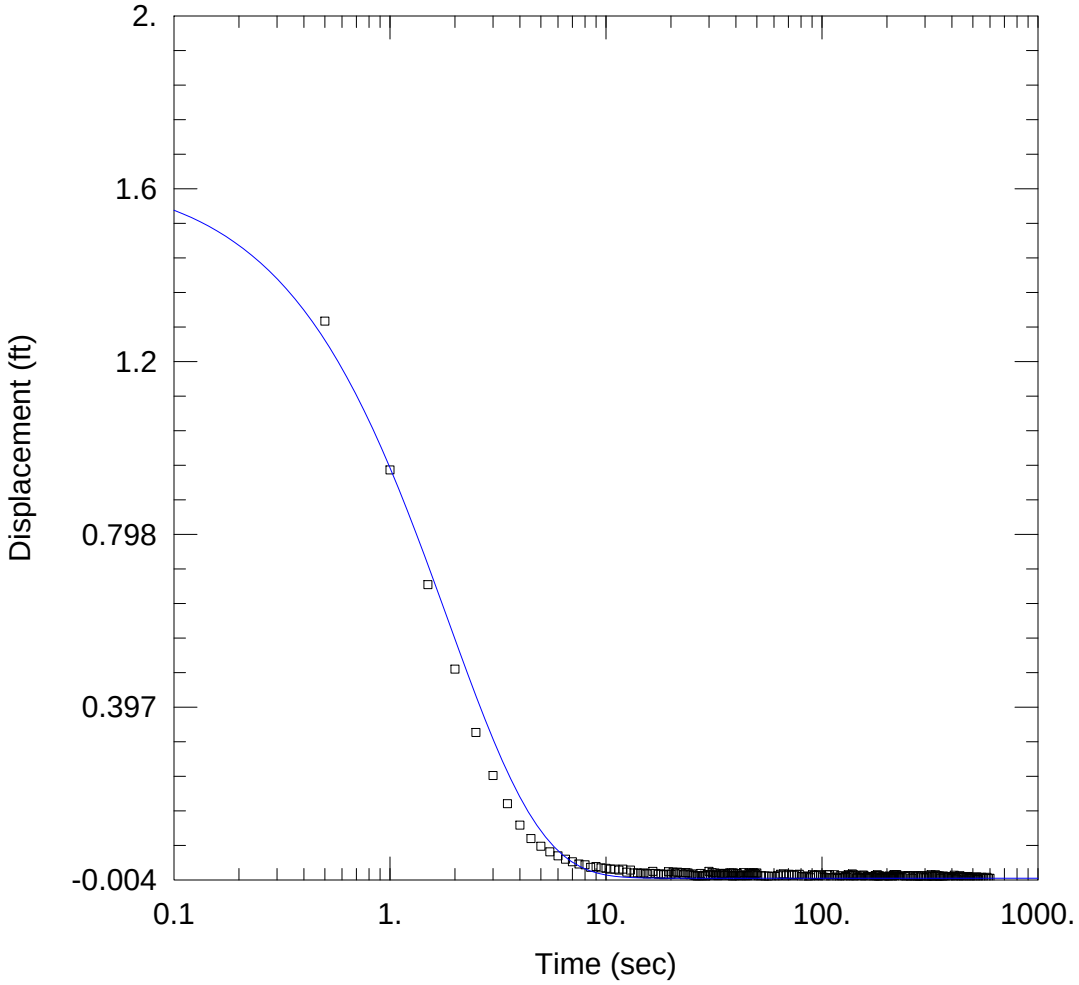
WELL DATA (OU3-11S - slug out)

Initial Displacement: 1.634 ft
Total Well Penetration Depth: 29.62 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 29.62 ft
Screen Length: 29.62 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 215.5 ft/day y0 = 1.634 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-11S -slugout.aqt
Date: 01/03/12 Time: 15:25:36

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-11S - slug out

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

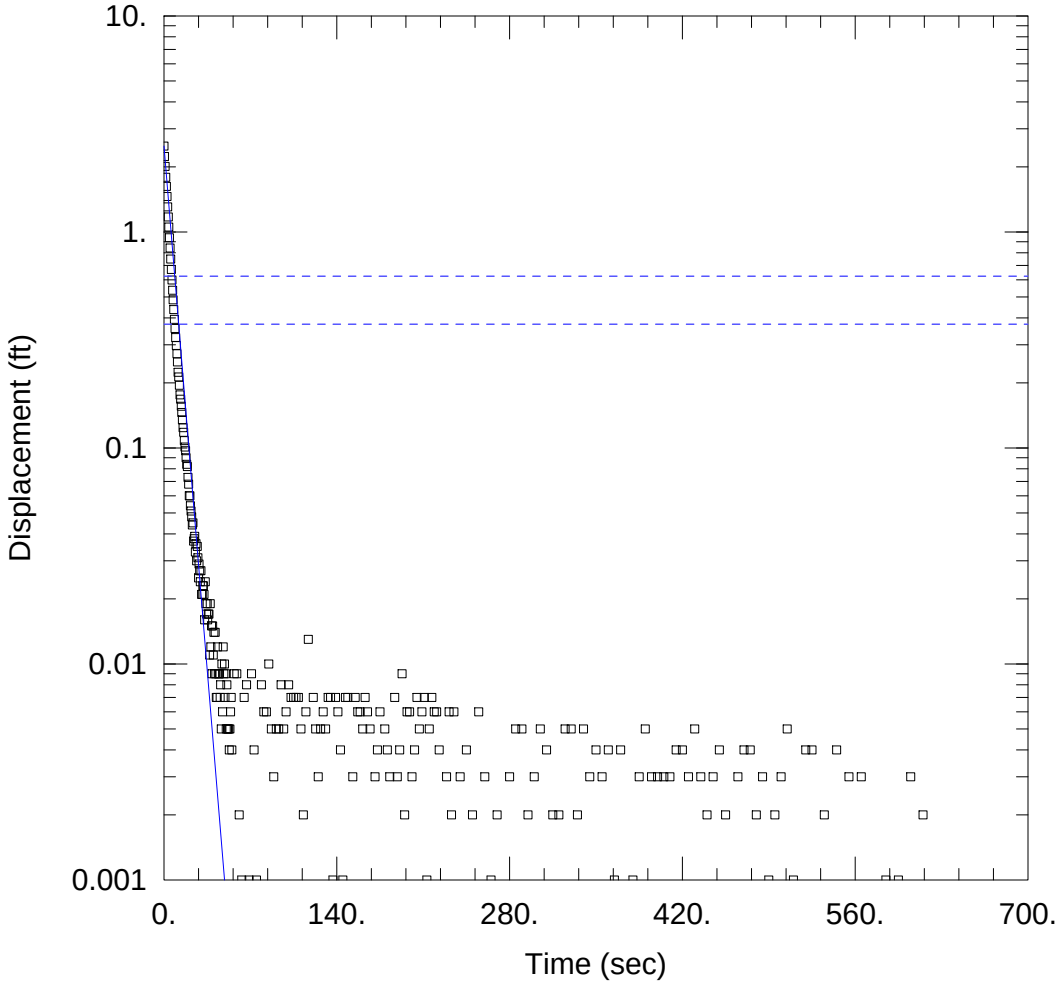
WELL DATA (OU3-11S - slug out)

Initial Displacement: 1.634 ft
Total Well Penetration Depth: 29.62 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 29.62 ft
Screen Length: 29.62 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 96.82 ft/day
Le = 0.1 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-16S - slug out.aqt
Date: 01/03/12 Time: 15:57:45

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-16S - slug out

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

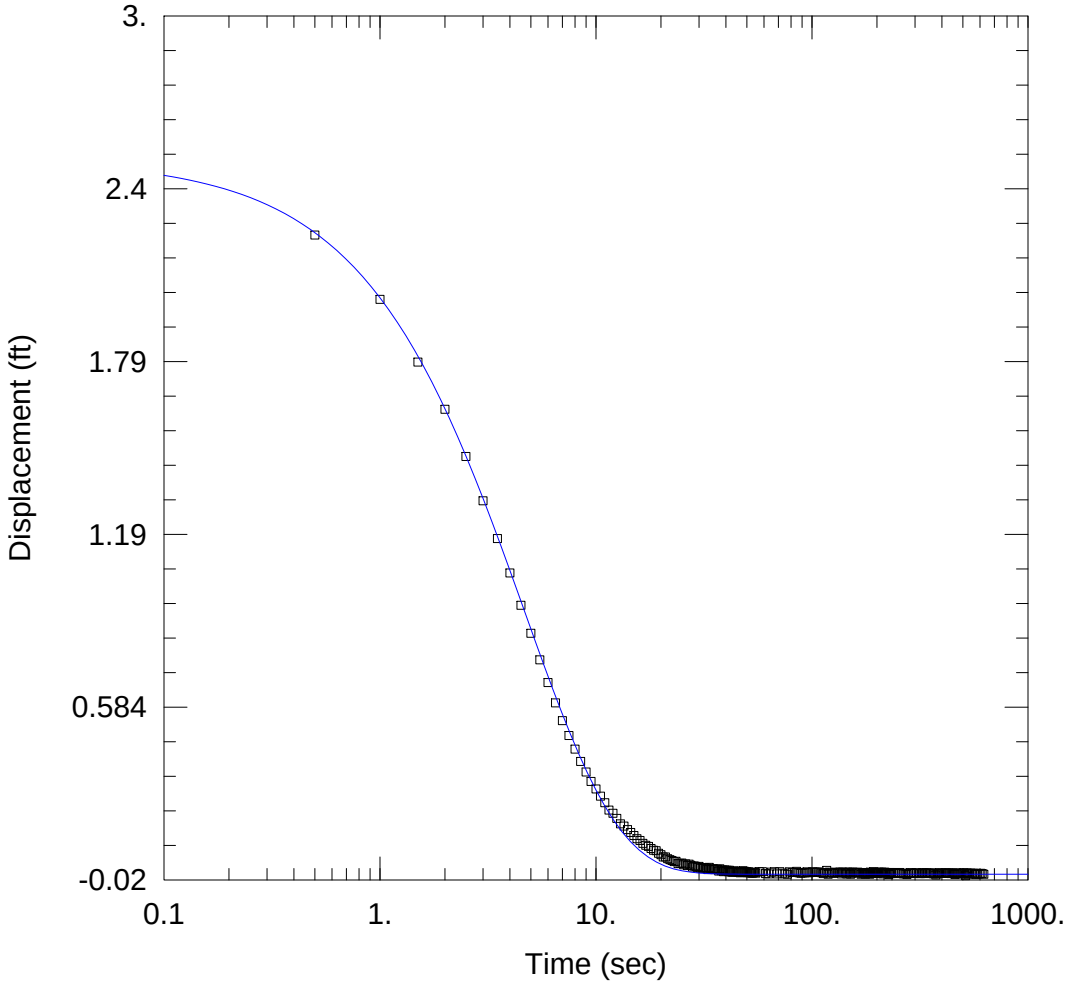
WELL DATA (OU3-16S - slug out)

Initial Displacement: 2.495 ft
Total Well Penetration Depth: 26.83 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 27.2 ft
Screen Length: 26.83 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 78.55 ft/day y0 = 2.495 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-16S - slug out.aqt
Date: 01/03/12 Time: 16:00:25

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-16S - slug out

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

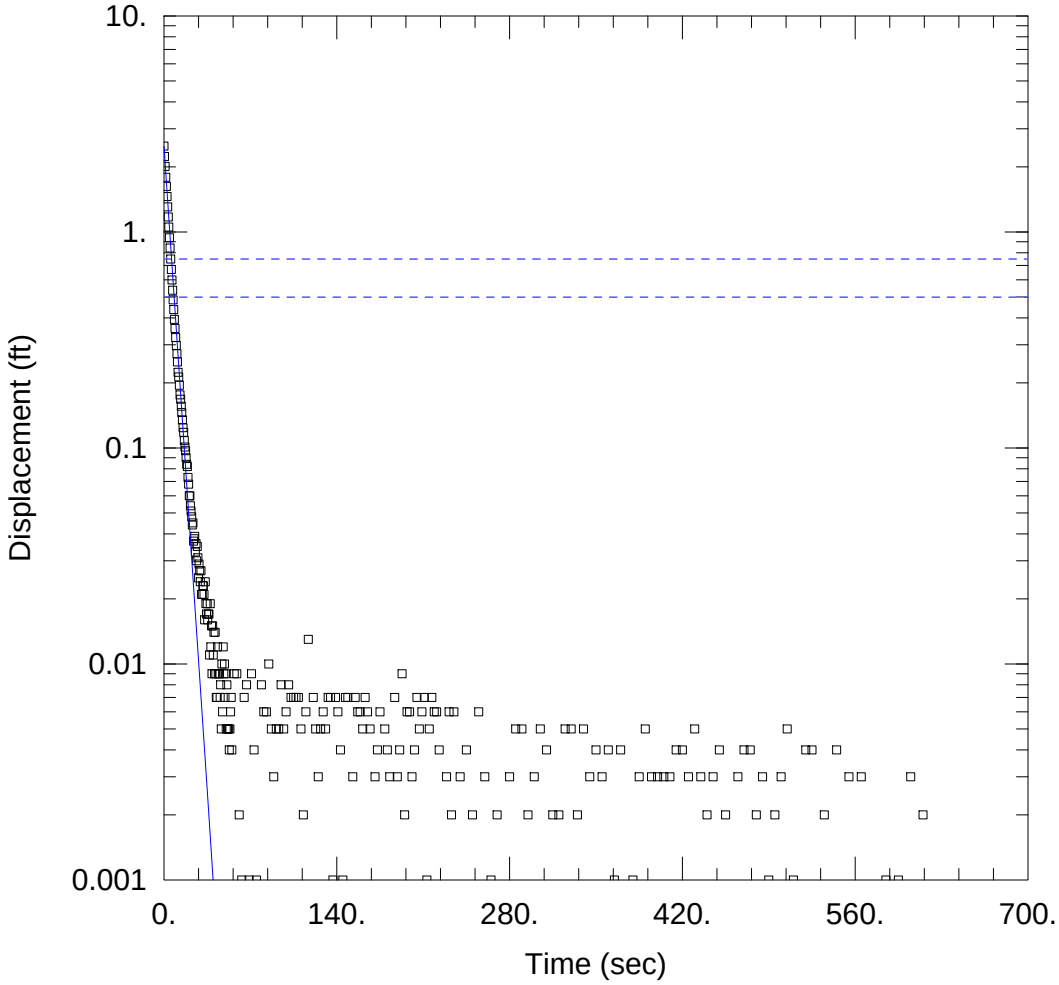
WELL DATA (OU3-16S - slug out)

Initial Displacement: 2.495 ft
Total Well Penetration Depth: 26.83 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 27.2 ft
Screen Length: 26.83 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 39.37 ft/day
Le = 0.1 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-16S - slug out.aqt
Date: 01/03/12 Time: 15:59:50

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-16S - slug out

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

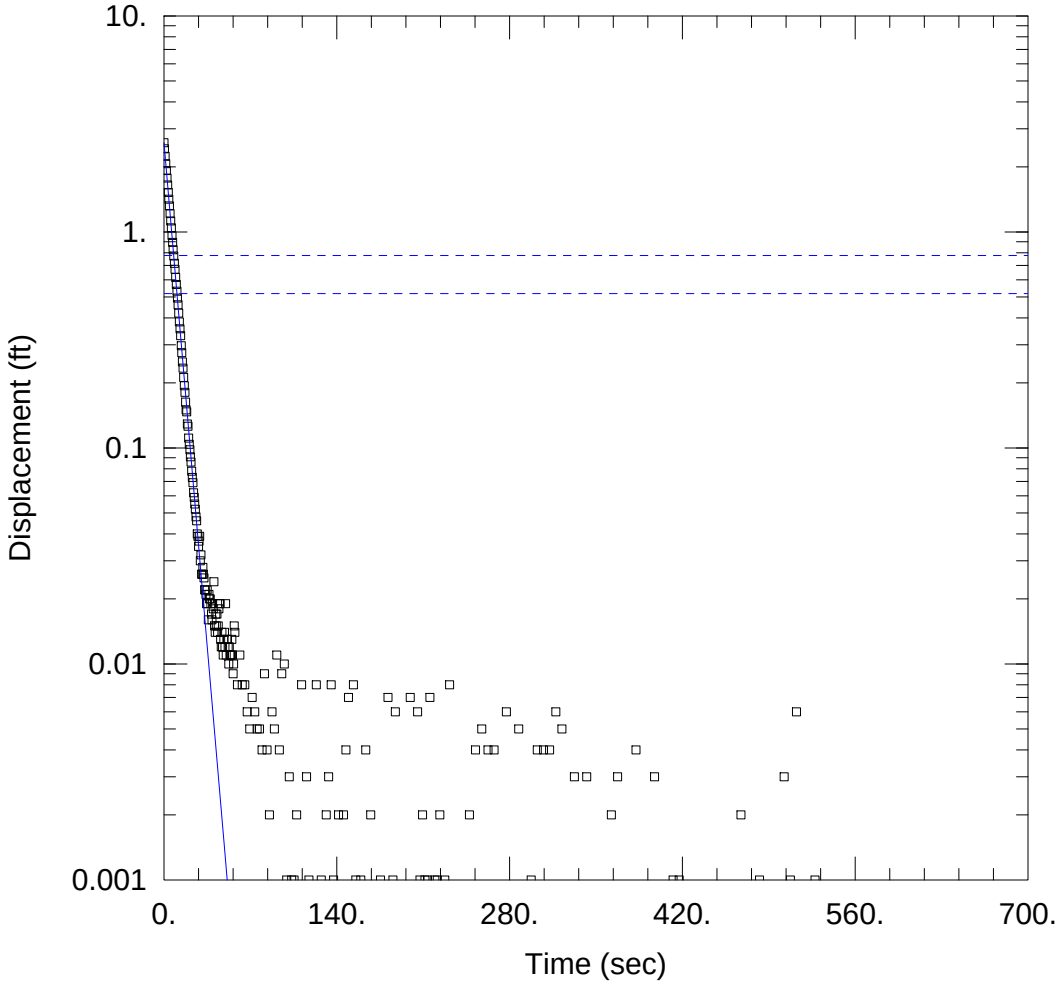
WELL DATA (OU3-16S - slug out)

Initial Displacement: 2.495 ft
Total Well Penetration Depth: 26.83 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 27.2 ft
Screen Length: 26.83 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 71.64 ft/day y0 = 2.495 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-17S - slug out.aqt
Date: 01/13/12 Time: 10:42:39

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-17S - slug out

AQUIFER DATA

Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.1

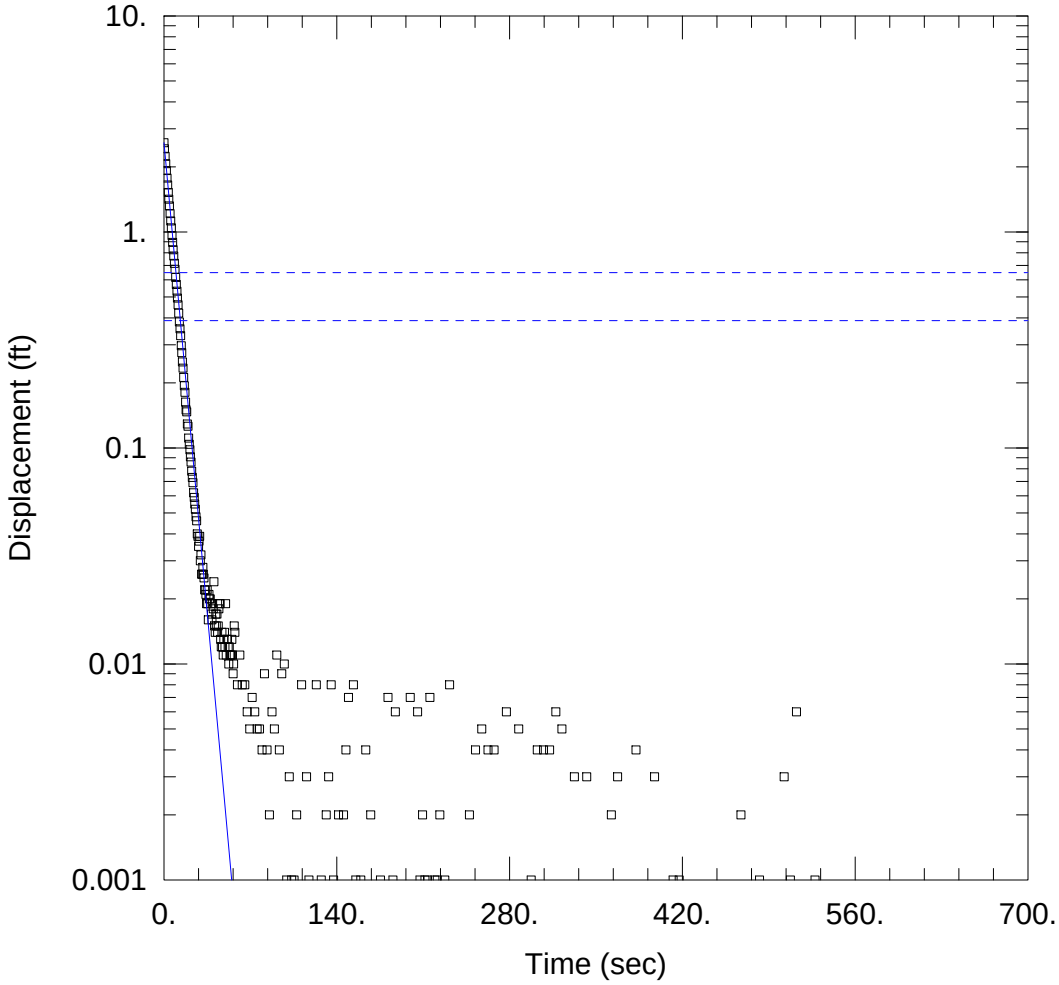
WELL DATA (OU3-17S - slug out)

Initial Displacement: 2.59 ft
Total Well Penetration Depth: 34.18 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 33.94 ft
Screen Length: 34.18 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 48.04 ft/day
y0 = 2.59 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-17S - slug out.aqt
Date: 01/13/12 Time: 10:43:34

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-17S - slug out

AQUIFER DATA

Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.1

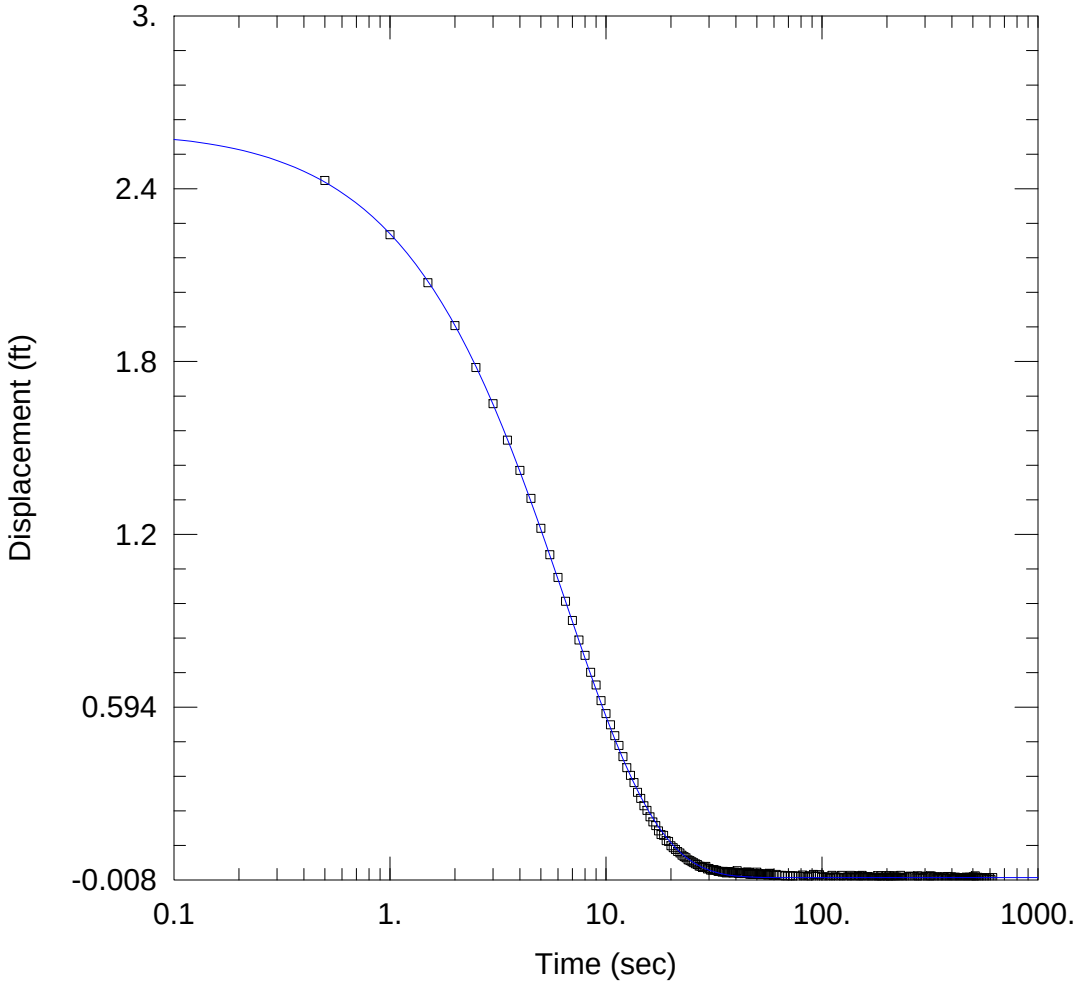
WELL DATA (OU3-17S - slug out)

Initial Displacement: 2.59 ft
Total Well Penetration Depth: 34.18 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 33.94 ft
Screen Length: 34.18 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 57.75 ft/day
y0 = 2.59 ft



WELL TEST ANALYSIS

Data Set: F:\...\OU3-17S - slug out.aqt
Date: 01/13/12 Time: 10:41:14

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: OU3-17S - slug out

AQUIFER DATA

Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.1

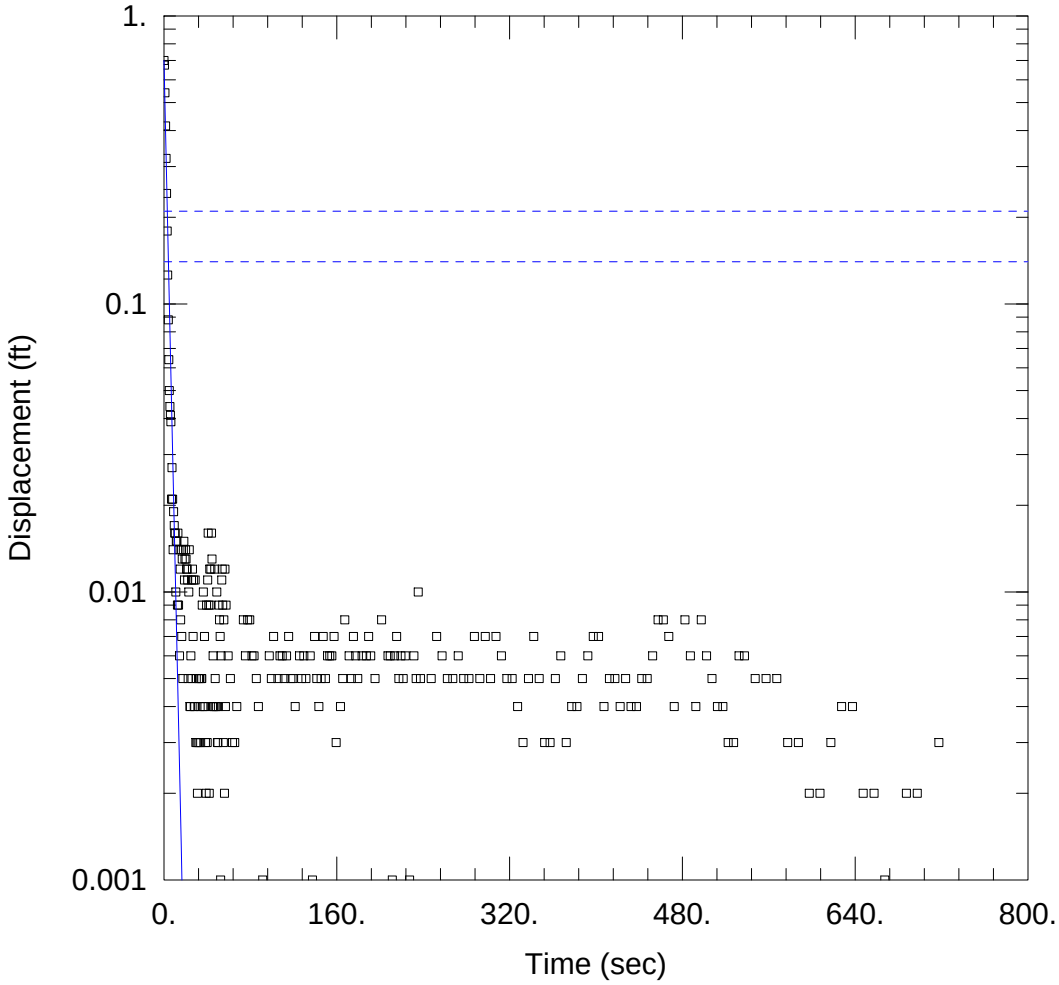
WELL DATA (OU3-17S - slug out)

Initial Displacement: 2.59 ft
Total Well Penetration Depth: 34.18 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 33.94 ft
Screen Length: 34.18 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 24.04 ft/day
Le = 12.88 ft



WELL TEST ANALYSIS

Data Set: F:\...\SC-MW-1D - slug out.aqt
Date: 01/13/12 Time: 10:51:16

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: SCMW-1D - slug out

AQUIFER DATA

Saturated Thickness: 38. ft
Anisotropy Ratio (Kz/Kr): 0.1

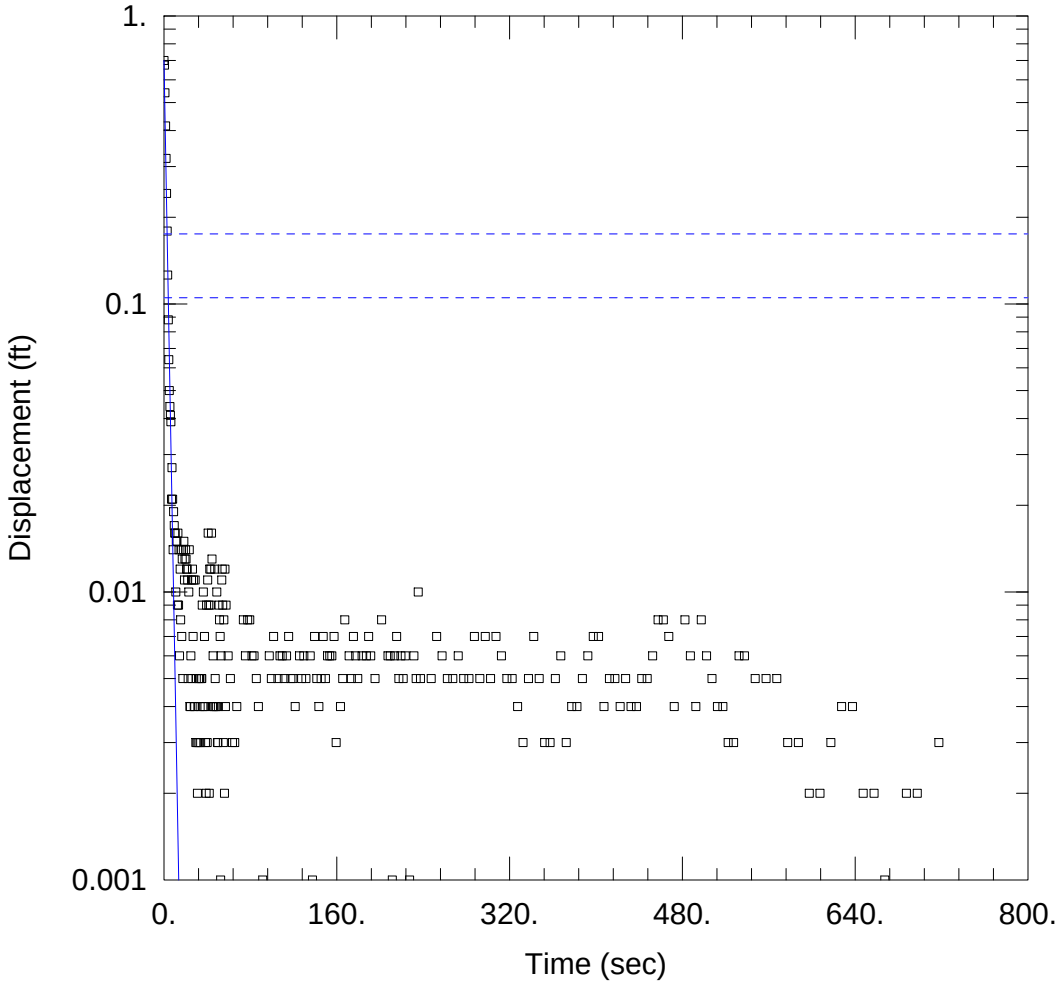
WELL DATA (SC-MW-1D - slug out)

Initial Displacement: 0.7 ft
Total Well Penetration Depth: 37.67 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 37.62 ft
Screen Length: 37.67 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 116.5 ft/day
y0 = 0.7 ft



WELL TEST ANALYSIS

Data Set: F:\...\SC-MW-1D - slug out.aqt
Date: 01/13/12 Time: 10:52:56

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: SCMW-1D - slug out

AQUIFER DATA

Saturated Thickness: 38. ft
Anisotropy Ratio (Kz/Kr): 0.1

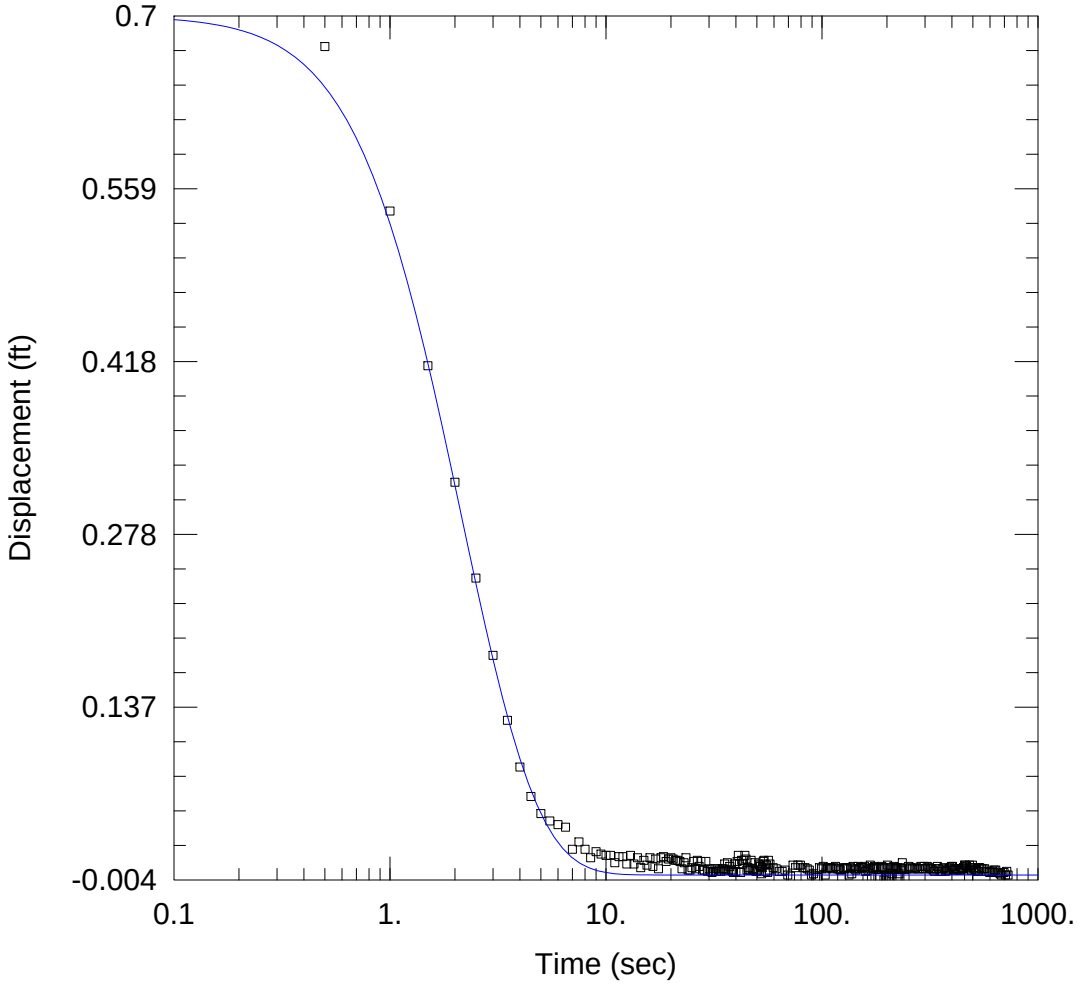
WELL DATA (SC-MW-1D - slug out)

Initial Displacement: 0.7 ft
Total Well Penetration Depth: 37.67 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 37.62 ft
Screen Length: 37.67 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 178.6 ft/day
y0 = 0.7 ft



WELL TEST ANALYSIS

Data Set: F:\...\SC-MW-1D - slug out.aqt
Date: 01/13/12 Time: 10:49:07

PROJECT INFORMATION

Company: ERM
Client: OU3 Working Group
Project: 0096498
Location: OU3
Test Well: SCMW-1D - slug out

AQUIFER DATA

Saturated Thickness: 38. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (SC-MW-1D - slug out)

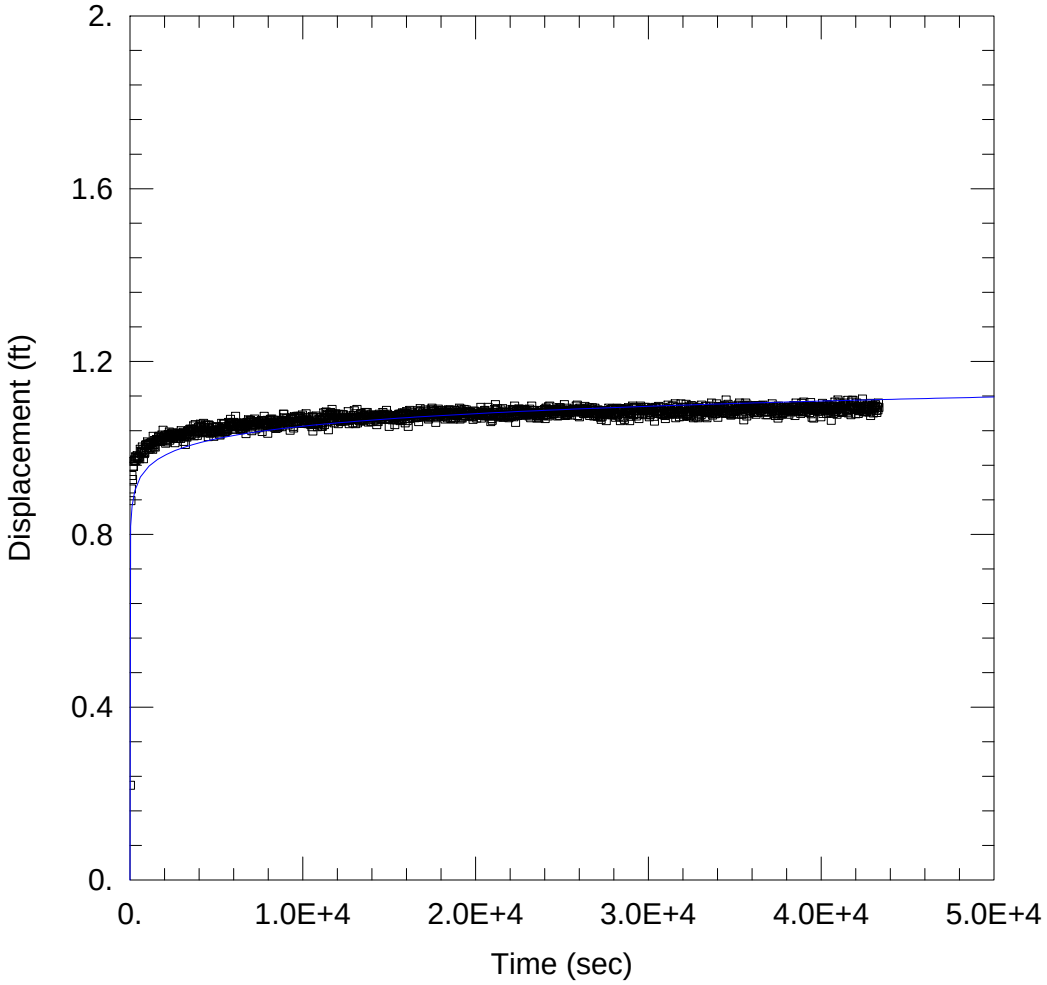
Initial Displacement: 0.7 ft
Total Well Penetration Depth: 37.67 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 37.62 ft
Screen Length: 37.67 ft
Well Radius: 0.333 ft
Gravel Pack Porosity: 0.33

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar

K = 66.5 ft/day
Le = 34.67 ft

Appendix L
U-SRG and L-SRG Constant-Rate
AQTESOLV Output



WELL TEST ANALYSIS

Data Set: F:\...\5SR(CJ).aqt
Date: 02/21/12 Time: 09:02:57

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-5SR

AQUIFER DATA

Saturated Thickness: 30. ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
OU3-5SR	0	0

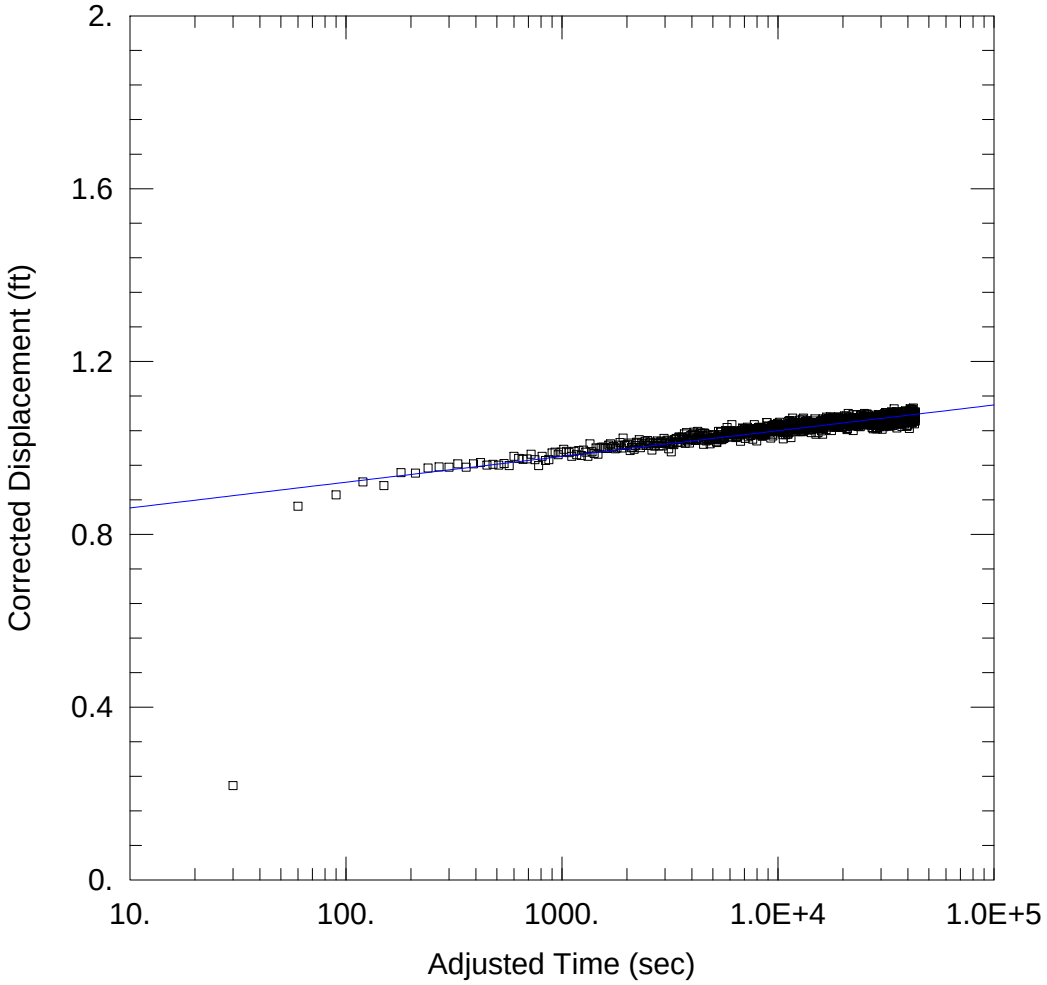
Observation Wells

Well Name	X (ft)	Y (ft)
▫ OU3-5SR	0	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 9111.5 ft^2/day
S = 3.684E-16
Sy = 1.0E-6
ß = 1.116E-6



WELL TEST ANALYSIS

Data Set: F:\...\5SR (C&J).aqt
Date: 03/27/12 Time: 12:07:12

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-5SR

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
OU3-5SR	0	0

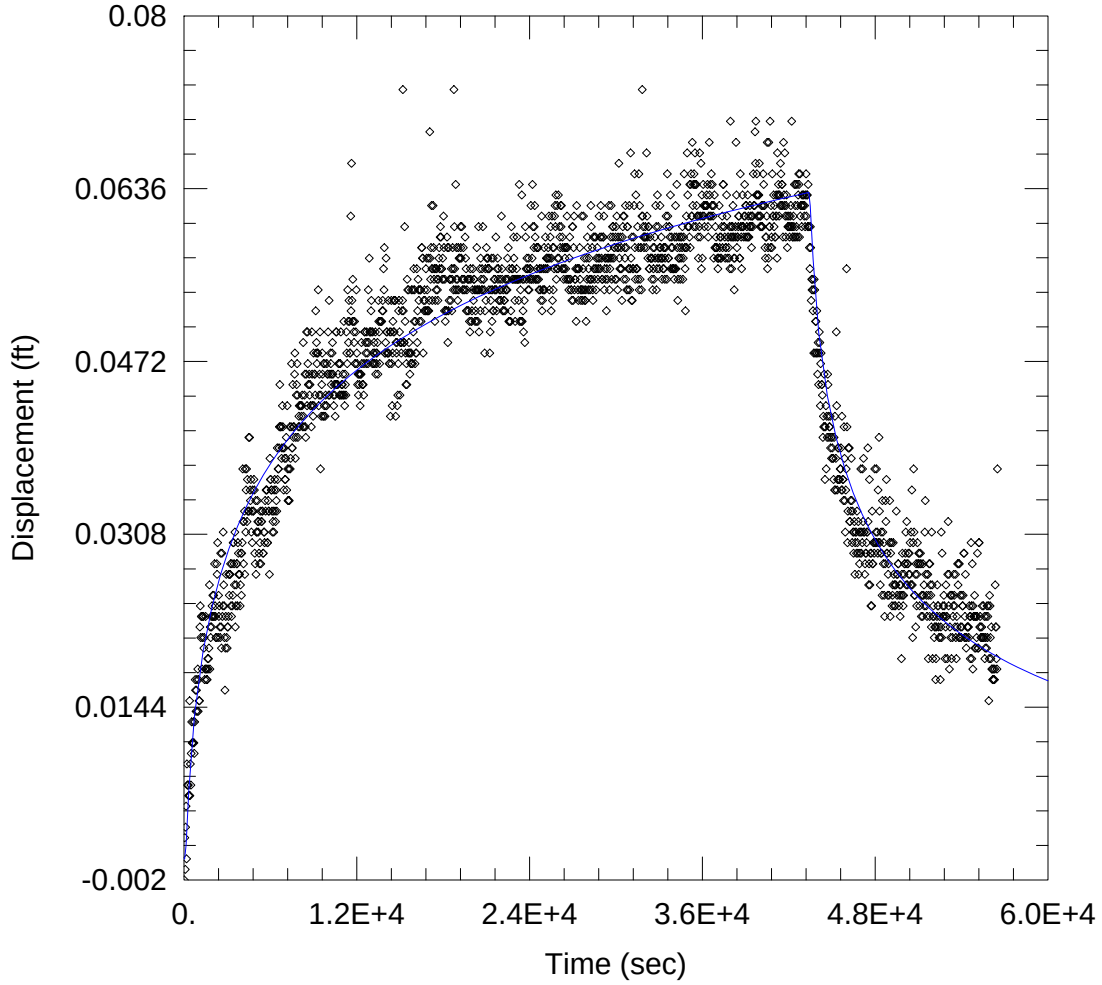
Observation Wells

Well Name	X (ft)	Y (ft)
▫ OU3-5SR	0	0

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 1.48E+4 ft^2/day S = 4.927E-13



WELL TEST ANALYSIS

Data Set: F:\...\5SR AT2.aqt
Date: 02/20/12 Time: 15:35:27

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-5SR

AQUIFER DATA

Saturated Thickness: 30. ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
5SR	0	0

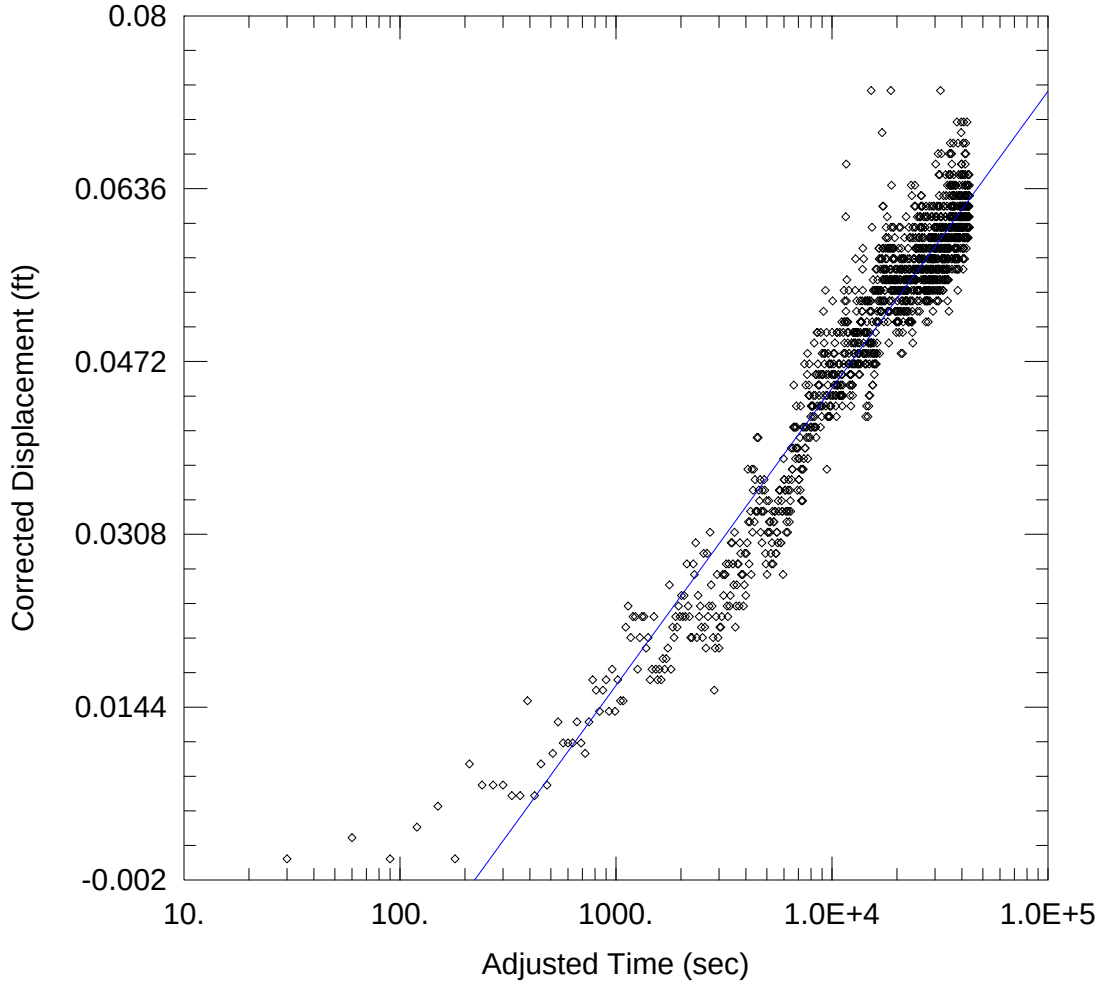
Observation Wells

Well Name	X (ft)	Y (ft)
◇ AT-2inch	50	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 2.876E+4 ft^2/day
S = 0.1701
Sy = 0.001
ß = 0.4679



WELL TEST ANALYSIS

Data Set: F:\...\5SR AT2(C&J).aqt
Date: 03/27/12 Time: 12:04:41

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-5SR

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.2933

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
5SR	0	0

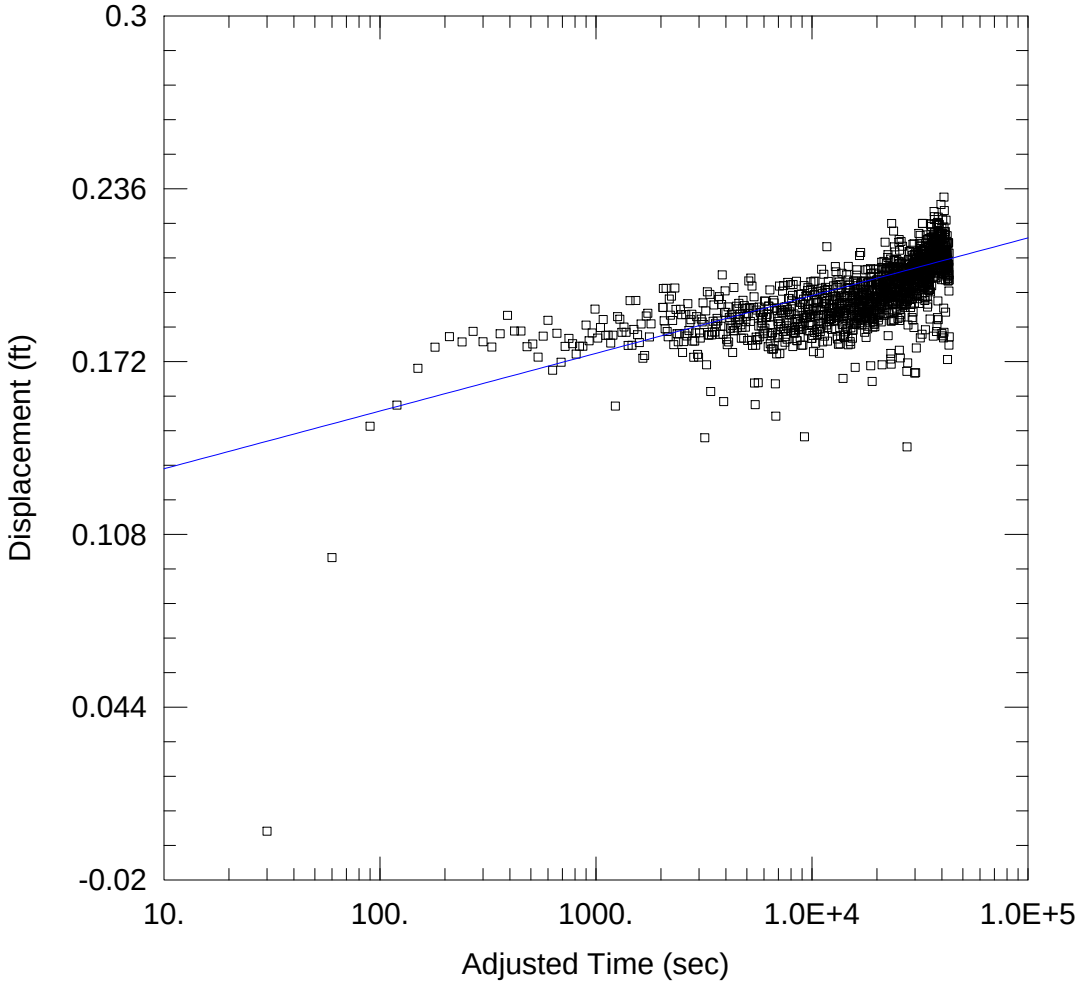
Observation Wells

Well Name	X (ft)	Y (ft)
◇ AT-S	58	0

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 3.127E+4 ft^2/day S = 0.06307



WELL TEST ANALYSIS

Data Set: F:\...\5M2corrected(CJ-JH edits).aqt
Date: 03/23/12 Time: 17:07:15

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-5M2

AQUIFER DATA

Saturated Thickness: 100. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
OU3-AT-M2	0	0

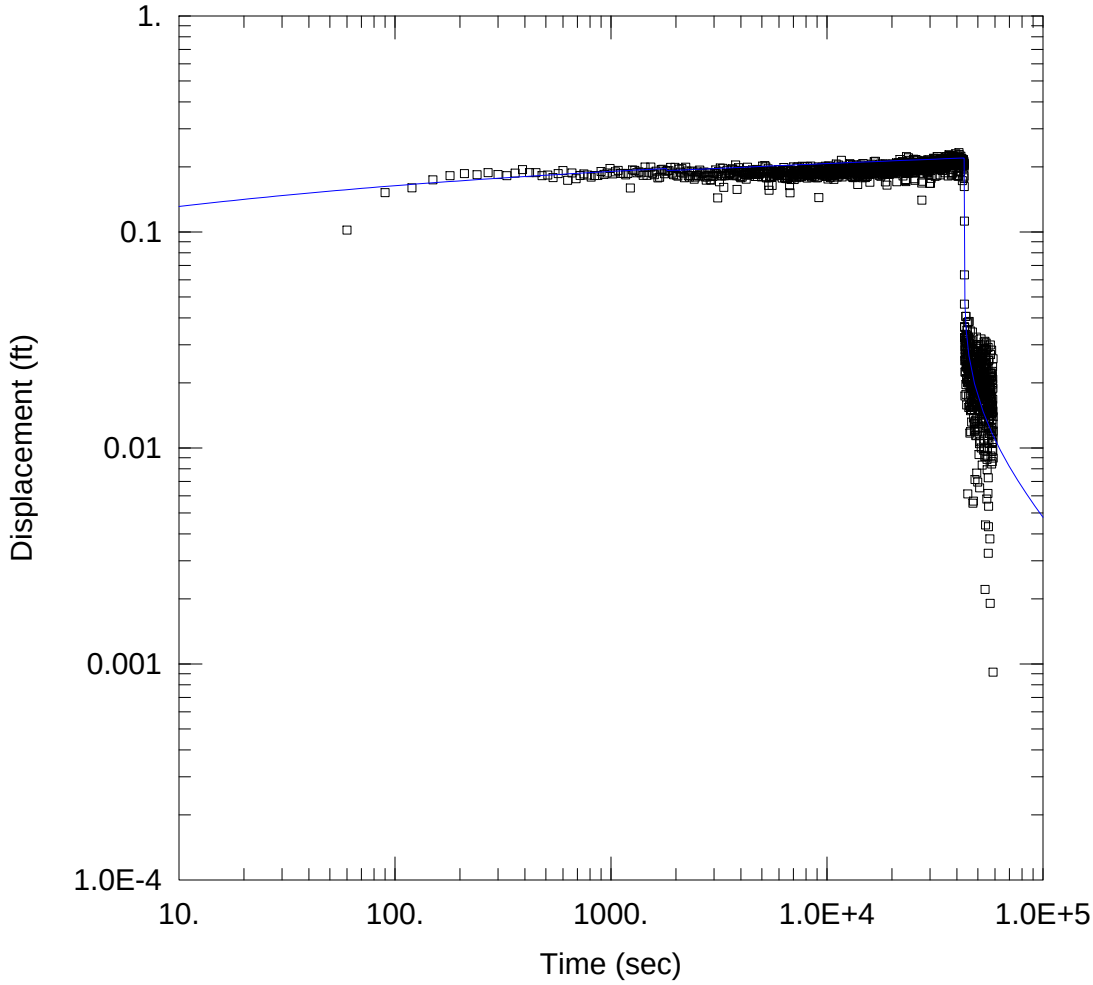
Observation Wells

Well Name	X (ft)	Y (ft)
▫ OU3-5M2	43	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 6.106E+4 ft^2/day S = 5.562E-9



WELL TEST ANALYSIS

Data Set: F:\...\5M2corrected(hantush - JH edits).aqt
Date: 03/23/12 Time: 17:05:41

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-5M2

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
OU3-AT-M2	0	0

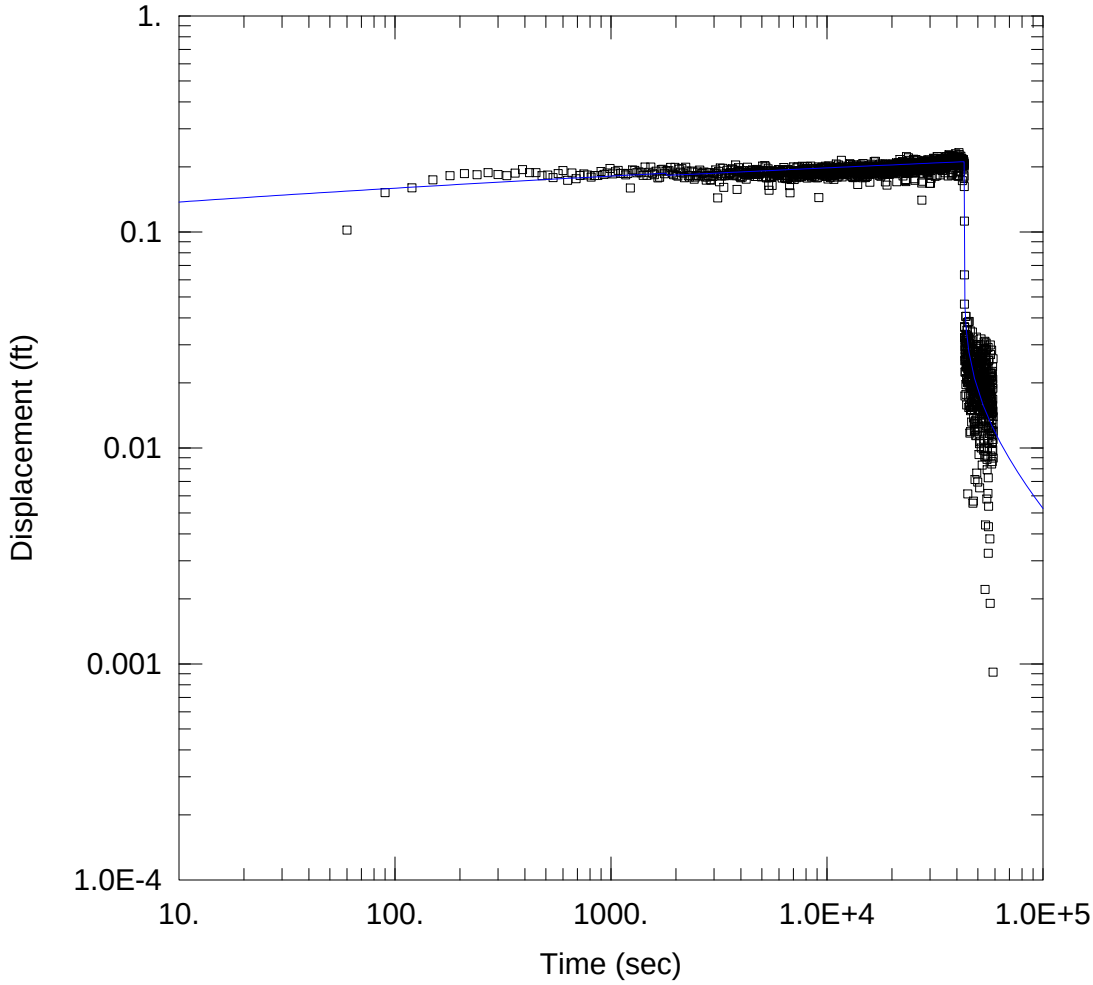
Observation Wells

Well Name	X (ft)	Y (ft)
▫ OU3-5M2	43	0

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush

T = 3.468E+4 ft^2/day
S = 3.904E-6
ß = 0.002215
Kz/Kr = 0.1
b = 100. ft



WELL TEST ANALYSIS

Data Set: F:\...\5M2corrected(Theis -JH-edits).aqt
Date: 03/23/12 Time: 17:04:15

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-5M2

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
OU3-AT-M2	0	0

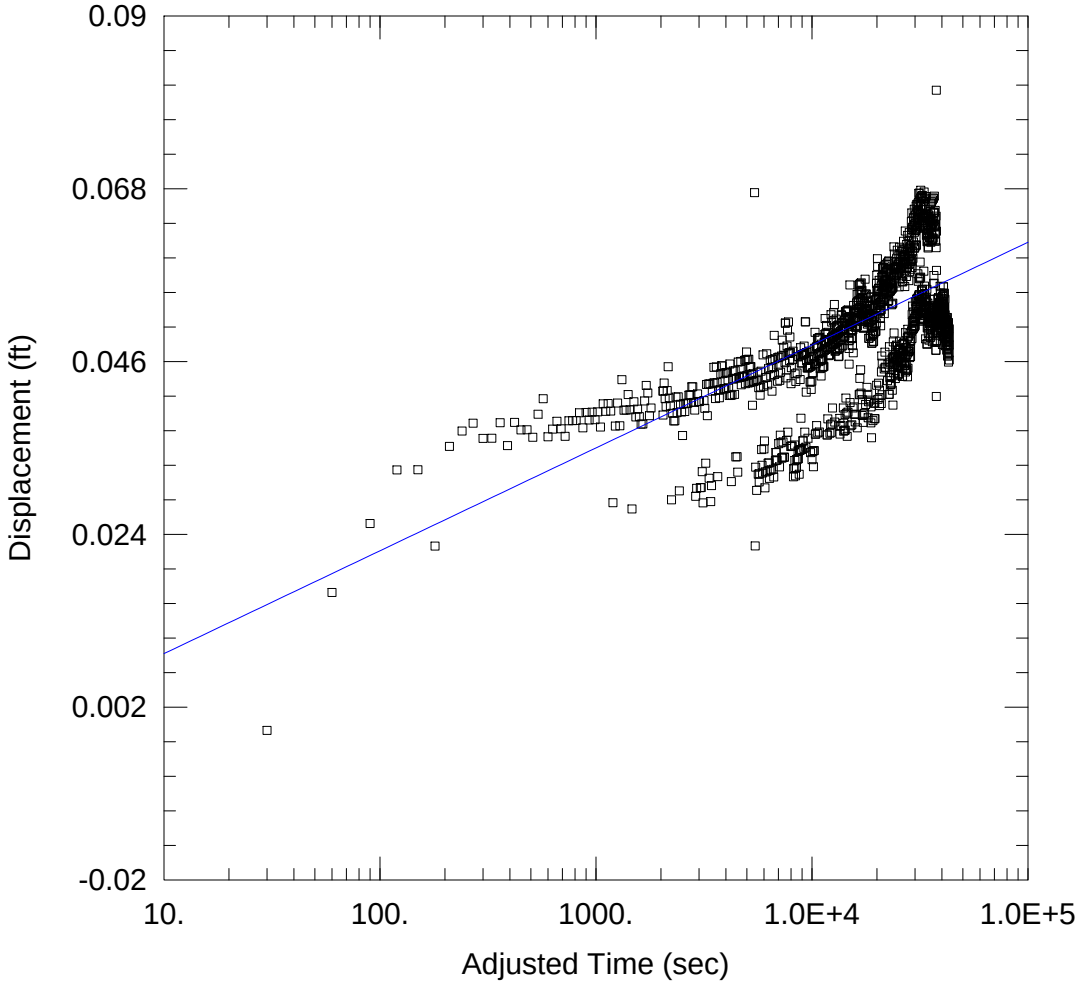
Observation Wells

Well Name	X (ft)	Y (ft)
▫ OU3-5M2	43	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 6.12E+4 ft^2/day
S = 1.116E-8
Kz/Kr = 0.1
b = 100. ft



WELL TEST ANALYSIS

Data Set: F:\...\5MRcorrected (CJ -JH).aqt
Date: 03/23/12 Time: 17:02:13

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-5MR - CJ

AQUIFER DATA

Saturated Thickness: 100. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
OU3-AT-M2	0	0

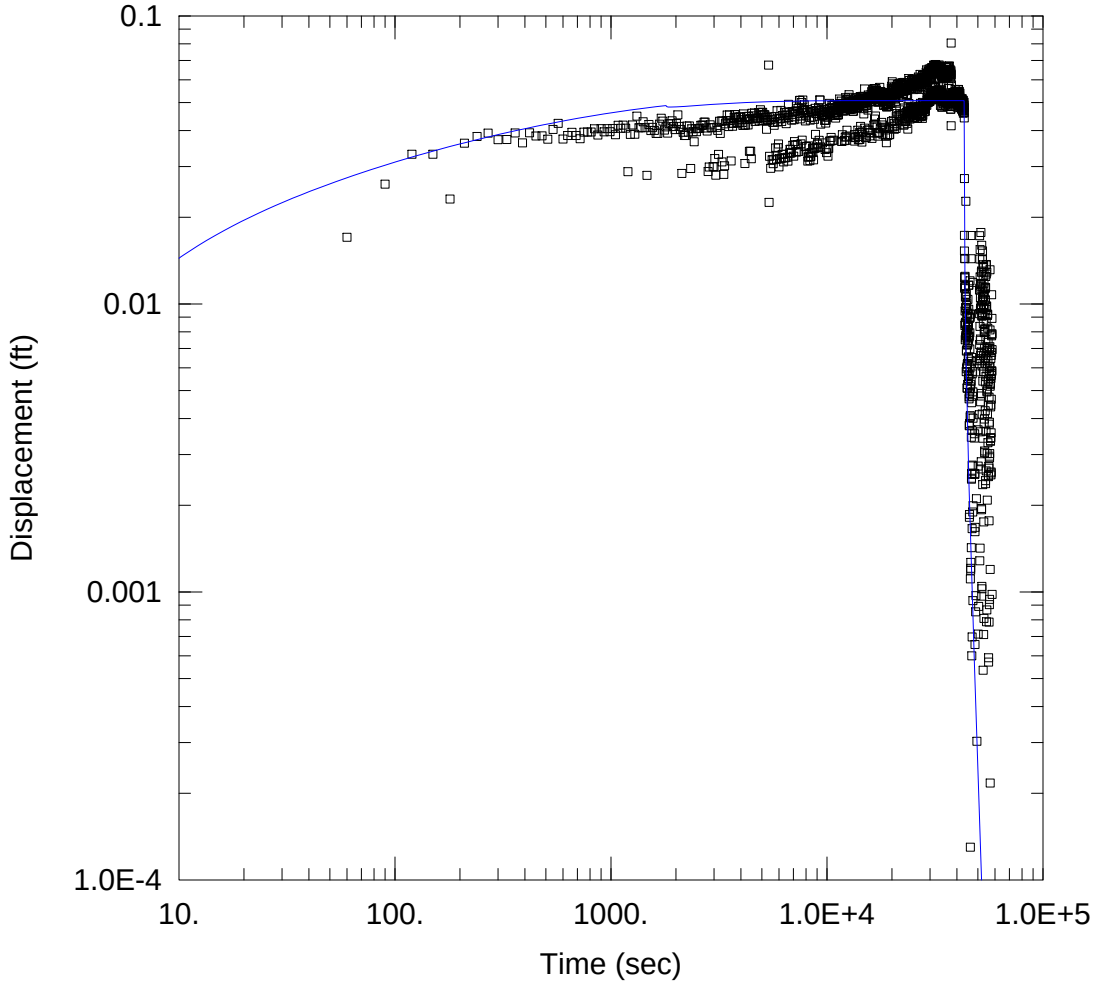
Observation Wells

Well Name	X (ft)	Y (ft)
▫ OU3-5MR	77	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 9.966E+4 ft^2/day S = 0.0009285



WELL TEST ANALYSIS

Data Set: F:\...\5MRcorrected(hantush-jacob -JH edits).aqt
Date: 03/23/12 Time: 17:00:52

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-5MR - HJ

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
OU3-AT-M2	0	0

Observation Wells

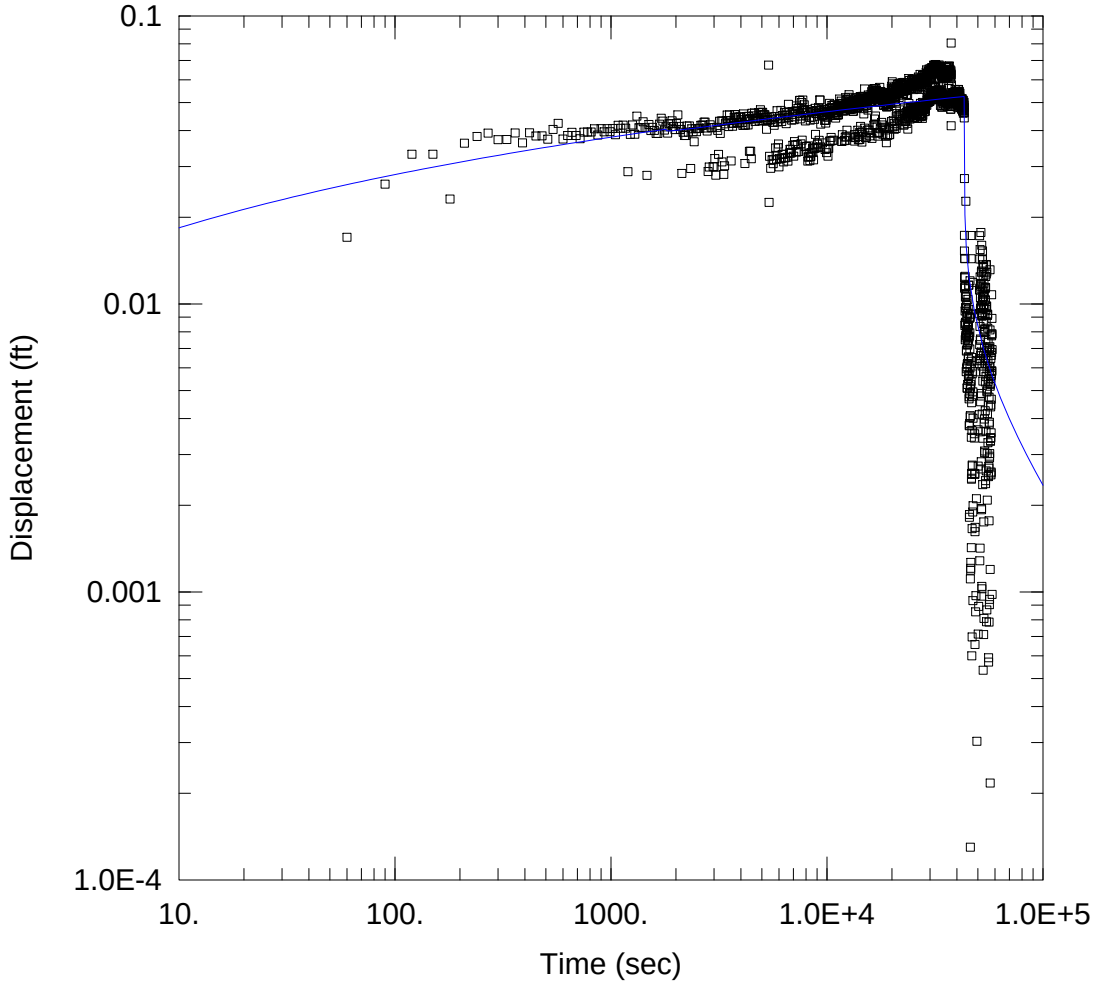
Well Name	X (ft)	Y (ft)
▫ OU3-5MR	77	0

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 7.809E+4 ft^2/day
r/B = 0.04365
b = 100. ft

S = 0.0008599
Kz/Kr = 0.1



WELL TEST ANALYSIS

Data Set: F:\...\5MRcorrected(T -jh edits)).aqt
Date: 03/23/12 Time: 16:59:15

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-5MR

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
OU3-AT-M2	0	0

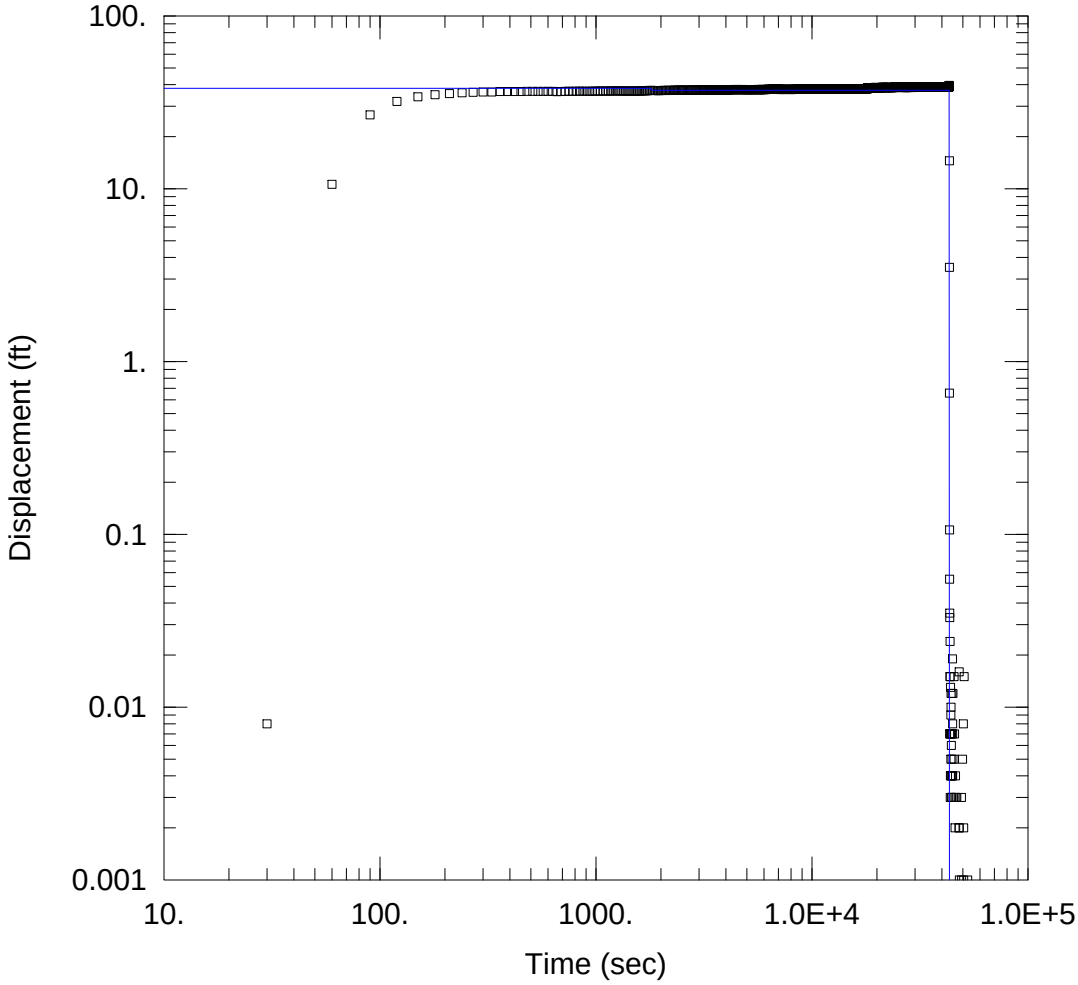
Observation Wells

Well Name	X (ft)	Y (ft)
▫ OU3-5MR	77	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1.368E+5 ft^2/day
S = 0.0001336
Kz/Kr = 0.1
b = 100. ft



WELL TEST ANALYSIS

Data Set: F:\...\AT-M2corrected (hantush-jacob -aquifer corrected).aqt
Date: 03/23/12 Time: 16:56:55

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-AT-M2

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
OU3-AT-M2	0	0

Observation Wells

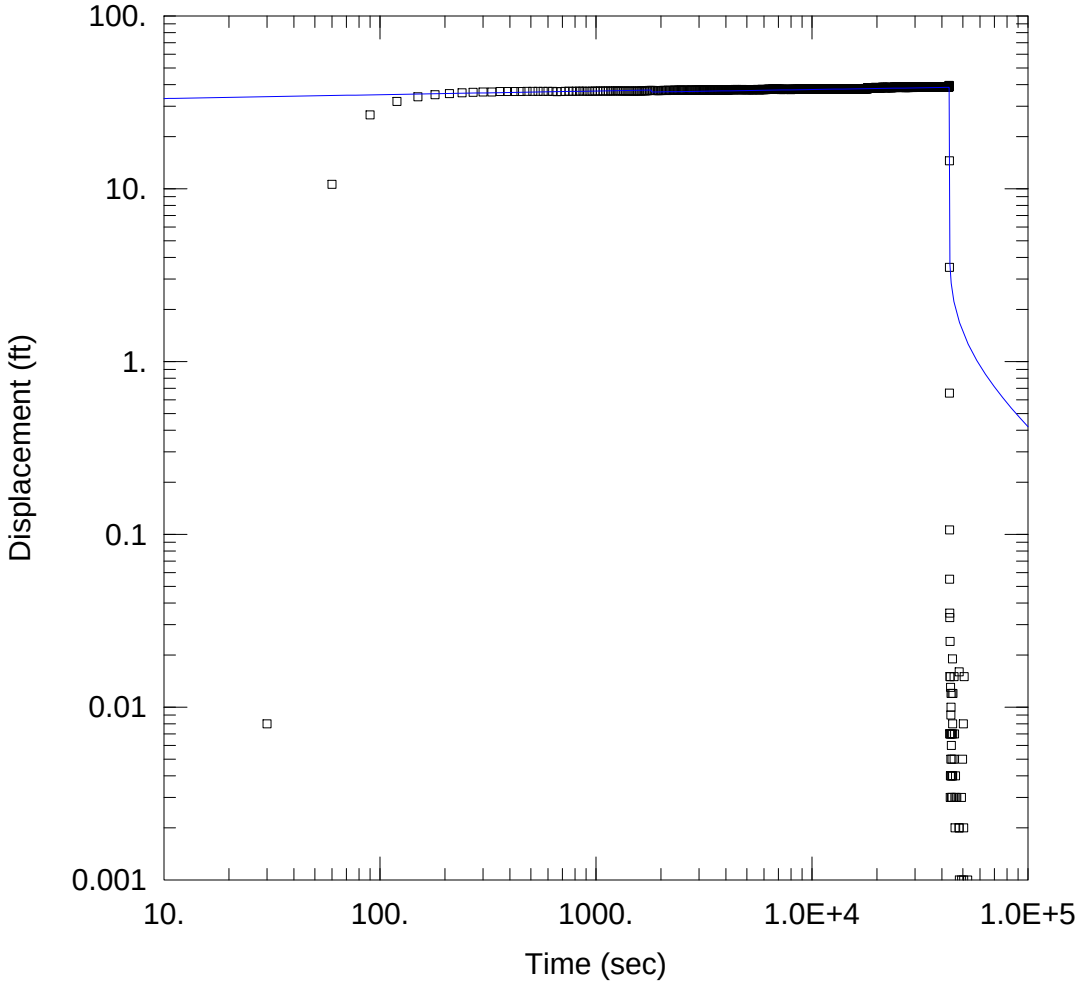
Well Name	X (ft)	Y (ft)
▫ OU3-AT-M2	0	0

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 205.2 ft^2/day
r/B = 0.1
b = 100. ft

S = 8.502E-18
Kz/Kr = 0.1



WELL TEST ANALYSIS

Data Set: F:\...\AT-M2corrected (T).aqt
Date: 03/23/12 Time: 16:56:00

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-AT-M2 - Theis

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
OU3-AT-M2	0	0

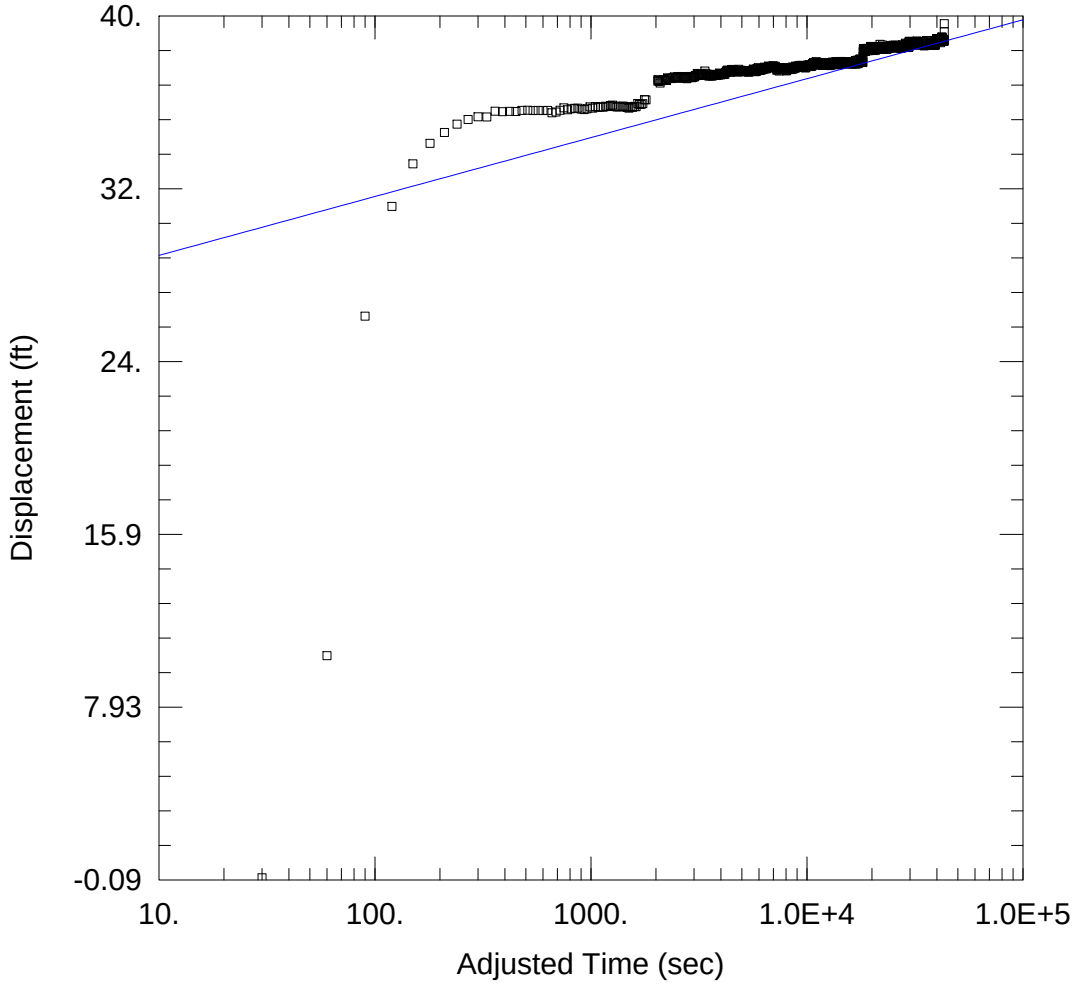
Observation Wells

Well Name	X (ft)	Y (ft)
▫ OU3-AT-M2	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 764.8 ft^2/day
S = 2.555E-11
Kz/Kr = 0.1
b = 100. ft



WELL TEST ANALYSIS

Data Set: F:\...\AT-M2corrected(CJ).aqt
Date: 03/23/12 Time: 16:54:44

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-AT-M2 - CJ

AQUIFER DATA

Saturated Thickness: 100. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
OU3-AT-M2	0	0

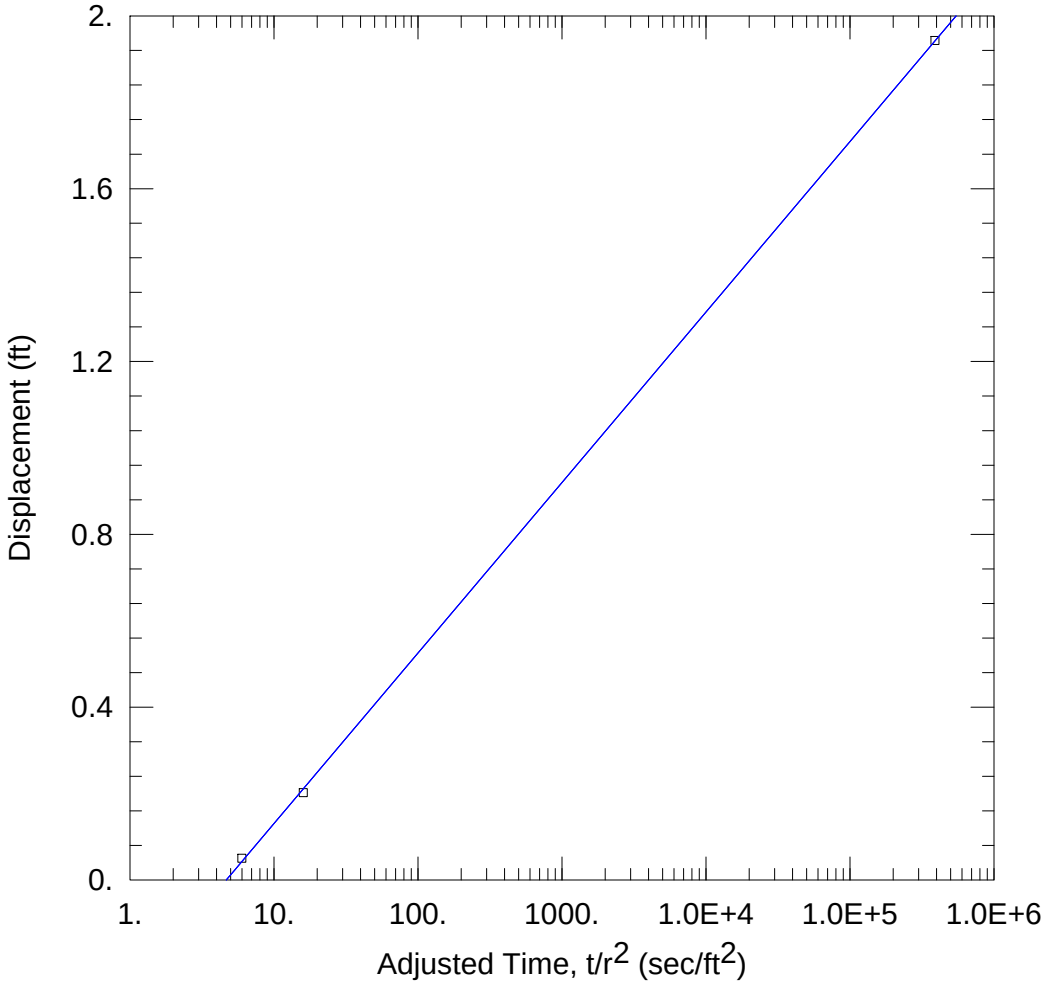
Observation Wells

Well Name	X (ft)	Y (ft)
▫ OU3-AT-M2	0	0

SOLUTION

Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 477.5 ft^2/day S = 3.011E-11



WELL TEST ANALYSIS

Data Set: F:\...\Distance-Drawdown.aqt
Date: 03/02/12 Time: 15:38:57

PROJECT INFORMATION

Company: ERM
Client: OU3
Project: 0096498
Location: Phoenix
Test Well: OU3-AT-4

AQUIFER DATA

Saturated Thickness: 50. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
AT-4	0	0

Observation Wells

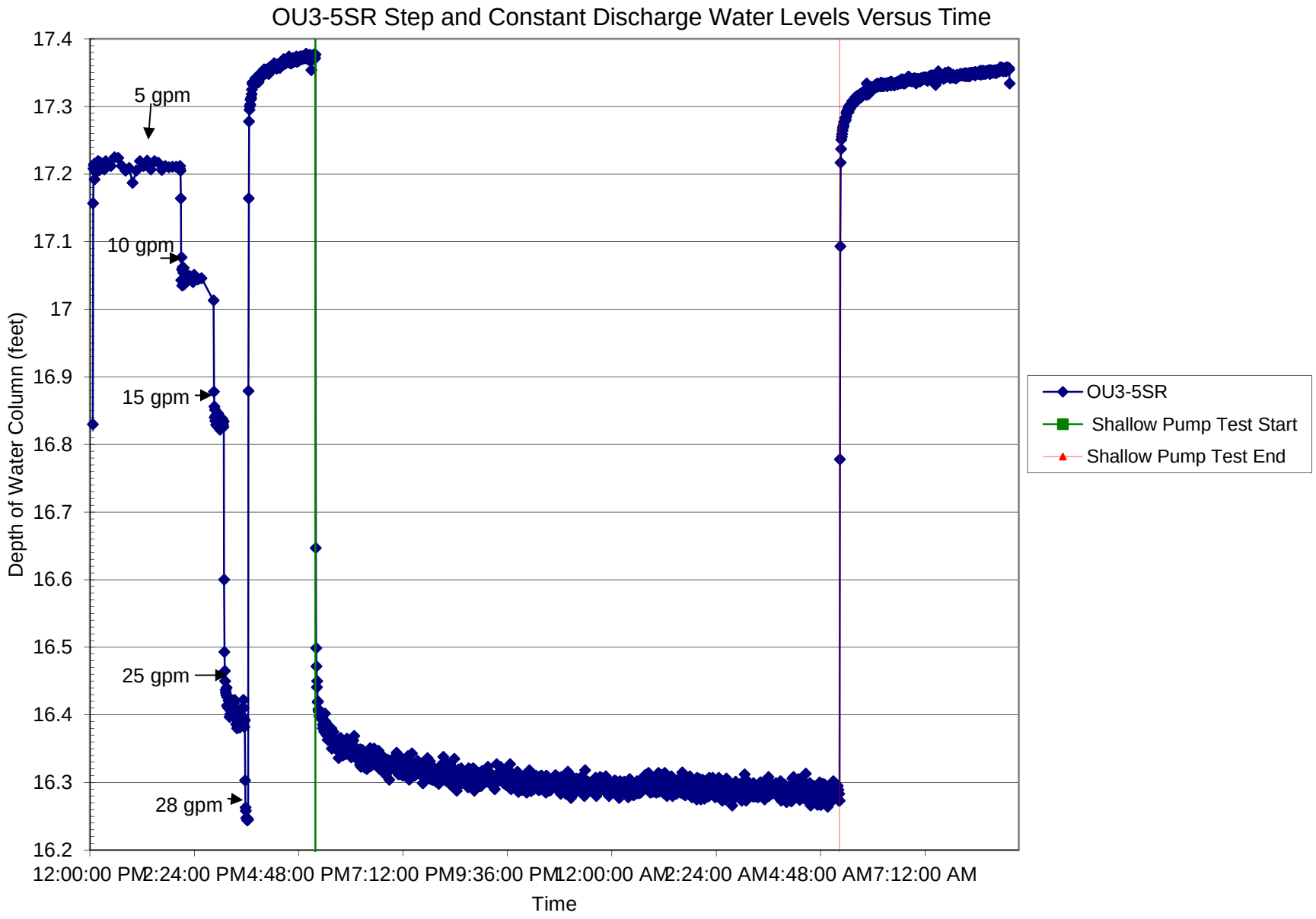
Well Name	X (ft)	Y (ft)
AT-4	0	0
5M2	52	0
5MR	85	0

SOLUTION

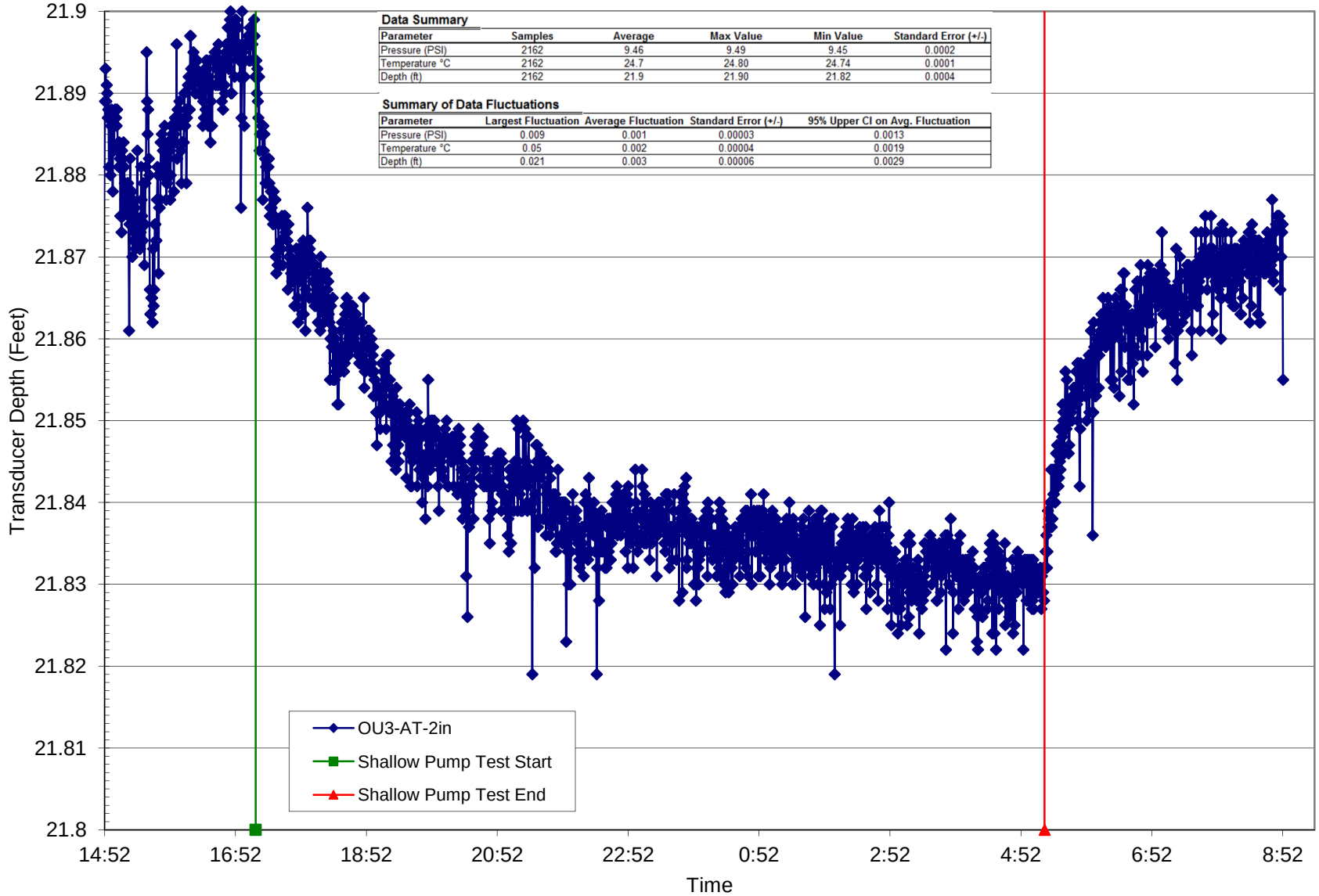
Aquifer Model: Confined Solution Method: Cooper-Jacob

T = 3306.9 ft^2/day S = 0.4016

Appendix M
U-SRG and L-SRG Transducer Data


OU3-5SR Step and Constant Discharge Water Levels Versus Time
Depth of Water Column (feet)
17.4
17.3
17.2
17.1
17
16.9
16.8
16.7
16.6
16.5
16.4
16.3
16.2
5 gpm
10 gpm
15 gpm
25 gpm
28 gpm
12:00:00 PM
2:24:00 PM
4:48:00 PM
7:12:00 PM
9:36:00 PM
12:00:00 AM
2:24:00 AM
4:48:00 AM
7:12:00 AM
Time
OU3-5SR
Shallow Pump Test Start
Shallow Pump Test End

Transducer Depth Versus Time U-SRG Constant Discharge Test



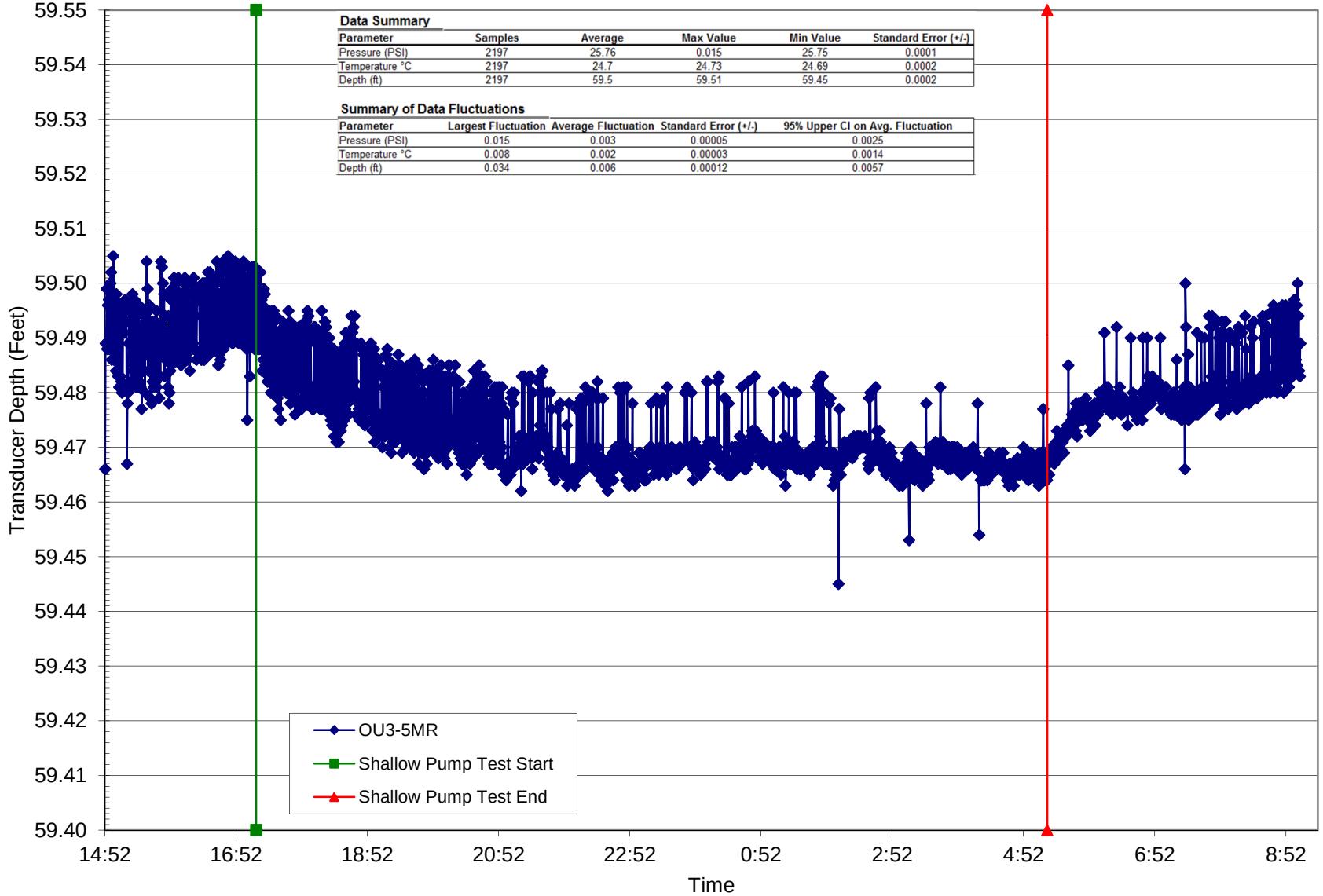
Data Summary

Parameter	Samples	Average	Max Value	Min Value	Standard Error (+/-)
Pressure (PSI)	2162	9.46	9.49	9.45	0.0002
Temperature °C	2162	24.7	24.80	24.74	0.0001
Depth (ft)	2162	21.9	21.90	21.82	0.0004

Summary of Data Fluctuations

Parameter	Largest Fluctuation	Average Fluctuation	Standard Error (+/-)	95% Upper CI on Avg. Fluctuation
Pressure (PSI)	0.009	0.001	0.00003	0.0013
Temperature °C	0.05	0.002	0.00004	0.0019
Depth (ft)	0.021	0.003	0.00006	0.0029

Transducer Depth Versus U-SRG Constant Discharge Test



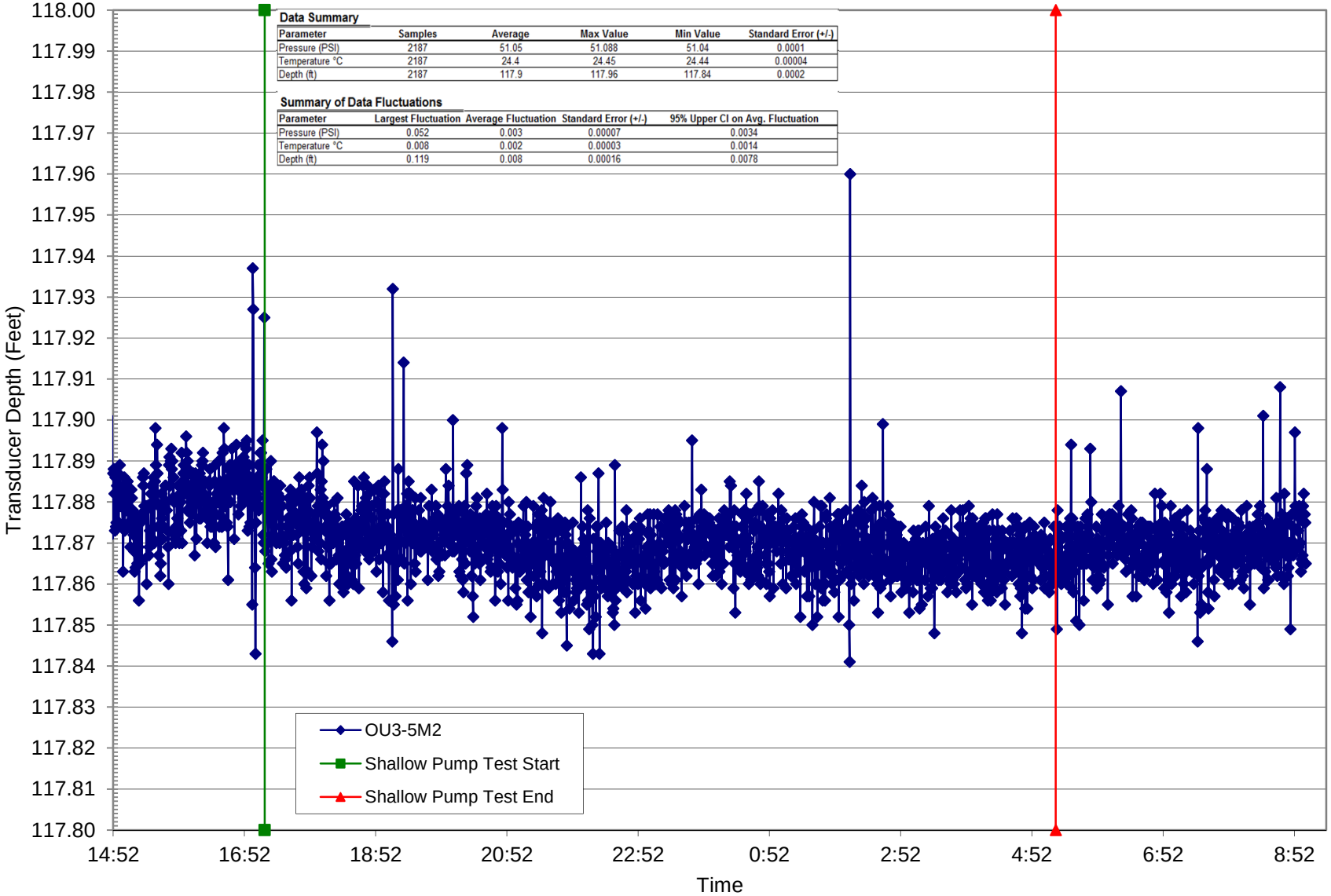
Data Summary

Parameter	Samples	Average	Max Value	Min Value	Standard Error (+/-)
Pressure (PSI)	2197	25.76	0.015	25.75	0.0001
Temperature °C	2197	24.7	24.73	24.69	0.0002
Depth (ft)	2197	59.5	59.51	59.45	0.0002

Summary of Data Fluctuations

Parameter	Largest Fluctuation	Average Fluctuation	Standard Error (+/-)	95% Upper CI on Avg. Fluctuation
Pressure (PSI)	0.015	0.003	0.00005	0.0025
Temperature °C	0.008	0.002	0.00003	0.0014
Depth (ft)	0.034	0.006	0.00012	0.0057

Transducer Depth Versus U-SRG Constant Discharge Test



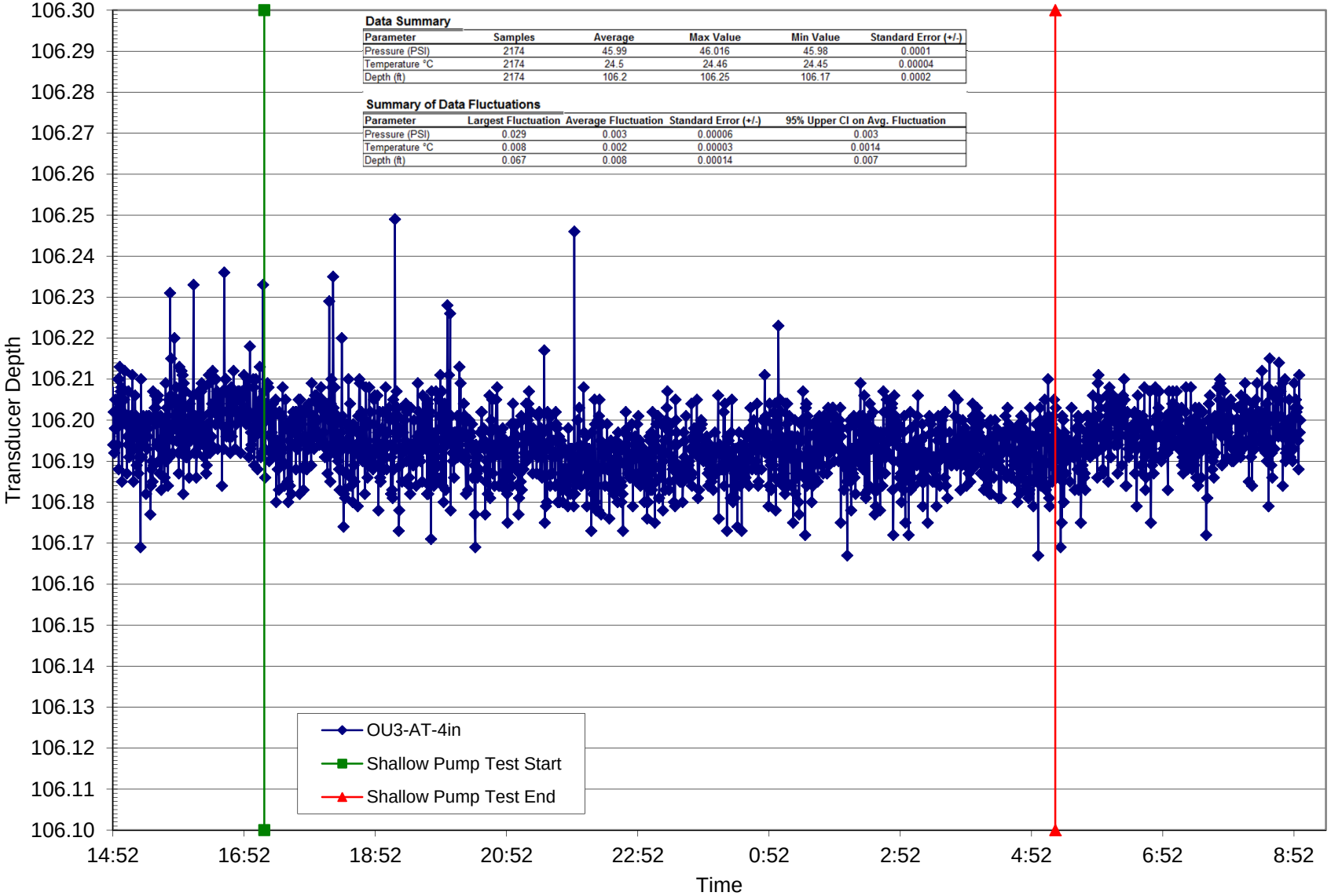
Data Summary

Parameter	Samples	Average	Max Value	Min Value	Standard Error (+/-)
Pressure (PSI)	2187	51.05	51.088	51.04	0.0001
Temperature °C	2187	24.4	24.45	24.44	0.00004
Depth (ft)	2187	117.9	117.96	117.84	0.0002

Summary of Data Fluctuations

Parameter	Largest Fluctuation	Average Fluctuation	Standard Error (+/-)	95% Upper CI on Avg. Fluctuation
Pressure (PSI)	0.052	0.003	0.00007	0.0034
Temperature °C	0.008	0.002	0.00003	0.0014
Depth (ft)	0.119	0.008	0.00016	0.0078

Transducer Depth Versus U-SRG Constant Discharge Test

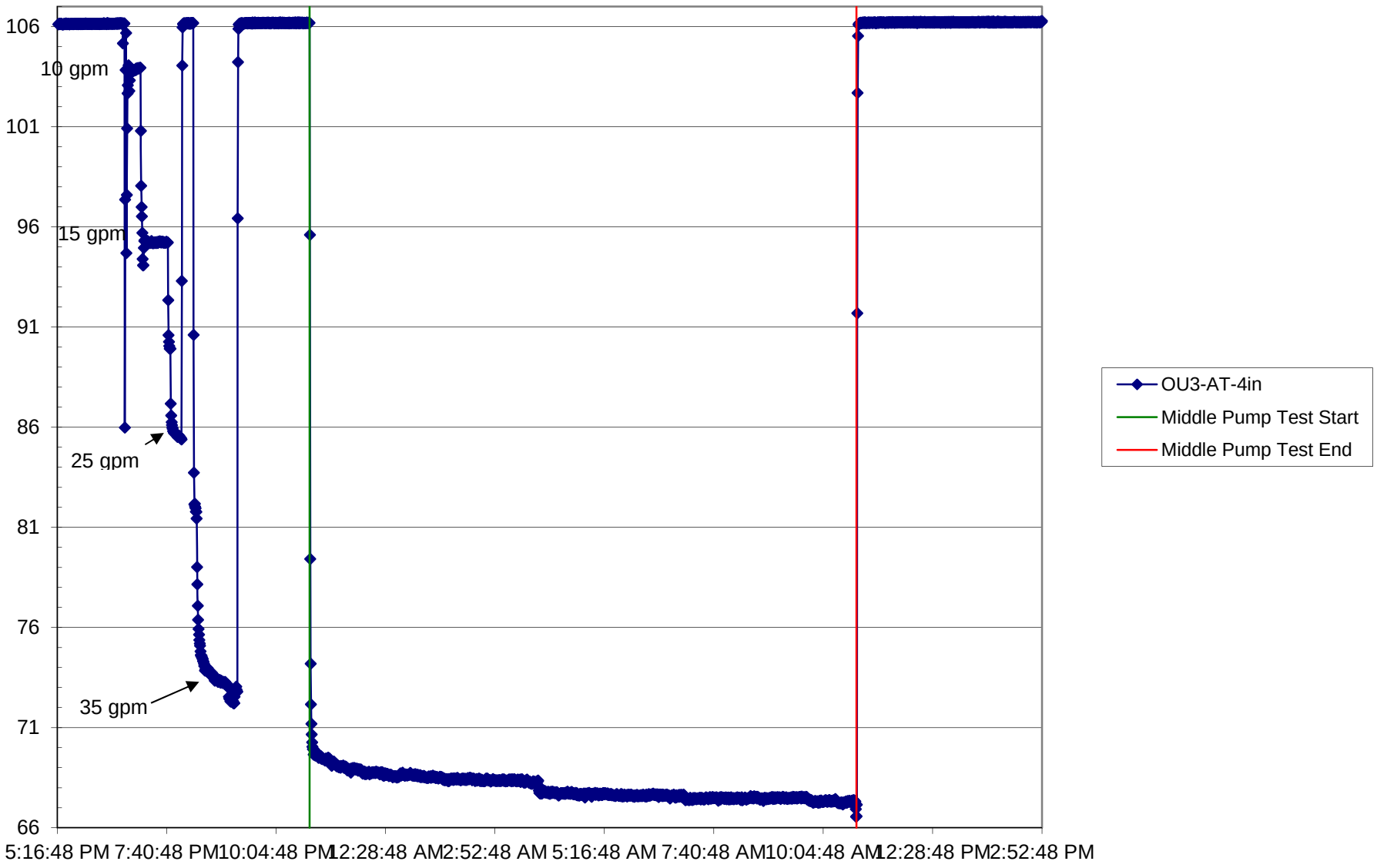


Data Summary

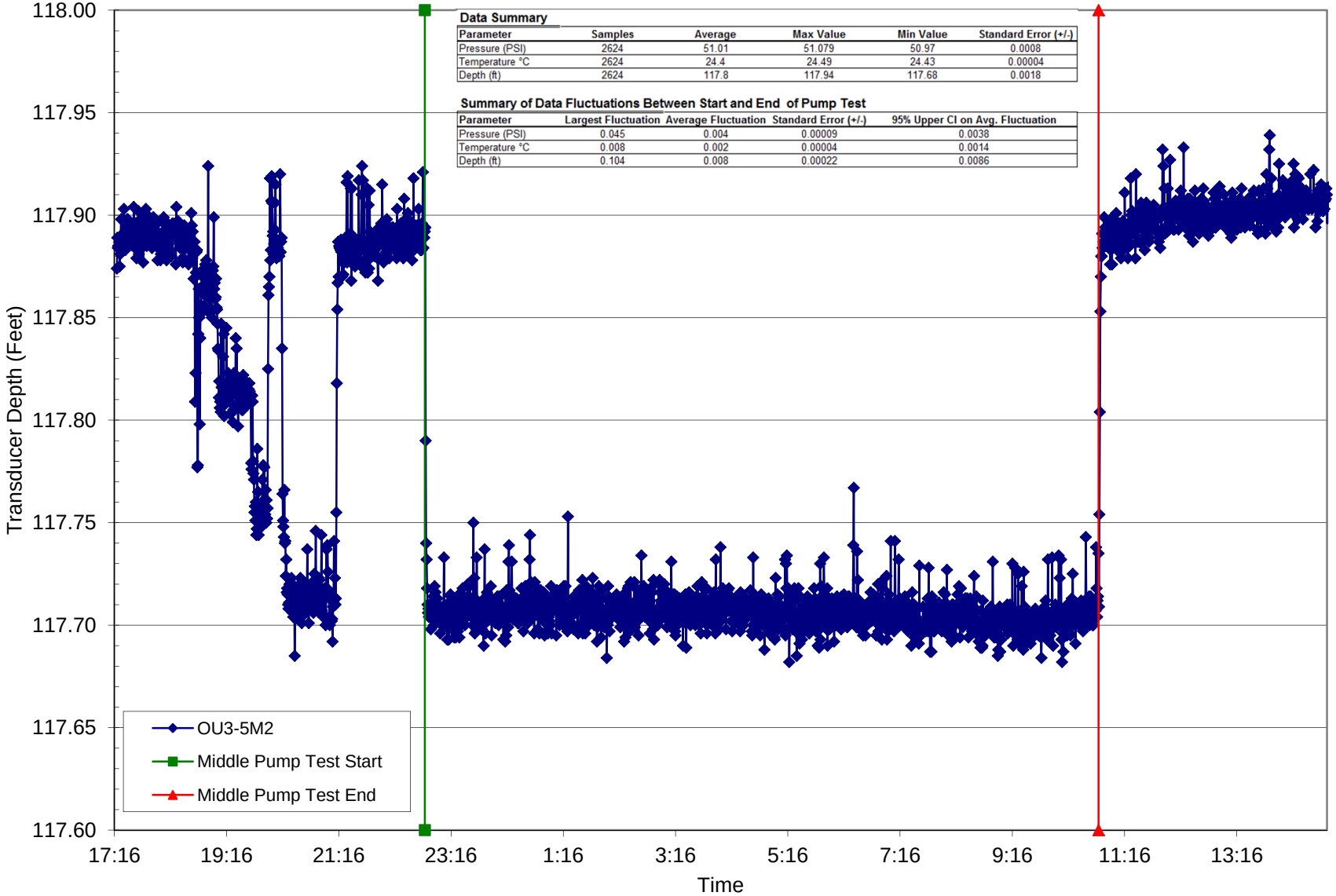
Parameter	Samples	Average	Max Value	Min Value	Standard Error (+/-)
Pressure (PSI)	2174	45.99	46.016	45.98	0.0001
Temperature °C	2174	24.5	24.46	24.45	0.00004
Depth (ft)	2174	106.2	106.25	106.17	0.0002

Summary of Data Fluctuations

Parameter	Largest Fluctuation	Average Fluctuation	Standard Error (+/-)	95% Upper CI on Avg. Fluctuation
Pressure (PSI)	0.029	0.003	0.00006	0.003
Temperature °C	0.008	0.002	0.00003	0.0014
Depth (ft)	0.067	0.008	0.00014	0.007


106
101
96
91
86
81
76
71
66
10 gpm
15 gpm
25 gpm
35 gpm
5:16:48 PM
7:40:48 PM
10:04:48 PM
12:28:48 AM
2:52:48 AM
5:16:48 AM
7:40:48 AM
10:04:48 AM
12:28:48 PM
2:52:48 PM
OU3-AT-4in
Middle Pump Test Start
Middle Pump Test End

Transducer Depth Versus L-SRG Constant Discharge Test



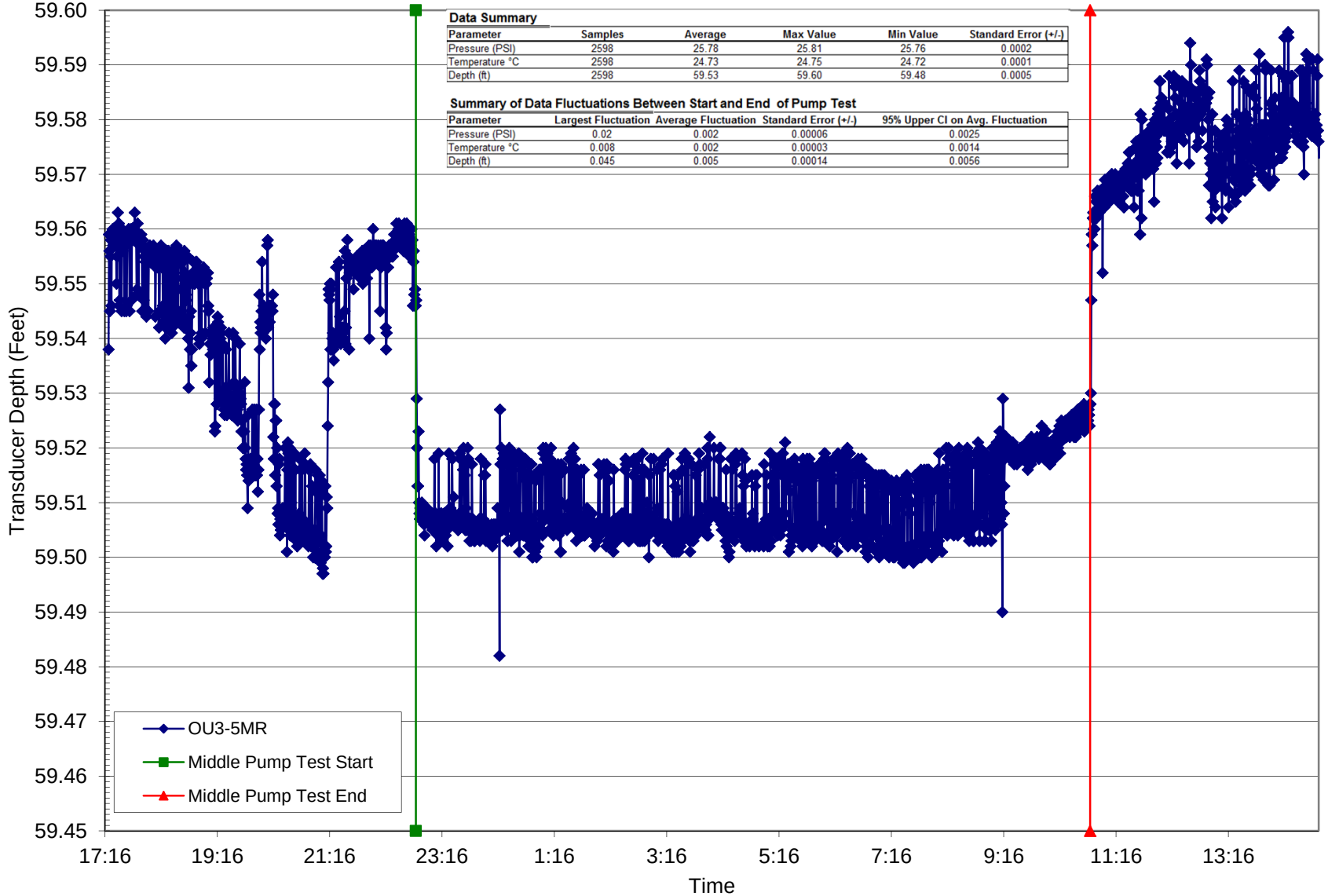
Data Summary

Parameter	Samples	Average	Max Value	Min Value	Standard Error (+/-)
Pressure (PSI)	2624	51.01	51.079	50.97	0.0008
Temperature °C	2624	24.4	24.49	24.43	0.00004
Depth (ft)	2624	117.8	117.94	117.68	0.0018

Summary of Data Fluctuations Between Start and End of Pump Test

Parameter	Largest Fluctuation	Average Fluctuation	Standard Error (+/-)	95% Upper CI on Avg. Fluctuation
Pressure (PSI)	0.045	0.004	0.00009	0.0038
Temperature °C	0.008	0.002	0.00004	0.0014
Depth (ft)	0.104	0.008	0.00022	0.0086

Transducer Depth Versus L-SRG Constant Discharge Test



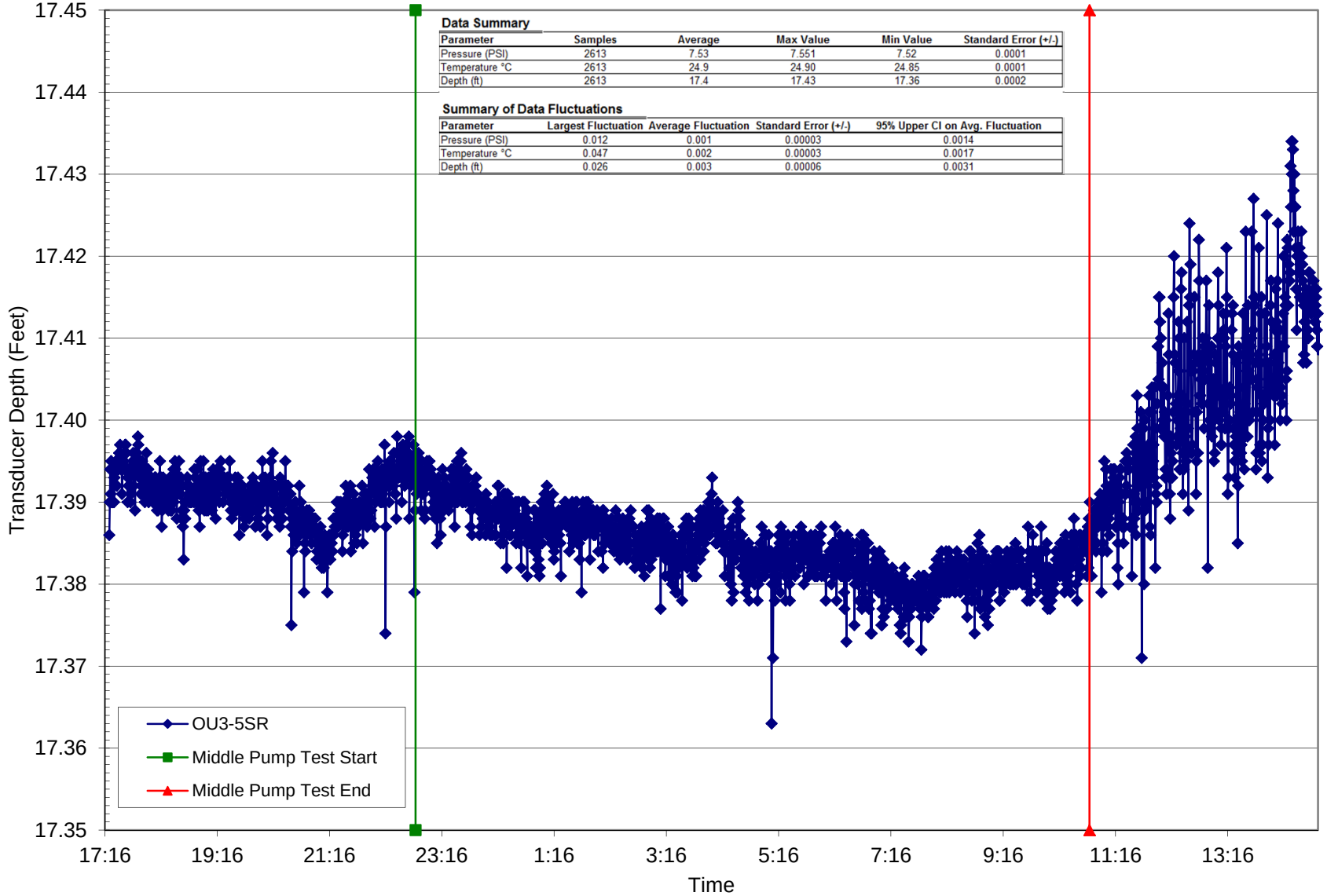
Data Summary

Parameter	Samples	Average	Max Value	Min Value	Standard Error (+/-)
Pressure (PSI)	2598	25.78	25.81	25.76	0.0002
Temperature °C	2598	24.73	24.75	24.72	0.0001
Depth (ft)	2598	59.53	59.60	59.48	0.0005

Summary of Data Fluctuations Between Start and End of Pump Test

Parameter	Largest Fluctuation	Average Fluctuation	Standard Error (+/-)	95% Upper CI on Avg. Fluctuation
Pressure (PSI)	0.02	0.002	0.00006	0.0025
Temperature °C	0.008	0.002	0.00003	0.0014
Depth (ft)	0.045	0.005	0.00014	0.0056

Transducer Depth Versus L-SRG Constant Discharge Test



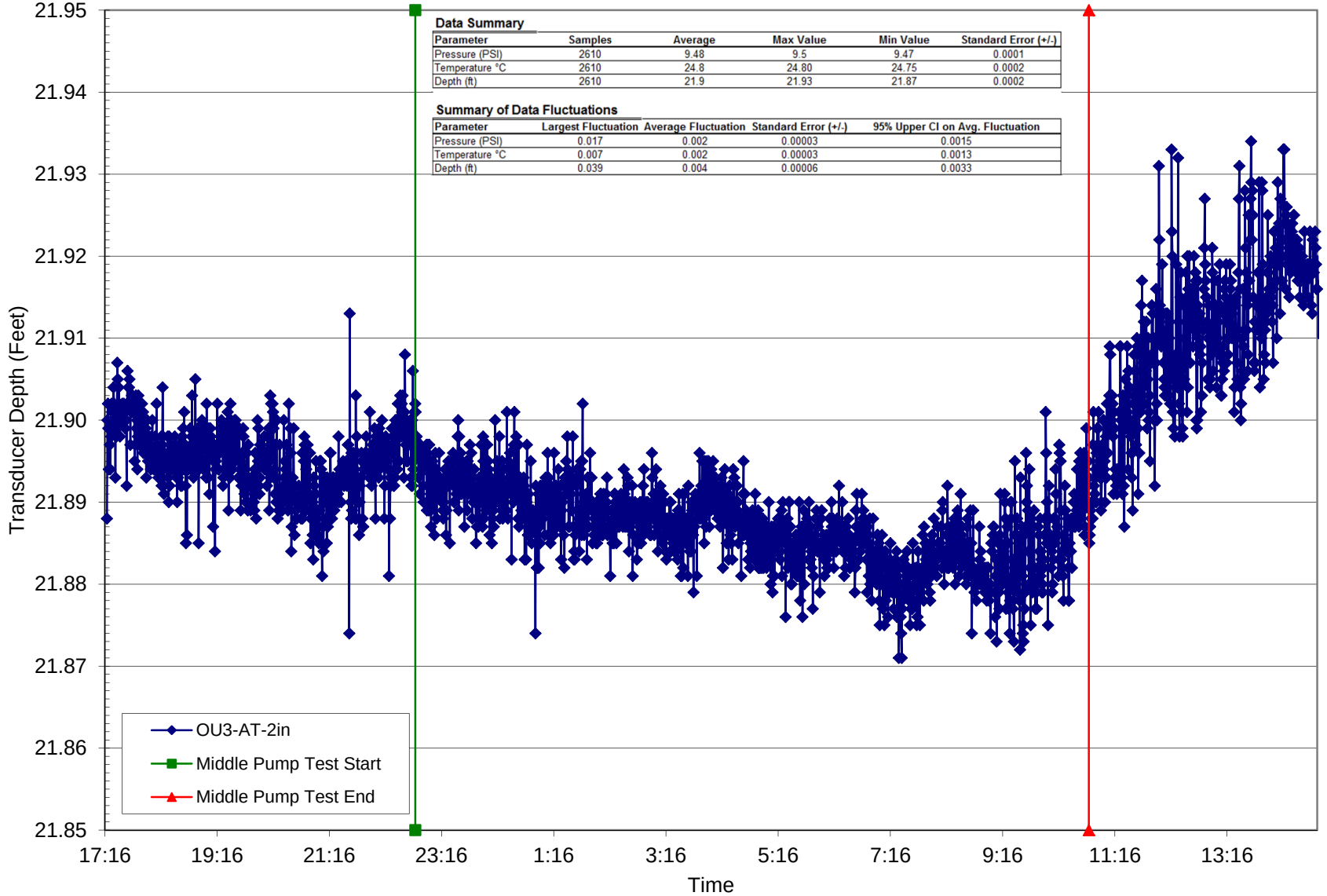
Data Summary

Parameter	Samples	Average	Max Value	Min Value	Standard Error (+/-)
Pressure (PSI)	2613	7.53	7.551	7.52	0.0001
Temperature °C	2613	24.9	24.90	24.85	0.0001
Depth (ft)	2613	17.4	17.43	17.36	0.0002

Summary of Data Fluctuations

Parameter	Largest Fluctuation	Average Fluctuation	Standard Error (+/-)	95% Upper CI on Avg. Fluctuation
Pressure (PSI)	0.012	0.001	0.00003	0.0014
Temperature °C	0.047	0.002	0.00003	0.0017
Depth (ft)	0.026	0.003	0.00006	0.0031

Transducer Depth Versus L-SRG Discharge Test



Data Summary

Parameter	Samples	Average	Max Value	Min Value	Standard Error (+/-)
Pressure (PSI)	2610	9.48	9.5	9.47	0.0001
Temperature °C	2610	24.8	24.80	24.75	0.0002
Depth (ft)	2610	21.9	21.93	21.87	0.0002

Summary of Data Fluctuations

Parameter	Largest Fluctuation	Average Fluctuation	Standard Error (+/-)	95% Upper CI on Avg. Fluctuation
Pressure (PSI)	0.017	0.002	0.00003	0.0015
Temperature °C	0.007	0.002	0.00003	0.0013
Depth (ft)	0.039	0.004	0.00006	0.0033