Ground Water Gauging and Sampling – Spring 2010
Boeing Tract 1
Hazelwood, Missouri

Prepared for:

The Boeing Company
Environment Health and Safety
Boeing Defense Space and Security
P.O.Box 516, MC S111-2491
St. Louis, MO 63166-0516

Prepared by:

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June 2010

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RCAP RECEIVED
JUN 14 2010

RAM GROUP *The Risk Assessment & Management Group of Gannett Fleming, Inc.*

June 8, 2010

Richard Nussbaum, P.E., R.G.
Chief, Permits Section
MDNR Hazardous Waste Program
1738 East Elm Street
Jefferson City, MO 65101

RE: Groundwater Gauging and Sampling – Spring 2010
Boeing Tract 1, Hazelwood, Missouri

Dear Rich,

On behalf of The Boeing Company, RAM Group is submitting copies of the above referred report that present a (i) description of the field activities conducted at the referenced site, and (ii) the groundwater data collected at the site, and (iii) evaluation of the data. We have enclosed one original and one hard copy each with an electronic copy on CD.

Please call us if you have any questions regarding this submittal.

Sincerely,

Atul Salhotra
Atul M. Salhotra, Ph.D.
Principal Professional

Kendall L. Pickett
Senior Geologist

CC Joseph W. Haake – Boeing (3 hard copies)
Christine Kump – Mitchell, P.E. - MDNR (1 hard copy)
Amber Whisnant, USEPA Region VII (2 hard copies)

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June 2010

Atul M. Salhotra, Ph.D.
Principal Professional

Kendall L. Pickett
Senior Geologist

This report presents the results and evaluation of data collected during field activities consisting of gauging, deployment of passive samplers, retrieval of passive samples and low-flow purging and sampling of the wells for laboratory analysis, and re-deployment of passive samplers for the next sampling event. These activities were performed at the Boeing Tract 1 facility in Hazelwood, Missouri from April 12, 2010 to May 4, 2010.

Groundwater gauging was performed on 57 monitoring wells. The groundwater sampling event included retrieval of passive samples from nine monitoring wells and low-flow purging and sampling of 42 monitoring wells.

QA/QC sampling consisted of three duplicates, three field equipment blanks, and five trip blanks.

The groundwater analytical results are tabulated in Table 4-2. The laboratory data reports are included in Appendix C.

SUMMARY OF FINDINGS

During gauging of wells on April 12-13, 2010, eight wells had either measurable free product or sheen. However, two weeks later during sampling of wells on April 26 – May 3, 2010, only two wells had sheen, MW-A1 and MW-A3, and were not sampled.

Groundwater depths were shallower than the previous November 2008 event. Lateral groundwater flow gradients and directions were consistent with the previous event in the shallow groundwater zone (0.01 ft/ft to the east) and deep groundwater zone (0.009 ft/ft to the southeast). Vertical flow gradients were generally consistent with the previous event with some variations (refer to Section 3.2).

In the low-flow samples from 42 wells including three duplicates and Snap Samples® from nine wells, 28 chemicals were detected at least once. Nine of the detected chemicals exceeded the screening levels.

The Snap Sampler® results were compared to the low-flow results for the nine wells sampled using both methods. For detected chemicals, the results were comparable when ignoring the estimated J-values and the Snap Sampler® VOC results typically had higher concentrations.

PATH FORWARD

The data obtained from this event will be combined with the previously available historic data and will be used (i) to refine the Fall gauging and sampling event, and (ii) in the CMS.

SECTION 1.0
INTRODUCTION

The Boeing Tract 1 Facility (Facility) is located in Hazelwood, St. Louis County, Missouri and covers a total area of about 228 acres (Figure 1-1). The Facility includes several buildings used to service and manufacture aircraft, office buildings, parking lots, a coal fueled power plant, and a wastewater treatment facility. The Facility included underground storage tanks (USTs), above ground storage tanks (ASTs), and other waste handling areas.

On December 22, 2004, the Missouri Department of Natural Resources (MDNR) approved the *Resource Conservation and Recovery Act Facility Investigation (RFI) Report* (MACTEC, December 2004). On August 24, 2009, the MDNR and The United States Environmental Protection Agency (USEPA) approved the *Risk-Based Corrective Action Report, Boeing Tract 1* (RAM, September 2004) and addendums (RAM, June 2009 and July 2009). The *Final Corrective Measures Study Work Plan* (RAM, April 21, 2010) was submitted to the agencies and is currently under review.

This groundwater sampling event was performed in accordance with Revised Groundwater Gauging and Sampling Plan for 2010 (RAM Group, 2010a), which is Appendix A of the Quality Assurance Project Plan (RAM Group, 2010b). The QAPP was approved by the MDNR on April 28, 2010.

RAM Group of Gannett Fleming, Inc. (RAM) performed groundwater gauging and sampling at the Boeing Tract 1 site in April and May 2010. Figure 2-1 provides a map of the site showing the monitoring well locations.

RAM Group performed groundwater gauging on April 12-13, 2010. During the gauging activities, Snap Samplers® were deployed in nine wells (refer to Section 2.3.2).

Groundwater sampling consisted of retrieval of Snap Sampler® samples, as well as low-flow purging and sampling from April 26 – May 3, 2010. Snap Samplers® were re-deployed with new sample bottles immediately after low-flow sampling was complete at each of the wells with passive samplers. Laboratory analysis was performed by Teklab, Inc. (Teklab) of Collinsville, Illinois.

An effort was made to gauge and sample wells from the presumed least contaminated to the most contaminated in each area and from area to area based on previous analytical and gauging results.

Site access was provided and coordinated by Boeing to wells located on the properties controlled by the Lambert International Airport, GKN, and Boeing. An airport representative was also required to escort the sampling team to wells on the Airport property.

Field documentation consisted of a field logbook documenting the activities, completed field sampling forms, and chain of custody records. Copies of these materials are provided in the Appendices.

2.1 PRE-GAUGING AND SAMPLING ACTIVITIES

Daily safety meetings were held prior to initiation of field work. The safety meetings reviewed the site-specific health and safety plan (HASP) and addressed safety issues related to the planned field activities for the day and weather conditions. All work was performed in Level D Personal Protective Equipment (PPE) and the breathing zone was monitored using MiniRAE 2000 photoionization detectors (PIDs) with 10.6eV lamps. The PIDs were calibrated periodically using 100 parts per million (ppm) isobutylene gas.

2.2 GAUGING WELLS

Groundwater gauging was performed on April 12-13, 2010 by Bhoom Korpol and Kendall Pickett of RAM Group. Joe Haake and Elmer Dwyer participated in this task. Sandy Britt of ProHydro, Inc. was present on April 12th to assist with the deployment of Snap Samplers®. Christine Kump-Mitchell of the MDNR was present on April 12th.

Gauging was performed on 57 of the 59 wells on Figure 2-1 using a Heron Interface meter for wells 0.75-inch diameter or greater. A Heron Skinny Water Level meter was used to gauge the 0.5-inch diameter wells and any wells that had obstructions that prevented access with the interface meter. Gauging data is presented on Table 2-1. Two wells could not be gauged as the manway covers could not be accessed (RC14 in Sub-area 6B and MW-11D in Sub-area 2B). The gauged wells included one additional well, MW-A28 in Area 1 (South of Bldg. 45). This well was added for deployment of a Snap Sampler® system, since the MW-A15 manway was too small to accept the Snap Sampler® system as planned. MW-A28 is located about 70 feet North of MW-A15.

Eight wells had either sheen or measurable free product as shown on Table 2-1.

2.3 GROUNDWATER SAMPLING

Groundwater sampling was performed on April 26 – May 3, 2010 by Mihika Baruah, Bhoom Korpol, Marty Hughes, and Kendall Pickett of RAM Group. Joe Haake and Elmer Dwyer participated in this task.

Each well was gently gauged for groundwater depth and presence of LNAPL prior to sampling using a Solinst Interface meter for wells 0.75-inch diameter or greater. A Heron Skinny Water Level meter was used to gauge the 0.5-inch diameter well and any wells that had obstructions that prevented access with the interface meter. Well depths were not gauged to avoid disturbance of the water column prior to sampling. No wells had measureable LNAPL. MW-A1 and MW-A3 had sheen; thus, they were not sampled. Therefore, 42 wells were sampled using low-flow methods and nine wells were sampled using passive sampling methods.

All field equipment requiring calibration was calibrated in accordance with the manufacturer specifications periodically during the sampling (Appendix A).

2.3.1 Low-Flow Purging and Sampling

Thirty-seven 2-inch diameter, one 0.5-inch diameter, one 0.75-inch diameter, one 1-inch diameter, and two 4-inch diameter wells were sampled using low-flow methods (refer to Table 2-2). A CO_2 operated QED Sample Pro 1.75-inch bladder pump or small diameter Geotech SS18 0.67-inch bladder pump were used in all wells except the 0.5-inch diameter well, which was sampled using a Pegasus Athena Peristaltic pump. This well, B27W3D, was not purged prior to sampling based on previous experience that indicated the well would go dry before collection of all samples. This well went dry after collecting two 40ml VOA vials for VOCs and TPH-GRO and about ½-liter for TPH-DRO/ORO. Therefore, no samples were collected for total and dissolved metals (As, Ba, Cd, Cr, Mn, and Hg) as planned. However, there are other nearby wells that were sampled for metals (B28MW3 (totals only) and B28MW4 (totals and dissolved).

Two 2-inch diameter wells had to be sampled using a small diameter CO_2 operated Geotech SS18 0.67-inch bladder pump due to a kink in B41MW-5 well casing about 6 inches below top of casing (btoc), and due to an obstruction in MW-A12 well casing about 4.6 feet (ft) btoc. The 1-inch and 0.75-inch diameter wells were also sampled using the small diameter bladder pump.

New dedicated LDPE Bonded Teflon-lined tubing was cut for each well based on the well depth. The pump (or tubing for the peristaltic pump) intake was positioned at approximately mid-screen if the depth to water was at or above the top of screen. If the water depth was within the screened interval, the pump or tubing intake was adjusted to be positioned at about mid-way within the water column; however, no closer than two feet from the bottom of the well. Table 2-2 shows the position of the pump or tubing intake depth for each well.

A flow typically less than 200 ml/min was initiated and adjusted during purging in an effort to reach equilibrium where the rate of the water entering the well was the same as the water being purged from the well, thus creating a stabilized water level. During purging, water depth was monitored with either an interface or water level meter, flow rate was calculated by timing and measuring the amount of water collected in a graduated cylinder adjusted to a per minute basis, and water quality parameters were measured as water flowed through a flow cell connected to an In-Situ Troll 9500 Professional XP unit with an RDO optical fluorescence RO sensor to measure field parameters (pH, specific conductance, redox potential, dissolved oxygen, turbidity, and temperature). General water characteristics (odor, color, etc.) were also recorded as appropriate.

Once field parameters stabilized, the wells were sampled using low-flow methods. The tubing was disconnected from entering the flow cell and directed into the laboratory-supplied containers with the appropriate preservatives. The containers were filled in the following order as appropriate for the specific monitoring well:

- Volatile Organic Compounds (VOCs)
- Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO)
- Semi-Volatile Organic Compounds (SVOCs)
- TPH – Diesel Range Organics and Oil Range Organics (TPH-DRO and TPH-ORO)
- Polychlorinated Biphenyls (PCBs)
- Total metals
- Dissolved metals

The dissolved metals samples were field filtered using a new disposable QED #QF045 Quick Filter (0.45 micro) at each well after allowing 100ml to flow through the filter. Containers (40 ml glass vials) for VOC and TPH-GRO analyses were filled without headspace in a manner to minimize aeration and agitation of the samples.

For wells where the field parameters did not stabilize within one hour, the well was sampled and appropriately recorded (several wells). For wells where a stabilized flow

could not be maintained and the water level continued to drop, the well was sampled prior to dewatering of the screened interval and recorded appropriately (B41S5D and B42N6). One well dewatered before a sample could be collected due to a minimal water column; therefore, it was sampled on the following day after sufficient recharge and without further purging (B4MW-10).

During low-flow purging, the removed ground water was collected in 5-gallon buckets that had been graduated with 1-gallon markings. The total volume of water removed during purging was recorded.

The tubing used for low-flow purging and sampling was retrieved from each well, water was forced out of the tubing using CO_2, and the tubing was placed in labeled plastic bags for dedicated use at that well during future sampling events. The tubing is being stored in the RAM Group office at Hartford, Illinois.

The field purging and sampling forms are provided in Appendix B.

QA/QC samples included three blind duplicates, three field equipment rinsate blanks, and five trip blanks. The duplicates were analyzed for the same parameters as the original samples. The field equipment rinsate blanks and trip blanks were analyzed for VOCs using Method 8260.

The sample containers were labeled and placed in coolers with ice as they were collected. The samples were transferred to Teklab, Inc. (Teklab) daily at the site using chain-of-custody protocols.

Field equipment leased from Field Environmental Instruments, Inc. (FEI) (MiniRAE 2000 PIDs) was provided pre-calibrated. Copies of the equipment calibration forms from FEI are provided in Appendix A. During field sampling, the equipment calibration was periodically checked in the field and copies of those forms are also included in Appendix A.

2.3.2 Passive (No-Purge) Sampling

Nine wells were sampled using passive (no purge) sampling methods. Snap Samplers® were utilized for passive sampling. The Snap Sampler® system could not be deployed in B4MW-9 (Sub-area 3H), since the well top of casing was too close to the manway, the manway was damaged, and the manway cover was missing. No other suitable well was located nearby for substitution. However, the well manway was subsequently replaced and the Snap Sampler® system will be deployed in this well prior to the next sampling event. It appears that during the well repairs, the top of casing had to be cut; therefore, it will need to be surveyed to obtain accurate groundwater elevations.

The nine wells sampled using Snap Sampler® systems were also sampled using low-flow methods immediately after collection of the Snap Sampler® samples. New Snap Samper® bottles were re-deployed in the nine wells after completion of the low-flow

sampling.

The wells sampled using Snap Samplers® are presented in Table 2-3 and included wells of varying diameters (2-inch and 4-inch), varying depths (shallow, intermediate, and deep), and varying screened intervals between 10 to 15 feet of screen for comparison with the low-flow sampling results. Table 2-3 presents the Snap Sampler® deployment elevations in each well.

In wells MW8AS, MW10S, and MW10D sampled on the first day using Snap Samplers®, the sample containers contained air bubbles or were only partially filled or leaking when brought to surface. After contacting ProHydro, it was found that if the Snap Sampler® bottle caps were securely pushed closed upon reaching the surface, most sample containers would contain no headspace. In cases where a 40ml glass vial was partially filled or had an air bubble, the 40ml vial was immediately topped off with water from one of the 125ml plastic bottles. After the first day of sampling, this was not a problem.

2.4 MAINTENANCE AND REPAIR OF MONITORING WELLS

Some repairs and maintenance were performed on RC14 and B4MW-9 by Environmental Management Alternatives (EMA) during the period between the groundwater gauging and groundwater sampling. Additional recommended repairs will be presented in a separate document.

2.5 DECONTAMINATION PROCEDURES

All field sampling and gauging equipment that was re-used from well to well was decontaminated prior to use at each well using appropriate methods. The oil/water interface meters and small diameter water level meter were cleaned prior to use at each well using an Alconox wash and distilled water rinse. For wells with evidence of sheen or free product, an alcohol wash was added prior to the Alconox wash. Plastic sheeting was used at each well site to minimize cross contamination.

New disposable equipment and dedicated tubing used with the bladder pumps did not require decontamination. The peristaltic pump tubing was new and disposed after use in a single well. The Snap Sampler® systems are dedicated to each well and do not require decontamination, and the sample bottles are single-use and replaced with new bottles after sample collection.

The pumps (disassembled) and 4-way valves were cleaned prior to use in each well using an Alconox wash and distilled water rinse. Grab plates and O-rings were replaced with new ones as needed in the pumps.

2.6 WASTE DISPOSAL

Decon and purged ground water was collected in 5-gallon buckets and subsequently disposed at Boeing's industrial wastewater treatment facility. Disposables (gloves, tubing, paper towels, filters, plastic sheeting, etc.) were placed in plastic garbage bags and later disposed in an onsite dumpster.

The groundwater gauging data was used to evaluate the horizontal groundwater flow gradients and direction for the shallow and deep groundwater zones; as well as the vertical flow gradients between the shallow, intermediate, and deep groundwater zones.

Table 3-1 presents the groundwater gauging data for 59 wells; however, MW9D was under artesian conditions (water flowed out of the well upon opening the well cap) and could not be measured. According to Boeing representatives, this well has historically been artesian.

Of the 59 wells, 49 are shallow zone wells (screened from 2 to 26 ft below ground surface (bgs)), three are intermediate zone wells (screened from 32 to 42 ft bgs), six are deep zone wells (screened 56 to 80.5 ft bgs), and one is a backfill well (screened from 0 to 10 ft bgs). The average groundwater depths for each zone during the April 2010 gauging are presented as follows:

- Shallow zone average groundwater depth = 5.5 ft btoc
- Intermediate zone average groundwater depth = 7.0 ft btoc
- Deep zone average groundwater depth = 9.4 ft btoc

The average depths were all shallower compared to the November 2008 event (RAM Group, 2009b).

3.1 HORIZONTAL FLOW GRADIENTS

3.1.1 Shallow Groundwater Zone

Of the 49 shallow zone wells, eight did not have top of casing elevations documented; however, this did not cause a problem with contouring the groundwater flow map, as other gauged wells with top of casing elevations are located in close proximity. Therefore, gauging data for 41 shallow zone wells were used to develop the shallow zone groundwater flow map (Figure 3-1). Due to the very limited occurrence of free product or sheen in only eight shallow wells, the groundwater elevations were not adjusted due to the presence of free product.

Figure 3-1 indicates flow generally to the east across the site in the shallow groundwater zone. The following four well sets, which are generally oriented in the direction of flow, were used to calculate the groundwater gradient (elevation difference ÷ distance):

Well Sets	Distance Between Wells (ft)	GW Elevation Difference Between Wells (ft)	Calculated Groundwater Flow Gradient (ft/ft)	Approximate Ground Surface Elevation Difference (ft)*
MW1 to MW6	3,660	39.65	0.011	39.3
MW1 to B4MW-9	3110	28.33	0.009	27.1
MW3 to MW5CS	1,230	10.55	0.009	6.7
MW7 to MW6	1,875	24.00	0.013	18.9
Range			**0.009 to 0.013**	
Average			**0.01**	

* Based on difference in top of casing elevations since all wells were constructed with flush mounted manways.

Based on Figure 3-1 and the above calculations, the average groundwater gradient of 0.01 ft/ft was generally to the east. This is consistent with the surface gradient across the site as noted by the approximate ground surface elevation differences between the well sets in the table above.

The flow direction and gradient are consistent with the previous groundwater sampling event (RAM Group, 2009b).

3.1.2 Deep Groundwater Zone

Of the six deep zone wells, one was under artesian conditions (MW9D) and one well was not accessible (MW-11D, could not open manway); therefore, the groundwater depths could not be measured. Therefore, gauging data for four deep zone wells were used to develop the deep zone groundwater flow map (Figure 3-2). This constitutes a limited set of data for contouring the deep zone groundwater flow. No occurrence of free product was documented in the deep zone wells.

Figure 3-2 indicates flow generally to the southeast across the site in the deep groundwater zone. The following three well sets, which are generally oriented in the direction of flow, were used to calculate the groundwater gradient (elevation difference ÷ distance):

Well Sets	Distance Between Wells (ft)	Elevation Difference Between Wells (ft)	Calculated Groundwater Flow Gradient (ft/ft)	Approximate Ground Surface Elevation Difference (ft)*
MW10D to MW8-AD	980	7.35	0.008	2.65
MW10D to MW6D	1880	18.74	0.010	16.38
MW8-AD to MW6D	1050	11.39	0.011	13.73
Range			**0.008 to 0.011**	
Average			**0.009**	

* Based on difference in top of casing elevations since all wells were constructed with flush mounted manways.

Based on Figure 3-2 and the above calculations, the average groundwater gradient of 0.009 ft/ft was generally to the southeast.

The flow direction and gradient are consistent with the previous groundwater sampling event (RAM Group, 2009b).

3.2 VERTICAL FLOW GRADIENTS

Vertical groundwater gradients were calculated using the following well pairs between the shallow and deep zones, shallow and intermediate zones, and intermediate and deep zones:

Shallow and Deep Zone Well Pairs:

- B41MW-5 and B41S5D (Sub-area 3D)
- MW10S and MW10D (Sub-area 8A)
- MW-11S and MW-11D (Sub-area 2B)
- MW6 and MW6D (Sub-area 6D)
- MW8AS and MW8AD (Sub-area 6C)
- MW9S and MW9D (Sub-area 6B)

Shallow and Intermediate Zone Well Pairs:

- MW11S and MW11I (Sub-area 2B)
- MW-6S and MW-5I (Sub-area 2B)
- MW-8S and MW-8I (Sub-area 2B)

Intermediate and Deep Zone Well Pair:

- MW-11I and MW-11D (Sub-area 2B)

The vertical gradients were calculated by dividing the difference in elevations of the groundwater surfaces by the difference in elevations of the top of the screen in the well pairs. Table 3-2 presents the vertical gradient.

The vertical gradients between the shallow and deep zones are downward in Sub-areas 2B, 3D, and 8A, and ranges from 0.007 ft/ft to 0.275 ft/ft. These are consistent with the previous sampling event; however, the magnitude of the downward gradient in Sub-area 3D decreased by nearly one order of magnitude. The vertical gradients are upward in Sub-areas 6B, 6C, and 6D, ranging from 0.024 ft/ft to 0.145 ft/ft. These are consistent with the previous sampling event (RAM Group, 2009b).

Between the shallow and intermediate groundwater zones, the vertical gradients are downward in Sub-area 2B ranging from 0.028 ft/ft to 0.102 ft/ft. These are consistent with the previous sampling event, except for the MW-11S/MW-11I pair, which reversed direction from 0.011 ft/ft upward in November 2008 to 0.028 ft/ft downward in April 2010.

The vertical gradient between the intermediate and deep groundwater zones is downward in Sub-area 2B at a gradient of 0.473 ft/ft. This is consistent with the previous sampling event (RAM Group, 2009b).

4.1 SUMMARY OF DATA COLLECTED

The groundwater sampling event presented in Section 2.0 resulted in the following analytical data:

- 42 low-flow groundwater samples from the following monitoring wells:
  - 34 were from shallow wells
  - 3 were from intermediate wells
  - 5 were from deep wells

- 9 Snap Sampler® groundwater samples for the following monitoring wells:
  - 7 were from shallow wells
  - 1 was from an intermediate well
  - 1 was from a deep well

- 3 blind duplicate groundwater samples collected by low-flow methods
  - Duplicate #1 – MW8AD in Risk Sub-area 6C
  - Duplicate #2 – SWMU17-OB-1 in Risk Sub-area 2B
  - Duplicate #3 – MW-A27 in Risk Area 1 (South of Bldg 45)

- 3 equipment blank samples were collected from bladder pumps after each had been decontaminated in the field

- 7 trip blank samples

Chain-of-custody procedures were followed during sample transfer. A complete chain-of-custody record accompanied each sample shipment. Chain-of-custody documentation is provided in Appendix C at the end of each laboratory report. Custody seals were not used as samples were directly transferred to the laboratory courier in the field.

4.2 GROUND WATER SAMPLE RESULTS

Laboratory analysis was performed by Teklab in Collinsville, Illinois. The Teklab analytical data reports for groundwater sample results for samples collected on April 26 – May 4, 2010 are provided in Appendix C. The following Teklab reports are included:

- #10041038 dated April 30, 2010
- #10041079 dated April 30, 2010
- #10041129 dated May 6, 2010
- #10041130 dated May 6, 2010
- #10041180 dated May 10, 2010
- #10041217 dated May 10, 2010

- #10041218 dated May 10, 2010
- #10050079 dated May 11, 2010
- #10041181 dated May 13, 2010
- #10050500 dated May 18, 2010

Laboratory analytical methods and the analytes selected for analysis are presented in Table 4-1. The number of times each well has been sampled and analyzed is also presented in this table. Some dissolved metals analysis was dropped from specific wells with MDNR approval (RAM Group, 2010d). The comments section of Table 4-1 describes deviations for specific wells from the Revised Groundwater Gauging and Sampling Plan for 2010 (RAM, March 5, 2010).

Table 4-2 presents the comprehensive groundwater analytical results. Table 4-2(a) presents the detected concentrations, Table 4-2(b) presents the maximum detection limits for each chemical, Table 4-2(c) presents a summary of the detected concentrations and compares the maximum concentration for each detected chemical to the screening value, and Table 4-2(d) presents the wells with detected chemicals that exceeded screening values.

4.3 EVALUATION OF ANALYTICAL RESULTS

4.3.1 Detected Chemicals

The detected chemicals concentrations are presented on Table 4-2(a) and the maximum detected concentrations are compared to the very conservative screening values on Table 4-2(c). Twenty-eight chemicals were detected at least once consisting of the following:

- 6 metals (totals and dissolved)
- 1 SVOC
- TPH-GRO
- TPH-DRO
- TPH-ORO
- 18 VOCs

Of the 28 chemicals detected, the maximum concentration exceeded the groundwater screening levels for nine chemicals (2 metals, 1 SVOC, and 6 VOCs). The SVOC (bis(2-ethylhexyl)phthalate) is not a chemical of concern and was detected in only one well, MW9S. It was also detected in one well, RC14, at about the same concentration during the previous sampling event. Note that heptane, does not have a screening level for comparison; however, it is not a chemical of concern at the site and was detected in only two wells (MW-A23 and MW-A28) and not during the previous sampling event. Table 4-2(d) presents the wells in which the chemicals exceeded the screening levels.

4.3.2 Non-Detected Chemicals

Elevated dilution factors (DF) were required for VOC and TPH-GRO analysis of the following samples due to high concentrations of the detected chemicals shown and other target and/or non-target analytes:

- MW3-LF - 100X DF due to 13,000ug/L total 1,2-dichloroethene and 12,800ug/L cis-1,2-dichloroethene
- MW3-SS – 200X DF due to 14,000ug/L total 1,2-dichloroethene and 14,000ug/L cis-1,2-dichloroethene
- MW-5I – 2000X due to 223,000ug/L trichloroethene

Therefore, the detection limits for the non-detected chemicals were elevated for VOCs and TPH-GRO in MW3-LF, MW-SS, and MW-5I.

The non-detected chemicals' detection limit concentrations for chemicals of concern are presented on Table 4-2(b) and the maximum detection limits concentrations are compared to the very conservative screening values on Table 4-2(b). Table 4-2(b) presents the Maximum Detection Limit for each chemical, the 2nd Maximum, and the 3rd Maximum. This is due to the elevated maximum detection limits for VOCs and TPH-GRO in MW3-LF, MW-3SS, and MW-5I as discussed above. Most of the VOC and TPH-GRO Maximum and 2nd Maximum detection limits exceed the screening values; therefore, only the 3rd Maximum detection limits, which represent normal detection limits for the various methods with a dilution factor of 1 were compared to the screening values. The maximum detection limit concentrations exceeded the groundwater screening values for 11 chemicals of concern (1 metals, 6 VOCs, 4 SVOCs). Note that one chemical of concern, 1,2,3-trimethylbenzene, does not have a screening level for comparison.

4.4 COMPARISON OF LOW-FLOW VS. SNAP SAMPLER® DATA

4.4.1 Detected Chemicals

Nine wells were sampled using both passive methods (Snap Samplers®) and low-flow methods. Table 5-1 presents the comparison of the detected concentrations for chemicals that were detected in both the Snap Sampler® and Low-flow samples. MW-11I (intermediate zone well) is not included in the comparison, since only one chemical, TPH-DRO was detected at 290ug/L (J-value) in the Snap Sampler®, but was not detected in the Low-flow sample at a slightly higher reporting limit (300ug/L).

Table 5-1 presents the ratio of the Snap Sampler® result to the Low-flow result and also calculates the relative percent difference (RPD). Table 5-2 summarizes the comparison and presents the range and average values for the ratios and RPDs. Of the eight wells (7 shallow zone wells and one deep zone well) with detects using both SS and LF methods, 17 chemicals' concentrations were compared consisting of 5 metals, 9 VOCs, and TPH-GRO, TPH-DRO, and TPH-ORO. The following text discusses results for each well:

MW-A28

The comparison indicated the SS and LF results were comparable for TPH-GRO and TPH-DRO. The comparison is less comparable for TPH-ORO, acetone, naphthalene, and tert-butylbenzene, which is likely due to these concentrations all being estimated J-values. Although, it appears the VOCs have lower concentrations in the SS sample, this may not be the case since the VOCs are all estimated J-values.

MW-11S

The only chemical detected in both SS and LF samples was trichloroethene (TCE) and the results were comparable even though both were estimated J-values. The SS sample had the higher TCE concentration, but again both were estimated J-values.

SWMU17-OB-1

The three chemicals detected, 1,2-dichloroethene (total), cis-1,2-dichloroethene, and vinyl chloride were not comparable. A possible scenario for this may be due to this well being a backfill well located in the corner of an excavated treatment area. Since the backfill is coarser material than the surrounding natural soils, it is likely that local groundwater preferentially flows into the backfill area and is less likely to flow outward from the backfill area into the tighter natural soils. Therefore, the sample collected with the Snap Sampler® system is representative of groundwater that has been relatively stationary in the backfill area that was treated with hydrogen-release compound (HRC) and may still be affected to some degree, thus resulting in a lower concentration of these chlorinated VOCs in the SS sample. Since the well is located in the corner of the excavated/backfilled area, the purging affect of the low-flow method could possibly draw some representative groundwater from the adjacent natural soils that has not undergone treatment to the degree the groundwater within the backfill area has; therefore, the LF sample concentrations are higher.

MW3

Due to the amount of sample needed for the various analyses, this well has two strings of Snap Samplers® in the well, one above the other, but both within the screened interval. The chemicals compared include 4 metals, TPH-DRO, and 3 VOCs. All results are comparable, except for total arsenic, which includes an estimated J-value in the comparison. All concentrations are typically higher in the SS sample, except for the two dissolved metals results; thus, suggesting the SS sample is more representative and less affected by handling during sampling.

MW8AS

During retrieval of the Snap Sampler®, all bottles were leaking. The two 40ml glass VOA vials were topped off with water from the 125ml poly sample bottles. Four metals

were compared and total barium and chromium are comparable between the SS and LF samples and both have slightly lower concentrations in the SS sample. Total cadmium and manganese are less comparable and both have higher concentrations in the SS sample. Both cadmium and chromium results were estimated J-values.

MW6

MW6 is the only well with 15 ft of screened interval. Tetrachloroethene (PCE) and trichloroethene results were compared and were comparable. All were estimated J-values, and had lower concentrations in the SS samples.

MW10S

Upon retrieval of the Snap Sampler®, both 40ml glass VOA vials contained air bubbles. Both VOA vials were topped off with water from the 125ml poly sample bottle. Two metals and one VOC results were compared and were comparable. The vinyl chloride concentrations were both estimated J-values. The total barium and vinyl chloride concentrations were slightly higher in the SS sample, with the total manganese result lower.

MW10D

MW10D is the only deep zone well used for comparison of SS vs. LF samples. Upon retrieval of the Snap Sampler®, one 40ml glass VOA vial contained a small air bubble. It was topped off with water from the 125ml poly sample bottle. Three metals and one VOC results were compared. Total chromium and trichloroethene results each included an estimated J-value for comparison. Only the total barium results were comparable, and the SS sample had slightly higher concentrations. Total chromium and manganese were not comparable, with chromium being nearly twice as concentrated in the SS sample and manganese being about one-half as concentrated. The SS sample had twice the concentration of TCE as the LF sample, but again an estimated J-value was used in the comparison.

In summary, the SS and LF results are fairly comparable when not including estimated J-values and appear to result in higher VOC concentrations in the SS samples, likely due to less handling during sampling.

4.4.2 Non-Detected Chemicals

The detection limits for all wells where both SS and LF samples were collected, except for VOCs and TPH-GRO in the MW3-LF and MW3-SS samples, were normal detection limits for the methods of analyses using a dilution factor of 1. Elevated dilution factors (DF) were required for VOC and TPH-GRO analysis in these samples for the same reasons discussed above in Section 4.3.2. Therefore, the detection limits for the non-detected chemicals were elevated for VOCs and TPH-GRO in MW3-LF and MW-SS.

The non-detected chemicals' detection limit concentrations are presented on Table 5-3 and the maximum detection limits for samples and analyses with a dilution factor of 1 were the same for both the SS and LF samples from the same wells.

For the VOCs and TPH-GRO analyses in MW3-SS and MW3-LF, the detection limits were elevated due to the high dilution factors and were twice as high in the MW3-SS sample as compared to the MW3-LF sample.

4.5 COMPARISON OF ORIGINAL VS. DUPLICATE LOW-FLOW SAMPLE DATA

Three wells sampled using low-flow methods included both original and duplicate samples. These wells and duplicates were:

- MW8AD and Duplicate #1
- SWMU17-OB-1 and Duplicate #2
- MW-A27 and Duplicate #3

4.5.1 Detected Chemicals

The results for chemicals, concentrations detected in both the original and duplicate sample were compared by calculation of the ratio of the original concentration to the duplicate concentration. These comparisons are presented in Table 5-4.

In MW8AD and Duplicate #1, three total metals (Ba, Cr, and Mn) and two dissolved metals (Ba and Mn) were detected in both samples. The results for these metals were comparable.

In SWMU17-OB-1 and Duplicate #2, four VOCs (total 1,2-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride) were detected in both samples. The results for trans-1,2-dichloroethene and vinyl chloride were comparable. The results for total and cis-1,2-dichloroethene were less comparable, but one or both concentrations for these included estimated J-values.

In MW-A27 and Duplicate #3, the only chemical detected in both samples was TPH-DRO and the results for both were comparable.

4.5.2 Non-Detected Chemicals

The detection limits were the same for the non-detect concentrations for all three sets of original and duplicate samples and at normal non-diluted levels, except for TPH-DRO and TPH-ORO in the MW8AD/Duplicate #1 set. The TPH-DRO and TPH-ORO detections limits, although not the same were comparable. These comparisons are presented in Table 5-5.

During gauging of 57 wells on April 12-13, 2010, eight wells had either measurable free product or sheen. However, two weeks later during sampling of 42 wells on April 26 – May 3, 2010, only two wells had sheen, MW-A1 and MW-A3, and were not sampled.

Groundwater depths were shallower than during the previous November 2008 event. Lateral groundwater flow gradients and directions were consistent with the previous event in the shallow groundwater zone (0.01 ft/ft to the east) and deep groundwater zone (0.009 ft/ft to the southeast). Vertical flow gradients were generally consistent with the previous event with some variations (refer to Section 3.2).

In the low-flow samples from 42 wells including three duplicates and Snap Samples® from nine wells, 28 chemicals were detected at least once. Nine of the detected chemicals exceeded the screening levels.

The Snap Sampler® results were compared to the low-flow results for the nine wells sampled using both methods. For detected chemicals, the results were comparable when ignoring the estimated J-values and the Snap Sampler® VOC results typically had higher concentrations.

SECTION 6.0
PATH FORWARD

The data obtained from this event will be compared to and combined with the previously available historic data and will be used (i) to refine the Fall gauging and sampling event, and (ii) in the CMS.

1. MACTEC Engineering and Consulting, Inc. (MACTEC). *2004. RCRA Facility Investigation Report for McDonnell Douglas, Hazelwood, Missouri*, dated December.

2. Missouri Department of Natural Resources (MDNR). 2009. Risk-Based Corrective Action Report, Boeing Tract 1 Dated September 2004, Addendums to Risk-Based Corrective Action Report Dated June 29, 2009, and Dated July 29, 2009, The Boeing Company, Hazelwood, Missouri, EPA ID# MOD000818963, letter dated August 24.

3. MDNR. 2010. Quality Assurance Project Plan, approval of QAPP and Revised Groundwater Gauging and Sampling Plan for 2010, April 28.

4. Risk Assessment & Management Group, Inc. (RAM). 2004. *Risk-Based Corrective Action Report, Boeing Tract 1, St. Louis, Missouri*, dated September.

5. RAM Group of Gannett Fleming, Inc. (RAM Group). 2009. *November 2008 Groundwater Sampling Data Compilation Report, Boeing Tract 1, Hazelwood, Missouri,* dated January 16.

6. RAM Group. 2009a. *Changes in Groundwater Concentrations per November/December 2008 Sampling Event, Boeing Tract 1, St. Louis, Missouri*, Memorandum dated May 8.

7. RAM Group. 2009b. *Groundwater Flow Gradient – Shallow and Deep Groundwater Zones, November 17-19, 2008 Gauging, Boeing Tract 1, St. Louis, Missouri*, Memorandum dated June 4.

8. RAM Group. 2009c. *Revised Addendum A Protection of Surface Water*, addendum to risk assessment dated June 4.

9. RAM Group. 2009d. *Effect of Changes in Toxicity Values and Exposure Factors on Risks, Response to Outstanding Comment on Boeing RBCA Report Dated September 2004, Hazelwood, Missouri*, addendum to risk assessment dated July 24.

10. RAM Group, 2010a. *Revised Groundwater Gauging and Sampling Plan for 2010* March 5.

11. RAM Group, 2010b. *Quality Assurance Project Plan*, April 7.

12. RAM Group, 2010c. *Final Corrective Measures Study Work Plan,* April 21.

13. RAM Group, 2010d. *Revised Groundwater Sampling Plan for Metals*, April 27.

14. Tetra Tech EM, I*nc. (Tetra Tech). 2008. U.S. Environmental Protection Agency Final Risk Assessment, Boeing Tract 1 Facility, St. Louis, Missouri*, report dated March.

TABLES

Table 2-1
Field Gauging Data
Boeing Tract 1, Hazelwood, Missouri

Staff Initials: KLP / BRK

Subarea	Monitoring Well	Dia. (in.)	Well Depth (ft bgs)	Date	Time	PID (ppm)	DTP (ft btoc)	DTW (ft btoc)	DTB (ft btoc)	Comments (needed repairs, well bottom condition, etc)
Area 1: Runway Protection Zone (1 well)										
South of Bldg. 45	MW-A15	2	15	4/13/2010	1017	0	NA	3.69	11.44	Manway too small for Snap Sampler, deployed in MW-A28 instead. Soft
	MW-A22	2	15	4/13/2010	1012	5.6	NA	4.13	12.82	Hard
	MW-A23	2	15	4/13/2010	1004	150	NA	4.78	12.68	Hard
	MW-A25	2	15	4/13/2010	945	2.8	NA	3.95	12.76	Hard
	MW-A26	2	15	4/13/2010	950	0.3	NA	5.27	13.78	Hard
	MW-A27	2	15	4/13/2010	957	4.1	3.62	3.625	13.76	Hard
	MW-A28	2	15	4/13/2010	1023	23.1	NA	3.94	14.22	Deployed snap sampler setup planned for MW A15. Hard
	MW-A29	4	15	4/12/2010	1437	0	NA	3.91	14.5	OK for Snap Samplers, but need 4-inch dia dock. Hard
Hush House	MW-A1	2	15	4/13/2010	1222	105	Sheen	4.88	13.22	Hard
	MW-A3	2	15	4/13/2010	1212	10	4.05	4.06	14.77	Well cap sits too high to allow manway cover to lie flat. Hard
Area 2: Demolished Area (2 wells)										
2A	MW-A8	2	15	4/13/2010	1047					Could not locate.
	MW-A16	2	13	4/13/2010	1210	0	Sheen	4.83	12.9	Under front of luggage trailer. Soft
2B	B48N1	0.5	12.5	4/13/2010	1434	0	NA	6.4	11.79	Hard
	MW-5I	2	45	4/13/2010	1610	372	6.84	6.84	42.7	Broken bolt receptacle. Soft
	MW-6S	2	15	4/13/2010	1603	0.2	NA	4.19	14.99	Broken bolt receptacle. Hard
	MW-8S	2	16	4/13/2010	1629	1	NA	6.96	16.03	Hard
	MW-8I	2	40	4/13/2010	1625	0	NA	7.8	40.49	Missing 1 bolt. Soft
	MW-9S	2	16	4/13/2010	1443	22	4.04	4.05	16.36	Hard
	MW-10S	2	16	4/13/2010	1417	14	6.1	6.11	14.7	Hard
	MW-11S	2	16.5	4/12/2010	1533	0	NA	5.79	16.37	Hard

Table 2-1
Field Gauging Data
Boeing Tract 1, Hazelwood, Missouri

Staff Initials: KLP / BRK

Subarea	Monitoring Well	Dia. (in.)	Well Depth (ft bgs)	Date	Time	PID (ppm)	DTP (ft btoc)	DTW (ft btoc)	DTB (ft btoc)	Comments (needed repairs, well bottom condition, etc)
2B	MW-11I	2	40	4/12/2010	1455	0	NA	6.34	39.98	N.38 45.516 W-90 22.266 Hard
	MW-11D	2	75.25	4/13/2010	1545					N38 45.521, W-90 22.265 Could not get access well cover.
	TP-3	1	12.5	4/13/2010	1558	0	NA	5.04	12.74	Hard
	TP-4	1	14.6	4/13/2010	1619	0.5	NA	3.9	15.92	Missing manway bolts. Hard
	TP-6	1	16	4/13/2010	1536	27	Sheen	4.85	15.39	Hard
	SWMU17-OB-1	4	10	4/12/2010	1605	0	NA	4.91	11.73	N.38 45.528 W-90 22.325 Hard
2C	MW-A12	2	15	4/13/2010	1223	40	NA	4.42	13.1	Soft
	MW-A13	2	15	4/13/2010	1235	0	NA	5.18	14.84	Lost PID filter in well. Silty
Area 3: Retained Area (2 wells)										
3A	B41MW-18	2	12	4/13/2010	926	1.5	NA	4.43	11.59	Hard
	B42N6	1	15	4/13/2010	1247	4	NA	2.28	13.17	N38 45.464, W-90 22.191 Missing bolt, TOC cut crooked. Hard
3C	MW-A4	2	12	4/13/2010	1259	0	9.4	9.4	11.74	Well cap broken. Hard
3D	B41MW-5	2	12	4/13/2010	915	1.4	NA	3.23	12.26	No manway bolts. Hard
	B41S5D	0.75	70	4/13/2010	1500	0	NA	4.65	66.44	Silty
3E	B2E3	1	15	4/13/2010	1515	0	NA	6.96	14.68	Hard
	B2E5	1	13	4/13/2010	1521	0	NA	6.74	13.35	Hard
3H	B4MW-9	2	19.8	4/12/2010	1028	0	NA	9.06	19.44	Cannot deploy Snap Sampler, TOC too close to manway, manway damaged, missing cover. Soft.
	B4MW-10	2	12	4/12/2010	1044	0	NA	9.07	12	Manway too small for Snap Sampler. Hard

Table 2-1
Field Gauging Data
Boeing Tract 1, Hazelwood, Missouri

Staff Initials: KLP / BRK

Subarea	Monitoring Well	Dia. (in.)	Well Depth (ft bgs)	Date	Time	PID (ppm)	DTP (ft btoc)	DTW (ft btoc)	DTB (ft btoc)	Comments (needed repairs, well bottom condition, etc)
Area 6: GKN Facility (10 wells)										
6A	MW1	2	20	4/13/2010	853	0.8	NA	7.8	19.75	1 bolt & receptacle missing, other bolt broken in receptacle. Hard
6B	B27W3D	0.5	26	4/13/2010	744	0.2	NA	3.23	23.77	Manway too small for Snap Sampler. No manway bolts. TOC cut at steep angle. Hard
	B28MW3	2	12	4/13/2010	752	6.2	NA	4.39	11.56	No manway bolts. Hard
	B28MW4	2	15.6	4/13/2010	758	102	NA	5.29	20.3	Hard
	MW3	2	19.7	4/12/2010	1300	0	NA	5.18	19.23	Reduced Snap Sampler by one 125ml bottle since don't need Cr+6. Deployed 2 Snap Sampler strings in this well. No manway bolts or receptacles. Silty
	MW7	2	14.4	4/13/2010	735	0	NA	3.13	11.67	Hard
	MW9S	2	19	4/13/2010	810	1.8	NA	6.54	17.82	1 bolt missing. Hard
	MW9D	2	72.5	4/13/2010	805	NA	NA			Artesian NA
	RC8D	0.5	24	4/13/2010	820	2.2	NA	4.9	24.57	No manway bolts. Well top does not fit on TOC. Hard
	RC14	0.5	13	4/13/2010	835					Could not open manway cover.
6C	B25MW1	2	15.7	4/13/2010	1705	0	NA	9.22	15.17	Hard
	MW5CS	2	18.1	4/13/2010	1647	0	NA	8.99	20.02	N38 45.628, W-90 21.819 Hard
	MW5DS	2	17.5	4/13/2010	1657	0.2	NA	7.36	17.13	N38 45.608, W-90 21.836 No manway bolts. Hard
	MW8AS	2	16.5	4/12/2010	1005	0	NA	10.55	16.27	Reduced Snap Sampler by one 125ml bottle, due to approval onsite by MDNR to drop dissolved metals. Hard

Table 2-1
Field Gauging Data
Boeing Tract 1, Hazelwood, Missouri

Staff Initials: KLP / BRK

Subarea	Monitoring Well	Dia. (in.)	Well Depth (ft bgs)	Date	Time	PID (ppm)	DTP (ft btoc)	DTW (ft btoc)	DTB (ft btoc)	Comments (needed repairs, well bottom condition, etc)
6C	MW8AD	2	81	4/13/2010	1715	0	NA	9.22	80.7	Missing 1 bolt. Soft
6D	MW6	2	23	4/12/2010	953	0	NA	8.19	22.49	Hard
	MW6D	2	78	4/12/2010	1015	0	NA	6.88	78.42	Soft
Area 8: Office Complex North (5 wells)										
8A	MW10S	2	19	4/12/2010	810	0	NA	4.2	17.72	Soft
	MW10D	2	79.5	4/12/2010	821	0	NA	4.52	79.85	Need to install screws for Snap Sampler dock. Soft
8B	B220N4	1	13	4/12/2010	917	0	NA	3.85	12.78	Hard
	B220N6	1	13	4/12/2010	930	0	NA	5.06	12.68	Hard
	MW4	2	19.5	4/12/2010	937	0	NA	5.5	18.92	Hard

Notes:
PID - photoionization reading at well opening
DTP - depth to product
DTW - depth to groundwater
DTB - depth to bottom of well
No: No free product observed historically
Yes: Free product oberved historically
Yes: Free product oberved historically and/or in Nov 2008
ft bgs: Feet below ground surface
ft btoc: Feet below top of casing
in.: inches
dia.: diameter
ppm: parts per million isobutylene equivalent
+ For metals analyses, both total and dissolved fractions will be analyzed
GPS - Global Positioning System (degree/minute/seconds based on NAD27; degree/decimal minutes based on WGS 84)
Blank cells indicate missing data
TPH - total pretroleum hydrocarbons
GRO - gasoline range organics
DRO - disel range organics
ORO - oil range organics
PCBs - polychlorinated biphenyls
VOCs - volatile organic compounds
SVOCs - semi-volatile organic compounds
Yellow highlighted wells included passive sampling methods, except for E
Orange highlighted wells had sheen or measurable free product

Table 2-2
Low-Flow Field Sampling Data
Boeing Tract 1, Hazelwood, Missouri

Location/ Sub-area	Monitoring Well	Diameter (inches)	Screened Interval (ft bgs)	Total Depth (ft bgs)	Measured Depth to GW (ft btoc)	GPS Location	Dedicated Tubing Length (ft)	Pump Intake Target Depth (ft bgs)	Pump Intake Actual Depth (ft bgs)	Sampled After	Date / Time Sampled	Personnel Sampled	Can Accept Snap Samplers? (yes/no)	Comments
Area 1: Runway Protection Zone (9 wells)														
South of Bldg. 45	MW-A22	2	4.5-14.5	14.5	3.91	38/45/24N -90/22/18W	15.5	9.5	9.5	stabilized	5/3/2010 1130	MB/BRK	no, manway dia too small	some evidence of sheen, but interface probe did not detect
	MW-A23	2	2.7-12.7	12.7	4.46	38/45/25N -90/22/18W	13.7	7.7	8.8	stabilized	5/3/2010 1200	MB/BRK	no, manway dia too small	
	MW-A25	2	3-13	13	3.25	38/45/25N -90/22/21W	14	8	8	1 hour	4/30/2010 1453	EMH/KLP	no, manway dia too small	accidently disconnected pump after purging, re-attached and allowed 3 purge cycles before sampling
	MW-A26	2	4-14	14	4.79	38/45/25N -90/22/19W	15	9	9.5	1 hour	4/30/2010 1625	MB/BRK	no, manway dia too small	
	MW-A27	2	3.7-13.7	13.7	3.48	38/45/24N -90/22/19W	14.7	8.7	8.7	1 hour	5/3/2010 1355	MB/BRK	yes	took Dup #3
	MW-A28	2	4.5-14.5	14.5	3.47	38/45/25N -90/22/17W	15.5	9.5	9.5	1 hour	5/3/2010 1002	MB/BRK	converted	some evidence of black sheen, but interface did not detect
	MW-A29	4	4.5-14.5	14.5	2.38	38/45/25N -90/22/18W	15.5	9.5	9.5	stabilized	5/3/2010 0845	MB/BRK	yes, but need 4-inch dia dock	interface solid tone, but no evidence of sheen when probe dipped in water
Hush House	MW-A1	2	5-15	15	4.55	38/45/22N -90/22/14W	16	10	NA	did not sample	5/3-4/10	MB/BRK	no, manway dia too small	began purging on 5/3/10, but had to quit due to escort schedule, sheen present on 5/4/10, did not sample

Table 2-2
Low-Flow Field Sampling Data
Boeing Tract 1, Hazelwood, Missouri

Location/ Sub-area	Monitoring Well	Diameter (inches)	Screened Interval (ft bgs)	Total Depth (ft bgs)	Measured Depth to GW (ft btoc)	GPS Location	Dedicated Tubing Length (ft)	Pump Intake Target Depth (ft bgs)	Pump Intake Actual Depth (ft bgs)	Sampled After	Date / Time Sampled	Personnel Sampled	Can Accept Snap Samplers? (yes/no)	Comments
Hush House	MW-A3	2	5-15	15	3.61	38/45/22N -90/22/15W	16	10	NA	did not sample	5/3-4/10	MB/BRK	no, manway dia too small	began purging on 5/3/10, but had to quit due to escort schedule, sheen present on 5/4/10, did not sample, well casing too high for well cap and manway cover - need to change well cap or modify to allow manway to fit flush over cap
Area 2: Demolished Area (11 wells)														
2A	MW-A8	2	2.5-12.5	12.5	5.53	38/45/29N 90/22/23W	13	7.5	9	1 hour	4/30/2010 1218	EMH/KLP	yes, but tight fit	found well since gauging on 4/13/10
	MW-A16	2	2.5-12.5	12.5	4.59	38/45/29N -90/22/23W	13	7.5	8.5	1 hour	4/30/2010 1000	EMH/KLP	yes	found well under front of luggage cart, needs cap that will seal TOC
2B	MW-5I	2	32.0-42.0	42	6.89	38/45.51N -90/22.30W	42	37	37	1 hour	4/29/2010 1910	EMH/KLP	yes	
	MW-6S	2	5.0-15.0	15	3.95	38/45.51N -90/22.30W	15	10	10	1 hour	4/29/2010 1715	EMH/KLP	yes	
	MW-8S	2	8.0-16.0	16	6.46	38/45/30N -90/22/20W	17	12	11	1 hour	4/29/2010 1950	MB/BRK	yes	
	MW-8I	2	32.0-40.0	40	7.79	38/45/30N -90/22/20W	40	36	36	1 hour	4/29/2010 1445	EMH/KLP	yes	
	MW-11S	2	6.5-16.5	16.5	5.25	38/45.52N -90/22.26W	17.5	11.5	11.5	1 hour	4/29/2010 1705	MB/BRK	converted	
	MW-11I	2	32.0-40.0	40	7.62	38/45.516N -90/22.266W	41	36	36	1 hour	4/28/2010 2000	BRK/EMH	converted	

Table 2-2
Low-Flow Field Sampling Data
Boeing Tract 1, Hazelwood, Missouri

Location/ Sub-area	Monitoring Well	Diameter (inches)	Screened Interval (ft bgs)	Total Depth (ft bgs)	Measured Depth to GW (ft btoc)	GPS Location	Dedicated Tubing Length (ft)	Pump Intake Target Depth (ft bgs)	Pump Intake Actual Depth (ft bgs)	Sampled After	Date / Time Sampled	Personnel Sampled	Can Accept Snap Samplers? (yes/no)	Comments
2B	MW-11D	2	64.0-74.0	74	21.5	38/45.521N -90/22.265W	74	69	69	stabilized	4/28/2010 1953	MB/KLP	yes	manway replaced since 4/13/10 gauging attempt
	SWMU17-OB-1	4	0-10	10	4.88	38/45.528N -90/22.325W	13	5	7	stabilized	4/29/2010 1410	MB/BRK	converted	took Dup #2
2C	MW-A12	2	4.5-14.5	14.5	4.57	38/45/28N -90/22/15W	15	9.5	9.5	1 hour	4/30/2010 1415	MB/BRK	no, manway dia too small, obstruction at 4.6 ft btoc	used small dia bladder pump
Area 3: Retained Area (7 wells)														
3A	B41MW-18	2	2-12	12	3.65	38/45/31N -90/22/08W	13	7	7	stabilized	4/28/2010 0845	BRK/EMH	yes	
	B42N6	1	5-15	15	2.08	38/45.464N -90/22.191W	16	10	10	before dewatering screen	4/30/2010 0902	MB/BRK	no, manway dia. too small	small dia bladder pump
3C	MW-A4	2	2-12	12	9.33	38/45/21N -90/22/07W	13	7	10.7	stabilized	4/30/2010 1050	MB/BRK	yes	well cap broken, needs replacement but not enough clearance for manway cover using conventional well cap
3D	B41MW-5	2	2-12	12	3.11	38/45/30N -90/22/05W	12	7	8	stabilized	4/28/2010 0910	MB/KLP	no, manway dia. too small, well casing kinked about 6-in btoc	used small dia bladder pump

Table 2-2
Low-Flow Field Sampling Data
Boeing Tract 1, Hazelwood, Missouri

Location/ Sub-area	Monitoring Well	Diameter (inches)	Screened Interval (ft bgs)	Total Depth (ft bgs)	Measured Depth to GW (ft btoc)	GPS Location	Dedicated Tubing Length (ft)	Pump Intake Target Depth (ft bgs)	Pump Intake Actual Depth (ft bgs)	Sampled After	Date / Time Sampled	Personnel Sampled	Can Accept Snap Samplers? (yes/no)	Comments
3D	B41S5D	0.75	56-66	66	4.6	38/45/29N -90/22/05W	66	61	61	before dewatering screen	4/28/2010 1145	MB/KLP	no, manway dia. too small	used small dia bladder pump, air bubbles streaming inside flow cell during purging, later found that wtr inlet fitting cross threaded, changed fitting, did not affect samples since sample from well tubing before flow cell
3H	B4MW-9	2	10-19.8	19.8	8.84	38 45.510N -90 21.792W	20	14.9	14.9	1 hour	4/27/2010 1955	MB/KLP	yes	manway had been replaced since gauging on 4/12/10, TOC cut at steep angle, needs to be surveyed poss after hor. cut of casing and/or placement of Snap Sampler dock, ran out of CO2 gas after 33 mins into purging, restarted purging after 44 mins delay

Table 2-2
Low-Flow Field Sampling Data
Boeing Tract 1, Hazelwood, Missouri

Location/ Sub-area	Monitoring Well	Diameter (inches)	Screened Interval (ft bgs)	Total Depth (ft bgs)	Measured Depth to GW (ft btoc)	GPS Location	Dedicated Tubing Length (ft)	Pump Intake Target Depth (ft bgs)	Pump Intake Actual Depth (ft bgs)	Sampled After	Date / Time Sampled	Personnel Sampled	Can Accept Snap Samplers? (yes/no)	Comments
3H	B4MW-10	2	2-12	12	8.86	38/45.48N -90/21.79W	13	7	10.5	well went dry and recharged	4/28/2010 0945	BRK/EMH	no, manway dia too small	Purged dry on 4/27/10, returned 4/28/10 to sample, thorn bush over well
Area 6: GKN Facility (14 wells)														
6A	MW1	2	10-20	20	7.55	38/45/34N -90/22/26W	20	15	15	1 hour	4/27/2010 1625	MB/KLP	yes	
6B	B27W3D	0.5	21-26	26	3.34	38/45/37N -90/22/03W	NA, used peristaltic	23.5	23	sampled without purging	4/28/2010 1610	BRK	no, manway dia. too small	used peristaltic pump and sampled without purging, still well went dry before all samples could be collected
	B28MW3	2	2-12	12	4.33	38/45/37N -90/22/05W	12	7	8	stabilized	4/29/2010 0850	EMH/KLP	yes	
	B28MW4	2	5.5-20.5	20.5	5.31	38/45/37N -90/22/04W	21.5	13.1	12.75	1 hour	4/28/2010 1615	BRK/EMH	yes	
	MW3	2	10-19.7	19.7	5.35	38/45.686N -90/22.065W	20.7	14.7	15	1 hour	4/29/2010 0955	MB/BRK	converted	
	MW7	2	7-11.9	11.9	3	38/45/34N -90/22/04W	12	9.4	9.4	1 hour	4/28/2010 1615	MB/KLP	yes	
	MW9S	2	8.0-18.0	18	6.07	38/45/42N -90/22/02W	18	13	13	1 hour	4/29/2010 1108	EMH/KLP	yes	
6C	B25MW1	2	10.7-15.7	15.7	8.74	38 45.605N -90 21.905W	16.7	13.2	13.2	1 hour	4/27/2010	BRK/EMH	no, lot of sand and silt at top of casing, needs to be cleaned out	
	MW5CS	2	8-17.64	17.64	8.89	38/45.628N -90/21.819W	18.64	12.64	13.5	stabilized	4/27/2010 1332	BRK/EMH	yes	
	MW5DS	2	7-17.08	17.08	7.32	38/45.608N -90/21.836W	18	12.08	12.08	stabilized	4/27/2010 1341	MB/KLP	yes	
	MW8AS	2	6-16.5	16.5	10.42	38/45/39N -90/21/51W	17	11.5	13.5	stabilized	4/26/2010 1743	BRK/EMH	converted	
	MW8AD	2	70-80.5	80.5	8.47	38/45/39N -90/21/51W	81	75.5	75.5	1 hour	4/26/2010 1755	MB/KLP	yes	took Dup #1

Table 2-2
Low-Flow Field Sampling Data
Boeing Tract 1, Hazelwood, Missouri

Location/ Sub-area	Monitoring Well	Diameter (inches)	Screened Interval (ft bgs)	Total Depth (ft bgs)	Measured Depth to GW (ft btoc)	GPS Location	Dedicated Tubing Length (ft)	Pump Intake Target Depth (ft bgs)	Pump Intake Actual Depth (ft bgs)	Sampled After	Date / Time Sampled	Personnel Sampled	Can Accept Snap Samplers? (yes/no)	Comments
6D	MW6	2	8.0-23.0	23	7	38/45/33N -90/21/41W	23	15.5	15.5	1 hour	4/27/2010 1025	BRK/EMH	converted	
	MW6D	2	68.0-78.0	78	10.78	38/45/33N -90/21/41W	78	73	73	1 hour	4/27/2010 1105	MB/KLP	yes	
Area 8: Office Complex North (3 wells)														
8A	MW10S	2	8.0-18.0	18	3.43	38/45/49N -90/21/53W	18	13	13	1 hour	4/26/2010 1330	BRK/EMH	converted	
	MW10D	2	69.5-79.5	79.5	4.46	38/45/49N -90/21/53W	80	74.5	74.5	1 hour	4/26/2010 1415	MB/KLP	converted	
8B	MW4	2	10-19.5	19.5	4.89	38/45/54N -90/21/56W	20.5	14.5	14.75	1 hour	4/28/2010 1230	BRK/EMH	yes	

Notes:
MW-A1 and MWA3 had sheen present and were not sampled
yellow highlighted - have Snap Samplers® and were also sampled using low-flow methods (except B4MW-5

Ta[illegible]3
Field Snap Sampler Data
Boeing Tract 1, St. Louis, Missouri

Location / Sub-area	Monitoring Well	Diameter (inches)	Screened Interval (ft bgs)	Top of Casing Elevations (ft msl)	Screened Interval Elevations (ft msl)	Snap Sampler Deployment Depths (ft btoc)	Snap Sampler Deployment Elevations (ft msl)	Total Depth (ft bgs)	Analytical Methods+	Comments
Area 1: Runway Protection Zone (1 of 7 wells)										
South of Bldg. 45	MW-A28	2	4.5-14.5	539.09	534.59-524.59	10.00-13.08	529.09-526.01	14.5	TPH-GRO & VOC (8260), TPH-DRO/ORO (8270)	Shallow zone well, replaced MW-A15.
Area 2: Demolished Area (3 of 11 wells)										
2B	MW-11I	2	32.0-40.0	547.04	515.04-507.04	35.00-38.96	512.04-508.08	40	TPH-GRO & VOC (8260), TPH-DRO/ORO (8270), arsenic & cadmium (6010)-totals only	Intermediate zone well, did not analyze dissolved metals per MDNR approval.
2B	MW-11S	2	6.5-16.5	547.21	540.71-530.71	11.00-14.96	536.21-532.25	16.5	TPH-GRO & VOC (8260), TPH-DRO/ORO (8270), arsenic & cadmium (6010)-totals & dissolved	Shallow zone well.
2B	SWMU17-OB-1	4	0-10	Unk	Unk	6.00-8.21	Unk	10	TPH-GRO & VOC (8260), TPH-DRO/ORO (8270), arsenic & cadmium (6010)-totals only	Backfill well, well has not been surveyed, did not analyze dissolved metals per MDNR approval.
Area 3: Retained Area (1 of 6 wells)										
3H	B4MW-9	2	10-19.8	Unk	Unk	14.00-17.96 planned	Unk	19.8	TPH-GRO & VOC (8260), TPH-DRO/ORO (8270), arsenic & manganese (6010), mercury (7470), totals & dissolved metals	Shallow zone well, top of casing recently modified and needs to be surveyed, did not deploy Snap Sampler due to damaged well.
Area 6: GKN Facility (3 of 13 wells)										
6B	MW3	2	9.7-19.7	535.89	526.19-516.19	9.5-13.46 14.30-17.8	526.39-522.43 521.59-518.09	19.7	TPH-GRO & VOC (8260), TPH-DRO/ORO (8270), SVOC(8270), PCB(8082), arsenic, barium, cadmium, chromium, & manganese (6010), mercury (7470), totals & dissolved metals	Shallow zone well, two Snap Sampler strings in well (upper string has two 40ml VOAs plus three 125ml poly and lower string has four 125ml poly), replaced tubing on deeper set for add'l clearance.
6C	MW8AS	2	6.5-16.5	533.86	527.36-517.36	11.00-14.96	522.86-518.90	16.5	TPH-GRO & VOC (8260), TPH-DRO/ORO (8270), arsenic, barium, cadmium, & chromium (6010), mercury (7470), hexavalent chromium (7196A), totals & dissolved metals	Shallow zone well, SS bottles leaking when brought to surface, topped off 40ml vials from 125ml SS, did not run total Hg or Cr+6, did not run dissolved metals on Snap Samples per approval in field by MDNR rep to reduce # of sample bottles.
6D	MW6	2	8.0-23.0	519.47	511.47-496.47	18.00-20.21	501.47-499.26	23	VOC (8260), arsenic & chromium (6010)-totals only	Shallow zone well, did not analyze dissolved metals per MDNR approval.

Table 2-3
Field Snap Sampler Data
Boeing Tract 1, St. Louis, Missouri

Location / Sub-area	Monitoring Well	Diameter (inches)	Screened Interval (ft bgs)	Top of Casing	Screened Interval	Snap Sampler Deployment		Total Depth (ft bgs)	Analytical Methods+	Comments
				Elevations (ft msl)		Depths (ft btoc)	Elevations (ft msl)			
Area 8: Office Complex North (2 of 3 wells)										
8A	MW10D	2	69.5-79.5	536.7	467.20-457.20	74.00-76.21	462.70-460.49	79.5	VOC (8260), arsenic, barium, chromium, & manganese (6010)-totals & dissolved	Deep zone well, 40ml SS vial had small air bubble, topped off from 125ml SS, did not run dissolved metals, need to drill 3 pilot holes in TOC to secure Snap Sampler dock with screws.
8A	MW10S	2	8.0-18.0	536.81	528.81-518.81	12.00-14.21	524.81-522.60	18	VOC (8260), arsenic, barium, chromium, & manganese (6010)-totals & dissolved	Shallow zone well, 40ml SS vials had air bubbles, topped off from 125ml SS, did not run dissolved metals.

Notes:
ft bgs: Feet below ground surface
ft btoc: Feet below top of casing
ft msl: Feet above mean sea level
TPH - total petroleum hydrocarbons
GRO - gasoline range organics
DRO - diesel range organics
ORO - oil range organics
PCBs - poly-chlorinated biphenyls
VOCs - volatile organic compounds
SVOCs - semi-volatile organic compounds

Table 3-1
Groundwater Gauging Data April 12-13, 2010
Boeing Tract 1, St. Louis, Missouri

Well ID	Area / Sub-Area	Screened Interval (ft bgs)	Date	TOC Elevation (ft msl)	Depth to Water (ft btoc)	Depth to Free Product (ft btoc)	Free Product Thickness (ft)	Ground water Elevation (ft msl)	Comments
Backfill Wells (screened intervals from 0 to 10 ft bgs)									
SWMW17-OB-I	2B	0-10	4/12/2010	--	4.91	NA		NA	Hard
Shallow Zone Wells (screened intervals from 2 to 26 ft bgs)									
MW-A1	1	5-15	4/13/2010	537.04	4.88	Sheen	Sheen	532.16	Hard
MW-A3	1	5-15	4/13/2010	537.14	4.06	4.05	0.010	533.08	Well cap sits too high to allow manway cover to lie flat. Hard
MW-A15	1	4.5-14.5	4/13/2010	539.36	3.69	NA		535.67	Soft
MW-A22	1	4.5-14.5	4/13/2010	539.64	4.13	NA		535.51	Hard
MW-A23	1	2.7-12.7	4/13/2010	540.17	4.78	NA		535.39	Hard
MW-A25	1	3-13	4/13/2010	539.70	3.95	NA		535.75	Hard
MW-A26	1	4-14	4/13/2010	539.49	5.27	NA		534.22	Hard
MW-A27	1	3.7-13.7	4/13/2010	539.89	3.63	3.62	0.005	536.27	Hard
MW-A28	1	4.5-14.5	4/13/2010	539.09	3.94	NA		535.15	Hard
MW-A29	1	4.5-14.5	4/12/2010	539.56	3.91	NA		535.65	OK for Snap Samplers, but need 4-inch dia dock. Hard
MW-A16	2A	2.5-12.5	4/13/2010	--	4.83	Sheen	Sheen	NA	Under front of luggage trailer. Soft
MW-A8*	2A	2.5-12.5	4/30/2010	--	5.53			NA	Could not located on 4/13/10; therefore, used GW depth prior to sampling on 4/30/10.
B48N1	2B	2.0-12.5	4/13/2010	539.92	6.40	NA		533.52	Hard
MW-6S	2B	5.0-15.0	4/13/2010	547.84	4.19	NA		543.65	Broken bolt receptacle. Hard
MW-8S	2B	8.0-16.0	4/13/2010	547.85	6.96	NA		540.89	Hard
MW-9S	2B	6.0-16.0	4/13/2010	547.11	4.05	4.04	0.010	543.06	Hard
MW-10S	2B	5.0-15.0	4/13/2010	547.77	6.11	6.10	0.010	541.66	Hard
MW-11S	2B	6.5-16.5	4/12/2010	547.21	5.79	NA		541.42	Hard
TP-3	2B	6.0-12.5	4/13/2010	548.52	5.04	NA		543.48	Hard
TP-4	2B	9.0-14.6	4/13/2010	547.07	3.90	NA		543.17	Missing manway bolts. Hard
TP-6	2B	6.0-16.0	4/13/2010	548.70	4.85	Sheen	Sheen	543.85	Hard
MW-A12	2C	4.5-14.5	4/13/2010	538.92	4.42	NA		534.50	Soft
MW-A13	2C	4.5-14.5	4/13/2010	538.79	5.18	NA		533.61	Lost PID filter in well. Silty
B41MW-18	3A	2-12	4/13/2010	541.62	4.43	NA		537.19	Hard
B42N6	3A	5-15	4/13/2010	--	2.28	NA		NA	Missing bolt, TOC cut crooked. Hard
MW-A4	3C	2-12	4/13/2010	534.40	9.40	9.40	Sheen	525.00	Well cap broken. Hard
B41MW-5	3D	2-12	4/13/2010	534.55	3.23	NA		531.32	No manway bolts. Hard
B2E3	3E	5-15	4/13/2010	--	6.96	NA		NA	Hard
B2E5	3E	3-13	4/13/2010	--	6.74	NA		NA	Hard
B4MW-9	3H	10-19.8	4/12/2010	531.66	9.06	NA		522.60	Cannot deploy Snap Sampler, TOC too close to manway, manway damaged, missing cover. Soft
B4MW-10	3H	2-12	4/12/2010	527.52	9.07	NA		518.45	Manway too small for Snap Sampler. Hard
MW1	6A	10-20	4/13/2010	558.73	7.80	NA		550.93	1 bolt & receptacle missing, other bolt broken in receptacle. Hard
B27W3D	6B	21-26	4/13/2010	535.86	3.23	NA		532.63	Manway too small for Snap Sampler. No manway bolts. TOC cut at steep angle. Hard
B28MW3	6B	2-12	4/13/2010	538.38	4.39	NA		533.99	No manway bolts. Hard
B28MW4	6B	5.5-20.5	4/13/2010	538.17	5.29	NA		532.88	Hard
MW3	6B	10-19.7	4/12/2010	535.89	5.18	NA		530.71	No manway bolts or receptacles. Silty
MW7	6B	7-11.9	4/13/2010	538.41	3.13	NA		535.28	Hard
MW9S	6B	8.0-18.0	4/13/2010	536.17	6.54	NA		529.63	1 bolt missing. Hard
RC14	6B	3-13	4/13/2010	--				NA	Could not open manway cover.
RC8D	6B	19-24	4/13/2010	536.42	4.90	NA		531.52	No manway bolts. Well top does not fit on TOC. Hard
B25MW1	6C	10.7-15.7	4/13/2010	537.42	9.22	NA		528.20	Hard
MW5CS	6C	8-17.64	4/13/2010	529.15	8.99	NA		520.16	Hard
MW5DS	6C	7-17.08	4/13/2010	530.92	7.36	NA		523.56	No manway bolts. Hard
MW8AS	6C	6-16.5	4/12/2010	533.86	10.55	NA		523.31	Hard
MW6	6D	8.0-23.0	4/12/2010	519.47	8.19	NA		511.28	Hard
MW10S	8A	8.0-18.0	4/12/2010	536.81	4.20	NA		532.61	Soft
B220N4	8B	3-13	4/12/2010	--	3.85	NA		NA	Hard

Table 3-1
Groundwater Gauging Data April 12-13, 2010
Boeing Tract 1, St. Louis, Missouri

Well ID	Area / Sub-Area	Screened Interval (ft bgs)	Date	TOC Elevation (ft msl)	Depth to Water (ft btoc)	Depth to Free Product (ft btoc)	Free Product Thickness (ft)	Ground water Elevation (ft msl)	Comments
B220N6	8B	3-13	4/12/2010	--	5.06	NA		NA	Hard
MW4	8B	10-19.5	4/12/2010	540.79	5.50	NA		535.29	Hard
Intermediate Zone Wells (screened intervals from 32 to 42 ft bgs)									
MW-5I	2B	32.0-42.0	4/13/2010	547.73	6.84	6.84	Sheen	540.89	Broken bolt receptacle. Soft
MW-8I	2B	32.0-40.0	4/13/2010	547.84	7.80	NA		540.04	Missing 1 bolt. Soft
MW-11I	2B	32.0-40.0	4/12/2010	547.04	6.34	NA		540.70	Hard
Deep Zone Wells (screened intervals from 56 to 80.5 ft bgs)									
MW-11D*	2B	64.0-74.0	4/28/2010	547.08	21.50	NA		NA	Well cover not accessible on 4/13/10; therefore, used GW depth prior to sampling on 4/28/10.
B41S5D	3D	56-66.29	4/13/2010	534.27	4.65	NA		529.62	Silty
MW9D	6B	62-72.5	4/13/2010	539.75		NA		NA	Artesian
MW8AD	6C	70-80.5	4/13/2010	534.05	9.22	NA		524.83	Missing 1 bolt. Soft
MW6D	6D	68.0-78.0	4/12/2010	520.32	6.88	NA		513.44	Soft
MW10D	8A	70-79.5	4/12/2010	536.70	4.52	NA		532.18	Need to install screws for Snap Sampler dock. Soft

Notes:
ft bgs: feet below ground surface
ft btoc: feet below top of casing
ft msl: feet above mean sea level
ft: feet
NA: not applicable
*: did not use in GW flow map

Table 3-2
Vertical Groundwater Gradients, April 12-13, 2010
Boeing Tract 1, St. Louis, Missouri

Well Pair	Area / Sub-Area	Date	TOC Elevation (ft msl)	Depth to Water (ft btoc)	Groundwater Elevation (ft msl)	Top of Screen Depth (ft bgs)	Top of Screen Elevation (ft msl)	Difference in GW Elevations (ft)	Difference in Top of Screen Elevations (ft)	Gradient	Vertical Gradient Direction
Shallow/Deep Zones											
B41MW-5	3D	4/13/2010	534.55	3.23	531.32	2	532.55	1.70	54.28	0.031	Downward
B41S5D	3D	4/13/2010	534.27	4.65	529.62	56	478.27				
MW10S	8A	4/12/2010	536.81	4.20	532.61	8	528.81	0.43	62.11	0.007	Downward
MW10D	8A	4/12/2010	536.70	4.52	532.18	70	466.70				
MW-11S	2B	4/12/2010	547.21	5.79	541.42	6.5	540.71	15.84	57.63	0.275	Downward
MW-11D**	2B	4/13/2010	547.08	21.50	525.58	64	483.08				
MW6	6D	4/12/2010	519.47	8.19	511.28	8	511.47	-2.16	59.15	-0.037	Upward
MW6D	6D	4/12/2010	520.32	6.88	513.44	68	452.32				
MW8AS	6C	4/12/2010	533.86	10.55	523.31	6	527.86	-1.52	63.81	-0.024	Upward
MW8AD	6C	4/13/2010	534.05	9.22	524.83	70	464.05				
MW9S	6B	4/13/2010	536.17	6.54	529.63	8	528.17	-7.30	50.42	-0.145	Upward
MW9D*	6B	4/13/2010	539.75		536.93	62	477.75				
Shallow/Intermediate Zones											
MW-11S	2B	4/12/2010	547.21	5.79	541.42	6.5	540.71	0.72	25.67	0.028	Downward
MW-11I	2B	4/12/2010	547.04	6.34	540.70	32	515.04				
MW-6S	2B	4/13/2010	547.84	4.19	543.65	5	542.84	2.76	27.11	0.102	Downward
MW-5I	2B	4/13/2010	547.73	6.84	540.89	32	515.73				
MW-8S	2B	4/13/2010	547.85	6.96	540.89	8	539.85	0.86	24.02	0.036	Downward
MW-8I	2B	4/13/2010	547.84	7.80	540.04	32	515.84				
Intermediate/Deep Zones											
MW-11I	2B	4/12/2010	547.04	6.34	540.70	32	515.04	15.12	31.96	0.473	Downward
MW-11D**	2B	4/13/2010	547.08	21.50	525.58	64	483.08				

Notes:
ft bgs: feet below ground surface
ft btoc: feet below top of casing
ft msl: feet above mean sea leve
ft: feet
* In the 12/04 RFI, for MW9D which is artesian, the groundwater elevation was approximated at 536.93 ft msl (about 2 ft above ground elevation)
** MW-11D was not accessible during gauging on April 12 and 13, 2010. DTW measured during sampling on April 28, 2010 was used for this analysis
Note: Top of screen elevations assume depth in ft bgs is similar to ft btoc, since these wells are flush-mounte

Table 4-1
Groundwater Analytical Methods
Boeing Tract 1, Hazelwood, Missouri

Location/ Sub-area	Monitoring Well	No. of Times Sampled	Analytical Methods*																			Comments
			VOC	SVOC	PCB	TPH-GRO	TPH-DRO/ ORO	As		Ba		Cd		Cr		Mn		Hg		Cr+6		
								Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	
Area 1: Runway Protection Zone (9 wells)																						
South of Bldg. 45	MW-A22	4	X			X	X															
	MW-A23	4	X			X	X															
	MW-A25	2	X			X	X															
	MW-A26	2	X			X	X															
	MW-A27	4	X			X	X															Also Dup #3.
	MW-A28	1	X			X	X															
	MW-A29	2	X			X	X															
Hush House	MW-A1	4	X			X	X	X	X													Sheen present on 5/4/10, did not sample.
	MW-A3	2	X			X	X	X														Sheen present on 5/4/10, did not sample.
Area 2: Demolished Area (8 wells)																						
2A	MW-A8	4						X				X										
	MW-A16	2						X	X			X	X									
2B	MW-6S	11	X			X	X	X	X			X	X									
	MW-8I	12	X			X	X	X	X			X	X									
	MW-11S	12	X			X	X	X	X			X	X									
	MW-5I	14	X			X	X	X				X										
	MW-8S	12	X			X	X	X				X										
	MW-11I	12	X			X	X	X				X										
	MW-11D	12	X			X	X	X				X										
	SWMU17-OB-1	2	X			X	X	X				X										Also Dup #2.
2C	MW-A12	2	X			X	X															
Area 3: Retained Area (6 wells)																						
3A	B41MW-18	3	X			X	X	X														Lab did not run VOCs as requested.
	B42N6	3	X			X	X															Well went dry before samples for TPH-DRO/ORO could be collected.
3C	MW-A4	3	X			X	X															
3D	B41MW-5	4	X			X	X	X		X		X				X						Due to error on COC, did not run VOC.
	B41S5D	2	X			X	X	X	X	X	X	X	X			X	X					
3H	B4MW-9	2				X	X	X	X							X	X					Did not deploy Snap Sampler® due to well damage. Due to addition on 4/26/10 table, Low-flow sample was also analyzed for total & dissolved Hg.
	B4MW-10	2				X	X	X								X						Due to addition on 4/26/10 table, sample was also run for total Hg.
Area 6: GKN Facility (8 wells)																						
6A	MW1	11	X			X	X	X		X		X		X								
6B	B28MW3	10	X			X	X	X		X		X		X		X		X				
	MW7	13	X			X	X	X		X		X		X		X		X				
	B27W3D	7	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X			Well went dry before any metals samples could be collected. Lab did not run VOCs as requested.
	B28MW4	4	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X			Lab did not run VOCs as requested.
	MW3	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
	MW9S	13	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
6C	B25MW1	10	X			X	X	X		X		X		X				X		X		Sample did not meet hold time for Cr+6. Lab did not run VOCs as requested.
	MW5CS	13	X			X	X	X		X		X		X				X		X		Sample did not meet hold time for Cr+6. Lab did not run VOCs as requested.
	MW5DS	13	X			X	X	X		X		X		X				X		X		
	MW8AS	13	X			X	X	X	X	X	X	X	X	X	X			X	X	X	X	Snap Sampler bottles leaking when brought to surface, topped off 40ml vials from 125ml SS. Did not run dissolved metals on Snap Sampler® per MDNR approval in field to reduce # of sample bottles. Due to addition on 4/26/10 table, Snap Sampler was also run for total Mn and Low-flow sample was also run for total & dissolved Mn. Due to error on COC, Snap Sampler® was not run for total Cr+6 or TPH-GRO, and Low-Flow sample was not run for TPH-GRO.

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	5/3/2010	5/3/2010	4/30/2010	4/30/2010	5/3/2010	5/3/2010	5/3/2010	5/3/2010	5/3/2010	4/30/2010	4/30/2010	4/29/2010	4/29/2010
Sample	MW-A22	MW-A23	MW-A25	MW-A26	MW-A27	Dup #3 (MW-A27)	MW-A28-SS	MW-A28-LF	MW-A29	MW-A8	MW-A16	MW-5I	MW-6S
Area ID	South of Bldg. 45									2A		2B	
Metals (6010)													
Chromium, Hexavalent													
Arsenic										35.5	16 J	110	< 25
Barium													
Cadmium										< 2	< 2	< 2	0.6 J
Chromium													
Manganese													
Mercury (7470)													
Arsenic, Dissolved											12 J		< 25
Barium, Dissolved													
Cadmium, Dissolved											< 2		< 2
Chromium, Dissolved													
Manganese, Dissolved													
Mercury, Dissolved													
PCBs (8082)													
Aroclor 1254													
SVOCs (8270)													
1,2,4-Trichlorobenzene													
1,2-Dichlorobenzene													
1,3-Dichlorobenzene													
1,4-Dichlorobenzene													
2,4,5-Trichlorophenol													
2,4,6-Trichlorophenol													
2,4-Dichlorophenol													
2,4-Dimethylphenol													
2,4-Dinitrophenol													
2,4-Dinitrotoluene													
2,6-Dinitrotoluene													
2-Chloronaphthalene													
2-Chlorophenol													
2-Methoxy-4-methylphenol													
2-Methylnaphthalene													
2-Nitroaniline													
2-Nitrophenol													
3,3'-Dichlorobenzidine													
3-Nitroaniline													
4,6-Dinitro-2-methylphenol													
4-Bromophenyl phenyl ether													
4-Chloro-3-methylphenol													
4-Chloroaniline													
4-Chlorophenyl phenyl ether													
4-Nitroaniline													
4-Nitrophenol													

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	5/3/2010			5/3/2010			4/30/2010			4/30/2010			5/3/2010			5/3/2010			5/3/2010			5/3/2010			5/3/2010			4/30/2010			4/30/2010			4/29/2010			4/29/2010		
Sample	**MW-A22**			**MW-A23**			**MW-A25**			**MW-A26**			**MW-A27**			**Dup #3 (MW-A27)**			**MW-A28-SS**			**MW-A28-LF**			**MW-A29**			**MW-A8**			**MW-A16**			**MW-5I**			**MW-6S**		
Area ID	**South of Bldg. 45**																											**2A**						**2B**					
Acenaphthene																																							
Acenaphthylene																																							
Aniline																																							
Anthracene																																							
Azobenzene																																							
Benzidine																																							
Benzo(a)anthracene																																							
Benzo(a)pyrene																																							
Benzo(b)fluoranthene																																							
Benzo(g,h,i)perylene																																							
Benzo(k)fluoranthene																																							
Benzoic acid																																							
Benzyl alcohol																																							
Bis(2-chloroethoxy)methane																																							
Bis(2-chloroethyl)ether																																							
Bis(2-chloroisopropyl)ether																																							
Bis(2-ethylhexyl)phthalate																																							
Butyl benzyl phthalate																																							
Carbazole																																							
Chrysene																																							
Dibenzo(a,h)anthracene																																							
Dibenzofuran																																							
Diethyl phthalate																																							
Dimethyl phthalate																																							
Di-n-butyl phthalate																																							
Di-n-octyl phthalate																																							
Fluoranthene																																							
Fluorene																																							
Hexachlorobenzene																																							
Hexachlorobutadiene																																							
Hexachlorocyclopentadiene																																							
Hexachloroethane																																							
Indeno(1,2,3-cd)pyrene																																							
Isophorone																																							
m,p-Cresol																																							
Naphthalene																																							
Nitrobenzene																																							
N-Nitrosodimethylamine																																							
N-Nitroso-di-n-propylamine																																							
N-Nitrosodiphenylamine																																							
o-Cresol																																							
Pentachlorophenol																																							
Phenanthrene																																							
Phenol																																							
Pyrene																																							
Pyridine																																							
Quinoline																																							
TPH (8270)																																							
TPH - GRO (C6 - C10) (8260)	<	500			**1600**		<	500			**360**	J	<	500			**210**	J		**3200**			**3510**		<	500									<	1000000		<	500	
TPH-DRO (C10 - C21)		**200**	J		**868**		<	300			**384**			**240**	J		**270**	J		**1820**			**1530**		<	300									<	300			**280**	J
TPH-ORO (C21 - C35)	<	300			**220**	J	<	300		<	300		<	300		<	300			**500**	J		**270**	J	<	300									<	300		<	300	

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	5/3/2010	5/3/2010	4/30/2010	4/30/2010	5/3/2010	5/3/2010	5/3/2010	5/3/2010	5/3/2010	4/30/2010	4/30/2010	4/29/2010	4/29/2010
Sample	MW-A22	MW-A23	MW-A25	MW-A26	MW-A27	Dup #3 (MW-A27)	MW-A28-SS	MW-A28-LF	MW-A29	MW-A8	MW-A16	MW-5I	MW-6S
Area ID	South of Bldg. 45									2A		2B	
VOCs (8260)													
1,1,1,2-Tetrachloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,1,1-Trichloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,1,2,2-Tetrachloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,1,2-Trichloro-1,2,2-trifluoroethane	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20			< 40000	< 20
1,1,2-Trichloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,1-Dichloro-2-propanone	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50			< 100000	< 50
1,1-Dichloroethane	< 5	< 5	< 5	**1.2** J	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,1-Dichloroethene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,1-Dichloropropene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,2,3-Trichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,2,3-Trichloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,2,3-Trimethylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,2,4-Trichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,2,4-Trimethylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,2-Dibromo-3-chloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,2-Dibromoethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,2-Dichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,2-Dichloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,2-Dichloroethene, Total	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			**9600** J	< 5
1,2-Dichloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,3,5-Trimethylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,3-Dichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,3-Dichloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,3-Dichloropropene, Total	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1,4-Dichloro-2-butene, Total	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 20000	< 10
1,4-Dichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
1-Chlorobutane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
2,2-Dichloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
2-Butanone	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25			< 50000	< 25
2-Chloroethyl vinyl ether	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20			< 40000	< 20
2-Chlorotoluene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
2-Hexanone	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25			< 50000	< 25
2-Nitropropane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50			< 100000	< 50
4-Chlorotoluene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
4-Methyl-2-pentanone	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25			< 50000	< 25
Acetone	< 25	**7.3** J	< 25	< 25	< 25	< 25	**13** J	**18** J	< 25			< 50000	< 25
Acetonitrile	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50			< 100000	< 50
Acrolein	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100			< 200000	< 100
Acrylonitrile	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Allyl chloride	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Benzene	< 2	< 2	< 2	**1.6** J	< 2	< 2	< 2	**1.6** J	< 2			< 4000	< 2
Bromobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Bromochloromethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Bromodichloromethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Bromoform	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Bromomethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 20000	< 10
Butyl acetate	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25			< 50000	< 25
Carbon disulfide	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	5/3/2010	5/3/2010	4/30/2010	4/30/2010	5/3/2010	5/3/2010	5/3/2010	5/3/2010	5/3/2010	4/30/2010	4/30/2010	4/29/2010	4/29/2010
Sample	MW-A22	MW-A23	MW-A25	MW-A26	MW-A27	Dup #3 (MW-A27)	MW-A28-SS	MW-A28-LF	MW-A29	MW-A8	MW-A16	MW-5I	MW-6S
Area ID	South of Bldg. 45									2A		2B	
Carbon tetrachloride	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Chlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Chloroethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 20000	< 10
Chloroform	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Chloromethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 20000	< 10
Chloroprene	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20			< 40000	< 20
cis-1,2-Dichloroethene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			**9600** J	< 5
cis-1,3-Dichloropropene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
cis-1,4-Dichloro-2-butene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Cyclohexanone	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50			< 100000	< 50
Dibromochloromethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Dibromomethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Dichlorodifluoromethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 20000	< 10
Diisopropyl ether	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 4000	< 2
Ethyl acetate	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 20000	< 10
Ethyl ether	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Ethyl methacrylate	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Ethylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Ethyl-tert-butyl ether	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 4000	< 2
Heptane	< 20	**48.7**	< 20	< 20	< 20	< 20	**83.4**	< 20	< 20			< 40000	< 20
Hexachlorobutadiene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Hexachloroethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 20000	< 10
Iodomethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Isopropylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**11.3**	< 5			< 10000	< 5
m,p-Xylenes	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 20000	< 10
Methacrylonitrile													
Methyl acetate													
Methyl Methacrylate	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Methyl tert-butyl ether	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 4000	< 2
Methylacrylate	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 20000	< 10
Methylene chloride	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Naphthalene	< 10	< 10	< 10	< 10	< 10	< 10	**2** J	**4.8** J	< 10			< 20000	< 10
n-Butylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**4.9** J	< 5			< 10000	< 5
n-Hexane	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20			< 40000	< 20
Nitrobenzene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50			< 100000	< 50
n-Propylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**7.16**	< 5			< 10000	< 5
o-Xylene													
Pentachloroethane	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20			< 40000	< 20
p-Isopropyltoluene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Propionitrile	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50			< 100000	< 50
sec-Butylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**3.1** J	< 5			< 10000	< 5
Styrene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
tert-Amyl methyl ether	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			< 4000	< 2
tert-Butyl alcohol	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25			< 50000	< 25
tert-Butylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	**1.3** J	**1.6** J	< 5			< 10000	< 5

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	5/3/2010	5/3/2010	4/30/2010	4/30/2010	5/3/2010	5/3/2010	5/3/2010	5/3/2010	5/3/2010	4/30/2010	4/30/2010	4/29/2010	4/29/2010
Sample	MW-A22	MW-A23	MW-A25	MW-A26	MW-A27	Dup #3 (MW-A27)	MW-A28-SS	MW-A28-LF	MW-A29	MW-A8	MW-A16	MW-5I	MW-6S
Area ID	South of Bldg. 45									2A		2B	
Tetrachloroethene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Tetrahydrofuran	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20			< 40000	< 20
Toluene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
trans-1,2-Dichloroethene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
trans-1,3-Dichloropropene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
trans-1,4-Dichloro-2-butene	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 20000	< 10
Trichloroethene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			**223000**	< 5
Trichlorofluoromethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5			< 10000	< 5
Vinyl acetate	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 20000	< 10
Vinyl chloride	< 2	< 2	< 2	**1.8** J	< 2	< 2	< 2	< 2	< 2			< 4000	< 2
Xylenes, Total	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**1.5** J	< 5			< 10000	< 5

Lab Qualifiers:
Values in bold font are detected values except the values with "J" qualifier
J: analyte detected below reporting limit and estimated value shown
S: spike recovery outside accepted recovery limits

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/29/2010	4/29/2010	4/29/2010	4/29/2010	4/28/2010	4/28/2010	4/28/2010	4/29/2010	4/29/2010	4/29/2010	4/30/2010	4/28/2010	4/30/2010
Sample	MW-8S	MW8I	MW-11S-SS	MW-11S-LF	MW-11I-SS	MW-11I-LF	MW-11D	SWMU17-OB-1-SS	DUP-2 (SWMU17-OB-1)	SWMU17-OB-1-LF	MW-A12	B41MW-18	B42N6
Area ID	2B										2C	3A	3A
Metals (6010)													
Chromium, Hexavalent													
Arsenic	< 25	113	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25		< 25	
Barium													
Cadmium	< 2	< 2	0.5 J	< 2	< 2	< 2	< 2	< 2	< 2	< 2			
Chromium													
Manganese													
Mercury (7470)													
Arsenic, Dissolved		126	< 25	< 25									
Barium, Dissolved													
Cadmium, Dissolved		0.4 J	0.6 J	< 2									
Chromium, Dissolved													
Manganese, Dissolved													
Mercury, Dissolved													
PCBs (8082)													
Aroclor 1254													
SVOCs (8270)													
1,2,4-Trichlorobenzene													
1,2-Dichlorobenzene													
1,3-Dichlorobenzene													
1,4-Dichlorobenzene													
2,4,5-Trichlorophenol													
2,4,6-Trichlorophenol													
2,4-Dichlorophenol													
2,4-Dimethylphenol													
2,4-Dinitrophenol													
2,4-Dinitrotoluene													
2,6-Dinitrotoluene													
2-Chloronaphthalene													
2-Chlorophenol													
2-Methoxy-4-methylphenol													
2-Methylnaphthalene													
2-Nitroaniline													
2-Nitrophenol													
3,3'-Dichlorobenzidine													
3-Nitroaniline													
4,6-Dinitro-2-methylphenol													
4-Bromophenyl phenyl ether													
4-Chloro-3-methylphenol													
4-Chloroaniline													
4-Chlorophenyl phenyl ether													
4-Nitroaniline													
4-Nitrophenol													

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/29/2010	4/29/2010	4/29/2010	4/29/2010	4/28/2010	4/28/2010	4/28/2010	4/29/2010	4/29/2010	4/29/2010	4/30/2010	4/28/2010	4/30/2010
Sample	MW-8S	MW8I	MW-11S-SS	MW-11S-LF	MW-11I-SS	MW-11I-LF	MW-11D	SWMU17-OB-1-SS	DUP-2 (SWMU17-OB-1)	SWMU17-OB-1-LF	MW-A12	B41MW-18	B42N6
Area ID	2B										2C	3A	3A
Acenaphthene													
Acenaphthylene													
Aniline													
Anthracene													
Azobenzene													
Benzidine													
Benzo(a)anthracene													
Benzo(a)pyrene													
Benzo(b)fluoranthene													
Benzo(g,h,i)perylene													
Benzo(k)fluoranthene													
Benzoic acid													
Benzyl alcohol													
Bis(2-chloroethoxy)methane													
Bis(2-chloroethyl)ether													
Bis(2-chloroisopropyl)ether													
Bis(2-ethylhexyl)phthalate													
Butyl benzyl phthalate													
Carbazole													
Chrysene													
Dibenzo(a,h)anthracene													
Dibenzofuran													
Diethyl phthalate													
Dimethyl phthalate													
Di-n-butyl phthalate													
Di-n-octyl phthalate													
Fluoranthene													
Fluorene													
Hexachlorobenzene													
Hexachlorobutadiene													
Hexachlorocyclopentadiene													
Hexachloroethane													
Indeno(1,2,3-cd)pyrene													
Isophorone													
m,p-Cresol													
Naphthalene													
Nitrobenzene													
N-Nitrosodimethylamine													
N-Nitroso-di-n-propylamine													
N-Nitrosodiphenylamine													
o-Cresol													
Pentachlorophenol													
Phenanthrene													
Phenol													
Pyrene													
Pyridine													
Quinoline													
TPH (8270)													
TPH - GRO (C6 - C10) (8260)	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500	370 J
TPH-DRO (C10 - C21)	200 J	< 300	< 667	< 300	290 J	< 300	< 300	< 25	< 300	< 300	270 J	< 300	
TPH-ORO (C21 - C35)	< 300	< 300	< 667	< 300	< 405	< 300	< 300	< 25	< 300	< 300	< 290	< 300	

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/29/2010	4/29/2010	4/29/2010	4/29/2010	4/28/2010	4/28/2010	4/28/2010	4/29/2010	4/29/2010	4/29/2010	4/30/2010	4/28/2010	4/30/2010
Sample	MW-8S	MW8I	MW-11S-SS	MW-11S-LF	MW-11I-SS	MW-11I-LF	MW-11D	SWMU17-OB-1-SS	DUP-2 (SWMU17-OB-1)	SWMU17-OB-1-LF	MW-A12	B41MW-18	B42N6
Area ID	2B										2C	3A	3A
VOCs (8260)													
1,1,1,2-Tetrachloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,1,1-Trichloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,1,2,2-Tetrachloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,1,2-Trichloro-1,2,2-trifluoroethane	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		< 20
1,1,2-Trichloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,1-Dichloro-2-propanone	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50		< 50
1,1-Dichloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,1-Dichloroethene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,1-Dichloropropene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,2,3-Trichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,2,3-Trichloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,2,3-Trimethylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,2,4-Trichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,2,4-Trimethylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,2-Dibromoethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,2-Dichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,2-Dichloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,2-Dichloroethene, Total	< 5	< 5	< 5	< 5	< 5	< 5	< 5	1.1 J	4.6 J	5.45	< 5		< 5
1,2-Dichloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,3,5-Trimethylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,3-Dichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,3-Dichloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,3-Dichloropropene, Total	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1,4-Dichloro-2-butene, Total	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10
1,4-Dichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
1-Chlorobutane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
2,2-Dichloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
2-Butanone	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25		< 25
2-Chloroethyl vinyl ether	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		< 20
2-Chlorotoluene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
2-Hexanone	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25		< 25
2-Nitropropane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50		< 50
4-Chlorotoluene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
4-Methyl-2-pentanone	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25		< 25
Acetone	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	6.5 J		304
Acetonitrile	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50		< 50
Acrolein	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100		< 100
Acrylonitrile	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Allyl chloride	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Benzene	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		1.2 J
Bromobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Bromochloromethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Bromodichloromethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Bromoform	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Bromomethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10
Butyl acetate	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25		< 25
Carbon disulfide	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/29/2010	4/29/2010	4/29/2010	4/29/2010	4/28/2010	4/28/2010	4/28/2010	4/29/2010	4/29/2010	4/29/2010	4/30/2010	4/28/2010	4/30/2010
Sample	MW-8S	MW8I	MW-11S-SS	MW-11S-LF	MW-11I-SS	MW-11I-LF	MW-11D	SWMU17-OB-1-SS	DUP-2 (SWMU17-OB-1)	SWMU17-OB-1-LF	MW-A12	B41MW-18	B42N6
Area ID	2B										2C	3A	3A
Carbon tetrachloride	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Chlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Chloroethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10
Chloroform	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Chloromethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10
Chloroprene	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		< 20
cis-1,2-Dichloroethene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	1.1 J	3.1 J	3.9 J	< 5		< 5
cis-1,3-Dichloropropene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
cis-1,4-Dichloro-2-butene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Cyclohexanone	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50		< 50
Dibromochloromethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Dibromomethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Dichlorodifluoromethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10
Diisopropyl ether	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2
Ethyl acetate	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10
Ethyl ether	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Ethyl methacrylate	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Ethylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Ethyl-tert-butyl ether	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2
Heptane	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		< 20
Hexachlorobutadiene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Hexachloroethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10
Iodomethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Isopropylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		3.1 J
m,p-Xylenes	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10
Methacrylonitrile													
Methyl acetate													
Methyl Methacrylate	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Methyl tert-butyl ether	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2
Methylacrylate	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10
Methylene chloride	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Naphthalene	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10
n-Butylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
n-Hexane	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		< 20
Nitrobenzene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50		< 50
n-Propylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		1.4 J
o-Xylene													
Pentachloroethane	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		< 20
p-Isopropyltoluene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
Propionitrile	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50		< 50
sec-Butylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		1.4 J
Styrene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5
tert-Amyl methyl ether	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2
tert-Butyl alcohol	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25		< 25
tert-Butylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5		< 5

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/29/2010			4/29/2010			4/29/2010			4/29/2010			4/28/2010			4/28/2010			4/28/2010			4/29/2010			4/29/2010			4/29/2010			4/29/2010			4/30/2010			4/28/2010			4/30/2010		
Sample	MW-8S			MW8I			MW-11S-SS			MW-11S-LF			MW-11I-SS			MW-11I-LF			MW-11D			SWMU17-OB-1-SS			DUP-2 (SWMU17-OB-1)			SWMU17-OB-1-LF			MW-A12			B41MW-18			B42N6		
Area ID	2B																														2C			3A			3A		
Tetrachloroethene		2	J	<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5					<	5	
Tetrahydrofuran	<	20		<	20		<	20		<	20		<	20		<	20		<	20		<	20		<	20		<	20		<	20					<	20	
Toluene	<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5					<	5	
trans-1,2-Dichloroethene	<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5			**1.5**	J		**1.5**	J	<	5					<	5	
trans-1,3-Dichloropropene	<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5					<	5	
trans-1,4-Dichloro-2-butene	<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10					<	10	
Trichloroethene	<	5		<	5			**4.5**	J		**3.7**	J	<	5		<	5		<	5		<	5		<	5		<	5		<	5					<	5	
Trichlorofluoromethane		**1**	J	<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5					<	5	
Vinyl acetate	<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10					<	10	
Vinyl chloride	<	2		<	2		<	2		<	2		<	2		<	2		<	2			**1.2**	J		**15.9**			**15**		<	2						**1.2**	J
Xylenes, Total	<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5					<	5	

Lab Qualifiers:

Values in bold font are detected values

J: analyte detected below reporting lim

S: spike recovery outside accepted reco

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/30/2010	4/28/2010	4/28/2010	4/27/2010	4/28/2010	4/27/2010	4/28/2010	4/29/2010	4/28/2010	4/29/2010	4/29/2010	4/28/2010	4/29/2010
Sample	MW-A4	B41MW-5	B41S5D	B4MW-9	B4MW-10	MW1	B27W3D	B28MW3	B28MW4	MW3-SS	MW3-LF	MW7	MW9S
Area ID	3C	3D		3H		6A	6B						
Metals (6010)													
Chromium, Hexavalent													
Arsenic		< 25	< 25	< 25	< 25	< 25		49.5	37	32.8	20 J	< 25	22 J
Barium		392	317			159		1100	394	743	726	110	1580
Cadmium		< 2	< 2			0.3 J		< 2	< 2	< 2	< 2	0.4 J	< 2
Chromium						< 10		< 10	4 J	4.2 J	4.4 J	< 10	< 10
Manganese		1290	897	1390	92.3			2740	748	2650	2690	404	3540
Mercury (7470)				0.06 J	< 0.2			< 0.2	< 0.2	< 0.2	< 0.2	0.06 J	< 0.2
Arsenic, Dissolved			< 25	< 25					29.8	< 25	18 J		21 J
Barium, Dissolved			277						376	536	672		1520
Cadmium, Dissolved			< 2						< 2	< 2	< 2		< 2
Chromium, Dissolved									< 10	< 10	4.6 J		< 10
Manganese, Dissolved			448	1270					721	2380	2620		3470
Mercury, Dissolved				0.06 J					< 0.2	< 0.2	< 0.2		< 0.2
PCBs (8082)													
Aroclor 1254										< 2.08	< 1		< 1
SVOCs (8270)													
1,2,4-Trichlorobenzene										< 10	< 10		< 10
1,2-Dichlorobenzene										< 10	< 10		< 10
1,3-Dichlorobenzene										< 10	< 10		< 10
1,4-Dichlorobenzene										< 10	< 10		< 10
2,4,5-Trichlorophenol										< 10	< 10		< 10
2,4,6-Trichlorophenol										< 10	< 10		< 10
2,4-Dichlorophenol										< 10	< 10		< 10
2,4-Dimethylphenol										< 10	< 10		< 10
2,4-Dinitrophenol										< 20	< 20		< 20
2,4-Dinitrotoluene										< 10	< 10		< 10
2,6-Dinitrotoluene										< 10	< 10		< 10
2-Chloronaphthalene										< 10	< 10		< 10
2-Chlorophenol										< 10	< 10		< 10
2-Methoxy-4-methylphenol										< 10	< 10		< 10
2-Methylnaphthalene										< 10	< 10		< 10
2-Nitroaniline										< 40	< 40		< 40
2-Nitrophenol										< 20	< 20		< 20
3,3'-Dichlorobenzidine										< 10	< 10		< 10
3-Nitroaniline										< 40	< 40		< 40
4,6-Dinitro-2-methylphenol										< 20	< 20		< 20
4-Bromophenyl phenyl ether										< 10	< 10		< 10
4-Chloro-3-methylphenol										< 20	< 20		< 20
4-Chloroaniline										< 20	< 20		< 20
4-Chlorophenyl phenyl ether										< 10	< 10		< 10
4-Nitroaniline										< 20	< 20		< 20
4-Nitrophenol										< 20	< 20		< 20

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/30/2010	4/28/2010	4/28/2010	4/27/2010	4/28/2010	4/27/2010	4/28/2010	4/29/2010	4/28/2010	4/29/2010	4/29/2010	4/28/2010	4/29/2010
Sample	MW-A4	B41MW-5	B41S5D	B4MW-9	B4MW-10	MW1	B27W3D	B28MW3	B28MW4	MW3-SS	MW3-LF	MW7	MW9S
Area ID	3C	3D		3H		6A	6B						
Acenaphthene										< 10	< 10		< 10
Acenaphthylene										< 10	< 10		< 10
Aniline										< 20	< 20		< 20
Anthracene										< 10	< 10		< 10
Azobenzene										< 10	< 10		< 10
Benzidine										< 40	< 40		< 40
Benzo(a)anthracene										< 10	< 10		< 10
Benzo(a)pyrene										< 10	< 10		< 10
Benzo(b)fluoranthene										< 10	< 10		< 10
Benzo(g,h,i)perylene										< 10	< 10		< 10
Benzo(k)fluoranthene										< 10	< 10		< 10
Benzoic acid										< 50	< 50		< 50
Benzyl alcohol										< 20	< 20		< 20
Bis(2-chloroethoxy)methane										< 10	< 10		< 10
Bis(2-chloroethyl)ether										< 10	< 10		< 10
Bis(2-chloroisopropyl)ether										< 10	< 10		< 10
Bis(2-ethylhexyl)phthalate										< 6	< 6		17
Butyl benzyl phthalate										< 10	< 10		< 10
Carbazole										< 20	< 20		< 20
Chrysene										< 10	< 10		< 10
Dibenzo(a,h)anthracene										< 10	< 10		< 10
Dibenzofuran										< 10	< 10		< 10
Diethyl phthalate										< 10	< 10		< 10
Dimethyl phthalate										< 10	< 10		< 10
Di-n-butyl phthalate										< 10	< 10		< 10
Di-n-octyl phthalate										< 10	< 10		< 10
Fluoranthene										< 10	< 10		< 10
Fluorene										< 10	< 10		< 10
Hexachlorobenzene										< 10	< 10		< 10
Hexachlorobutadiene										< 10	< 10		< 10
Hexachlorocyclopentadiene										< 20	< 20		< 20
Hexachloroethane										< 10	< 10		< 10
Indeno(1,2,3-cd)pyrene										< 10	< 10		< 10
Isophorone										< 10	< 10		< 10
m,p-Cresol										< 10	< 10		< 10
Naphthalene										< 10	< 10		< 10
Nitrobenzene										< 10	< 10		< 10
N-Nitrosodimethylamine										< 20	< 20		< 20
N-Nitroso-di-n-propylamine										< 10	< 10		< 10
N-Nitrosodiphenylamine										< 10	< 10		< 10
o-Cresol										< 10	< 10		< 10
Pentachlorophenol										< 20	< 20		< 20
Phenanthrene										< 10	< 10		< 10
Phenol										< 5	< 5		< 5
Pyrene										< 10	< 10		< 10
Pyridine										< 20	< 20		< 20
Quinoline										< 5	< 5		< 5
TPH (8270)													
TPH - GRO (C6 - C10) (8260)	< 500	< 500	< 500	< 500	< 500	< 500	504	< 500	851	< 100000	< 50000	< 500	< 500
TPH-DRO (C10 - C21)	< 300	280 J	383	< 300	< 300	< 300	305	270 J	362	260 J	240 J	< 300	< 300
TPH-ORO (C21 - C35)	< 300	< 300	838	< 300	< 300	< 300	220 J	< 300	< 300	< 300	< 300	< 300	< 300

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/30/2010	4/28/2010	4/28/2010	4/27/2010	4/28/2010	4/27/2010	4/28/2010	4/29/2010	4/28/2010	4/29/2010	4/29/2010	4/28/2010	4/29/2010
Sample	MW-A4	B41MW-5	B41S5D	B4MW-9	B4MW-10	MW1	B27W3D	B28MW3	B28MW4	MW3-SS	MW3-LF	MW7	MW9S
Area ID	3C	3D		3H		6A	6B						
VOCs (8260)													
1,1,1,2-Tetrachloroethane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,1,1-Trichloroethane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,1,2,2-Tetrachloroethane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,1,2-Trichloro-1,2,2-trifluoroethane	< 20		< 20			< 20		< 20		< 4000	< 2000	< 20	< 20
1,1,2-Trichloroethane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,1-Dichloro-2-propanone	< 50		< 50			< 50		< 50		< 10000	< 5000	< 50	< 50
1,1-Dichloroethane	< 5		5.72			< 5		2.1 J		< 1000	< 500	< 5	< 5
1,1-Dichloroethene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,1-Dichloropropene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,2,3-Trichlorobenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,2,3-Trichloropropane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,2,3-Trimethylbenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,2,4-Trichlorobenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,2,4-Trimethylbenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,2-Dibromo-3-chloropropane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,2-Dibromoethane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,2-Dichlorobenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,2-Dichloroethane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,2-Dichloroethene, Total	< 5		1.5 J			< 5		< 5		14000	13000	< 5	< 5
1,2-Dichloropropane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,3,5-Trimethylbenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,3-Dichlorobenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,3-Dichloropropane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,3-Dichloropropene, Total	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1,4-Dichloro-2-butene, Total	< 10		< 10			< 10		< 10		< 2000	< 1000	< 10	< 10
1,4-Dichlorobenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
1-Chlorobutane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
2,2-Dichloropropane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
2-Butanone	< 25		< 25			< 25		< 25		< 5000	< 2500	< 25	< 25
2-Chloroethyl vinyl ether	< 20		< 20			< 20		< 20		< 4000	< 2000	< 20	< 20
2-Chlorotoluene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
2-Hexanone	< 25		< 25			< 25		< 25		< 5000	< 2500	< 25	< 25
2-Nitropropane	< 50		< 50			< 50		< 50		< 10000	< 5000	< 50	< 50
4-Chlorotoluene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
4-Methyl-2-pentanone	< 25		< 25			< 25		< 25		< 5000	< 2500	< 25	< 25
Acetone	< 25		< 25			< 25		< 25		< 5000	< 2500	< 25	< 25
Acetonitrile	< 50		< 50			< 50		< 50		< 10000	< 5000	< 50	< 50
Acrolein	< 100		< 100			< 100		< 100		< 20000	< 10000	< 100	< 100
Acrylonitrile	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Allyl chloride	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Benzene	< 2		< 2			< 2		< 2		< 400	< 200	< 2	< 2
Bromobenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Bromochloromethane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Bromodichloromethane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Bromoform	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Bromomethane	< 10		< 10			< 10		< 10		< 2000	< 1000	< 10	< 10
Butyl acetate	< 25		< 25			< 25		< 25		< 5000	< 2500	< 25	< 25
Carbon disulfide	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/30/2010	4/28/2010	4/28/2010	4/27/2010	4/28/2010	4/27/2010	4/28/2010	4/29/2010	4/28/2010	4/29/2010	4/29/2010	4/28/2010	4/29/2010
Sample	MW-A4	B41MW-5	B41S5D	B4MW-9	B4MW-10	MW1	B27W3D	B28MW3	B28MW4	MW3-SS	MW3-LF	MW7	MW9S
Area ID	3C	3D		3H		6A	6B						
Carbon tetrachloride	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Chlorobenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Chloroethane	< 10		< 10			< 10		< 10		< 2000	< 1000	< 10	< 10
Chloroform	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Chloromethane	< 10		< 10			< 10		< 10		< 2000	< 1000	< 10	< 10
Chloroprene	< 20		< 20			< 20		< 20		< 4000	< 2000	< 20	< 20
cis-1,2-Dichloroethene	< 5		1.5 J			< 5		< 5		**14000**	**12800**	< 5	< 5
cis-1,3-Dichloropropene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
cis-1,4-Dichloro-2-butene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Cyclohexanone	< 50		< 50			< 50		< 50		< 10000	< 5000	< 50	< 50
Dibromochloromethane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Dibromomethane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Dichlorodifluoromethane	< 10		< 10			< 10		< 10		< 2000	< 1000	< 10	< 10
Diisopropyl ether	< 2		< 2			< 2		< 2		< **400**	< 200	< 2	< 2
Ethyl acetate	< 10		< 10			< 10		< 10		< 2000	< 1000	< 10	< 10
Ethyl ether	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Ethyl methacrylate	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Ethylbenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Ethyl-tert-butyl ether	< 2		< 2			< 2		< 2		< 400	< 200	< 2	< 2
Heptane	< 20		< 20			< 20		< 20		< 4000	< 2000	< 20	< 20
Hexachlorobutadiene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Hexachloroethane	< 10		< 10			< 10		< 10		< 2000	< 1000	< 10	< 10
Iodomethane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Isopropylbenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
m,p-Xylenes	< 10		< 10			< 10		< 10		< 2000	< 1000	< 10	< 10
Methacrylonitrile													
Methyl acetate													
Methyl Methacrylate	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Methyl tert-butyl ether	< 2		< 2			< 2		< 2		< 400	< 200	< 2	< 2
Methylacrylate	< 10		< 10			< 10		< 10		< 2000	< 1000	< 10	< 10
Methylene chloride	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Naphthalene	< 10		< 10			< 10		< 10		< 2000	< 1000	< 10	< 10
n-Butylbenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
n-Hexane	< 20		< 20			< 20		< 20		< 4000	< 2000	< 20	< 20
Nitrobenzene	< 50		< 50			< 50		< 50		< 10000	< 5000	< 50	< 50
n-Propylbenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
o-Xylene													
Pentachloroethane	< 20		< 20			< 20		< 20		< 4000	< 2000	< 20	< 20
p-Isopropyltoluene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Propionitrile	< 50		< 50			< 50		< 50		< 10000	< 5000	< 50	< 50
sec-Butylbenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Styrene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
tert-Amyl methyl ether	< 2		< 2			< 2		< 2		< 400	< 200	< 2	< 2
tert-Butyl alcohol	< 25		< 25			< 25		< 25		< 5000	< 2500	< 25	< 25
tert-Butylbenzene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/30/2010	4/28/2010	4/28/2010	4/27/2010	4/28/2010	4/27/2010	4/28/2010	4/29/2010	4/28/2010	4/29/2010	4/29/2010	4/28/2010	4/29/2010
Sample	**MW-A4**	**B41MW-5**	**B41S5D**	**B4MW-9**	**B4MW-10**	**MW1**	**B27W3D**	**B28MW3**	**B28MW4**	**MW3-SS**	**MW3-LF**	**MW7**	**MW9S**
Area ID	**3C**	**3D**		**3H**		**6A**	**6B**						
Tetrachloroethene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Tetrahydrofuran	< 20		< 20			< 20		< 20		< 4000	< 2000	< 20	< 20
Toluene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
trans-1,2-Dichloroethene	< 5		< 5			< 5		< 5		< 1000	**150** J	< 5	< 5
trans-1,3-Dichloropropene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
trans-1,4-Dichloro-2-butene	< 10		< 10			< 10		< 10		< 2000	< 1000	< 10	< 10
Trichloroethene	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Trichlorofluoromethane	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5
Vinyl acetate	< 10		< 10			< 10		< 10		< 2000	< 1000	< 10	< 10
Vinyl chloride	< 2		**1.5** J			< 2		< 2		**1080**	**953**	< 2	< 2
Xylenes, Total	< 5		< 5			< 5		< 5		< 1000	< 500	< 5	< 5

Lab Qualifiers:
Values in bold font are detected values
J: analyte detected below reporting lim
S: spike recovery outside accepted reco

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/27/2010			4/27/2010			4/27/2010			4/26/2010			4/26/2010			4/26/2010			4/26/2010			4/27/2010			4/27/2010			4/27/2010			4/26/2010			4/26/2010			4/26/2010		
Sample	**B25MW1**			**MW5CS**			**MW-5DS**			**MW-8AS-SS**			**MW8AS-LF**			**MW8AD**			**Duplicate#1 (MW8AD)**			**MW6-SS**			**MW6-LF**			**MW6D**			**MW10S-SS**			**MW10S-LF**			**MW10D-SS**		
Area ID	**6C**																					**6D**									**8A**								
Metals (6010)																																							
Chromium, Hexavalent	<	5	H	<	5	H	<	5					<	5		<	5	SR	<	5	S																		
Arsenic	<	25		<	25		<	25		<	25		<	25		<	25		<	25		<	25		<	25		<	25			31.7		<	25		<	25	
Barium		**108**			**625**			**333**			**370**			**395**			**292**			**295**												**244**			**216**			**323**	
Cadmium		**0.3**	J		**0.8**	J	<	2			**0.4**	J		**0.3**	J	<	2			**0.8**	J																		
Chromium	<	10			**4.7**	J	<	10			**5.7**	J		**6.7**	J		**7**	J		**6.2**	J	<	10			**8**	J		**7.9**	J	<	10			**5.2**	J		**10.1**	
Manganese											**3050**			**1760**			**1370**			**1390**												**1920**			**2080**			**500**	
Mercury (7470)	<	0.2			**0.07**	J	<	0.2			**0.06**	J	<	0.2	S	<	0.2		<	0.2																			
Arsenic, Dissolved													<	25		<	25		<	25														<	25				
Barium, Dissolved														**382**			**253**			**257**															**205**				
Cadmium, Dissolved													<	2		<	2		<	2																			
Chromium, Dissolved														**4.5**	J	<	10		<	10															**4.6**	J			
Manganese, Dissolved														**1570**			**1190**			**1210**															**2000**				
Mercury, Dissolved													<	0.2		<	0.2		<	0.2																			
PCBs (8082)																																							
Aroclor 1254																																							
SVOCs (8270)																																							
1,2,4-Trichlorobenzene																																							
1,2-Dichlorobenzene																																							
1,3-Dichlorobenzene																																							
1,4-Dichlorobenzene																																							
2,4,5-Trichlorophenol																																							
2,4,6-Trichlorophenol																																							
2,4-Dichlorophenol																																							
2,4-Dimethylphenol																																							
2,4-Dinitrophenol																																							
2,4-Dinitrotoluene																																							
2,6-Dinitrotoluene																																							
2-Chloronaphthalene																																							
2-Chlorophenol																																							
2-Methoxy-4-methylphenol																																							
2-Methylnaphthalene																																							
2-Nitroaniline																																							
2-Nitrophenol																																							
3,3'-Dichlorobenzidine																																							
3-Nitroaniline																																							
4,6-Dinitro-2-methylphenol																																							
4-Bromophenyl phenyl ether																																							
4-Chloro-3-methylphenol																																							
4-Chloroaniline																																							
4-Chlorophenyl phenyl ether																																							
4-Nitroaniline																																							
4-Nitrophenol																																							

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/27/2010	4/27/2010	4/27/2010	4/26/2010	4/26/2010	4/26/2010	4/26/2010	4/27/2010	4/27/2010	4/27/2010	4/26/2010	4/26/2010	4/26/2010
Sample	B25MW1	MW5CS	MW-5DS	MW-8AS-SS	MW8AS-LF	MW8AD	Duplicate#1 (MW8AD)	MW6-SS	MW6-LF	MW6D	MW10S-SS	MW10S-LF	MW10D-SS
Area ID	6C							6D			8A		
Acenaphthene													
Acenaphthylene													
Aniline													
Anthracene													
Azobenzene													
Benzidine													
Benzo(a)anthracene													
Benzo(a)pyrene													
Benzo(b)fluoranthene													
Benzo(g,h,i)perylene													
Benzo(k)fluoranthene													
Benzoic acid													
Benzyl alcohol													
Bis(2-chloroethoxy)methane													
Bis(2-chloroethyl)ether													
Bis(2-chloroisopropyl)ether													
Bis(2-ethylhexyl)phthalate													
Butyl benzyl phthalate													
Carbazole													
Chrysene													
Dibenzo(a,h)anthracene													
Dibenzofuran													
Diethyl phthalate													
Dimethyl phthalate													
Di-n-butyl phthalate													
Di-n-octyl phthalate													
Fluoranthene													
Fluorene													
Hexachlorobenzene													
Hexachlorobutadiene													
Hexachlorocyclopentadiene													
Hexachloroethane													
Indeno(1,2,3-cd)pyrene													
Isophorone													
m,p-Cresol													
Naphthalene													
Nitrobenzene													
N-Nitrosodimethylamine													
N-Nitroso-di-n-propylamine													
N-Nitrosodiphenylamine													
o-Cresol													
Pentachlorophenol													
Phenanthrene													
Phenol													
Pyrene													
Pyridine													
Quinoline													
TPH (8270)													
TPH - GRO (C6 - C10) (8260)	< 500	< 500	< 500						< 500				
TPH-DRO (C10 - C21)	< 300	< 300	< 300	510 J	< 306	< 300	< 287						
TPH-ORO (C21 - C35)	< 300	< 300	< 300	< 625	< 306	< 300	< 287						

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/27/2010	4/27/2010	4/27/2010	4/26/2010	4/26/2010	4/26/2010	4/26/2010	4/27/2010	4/27/2010	4/27/2010	4/26/2010	4/26/2010	4/26/2010
Sample	B25MW1	MW5CS	MW-5DS	MW-8AS-SS	MW8AS-LF	MW8AD	Duplicate#1 (MW8AD)	MW6-SS	MW6-LF	MW6D	MW10S-SS	MW10S-LF	MW10D-SS
Area ID	6C							6D			8A		
VOCs (8260)													
1,1,1,2-Tetrachloroethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,1-Trichloroethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloro-1,2,2-trifluoroethane			< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
1,1,2-Trichloroethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloro-2-propanone			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1-Dichloroethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	2.2 J	< 5
1,1-Dichloroethene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloropropene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,3-Trichlorobenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,3-Trichloropropane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,3-Trimethylbenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,4-Trichlorobenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,4-Trimethylbenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dibromoethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichlorobenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethene, Total			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3,5-Trimethylbenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3-Dichlorobenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3-Dichloropropane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3-Dichloropropene, Total			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,4-Dichloro-2-butene, Total			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,4-Dichlorobenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1-Chlorobutane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2,2-Dichloropropane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Butanone			< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
2-Chloroethyl vinyl ether			< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
2-Chlorotoluene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Hexanone			< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
2-Nitropropane			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
4-Chlorotoluene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
4-Methyl-2-pentanone			< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Acetone			< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Acetonitrile			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Acrolein			< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
Acrylonitrile			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Allyl chloride			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Benzene			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Bromobenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromochloromethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromodichloromethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromoform			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Butyl acetate			< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Carbon disulfide			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/27/2010	4/27/2010	4/27/2010	4/26/2010	4/26/2010	4/26/2010	4/26/2010	4/27/2010	4/27/2010	4/27/2010	4/26/2010	4/26/2010	4/26/2010
Sample	B25MW1	MW5CS	MW-5DS	MW-8AS-SS	MW8AS-LF	MW8AD	Duplicate#1 (MW8AD)	MW6-SS	MW6-LF	MW6D	MW10S-SS	MW10S-LF	MW10D-SS
Area ID	6C							6D			8A		
Carbon tetrachloride			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Chloroform			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloromethane			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Chloroprene			< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
cis-1,2-Dichloroethene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,4-Dichloro-2-butene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Cyclohexanone			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Dibromochloromethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibromomethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Diisopropyl ether			< 2						< 2				
Ethyl acetate			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ethyl ether			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethyl methacrylate			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethyl-tert-butyl ether			< 2						< 2				
Heptane			< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Hexachlorobutadiene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Hexachloroethane			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Iodomethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Isopropylbenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
m,p-Xylenes			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10	< 10
Methacrylonitrile				< 5	< 5	< 5	< 5	< 5		< 5	< 10	< 5	< 5
Methyl acetate											< 5		
Methyl Methacrylate			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methyl tert-butyl ether			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Methylacrylate			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Methylene chloride			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Naphthalene			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
n-Butylbenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
n-Hexane			< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Nitrobenzene			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
n-Propylbenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
o-Xylene													
Pentachloroethane			< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
p-Isopropyltoluene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Propionitrile			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
sec-Butylbenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Styrene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
tert-Amyl methyl ether			< 2						< 2				
tert-Butyl alcohol			< 25						< 25				
tert-Butylbenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/27/2010	4/27/2010	4/27/2010	4/26/2010	4/26/2010	4/26/2010	4/26/2010	4/27/2010	4/27/2010	4/27/2010	4/26/2010	4/26/2010	4/26/2010
Sample	B25MW1	MW5CS	MW-5DS	MW-8AS-SS	MW8AS-LF	MW8AD	Duplicate#1 (MW8AD)	MW6-SS	MW6-LF	MW6D	MW10S-SS	MW10S-LF	MW10D-SS
Area ID	6C							6D			8A		
Tetrachloroethene			< 5	< 5	< 5	< 5	< 5	**2.8** J	**3.4** J	< 5	< 5	< 5	< 5
Tetrahydrofuran			< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Toluene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,2-Dichloroethene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,4-Dichloro-2-butene			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Trichloroethene			< 5	< 5	< 5	< 5	< 5	**1.3** J	**1.4** J	< 5	< 5	< 5	**8.2**
Trichlorofluoromethane			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Vinyl acetate			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Vinyl chloride			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	**1.4** J	**1.3** J	< 2
Xylenes, Total			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5

Lab Qualifiers:

Values in bold font are detected values

J: analyte detected below reporting lim

S: spike recovery outside accepted rec

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/26/2010			4/28/2010			4/26/2010	4/28/2010	4/30/2010	4/27/2010	4/27/2010	4/27/2010	4/27/2010	4/27/2010	4/27/2010	4/30/2010
Sample	MW10D-LF			MW4			EQ BLK#1	EQUIP BLANK 2	Equip. Blank	Trip Blank						
Area ID	8A			8B												
Metals (6010)																
Chromium, Hexavalent																
Arsenic	<	25		<	25											
Barium		315														
Cadmium																
Chromium		6.8	J	<	10											
Manganese		948														
Mercury (7470)																
Arsenic, Dissolved	<	25		<	25											
Barium, Dissolved		274														
Cadmium, Dissolved																
Chromium, Dissolved	<	10		<	10											
Manganese, Dissolved		301														
Mercury, Dissolved																
PCBs (8082)																
Aroclor 1254																
SVOCs (8270)																
1,2,4-Trichlorobenzene																
1,2-Dichlorobenzene																
1,3-Dichlorobenzene																
1,4-Dichlorobenzene																
2,4,5-Trichlorophenol																
2,4,6-Trichlorophenol																
2,4-Dichlorophenol																
2,4-Dimethylphenol																
2,4-Dinitrophenol																
2,4-Dinitrotoluene																
2,6-Dinitrotoluene																
2-Chloronaphthalene																
2-Chlorophenol																
2-Methoxy-4-methylphenol																
2-Methylnaphthalene																
2-Nitroaniline																
2-Nitrophenol																
3,3'-Dichlorobenzidine																
3-Nitroaniline																
4,6-Dinitro-2-methylphenol																
4-Bromophenyl phenyl ether																
4-Chloro-3-methylphenol																
4-Chloroaniline																
4-Chlorophenyl phenyl ether																
4-Nitroaniline																
4-Nitrophenol																

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/26/2010	4/28/2010	4/26/2010	4/28/2010	4/30/2010	4/27/2010	4/27/2010	4/27/2010	4/27/2010	4/27/2010	4/27/2010	4/30/2010
Sample	MW10D-LF	MW4	EQ BLK#1	EQUIP BLANK 2	Equip. Blank	Trip Blank						
Area ID	8A	8B										
Acenaphthene												
Acenaphthylene												
Aniline												
Anthracene												
Azobenzene												
Benzidine												
Benzo(a)anthracene												
Benzo(a)pyrene												
Benzo(b)fluoranthene												
Benzo(g,h,i)perylene												
Benzo(k)fluoranthene												
Benzoic acid												
Benzyl alcohol												
Bis(2-chloroethoxy)methane												
Bis(2-chloroethyl)ether												
Bis(2-chloroisopropyl)ether												
Bis(2-ethylhexyl)phthalate												
Butyl benzyl phthalate												
Carbazole												
Chrysene												
Dibenzo(a,h)anthracene												
Dibenzofuran												
Diethyl phthalate												
Dimethyl phthalate												
Di-n-butyl phthalate												
Di-n-octyl phthalate												
Fluoranthene												
Fluorene												
Hexachlorobenzene												
Hexachlorobutadiene												
Hexachlorocyclopentadiene												
Hexachloroethane												
Indeno(1,2,3-cd)pyrene												
Isophorone												
m,p-Cresol												
Naphthalene												
Nitrobenzene												
N-Nitrosodimethylamine												
N-Nitroso-di-n-propylamine												
N-Nitrosodiphenylamine												
o-Cresol												
Pentachlorophenol												
Phenanthrene												
Phenol												
Pyrene												
Pyridine												
Quinoline												
TPH (8270)												
TPH - GRO (C6 - C10) (8260)		< 500			< 500		< 500		< 500	**360 J**	< 500	< 500
TPH-DRO (C10 - C21)		< 300										
TPH-ORO (C21 - C35)		< 300										

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/26/2010	4/28/2010	4/26/2010	4/28/2010	4/30/2010	4/27/2010	4/27/2010	4/27/2010	4/27/2010	4/27/2010	4/27/2010	4/30/2010
Sample	MW10D-LF	MW4	EQ BLK#1	EQUIP BLANK 2	Equip. Blank	Trip Blank						
Area ID	8A	8B										
VOCs (8260)												
1,1,1,2-Tetrachloroethane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,1-Trichloroethane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloro-1,2,2-trifluoroethane	< 20		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
1,1,2-Trichloroethane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloro-2-propanone	< 50		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1-Dichloroethane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloropropene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,3-Trichlorobenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,3-Trichloropropane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,3-Trimethylbenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,4-Trichlorobenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,4-Trimethylbenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dibromoethane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichlorobenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethene, Total	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3,5-Trimethylbenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3-Dichlorobenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3-Dichloropropane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3-Dichloropropene, Total	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,4-Dichloro-2-butene, Total	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,4-Dichlorobenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1-Chlorobutane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2,2-Dichloropropane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Butanone	< 25		< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
2-Chloroethyl vinyl ether	< 20		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
2-Chlorotoluene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Hexanone	< 25		< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
2-Nitropropane	< 50		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
4-Chlorotoluene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
4-Methyl-2-pentanone	< 25		< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Acetone	< 25		< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Acetonitrile	< 50		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Acrolein	< 100		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
Acrylonitrile	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Allyl chloride	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Benzene	< 2		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Bromobenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromochloromethane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromodichloromethane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromoform	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Butyl acetate	< 25		< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Carbon disulfide	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5

Ta[illegible]2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/26/2010	4/28/2010	4/26/2010	4/28/2010	4/30/2010	4/27/2010	4/27/2010	4/27/2010	4/27/2010	4/27/2010	4/27/2010	4/30/2010
Sample	MW10D-LF	MW4	EQ BLK#1	EQUIP BLANK 2	Equip. Blank	Trip Blank						
Area ID	8A	8B										
Carbon tetrachloride	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Chloroform	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloromethane	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Chloroprene	< 20		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
cis-1,2-Dichloroethene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,4-Dichloro-2-butene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Cyclohexanone	< 50		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Dibromochloromethane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibromomethane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Diisopropyl ether					< 2		< 2		< 2	< 2	< 2	< 2
Ethyl acetate	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ethyl ether	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethyl methacrylate	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethyl-tert-butyl ether					< 2		< 2		< 2	< 2	< 2	< 2
Heptane	< 20		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Hexachlorobutadiene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Hexachloroethane	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Iodomethane	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Isopropylbenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
m,p-Xylenes	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Methacrylonitrile	< 5		< 5	< 5		< 5		< 5				
Methyl acetate												
Methyl Methacrylate	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methyl tert-butyl ether	< 2		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Methylacrylate	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Methylene chloride	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Naphthalene	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
n-Butylbenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
n-Hexane	< 20		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Nitrobenzene	< 50		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
n-Propylbenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
o-Xylene												
Pentachloroethane	< 20		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
p-Isopropyltoluene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Propionitrile	< 50		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
sec-Butylbenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Styrene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
tert-Amyl methyl ether					< 2		< 2		< 2	< 2	< 2	< 2
tert-Butyl alcohol					< 25		< 25		< 25	< 25	< 25	< 25
tert-Butylbenzene	< 5		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5

Table 4-2
Groundwater Analytical Data (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/26/2010			4/28/2010			4/26/2010			4/28/2010			4/30/2010			4/27/2010			4/27/2010			4/27/2010			4/27/2010			4/27/2010			4/27/2010			4/27/2010			4/30/2010		
Sample	MW10D-LF			MW4			EQ BLK#1			EQUIP BLANK 2			Equip. Blank			Trip Blank																			
Area ID	8A			8B																																
Tetrachloroethene	<	5					<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5	
Tetrahydrofuran	<	20					<	20		<	20		<	20		<	20		<	20		<	20		<	20		<	20		<	20		<	20	
Toluene	<	5					<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5	
trans-1,2-Dichloroethene	<	5					<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5	
trans-1,3-Dichloropropene	<	5					<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5	
trans-1,4-Dichloro-2-butene	<	10					<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10	
Trichloroethene		**4.1**	J				<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5	
Trichlorofluoromethane	<	5					<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5	
Vinyl acetate	<	10					<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10		<	10	
Vinyl chloride	<	2					<	2		<	2		<	2		<	2		<	2		<	2		<	2		<	2		<	2		<	2	
Xylenes, Total	<	5					<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5		<	5	

Lab Qualifiers:

Values in bold font are detected values

J: analyte detected below reporting lim

S: spike recovery outside accepted rec

Table 4-2(a)
Detected Concentrations in Ground Water (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	5/3/2010		5/3/2010		4/30/2010		5/3/2010		5/3/2010		5/3/2010		5/3/2010		4/30/2010		4/30/2010		4/29/2010		4/29/2010		4/29/2010		4/29/2010		4/29/2010	
Sample	MW-A22		MW-A23		MW-A26		MW-A27		Dup #3 (MW-A27)		MW-A28-SS		MW-A28-LF		MW-A8		MW-A16		MW-5I		MW-6S		MW-8S		MW8I		MW-11S-SS	
Area ID	South of Bldg. 45														2A				2B									
Metals (6010)																												
Arsenic															35.5		16	J	110						113			
Barium																												
Cadmium																					0.6	J					0.5	J
Chromium																												
Manganese																												
Mercury (7470)																												
Arsenic, Dissolved																	12	J							126			
Barium, Dissolved																												
Cadmium, Dissolved																									0.4	J	0.6	J
Chromium, Dissolved																												
Manganese, Dissolved																												
Mercury, Dissolved																												
SVOCs (8270)																												
Bis(2-ethylhexyl)phthalate																												
TPH (8270)																												
TPH - GRO (C6 - C10) (8260)			1,600		360	J			210	J	3,200		3,510															
TPH-DRO (C10 - C21)	200	J	868		384		240	J	270	J	1,820		1,530								280	J	200	J				
TPH-ORO (C21 - C35)			220	J							500	J	270	J														
VOCs (8260)																												
1,1-Dichloroethane					1.2	J																						
1,2-Dichloroethene, Total																			9,600	J								
Acetone			7.3	J							13	J	18	J														
Benzene					1.6	J							1.6	J														
cis-1,2-Dichloroethene																			9,600	J								
Heptane			48.7								83.4																	
Isopropylbenzene													11.3															
Naphthalene											2	J	4.8	J														
n-Butylbenzene													4.9	J														
n-Propylbenzene													7.16															
sec-Butylbenzene													3.1	J														
tert-Butylbenzene											1.3	J	1.6	J														
Tetrachloroethene																							2	J				
trans-1,2-Dichloroethene																												
Trichloroethene																			223,000								4.5	J
Trichlorofluoromethane																							1	J				
Vinyl chloride					1.8	J																						
Xylenes, Total													1.5	J														

Lab Qualifiers:
J: analyte detected below reporting limit

Table 4-2(a)
Detected Concentrations in Ground Water (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/29/2010	4/28/2010	4/29/2010	4/29/2010	4/29/2010	4/30/2010	4/30/2010	4/28/2010	4/28/2010	4/27/2010	4/28/2010	4/27/2010	4/28/2010	4/29/2010	4/28/2010	4/29/2010
Sample	MW-11S-LF	MW-11I-SS	SWMU17-OB-1-SS	DUP-2 (SWMU17-OB-1)	SWMU17-OB-1-LF	MW-A12	B42N6	B41MW-5	B41S5D	B4MW-9	B4MW-10	MW1	B27W3D	B28MW3	B28MW4	MW3-SS
Area ID	2B					2C	3A	3D		3H		6A	6B			
Metals (6010)																
Arsenic														49.5	37	32.8
Barium								392	317			159		1,100	394	743
Cadmium												0.3 J				
Chromium															4 J	4.2 J
Manganese								1,290	897	1,390	92.3			2740	748	2,650
Mercury (7470)										0.06 J						
Arsenic, Dissolved															29.8	
Barium, Dissolved									277						376	536
Cadmium, Dissolved																
Chromium, Dissolved																
Manganese, Dissolved									448	1,270					721	2,380
Mercury, Dissolved										0.06 J						
SVOCs (8270)																
Bis(2-ethylhexyl)phthalate																
TPH (8270)																
TPH - GRO (C6 - C10) (8260)							370 J						504		851	
TPH-DRO (C10 - C21)		290 J				270 J		280 J	383				305	270 J	362	260 J
TPH-ORO (C21 - C35)									838				220 J			
VOCs (8260)																
1,1-Dichloroethane									5.72					2.1 J		
1,2-Dichloroethene, Total			1.1 J	4.6 J	5.45				1.5 J							14,000
Acetone						6.5 J	304									
Benzene							1.2 J									
cis-1,2-Dichloroethene			1.1 J	3.1 J	3.9 J				1.5 J							14,000
Heptane																
Isopropylbenzene							3.1 J									
Naphthalene																
n-Butylbenzene																
n-Propylbenzene							1.4 J									
sec-Butylbenzene							1.4 J									
tert-Butylbenzene																
Tetrachloroethene																
trans-1,2-Dichloroethene				1.5 J	1.5 J											
Trichloroethene	3.7 J															
Trichlorofluoromethane																
Vinyl chloride			1.2 J	15.9	15		1.2 J		1.5 J							1,080
Xylenes, Total																

Lab Qualifiers:

J: analyte detected below reporting limit

Table 4-2(a)
Detected Concentrations in Ground Water (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/29/2010		4/28/2010		4/29/2010		4/28/2010		4/28/2010		4/27/2010		4/26/2010		4/26/2010		4/26/2010		4/26/2010		4/28/2010		4/27/2010		4/26/2010	
Sample	MW3-LF		MW7		MW9S		B25MW1		MW5CS		MW-5DS		MW-8AS-SS		MW8AS-LF		MW8AD		Duplicate#1 (MW8AD)		MW6-SS		MW6-LF		MW6D		MW10S-SS	
Area ID	6B						6C														6D						8A	
Metals (6010)																												
Arsenic	20	J			22	J																					31.7	
Barium	726		110		1,580		108		625		333		370		395		292		295								244	
Cadmium			0.4	J			0.3	J	0.8	J			0.4	J	0.3	J			0.8	J								
Chromium	4.4	J							4.7	J			5.7	J	6.7	J	7	J	6.2	J			8	J	7.9	J		
Manganese	2,690		404		3,540								3,050		1760		1370		1,390								1920	
Mercury (7470)			0.06	J					0.07	J			0.06	J														
Arsenic, Dissolved	18	J			21	J																						
Barium, Dissolved	672				1,520										382		253		257									
Cadmium, Dissolved																												
Chromium, Dissolved	4.6	J													4.5	J												
Manganese, Dissolved	2,620				3,470										1,570		1190		1,210									
Mercury, Dissolved																												
SVOCs (8270)																												
Bis(2-ethylhexyl)phthalate					17																							
TPH (8270)																												
TPH - GRO (C6 - C10) (8260)																												
TPH-DRO (C10 - C21)	240	J											510	J														
TPH-ORO (C21 - C35)																												
VOCs (8260)																												
1,1-Dichloroethane																												
1,2-Dichloroethene, Total	13,000																											
Acetone																												
Benzene																												
cis-1,2-Dichloroethene	12,800																											
Heptane																												
Isopropylbenzene																												
Naphthalene																												
n-Butylbenzene																												
n-Propylbenzene																												
sec-Butylbenzene																												
tert-Butylbenzene																												
Tetrachloroethene																					2.8	J	3.4	J				
trans-1,2-Dichloroethene	150	J																										
Trichloroethene																					1.3	J	1.4	J				
Trichlorofluoromethane																												
Vinyl chloride	953																										1.4	J
Xylenes, Total																												

Lab Qualifiers:
J: analyte detected below reporting limit

Table 4-2(a)
Detected Concentrations in Ground Water (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/26/2010		4/26/2010		4/26/2010	
Sample	MW10S-LF		MW10D-SS		MW10D-LF	
Area ID	8A					
Metals (6010)						
Arsenic						
Barium	216		323		315	
Cadmium						
Chromium	5.2	J	10.1		6.8	J
Manganese	2,080		500		948	
Mercury (7470)						
Arsenic, Dissolved						
Barium, Dissolved	205				274	
Cadmium, Dissolved						
Chromium, Dissolved	4.6	J				
Manganese, Dissolved	2,000				301	
Mercury, Dissolved						
SVOCs (8270)						
Bis(2-ethylhexyl)phthalate						
TPH (8270)						
TPH - GRO (C6 - C10) (8260)						
TPH-DRO (C10 - C21)						
TPH-ORO (C21 - C35)						
VOCs (8260)						
1,1-Dichloroethane	2.2	J				
1,2-Dichloroethene, Total						
Acetone						
Benzene						
cis-1,2-Dichloroethene						
Heptane						
Isopropylbenzene						
Naphthalene						
n-Butylbenzene						
n-Propylbenzene						
sec-Butylbenzene						
tert-Butylbenzene						
Tetrachloroethene						
trans-1,2-Dichloroethene						
Trichloroethene			8.2		4.1	J
Trichlorofluoromethane						
Vinyl chloride	1.3	J				
Xylenes, Total						

Lab Qualifiers:
J: analyte detected below reporting limit

Table 4-2(b)
Groundwater Maximum Detection Limits for COCs (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Analyte	Maximum Detection Limit	2nd Maximum Detection Limit*	3rd Maximum Detection Limit**	Screening Value	Exceedance
Metals (6010)					
Arsenic	<25	<25	<25	10	E
Cadmium	<2	<2	<2	5	NE
Chromium	<10	<10	<10	100	NE
Mercury (7470)	<0.2	<0.2	<0.2	2	NE
Arsenic, Dissolved	<25	<25	<25	10	E
Cadmium, Dissolved	<2	<2	<2	5	NE
Chromium, Dissolved	<10	<10	<10	100	NE
Mercury, Dissolved	<0.2	<0.2	<0.2	2	NE
PCBs (8082)					
Aroclor 1254	<2.08	<2.08	<1	0.034	NE
SVOCs (8270)					
1,2-Dichlorobenzene	<10	<10	<10	600	NE
1,3-Dichlorobenzene	<10	<10	<10	89.3	NE
1,4-Dichlorobenzene	<10	<10	<10	75	NE
Acenaphthylene	<10	<10	<10	170	NE
Benzo(a)anthracene	<10	<10	<10	0.029	E
Benzo(b)fluoranthene	<10	<10	<10	0.029	E
Carbazole	<20	<20	<20	26.4	NE
Chrysene	<10	<10	<10	2.9	E
Naphthalene	<10	<10	<10	0.14	E
TPH (8270)					
TPH - GRO (C6 - C10) (8260)	<1000000	<100000	<500	18100	NE
TPH-DRO (C10 - C21)	<667	<667	<667	34300	NE
TPH-ORO (C21 - C35)	<667	<667	<667	31800	NE
VOCs (8260)					
1,1,2-Trichloro-1,2,2-trifluoroethane	<40000	<4000	<20	59000	NE
1,1-Dichloroethane	<10000	<1000	<5	2.4	E
1,1-Dichloroethene	<10000	<1000	<5	7	NE
1,2,3-Trimethylbenzene	<10000	<1000	<5	NA	N/A
1,2,4-Trimethylbenzene	<10000	<1000	<5	15	NE
1,2-Dichlorobenzene	<10000	<1000	<5	600	NE
1,2-Dichloroethene, Total	<5	<5	<5	330	NE
1,2-Dichloropropane	<10000	<1000	<5	5	NE
1,4-Dichlorobenzene	<10000	<1000	<5	75	NE
2-Butanone	<50000	<5000	<25	7100	NE
2-Hexanone	<50000	<5000	<25	47	NE
Acetone	<50000	<5000	<25	22000	NE
Benzene	<4000	<400	<2	5	NE
Bromodichloromethane	<10000	<1000	<5	0.12	E
Bromomethane	<20000	<2000	<10	8.7	E
Carbon disulfide	<10000	<1000	<5	1000	NE
Chloroform	<10000	<1000	<5	0.19	E
cis-1,2-Dichloroethene	<5	<5	<5	70	NE
Dichlorodifluoromethane	<20000	<2000	<10	390	NE
Ethylbenzene	<10000	<1000	<5	700	NE
Isopropylbenzene	<10000	<1000	<5	680	NE
m,p-Xylenes	<20000	<2000	<10	1200	NE
Methyl tert-butyl ether	<4000	<400	<2	12	NE
Methylene chloride	<10000	<1000	<5	4.8	E
Naphthalene	<20000	<2000	<10	0.14	E
n-Butylbenzene	<10000	<1000	<5	98.9	NE
n-Propylbenzene	<10000	<1000	<5	1300	NE
sec-Butylbenzene	<10000	<1000	<5	106	NE
tert-Butylbenzene	<10000	<1000	<5	103	NE
Tetrachloroethene	<10000	<1000	<5	5	NE
Toluene	<10000	<1000	<5	1000	NE
trans-1,2-Dichloroethene	<10000	<1000	<5	100	NE
Trichloroethene	<1000	<1000	<5	5	NE
Trichlorofluoromethane	<10000	<1000	<5	1300	NE
Vinyl chloride	<4000	<2	<2	2	NE
Xylenes, Total	<10000	<1000	<5	10000	NE

Lab Qualifiers:

<: below reporting limit NA: not available N/A: not applicable E: exceeded NE: not exceeded

*: Obtained excluding the data collected from monitoring well MW-5I on 4/29/2010

*: Obtained excluding the data collected from monitoring wells MW3 and MW-5I on 4/29/2010

Table 4-2(c)
Summary of Detected Concentrations in Groundwater
Boeing Tract 1, Hazelwood, Missouri

Analyte	# Wells Sampled	# Detects (included duplicates)	Max Detected Concentration	Screening Value	Exceedance
			[µg/L]		
Metals (6010)					
Arsenic	31	10	113	10	E
Barium	15	20	1,580	2000	NE
Cadmium	23	9	0.8	5	NE
Chromium	16	13	10.1	100	NE
Manganese	13	18	3,540	880	E
Mercury (7470)	12	4	0.07	2	NE
Arsenic, Dissolved	11	5	126	10	E
Barium, Dissolved	5	10	1,520	2000	NE
Cadmium, Dissolved	9	2	0.6	5	NE
Chromium, Dissolved	5	3	4.6	100	NE
Manganese, Dissolved	6	11	3,470	880	E
Mercury, Dissolved	5	1	0.06	2	NE
SVOCs (8270)					
Bis(2-ethylhexyl)phthalate	2	1	17	4.8	E
TPH (8270)					
TPH - GRO (C6 - C10) (8260)	34	8	3,510	18100	NE
TPH-DRO (C10 - C21)	35	19	1,820	34300	NE
TPH-ORO (C21 - C35)	35	5	838	31800	NE
VOCs (8260)					
1,1-Dichloroethane	31	4	5.72	2.4	E
1,2-Dichloroethene, Total	31	7	14,000	NA	N/A
Acetone	31	5	304	22100	NE
Benzene	31	3	1.6	5	NE
cis-1,2-Dichloroethene	31	7	14,000	70	E
Heptane	31	2	83.4	NA	N/A
Isopropylbenzene	31	2	11.3	680	NE
Naphthalene	31	2	4.8	0.14	E
n-Butylbenzene	31	1	4.9	98.9	NE
n-Propylbenzene	31	2	7.16	1300	NE
sec-Butylbenzene	31	2	3.1	106	NE
tert-Butylbenzene	31	2	1.6	286	NE
Tetrachloroethene	31	3	3.4	5	NE
trans-1,2-Dichloroethene	31	3	150	100	E
Trichloroethene	31	7	223,000	5	E
Trichlorofluoromethane	31	1	1	698	NE
Vinyl chloride	31	10	1,080	2	E
Xylenes, Total	31	1	1.5	10000	NE

Lab Qualifiers:

J: analyte detected below reporting limit E: exceeded NE: not exceeded

NA: not available N/A: not applicable

Table 4-2(d)
Wells with Detected Concentrations Exceeding Screening Levels (April - May 2010)
Boeing Tract 1, St. Louis, Missouri

Analyte	South of Bldg. 45	2A	2B	3D	3H	6B	6C	8A
Metals								
Arsenic		MW-A8 and MW-A16	MW-5I and MW8I			B28MW3, B28MW4, MW3, and MW9S		MW10S
Manganese				B41MW-5 and B41S5D	B4MW-9	B28MW3, MW3, and MW9S	MW-8AS and MW8AD	MW10S and MW10D
Arsenic, Dissolved		MW-A16	MW8I			B28MW4, MW3, and MW9S		
Manganese, Dissolved					B4MW-9	B28MW3, MW3, and MW9S		
SVOCs								
Bis(2-ethylhexyl)phthalate						MW9S		
VOCs								
1,1-Dichloroethane				B41S5D				
cis-1,2-Dichloroethene	MW-A28		MW-5I			MW3		
Naphthalene	MW-A28							
trans-1,2-Dichloroethene						MW3		
Trichloroethene			MW-5I					
Vinyl chloride			SWMU17-OB-1			MW3		

Notes:
Hush House: 2 wells had sheen hence not sampled.
Areas 3A, 6A, and 8B have no exceedances in any wells.

Table 5-1
Comparison of Detected Concentrations in Groundwater Using Snap Sampler and Low-Flow Methods (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	5/3/2010				4/29/2010				4/29/2010				4/29/2010			
Sample	MW-A28				MW-11S				SWMU17-OB-1*				MW3			
	SS	LF	Ratio	RPD	SS	LF	Ratio	RPD	SS	LF	Ratio	RPD	SS	LF	Ratio	RPD
Area ID	South of Bldg. 45				2B				2B				6B			
Metals (6010)																
Arsenic													32.8	*20*	1.6	48
Barium													743	726	1.0	2
Cadmium																
Chromium													*4.2*	*4.4*	1.0	5
Manganese													2,650	2,690	1.0	1
Barium, Dissolved													536	672	0.8	23
Manganese, Dissolved													2,380	2,620	0.9	10
TPH (8270)																
TPH - GRO (C6 - C10) (8260)	3,200	3,510	0.9	9.2												
TPH-DRO (C10 - C21)	1,820	1,530	1.2	17									*260*	*240*	1.1	8
TPH-ORO (C21 - C35)	*500*	*270*	1.9	60												
VOCs (8260)																
1,2-Dichloroethene, Total									*1.1*	5.45	0.2	133	14,000	13,000	1.1	7
Acetone	*13*	*18*	0.7	32												
cis-1,2-Dichloroethene									*1.1*	*3.9*	0.3	112	14,000	12,800	1.1	9
Naphthalene	*2*	*4.8*	0.4	82												
tert-Butylbenzene	*1.3*	*1.6*	0.8	21												
Tetrachloroethene																
Trichloroethene					*4.5*	*3.7*	1.2	20								
Vinyl chloride									*1.2*	15.9	0.1	172	1,080	953	1.1	12

Notes:

*: For the LF results in SWMU17-OB-1, the higher concentration of the original and duplicate samples was used for comparison to the SS results.

Ratio greater than 1 indicates Snap Sampler (SS) concentration is higher than the Low Flow (LF) concentration

Values in italic font are "J" qualified meaning that analyte detected below reporting limit and the value shown estimated

RPD: Relative Percent Difference

$$RPD = \left| \frac{SS - LF}{(SS + LF) \div 2} \right| \times 100$$

Table 5-1
Comparison of Detected Concentrations in Groundwater Using Snap Sampler and Low-Flow Methods (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/26/2010				4/26/2010				4/26/2010				4/26/2010			
Sample	MW-8AS				MW6				MW10S				MW10D			
	SS	LF	Ratio	RPD	SS	LF	Ratio	RPD	SS	LF	Ratio	RPD	SS	LF	Ratio	RPD
Area ID	6C				6D				8A				8A			
Metals (6010)																
Arsenic																
Barium	370	395	0.9	7					244	216	1.1	12	323	315	1.0	3
Cadmium	*0.4*	*0.3*	200	29												
Chromium	*5.7*	*6.7*	0.9	16									10.1	*6.8*	1.5	39
Manganese	3,050	1,760	1.7	54					1,920	2,080	0.9	8	500	948	0.5	62
Barium, Dissolved																
Manganese, Dissolved																
TPH (8270)																
TPH - GRO (C6 - C10) (8260)																
TPH-DRO (C10 - C21)																
TPH-ORO (C21 - C35)																
VOCs (8260)																
1,2-Dichloroethene, Total																
Acetone																
cis-1,2-Dichloroethene																
Naphthalene																
tert-Butylbenzene																
Tetrachloroethene					*2.8*	*3.4*	0.8	19								
Trichloroethene					*1.3*	*1.4*	0.9	7					8.2	*4.1*	2.0	67
Vinyl chloride									*1.4*	*1.3*	1.1	7				

Table 5-2

Summary of Comparison of Detected Concentrations in Groundwater Using Snap Sampler® and Low-Flow Methods
Boeing Tract 1, Hazelwood, Missouri

Analyte	#Detected	Ratio		RPD	
		Range	Average	Range	Average
Metals (6010)					
Arsenic	1	NA	1.6	NA	48
Barium	4	0.9 - 1.5	1.0	2 - 12	6
Cadmium	1	NA	1.3	NA	29
Chromium	3	0.9 - 5.2	1.1	5 - 39	21
Manganese	4	0.5 - 1.7	1.0	1 - 62	31
Barium, Dissolved	1	NA	0.8	NA	23
Manganese, Dissolved	1	NA	0.9	NA	10
TPH (8270)					
TPH - GRO (C6 - C10) (8260)	1	NA	0.9	NA	9
TPH-DRO (C10 - C21)	2	1.1 - 1.2	1.15	8 - 17	13
TPH-ORO (C21 - C35)	1	NA	1.9	NA	60
VOCs (8260)					
1,2-Dichloroethene, Total	2	0.2 - 1.1	0.6	7 - 133	70
Acetone	1	NA	0.7	NA	32
cis-1,2-Dichloroethene	2	0.3 - 1.1	0.7	9 - 112	61
Naphthalene	1	NA	0.4	NA	82
tert-Butylbenzene	1	NA	0.8	NA	21
Tetrachloroethene	1	NA	0.8	NA	19
Trichloroethene	3	0.9 - 2.0	1.4	7 - 67	31
Vinyl chloride	3	0.1 - 1.1	0.77	7 - 172	64

Notes:
NA: Not applicable
Ratio greater than 1 indicates Snap Sampler (SS) concentration is higher than the Low Flow (LF) concentration
RPD: Relative Percent Difference

Table 5-3
Comparison of Non-Detected Concentrations in Groundwater Using Snap Sampler and Low-Flow Methods (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	5/3/2010		4/29/2010		4/28/2010		4/29/2010		4/29/2010		4/26/2010		4/26/2010		4/26/2010		4/26/2010	
	MW-A28		MW-11S		MW-11I		SWMU17-OB-1		MW3		MW-8AS		MW6		MW10S		MW10D	
Sample	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF
Area ID	South of Bldg. 45		2B		2B		2B		6B		6C		6D		8A		8A	
Metals (6010)																		
Chromium, Hexavalent												< 5						
Arsenic			< 25	< 25	< 25	< 25	< 25	< 25			< 25	< 25	< 25	< 25	31.7	< 25	< 25	< 25
Barium																		
Cadmium			*0.5*	< 2	< 2	< 2	< 2	< 2	< 2	< 2								
Chromium													< 10	*8*	< 10	*5.2*		
Manganese																		
Mercury (7470)									< 0.2	< 0.2	*0.06*	< 0.2						
Arsenic, Dissolved			< 25	< 25					< 25	*18*		< 25				< 25		< 25
Barium, Dissolved												382				205		274
Cadmium, Dissolved			*0.6*	< 2					< 2	< 2		< 2						
Chromium, Dissolved									< 10	*4.6*		*4.5*				*4.6*		< 10
Manganese, Dissolved												1,570				2,000		301
Mercury, Dissolved									< 0.2	< 0.2		< 0.2						
PCBs (8082)																		
Aroclor 1254									< 2.08	< 1								
SVOCs (8270)																		
1,2,4-Trichlorobenzene									< 10	< 10								
1,2-Dichlorobenzene									< 10	< 10								
1,3-Dichlorobenzene									< 10	< 10								
1,4-Dichlorobenzene									< 10	< 10								
2,4,5-Trichlorophenol									< 10	< 10								
2,4,6-Trichlorophenol									< 10	< 10								
2,4-Dichlorophenol									< 10	< 10								
2,4-Dimethylphenol									< 10	< 10								
2,4-Dinitrophenol									< 20	< 20								
2,4-Dinitrotoluene									< 10	< 10								
2,6-Dinitrotoluene									< 10	< 10								
2-Chloronaphthalene									< 10	< 10								
2-Chlorophenol									< 10	< 10								
2-Methoxy-4-methylphenol									< 10	< 10								
2-Methylnaphthalene									< 10	< 10								
2-Nitroaniline									< 40	< 40								
2-Nitrophenol									< 20	< 20								
3,3'-Dichlorobenzidine									< 10	< 10								
3-Nitroaniline									< 40	< 40								
4,6-Dinitro-2-methylphenol									< 20	< 20								
4-Bromophenyl phenyl ether									< 10	< 10								
4-Chloro-3-methylphenol									< 20	< 20								
4-Chloroaniline									< 20	< 20								
4-Chlorophenyl phenyl ether									< 10	< 10								
4-Nitroaniline									< 20	< 20								
4-Nitrophenol									< 20	< 20								

Table 5-3
Comparison of Non-Detected Concentrations in Groundwater Using Snap Sampler and Low-Flow Methods (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	5/3/2010		4/29/2010		4/28/2010		4/29/2010		4/29/2010		4/26/2010		4/26/2010		4/26/2010		4/26/2010	
	MW-A28		MW-11S		MW-11I		SWMU17-OB-1		MW3		MW-8AS		MW6		MW10S		MW10D	
Sample	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF
Area ID	South of Bldg. 45		2B		2B		2B		6B		6C		6D		8A		8A	
Acenaphthene									< 10	< 10								
Acenaphthylene									< 10	< 10								
Aniline									< 20	< 20								
Anthracene									< 10	< 10								
Azobenzene									< 10	< 10								
Benzidine									< 40	< 40								
Benzo(a)anthracene									< 10	< 10								
Benzo(a)pyrene									< 10	< 10								
Benzo(b)fluoranthene									< 10	< 10								
Benzo(g,h,i)perylene									< 10	< 10								
Benzo(k)fluoranthene									< 10	< 10								
Benzoic acid									< 50	< 50								
Benzyl alcohol									< 20	< 20								
Bis(2-chloroethoxy)methane									< 10	< 10								
Bis(2-chloroethyl)ether									< 10	< 10								
Bis(2-chloroisopropyl)ether									< 10	< 10								
Bis(2-ethylhexyl)phthalate									< 6	< 6								
Butyl benzyl phthalate									< 10	< 10								
Carbazole									< 20	< 20								
Chrysene									< 10	< 10								
Dibenzo(a,h)anthracene									< 10	< 10								
Dibenzofuran									< 10	< 10								
Diethyl phthalate									< 10	< 10								
Dimethyl phthalate									< 10	< 10								
Di-n-butyl phthalate									< 10	< 10								
Di-n-octyl phthalate									< 10	< 10								
Fluoranthene									< 10	< 10								
Fluorene									< 10	< 10								
Hexachlorobenzene									< 10	< 10								
Hexachlorobutadiene									< 10	< 10								
Hexachlorocyclopentadiene									< 20	< 20								
Hexachloroethane									< 10	< 10								
Indeno(1,2,3-cd)pyrene									< 10	< 10								
Isophorone									< 10	< 10								
m,p-Cresol									< 10	< 10								
Naphthalene									< 10	< 10								
Nitrobenzene									< 10	< 10								
N-Nitrosodimethylamine									< 20	< 20								
N-Nitroso-di-n-propylamine									< 10	< 10								
N-Nitrosodiphenylamine									< 10	< 10								
o-Cresol									< 10	< 10								
Pentachlorophenol									< 20	< 20								
Phenanthrene									< 10	< 10								
Phenol									< 5	< 5								
Pyrene									< 10	< 10								
Pyridine									< 20	< 20								
Quinoline									< 5	< 5								

Table 5-3
Comparison of Non-Detected Concentrations in Groundwater Using Snap Sampler and Low-Flow Methods (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	5/3/2010		4/29/2010		4/28/2010		4/29/2010		4/29/2010		4/26/2010		4/26/2010		4/26/2010		4/26/2010	
	MW-A28		MW-11S		MW-11I		SWMU17-OB-1		MW3		MW-8AS		MW6		MW10S		MW10D	
Sample	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF
Area ID	South of Bldg. 45		2B		2B		2B		6B		6C		6D		8A		8A	
TPH (8270)																		
TPH - GRO (C6 - C10) (8260)			< 500	< 500	< 500	< 500	< 500	< 500	< 100,000	< 50,000				< 500				
TPH-DRO (C10 - C21)			< 667	< 300	*290*	< 300	< 25	< 300			*510*	< 306						
TPH-ORO (C21 - C35)			< 667	< 300	< 405	< 300	< 25	< 300	< 300	< 300	< 625	< 306						
VOCs (8260)																		
1,1,1,2-Tetrachloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,1-Trichloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloro-1,2,2-trifluoroeth	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 4,000	< 2,000	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
1,1,2-Trichloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloro-2-propanone	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 10,000	< 5,000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1-Dichloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	2.2	< 5	< 5
1,1-Dichloroethene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloropropene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,3-Trichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,3-Trichloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,3-Trimethylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,4-Trichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2,4-Trimethylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dibromoethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethene, Total	< 5	< 5	< 5	< 5	< 5	< 5					< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3,5-Trimethylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3-Dichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3-Dichloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3-Dichloropropene, Total	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,4-Dichloro-2-butene, Total	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 2,000	< 1,000	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,4-Dichlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1-Chlorobutane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2,2-Dichloropropane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Butanone	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 5,000	< 2,500	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
2-Chloroethyl vinyl ether	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 4,000	< 2,000	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
2-Chlorotoluene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Hexanone	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 5,000	< 2,500	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
2-Nitropropane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 10,000	< 5,000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
4-Chlorotoluene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
4-Methyl-2-pentanone	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 5,000	< 2,500	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Acetone			< 25	< 25	< 25	< 25	< 25	< 25	< 5,000	< 2,500	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Acetonitrile	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 10,000	< 5,000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Acrolein	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 20,000	< 10,000	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
Acrylonitrile	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Allyl chloride	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Benzene	< 2	*1.6*	< 2	< 2	< 2	< 2	< 2	< 2	< 400	< 200	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Bromobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5

Table 5-3
Comparison of Non-Detected Concentrations in Groundwater Using Snap Sampler and Low-Flow Methods (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	5/3/2010		4/29/2010		4/28/2010		4/29/2010		4/29/2010		4/26/2010		4/26/2010		4/26/2010		4/26/2010	
	MW-A28		MW-11S		MW-11I		SWMU17-OB-1		MW3		MW-8AS		MW6		MW10S		MW10D	
Sample	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF
Area ID	South of Bldg. 45		2B		2B		2B		6B		6C		6D		8A		8A	
Bromochloromethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromodichloromethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromoform	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 2,000	< 1,000	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Butyl acetate	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 5,000	< 2,500	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Carbon disulfide	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 2,000	< 1,000	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Chloroform	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloromethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 2,000	< 1,000	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Chloroprene	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 4,000	< 2,000	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
cis-1,2-Dichloroethene	< 5	< 5	< 5	< 5	< 5	< 5					< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,4-Dichloro-2-butene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Cyclohexanone	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 10,000	< 5,000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Dibromochloromethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibromomethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 2,000	< 1,000	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Diisopropyl ether	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 400	< 200				< 2				
Ethyl acetate	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 2,000	< 1,000	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ethyl ether	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethyl methacrylate	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethyl-tert-butyl ether	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 400	< 200				< 2				
Heptane	83.4	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 4,000	< 2,000	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Hexachlorobutadiene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Hexachloroethane	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 2,000	< 1,000	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Iodomethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Isopropylbenzene	< 5	11.3	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
m,p-Xylenes	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 2,000	< 1,000	< 10	< 10	< 10	< 10		< 10	< 10	< 10
Methacrylonitrile											< 5	< 5	< 5		< 10	< 5	< 5	< 5
Methyl acetate															< 5			
Methyl Methacrylate	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methyl tert-butyl ether	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 400	< 200	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Methylacrylate	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 2,000	< 1,000	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Methylene chloride	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Naphthalene			< 10	< 10	< 10	< 10	< 10	< 10	< 2,000	< 1,000	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
n-Butylbenzene	< 5	*4.9*	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
n-Hexane	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 4,000	< 2,000	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Nitrobenzene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 10,000	< 5,000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
n-Propylbenzene	< 5	7.16	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Pentachloroethane	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 4,000	< 2,000	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
p-Isopropyltoluene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Propionitrile	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 10,000	< 5,000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
sec-Butylbenzene	< 5	*3.1*	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Styrene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5

Table 5-3
Comparison of Non-Detected Concentrations in Groundwater Using Snap Sampler and Low-Flow Methods (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	5/3/2010		4/29/2010		4/28/2010		4/29/2010		4/29/2010		4/26/2010		4/26/2010		4/26/2010		4/26/2010	
	MW-A28		MW-11S		MW-11I		SWMU17-OB-1		MW3		MW-8AS		MW6		MW10S		MW10D	
Sample	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF	SS	LF
Area ID	South of Bldg. 45		2B		2B		2B		6B		6C		6D		8A		8A	
tert-Amyl methyl ether	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 400	< 200				< 2				
tert-Butyl alcohol	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 5,000	< 2,500				< 25				
tert-Butylbenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5			< 5	< 5	< 5	< 5
Tetrahydrofuran	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 4,000	< 2,000	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Toluene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,2-Dichloroethene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	*1.5*	< 1,000	*150*	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,4-Dichloro-2-butene	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 2,000	< 1,000	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Trichloroethene	< 5	< 5			< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5			< 5	< 5		
Trichlorofluoromethane	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Vinyl acetate	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 2,000	< 1,000	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Vinyl chloride	< 2	< 2	< 2	< 2	< 2	< 2					< 2	< 2	< 2	< 2			< 2	< 2
Xylenes, Total	< 5	*1.5*	< 5	< 5	< 5	< 5	< 5	< 5	< 1,000	< 500	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5

Notes:
Values in italic font are "J" qualified meaning that analyte detected below reporting limit and the value shown estimated
<: indicates below reporting limit

Table 5-4
Comparison of Groundwater Concentrations for Original and Duplicate Samples-Detects (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/26/2010			4/29/2010			5/3/2010		
Sample	MW8AD	Dup #1 (MW8AD)	Ratio = Original/Duplicate	SWMU17-OB-1-LF	Dup #2 (SWMU17-OB-1)	Ratio = Original/Duplicate	MW-A27	Dup #3 (MW-A27)	Ratio = Original/Duplicate
Area ID	6C			2B			South of Bldg. 45		
Metals (6010)									
Barium	292	295	1.0						
Chromium	*7* J	*6.2* J	1.1						
Manganese	1,370	1,390	1.0						
Barium, Dissolved	253	257	1.0						
Manganese, Dissolved	1,190	1,210	1.0						
TPH (8270)									
TPH-DRO (C10 - C21)							*240* J	*270* J	0.9
VOCs (8260)									
1,2-Dichloroethene, Total				5.45	*4.6* J	1.2			
cis-1,2-Dichloroethene				*3.9* J	*3.1* J	1.3			
trans-1,2-Dichloroethene				*1.5* J	*1.5* J	1.0			
Vinyl chloride				15	15.9	0.9			

Notes:
Values in italic font are "J" qualified meaning that analyte detected below reporting limit and the value shown estimated
Ratio greater than 1 indicates original sample concentration is higher than duplicate sample.

Table 5-5
Comparison of Groundwater Concentrations for Original and Duplicate Samples-Non-Detects (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/26/2010						4/29/2010						5/3/2010					
Sample	MW8AD		Dup #1 (MW8AD)			Ratio = Original/Duplicate	SWMU17-OB-1-LF		Dup #2 (SWMU17-OB-1)			Ratio = Original/Duplicate	MW-A27		Dup #3 (MW-A27)			Ratio = Original/Duplicate
Area ID	6C						2B						South of Bldg. 45					
Metals (6010)																		
Chromium, Hexavalent	<	5	SR	<	5	S	1.0											
Arsenic	<	25		<	25		1.0	<	25.0		<	25.0		1.0				
Cadmium	<	2			*0.8*	J	NA	<	2.0		<	2.0		1.0				
Mercury (7470)	<	0.2		<	0.2		1.0											
Arsenic, Dissolved	<	25		<	25		1.0											
Cadmium, Dissolved	<	2		<	2		1.0											
Chromium, Dissolved	<	10		<	10		1.0											
Mercury, Dissolved	<	0.2		<	0.2		1.0											
TPH (8270)																		
TPH - GRO (C6 - C10) (8260)								<	500.0		<	500.0		1.0	<	500		*210*	J	NA
TPH-DRO (C10 - C21)	<	300		<	287		1.0	<	300.0		<	300.0		1.0				
TPH-ORO (C21 - C35)	<	300		<	287		1.0	<	300.0		<	300.0		1.0	<	300		<	300		1.0
VOCs (8260)																		
1,1,1,2-Tetrachloroethane	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,1,1-Trichloroethane	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,1,2,2-Tetrachloroethane	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	<	20		<	20		1.0	<	20.0		<	20.0		1.0	<	20		<	20		1.0
1,1,2-Trichloroethane	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,1-Dichloro-2-propanone	<	50		<	50		1.0	<	50.0		<	50.0		1.0	<	50		<	50		1.0
1,1-Dichloroethane	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,1-Dichloroethene	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,1-Dichloropropene	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,2,3-Trichlorobenzene	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,2,3-Trichloropropane	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,2,3-Trimethylbenzene	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,2,4-Trichlorobenzene	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,2,4-Trimethylbenzene	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,2-Dibromo-3-chloropropane	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,2-Dibromoethane	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,2-Dichlorobenzene	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,2-Dichloroethane	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,2-Dichloroethene, Total	<	5		<	5		1.0								<	5		<	5		1.0
1,2-Dichloropropane	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,3,5-Trimethylbenzene	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,3-Dichlorobenzene	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,3-Dichloropropane	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,3-Dichloropropene, Total	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0
1,4-Dichloro-2-butene, Total	<	10		<	10		1.0	<	10.0		<	10.0		1.0	<	10		<	10		1.0
1,4-Dichlorobenzene	<	5		<	5		1.0	<	5.0		<	5.0		1.0	<	5		<	5		1.0

Table 5-5
Comparison of Groundwater Concentrations for Original and Duplicate Samples-Non-Detects (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/26/2010			4/29/2010			5/3/2010		
Sample	MW8AD	Dup #1 (MW8AD)	Ratio = Original/Duplicate	SWMU17-OB-1-LF	Dup #2 (SWMU17-OB-1)	Ratio = Original/Duplicate	MW-A27	Dup #3 (MW-A27)	Ratio = Original/Duplicate
Area ID	6C			2B			South of Bldg. 45		
1-Chlorobutane	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
2,2-Dichloropropane	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
2-Butanone	<25	<25	1.0	<25.0	<25.0	1.0	<25	<25	1.0
2-Chloroethyl vinyl ether	<20	<20	1.0	<20.0	<20.0	1.0	<20	<20	1.0
2-Chlorotoluene	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
2-Hexanone	<25	<25	1.0	<25.0	<25.0	1.0	<25	<25	1.0
2-Nitropropane	<50	<50	1.0	<50.0	<50.0	1.0	<50	<50	1.0
4-Chlorotoluene	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
4-Methyl-2-pentanone	<25	<25	1.0	<25.0	<25.0	1.0	<25	<25	1.0
Acetone	<25	<25	1.0	<25.0	<25.0	1.0	<25	<25	1.0
Acetonitrile	<50	<50	1.0	<50.0	<50.0	1.0	<50	<50	1.0
Acrolein	<100	<100	1.0	<100.0	<100.0	1.0	<100	<100	1.0
Acrylonitrile	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Allyl chloride	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Benzene	<2	<2	1.0	<2.0	<2.0	1.0	<2	<2	1.0
Bromobenzene	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Bromochloromethane	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Bromodichloromethane	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Bromoform	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Bromomethane	<10	<10	1.0	<10.0	<10.0	1.0	<10	<10	1.0
Butyl acetate	<25	<25	1.0	<25.0	<25.0	1.0	<25	<25	1.0
Carbon disulfide	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Carbon tetrachloride	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Chlorobenzene	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Chloroethane	<10	<10	1.0	<10.0	<10.0	1.0	<10	<10	1.0
Chloroform	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Chloromethane	<10	<10	1.0	<10.0	<10.0	1.0	<10	<10	1.0
Chloroprene	<20	<20	1.0	<20.0	<20.0	1.0	<20	<20	1.0
cis-1,2-Dichloroethene	<5	<5	1.0				<5	<5	1.0
cis-1,3-Dichloropropene	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
cis-1,4-Dichloro-2-butene	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Cyclohexanone	<50	<50	1.0	<50.0	<50.0	1.0	<50	<50	1.0
Dibromochloromethane	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Dibromomethane	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Dichlorodifluoromethane	<10	<10	1.0	<10.0	<10.0	1.0	<10	<10	1.0
Diisopropyl ether				<2.0	<2.0	1.0	<2	<2	1.0
Ethyl acetate	<10	<10	1.0	<10.0	<10.0	1.0	<10	<10	1.0
Ethyl ether	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Ethyl methacrylate	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Ethylbenzene	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0
Ethyl-tert-butyl ether				<2.0	<2.0	1.0	<2	<2	1.0
Heptane	<20	<20	1.0	<20.0	<20.0	1.0	<20	<20	1.0
Hexachlorobutadiene	<5	<5	1.0	<5.0	<5.0	1.0	<5	<5	1.0

Table 5-5
Comparison of Groundwater Concentrations for Original and Duplicate Samples-Non-Detects (ug/L)
Boeing Tract 1, Hazelwood, Missouri

Date Collected	4/26/2010			4/29/2010			5/3/2010		
Sample	MW8AD	Dup #1 (MW8AD)	Ratio = Original/Duplicate	SWMU17-OB-1-LF	Dup #2 (SWMU17-OB-1)	Ratio = Original/Duplicate	MW-A27	Dup #3 (MW-A27)	Ratio = Original/Duplicate
Area ID	6C			2B			South of Bldg. 45		
Hexachloroethane	< 10	< 10	1.0	< 10.0	< 10.0	1.0	< 10	< 10	1.0
Iodomethane	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
Isopropylbenzene	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
m,p-Xylenes	< 10	< 10	1.0	< 10.0	< 10.0	1.0	< 10	< 10	1.0
Methacrylonitrile	< 5	< 5	1.0						
Methyl Methacrylate	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
Methyl tert-butyl ether	< 2	< 2	1.0	< 2.0	< 2.0	1.0	< 2	< 2	1.0
Methylacrylate	< 10	< 10	1.0	< 10.0	< 10.0	1.0	< 10	< 10	1.0
Methylene chloride	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
Naphthalene	< 10	< 10	1.0	< 10.0	< 10.0	1.0	< 10	< 10	1.0
n-Butylbenzene	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
n-Hexane	< 20	< 20	1.0	< 20.0	< 20.0	1.0	< 20	< 20	1.0
Nitrobenzene	< 50	< 50	1.0	< 50.0	< 50.0	1.0	< 50	< 50	1.0
n-Propylbenzene	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
Pentachloroethane	< 20	< 20	1.0	< 20.0	< 20.0	1.0	< 20	< 20	1.0
p-Isopropyltoluene	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
Propionitrile	< 50	< 50	1.0	< 50.0	< 50.0	1.0	< 50	< 50	1.0
sec-Butylbenzene	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
Styrene	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
tert-Amyl methyl ether				< 2.0	< 2.0	1.0	< 2	< 2	1.0
tert-Butyl alcohol				< 25.0	< 25.0	1.0	< 25	< 25	1.0
tert-Butylbenzene	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
Tetrachloroethene	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
Tetrahydrofuran	< 20	< 20	1.0	< 20.0	< 20.0	1.0	< 20	< 20	1.0
Toluene	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
trans-1,2-Dichloroethene	< 5	< 5	1.0				< 5	< 5	1.0
trans-1,3-Dichloropropene	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
trans-1,4-Dichloro-2-butene	< 10	< 10	1.0	< 10.0	< 10.0	1.0	< 10	< 10	1.0
Trichloroethene	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
Trichlorofluoromethane	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0
Vinyl acetate	< 10	< 10	1.0	< 10.0	< 10.0	1.0	< 10	< 10	1.0
Vinyl chloride	< 2	< 2	1.0				< 2	< 2	1.0
Xylenes, Total	< 5	< 5	1.0	< 5.0	< 5.0	1.0	< 5	< 5	1.0

Lab Qualifiers:

Values in italic font are "J" qualified meaning that analyte detected below reporting limit and the value shown estimated

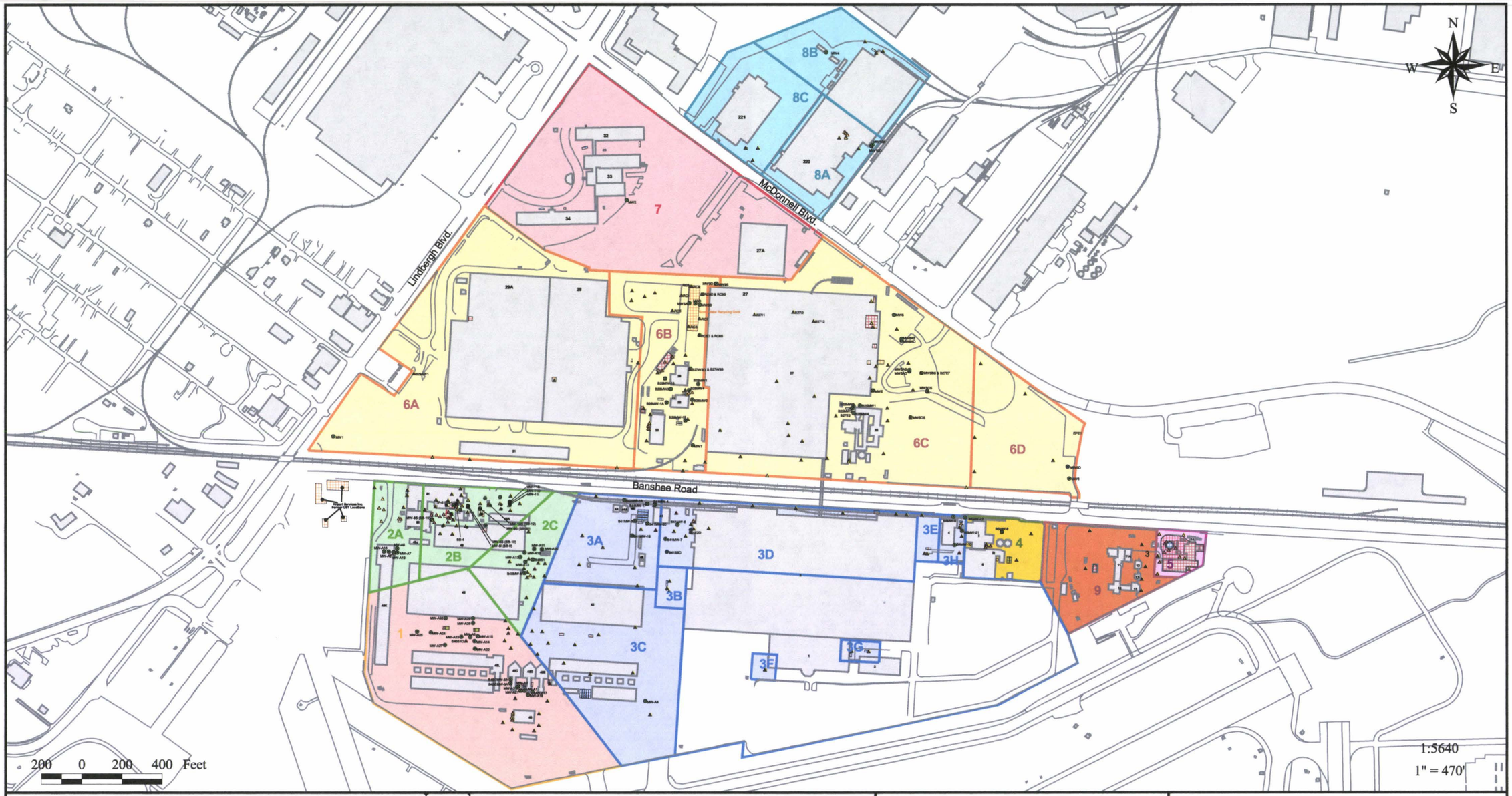
S: spike recovery outside accepted recovery limits

Ratio greater than 1 indicates concentration in original sample is higher than the one in duplicate sample

NA: only compared when both values non-detect

FIGURES

FIGURES



Legend

- Abandoned Shallow Piezometer
- Abandoned Shallow Well
- Deep Piezometer
- Deep Well
- Intermediate Well
- Other Shallow Boring
- RFA Boring
- RCRA Closure Shallow Boring
- RFI Deep Boring/Temp. Piezometer
- RFI Shallow Boring
- RFI Shallow Boring/Temp. Piezometer
- Shallow Piezometer
- Shallow Well
- UST Closure Sample
- Other Area
- UST
- SWMU

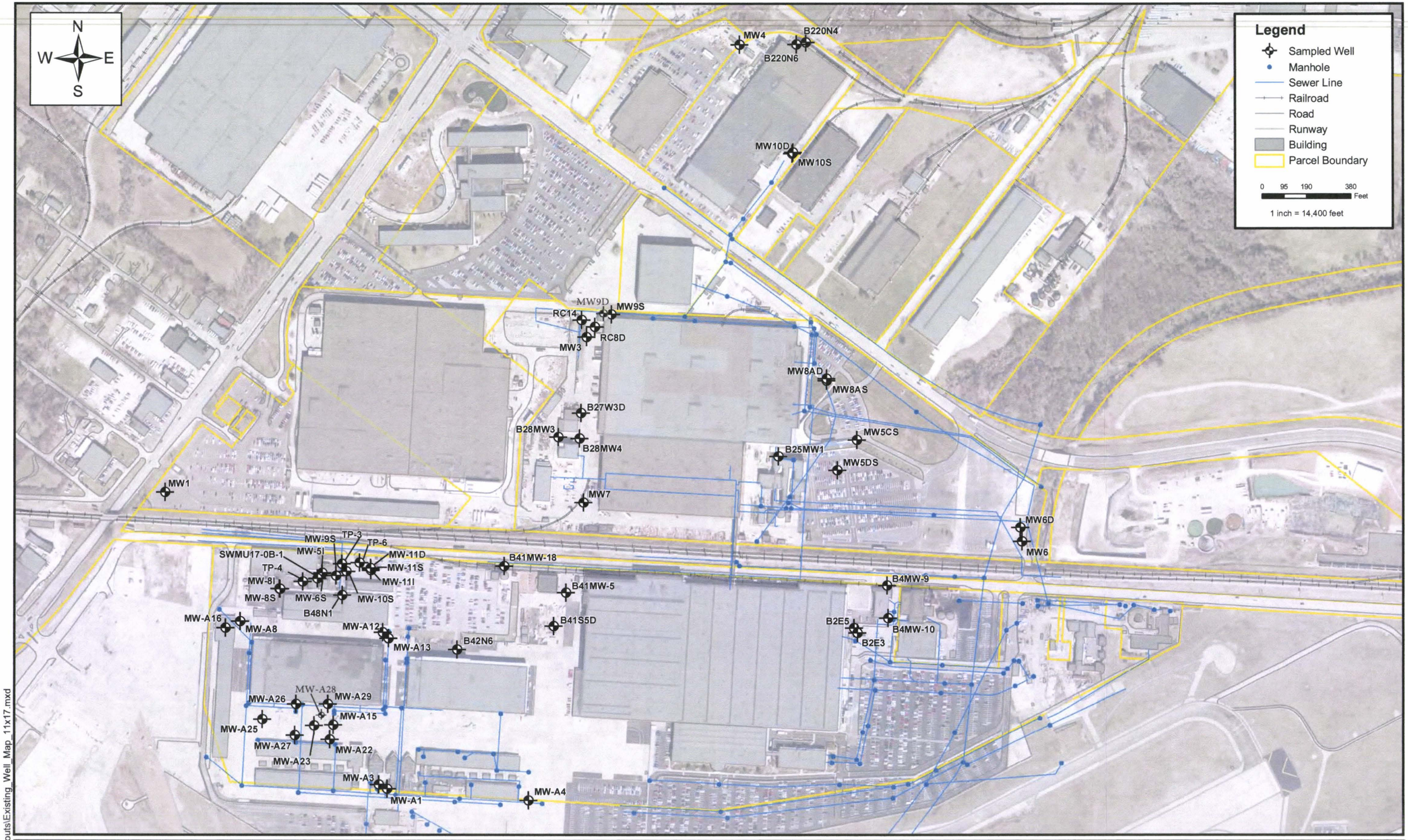
Drawn by: BSM Approved by:

Checked by: Date: September 10, 2004

Risk Assessment & Management Group, Inc.

Figure 1-1
Risk Assessment Exposure Area Map, Boeing Tract 1 (North and South)

P:\1_Gis\3250035046\apr\risk\risk_fig1-1_040910.apr



J:\Boeing\Layouts\Existing_Well_Map_11x17.mxd

NO.	REVISIONS DESCRIPTION	DATE	BY	DESIGNED DKB	GIS CER	SCALE AS NOTED	Gannett Fleming BALTIMORE, MARYLAND	Report Wells	Locations of Monitoring Wells	GF PROJECT NO. 49992 DATE 12-29-08 GIS FILE Existing_Well_Map_11x17.mxd	Figure 2-1
				CHECKED	APPROVED						

LEGEND

- MONITORING WELL LOCATION
- 550.93 WATER TABLE ELEVATION (FEET)
- APPROX. GROUNDWATER FLOW DIRECTION

0 400
APPROX. SCALE (FEET)

RAM Group of Gannett Fleming, Inc.
5433 Westheimer, Suite 725, Houston, TX 77056

Figure 3-1
Shallow Zone Groundwater Flow Map
(April 12 and 13, 2010)
Boeing Tract 1
St. Louis, Missouri

May 2010/BR | RAM Group (050036)

N

LEGEND

- MONITORING WELL LOCATION
- 531.79 WATER TABLE ELEVATION (FEET)
- APPROX. GROUNDWATER FLOW DIRECTION

0 400
APPROX. SCALE (FEET)

RAM Group of Gannett Fleming, Inc.
5433 Westheimer, Suite 725, Houston, TX 77056

Figure 3-2
Deep Zone Groundwater Flow Map
(April 12 and 13, 2010)
Boeing Tract 1
St. Louis, Missouri

May 2010/BR | RAM Group (049992)

APPENDICES

APPENDIX A

APPENDIX A
FIELD EQUIPMENT CALIBRATION FORMS

FIELD ENVIRONMENTAL INSTRUMENTS, INC.
www.fieldenvironmental.com

301 Brushton Avenue
Suite A
Pittsburgh PA 15221
800-393-4009 Toll Free
(412) 436-2600 Local
(412) 436-2615 Fax

Photo-Ionization Detector Calibration Certificate

	Lot#	Expiration
Isobutylene Gas	09-3732	3/16/2011

Cal Standard	Reading	Acceptable Range
100 ppm	100.0	(98 - 102)

Pump Flow mL/min	Acceptable Range
480	(300 - 500)

Response Factor
1.0

Model	MiniRae 2000
Lamp	10.6 eV
S/N	110-005470
Barcode	U949X
Order #	144565

Calibrated By: Chris Boggas

Date of Calibration: 04/22/10

All calibrations performed by FEI conform to manufacturer's specifications. Please report any issues within 24 hours of receiving equipment.
All calibration gas used is traceable to NIST. Additional documentation is available upon request.

FIELD ENVIRONMENTAL INSTRUMENTS, INC.
www.fieldenvironmental.com

301 Brushton Avenue
Suite A
Pittsburgh PA 15221
800-393-4009 Toll Free
(412) 436-2600 Local
(412) 436-2616 Fax

Photo-Ionization Detector Calibration Certificate

	Lot #	Expiration
Isobutylene Gas	09-3732	3/16/2011

Cal Standard	Reading	Acceptable Range
100 ppm	100.0	(98 - 102)

Pump Flow mL/min	Acceptable Range
508	(300 - 500)

Response Factor
1.0

Model	MiniRae 2000
Lamp	10.6 eV
S/N	110-00718
Barcode	U2903X
Order #	144565

Calibrated By: Chris Boggas

Date of Calibration: 04/22/10

All calibrations performed by FEI conform to manufacturer's specifications. Please report any issues within 24 hours of receiving equipment.
All calibration gas used is traceable to NIST. Additional documentation is available upon request.

Air Monitoring Equipment Calibration Form

Project: BOEING MO Project #: 049992

Equipment Calibrated By: MB

Date: 4/29/10

Instrument:	PID	Type MINI RAE	Serial Number U00949X

Time Calibrated:	Hours Used: 12	Battery Check: Y	Maintenance and Repair:
Zero/Fresh Air Calibration			
Calibration Standard	(ppm)	0	
Intitial Reading	(ppm)		
Corrected Reading	(ppm)		Comments:
Span/Gas Calibration			
Calibration Standard	(ppm)	100	
Intitial Reading	(ppm)		
Corrected Reading	(ppm)		

Instrument:	Multi-gas	Type	Serial Number

Time Calibrated:	Hours Used:	Battery Check:	Maintenance and Repair:

	CO (ppm) / LEL (%)	H_2S (ppm) / O_2 (%)
Zero/Fresh Air Calibration		
Calibration Standard		
Initial Reading		
Corrected Reading		
Span/Gas Calibration	**CO (ppm) / LEL (%)**	**H_2S (ppm) / O_2 (%)**
Calibration Standard		
Initial Reading		
Corrected Reading		

Comments:

Air Monitoring Equipment Calibration Form

Project: BOEING, MO Project #: 049992

Equipment Calibrated By: MB

Date: 4/29/10

Instrument:	PID	Type MINI RAE	Serial Number U02903X

Time Calibrated: 0600	Hours Used: 12	Battery Check: Y	Maintenance and Repair:

Zero/Fresh Air Calibration		
Calibration Standard	(ppm)	0
Intitial Reading	(ppm)	0
Corrected Reading	(ppm)	0
Span/Gas Calibration		
Calibration Standard	(ppm)	100
Intitial Reading	(ppm)	102
Corrected Reading	(ppm)	103

Comments:

Instrument:	Multi-gas	Type	Serial Number

Time Calibrated:	Hours Used:	Battery Check:	Maintenance and Repair:

	CO (ppm) / LEL (%)	H_2S (ppm) / O_2 (%)
Zero/Fresh Air Calibration		
Calibration Standard		
Initial Reading		
Corrected Reading		
Span/Gas Calibration	**CO (ppm) / LEL (%)**	**H_2S (ppm) / O_2 (%)**
Calibration Standard		
Initial Reading		
Corrected Reading		

Comments:

Air Monitoring Equipment Calibration Form

Project: BOEING, MO Project #: 049992

Equipment Calibrated By: MB

Date: 4/28/10

Instrument:	PID	Type MINIRAE	Serial Number W00949X

Time Calibrated: 0620/1125	Hours Used: 12	Battery Check: Y	Maintenance and Repair: INSTRUMENT IS GIVING "LAMP" MESSAGE AT 6:20

Zero/Fresh Air Calibration		
Calibration Standard	(ppm)	0
Intitial Reading	(ppm)	MB ~~0~~ 0
Corrected Reading	(ppm)	0
Span/Gas Calibration		
Calibration Standard	(ppm)	100
Intitial Reading	(ppm)	101
Corrected Reading	(ppm)	102

Comments:

Instrument:	Multi-gas	Type	Serial Number

Time Calibrated:	Hours Used:	Battery Check:	Maintenance and Repair:

	CO (ppm) / LEL (%)	H_2S (ppm) / O_2 (%)
Zero/Fresh Air Calibration		
Calibration Standard		
Initial Reading		
Corrected Reading		
Span/Gas Calibration		
Calibration Standard		
Initial Reading		
Corrected Reading		

Comments:

Air Monitoring Equipment Calibration Form

Project: BOEING, MO Project #: 049992

Equipment Calibrated By: MB

Date: 4/28/10

Instrument:	PID	Type MINIRAE	Serial Number U02903X

Time Calibrated: 0612	Hours Used: 12	Battery Check: Y	Maintenance and Repair:

Zero/Fresh Air Calibration		
Calibration Standard	(ppm)	0
Intitial Reading	(ppm)	0
Corrected Reading	(ppm)	0
Span/Gas Calibration		
Calibration Standard	(ppm)	100
Intitial Reading	(ppm)	100
Corrected Reading	(ppm)	100

Comments:

Instrument:	Multi-gas	Type	Serial Number

Time Calibrated:	Hours Used:	Battery Check:	Maintenance and Repair:

	CO (ppm) / LEL (%)	H_2S (ppm) / O_2 (%)
Zero/Fresh Air Calibration		
Calibration Standard		
Initial Reading		
Corrected Reading		
Span/Gas Calibration	**CO (ppm) / LEL (%)**	**H_2S (ppm) / O_2 (%)**
Calibration Standard		
Initial Reading		
Corrected Reading		

Comments:

Air Monitoring Equipment Calibration Form

Project: BOEING. MO Project #: 049992

Equipment Calibrated By: MB

Date: 4/27/10

Instrument:	PID	Type MINI RAE	Serial Number U00949X

Time Calibrated: 05:50	Hours Used: 10	Battery Check: Y	Maintenance and Repair:
Zero/Fresh Air Calibration			
Calibration Standard	(ppm)	0	
Initial Reading	(ppm)	0.2	
Corrected Reading	(ppm)	0.3	Comments:
Span/Gas Calibration			
Calibration Standard	(ppm)	100	
Initial Reading	(ppm)	102	
Corrected Reading	(ppm)	104	

Instrument:	Multi-gas	Type	Serial Number

Time Calibrated:	Hours Used:	Battery Check:	Maintenance and Repair:

	CO (ppm) / LEL (%)	H_2S (ppm) / O_2 (%)
Zero/Fresh Air Calibration		
Calibration Standard		
Initial Reading		
Corrected Reading		

	CO (ppm) / LEL (%)	H_2S (ppm) / O_2 (%)	Comments:
Span/Gas Calibration			
Calibration Standard			
Initial Reading			
Corrected Reading			

Air Monitoring Equipment Calibration Form

Project: BOEING MO Project #: 049992

Equipment Calibrated By: MB

Date: 4/27/10

Instrument: PID	Type MINIRAE	Serial Number U02903X

Time Calibrated: 0600	Hours Used: 10	Battery Check: Y	Maintenance and Repair:
Zero/Fresh Air Calibration			
Calibration Standard	(ppm)	0	
Initial Reading	(ppm)	0	
Corrected Reading	(ppm)	0	Comments:
Span/Gas Calibration			
Calibration Standard	(ppm)	100	
Initial Reading	(ppm)	101	
Corrected Reading	(ppm)	101	

Instrument: Multi-gas	Type	Serial Number

Time Calibrated:	Hours Used:	Battery Check:	Maintenance and Repair:
Zero/Fresh Air Calibration	CO (ppm) / LEL (%)	H_2S (ppm) / O_2 (%)	
Calibration Standard			
Initial Reading			
Corrected Reading			
Span/Gas Calibration	CO (ppm) / LEL (%)	H_2S (ppm) / O_2 (%)	Comments:
Calibration Standard			
Initial Reading			
Corrected Reading			

PH Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-27
Time 071719
Last Cal: 4/27/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = 5.82952 mV
- Final Reading = 7.00 pH
- Temperature = 23.2176 C
- Slope = -58.8063 mV/pH
- Offset = 417.474 mV

ORP Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-27
Time 071719
Last Cal: 4/27/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 226.569 mV
- Response = 187.388 mV

- Final Reading = 226.569 mV
- Temperature = 23.2176 C
- Offset = -39.1806 mV

Cond Calibration Report

Device Serial Number 48192
Sensor Serial Number LC05502
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-27
Time 071719
Last Cal: 4/27/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 42.6135 ohms
- Final Reading = 7980 µS/cm
- Temperature = 23.2176 C
- Kcell = 0.32767

---

http://www.in-situ.com

RDO Calibration Report

Device Serial Number 48192
Sensor Serial Number 142807
Sensor Mfg Date 3/19/09
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-04-26
Time 094818
Last Cal: 4/26/10
Sensor Firmware Ver 10
Cap Serial Number 158193
Cap Mfg Date 2/25/10
Cap Expiration Date 4/1/11
Saturation Point: NEW CALIBRATION VALUES

- 8.65 mg/l
- 15.67 °C
- 986.01 mbar

Zero Point: NEW CALIBRATION VALUES

- -0.00 mg/l
- 16.80 °C

Calibration slope 1.12 (mg/l) / (mg/l)
Calibration offset 0.01 mg/l

---

http://www.in-situ.com

PH Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-26
Time 093219
Last Cal: 4/26/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = 3.54635 mV
- Final Reading = 7.00 pH
- Temperature = 17.3178 C
- Slope = -57.6357 mV/pH
- Offset = 406.996 mV

ORP Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-26
Time 093219
Last Cal: 4/26/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 235.659 mV
- Response = 220.755 mV

- Final Reading = 235.659 mV
- Temperature = 17.3178 C
- Offset = -14.9035 mV

Cond Calibration Report

Device Serial Number 48192
Sensor Serial Number LC05502
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-26
Time 093219
Last Cal: 4/26/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 48.3998 ohms
- Final Reading = 7980 µS/cm
- Temperature = 17.3178 C
- Kcell = 0.326798

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RDO Calibration Report

Device Serial Number 48192
Sensor Serial Number 142807
Sensor Mfg Date 3/19/09
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-05-04
Time 065723
Last Cal: 5/4/10
Sensor Firmware Ver 10
Cap Serial Number 158193
Cap Mfg Date 2/25/10
Cap Expiration Date 4/1/11
Saturation Point: NEW CALIBRATION VALUES

- 8.17 mg/l
- 22.03 °C
- 991.74 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.09 mg/l
- 23.08 °C

Calibration slope 1.06 (mg/l) / (mg/l)
Calibration offset -0.10 mg/l

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RDO Calibration Report

Device Serial Number 48192
Sensor Serial Number 142807
Sensor Mfg Date 3/19/09
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-05-02
Time 200808
Last Cal: 5/2/10
Sensor Firmware Ver 10
Cap Serial Number 158193
Cap Mfg Date 2/25/10
Cap Expiration Date 4/1/11
Saturation Point: NEW CALIBRATION VALUES

- 7.79 mg/l
- 24.08 °C
- 983.94 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.04 mg/l
- 23.96 °C

Calibration slope 1.05 (mg/l) / (mg/l)
Calibration offset -0.05 mg/l

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PH Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-05-04
Time 064839
Last Cal: 5/4/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -1.14437 mV
- Final Reading = 7.00 pH
- Temperature = 23.1619 C
- Slope = -58.7953 mV/pH
- Offset = 410.423 mV

ORP Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-05-04
Time 064839
Last Cal: 5/4/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 226.655 mV
- Response = 176.358 mV

- Final Reading = 226.655 mV
- Temperature = 23.1619 C
- Offset = -50.2963 mV

Cond Calibration Report

Device Serial Number 48192
Sensor Serial Number LC05502
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-05-04
Time 064839
Last Cal: 5/4/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 42.9251 ohms
- Final Reading = 7980 µS/cm
- Temperature = 23.1619 C
- Kcell = 0.329678

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PH Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-05-02
Time 195851
Last Cal: 5/2/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = 1.59197 mV
- Final Reading = 7.00 pH
- Temperature = 25.1061 C
- Slope = -59.1811 mV/pH
- Offset = 415.859 mV

ORP Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-05-02
Time 195851
Last Cal: 5/2/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 223.659 mV
- Response = 130.934 mV

- Final Reading = 223.659 mV
- Temperature = 25.1061 C
- Offset = -92.7255 mV

Cond Calibration Report

Device Serial Number 48192
Sensor Serial Number LC05502
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-05-02
Time 195851
Last Cal: 5/2/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 41.0312 ohms
- Final Reading = 7980 µS/cm
- Temperature = 25.1061 C
- Kcell = 0.328143

---

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RDO Calibration Report

Device Serial Number 48192
Sensor Serial Number 142807
Sensor Mfg Date 3/19/09
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-04-30
Time 063854
Last Cal: 4/30/10
Sensor Firmware Ver 10
Cap Serial Number 158193
Cap Mfg Date 2/25/10
Cap Expiration Date 4/1/11
Saturation Point: NEW CALIBRATION VALUES

- 7.56 mg/l
- 25.11 °C
- 977.65 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.07 mg/l
- 25.17 °C

Calibration slope 1.06 (mg/l) / (mg/l)
Calibration offset -0.08 mg/l

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PH Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-30
Time 063313
Last Cal: 4/30/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = 1.38164 mV
- Final Reading = 7.00 pH
- Temperature = 25.5737 C
- Slope = -59.2738 mV/pH
- Offset = 416.298 mV

ORP Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-30
Time 063313
Last Cal: 4/30/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 222.939 mV
- Response = 146.612 mV

- Final Reading = 222.939 mV
- Temperature = 25.5737 C
- Offset = -76.3269 mV

Cond Calibration Report

Device Serial Number 48192
Sensor Serial Number LC05502
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-30
Time 063313
Last Cal: 4/30/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 40.921 ohms
- Final Reading = 7980 µS/cm
- Temperature = 25.5737 C
- Kcell = 0.330403

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RDO Calibration Report

Device Serial Number 48192
Sensor Serial Number 142807
Sensor Mfg Date 3/19/09
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-04-29
Time 063445
Last Cal: 4/29/10
Sensor Firmware Ver 10
Cap Serial Number 158193
Cap Mfg Date 2/25/10
Cap Expiration Date 4/1/11
Saturation Point: NEW CALIBRATION VALUES

- 7.81 mg/l
- 23.71 °C
- 985.01 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.02 mg/l
- 25.36 °C

Calibration slope 1.05 (mg/l) / (mg/l)
Calibration offset -0.02 mg/l

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PH Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-29
Time 062635
Last Cal: 4/29/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = 1.33845 mV
- Final Reading = 7.00 pH
- Temperature = 25.12 C
- Slope = -59.1838 mV/pH
- Offset = 415.625 mV

ORP Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-29
Time 062635
Last Cal: 4/29/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 223.638 mV
- Response = 165.341 mV

- Final Reading = 223.638 mV
- Temperature = 25.12 C
- Offset = -58.2963 mV

Cond Calibration Report

Device Serial Number 48192
Sensor Serial Number LC05502
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-29
Time 062635
Last Cal: 4/29/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 40.9177 ohms
- Final Reading = 7980 µS/cm
- Temperature = 25.12 C
- Kcell = 0.327329

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RDO Calibration Report

Device Serial Number 48192
Sensor Serial Number 142807
Sensor Mfg Date 3/19/09
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-04-28
Time 061527
Last Cal: 4/28/10
Sensor Firmware Ver 10
Cap Serial Number 158193
Cap Mfg Date 2/25/10
Cap Expiration Date 4/1/11
Saturation Point: NEW CALIBRATION VALUES

- 7.99 mg/l
- 24.16 °C
- 991.59 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.01 mg/l
- 25.15 °C

Calibration slope 1.03 (mg/l) / (mg/l)
Calibration offset -0.01 mg/l

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PH Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-28
Time 060514
Last Cal: 4/28/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = 2.40825 mV
- Final Reading = 7.00 pH
- Temperature = 25.2516 C
- Slope = -59.2099 mV/pH
- Offset = 416.878 mV

ORP Calibration Report

Device Serial Number 48192
Sensor Serial Number PP10660
Sensor Mfg Date 9/24/07
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-28
Time 060514
Last Cal: 4/28/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 223.435 mV
- Response = 187.674 mV

- Final Reading = 223.435 mV
- Temperature = 25.2516 C
- Offset = -35.7611 mV

Cond Calibration Report

Device Serial Number 48192
Sensor Serial Number LC05502
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-28
Time 060514
Last Cal: 4/28/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 40.9508 ohms
- Final Reading = 7980 µS/cm
- Temperature = 25.2516 C
- Kcell = 0.328477

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RDO Calibration Report

Device Serial Number 48192
Sensor Serial Number 142807
Sensor Mfg Date 3/19/09
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-04-27
Time 072741
Last Cal: 4/27/10
Sensor Firmware Ver 10
Cap Serial Number 158193
Cap Mfg Date 2/25/10
Cap Expiration Date 4/1/11
Saturation Point: NEW CALIBRATION VALUES

- 9.01 mg/l
- 17.23 °C
- 984.22 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.01 mg/l
- 22.77 °C

Calibration slope 1.04 (mg/l) / (mg/l)
Calibration offset -0.01 mg/l

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PH Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-26
Time 091855
Last Cal: 4/26/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = 14.3755 mV
- Final Reading = 7.00 pH
- Temperature = 17.414 C
- Slope = -57.6548 mV/pH
- Offset = 417.959 mV

ORP Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-26
Time 091855
Last Cal: 4/26/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 235.511 mV
- Response = 226.074 mV

- Final Reading = 235.511 mV
- Temperature = 17.414 C
- Offset = -9.43681 mV

Cond Calibration Report

Device Serial Number 48304
Sensor Serial Number LC05521
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-26
Time 091855
Last Cal: 4/26/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 48.9864 ohms
- Final Reading = 7980 µS/cm
- Temperature = 17.414 C
- Kcell = 0.331491

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PH Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-27
Time 065139
Last Cal: 4/27/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -6.14477 mV
- Final Reading = 7.00 pH
- Temperature = 27.8135 C
- Slope = -59.7183 mV/pH
- Offset = 411.883 mV

ORP Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-27
Time 065139
Last Cal: 4/27/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 219.488 mV
- Response = 208.582 mV

- Final Reading = 219.488 mV
- Temperature = 27.8135 C
- Offset = -10.9054 mV

Cond Calibration Report

Device Serial Number 48304
Sensor Serial Number LC05521
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-27
Time 065139
Last Cal: 4/27/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 65.6603 ohms
- Final Reading = 7980 µS/cm
- Temperature = 27.8135 C
- Kcell = 0.55446

---

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RDO Calibration Report

Device Serial Number 48304
Sensor Serial Number 139512
Sensor Mfg Date 12/4/08
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-05-02
Time 200508
Last Cal: 5/2/10
Sensor Firmware Ver 10
Cap Serial Number 150955
Cap Mfg Date 10/22/09
Cap Expiration Date 1/30/11
Saturation Point: NEW CALIBRATION VALUES

- 7.54 mg/l
- 23.98 °C
- 983.30 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.05 mg/l
- 23.83 °C

Calibration slope 1.09 (mg/l) / (mg/l)
Calibration offset -0.06 mg/l

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PH Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-05-04
Time 065822
Last Cal: 5/4/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -4.53958 mV
- Final Reading = 7.00 pH
- Temperature = 23.2753 C
- Slope = -58.8178 mV/pH
- Offset = 407.185 mV

ORP Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-05-04
Time 065822
Last Cal: 5/4/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 226.48 mV
- Response = 205.086 mV

- Final Reading = 226.48 mV
- Temperature = 23.2753 C
- Offset = -21.3937 mV

Cond Calibration Report

Device Serial Number 48304
Sensor Serial Number LC05521
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-05-04
Time 065823
Last Cal: 5/4/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 43.4281 ohms
- Final Reading = 7980 µS/cm
- Temperature = 23.2753 C
- Kcell = 0.33434

---

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PH Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-30
Time 062537
Last Cal: 4/30/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -4.93558 mV
- Final Reading = 7.00 pH
- Temperature = 25.4265 C
- Slope = -59.2446 mV/pH
- Offset = 409.777 mV

ORP Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-30
Time 062537
Last Cal: 4/30/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 223.166 mV
- Response = 205.232 mV

- Final Reading = 223.166 mV
- Temperature = 25.4265 C
- Offset = -17.9335 mV

Cond Calibration Report

Device Serial Number 48304
Sensor Serial Number LC05521
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-30
Time 062538
Last Cal: 4/30/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 41.5199 ohms
- Final Reading = 7980 µS/cm
- Temperature = 25.4265 C
- Kcell = 0.334235

---

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RDO Calibration Report

Device Serial Number 48304
Sensor Serial Number 139512
Sensor Mfg Date 12/4/08
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-04-26
Time 092833
Last Cal: 4/26/10
Sensor Firmware Ver 10
Cap Serial Number 150955
Cap Mfg Date 10/22/09
Cap Expiration Date 1/30/11
Saturation Point: NEW CALIBRATION VALUES

- 9.30 mg/l
- 15.33 °C
- 985.48 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.06 mg/l
- 17.28 °C

Calibration slope 1.05 (mg/l) / (mg/l)
Calibration offset -0.06 mg/l

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RDO Calibration Report

Device Serial Number 48304
Sensor Serial Number 139512
Sensor Mfg Date 12/4/08
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-05-04
Time 070630
Last Cal: 5/4/10
Sensor Firmware Ver 10
Cap Serial Number 150955
Cap Mfg Date 10/22/09
Cap Expiration Date 1/30/11
Saturation Point: NEW CALIBRATION VALUES

- 8.07 mg/l
- 21.92 °C
- 991.36 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.09 mg/l
- 22.83 °C

Calibration slope 1.07 (mg/l) / (mg/l)
Calibration offset -0.10 mg/l

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PH Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-05-02
Time 195047
Last Cal: 5/2/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -5.84735 mV
- Final Reading = 7.00 pH
- Temperature = 24.9151 C
- Slope = -59.1432 mV/pH
- Offset = 408.155 mV

ORP Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-05-02
Time 195048
Last Cal: 5/2/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 223.953 mV
- Response = 205.395 mV

- Final Reading = 223.953 mV
- Temperature = 24.9151 C
- Offset = -18.5581 mV

Cond Calibration Report

Device Serial Number 48304
Sensor Serial Number LC05521
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-05-02
Time 195048
Last Cal: 5/2/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 41.7999 ohms
- Final Reading = 7980 µS/cm
- Temperature = 24.9151 C
- Kcell = 0.332982

---

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PH Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-28
Time 061243
Last Cal: 4/28/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -1.23826 mV
- Final Reading = 7.00 pH
- Temperature = 25.0677 C
- Slope = -59.1734 mV/pH
- Offset = 412.976 mV

ORP Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-28
Time 061243
Last Cal: 4/28/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 223.718 mV
- Response = 209.915 mV

- Final Reading = 223.718 mV
- Temperature = 25.0677 C
- Offset = -13.8038 mV

Cond Calibration Report

Device Serial Number 48304
Sensor Serial Number LC05521
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-28
Time 061243
Last Cal: 4/28/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 41.7145 ohms
- Final Reading = 7980 µS/cm
- Temperature = 25.0677 C
- Kcell = 0.333345

---

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RDO Calibration Report

Device Serial Number 48304
Sensor Serial Number 139512
Sensor Mfg Date 12/4/08
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-04-29
Time 060854
Last Cal: 4/29/10
Sensor Firmware Ver 10
Cap Serial Number 150955
Cap Mfg Date 10/22/09
Cap Expiration Date 1/30/11
Saturation Point: NEW CALIBRATION VALUES

- 7.75 mg/l
- 23.70 °C
- 984.61 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.13 mg/l
- 23.71 °C

Calibration slope 1.08 (mg/l) / (mg/l)
Calibration offset -0.14 mg/l

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RDO Calibration Report

Device Serial Number 48304
Sensor Serial Number 139512
Sensor Mfg Date 12/4/08
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-04-30
Time 063238
Last Cal: 4/30/10
Sensor Firmware Ver 10
Cap Serial Number 150955
Cap Mfg Date 10/22/09
Cap Expiration Date 1/30/11
Saturation Point: NEW CALIBRATION VALUES

- 6.81 mg/l
- 25.11 °C
- 977.04 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.06 mg/l
- 25.27 °C

Calibration slope 1.18 (mg/l) / (mg/l)
Calibration offset -0.07 mg/l

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RDO Calibration Report

Device Serial Number 48304
Sensor Serial Number 139512
Sensor Mfg Date 12/4/08
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-04-28
Time 060747
Last Cal: 4/28/10
Sensor Firmware Ver 10
Cap Serial Number 150955
Cap Mfg Date 10/22/09
Cap Expiration Date 1/30/11
Saturation Point: NEW CALIBRATION VALUES

- 7.75 mg/l
- 24.06 °C
- 991.03 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.04 mg/l
- 25.07 °C

Calibration slope 1.07 (mg/l) / (mg/l)
Calibration offset -0.04 mg/l

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PH Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-29
Time 055953
Last Cal: 4/29/10
Cal Points: 1
Point 1:

-
- Stimulus = 7.00 pH
- Response = -3.38874 mV
- Final Reading = 7.00 pH
- Temperature = 25.3648 C
- Slope = -59.2324 mV/pH
- Offset = 411.238 mV

ORP Calibration Report

Device Serial Number 48304
Sensor Serial Number PP11219
Sensor Mfg Date 5/13/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-29
Time 055953
Last Cal: 4/29/10
Cal Points: 1
Cal Type: Quick Cal Solution pH7
Point 1:

- Quick Cal Solution pH7
- Stimulus = 223.261 mV
- Response = 207.826 mV

- Final Reading = 223.261 mV
- Temperature = 25.3648 C
- Offset = -15.4345 mV

Cond Calibration Report

Device Serial Number 48304
Sensor Serial Number LC05521
Sensor Type Conductivity, Low Range
Sensor Mfg Date 3/6/08
Method Quick Cal
Action COMPLETED
Status Point 1 STABLE
Date 2010-04-29
Time 055953
Last Cal: 4/29/10
Cal Points:

- 1
- Custom Cal Solution
- Stimulus = 7980 µS/cm
- Response = 41.2153 ohms
- Final Reading = 7980 µS/cm
- Temperature = 25.3648 C
- Kcell = 0.331364

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RDO Calibration Report

Device Serial Number 48304
Sensor Serial Number 139512
Sensor Mfg Date 12/4/08
Method Traditional
Action COMPLETED
Status Point 1 STABLE
Status Point 2 STABLE
Date 2010-04-27
Time 070016
Last Cal: 4/27/10
Sensor Firmware Ver 10
Cap Serial Number 150955
Cap Mfg Date 10/22/09
Cap Expiration Date 1/30/11
Saturation Point: NEW CALIBRATION VALUES

- 9.26 mg/l
- 15.43 °C
- 983.71 mbar

Zero Point: NEW CALIBRATION VALUES

- 0.06 mg/l
- 24.09 °C

Calibration slope 1.05 (mg/l) / (mg/l)
Calibration offset -0.06 mg/l

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APPENDIX
B

APPENDIX B
FIELD SAMPLING FORMS

In-Situ Inc.

Troll 9000
4/27/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	20 [ft]
		Pump placement from TOC	14.9 [ft]

Well Information:		**Pumping information:**	
Well ID	B4MW-9	Final pumping rate	100 [mL/min]
Well diameter	2 [in]	Flowcell volume	689.27 [mL]
Well total depth	19.8 [ft]	Calculated Sample Rate	414 [sec]
Depth to top of screen	10 [ft]	Sample rate	414 [sec]
Screen length	118 [in]	Stabilized drawdown	0 [in]
Depth to Water	8.84 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	19:21:30	59.80	6.18	5673.55	16.50	0.58	207.00
	19:28:39	58.46	6.17	5618.19	14.30	0.31	214.38
	19:35:49	57.82	6.14	5580.82	11.00	0.19	221.36
	19:42:58	57.42	6.12	5560.48	11.90	0.13	227.67
	19:50:08	57.21	6.10	5548.55	13.34	0.10	232.90
Variance in last 3 readings	19:35:49	-0.64	-0.03	-37.37	-3.30	-0.12	6.98
	19:42:58	-0.40	-0.02	-20.34	0.90	-0.06	6.31
	19:50:08	-0.21	-0.02	-11.93	1.44	-0.03	5.23

Notes:

Sample Time:1955
Purged water volume:2.25 gal
Ran out of CO2 at 1828
Resumed purging at 1912
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at B4MW-9
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/27/2010	5:55:37 PM	0	60.37	0	29.337	73.5	3.323	169	6.38	0.73	7.6577	5606.45
4/27/2010	6:02:47 PM	430	59.88	-0.052	29.338	32.4	3.352	171	6.43	0.52	5.4792	5554.84
4/27/2010	6:09:55 PM	858	60.3	-0.185	29.337	20.5	3.323	173	6.44	0.45	4.7648	5549.49
4/27/2010	6:17:05 PM	1288	60.51	-0.167	29.337	15.1	3.352	174	6.43	0.43	4.5467	5572.69
4/27/2010	6:24:14 PM	1717	60.15	-0.632	29.338	14.3	3.323	180	6.34	0.4	4.176	5598.06
4/27/2010	6:31:24 PM	2147	61.04	1.523	29.339	13.3	3.352	189	6.24	0.34	3.6504	5672.51
4/27/2010	6:38:33 PM	2576	63	1.678	29.34	11.3	3.323	190	6.22	0.39	4.2082	5827.26
4/27/2010	6:45:43 PM	3006	64.45	1.691	29.343	10	3.323	191	6.21	0.39	4.2965	5939.85
4/27/2010	6:52:52 PM	3435	64.79	1.695	29.349	11.5	3.352	192	6.21	0.39	4.2753	5973.19
4/27/2010	7:00:02 PM	3865	64.98	1.74	29.353	11	3.323	193	6.21	0.38	4.1817	5987.59
4/27/2010	7:07:11 PM	4294	65.1	1.742	29.355	12.3	3.323	194	6.21	0.37	4.131	6006.62
4/27/2010	7:14:22 PM	4725	62.9	-0.713	29.356	13.9	3.323	198	6.2	0.63	6.8656	5868.59
4/27/2010	7:21:30 PM	5153	59.8	-0.168	29.356	16.5	3.323	207	6.18	0.58	6.0172	5673.55
4/27/2010	7:28:39 PM	5582	58.46	-0.203	29.356	14.3	3.352	214	6.17	0.31	3.169	5618.19
4/27/2010	7:35:49 PM	6012	57.82	-0.426	29.354	11	3.352	221	6.14	0.19	1.9543	5580.82
4/27/2010	7:42:58 PM	6441	57.42	-0.679	29.354	11.9	3.323	228	6.12	0.13	1.3567	5560.48
4/27/2010	7:50:08 PM	6871	57.21	-1.06	29.354	13.3	3.323	233	6.1	0.1	1.0386	5548.55

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/27/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	13 [ft]
		Pump placement from TOC	10 [ft]

Well Information:		**Pumping information:**	
Well ID	B4MW-10	Final pumping rate	125 [mL/min]
Well diameter	2 [in]	Flowcell volume	658.02 [mL]
Well total depth	12 [ft]	Calculated Sample Rate	316 [sec]
Depth to top of screen	2 [ft]	Sample rate	316 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	8.86 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	18:37:02	58.75	7.30	2313.31	36.04	3.94	71.19
	18:42:29	58.50	7.27	2297.74	23.00	3.46	70.44
	18:47:57	58.41	7.24	2289.29	17.78	2.98	70.17
	18:53:24	58.47	7.21	2289.62	11.44	2.74	70.11
	18:58:51	58.52	7.18	2288.68	14.02	2.53	69.93
Variance in last 3 readings	18:47:57	-0.09	-0.04	-8.45	-5.22	-0.48	-0.27
	18:53:24	0.06	-0.03	0.33	-6.34	-0.25	-0.06
	18:58:51	0.05	-0.03	-0.94	2.58	-0.20	-0.18

Notes:

Sample Time:
Purged water volume:1.5 gal
stopped pumping as the water level dropped. pumped the well dry with peristaltic pump.

4/28/10: Bladder pump intake set at 10.5 ft
DTW: 9.22', with pump (9.13')
Sampled at 9:45 AM

Table A
Low Flow Purging Data at B4MW-10
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/27/2010	6:20:38 PM	0	60.18	0	29.367	66.8	2.794	85	7.3	4.62	47.7764	2372.19
4/27/2010	6:26:05 PM	327	59.38	-1.362	29.366	32.1	2.794	77	7.32	4.15	42.5547	2343.32
4/27/2010	6:31:33 PM	655	59.05	-0.32	29.364	30	2.794	73	7.32	3.98	40.6381	2326.46
4/27/2010	6:37:02 PM	984	58.75	-3.648	29.365	36	2.794	71	7.3	3.94	40.0647	2313.31
4/27/2010	6:42:29 PM	1311	58.5	0.995	29.365	23	2.794	70	7.27	3.46	35.0756	2297.74
4/27/2010	6:47:57 PM	1639	58.41	0.925	29.369	17.8	2.794	70	7.24	2.98	30.2207	2289.29
4/27/2010	6:53:24 PM	1966	58.47	0.375	29.371	11.4	2.794	70	7.21	2.74	27.7405	2289.62
4/27/2010	6:58:51 PM	2293	58.52	0.273	29.373	14	2.794	70	7.18	2.53	25.6957	2288.68

In-Situ Inc.

Troll 9000
4/27/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	16 [ft]
		Pump placement from TOC	13.2 [ft]

Well Information:		**Pumping information:**	
Well ID	B25MW1	Final pumping rate	150 [mL/min]
Well diameter	2 [in]	Flowcell volume	671.42 [mL]
Well total depth	15.7 [ft]	Calculated Sample Rate	269 [sec]
Depth to top of screen	10.7 [ft]	Sample rate	269 [sec]
Screen length	60 [in]	Stabilized drawdown	0 [in]
Depth to Water	8.67 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	15:48:45	61.10	7.25	416.77	6.74	5.59	53.79
	15:53:25	61.06	7.23	421.97	4.79	5.36	52.94
	15:58:04	60.72	7.22	424.06	4.10	5.06	52.40
	16:02:41	60.89	7.20	431.66	2.79	4.79	51.75
	16:07:21	61.09	7.19	439.13	2.80	4.59	51.03
Variance in last 3 readings	15:58:04	-0.34	-0.01	2.09	-0.69	-0.30	-0.54
	16:02:41	0.17	-0.02	7.60	-1.31	-0.27	-0.65
	16:07:21	0.20	-0.01	7.47	0.01	-0.20	-0.72

Notes:

Sample Time:1607
Purged water volume:2.25 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at B25MW1
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/27/2010	3:06:56 PM	0	62.82	0	29.325	120.2	2.823	93	7.32	6.22	65.9608	667.07
4/27/2010	3:11:35 PM	279	61.82	0.061	29.322	89.7	2.823	82	7.22	6.02	63.1602	740.5
4/27/2010	3:16:13 PM	557	61.33	-0.448	29.319	42.1	2.794	70	7.27	6.4	66.6918	573.87
4/27/2010	3:20:53 PM	837	61.58	-0.604	29.313	23.5	2.823	64	7.3	6.68	69.8362	481.51
4/27/2010	3:25:32 PM	1116	60.96	-0.271	29.313	14.8	2.823	60	7.31	6.75	70.0456	439.82
4/27/2010	3:30:10 PM	1394	60.38	-0.411	29.315	11.6	2.852	58	7.3	6.54	67.4011	420.17
4/27/2010	3:34:49 PM	1673	60.64	-0.535	29.316	8.7	2.823	57	7.29	6.38	65.9691	414.5
4/27/2010	3:39:27 PM	1951	60.84	-0.025	29.317	8.3	2.794	56	7.28	6.14	63.619	413.63
4/27/2010	3:44:07 PM	2231	60.85	-0.645	29.318	5.4	2.852	55	7.26	5.81	60.1764	413.33
4/27/2010	3:48:45 PM	2509	61.1	-0.257	29.321	6.7	2.852	54	7.25	5.59	58.1399	416.77
4/27/2010	3:53:25 PM	2789	61.06	-0.242	29.318	4.8	2.823	53	7.23	5.36	55.7397	421.97
4/27/2010	3:58:04 PM	3068	60.72	-0.457	29.315	4.1	2.852	52	7.22	5.06	52.4208	424.06
4/27/2010	4:02:41 PM	3345	60.89	-0.31	29.317	2.8	2.852	52	7.2	4.79	49.7081	431.66
4/27/2010	4:07:21 PM	3625	61.09	-0.333	29.317	2.8	2.852	51	7.19	4.59	47.7536	439.13

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/29/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	12 [ft]
		Pump placement from TOC	8 [ft]

Well Information:		**Pumping information:**	
Well ID	B28MW3	Final pumping rate	150 [mL/min]
Well diameter	2 [in]	Flowcell volume	653.56 [mL]
Well total depth	12 [ft]	Calculated Sample Rate	262 [sec]
Depth to top of screen	2 [ft]	Sample rate	262 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	4.33 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	8:29:45	58.27	6.95	2309.91	6.00	0.04	-113.00
	8:34:17	58.30	6.96	2317.90	5.80	0.03	-114.00
	8:38:49	58.35	6.96	2322.24	1.90	0.01	-114.00
	8:43:20	58.41	6.96	2326.81	1.80	0.00	-114.00
	8:47:52	58.43	6.96	2330.32	1.20	-0.01	-114.00
Variance in last 3 readings	8:38:49	0.05	0.00	4.34	-3.90	-0.02	0.00
	8:43:20	0.06	0.00	4.57	-0.10	-0.01	0.00
	8:47:52	0.02	0.00	3.51	-0.60	-0.01	0.00

Notes:
Sample Time:0850
Purged water volume:1.5 gal
Water quality parameters stabilized

Table A
Low Flow Purging Data at B28MW3
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/29/2010	8:16:11 AM	0	58.15	0	29.163	23.4	3.235	-108	6.89	0.09	0.9655	2322.52
4/29/2010	8:20:42 AM	271	58.16	-0.339	29.16	23.3	3.235	-110	6.92	0.07	0.7267	2312.8
4/29/2010	8:25:14 AM	543	58.25	0.057	29.157	14.1	3.235	-112	6.94	0.06	0.6335	2310.75
4/29/2010	8:29:45 AM	814	58.27	-3.409	29.159	6	3.205	-113	6.95	0.04	0.3773	2309.91
4/29/2010	8:34:17 AM	1086	58.3	0.393	29.157	5.8	3.205	-114	6.96	0.03	0.2577	2317.9
4/29/2010	8:38:49 AM	1358	58.35	0.893	29.15	1.9	3.147	-114	6.96	0.01	0.1124	2322.24
4/29/2010	8:43:20 AM	1629	58.41	-0.073	29.155	1.8	3.235	-114	6.96	0	0.0183	2326.81
4/29/2010	8:47:52 AM	1901	58.43	-0.792	29.144	1.2	3.205	-114	6.96	-0.01	-0.1359	2330.32

In-Situ Inc.

Troll 9000
4/28/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	20.5 [ft]
		Pump placement from TOC	12.75 [ft]

Well Information:		**Pumping information:**	
Well ID	B28MW4	Final pumping rate	135 [mL/min]
Well diameter	2 [in]	Flowcell volume	691.5 [mL]
Well total depth	20.5 [ft]	Calculated Sample Rate	308 [sec]
Depth to top of screen	5.5 [ft]	Sample rate	308 [sec]
Screen length	180 [in]	Stabilized drawdown	0 [in]
Depth to Water	4.92 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	15:49:09	64.75	6.83	881.92	127.40	0.12	-120.00
	15:54:29	65.90	6.82	891.61	181.60	0.11	-120.00
	15:59:48	65.97	6.82	891.85	228.70	0.10	-120.00
	16:05:08	64.98	6.83	883.08	252.40	0.09	-120.00
	16:10:27	64.55	6.83	877.17	525.80	0.09	-120.00
Variance in last 3 readings	15:59:48	0.07	0.00	0.24	47.10	-0.01	0.00
	16:05:08	-0.99	0.01	-8.77	23.70	-0.01	0.00
	16:10:27	-0.43	0.00	-5.91	273.40	0.00	0.00

Notes:
Sample Time:1615
Purged water volume:2.25 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at B28MW4
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/28/2010	3:11:54 PM	0	64.85	0	29.347	43.7	3.323	-116	6.81	0.46	5.0332	869.18
4/28/2010	3:17:12 PM	318	63.56	1.554	29.344	31.2	3.323	-119	6.82	0.27	2.9026	861.05
4/28/2010	3:22:31 PM	637	63.39	1.702	29.343	24.8	3.323	-120	6.84	0.19	2.0455	859.08
4/28/2010	3:27:51 PM	957	63.99	-0.202	29.341	21.9	3.352	-121	6.84	0.17	1.8341	866.04
4/28/2010	3:33:10 PM	1276	64.22	1.943	29.34	23.6	3.352	-120	6.84	0.16	1.7394	868.46
4/28/2010	3:38:31 PM	1597	64.53	1.83	29.336	61	3.352	-120	6.84	0.15	1.5822	874.01
4/28/2010	3:43:50 PM	1916	64.81	-0.28	29.33	124.9	3.352	-120	6.83	0.14	1.4873	880.78
4/28/2010	3:49:09 PM	2235	64.75	1.964	29.329	127.4	3.352	-120	6.83	0.12	1.3497	881.92
4/28/2010	3:54:29 PM	2555	65.9	1.704	29.325	181.6	3.352	-120	6.82	0.11	1.2383	891.61
4/28/2010	3:59:48 PM	2874	65.97	-0.381	29.319	228.7	3.352	-120	6.82	0.1	1.1009	891.85
4/28/2010	4:05:08 PM	3194	64.98	1.461	29.319	252.4	3.352	-120	6.83	0.09	1.0338	883.08
4/28/2010	4:10:27 PM	3513	64.55	1.473	29.317	525.8	3.352	-120	6.83	0.09	0.9379	877.17

In-Situ Inc.

Troll 9000
4/28/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	12 [ft]
		Pump placement from TOC	8 [ft]

Well Information:		**Pumping information:**	
Well ID	B41MW-5	Final pumping rate	150 [mL/min]
Well diameter	2 [in]	Flowcell volume	653.56 [mL]
Well total depth	12 [ft]	Calculated Sample Rate	262 [sec]
Depth to top of screen	2 [ft]	Sample rate	262 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	3.11 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	8:43:10	61.11	6.97	1015.90	1.50	0.46	68.00
	8:47:42	61.65	6.84	1018.66	1.80	0.33	70.00
	8:52:13	61.95	6.74	1021.13	1.60	0.26	73.00
	8:56:45	62.00	6.70	1021.11	1.10	0.22	73.00
	9:01:16	61.97	6.70	1020.79	1.10	0.19	72.00
Variance in last 3 readings	8:52:13	0.30	-0.10	2.47	-0.20	-0.07	3.00
	8:56:45	0.05	-0.04	-0.02	-0.50	-0.04	0.00
	9:01:16	-0.03	0.00	-0.32	0.00	-0.03	-1.00

Notes:

Sample Time:0910
Purged water volume:1.25 gal
Small dia Geotech pump 0.67 dia due to kinked casing
Water quality parameters stabilized

Table A
Low Flow Purging Data at B41MW-5
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/28/2010	8:43:10 AM	0	61.11	0	29.455	1.5	2.794	68	6.97	0.46	4.7708	1015.9
4/28/2010	8:47:42 AM	272	61.65	0.713	29.455	1.8	2.794	70	6.84	0.33	3.3996	1018.66
4/28/2010	8:52:13 AM	543	61.95	-0.326	29.454	1.6	2.794	73	6.74	0.26	2.761	1021.13
4/28/2010	8:56:45 AM	815	62	0.32	29.453	1.1	2.794	73	6.7	0.22	2.3494	1021.11
4/28/2010	9:01:16 AM	1086	61.97	1.425	29.453	1.1	2.794	72	6.7	0.19	2.0409	1020.79

In-Situ Inc.

Troll 9000
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Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	13 [ft]
		Pump placement from TOC	7 [ft]

Well Information:		**Pumping information:**	
Well ID	B41MW-18	Final pumping rate	125 [mL/min]
Well diameter	2 [in]	Flowcell volume	658.02 [mL]
Well total depth	12 [ft]	Calculated Sample Rate	316 [sec]
Depth to top of screen	2 [ft]	Sample rate	316 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	3.85 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	8:21:09	60.74	7.19	716.54	11.08	1.09	86.93
	8:26:37	61.35	7.19	719.72	7.05	1.02	83.99
	8:32:05	61.86	7.18	724.47	6.18	0.98	80.75
	8:37:31	61.51	7.19	726.02	5.91	1.04	78.07
	8:42:59	61.62	7.19	724.78	6.41	1.07	74.90
Variance in last 3 readings	8:32:05	0.51	0.00	4.75	-0.87	-0.04	-3.24
	8:37:31	-0.35	0.00	1.55	-0.27	0.06	-2.68
	8:42:59	0.11	0.00	-1.24	0.50	0.03	-3.17

Notes:
Sample Time:845
Purged water volume:1.5 gal
Water quality parameters stabilized

Table A
Low Flow Purging Data at B41MW-18
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/28/2010	8:04:46 AM	0	60.87	0	29.425	45.3	3.323	84	7.14	1.01	10.4065	723.72
4/28/2010	8:10:13 AM	327	60.23	-0.193	29.425	26.1	3.323	88	7.18	1.22	12.4803	716.87
4/28/2010	8:15:42 AM	656	60.73	-3.319	29.424	16.4	3.323	89	7.18	1.24	12.7627	714.15
4/28/2010	8:21:09 AM	983	60.74	-0.211	29.422	11.1	3.294	87	7.19	1.09	11.2832	716.54
4/28/2010	8:26:37 AM	1311	61.35	-0.076	29.423	7	3.323	84	7.19	1.02	10.5964	719.72
4/28/2010	8:32:05 AM	1639	61.86	-0.023	29.423	6.2	3.323	81	7.18	0.98	10.2212	724.47
4/28/2010	8:37:31 AM	1965	61.51	-0.077	29.424	5.9	3.323	78	7.19	1.04	10.8088	726.02
4/28/2010	8:42:59 AM	2293	61.62	-3.469	29.426	6.4	3.294	75	7.19	1.07	11.1637	724.78

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/28/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	66 [ft]
		Pump placement from TOC	61 [ft]

Well Information:		**Pumping information:**	
Well ID	B41S5D	Final pumping rate	50 [mL/min]
Well diameter	0.75 [in]	Flowcell volume	894.59 [mL]
Well total depth	66 [ft]	Calculated Sample Rate	1074 [sec]
Depth to top of screen	56 [ft]	Sample rate	1074 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	4.6 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	11:21:10	70.98	6.53	949.04	84.64	3.96	47.10
	11:39:44	71.01	6.52	941.03	172.07	4.42	39.58
Variance in last 3 readings	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	11:21:10	70.98	6.53	949.04	84.64	3.96	47.10
	11:39:44	0.03	-0.01	-8.01	87.43	0.46	-7.52

Notes: Sample Time:1145
Purged water volume:0.75 gal
sampled before dewatering well.

Table A
Low Flow Purging Data at B41S5D
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/28/2010	11:21:10 AM	0	70.98	0	29.442	84.6	2.823	47	6.53	3.96	45.9338	949.04
4/28/2010	11:39:44 AM	1114	71.01	-0.001	29.437	172.1	2.823	40	6.52	4.42	51.2872	941.03

In-Situ Inc.

Troll 9000
4/30/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	16 [ft]
		Pump placement from TOC	10 [ft]

Well Information:		**Pumping information:**	
Well ID	B42N6	Final pumping rate	70 [mL/min]
Well diameter	0.5 [in]	Flowcell volume	671.42 [mL]
Well total depth	15 [ft]	Calculated Sample Rate	576 [sec]
Depth to top of screen	5 [ft]	Sample rate	576 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	2.08 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	8:34:51	64.25	6.69	6410.69	37.52	1.51	64.12
	8:44:48	63.78	6.69	6045.70	54.12	1.73	45.58
	8:54:45	63.77	6.71	5998.81	30.09	1.89	34.62
Variance in last 3 readings	8:34:51	64.25	6.69	6410.69	37.52	1.51	64.12
	8:44:48	-0.48	0.00	-364.99	16.60	0.22	-18.54
	8:54:45	-0.01	0.02	-46.89	-24.04	0.16	-10.96

Notes:
Sample Time:0902
Purged water volume:0.5 gal
Sampled as water level was dropping even with a very low flow rate

Table A
Low Flow Purging Data at B42N6
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/30/2010	8:34:51 AM	0	64.25	0	29.076	37.5	2.764	64	6.69	1.51	16.8162	6410.69
4/30/2010	8:44:48 AM	597	63.78	2.088	29.077	54.1	2.764	46	6.69	1.73	19.0864	6045.7
4/30/2010	8:54:45 AM	1194	63.77	-8.086	29.079	30.1	2.764	35	6.71	1.89	20.8879	5998.81

In-Situ Inc.

Troll 9000
4/27/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	20 [ft]
		Pump placement from TOC	15 [ft]

Well Information:		**Pumping information:**	
Well ID	MW1	Final pumping rate	100 [mL/min]
Well diameter	2 [in]	Flowcell volume	689.27 [mL]
Well total depth	20 [ft]	Calculated Sample Rate	414 [sec]
Depth to top of screen	10 [ft]	Sample rate	414 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	7.55 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-0.1 +/-3 %	+/-1 +/-10 %	+/-0.3	+/-10
Last 5 Readings	15:53:23	62.56	6.77	3510.22	11.56	0.21	79.99
	16:00:32	62.50	6.76	3515.97	8.00	0.18	74.35
	16:07:42	62.25	6.76	3508.57	7.59	0.14	69.42
	16:14:50	62.09	6.76	3508.86	6.67	0.12	62.96
	16:22:00	62.10	6.76	3512.18	6.56	0.10	58.16
Variance in last 3 readings	16:07:42	-0.25	0.00	-7.40	-0.41	-0.04	-4.92
	16:14:50	-0.15	0.00	0.29	-0.93	-0.03	-6.47
	16:22:00	0.00	0.00	3.31	-0.11	-0.02	-4.80

Notes:
Sample Time:1625
Purged water volume:2.25 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW1
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/27/2010	3:17:35 PM	0	63.46	0	29.284	61.1	3.382	116	6.72	1.04	11.3031	3532.26
4/27/2010	3:24:45 PM	430	63.38	-0.502	29.279	38.2	3.323	107	6.76	0.69	7.5088	3540.89
4/27/2010	3:31:55 PM	860	63.07	-0.152	29.275	24.8	3.352	99	6.76	0.43	4.6697	3525.24
4/27/2010	3:39:04 PM	1289	62.78	-1.74	29.275	17	3.352	92	6.77	0.32	3.4636	3505.16
4/27/2010	3:46:13 PM	1718	62.52	-1.62	29.281	15.6	3.382	87	6.77	0.25	2.6886	3502.35
4/27/2010	3:53:23 PM	2148	62.56	0.315	29.279	11.6	3.352	80	6.77	0.21	2.2404	3510.22
4/27/2010	4:00:32 PM	2577	62.5	0.073	29.276	8	3.352	74	6.76	0.18	1.9157	3515.97
4/27/2010	4:07:42 PM	3007	62.25	0.023	29.277	7.6	3.352	69	6.76	0.14	1.5157	3508.57
4/27/2010	4:14:50 PM	3435	62.09	-0.211	29.279	6.7	3.352	63	6.76	0.12	1.2446	3508.86
4/27/2010	4:22:00 PM	3865	62.1	-0.379	29.278	6.6	3.352	58	6.76	0.1	1.0658	3512.18

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/29/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	20 [ft]
		Pump placement from TOC	15 [ft]

Well Information:		**Pumping information:**	
Well ID	MW3	Final pumping rate	105 [mL/min]
Well diameter	2 [in]	Flowcell volume	689.27 [mL]
Well total depth	19.7 [ft]	Calculated Sample Rate	394 [sec]
Depth to top of screen	10 [ft]	Sample rate	394 [sec]
Screen length	116.4 [in]	Stabilized drawdown	0 [in]
Depth to Water	5.35 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	9:21:51	64.94	6.59	2817.73	32.40	0.32	43.00
	9:28:40	65.40	6.59	2832.21	34.00	0.30	38.00
	9:35:28	65.30	6.59	2837.42	40.90	0.27	34.00
	9:42:17	65.68	6.59	2856.38	27.20	0.24	30.00
	9:49:06	65.62	6.59	2859.49	20.70	0.22	26.00
Variance in last 3 readings	9:35:28	-0.10	0.00	5.21	6.90	-0.03	-4.00
	9:42:17	0.38	0.00	18.96	-13.70	-0.03	-4.00
	9:49:06	-0.06	0.00	3.11	-6.50	-0.02	-4.00

Notes:
Sample Time:955
Purged water volume:2 gal
Water quality parameters did not stabilize
Also collected samples using SNAP sampler at 0800

Table A
Low Flow Purging Data at MW3
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/29/2010	8:47:48 AM	0	62.49	0	29.178	115.1	2.823	71	6.9	0.03	0.3158	2659.75
4/29/2010	8:54:35 AM	407	63.59	-0.63	29.175	86.7	2.823	69	6.68	0.12	1.2758	2735.99
4/29/2010	9:01:24 AM	816	63.88	0.671	29.171	55.5	2.852	62	6.63	0.34	3.7198	2768.06
4/29/2010	9:08:14 AM	1226	64.32	0.334	29.163	39	2.823	55	6.61	0.38	4.1989	2790.77
4/29/2010	9:15:02 AM	1634	64.72	0.538	29.159	34.8	2.852	49	6.6	0.36	3.9512	2806.15
4/29/2010	9:21:51 AM	2043	64.94	0.441	29.153	32.4	2.852	43	6.59	0.32	3.5825	2817.73
4/29/2010	9:28:40 AM	2452	65.4	0.593	29.146	34	2.852	38	6.59	0.3	3.36	2832.21
4/29/2010	9:35:28 AM	2860	65.3	0.523	29.147	40.9	2.823	34	6.59	0.27	2.9754	2837.42
4/29/2010	9:42:17 AM	3269	65.68	-3.034	29.141	27.2	2.852	30	6.59	0.24	2.662	2856.38
4/29/2010	9:49:06 AM	3678	65.62	0.527	29.141	20.7	2.852	26	6.59	0.22	2.4178	2859.49

In-Situ Inc.

Troll 9000
4/28/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	20 [ft]
		Pump placement from TOC	14.75 [ft]

Well Information:		**Pumping information:**	
Well ID	MW4	Final pumping rate	105 [mL/min]
Well diameter	2 [in]	Flowcell volume	689.27 [mL]
Well total depth	19.5 [ft]	Calculated Sample Rate	394 [sec]
Depth to top of screen	2 [ft]	Sample rate	394 [sec]
Screen length	114 [in]	Stabilized drawdown	0 [in]
Depth to Water	5.1 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	12:01:12	64.18	6.82	4540.75	24.00	0.15	-37.00
	12:08:00	63.62	6.82	4519.75	17.30	0.13	-36.00
	12:14:49	64.19	6.82	4551.64	15.70	0.11	-35.00
	12:21:38	63.79	6.82	4553.83	13.80	0.09	-34.00
	12:28:26	63.76	6.82	4549.47	11.40	0.07	-34.00
Variance in last 3 readings	12:14:49	0.57	0.00	31.89	-1.60	-0.02	1.00
	12:21:38	-0.40	0.00	2.19	-1.90	-0.02	1.00
	12:28:26	-0.03	0.00	-4.36	-2.40	-0.02	0.00

Notes:
Sample Time:1230
Purged water volume:2.75 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW4
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/28/2010	11:27:08 AM	0	64.1	0	29.419	94.8	3.352	-44	6.8	0.39	4.2064	4473.52
4/28/2010	11:33:56 AM	408	64.16	-0.127	29.414	75.7	3.323	-42	6.82	0.31	3.3597	4503.16
4/28/2010	11:40:45 AM	817	64.57	-0.161	29.412	52.4	3.352	-41	6.82	0.26	2.879	4528.61
4/28/2010	11:47:33 AM	1225	64.55	0.072	29.408	41.8	3.323	-39	6.82	0.21	2.3364	4532.11
4/28/2010	11:54:23 AM	1635	64.26	0.148	29.406	34.9	3.352	-38	6.82	0.18	1.9443	4543.46
4/28/2010	12:01:12 PM	2044	64.18	-1.84	29.404	24	3.323	-37	6.82	0.15	1.613	4540.75
4/28/2010	12:08:00 PM	2452	63.62	0.073	29.402	17.3	3.352	-36	6.82	0.13	1.3754	4519.75
4/28/2010	12:14:49 PM	2861	64.19	-2.013	29.401	15.7	3.323	-35	6.82	0.11	1.1737	4551.64
4/28/2010	12:21:38 PM	3270	63.79	-0.171	29.394	13.8	3.352	-34	6.82	0.09	0.9499	4553.83
4/28/2010	12:28:26 PM	3678	63.76	-0.124	29.389	11.4	3.323	-34	6.82	0.07	0.7946	4549.47

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Troll 9000
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Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	18 [ft]
		Pump placement from TOC	13.5 [ft]

Well Information:		**Pumping information:**	
Well ID	MW5CS	Final pumping rate	125 [mL/min]
Well diameter	2 [in]	Flowcell volume	680.34 [mL]
Well total depth	17.64 [ft]	Calculated Sample Rate	327 [sec]
Depth to top of screen	8 [ft]	Sample rate	327 [sec]
Screen length	115.68 [in]	Stabilized drawdown	0 [in]
Depth to Water	10.09 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	13:13:49	15.97	6.68	3133.26	0.29	0.90	87.33
	13:19:28	16.35	6.64	3156.92	-0.04	0.75	84.66
	13:25:06	16.56	6.62	3182.08	-0.04	0.62	82.28
Variance in last 3 readings	13:13:49	15.97	6.68	3133.26	0.29	0.90	87.33
	13:19:28	0.38	-0.03	23.65	-0.33	-0.16	-2.66
	13:25:06	0.21	-0.02	25.17	0.01	-0.13	-2.38

Notes:
Sample Time:1332
Purged water volume:1.25 gal
Water quality parameters stabilized

Table A
Low Flow Purging Data at MW5CS
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/27/2010	1:13:49 PM	0	60.75	0	29.309	0.3	2.823	87	6.68	0.9	9.4532	3133.26
4/27/2010	1:19:28 PM	339	61.44	0.053	29.314	0	2.823	85	6.64	0.75	7.8727	3156.92
4/27/2010	1:25:06 PM	677	61.81	-0.661	29.311	0	2.823	82	6.62	0.62	6.5562	3182.08

In-Situ Inc.

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Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	18 [ft]
		Pump placement from TOC	12.1 [ft]

Well Information:		**Pumping information:**	
Well ID	MW5DS	Final pumping rate	80 [mL/min]
Well diameter	2 [in]	Flowcell volume	680.34 [mL]
Well total depth	17.08 [ft]	Calculated Sample Rate	511 [sec]
Depth to top of screen	7 [ft]	Sample rate	511 [sec]
Screen length	121 [in]	Stabilized drawdown	0 [in]
Depth to Water	7.32 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	13:11:27	61.12	6.64	4081.17	12.56	0.18	123.86
	13:20:16	62.84	6.65	4196.29	12.46	0.19	125.46
	13:29:07	63.72	6.65	4278.94	12.26	0.18	126.31
	13:37:56	64.50	6.64	4320.97	12.96	0.18	127.57
Variance in last 3 readings	13:20:16	1.72	0.01	115.12	-0.10	0.01	1.60
	13:29:07	0.88	0.00	82.65	-0.20	-0.01	0.85
	13:37:56	0.78	-0.01	42.03	0.70	0.00	1.26

Notes:
Sample Time:1341
Purged water volume:1.5 gal
Water quality parameters stabilized

Table A
Low Flow Purging Data at MW5DS
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/27/2010	1:11:27 PM	0	61.12	0	29.289	12.6	3.352	124	6.64	0.18	1.898	4081.17
4/27/2010	1:20:16 PM	529	62.85	-1.532	29.288	12.5	3.352	125	6.65	0.19	2.0091	4196.29
4/27/2010	1:29:07 PM	1060	63.72	-3.092	29.288	12.3	3.352	126	6.65	0.18	1.9202	4278.94
4/27/2010	1:37:56 PM	1589	64.5	-0.949	29.289	13	3.352	128	6.64	0.18	1.9925	4320.97

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Troll 9000
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Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	23 [ft]
		Pump placement from TOC	15.5 [ft]

Well Information:		**Pumping information:**	
Well ID	MW6	Final pumping rate	115 [mL/min]
Well diameter	2 [in]	Flowcell volume	702.66 [mL]
Well total depth	23 [ft]	Calculated Sample Rate	367 [sec]
Depth to top of screen	8 [ft]	Sample rate	367 [sec]
Screen length	180 [in]	Stabilized drawdown	0 [in]
Depth to Water	6.75 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	9:57:19	58.83	6.87	2249.89	24.70	1.36	94.00
	10:03:39	59.10	6.87	2256.90	23.80	1.26	91.00
	10:09:59	59.16	6.88	2253.71	21.40	1.16	89.00
	10:16:21	59.01	6.88	2248.96	18.10	1.11	86.00
	10:22:41	59.12	6.88	2252.69	17.30	1.03	84.00
Variance in last 3 readings	10:09:59	0.06	0.01	-3.19	-2.40	-0.10	-2.00
	10:16:21	-0.15	0.00	-4.75	-3.30	-0.05	-3.00
	10:22:41	0.11	0.00	3.73	-0.80	-0.08	-2.00

Notes:
Sample Time:1025
Purged water volume:2.5 gal
also collected snap samples at 8.45 am

Table A
Low Flow Purging Data at MW6
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/27/2010	9:25:35 AM	0	58.11	0	29.264	71	2.823	110	6.85	2.3	23.2996	2236.2
4/27/2010	9:31:55 AM	380	57.97	-0.187	29.269	56.8	2.823	106	6.86	2.05	20.7639	2230.14
4/27/2010	9:38:17 AM	762	57.95	-0.022	29.274	46.8	2.823	103	6.87	1.87	18.8819	2228.02
4/27/2010	9:44:37 AM	1142	58.14	-2.348	29.277	34.2	2.823	100	6.87	1.64	16.6371	2232.42
4/27/2010	9:50:57 AM	1522	58.46	0.421	29.281	27.6	2.823	97	6.87	1.5	15.2313	2242.46
4/27/2010	9:57:19 AM	1904	58.83	0.234	29.282	24.7	2.823	94	6.87	1.36	13.8436	2249.89
4/27/2010	10:03:39 AM	2284	59.1	-0.391	29.287	23.8	2.852	91	6.87	1.26	12.8536	2256.9
4/27/2010	10:09:59 AM	2664	59.16	0.263	29.288	21.4	2.852	89	6.88	1.16	11.84	2253.71
4/27/2010	10:16:21 AM	3046	59.01	0.21	29.29	18.1	2.823	86	6.88	1.11	11.363	2248.96
4/27/2010	10:22:41 AM	3426	59.12	0.332	29.292	17.3	2.823	84	6.88	1.03	10.5442	2252.69

In-Situ Inc.

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Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	78 [ft]
		Pump placement from TOC	73 [ft]

Well Information:		**Pumping Information:**	
Well ID	MW6D	Final pumping rate	130 [mL/min]
Well diameter	2 [in]	Flowcell volume	948.15 [mL]
Well total depth	78 [ft]	Calculated Sample Rate	438 [sec]
Depth to top of screen	68 [ft]	Sample rate	438 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	10.78 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	10:29:32	63.17	6.62	1278.88	310.90	0.51	46.00
	10:37:05	63.16	6.63	1277.76	267.20	0.46	49.00
	10:44:41	63.02	6.63	1274.60	228.80	0.41	51.00
	10:52:15	63.14	6.62	1274.32	191.40	0.38	53.00
	10:59:49	63.70	6.62	1282.98	161.10	0.35	55.00
Variance in last 3 readings	10:44:41	-0.14	0.00	-3.16	-38.40	-0.05	2.00
	10:52:15	0.12	-0.01	-0.28	-37.40	-0.03	2.00
	10:59:49	0.56	0.00	8.66	-30.30	-0.03	2.00

Notes: Sample Time:1105
Purged water volume:2.25 gal

Table A
Low Flow Purging Data at MW6D
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/27/2010	9:59:15 AM	0	60.4	0	29.261	370.2	3.352	104	6.5	2.66	27.5601	1231.79
4/27/2010	10:06:48 AM	453	61.82	0.63	29.264	397.5	3.352	58	6.59	1.32	13.9453	1256.68
4/27/2010	10:14:24 AM	909	61.92	0.262	29.268	376.8	3.323	45	6.62	0.79	8.3655	1259.52
4/27/2010	10:21:58 AM	1363	62.08	0.521	29.27	365.7	3.352	44	6.63	0.6	6.3324	1262.62
4/27/2010	10:29:32 AM	1817	63.17	0.593	29.273	310.9	3.352	46	6.62	0.51	5.4247	1278.88
4/27/2010	10:37:05 AM	2270	63.16	0.627	29.274	267.2	3.323	49	6.63	0.46	4.9029	1277.76
4/27/2010	10:44:41 AM	2726	63.02	0.681	29.277	228.8	3.352	51	6.63	0.41	4.4018	1274.6
4/27/2010	10:52:15 AM	3180	63.14	0.78	29.278	191.4	3.323	53	6.62	0.38	4.0129	1274.32
4/27/2010	10:59:49 AM	3634	63.7	-0.483	29.281	161.1	3.352	55	6.62	0.35	3.7584	1282.98

In-Situ Inc.

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Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	MBaruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	12 [ft]
		Pump placement from TOC	9.4 [ft]

Well Information:		**Pumping information:**	
Well ID	MW7	Final pumping rate	80 [mL/min]
Well diameter	2 [in]	Flowcell volume	653.56 [mL]
Well total depth	11.9 [ft]	Calculated Sample Rate	491 [sec]
Depth to top of screen	7 [ft]	Sample rate	491 [sec]
Screen length	4.9 [in]	Stabilized drawdown	0 [in]
Depth to Water	3 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	15:37:18	64.96	6.57	1318.18	2.85	0.26	49.08
	15:45:46	65.04	6.46	1283.02	2.09	0.24	52.97
	15:54:16	66.37	6.37	1283.18	2.72	0.20	56.36
	16:02:46	65.59	6.32	1247.47	2.34	0.19	58.86
	16:11:14	64.84	6.21	1220.49	2.09	0.18	64.45
Variance in last 3 readings	15:54:16	1.33	-0.09	0.16	0.63	-0.04	3.39
	16:02:46	-0.78	-0.05	-35.71	-0.38	-0.01	2.50
	16:11:14	-0.75	-0.10	-26.98	-0.25	-0.01	5.58

Notes:
Sample Time:1615
Purged water volume:1.75 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW7
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/28/2010	3:11:50 PM	0	64.73	0	29.363	3.3	2.823	61	6.81	0.68	7.3745	1357.11
4/28/2010	3:20:18 PM	508	64.84	-0.437	29.36	1.9	2.823	48	6.82	0.42	4.5286	1407.96
4/28/2010	3:28:48 PM	1018	64.66	0.709	29.358	2.3	2.823	46	6.7	0.32	3.4352	1357.98
4/28/2010	3:37:18 PM	1528	64.96	-0.504	29.355	2.9	2.823	49	6.57	0.26	2.8708	1318.18
4/28/2010	3:45:46 PM	2036	65.04	-2.563	29.348	2.1	2.823	53	6.46	0.24	2.5994	1283.02
4/28/2010	3:54:16 PM	2546	66.37	0.014	29.345	2.7	2.823	56	6.37	0.2	2.1929	1283.18
4/28/2010	4:02:46 PM	3056	65.59	-1.269	29.337	2.3	2.823	59	6.32	0.19	2.1098	1247.47
4/28/2010	4:11:14 PM	3564	64.84	0.346	29.333	2.1	2.823	64	6.21	0.18	1.9643	1220.49

In-Situ Inc.

Troll 9000
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Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	81 [ft]
		Pump placement from TOC	75.5 [ft]

Well Information:		**Pumping information:**	
Well ID	MW8AD	Final pumping rate	100 [mL/min]
Well diameter	2 [in]	Flowcell volume	961.54 [mL]
Well total depth	80.5 [ft]	Calculated Sample Rate	577 [sec]
Depth to top of screen	70 [ft]	Sample rate	577 [sec]
Screen length	126 [in]	Stabilized drawdown	0 [in]
Depth to Water	8.47 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	17:08:22	60.49	6.73	764.63	1502.50	0.73	76.00
	17:18:21	60.16	6.73	758.91	734.10	0.58	71.00
	17:28:21	60.24	6.72	757.03	342.30	0.47	67.00
	17:38:20	60.14	6.72	756.18	202.80	0.41	64.00
	17:48:17	60.31	6.72	756.86	154.20	0.36	60.00
Variance in last 3 readings	17:28:21	0.08	-0.01	-1.88	-391.80	-0.11	-4.00
	17:38:20	-0.10	0.00	-0.85	-139.50	-0.06	-3.00
	17:48:17	0.17	0.00	0.68	-48.60	-0.05	-4.00

Notes:
Sample Time:1755
Purged water volume:2.25 gal
collected field duplicate DUP-1

Table A
Low Flow Purging Data at MW8AD
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/26/2010	4:48:26 PM	0	61.64	0	29.157	2126.9	2.794	92	6.76	1.83	19.3091	788.4
4/26/2010	4:58:25 PM	599	61.03	-1.12	29.16	2140.6	2.794	82	6.73	1.04	10.8496	773.1
4/26/2010	5:08:22 PM	1196	60.49	-0.211	29.161	1502.5	2.794	76	6.73	0.73	7.6318	764.63
4/26/2010	5:18:21 PM	1795	60.16	-0.134	29.164	734.1	2.794	71	6.73	0.58	6.0463	758.91
4/26/2010	5:28:21 PM	2395	60.24	-0.307	29.164	342.3	2.794	67	6.72	0.47	4.9045	757.03
4/26/2010	5:38:20 PM	2994	60.14	-0.693	29.163	202.8	2.823	64	6.72	0.41	4.2475	756.18
4/26/2010	5:48:17 PM	3591	60.31	-0.663	29.163	154.2	2.794	60	6.72	0.36	3.7079	756.86

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/26/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	17 [ft]
		Pump placement from TOC	13.5 [ft]

Well Information:		**Pumping information:**	
Well ID	MW8AS	Final pumping rate	130 [mL/min]
Well diameter	2 [in]	Flowcell volume	675.88 [mL]
Well total depth	16.5 [ft]	Calculated Sample Rate	312 [sec]
Depth to top of screen	6 [ft]	Sample rate	312 [sec]
Screen length	126 [in]	Stabilized drawdown	0 [in]
Depth to Water	10.42 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	17:19:02	57.53	6.94	2529.56	2.90	1.15	77.00
	17:24:26	57.52	6.92	2532.18	2.90	0.75	73.00
	17:29:49	57.52	6.92	2535.58	2.00	0.53	71.00
	17:35:13	57.45	6.92	2535.92	1.30	0.42	70.00
	17:40:36	57.42	6.92	2534.90	1.70	0.46	70.00
Variance in last 3 readings	17:29:49	0.00	0.00	3.40	-0.90	-0.22	-2.00
	17:35:13	-0.07	0.00	0.34	-0.70	-0.11	-1.00
	17:40:36	-0.03	0.00	-1.02	0.40	0.04	0.00

Notes:

Sample Time:1743
Purged water volume:3 gal
Also collected SNAP samples at 1545
Water quality parameters stabilized

Table A
Low Flow Purging Data at MW8AS
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/26/2010	5:08:15 PM	0	58.03	0	29.142	8.3	3.323	73	6.96	1.58	16.0494	2539.74
4/26/2010	5:13:39 PM	324	57.65	0.908	29.144	6.2	3.323	77	6.95	1.5	15.1848	2531.51
4/26/2010	5:19:02 PM	647	57.53	-2.156	29.143	2.9	3.323	77	6.94	1.15	11.5911	2529.56
4/26/2010	5:24:26 PM	971	57.52	0.206	29.143	2.9	3.294	73	6.92	0.75	7.5342	2532.18
4/26/2010	5:29:49 PM	1294	57.52	1.111	29.142	2	3.294	71	6.92	0.53	5.3972	2535.58
4/26/2010	5:35:13 PM	1618	57.45	0.1	29.145	1.3	3.323	70	6.92	0.42	4.2223	2535.92
4/26/2010	5:40:36 PM	1941	57.42	0.99	29.143	1.7	3.323	70	6.92	0.46	4.6191	2534.9

In-Situ Inc.

Troll 9000
4/29/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	KPickett	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	18 [ft]
		Pump placement from TOC	13 [ft]

Well Information:		**Pumping information:**	
Well ID	MW9S	Final pumping rate	115 [mL/min]
Well diameter	2 [in]	Flowcell volume	680.34 [mL]
Well total depth	18 [ft]	Calculated Sample Rate	355 [sec]
Depth to top of screen	8 [ft]	Sample rate	355 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	6.07 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	10:39:46	62.81	6.74	9313.22	43.90	0.01	-48.00
	10:45:54	63.03	6.75	9283.50	37.90	0.00	-49.00
	10:52:01	62.45	6.76	9214.51	46.00	-0.01	-50.00
	10:58:10	61.82	6.77	9128.84	48.10	-0.02	-51.00
	11:04:17	61.56	6.77	9055.57	67.70	-0.03	-52.00
Variance in last 3 readings	10:52:01	-0.58	0.01	-68.99	8.10	-0.01	-1.00
	10:58:10	-0.63	0.01	-85.67	2.10	-0.01	-1.00
	11:04:17	-0.26	0.00	-73.27	19.60	-0.01	-1.00

Notes:
Sample Time:1108
Purged water volume:2.5 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW9S
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/29/2010	10:02:56 AM	0	63.49	0	29.121	129.8	3.323	-37	6.69	0.62	6.9321	9366.24
4/29/2010	10:09:04 AM	368	62.98	1.744	29.118	93.7	3.352	-39	6.72	0.26	2.8594	9257.35
4/29/2010	10:15:12 AM	736	62.88	1.263	29.113	84.6	3.352	-41	6.74	0.13	1.4431	9278.93
4/29/2010	10:21:21 AM	1105	62.88	0.122	29.107	58.3	3.323	-43	6.75	0.07	0.8107	9268.73
4/29/2010	10:27:29 AM	1473	62.78	1.609	29.105	50	3.323	-45	6.75	0.04	0.4474	9273.26
4/29/2010	10:33:36 AM	1840	63.4	-0.293	29.101	43.6	3.323	-46	6.75	0.02	0.2634	9300.63
4/29/2010	10:39:46 AM	2210	62.81	1.615	29.095	43.9	3.352	-48	6.74	0.01	0.1129	9313.22
4/29/2010	10:45:54 AM	2578	63.03	-0.316	29.093	37.9	3.352	-49	6.75	0	-0.0081	9283.5
4/29/2010	10:52:01 AM	2945	62.45	1.83	29.091	46	3.323	-50	6.76	-0.01	-0.0821	9214.51
4/29/2010	10:58:10 AM	3314	61.82	1.315	29.086	48.1	3.323	-51	6.77	-0.02	-0.2011	9128.84
4/29/2010	11:04:17 AM	3681	61.56	2.175	29.086	67.7	3.352	-52	6.77	-0.03	-0.3379	9055.57

In-Situ Inc.

Troll 9000
4/26/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	43 [ft]
		Pump placement from TOC	25.24 [ft]

Well Information:		**Pumping information:**	
Well ID	MW10S	Final pumping rate	110 [mL/min]
Well diameter	2 [in]	Flowcell volume	791.93 [mL]
Well total depth	18 [ft]	Calculated Sample Rate	432 [sec]
Depth to top of screen	8 [ft]	Sample rate	432 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	3.43 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	13:00:24	63.83	7.03	1496.78	19.70	0.30	-39.00
	13:07:51	63.45	7.03	1511.80	14.00	0.31	-40.00
	13:15:19	63.74	7.03	1523.31	10.80	0.20	-43.00
	13:22:48	63.13	7.03	1518.54	8.90	0.28	-44.00
	13:30:16	62.84	7.04	1527.51	7.40	0.22	-44.00
Variance in last 3 readings	13:15:19	0.29	0.00	11.51	-3.20	-0.11	-3.00
	13:22:48	-0.61	0.00	-4.77	-1.90	0.08	-1.00
	13:30:16	-0.29	0.01	8.97	-1.50	-0.06	0.00

Notes:

Sample Time:1330
Purged water volume:2.5 gal
Water quality parameters did not stabilize
Also collected SNAP samples at 1100

Table A
Low Flow Purging Data at MW10S
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/26/2010	12:30:31 PM	0	64.28	0	29.123	64.4	3.411	-34	6.97	-0.08	-0.8495	1476.4
4/26/2010	12:37:59 PM	448	64.1	-0.449	29.117	43.6	3.382	-37	7.02	-0.08	-0.8388	1465.83
4/26/2010	12:45:28 PM	897	63.49	-0.001	29.118	37.3	3.382	-38	7.02	0.02	0.246	1452.28
4/26/2010	12:52:55 PM	1344	63.34	-0.218	29.118	24.5	3.382	-38	7.03	0.15	1.6035	1475.39
4/26/2010	1:00:24 PM	1793	63.83	-0.025	29.118	19.7	3.411	-39	7.03	0.3	3.2239	1496.78
4/26/2010	1:07:51 PM	2240	63.45	0.085	29.113	14	3.382	-40	7.03	0.31	3.3828	1511.8
4/26/2010	1:15:19 PM	2688	63.74	-3.123	29.113	10.8	3.382	-43	7.03	0.2	2.2208	1523.31
4/26/2010	1:22:48 PM	3137	63.13	-3.09	29.114	8.9	3.382	-44	7.03	0.28	3.0453	1518.54
4/26/2010	1:30:16 PM	3585	62.84	-2.485	29.113	7.4	3.352	-44	7.04	0.22	2.3243	1527.51

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/26/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	80 [ft]
		Pump placement from TOC	74.5 [ft]

Well Information:		**Pumping information:**	
Well ID	MW10D	Final pumping rate	145 [mL/min]
Well diameter	2 [in]	Flowcell volume	957.08 [mL]
Well total depth	79.5 [ft]	Calculated Sample Rate	397 [sec]
Depth to top of screen	69.5 [ft]	Sample rate	397 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	4.46 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	13:46:48	64.71	6.69	918.68	155.70	0.89	94.00
	13:53:39	64.63	6.69	909.92	104.70	0.84	90.00
	14:00:32	64.90	6.69	910.42	73.30	0.75	86.00
	14:07:24	64.99	6.68	899.63	54.90	0.70	83.00
	14:14:15	65.29	6.69	901.07	47.00	0.67	77.00
Variance in last 3 readings	14:00:32	0.27	0.00	0.50	-31.40	-0.09	-4.00
	14:07:24	0.09	-0.01	-10.79	-18.40	-0.05	-3.00
	14:14:15	0.30	0.01	1.44	-7.90	-0.03	-6.00

Notes:
Sample Time:1415
Purged water volume:3.0 gal
Also collected SNAP samples at 1135

Table A
Low Flow Purging Data at MW10D
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/26/2010	1:12:29 PM	0	66.45	0	29.136	913.5	2.823	114	6.67	2.88	32.06	1013.62
4/26/2010	1:19:21 PM	412	65.28	0.065	29.138	835	2.852	110	6.68	2	21.9802	991.07
4/26/2010	1:26:12 PM	823	64.79	-3.15	29.136	513.9	2.852	106	6.68	1.51	16.5432	973.48
4/26/2010	1:33:04 PM	1235	64.65	0.056	29.136	382	2.852	102	6.69	1.18	12.9242	954.05
4/26/2010	1:39:55 PM	1646	64.19	0.155	29.135	240.6	2.852	98	6.69	0.96	10.4574	926.3
4/26/2010	1:46:48 PM	2059	64.71	0.205	29.138	155.7	2.852	94	6.69	0.89	9.7022	918.68
4/26/2010	1:53:39 PM	2470	64.63	0.071	29.141	104.7	2.852	90	6.69	0.84	9.1888	909.92
4/26/2010	2:00:32 PM	2883	64.9	0.084	29.14	73.3	2.852	86	6.69	0.75	8.2159	910.42
4/26/2010	2:07:24 PM	3295	64.99	-2.568	29.142	54.9	2.852	83	6.68	0.7	7.6616	899.63
4/26/2010	2:14:15 PM	3706	65.29	0.088	29.141	47	2.852	77	6.69	0.67	7.3743	901.07

In-Situ Inc.

Troll 9000
4/29/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	KPickett	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	42 [ft]
		Pump placement from TOC	37 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-5I	Final pumping rate	125 [mL/min]
Well diameter	2 [in]	Flowcell volume	787.46 [mL]
Well total depth	42 [ft]	Calculated Sample Rate	378 [sec]
Depth to top of screen	32 [ft]	Sample rate	378 [sec]
Screen length	120 [in]	Stabilized drawdown	0.03 [in]
Depth to Water	6.89 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	18:41:46	65.53	6.77	827.91	848.90	0.07	-60.00
	18:48:18	65.86	6.77	834.22	1140.50	0.05	-62.00
	18:54:50	65.98	6.77	834.42	2818.20	0.03	-65.00
	19:01:23	66.01	6.77	838.13	91.50	0.01	-66.00
	19:07:54	65.95	6.76	841.25	212.20	0.00	-67.00
Variance in last 3 readings	18:54:50	0.12	0.00	0.20	1677.70	-0.02	-3.00
	19:01:23	0.03	0.00	3.71	-2726.70	-0.02	-1.00
	19:07:54	-0.06	-0.01	3.12	120.70	-0.01	-1.00

Notes:
Sample Time:1910
Purged water volume:2.25 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW-5I
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/29/2010	6:09:06 PM	0	66.38	0	28.96	66.9	3.294	-62	6.77	0.62	6.901	848.23
4/29/2010	6:15:37 PM	391	65.7	0.269	28.956	107.4	3.235	-65	6.79	0.32	3.593	845.26
4/29/2010	6:22:10 PM	784	65.54	1.689	28.951	282.9	3.235	-67	6.79	0.2	2.1901	846.31
4/29/2010	6:28:42 PM	1176	65.62	1.483	28.95	490	3.264	-65	6.78	0.13	1.4929	840.85
4/29/2010	6:35:14 PM	1568	65.46	2.174	28.952	2250.4	3.264	-61	6.78	0.1	1.0807	836.08
4/29/2010	6:41:46 PM	1960	65.53	1.974	28.95	848.9	3.235	-60	6.77	0.07	0.7557	827.91
4/29/2010	6:48:18 PM	2352	65.86	2.104	28.949	1140.5	3.235	-62	6.77	0.05	0.5061	834.22
4/29/2010	6:54:50 PM	2744	65.98	2.305	28.948	2818.2	3.235	-65	6.77	0.03	0.3102	834.42
4/29/2010	7:01:23 PM	3137	66.01	2.51	28.949	91.5	3.264	-66	6.77	0.01	0.1605	838.13
4/29/2010	7:07:54 PM	3528	65.95	-1.053	28.95	212.2	3.235	-67	6.76	0	0.0106	841.25

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/29/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	KPickettt	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	15 [ft]
		Pump placement from TOC	10 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-6S	Final pumping rate	135 [mL/min]
Well diameter	2 [in]	Flowcell volume	666.95 [mL]
Well total depth	15 [ft]	Calculated Sample Rate	297 [sec]
Depth to top of screen	5 [ft]	Sample rate	297 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	3.95 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	16:45:19	64.47	6.99	1550.24	33.80	0.04	-66.00
	16:50:28	64.10	6.99	1543.79	68.00	0.04	-66.00
	16:55:35	63.93	6.99	1538.16	80.70	0.03	-66.00
	17:00:44	63.53	7.00	1533.35	28.70	0.02	-66.00
	17:05:57	63.41	7.00	1525.94	45.00	0.00	-66.00
Variance in last 3 readings	16:55:35	-0.17	0.00	-5.63	12.70	-0.01	0.00
	17:00:44	-0.40	0.01	-4.81	-52.00	-0.01	0.00
	17:05:57	-0.12	0.00	-7.41	16.30	-0.02	0.00

Notes:
Sample Time:1715
Purged water volume:3.25 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW-6S
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/29/2010	4:04:16 PM	0	66.29	0	28.972	65.9	3.352	-61	6.94	0.5	5.5544	1614.55
4/29/2010	4:09:23 PM	307	66.16	-0.185	28.972	58.7	3.352	-61	6.96	0.28	3.0931	1607.46
4/29/2010	4:14:31 PM	615	65.98	-2.708	28.969	34.2	3.323	-61	6.97	0.15	1.699	1599.48
4/29/2010	4:19:39 PM	923	65.9	0.103	28.963	18.3	3.352	-62	6.98	0.09	1.0417	1595.47
4/29/2010	4:24:47 PM	1231	65.7	-0.342	28.963	12.9	3.323	-64	6.98	0.06	0.6934	1590.4
4/29/2010	4:29:55 PM	1539	65.55	-2.631	28.962	12.7	3.352	-64	6.98	0.05	0.5708	1584.21
4/29/2010	4:35:03 PM	1847	65.52	0.097	28.956	16.7	3.352	-66	6.98	0.05	0.6081	1581.86
4/29/2010	4:40:12 PM	2156	64.97	-0.21	28.965	26.9	3.352	-66	6.98	0.05	0.5763	1566.26
4/29/2010	4:45:19 PM	2463	64.47	-1.167	28.957	33.8	3.352	-66	6.99	0.04	0.4809	1550.24
4/29/2010	4:50:28 PM	2772	64.1	-1.009	28.957	68	3.352	-66	6.99	0.04	0.3962	1543.79
4/29/2010	4:55:35 PM	3079	63.93	-0.049	28.961	80.7	3.352	-66	6.99	0.03	0.3312	1538.16
4/29/2010	5:00:44 PM	3388	63.53	-0.288	28.958	28.7	3.352	-66	7	0.02	0.1929	1533.35
4/29/2010	5:05:57 PM	3701	63.41	-0.651	28.957	45	3.323	-66	7	0	0.0468	1525.94

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/29/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	KPickett	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	40 [ft]
		Pump placement from TOC	36 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-8I	Final pumping rate	120 [mL/min]
Well diameter	2 [in]	Flowcell volume	778.54 [mL]
Well total depth	40 [ft]	Calculated Sample Rate	390 [sec]
Depth to top of screen	32 [ft]	Sample rate	390 [sec]
Screen length	96 [in]	Stabilized drawdown	0 [in]
Depth to Water	7.97 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	14:13:10	69.97	6.75	679.90	172.80	0.70	-33.00
	14:19:54	70.15	6.75	687.62	217.40	0.70	-33.00
	14:26:39	70.11	6.75	692.68	347.50	0.69	-34.00
	14:33:24	69.92	6.75	702.00	248.90	0.65	-35.00
	14:40:08	69.42	6.75	709.19	282.90	0.62	-36.00
Variance in last 3 readings	14:26:39	-0.04	0.00	5.06	130.10	-0.01	-1.00
	14:33:24	-0.19	0.00	9.32	-98.60	-0.04	-1.00
	14:40:08	-0.50	0.00	7.19	34.00	-0.03	-1.00

Notes:
Sample Time:1445
Purged water volume:2.5 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW-8I
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/29/2010	1:39:28 PM	0	68.82	0	28.995	42.9	3.323	-49	6.77	0.29	3.3571	789.05
4/29/2010	1:46:12 PM	404	68.87	-0.134	29.002	68.9	3.323	-48	6.77	0.3	3.4348	763.12
4/29/2010	1:52:56 PM	808	68.93	-0.894	28.994	59.2	3.352	-44	6.77	0.38	4.3643	720.64
4/29/2010	1:59:41 PM	1213	69.18	-0.508	28.988	70	3.352	-37	6.76	0.53	6.0702	674.22
4/29/2010	2:06:25 PM	1617	69.93	-2.226	28.987	118.3	3.352	-33	6.76	0.66	7.6626	672.08
4/29/2010	2:13:10 PM	2022	69.97	-2.34	28.986	172.8	3.323	-33	6.75	0.7	8.1352	679.9
4/29/2010	2:19:54 PM	2426	70.15	0.209	28.984	217.4	3.352	-33	6.75	0.7	8.1814	687.62
4/29/2010	2:26:39 PM	2831	70.11	0.085	28.981	347.5	3.352	-34	6.75	0.69	7.9926	692.68
4/29/2010	2:33:24 PM	3236	69.92	-0.121	28.983	248.9	3.323	-35	6.75	0.65	7.6047	702
4/29/2010	2:40:08 PM	3640	69.42	-0.208	28.985	282.9	3.352	-36	6.75	0.62	7.1552	709.19

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/29/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	17 [ft]
		Pump placement from TOC	12 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-8S	Final pumping rate	110 [mL/min]
Well diameter	2 [in]	Flowcell volume	675.88 [mL]
Well total depth	16 [ft]	Calculated Sample Rate	369 [sec]
Depth to top of screen	8 [ft]	Sample rate	369 [sec]
Screen length	96 [in]	Stabilized drawdown	0 [in]
Depth to Water	6.46 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	19:21:49	62.31	7.01	843.26	15.25	0.22	54.59
	19:28:11	62.14	7.00	838.84	33.16	0.20	53.85
	19:34:35	62.00	7.00	834.87	49.77	0.18	53.42
	19:40:58	61.81	6.99	834.25	69.12	0.16	52.89
	19:47:20	61.62	7.00	831.77	112.13	0.15	52.20
Variance in last 3 readings	19:34:35	-0.14	0.00	-3.97	16.61	-0.02	-0.44
	19:40:58	-0.20	-0.01	-0.62	19.35	-0.02	-0.52
	19:47:20	-0.19	0.00	-2.48	43.01	-0.01	-0.69

Notes:
Sample Time:1950
Purged water volume:1.5 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW-8S
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/29/2010	6:43:33 PM	0	65.01	0	28.972	4.7	2.882	61	7.06	0.9	9.938	861.71
4/29/2010	6:49:56 PM	383	63.38	-0.316	28.964	3.5	2.882	59	7.05	0.52	5.6515	853.64
4/29/2010	6:56:19 PM	766	63.25	-0.155	28.962	2.7	2.882	58	7.04	0.39	4.2195	852.18
4/29/2010	7:02:41 PM	1148	63.12	0.182	28.961	5.2	2.882	57	7.03	0.32	3.4524	850.92
4/29/2010	7:09:04 PM	1531	62.95	-0.325	28.958	6.3	2.882	56	7.02	0.28	3.0121	847.07
4/29/2010	7:15:26 PM	1913	62.84	0.659	28.954	9.2	2.882	55	7.02	0.25	2.6383	846.45
4/29/2010	7:21:49 PM	2296	62.31	0.089	28.961	15.3	2.882	55	7.01	0.22	2.3074	843.26
4/29/2010	7:28:11 PM	2678	62.14	-0.177	28.96	33.2	2.882	54	7	0.2	2.1059	838.84
4/29/2010	7:34:35 PM	3062	62	-0.155	28.96	49.8	2.882	53	7	0.18	1.9415	834.87
4/29/2010	7:40:58 PM	3445	61.81	-2.429	28.961	69.1	2.882	53	6.99	0.16	1.7408	834.25
4/29/2010	7:47:20 PM	3827	61.62	-0.186	28.963	112.1	2.882	52	7	0.15	1.5944	831.77

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/28/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	KPickett	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	74 [ft]
		Pump placement from TOC	69 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-11D	Final pumping rate	90 [mL/min]
Well diameter	2 [in]	Flowcell volume	930.29 [mL]
Well total depth	15.7 [ft]	Calculated Sample Rate	621 [sec]
Depth to top of screen	64 [ft]	Sample rate	621 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	21.5 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	19:08:54	64.71	6.74	723.91	381.82	0.64	-46.90
	19:19:39	64.54	6.75	720.39	76.69	0.54	-54.62
	19:30:23	64.26	6.75	717.20	189.14	0.45	-60.45
	19:41:08	64.13	6.76	713.74	457.23	0.40	-65.09
	19:51:52	63.81	6.76	703.28	40.62	0.36	-69.04
Variance in last 3 readings	19:30:23	-0.27	0.00	-3.19	112.45	-0.08	-5.83
	19:41:08	-0.13	0.01	-3.46	268.09	-0.05	-4.63
	19:51:52	-0.32	0.00	-10.46	-416.61	-0.04	-3.95

Notes:
Sample Time:1953
Purged water volume:1.75 gal
Water quality parameters stabilized

Table A
Low Flow Purging Data at MW-11D
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/28/2010	6:47:27 PM	0	64.88	0	29.271	63	3.352	-41	6.74	1.23	13.3876	717.7
4/28/2010	6:58:11 PM	644	64.91	-0.024	29.264	90.4	3.323	-42	6.75	0.81	8.852	718.44
4/28/2010	7:08:54 PM	1287	64.71	-1.552	29.261	381.8	3.323	-47	6.74	0.64	6.9351	723.91
4/28/2010	7:19:39 PM	1932	64.54	-1.465	29.261	76.7	3.352	-55	6.75	0.54	5.8286	720.39
4/28/2010	7:30:23 PM	2576	64.26	-1.164	29.259	189.1	3.323	-60	6.75	0.45	4.9032	717.2
4/28/2010	7:41:08 PM	3221	64.13	-1.138	29.257	457.2	3.323	-65	6.76	0.4	4.3249	713.74
4/28/2010	7:51:52 PM	3865	63.81	-4.224	29.26	40.6	3.323	-69	6.76	0.36	3.8662	703.28

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/29/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	17 [ft]
		Pump placement from TOC	11.5 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-11S	Final pumping rate	85 [mL/min]
Well diameter	2 [in]	Flowcell volume	675.88 [mL]
Well total depth	16.5 [ft]	Calculated Sample Rate	478 [sec]
Depth to top of screen	6.5 [ft]	Sample rate	478 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	5.25 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	16:27:29	71.14	6.48	6714.46	57.64	0.67	59.05
	16:35:45	71.56	6.47	6662.30	112.63	0.55	55.19
	16:44:00	71.46	6.47	6665.25	58.80	0.59	52.03
	16:52:16	71.38	6.46	6650.94	65.34	0.54	49.08
	17:00:32	71.10	6.46	6582.51	26.21	0.44	46.59
Variance in last 3 readings	16:44:00	-0.10	0.00	2.95	-53.83	0.04	-3.17
	16:52:16	-0.08	0.00	-14.31	6.55	-0.05	-2.95
	17:00:32	-0.29	0.00	-68.43	-39.13	-0.10	-2.49

Notes:

Sample Time:1705
Purged water volume:1.75 gal
Water quality parameters did not stabilize
Also collected samples using SNAP Sampler at 1520

Table A
Low Flow Purging Data at MW-11S
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/29/2010	4:02:41 PM	0	69.7	0	29	42.5	2.852	76	6.54	1.59	18.8712	6607.38
4/29/2010	4:10:57 PM	496	70.81	-0.004	28.995	31.8	2.852	69	6.5	1.12	13.4093	6752.21
4/29/2010	4:19:13 PM	992	70.85	-0.053	28.989	28.6	2.823	63	6.48	0.81	9.7199	6716.67
4/29/2010	4:27:29 PM	1488	71.14	-2.603	28.989	57.6	2.852	59	6.48	0.67	8.0729	6714.46
4/29/2010	4:35:45 PM	1984	71.56	-0.013	28.988	112.6	2.852	55	6.47	0.55	6.6965	6662.3
4/29/2010	4:44:00 PM	2479	71.46	-0.125	28.989	58.8	2.852	52	6.47	0.59	7.1353	6665.25
4/29/2010	4:52:16 PM	2975	71.38	-0.442	28.989	65.3	2.852	49	6.46	0.54	6.4711	6650.94
4/29/2010	5:00:32 PM	3471	71.1	0.171	28.987	26.2	2.823	47	6.46	0.44	5.2799	6582.51

In-Situ Inc.

Troll 9000
4/28/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	41 [ft]
		Pump placement from TOC	36 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-11I	Final pumping rate	110 [mL/min]
Well diameter	2 [in]	Flowcell volume	783 [mL]
Well total depth	40 [ft]	Calculated Sample Rate	428 [sec]
Depth to top of screen	2 [ft]	Sample rate	428 [sec]
Screen length	96 [in]	Stabilized drawdown	0 [in]
Depth to Water	7.62 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	19:29:57	63.15	6.69	727.98	8.06	1.26	60.92
	19:37:20	63.07	6.69	724.85	8.05	1.21	60.14
	19:44:44	63.02	6.69	721.27	12.03	1.17	59.32
	19:52:08	62.91	6.69	723.30	14.36	1.12	58.58
	19:59:33	62.82	6.69	727.85	15.50	1.08	57.93
Variance in last 3 readings	19:44:44	-0.06	0.00	-3.58	3.98	-0.05	-0.82
	19:52:08	-0.10	0.00	2.03	2.33	-0.05	-0.74
	19:59:33	-0.10	0.00	4.55	1.14	-0.03	-0.65

Notes:

Sample Time:1800
Purged water volume:2.25 gal
Also Collected SNAP samples at 1800

Table A
Low Flow Purging Data at MW-11I
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/28/2010	7:00:21 PM	0	64.24	0	29.284	19.7	2.794	68	6.69	1.82	19.6426	728.39
4/28/2010	7:07:45 PM	444	63.73	0.23	29.28	15	2.823	65	6.69	1.48	15.9148	724.8
4/28/2010	7:15:09 PM	888	63.44	-1.87	29.281	9.4	2.794	64	6.69	1.38	14.7829	725.29
4/28/2010	7:22:33 PM	1332	63.29	1.048	29.278	7.3	2.794	62	6.69	1.29	13.7722	724.83
4/28/2010	7:29:57 PM	1776	63.15	0.903	29.276	8.1	2.794	61	6.69	1.26	13.4198	727.98
4/28/2010	7:37:20 PM	2219	63.07	-1.747	29.275	8	2.794	60	6.69	1.21	12.9338	724.85
4/28/2010	7:44:44 PM	2663	63.02	0.239	29.276	12	2.794	59	6.69	1.17	12.4418	721.27
4/28/2010	7:52:08 PM	3107	62.91	-0.088	29.279	14.4	2.794	59	6.69	1.12	11.9078	723.3
4/28/2010	7:59:33 PM	3552	62.82	0.107	29.278	15.5	2.794	58	6.69	1.08	11.5294	727.85

In-Situ Inc.

Troll 9000 | **Low-Flow System**
5/3/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	16 [ft]
		Pump placement from TOC	10 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-A1	Final pumping rate	75 [mL/min]
Well diameter	2 [in]	Flowcell volume	671.42 [mL]
Well total depth	15 [ft]	Calculated Sample Rate	538 [sec]
Depth to top of screen	5 [ft]	Sample rate	538 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	4.55 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	15:03:04	68.94	7.01	436.13	7.30	0.22	-103.51
	15:12:22	68.12	7.03	434.29	5.34	0.14	-106.85
	15:21:40	68.90	7.02	441.04	7.26	0.09	-108.83
	15:30:59	69.22	7.02	443.22	9.02	0.07	-109.72
	15:37:57	69.23	7.01	443.92	10.64	0.06	-109.97
Variance in last 3 readings	15:21:40	0.78	0.00	6.75	1.91	-0.05	-1.98
	15:30:59	0.32	-0.01	2.18	1.77	-0.02	-0.89
	15:37:57	0.02	0.00	0.69	1.62	-0.01	-0.25

Notes:

Sample Time:
Purged water volume:
Stopped purging as Brian Gibson (Airport Environmental) had to leave at 16:00 and we did not have access to airport anymore.

5/4/2010 8:00 AM: DTW=4.61'
Observed product on probe including odor, did not sample this well.

Table A
Low Flow Purging Data at MW-A1
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
5/3/2010	2:53:45 PM	0	66.11	0	29.298	12	3.264	-91	6.96	0.33	3.6631	416
5/3/2010	3:03:04 PM	559	68.94	1.142	29.293	7.3	3.294	-104	7.01	0.22	2.4922	436.13
5/3/2010	3:12:22 PM	1117	68.12	0.057	29.286	5.3	3.294	-107	7.03	0.14	1.5813	434.29
5/3/2010	3:21:40 PM	1675	68.9	1.187	29.287	7.3	3.264	-109	7.02	0.09	1.07	441.04
5/3/2010	3:30:59 PM	2234	69.22	0.121	29.279	9	3.294	-110	7.02	0.07	0.8058	443.22
5/3/2010	3:37:57 PM	2652	69.24	0.185	29.277	10.6	3.294	-110	7.01	0.06	0.6528	443.92

In-Situ Inc.

Troll 9000
5/3/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	16 [ft]
		Pump placement from TOC	10 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-A3	Final pumping rate	75 [mL/min]
Well diameter	2 [in]	Flowcell volume	671.42 [mL]
Well total depth	15 [ft]	Calculated Sample Rate	538 [sec]
Depth to top of screen	2 [ft]	Sample rate	538 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	3.57 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	15:05:59	72.49	7.02	633.93	4.97	0.90	48.17
	15:15:17	71.72	6.98	633.09	4.59	0.45	30.07
	15:24:35	71.49	6.97	621.60	5.46	0.27	19.78
	15:33:54	71.52	6.96	612.75	8.64	0.18	13.87
	15:43:11	71.19	6.95	608.41	6.84	0.12	9.72
Variance in last 3 readings	15:24:35	-0.23	-0.01	-11.49	0.86	-0.18	-10.29
	15:33:54	0.03	-0.01	-8.86	3.18	-0.09	-5.91
	15:43:11	-0.33	-0.01	-4.33	-1.80	-0.06	-4.15

Notes:

Sample Time:1200
Purged water volume:1 gal
Stopped purging as Brian Gibson (Airport Environmental) had to leave at 16:00 and we did not have access to airport anymore.

5/4/2010 8:00 AM: DTW=3.63'
Observed product on probe including odor, did not sample this well.

Table A
Low Flow Purging Data at MW-A3
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
5/3/2010	3:05:59 PM	0	72.49	0	29.318	5	2.617	48	7.02	0.9	10.6784	633.92
5/3/2010	3:15:17 PM	558	71.72	0.076	29.312	4.6	2.617	30	6.98	0.45	5.263	633.09
5/3/2010	3:24:35 PM	1116	71.49	-1.382	29.307	5.5	2.588	20	6.97	0.27	3.1315	621.6
5/3/2010	3:33:54 PM	1675	71.52	0.281	29.302	8.6	2.617	14	6.96	0.18	2.0727	612.75
5/3/2010	3:43:11 PM	2232	71.19	-0.631	29.295	6.8	2.588	10	6.95	0.12	1.4005	608.41

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/30/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	13 [ft]
		Pump placement from TOC	10.4 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-A4	Final pumping rate	85 [mL/min]
Well diameter	2 [in]	Flowcell volume	658.02 [mL]
Well total depth	19.5 [ft]	Calculated Sample Rate	465 [sec]
Depth to top of screen	2 [ft]	Sample rate	465 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	9.25 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	10:31:56	65.95	6.77	779.19	0.80	1.18	64.22
	10:39:58	67.62	6.73	788.11	0.04	1.33	66.68
	10:48:00	68.01	6.73	793.49	-0.24	1.30	66.25
Variance in last 3 readings	10:31:56	65.95	6.77	779.19	0.80	1.18	64.22
	10:39:58	1.66	-0.04	8.93	-0.76	0.15	2.47
	10:48:00	0.39	-0.01	5.38	-0.28	-0.04	-0.43

Notes:
Sample Time:1050
Purged water volume:1.0 gal
Water quality parameters stabilized

Table A
Low Flow Purging Data at MW-A4
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/30/2010	10:31:56 AM	0	65.95	0	29.049	0.8	2.794	64	6.77	1.18	13.1281	779.19
4/30/2010	10:39:58 AM	482	67.62	-0.225	29.039	0	2.794	67	6.73	1.33	15.0612	788.11
4/30/2010	10:48:00 AM	964	68.01	-0.122	29.04	-0.2	2.794	66	6.73	1.3	14.7255	793.49

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/30/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	KPickett	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	13 [ft]
		Pump placement from TOC	9 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-A8	Final pumping rate	100 [mL/min]
Well diameter	2 [in]	Flowcell volume	658.02 [mL]
Well total depth	12.5 [ft]	Calculated Sample Rate	395 [sec]
Depth to top of screen	2.5 [ft]	Sample rate	395 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	5.53 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	11:45:42	63.14	6.81	1043.11	13.60	0.04	-98.00
	11:52:33	63.58	6.81	1036.47	14.90	0.02	-99.00
	11:59:23	63.38	6.81	1034.91	18.50	0.01	-100.00
	12:06:12	63.23	6.81	1039.94	17.90	0.00	-100.00
	12:13:01	63.32	6.81	1044.07	20.70	-0.01	-101.00
Variance in last 3 readings	11:59:23	-0.20	0.00	-1.56	3.60	-0.01	-1.00
	12:06:12	-0.15	0.00	5.03	-0.60	-0.01	0.00
	12:13:01	0.09	0.00	4.13	2.80	-0.01	-1.00

Notes:
Sample Time:1218
Purged water volume:2.75 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW-A8
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/30/2010	11:11:35 AM	0	64.98	0	29.028	28.2	3.294	-83	6.71	0.44	4.8985	1131.88
4/30/2010	11:18:25 AM	410	63.56	0.21	29.024	19.5	3.294	-88	6.77	0.22	2.4289	1105.16
4/30/2010	11:25:14 AM	819	63.04	-1.874	29.02	14.5	3.264	-92	6.8	0.13	1.348	1083.45
4/30/2010	11:32:04 AM	1229	62.72	0.675	29.023	13.1	3.294	-95	6.81	0.08	0.8386	1068.21
4/30/2010	11:38:53 AM	1638	62.87	0.641	29.027	10.8	3.294	-96	6.81	0.05	0.5784	1042.17
4/30/2010	11:45:42 AM	2047	63.14	0.594	29.023	13.6	3.294	-98	6.81	0.04	0.4626	1043.11
4/30/2010	11:52:33 AM	2458	63.58	-2.147	29.023	14.9	3.294	-99	6.81	0.02	0.2376	1036.47
4/30/2010	11:59:23 AM	2868	63.38	0.659	29.016	18.5	3.294	-100	6.81	0.01	0.0738	1034.91
4/30/2010	12:06:12 PM	3277	63.23	0.479	29.017	17.9	3.264	-100	6.81	0	-0.0259	1039.94
4/30/2010	12:13:01 PM	3686	63.32	-0.631	29.017	20.7	3.294	-101	6.81	-0.01	-0.0804	1044.07

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/30/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	15 [ft]
		Pump placement from TOC	9.5 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-A12	Final pumping rate	90 [mL/min]
Well diameter	2 [in]	Flowcell volume	666.95 [mL]
Well total depth	14.5 [ft]	Calculated Sample Rate	445 [sec]
Depth to top of screen	4.5 [ft]	Sample rate	445 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	4.57 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	13:43:46	68.76	6.68	553.37	67.74	0.29	74.78
	13:51:28	69.00	6.70	556.65	48.11	0.28	70.87
	13:59:23	69.28	6.73	559.60	41.28	0.26	66.72
	14:07:06	69.38	6.77	561.93	43.35	0.26	61.54
	14:14:48	69.04	6.82	561.93	44.26	0.25	55.85
Variance in last 3 readings	13:59:23	0.27	0.03	2.95	-6.82	-0.02	-4.15
	14:07:06	0.11	0.04	2.33	2.07	0.00	-5.18
	14:14:48	-0.35	0.05	0.00	0.91	-0.01	-5.69

Notes:
Sample Time:1415
Purged water volume:1.5 gal
Water quality parameters stabilized

Table A
Low Flow Purging Data at MW-A12
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/30/2010	1:13:00 PM	0	67.52	0	29.043	29.8	2.794	74	6.85	0.9	10.1846	539.82
4/30/2010	1:20:41 PM	461	66.94	-0.002	29.037	32.2	2.794	79	6.73	0.55	6.1264	540.18
4/30/2010	1:28:23 PM	923	66.51	-0.064	29.027	43.4	2.794	80	6.68	0.4	4.4388	537.43
4/30/2010	1:36:05 PM	1385	67.33	-9.159	29.028	57.2	2.823	79	6.66	0.33	3.6744	542.01
4/30/2010	1:43:46 PM	1846	68.76	0.002	29.023	67.7	2.794	75	6.68	0.29	3.368	553.37
4/30/2010	1:51:28 PM	2308	69	0.004	29.024	48.1	2.794	71	6.7	0.28	3.2421	556.65
4/30/2010	1:59:23 PM	2783	69.28	0.003	29.021	41.3	2.823	67	6.73	0.26	3.0489	559.6
4/30/2010	2:07:06 PM	3246	69.38	0.003	29.022	43.4	2.794	62	6.77	0.26	3.0041	561.93
4/30/2010	2:14:48 PM	3708	69.04	0.002	29.018	44.3	2.794	56	6.82	0.25	2.9159	561.93

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/30/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	13 [ft]
		Pump placement from TOC	8.5 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-A16	Final pumping rate	130 [mL/min]
Well diameter	2 [in]	Flowcell volume	658.02 [mL]
Well total depth	12.5 [ft]	Calculated Sample Rate	304 [sec]
Depth to top of screen	2.5 [ft]	Sample rate	304 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	4.59 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	9:35:42	59.08	6.81	533.29	6.60	0.19	-83.00
	9:40:57	59.21	6.81	542.60	5.10	0.15	-86.00
	9:46:13	59.37	6.82	552.60	6.70	0.12	-88.00
	9:51:28	59.42	6.83	561.32	3.80	0.09	-90.00
	9:56:43	59.62	6.83	569.17	3.40	0.07	-92.00
Variance in last 3 readings	9:46:13	0.16	0.01	10.00	1.60	-0.03	-2.00
	9:51:28	0.05	0.01	8.72	-2.90	-0.03	-2.00
	9:56:43	0.20	0.00	7.85	-0.40	-0.02	-2.00

Notes:
Sample Time:1000
Purged water volume:2.75 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW-A16
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/30/2010	8:53:41 AM	0	59.04	0	29.055	68.7	3.264	-78	6.73	-0.04	-0.4372	544.08
4/30/2010	8:58:57 AM	316	58.7	-2.869	29.056	65.6	3.264	-71	6.74	0.05	0.5317	471.83
4/30/2010	9:04:11 AM	630	58.56	-2.874	29.054	43.7	3.264	-68	6.75	0.24	2.4874	450.86
4/30/2010	9:09:26 AM	945	58.44	-0.308	29.05	26	3.235	-69	6.76	0.36	3.6534	459.27
4/30/2010	9:14:41 AM	1260	58.57	-0.822	29.049	18.4	3.264	-71	6.77	0.37	3.745	478.16
4/30/2010	9:19:58 AM	1577	58.75	-0.556	29.048	13.2	3.235	-74	6.78	0.33	3.3591	494.84
4/30/2010	9:25:12 AM	1891	58.92	0.216	29.047	9.3	3.294	-78	6.79	0.28	2.8514	511.12
4/30/2010	9:30:27 AM	2206	59.05	-2.834	29.041	9.1	3.294	-81	6.8	0.23	2.3319	522.29
4/30/2010	9:35:42 AM	2521	59.08	-0.944	29.037	6.6	3.235	-83	6.81	0.19	1.9114	533.29
4/30/2010	9:40:57 AM	2836	59.21	-0.476	29.037	5.1	3.294	-86	6.81	0.15	1.4922	542.6
4/30/2010	9:46:13 AM	3152	59.37	-0.643	29.035	6.7	3.264	-88	6.82	0.12	1.2017	552.6
4/30/2010	9:51:28 AM	3467	59.42	-0.021	29.034	3.8	3.264	-90	6.83	0.09	0.9085	561.32
4/30/2010	9:56:43 AM	3782	59.62	0.004	29.03	3.4	3.264	-92	6.83	0.07	0.7636	569.17

In-Situ Inc.

Troll 9000 | **Low-Flow System**
5/3/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	15.5 [ft]
		Pump placement from TOC	9.5 [ft]

Well Information:		**Pumping information:**	
Well ID	MW- A22	Final pumping rate	65 [mL/min]
Well diameter	2 [in]	Flowcell volume	669.18 [mL]
Well total depth	14.5 [ft]	Calculated Sample Rate	618 [sec]
Depth to top of screen	4.5 [ft]	Sample rate	618 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	3.91 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	10:38:33	64.37	7.01	534.09	6.52	0.66	93.72
	10:49:14	66.21	7.01	546.00	3.25	0.76	86.67
	10:59:55	66.75	7.03	546.53	3.90	0.55	82.98
	11:10:37	67.26	7.03	546.45	4.64	0.50	79.09
	11:21:18	68.27	7.04	551.74	4.11	0.44	76.00
Variance in last 3 readings	10:59:55	0.54	0.01	0.54	0.65	-0.21	-3.69
	11:10:37	0.51	0.01	-0.09	0.74	-0.04	-3.90
	11:21:18	1.01	0.01	5.29	-0.53	-0.06	-3.09

Notes:
Sample Time:1130
Purged water volume:1.25 gal
Water quality parameters stabilized

Table A
Low Flow Purging Data at MW-A22
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
5/3/2010	10:38:33 AM	0	64.37	0	29.338	6.5	2.647	94	7.01	0.66	7.1659	534.09
5/3/2010	10:49:14 AM	641	66.21	-1.203	29.333	3.2	2.617	87	7.01	0.76	8.3633	546
5/3/2010	10:59:55 AM	1282	66.75	-0.85	29.336	3.9	2.617	83	7.03	0.55	6.059	546.53
5/3/2010	11:10:37 AM	1924	67.26	-0.351	29.337	4.6	2.617	79	7.03	0.5	5.6064	546.45
5/3/2010	11:21:18 AM	2565	68.27	-0.132	29.336	4.1	2.617	76	7.04	0.44	4.9882	551.74

In-Situ Inc.

Troll 9000 | **Low-Flow System**
5/3/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	BRKORPOL	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	13.7 [ft]
		Pump placement from TOC	8.8 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-A23	Final pumping rate	110 [mL/min]
Well diameter	2 [in]	Flowcell volume	661.15 [mL]
Well total depth	12.7 [ft]	Calculated Sample Rate	361 [sec]
Depth to top of screen	2 [ft]	Sample rate	361 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	4.48 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00
	11:40:23	68.20	6.93	503.56	9.85	0.50	-86.12
	11:46:37	67.88	6.94	500.81	8.79	0.32	-89.03
	11:52:52	68.07	6.95	504.07	8.43	0.23	-89.18
	11:59:06	68.15	6.94	506.92	7.87	0.18	-90.82
Variance in last 3 readings	11:46:37	-0.31	0.02	-2.75	-1.06	-0.18	-2.91
	11:52:52	0.19	0.01	3.26	-0.35	-0.09	-0.15
	11:59:06	0.08	-0.01	2.85	-0.56	-0.05	-1.64

Notes:
Sample Time:1200
Purged water volume:1 gal
Water quality parameters stabilized

Table A
Low Flow Purging Data at MW-A23
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
5/3/2010	11:40:23 AM	0	68.2	0	29.323	9.9	3.264	-86	6.93	0.5	5.6008	503.56
5/3/2010	11:46:37 AM	374	67.88	2.261	29.317	8.8	3.294	-89	6.94	0.32	3.5649	500.81
5/3/2010	11:52:52 AM	749	68.07	2.914	29.313	8.4	3.294	-89	6.95	0.23	2.6093	504.07
5/3/2010	11:59:06 AM	1123	68.15	2.878	29.313	7.9	3.294	-91	6.94	0.18	2.063	506.92

In-Situ Inc.

Troll 9000
4/30/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	KPickett	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	14 [ft]
		Pump placement from TOC	8 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-A25	Final pumping rate	105 [mL/min]
Well diameter	2 [in]	Flowcell volume	662.49 [mL]
Well total depth	13 [ft]	Calculated Sample Rate	379 [sec]
Depth to top of screen	3 [ft]	Sample rate	379 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	3.25 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	14:22:06	66.68	7.14	734.17	120.05	0.15	49.57
	14:28:39	66.02	7.15	746.02	61.79	0.14	50.37
	14:35:13	65.61	7.16	759.26	37.83	0.13	51.08
	14:41:46	65.61	7.16	770.71	38.70	0.12	51.62
	14:48:18	65.36	7.17	777.01	30.46	0.11	52.43
Variance in last 3 readings	14:35:13	-0.41	0.01	13.24	-23.95	-0.01	0.71
	14:41:46	0.01	0.00	11.46	0.87	-0.01	0.54
	14:48:18	-0.26	0.00	6.30	-8.24	-0.01	0.80

Notes:
Sample Time:1453
Purged water volume:2 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW-A25
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/30/2010	1:42:48 PM	0	67.22	0	29	22.5	3.264	51	7.1	0.41	4.5724	512.33
4/30/2010	1:49:21 PM	393	67.16	-1.041	28.999	17	3.294	51	7.1	0.3	3.3973	566.11
4/30/2010	1:55:54 PM	786	67.27	-0.611	28.998	28.1	3.264	50	7.11	0.25	2.7865	612.77
4/30/2010	2:02:27 PM	1179	67.17	-0.489	28.995	45.4	3.264	50	7.12	0.21	2.4242	653.77
4/30/2010	2:09:00 PM	1572	66.7	1.351	28.992	67.1	3.294	50	7.13	0.19	2.0826	689.48
4/30/2010	2:15:33 PM	1965	66.51	-2.889	28.993	80.2	3.294	50	7.14	0.16	1.8339	714.54
4/30/2010	2:22:06 PM	2358	66.68	-2.094	28.986	120.1	3.294	50	7.14	0.15	1.7249	734.17
4/30/2010	2:28:39 PM	2751	66.02	-1.098	28.987	61.8	3.264	50	7.15	0.14	1.5813	746.02
4/30/2010	2:35:13 PM	3145	65.61	-0.994	28.984	37.8	3.294	51	7.16	0.13	1.4439	759.26
4/30/2010	2:41:46 PM	3538	65.61	-0.878	28.983	38.7	3.264	52	7.16	0.12	1.2952	770.71
4/30/2010	2:48:18 PM	3930	65.36	-0.801	28.984	30.5	3.264	52	7.17	0.11	1.1801	777.01

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/30/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	15 [ft]
		Pump placement from TOC	9.5 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-A26	Final pumping rate	100 [mL/min]
Well diameter	2 [in]	Flowcell volume	666.95 [mL]
Well total depth	14 [ft]	Calculated Sample Rate	401 [sec]
Depth to top of screen	4 [ft]	Sample rate	401 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	4.79 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	15:56:07	66.18	6.96	577.13	5.24	0.25	32.40
	16:03:03	66.95	6.96	582.60	5.31	0.21	26.80
	16:09:59	67.15	6.97	586.14	3.49	0.17	21.16
	16:16:55	67.16	6.98	588.28	2.53	0.15	15.44
	16:23:51	66.99	6.99	585.52	2.06	0.13	10.14
Variance in last 3 readings	16:09:59	0.20	0.01	3.54	-1.82	-0.04	-5.64
	16:16:55	0.01	0.01	2.14	-0.96	-0.02	-5.72
	16:23:51	-0.17	0.01	-2.76	-0.47	-0.02	-5.29

Notes:
Sample Time:1625
Purged water volume:1.5 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW-A26
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/30/2010	3:21:28 PM	0	65.38	0	28.999	11.8	2.764	56	6.97	0.93	10.2849	559.7
4/30/2010	3:28:23 PM	415	64.97	0.511	28.996	11.8	2.764	52	6.94	0.52	5.7241	562.31
4/30/2010	3:35:19 PM	831	65.97	0.459	28.999	7.3	2.764	48	6.93	0.41	4.5286	571.74
4/30/2010	3:42:15 PM	1247	66.18	0.181	29	5.7	2.794	43	6.94	0.35	3.8657	575.06
4/30/2010	3:49:11 PM	1663	66.16	0.347	28.992	10.4	2.794	38	6.95	0.3	3.3418	576.24
4/30/2010	3:56:07 PM	2079	66.18	-2.187	28.994	5.2	2.764	32	6.96	0.25	2.7434	577.13
4/30/2010	4:03:03 PM	2495	66.95	0.125	28.979	5.3	2.764	27	6.96	0.21	2.3531	582.6
4/30/2010	4:09:59 PM	2911	67.15	0.267	28.975	3.5	2.794	21	6.97	0.17	1.9232	586.14
4/30/2010	4:16:55 PM	3327	67.16	0.104	28.975	2.5	2.794	15	6.98	0.15	1.6961	588.28
4/30/2010	4:23:51 PM	3743	66.99	0.122	28.98	2.1	2.764	10	6.99	0.13	1.4376	585.52

In-Situ Inc.

Troll 9000 | **Low-Flow System**
5/3/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	14.7 [ft]
		Pump placement from TOC	8.7 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-A27	Final pumping rate	95 [mL/min]
Well diameter	2 [in]	Flowcell volume	665.61 [mL]
Well total depth	13.7 [ft]	Calculated Sample Rate	421 [sec]
Depth to top of screen	3.7 [ft]	Sample rate	421 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	3.48 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	13:25:03	70.79	7.36	531.49	4.58	0.38	64.49
	13:32:19	70.83	7.35	541.18	9.70	0.33	63.49
	13:39:36	71.00	7.35	548.08	11.57	0.30	62.08
	13:46:53	70.84	7.36	551.69	31.15	0.31	60.40
	13:54:09	71.12	7.38	557.01	38.24	0.36	58.26
Variance in last 3 readings	13:39:36	0.16	0.00	6.90	1.87	-0.03	-1.41
	13:46:53	-0.16	0.01	3.61	19.58	0.01	-1.68
	13:54:09	0.28	0.02	5.32	7.09	0.05	-2.14

Notes:
Sample Time:1355
Purged water volume:1.75 gal
Water quality parameters did not stabilize

Table A
Low Flow Purging Data at MW-A27
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
5/3/2010	12:55:57 PM	0	71.64	0	29.342	4.4	2.617	88	7.36	1.15	13.435	514.99
5/3/2010	1:03:13 PM	436	70.63	-1.848	29.334	3.9	2.617	76	7.39	0.68	7.8757	509.59
5/3/2010	1:10:29 PM	872	70.38	0.399	29.328	2.6	2.617	70	7.39	0.48	5.5507	510.44
5/3/2010	1:17:46 PM	1309	70.77	0.548	29.324	2.7	2.617	65	7.38	0.47	5.439	522.53
5/3/2010	1:25:03 PM	1746	70.79	0.696	29.322	4.6	2.647	64	7.36	0.38	4.419	531.49
5/3/2010	1:32:19 PM	2182	70.83	-1.617	29.32	9.7	2.617	63	7.35	0.33	3.8763	541.18
5/3/2010	1:39:36 PM	2619	71	0.679	29.318	11.6	2.617	62	7.35	0.3	3.5031	548.08
5/3/2010	1:46:53 PM	3056	70.84	0.736	29.32	31.2	2.617	60	7.36	0.31	3.6042	551.69
5/3/2010	1:54:09 PM	3492	71.12	0.573	29.312	38.2	2.617	58	7.38	0.36	4.2412	557.01

In-Situ Inc.

Troll 9000 | **Low-Flow System**
5/3/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	15.5 [ft]
		Pump placement from TOC	9.5 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-A28	Final pumping rate	125 [mL/min]
Well diameter	2 [in]	Flowcell volume	669.18 [mL]
Well total depth	14.5 [ft]	Calculated Sample Rate	322 [sec]
Depth to top of screen	4.5 [ft]	Sample rate	322 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	3.43 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	9:35:09	62.16	7.41	668.86	21.80	0.15	-134.00
	9:40:42	62.45	7.40	670.17	17.40	0.12	-135.00
	9:46:16	62.40	7.40	672.29	13.50	0.11	-136.00
	9:51:50	62.44	7.41	673.89	12.50	0.10	-137.00
	9:57:24	62.72	7.42	677.24	10.30	0.09	-139.00
Variance in last 3 readings	9:46:16	-0.05	0.00	2.12	-3.90	-0.01	-1.00
	9:51:50	0.04	0.01	1.60	-1.00	-0.01	-1.00
	9:57:24	0.28	0.01	3.35	-2.20	-0.01	-2.00

Notes:

Sample Time:1002
Purged water volume:2 gal
Water quality parametrs did not stabilize
Also collected samples using SNAP Sampler at 0830

Table A
Low Flow Purging Data at MW-A28
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
5/3/2010	9:01:46 AM	0	61.12	0	29.321	90.9	3.235	-116	7.46	0.67	6.9618	674.27
5/3/2010	9:07:19 AM	333	61.15	-0.12	29.322	90	3.235	-134	7.52	0.41	4.2468	674.94
5/3/2010	9:12:53 AM	667	61.35	-2.845	29.326	86	3.264	-140	7.56	0.31	3.2056	678.3
5/3/2010	9:18:27 AM	1001	61.81	-0.032	29.327	55.4	3.235	-140	7.54	0.27	2.8266	677.49
5/3/2010	9:24:01 AM	1335	62.06	-0.03	29.324	44.1	3.264	-137	7.48	0.22	2.3232	674.28
5/3/2010	9:29:35 AM	1669	62.14	0.142	29.321	29.5	3.264	-135	7.43	0.18	1.8484	669.64
5/3/2010	9:35:09 AM	2003	62.16	-0.604	29.326	21.8	3.235	-134	7.41	0.15	1.5391	668.86
5/3/2010	9:40:42 AM	2336	62.45	-2.831	29.329	17.4	3.264	-135	7.4	0.12	1.3046	670.17
5/3/2010	9:46:16 AM	2670	62.4	0.108	29.325	13.5	3.264	-136	7.4	0.11	1.1623	672.29
5/3/2010	9:51:50 AM	3004	62.44	-0.138	29.319	12.5	3.264	-137	7.41	0.1	1.0567	673.89
5/3/2010	9:57:24 AM	3338	62.72	0.195	29.319	10.3	3.235	-139	7.42	0.09	0.9266	677.24

In-Situ Inc.

Troll 9000
5/3/2010

Low-Flow System
ISI Low-Flow Log

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	15.5 [ft]
		Pump placement from TOC	9.5 [ft]

Well Information:		**Pumping information:**	
Well ID	MW-A29	Final pumping rate	110 [mL/min]
Well diameter	4 [in]	Flowcell volume	669.18 [mL]
Well total depth	14.5 [ft]	Calculated Sample Rate	366 [sec]
Depth to top of screen	4.5 [ft]	Sample rate	366 [sec]
Screen length	120 [in]	Stabilized drawdown	0 [in]
Depth to Water	2.38 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	8:11:46	60.33	7.42	283.46	0.52	2.70	82.91
	8:18:05	59.97	7.34	281.08	0.39	2.31	85.02
	8:24:25	59.99	7.32	280.61	0.33	2.10	86.26
	8:30:46	60.48	7.30	281.91	0.22	1.98	86.61
	8:37:05	61.00	7.30	283.51	-0.33	1.91	86.04
Variance in last 3 readings	8:24:25	0.02	-0.03	-0.47	-0.06	-0.20	1.23
	8:30:46	0.49	-0.01	1.30	-0.11	-0.12	0.36
	8:37:05	0.52	0.00	1.60	-0.55	-0.07	-0.57

Notes:
Sample Time:845
Purged water volume:0.75 gal
Water quality parameters stabilized

Table A
Low Flow Purging Data at MW-A29
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
5/3/2010	8:11:46 AM	0	60.33	0	29.295	0.5	2.647	83	7.42	2.7	27.8024	283.46
5/3/2010	8:18:05 AM	379	59.97	0.219	29.304	0.4	2.647	85	7.34	2.31	23.6495	281.08
5/3/2010	8:24:25 AM	759	59.99	0.337	29.306	0.3	2.617	86	7.32	2.1	21.5777	280.61
5/3/2010	8:30:46 AM	1140	60.48	-1.349	29.309	0.2	2.647	87	7.3	1.98	20.4539	281.91
5/3/2010	8:37:05 AM	1519	61	0.573	29.306	-0.3	2.617	86	7.3	1.91	19.8488	283.51

In-Situ Inc.

Troll 9000 | **Low-Flow System**
4/29/2010 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	Mihika Baruah	Pump Model/Type	QED
Company Name	RAM Group of Gannett Fleming	Tubing Type	LDPE W/Teflon
Project Name	BOEING	Tubing Diameter	0.17 [in]
Site Name	49992	Tubing Length	13 [ft]
		Pump placement from TOC	7 [ft]

Well Information:		**Pumping information:**	
Well ID	SWMU17-OB-1-LF	Final pumping rate	125 [mL/min]
Well diameter	4 [in]	Flowcell volume	658.02 [mL]
Well total depth	11.73 [ft]	Calculated Sample Rate	316 [sec]
Depth to top of screen	1.73 [ft]	Sample rate	316 [sec]
Screen length	99.24 [in]	Stabilized drawdown	0 [in]
Depth to Water	4.88 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-3 %	+/-10 %	+/-0.3	+/-10
Last 5 Readings	13:41:04	67.58	6.96	2010.22	10.71	0.44	50.64
	13:46:31	67.19	6.97	2037.49	6.95	0.30	41.70
	13:51:59	67.19	6.98	2041.35	5.29	0.22	35.08
	13:57:26	66.93	6.98	2052.43	4.32	0.17	29.67
	14:02:54	66.98	6.97	2051.01	4.31	0.15	25.29
Variance in last 3 readings	13:51:59	0.00	0.01	3.85	-1.67	-0.08	-6.62
	13:57:26	-0.26	0.00	11.08	-0.97	-0.05	-5.41
	14:02:54	0.05	0.00	-1.42	-0.01	-0.02	-4.38

Notes:

Sample Time:1410
Purged water volume:1.75 gal
Water quality parameters stabilized
Collected Duplicate #2
Also collected samples using SNAP Sampler at 1250

Table A
Low Flow Purging Data at SWMU17-OB-1
Boeing Tract 1, Hazelwood, Missouri

Date	Time	ET	Temperature	Pressure	Barometric	Turbidity	Battery	ORP	pH	Rugged DO	Rugged DO Sat	Conductivity
		Sec	Fahrenheit	Feet H2O	Inches Hg	NTU	Volts	millivolts	pH	mg/L	%Saturation	microSiemens/cm
4/29/2010	1:41:04 PM	0	67.58	0	29.032	10.7	2.823	51	6.96	0.44	4.9529	2010.22
4/29/2010	1:46:31 PM	327	67.19	0.044	29.023	7	2.823	42	6.97	0.3	3.4132	2037.49
4/29/2010	1:51:59 PM	655	67.19	0.577	29.016	5.3	2.823	35	6.98	0.22	2.5299	2041.35
4/29/2010	1:57:26 PM	982	66.93	0.857	29.004	4.3	2.823	30	6.98	0.17	1.9738	2052.43
4/29/2010	2:02:54 PM	1310	66.98	-2.12	29.007	4.3	2.823	25	6.97	0.15	1.7185	2051.01

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/26/10
WELL NO.: MW10S
PERSONNEL INITIALS: BRK/~~BEH~~ EMH

WELL DEPTH: 18' bgs
PRE-PURGE GW DEPTH w/o pump: 3.43'
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 8-18' bgs
PUMP INTAKE DEPTH: 13' bgs

PUMP TYPE: QED Bladder 1.75"
TUBING TYPE/SIZE: HDPE-Teflon Bonded
PURGE START TIME: 12:15
SAMPLE START TIME: 13:30
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
12:30	6.97	1476	-34	-0.08	64.41	64.28	110	4.36
	7.02	1466	-37	-0.08	43.55	64.10	100	4.10
	7.02	1452	-38	0.02	37.27	63.49	100	4.03
12:53	7.03	1475	-38	0.15	24.50	63.34	100	3.99
12:56	7.03	1475	-39	0.30	19.70	63.83	100	3.99
13:04	7.03	1497	-39	0.30	14.04	63.45	100	4.01
13:11	7.03	1512	-40	0.31	10.70	63.74	100	4.01
13:19	7.03	1523	-43	0.20	10.78	63.13	100	4.04

Observations
(color, condition, etc.):
Cut dedicated tubing 18ft long
INITIAL FLOW RATE ~ 300 ml/min DTW ~ 5.0'

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/26/10
WELL NO.: MW10D
PERSONNEL INITIALS: MB/KLP

WELL DEPTH: 79.5 ftbgs
PRE-PURGE GW DEPTH w/o pump: 4.46'bgs
PRE-PURGE GW DEPTH w/ pump: 4.38'bgs
SCREENED INTERVAL: 69.5-79.5'bgs
PUMP INTAKE DEPTH: 74.5'bgs

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE-Teflon Bonded/0.17"
PURGE START TIME: 12:50
SAMPLE START TIME: 1415
SAMPLE END TIME: 1425

12:50pm - Pump on

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1312	6.67	1014	114	2.88	2135	66.45	145	5.00
1319	6.68	991.1	110	2.00	835.0	65.28	140	5.24
1327	6.68	973.5	106	1.51	513.9	64.79	150	5.42
1333	6.69	954.0	102	1.18	382.0	64.65	155	5.58
1340	6.69	926.3	98	0.96	240.6	64.19	160	5.65
1347	6.69	918.7	94				170	5.70
13:53	6.69	909.9	90	0.84	104.7	64.63	155	5.71 → reduced the flow
14:00	6.69	910.4	86	0.75	73.28	64.90	150	5.78
DR ~~14:07~~	~~6.68~~	~~910.4~~	~~86~~	~~0.75~~	~~73.28~~			
14:07	6.68	899.6	83	0.70	54.85	64.99	150	5.85
14:14	6.69	901.1	77	0.67	46.95	65.29	150	5.85

Observations
(color, condition, etc.):
cut 80ft dedicated tubing
WATER IS TURBID
Purged Volume = 3 gallons

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/26/10
WELL NO.: MW8AD
PERSONNEL INITIALS: MB/KLP

WELL DEPTH: 80.5' bgs
PRE-PURGE GW DEPTH w/o pump: 8.47'
PRE-PURGE GW DEPTH w/ pump: 8.47'
SCREENED INTERVAL: 70'-80.5'
PUMP INTAKE DEPTH: 75.5'

PUMP TYPE: QED 2" BLADDER
TUBING TYPE/SIZE: LDPE/TEFLON - 0.17"
PURGE START TIME: 16:12
SAMPLE START TIME: 1755
SAMPLE END TIME: 1840

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1648	6.76	788.4	92	1.83	2127	61.64	100	10.2
1658	6.73	773.1	82	1.04	2141	61.03	110	10.67
1708	6.73	~~773.1~~ 764.2	~~80~~ 76	0.73	1503	60.49	110	11.10
1718	6.73	758.9	71	0.58	734.1	60.16	110	11.46
1728	6.72	757	67	0.47	342.3	60.24	110	11.71
1738	6.72	756.2	64	0.41	202.8	60.14	110	11.91
1748	6.72	756.9	60	0.36	154.2	60.31	110	12.10

Observations
(color, condition, etc.):
81 ft dedicated tubing - Very turbid to begin
OBSERVED DRAWDOWN. PURGED WELL FOR 1 HR. BEFORE SAMPLING
*ALSO TOOK Duplicate #1
purge volume 2.25 gal.

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/26/10
WELL NO.: MW8A
PERSONNEL INITIALS: BRK/MEH

WELL DEPTH: 16.5' bgs ~~MW8A~~
PRE-PURGE GW DEPTH w/o pump: 10.42 bgs
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 6-16.5' bgs
PUMP INTAKE DEPTH: 13.5' bgs

PUMP TYPE: QED Bladder 1.75"
TUBING TYPE/SIZE: LDPE-teflon Bonded/0.17"
PURGE START TIME: 1659
SAMPLE START TIME: 1743
SAMPLE END TIME: 1815

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1708	6.96	2540	73	1.58	8.26	58.03	130	10.78
1714	6.95	2532	77	1.50	6.194	57.65	130	10.85
1719	6.94	2530	77	~~1.55~~ 1.15	2.898	57.53	140	10.9
1724	6.92	2532	73	0.75	2.877	57.52	125	10.91
1729	6.92	2536	71	0.53	2.016	57.52	105	10.91
1735	6.92	2536	70	0.42	1.264	57.45	160	10.98
1740	6.92	2535	70	0.46	1.730	57.42	125	11.01

→ increase the flow adjusted the flow

Observations (color, condition, etc.):
17ft of dedicated tubing purge volume 3.0 gal

Monitor Well Low Flow Data

Page 1 of ____

SITE NAME: BOEING
DATE: 4-26-2010
MW6 WELL NO.: ~~MW-8A8 MW-8A5~~
PERSONNEL INITIALS: BR/EMH

WELL DEPTH: 23 FT
PRE-PURGE GW DEPTH w/o pump: 7.00
PRE-PURGE GW DEPTH w/ pump: 6.75
SCREENED INTERVAL: 8 - 23 FT
PUMP INTAKE DEPTH: ~~15.3~~ FT 15.5

PUMP TYPE: 1.75" BLADDER QED
TUBING TYPE/SIZE: LDPE · TEFLON BONDED - 0.17"
PURGE START TIME: 9:15 AM
SAMPLE START TIME: 10:25 AM
SAMPLE END TIME: 10:30

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
925	6.85	2236	110	2.3	71.04	58.11	115	7.37
931	6.86	2230	106	2.05	56.77	57.97	120	7.37
938	6.87	2228	103	1.87	46.8	57.95	115	7.36
945	6.87	2232	100	1.64	34.24	58.14	120	7.36
951	6.87	2242	97	1.5	27.64	58.46	120	7.36
957	6.87	2250	94	1.36	24.72	58.83	117	7.36
10:03	6.87	2257	91	1.26	33.79	59.10	115	7.36
10:09	6.88	2254	89	1.16	21.42	59.16	115	7.35
10:15	6.88	2249	86	1.11	18.12	59.01	100	7.35
10:22	6.88	2253	84	1.03	17.31	59.12	100	7.35
10:28	6.87	2284	80	0.93	15.10	60.01	~~100~~	~~7.~~ BR

Observations
(color, condition, etc.):
turbid, brown DEDICATED 23 Feet of TUBING TO This well

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/27/10
WELL NO.: MW6D
PERSONNEL INITIALS: MB/KLP

WELL DEPTH: 78.0 ft bgs
PRE-PURGE GW DEPTH w/o pump: ~~6.97'~~ 9.79 bgs
PRE-PURGE GW DEPTH w/ pump: 10.78
SCREENED INTERVAL: 68.0-78.0' bgs
PUMP INTAKE DEPTH: 73.0 ft bgs

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE w/ flow bounded/0.17"
PURGE START TIME: ~~9:00~~ 9:55
SAMPLE START TIME: 1105
SAMPLE END TIME: 1110

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)	
0959	6.50	1232	104	2.66	370.2	60.40	130	9.55	
1006	6.59	1257	58	1.32	397.5	61.82	130	10.55	← lower flow
1014	6.62	1260	45	0.79	376.8	61.92	110	11.06	← lower flow
1023	6.63	1263	44	0.60	365.7	62.08	80	11.39	
1029	6.62	1279	46	0.51	310.9	63.17	70	11.52	
1037	6.63	1278	49	0.46	267.2	63.16	80	11.70	
1044	6.63	1275	51	0.41	228.8	63.02	80	11.86	
1052	6.62	1274	53	0.38	191.4	63.14	80	12.03	
1100	6.62	1283	55	0.35	161.1	63.70	80	12.20	

Observations (color, condition, etc.):
78 ft of dedicated tubing
2.25 gallons purge water

Monitor Well Low Flow Data

SITE NAME: Beems
DATE: 4/27/10
WELL NO.: MW5DS
PERSONNEL INITIALS: MB/KLP

WELL DEPTH: 17.08ft
PRE-PURGE GW DEPTH w/o pump: 7.32ft
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 7- 17.08ft
PUMP INTAKE DEPTH: 12.08ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE w/teflon bonded / 0.17"
PURGE START TIME: 1300
SAMPLE START TIME: 1341
SAMPLE END TIME: 1402

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1311	6.64	4081	124	0.18	12.56	61.12	80	8.05
1320	6.65	4196	125	0.19	12.46	62.84	80	8.19
13289	6.65	4279	126	0.18	12.26	63.72	80	8.22
1338	6.64	4321	128	0.18	12.96	64.50	70	8.28
Stabilized								

Observations
(color, condition, etc.):
18ft of dedicated tubing
COLOR WAS CLEAR
1.5 gallons purge water

Monitor Well Low Flow Data

Page 1 of 1

SITE NAME: BOEING
DATE: 4-27-2010
WELL NO.: MW5CS
PERSONNEL INITIALS: BR/EMH

WELL DEPTH: 17.64'
PRE-PURGE GW DEPTH w/o pump: 8.89
PRE-PURGE GW DEPTH w/ pump: 8.50
SCREENED INTERVAL: 8 - 17.64
PUMP INTAKE DEPTH: 13.5

PUMP TYPE: 1.75" Bladder QED.
TUBING TYPE/SIZE: LDPE Teflon bonded - 0.17'
PURGE START TIME: 12:58
SAMPLE START TIME: 13:32
SAMPLE END TIME:

9x64

.64
1
7.68 4

11 ~~5~~68

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1313	6.68	3133	87	0.90	0.2887	15.97	125 ~~135~~	10.15 10.09
1319	6.64	3157	85	0.75	-0.0440	16.35	115	10.30
1325	6.62	3182	82	0.62	-0.0362	16.56	115	10.48
	paramters stabilized.							

Observations
(color, condition, etc.):
Clear water. purge water: 125 gal.

Monitor Well Low Flow Data

Page ___ of ___

SITE NAME: Boeing
DATE: 4/27/10
WELL NO.: B25MW1
PERSONNEL INITIALS: BR/EMH

WELL DEPTH: 15.7
PRE-PURGE GW DEPTH w/o pump: 8.74
PRE-PURGE GW DEPTH w/ pump: 8.67
SCREENED INTERVAL: 10.7-15.7
PUMP INTAKE DEPTH: 13.2

PUMP TYPE: 1.75" QED Bladder pump
TUBING TYPE/SIZE:
PURGE START TIME: 15:05
SAMPLE START TIME: 16:07
SAMPLE END TIME: 1625

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
15:07	7.32	667.1	93	6.22	120.2	62.82	150	8.87
15:12	7.22	740.5	82	6.02	89.73	61.82	160	8.96 → reduced to flow
15:16	7.27	573.9	70	6.40	42.15	61.33	120	8.96
15:20	7.30	481.5	64	6.68	23.54	61.58	120	8.99
1525	7.31	439.8	60	6.75	14.84	60.96	125	8.99
15:30	7.30	420.2	58	6.54	11.57	60.38	125	9.0
15:34	7.29	414.5	57	6.38	8.655	60.64	125	9.0
15:59	7.28	413.6	56	6.14	8.260	60.84	125	9.03
15:44	7.26	413.3	55	5.81	5.360	60.85	130	9.03
15:49	7.25	416.8	54	5.59	6.743	61.10	130	9.03
1553	7.23	422.0	53	5.36	4.791	61.06	135	9.06
1558	7.22	424.1	52	5.06	4.096	60.72	132	9.06
1603	7.20	431.7	52	4.79	2.788	60.89	130	9.06
1607	7.19	439.1	51	4.59	2.803	61.09	130	9.06

Observations
(color, condition, etc.):
brown color Total depth 15.14 silty at the bottom
purge volume 2.25 gal

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/27/10
WELL NO.: MW1
PERSONNEL INITIALS: MB/KLP

WELL DEPTH: 20ft
PRE-PURGE GW DEPTH w/o pump: 7.55ft
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 10-20ft
PUMP INTAKE DEPTH: 15ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE w/teflon bonded / 0.17"
PURGE START TIME: 1507
SAMPLE START TIME: 1625
SAMPLE END TIME: 1633

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1517	6.72	3532	116	1.04	61.13	63.46	100	7.40
1524	6.76	3541	107	0.69	38.17	63.38	100	7.40
~~1531~~	~~6.76~~	~~3541~~	~~+~~					
1531	6.76	3525	99	0.43	24.90	63.07	110	7.40
1539	6.77	3505	92	0.32	16.99	62.78	110	7.40
1547	6.77	3502	87	0.25	15.57	62.52	120	7.41
1553	6.77	3510	80	0.21	11.56	62.56	120	7.45
1600	6.76	3516	~~80~~74	0.19	8.00	62.50	120	7.44
1607	6.76	3509	69	0.14	7.60	62.25	120	7.44
1614	6.76	3509	63	0.12	6.67	62.09	120	7.44
1622	6.76	3512	58	0.10	6.56	62.10	120	7.44

Observations (color, condition, etc.):
20ft dedicated tubing
COLOR WAS CLEAR. SOME SILT SAND AT THE BOTTOM OF PURGE BUCKET
PURGE VOL. - 2.25 GAL
well depth - 19.70 (hard bottom)

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/27/10
WELL NO.: B4MW-9
PERSONNEL INITIALS: MB/KLP

WELL DEPTH: 19.8 ft
PRE-PURGE GW DEPTH w/o pump: 8.84
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 10 - 19.8 ft
PUMP INTAKE DEPTH: 14.9 ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: DLPE w/teflon bonded/0.17"
PURGE START TIME: 1740
SAMPLE START TIME: 1955
SAMPLE END TIME: 2015

	TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)	
	1755	6.38	5606	169	0.73	73.54	60.37	100	9.64	
	1803	6.43	5555	171	0.52	32.40	59.88	110	10.20	
	1810	6.44	5549	173	0.45	20.53	60.30	80	10.34	
	1817	6.43	5573	174	0.43	15.09	60.51	80	10.45	
5	1824	6.34	5598	180	0.40	14.33	60.15	140	10.50	shut down for samples # 5-11.
12	1914	6.20	5869	198	0.63	13.87	62.90	80	9.38	
	1921	6.18	5674	207	0.58	16.52	59.80	80	9.32	
	1929	6.17	5618	214	0.31	14.30	58.46	80	9.60	
	1935	6.14	5581	221	0.19	11.00	57.82	80	9.58	
	1943	6.12	5560	228	0.13	11.90	57.42	80	9.82	
	1950	6.10	5549	233	0.10	13.34	57.21	80	10.35	

Observations
(color, condition, etc.):
20 ft of dedicated tubing
1828 removed of gas
1912 connected gas cylinder
2.25 gallons purge water

Monitor Well Low Flow Data

Page ____ of ____

SITE NAME: Boeing
DATE: 4/27/10
WELL NO.: B4MW-10
PERSONNEL INITIALS: BR/EMH

WELL DEPTH: 12
PRE-PURGE GW DEPTH w/o pump: 8.86
PRE-PURGE GW DEPTH w/ pump: 8.80
SCREENED INTERVAL: 2-12
PUMP INTAKE DEPTH: 10 ft

PUMP TYPE:
TUBING TYPE/SIZE:
PURGE START TIME: 18:12
SAMPLE START TIME: 9:45 Am (4/28/10)
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1820	7.30	2372	85	4.62	66.84	60.18	125	9.28
1826	7.32	2343	77	4.15	32.07	59.38	120	9.54
lowered the ~~tubing~~ pump to 10.5 ft since the water level was dropping								
1832	7.32	2326	73	3.98	30.03	59.05	~~113~~ 125	9.73
1836	7.30	2323	71	3.94	36.04	58.75	125	9.89
1842	7.27	2298	70	3.46	23.00	58.5	125	10.06 → reduce the flow
1848	7.24	2289	70	2.98	17.78	58.41	75	10.22
1853	7.21	2290	70	2.74	11.41	58.47	70	10.33
1858								10.40
Well not recharging. Stopped pumping								
4/28/10	pump set at 10.5 ft							
9:34								9.22
							with pump	9.13
Sampled at 9:45 Am								
		Total As, Mn,		Hg	VOC's	TPH DRO, ORO		

Observations
(color, condition, etc.):
pumped the well dry with peristaltic pump at 19:15

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/28/10
WELL NO.: B41MW-18
PERSONNEL INITIALS: BRJ EMH

WELL DEPTH: 12
PRE-PURGE GW DEPTH w/o pump: ~~3.95~~ 3.65
PRE-PURGE GW DEPTH w/ pump: 3.85
SCREENED INTERVAL: 2-12
PUMP INTAKE DEPTH: 7

PUMP TYPE: 1.75" QED Bladder
TUBING TYPE/SIZE:
PURGE START TIME: 8:00
SAMPLE START TIME: 8:45
SAMPLE END TIME: 9:08

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)	
8:04	7.14	723.7	84	1.01	45.28	60.87	~~125~~ ~~135~~	4.39	
8:10	7.18	716.9	88	1.22	26.09	60.73	135	4.49	
8:16	7.18	714.1	89	1.24	16.36	60.73	125	4.62	Reduced Flow Rate
8:18							105	4.70	
8:21	7.19	716.5	~~84~~ 87	~~1.24~~ 1.09	11.08	60.74	105	4.78	reduced flow
8:25							80	4.83	
8:26	7.19	719.7	84	1.02	7.047	61.35	80	4.86	
8:31	7.18	724.5	81	0.98	6.178	61.86	80	4.92	
8:37	7.19	726	78	1.04	5.912	61.51	80	5.0	
8:42	7.19	724.8	75	1.07	6.409	61.62	80	5.07	
	Stabilized.								

Observations (color, condition, etc.): Purge volume: 1.5 gal.

Monitor Well Low Flow Data

Page 1 of ___

SITE NAME: Boeing
DATE: 4/28/10
WELL NO.: B41 MW-5
PERSONNEL INITIALS: MB/KLP

WELL DEPTH: 12 ft
PRE-PURGE GW DEPTH w/o pump: 3.11 ft
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 2-12 ft
PUMP INTAKE DEPTH: 8 ft

PUMP TYPE: QED Bladder ~~2"~~ small dia.
TUBING TYPE/SIZE: LDPE w/ teflon bonded/0.17"
PURGE START TIME: ~~0806~~ 0830
SAMPLE START TIME: 0910
SAMPLE END TIME: 0925

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
0843	6.97	1016	68	0.46	1.470	61.11	150	3.30
0847	6.84	1019	70	0.33	1.758	61.65	150	3.42
0852	6.74	1021	73	0.26	1.572	61.95	150	3.53
0857	6.70	1021	73	0.22	1.143	62.00	150	3.62
0902	6.70	1021	72	0.19	1.085	61.97	140	3.70

Observations
(color, condition, etc.):

12 ft dedicated tubing
2" bladder pump cannot get past kinked casing about 6-inches below TOC
will not accept snap samplers due to small manway & poss. kinked tubing

well depth = 12.25 (hard)

Monitor Well Low Flow Data

SITE NAME: BOEING
DATE: 4/28/10
WELL NO.: B4SSD
PERSONNEL INITIALS: KLP/MB

WELL DEPTH: 66 ft
PRE-PURGE GW DEPTH w/o pump: 4.60 ft
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 56-66 ft
PUMP INTAKE DEPTH: 61 ft

PUMP TYPE: QED Bladder - small dia 0.67"
TUBING TYPE/SIZE: LDPE w/teflon bonded / 0.17"
PURGE START TIME: 1053
SAMPLE START TIME: 1145
SAMPLE END TIME: 1235

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1121	6.53	949.0	47	3.96	84.64	70.98	50	~~19.8~~ 19.99
1139	6.52	941.0	40	4.42	172.1	71.01	50	30.70
Sampled before dewatering screen								

Observations (color, condition, etc.):
66 ft of dedicated tubing
Cannot be converted to snap samplers - well dia too small (0.75-inch)

Well depth = could not take - w/ tape sticking to well wall

Monitor Well Low Flow Data

Page ____ of ____

SITE NAME: Boeing
DATE: 4/28/10
WELL NO.: MW4 ~~B220~~
PERSONNEL INITIALS: BOL / BMM

WELL DEPTH: 19.5
PRE-PURGE GW DEPTH w/o pump: 4.89
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 10 - 19.5
PUMP INTAKE DEPTH: 14.75

PUMP TYPE:
TUBING TYPE/SIZE:
PURGE START TIME: 11:20
SAMPLE START TIME: 12:30
SAMPLE END TIME:

P2D 0.2

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
11:27	6.8	4474	-44	0.39	94.78	64.10	~~100~~ 105	5.17
11:34	6.82	4503	-42	0.31	75.74	64.16	100	5.17
11:40	6.82	4529	-41	0.26	52.43	64.57	115	5.16
11:47	6.82	4532	-39	0.21	41.79	64.55	115	5.16
11:54	6.82	4543	-38	0.18	34.93	64.26	120	5.16
12:01	6.82	4541	-37	0.15	24.03	64.18	120	5.17
12:07	6.82	4520	-36	0.13	17.30	63.62	120	5.17
12:14	6.82	4552	-35	0.11	15.67	64.19	130	5.17
12:21	6.82	4554	-34	0.09	13.83	63.79	130	5.17
12:28	6.82	4549	-34	0.07	11.38	63.76	130	5.17

Observations
(color, condition, etc.):
purge vol. 2.75 gal

Monitor Well Low Flow Data

Page ____ of ____

SITE NAME: Boeing
DATE: 4/28/10
WELL NO.: B28MW4
PERSONNEL INITIALS: BRJ EMH

WELL DEPTH: 20.5
PRE-PURGE GW DEPTH w/o pump: 5.3
PRE-PURGE GW DEPTH w/ pump: 4.92
SCREENED INTERVAL: 5.5-20.5
PUMP INTAKE DEPTH: 12.75

PUMP TYPE:
TUBING TYPE/SIZE:
PURGE START TIME: 1508
SAMPLE START TIME: 16:15
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1511	6.81	869.2	-116	0.46	43.72	64.85	135	5.5
1516	6.82	861.1	-119	0.27	31.21	63.56	140	5.75
1521	6.84	859.1	-120	0.19	24.80	63.39	90	5.8 → reduced flow
1527	6.84	866	-121	0.17	21.91	63.99	95	5.8
1532	6.84	868.5	-120	0.16	23.58	64.22	90	5.81
1538	6.84	874	-120	0.15	60.79	64.53	90	5.81
1543	6.83	880	-120	0.14	124.9	64.81	90	5.81
1548	6.83	881.9	-120	0.12	127.4	64.75	95	5.82
1553	6.82	891.6	-120	0.11	181.6	65.90	95	5.82
1558	6.82	891.6	-120	0.10	226.	65.97	95	5.84
1603	6.83	883.1	-120	0.09	252.4	64.98	95	5.84
~~1608~~ 1609	6.83	877.2	-120	0.09	525.8	64.55	95	5.92
1615	6.84	876.0	-119	0.08	587.7	64.42	95	5.92

Observations
(color, condition, etc.):
purge volume 2.25 gal,

2 VOC & TPH GRO, Amber for DRO & ORO
~~Total & Diss~~
As, Ba, Cd, Cr, Mn, Hg

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/28/10
WELL NO.: MW7
PERSONNEL INITIALS: MB/KLP

WELL DEPTH: 11.9 ft
PRE-PURGE GW DEPTH w/o pump: 3.05 ft
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 7-11.9 ft
PUMP INTAKE DEPTH: 9.4 ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE w/teflon bonded/0.17"
PURGE START TIME: 1504
SAMPLE START TIME: 1615
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1511	6.81	1357	61	0.68	3.290	64.73	80	3.71
1520	6.82	1408	48	0.42	1.902	64.84	85	~~3.4~~ 3.42
1529	6.70	1358	46	0.32	2.313	64.66	100	3.45
1537	6.57	1318	49	0.26	2.852	64.96	90	3.45
1546	6.46	1283	53	0.24	2.093	65.04	90	3.45
1554	6.37	1283	56	0.20	2.723	66.37	80	3.45
1604	6.32	1247	59	0.19	2.339	65.59	90	3.45
1611	6.21	1220	64	0.18	2.089	64.84	90	3.48

Observations
(color, condition, etc.):
12 ft of dedicated tubing
1.75 gallon of purge water
Snap Sampler can be added

Total Depth = 11.66 ft (hard)

Page ____ of ____

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/28/10
WELL NO.: B27W3D
PERSONNEL INITIALS: BR

WELL DEPTH: 26 0.5" dia
PRE-PURGE GW DEPTH w/o pump: 3.34
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 21-26
PUMP INTAKE DEPTH:

PUMP TYPE:
TUBING TYPE/SIZE:
PURGE START TIME:
SAMPLE START TIME: 16:10
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
	Tubing set at 23ft							
	~~Collected~~ purged 100mL before sampling.							

Observations (color, condition, etc.):

Sampled with peristaltic pump. 2 (VOCs & GRO), (DRO, ORO)

Collected samples for VOCs, TPH-GRO. Pb, Ba, Cd, Cr, Mn, Hg Total and diss

Collected 1/2 Ltr for TPH-DRO & ORO

well was dry.

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/28/10
WELL NO.: MW-11D
PERSONNEL INITIALS: MB/KLP

WELL DEPTH: 74.0ft
PRE-PURGE GW DEPTH w/o pump: 21.5ft
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 64-74ft
PUMP INTAKE DEPTH: 69ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE w/teflon bonded/0.17"
PURGE START TIME: 1835
SAMPLE START TIME: 1953
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1847	6.74	717.7	-41	1.23	62.95	64.88	90	22.6
1858	6.75	718.4	-42	0.81	90.37	64.91	80	23.71
1909	6.74	723.9	-47	0.64	381.80	64.71	90	24.75
1919	6.75	720.4	-55	0.54	76.69	64.54	90	25.57
1930	6.75	717.2	-60	0.45	189.1	64.26	90	26.40
1941	6.76	713.7	-65	0.40	457.2	64.13	80	27.11
1952	6.76	703.3	-69	0.36	40.62	63.81	80	27.76

Observations
(color, condition, etc.):
cut 74 ft dedicated tubing
SnapSamplers can be added
New manway added to well.

MW depth =

Monitor Well Low Flow Data

SITE NAME: BOEING, MO
DATE: 4/28/10
WELL NO.: MW-11I
PERSONNEL INITIALS: BR/EMH

WELL DEPTH: 40
PRE-PURGE GW DEPTH w/o pump: ~~6.26~~ BR 7.62
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 32-40
PUMP INTAKE DEPTH: 36

PUMP TYPE: BLADDER 2"
TUBING TYPE/SIZE: LDPE-TEFLON/0.17"
PURGE START TIME: 18:45
SAMPLE START TIME: 20:00
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
19:00	6.69	728.4	68	1.82	19.72	64.24	110	8.83
	6.69	724.8	65	1.48	14.98	63.73	125	9.77
	6.69	725.3	64	1.38	9.38	63.44	120	11.15
19:20	6.69	724.8	62	1.29	7.346	63.29	80	11.54
19:29	6.69	728.0	61	1.26	8.10	63.15	80	11.81
1938 ~~1934~~	6.69	724.8	60	1.21	8.05	63.07	80	12.01
1944 ~~1947~~	6.69	721.3	59	1.17	12.03	63.02	80	12.68
1952	6.69	723.3	59	1.12	14.36	62.91	80	13.03
1959	6.69	727.9	58	1.08	15.50	62.82	80	13.42

Reduced to 80 ml/min

Observations
(color, condition, etc.):

CUT TUBING LENGTH TO 41' water depth before snap sampler was taken out 6.21 ~~7.62~~
purge volume 2.25 gal

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/29/10
WELL NO.: B28MW3
PERSONNEL INITIALS: EMH/KLP

WELL DEPTH: 12 ft
PRE-PURGE GW DEPTH w/o pump: 4.33 ft
PRE-PURGE GW DEPTH w/ pump: 4.22 ft
SCREENED INTERVAL: 2-12 ft
PUMP INTAKE DEPTH: 8 ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE w/ Teflon bonded / 0.17"
PURGE START TIME: 0810
SAMPLE START TIME: 0850
SAMPLE END TIME: 0905

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
0816							150	4.65
0821	6.92	2313	-110	0.07	23.33	58.16	140	4.91
0825	6.94	2311	-112	0.06	14.11	58.25	140	5.08
0829	6.95	2310	-113	0.04	6.022	58.27	140	5.24
0834	6.96	2318	-114	0.03	5.841	58.30	120	5.38
0839	6.96	2322	-114	0.01	1.891	58.35	120	5.48
0843	6.96	2327	-114	0.00	1.819	58.41	125	5.61
0848	6.96	2330	-114	-0.01	1.185	58.43	130	5.72
	Stabilized							

← reduced flow rate

Observations
(color, condition, etc.):
Cut 12 ft tubing dedicated
will accept snap sampler
1.5 gallons purge water.

Well depth =

Monitor Well Low Flow Data

Page 1 of ____

SITE NAME: Boeing
DATE: 4/29/10
WELL NO.: MW3-LF
PERSONNEL INITIALS: BR, MB

WELL DEPTH: 19.7
PRE-PURGE GW DEPTH w/o pump: 5.35'
PRE-PURGE GW DEPTH w/ pump: 5.7
SCREENED INTERVAL: 10-19.7
PUMP INTAKE DEPTH: 15'

PUMP TYPE: 2" BLADDER
TUBING TYPE/SIZE: LDPE - TEFLON/ 0.17"
PURGE START TIME: 8:40
SAMPLE START TIME: 9:55
SAMPLE END TIME: 10:35

PID = 0.1 ppm

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
8:48	6.90	2660	71	0.03	115.1	62.49	105	5.75
8:54	6.68	2736	69	0.12	86.67	63.59	97	5.75
9:01	6.63	2768	62	0.34	55.47	63.88	100	5.80
9:09	6.61	2791	55	0.38	39.04	64.32	100	5.82
9:15	6.60	2806	49	0.36	34.77	64.72	100	5.85
9:21	6.59	2818	43	0.32	32.41	64.94	90	5.89
9:28	6.59	2832	38	0.30	34.04	65.40	90	5.90
9:35	6.59	2837	34	0.27	40.85	65.30	90	5.90
9:42	6.59	2859	30	0.24	27.15	65.68	90	5.90
9:50	6.59	2859	26	0.22	20.71	65.62	90	5.92

Observations (color, condition, etc.): DTW =4.82 with snap sampler in before taking them out

COLOR IS BROWNISH
PURGE VOL = 2 GAL

TPH GRO, DRO, ORO
VOC
SVOC, PCB
As, Ba, Cd, Cr, Mn
Hg
TA & dis

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/29/10
WELL NO.: MW95
PERSONNEL INITIALS: EMH/KLP

WELL DEPTH: 18 ft
PRE-PURGE GW DEPTH w/o pump: 6.07 ft
PRE-PURGE GW DEPTH w/ pump: 5.71 ft
SCREENED INTERVAL: 8-18 ft
PUMP INTAKE DEPTH: 13 ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE w/ Teflon bonded / 0.17"
PURGE START TIME: 0955
SAMPLE START TIME: 1108
SAMPLE END TIME: 1133

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1002	6.69	9366	-37	0.62	129.8	63.49	115	6.02
1009	6.72	9257	-39	0.26	93.74	62.98	140	6.57
1015	6.74	9279	-41	0.13	84.64	62.88	130	6.67
1021	6.75	9269	-43	0.07	58.29	62.88	130	6.77
1027	6.75	9273	-45	0.04	50.02	62.78	130	6.76
1033	6.75	9301	-46	0.02	43.59	63.40	130	6.78
1039	6.74	9313	-48	0.01	43.87	62.81	125	6.75
1046	6.75	9284	-49	-0.00	37.94	63.03	125	6.75
1052	6.76	9215	-50	-0.01	45.97	62.45	115	6.75
1058	6.77	9129	-51	-0.02	48.07	61.82	120	6.83
1104	6.77	9056	-52	-0.03	67.74	61.56	120	6.84

Observations
(color, condition, etc.):
will accept Snap Sampler
Cut 18 ft of dedicated tubing
2.5 gallons purge water

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/29/10
WELL NO.: MW-8I
PERSONNEL INITIALS: EMH/KLP

WELL DEPTH: 40ft
PRE-PURGE GW DEPTH w/o pump: 7.97
PRE-PURGE GW DEPTH w/ pump: 6.95
SCREENED INTERVAL: 32-40 ft
PUMP INTAKE DEPTH: 36 ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE-Teflon Bonded/0.17"
PURGE START TIME: 1310
SAMPLE START TIME: 1445
SAMPLE END TIME: 1505

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1339	6.77	789.0	-49	0.29	42.95	68.82	120	11.34
1346	6.77	763.1	-48	0.30	68.95	68.87	115	12.04
1355	6.77	720.6	-44	0.38	59.18	68.93	115	13.01
	6.76	674.2	-37	0.53	69.99	69.18	[illegible]	[illegible]
1406	6.76	672.1	-33	0.66	118.3	69.93	95	13.95
1413	6.75	679.9	-33	0.70	172.8	69.97	100	14.45
1420	6.75	687.6	-33	0.70	217.4	70.15	100	14.90
1426	6.75	692.7	-34	0.69	347.5	70.11	100	15.29
1433	6.75	702.0	-35	0.65	248.9	69.92	100	15.76
1440	6.75	709.2	-36	0.62	282.9	69.42	105	

Observations (color, condition, etc.):
Cut 40 ft of dedicated tubing
Can convert to snap samplers
PID=0.0 purge volume 2.5 gal

Monitor Well Low Flow Data

Page 1 of ___

SWMU17-OB-1

SITE NAME: Boeing
DATE: 4/29/2010
WELL NO.: ~~SMW~~
PERSONNEL INITIALS: BR/MB

WELL DEPTH: 10 (Measured at 11.73)
PRE-PURGE GW DEPTH w/o pump: 4.88
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 0-10 (~~2~~ 1.73 - 11.73)
PUMP INTAKE DEPTH: 7'

PUMP TYPE: BLADER 2"
TUBING TYPE/SIZE: LDPE-TEFLON/0.17"
PURGE START TIME: 13:30
SAMPLE START TIME: 1410
SAMPLE END TIME: 1430

PID ÷ 2.5 ppm

GW depth with snap sampler 4.93'

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1341	6.96	2010	51	0.44	10.71	67.58	125	4.99
1346	6.97	2037	42	0.30	6.96	67.19	120	4.91
1352	6.98	2041	35	0.22	5.29	67.19	120	4.91
1356	6.98	2052	30	0.17	4.320	66.93	120	4.91
1402	6.97	2051	25	0.15	4.312	66.98		

Observations
(color, condition, etc.):
CUT TUBING @ 13'
COLLECTED 'DUP #2'
PURGE WATER = 1.75'

VOC, TPH-GRO, TPH-DRO, ORO
As, Cd

As, Cd - TOTAL

Monitor Well Low Flow Data

SITE NAME: BOEING
DATE: 4/29/10
WELL NO.: MW-11S
PERSONNEL INITIALS: BR, MB

WELL DEPTH: 16.5
PRE-PURGE GW DEPTH w/o pump: 5.25
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 6.5 – 16.5
PUMP INTAKE DEPTH: 11.5

PUMP TYPE: BLADDER 2"
TUBING TYPE/SIZE: LDPE - TEFLON / 0.17"
PURGE START TIME: 1654
SAMPLE START TIME: 1705
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1602	6.54	6607	76	1.59	42.48	69.70	85	5.70
1610	6.50	6752	69	1.12	31.77	70.81	90	6.0
1619	6.48	6717	63	0.81	28.57	70.85	80	6.2
1627	6.48	6714	59	0.67	57.64	71.14	80	6.3
1635	6.47	6662	55	0.55	112.6	71.56	80	6.3
1644	6.47	6665	52	0.59	58.80	71.46	80	6.30
1652	6.46	6657	49	0.54	65.34	71.38	80	6.28
1700	6.46	6583	47	0.44	26.21	71.10	80	6.28

Observations (color, condition, etc.):

DTW = 5' W/ SNAP SAMPLER IN WELL
CUT TUBING TO 17.5'
Purge volume 1.75 gal

VOC & TPH GRO, ALL-AS, Cd, Cr, Pb

Monitor Well Low Flow Data

Page 1 of ___

SITE NAME: Boeing
DATE: 4/29/10
WELL NO.: MW-65
PERSONNEL INITIALS: EMH/KLP

WELL DEPTH: 15 ft
PRE-PURGE GW DEPTH w/o pump: 3.95 ft
PRE-PURGE GW DEPTH w/ pump: 4.47 ft
SCREENED INTERVAL: 5-15 ft
PUMP INTAKE DEPTH: 10 ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE w/ Teflon Bonded/0.17"
PURGE START TIME: 1555
SAMPLE START TIME: 1715
SAMPLE END TIME: 1730

	TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)	
	1604	6.94	1615	-61	0.50	65.92	66.29	135	5.19	
	1610	6.96	1607	-61	0.28	58.67	66.16	150	5.35	
	1614	6.97	1599	-61	0.15	34.16	65.98	150	5.47	
	1619	6.98	1595	-62	0.09	18.35	65.90	150	~~5.55~~ 5.65	
	1624	6.98	1590	-64	0.06	12.89	65.70	145	5.65	
	1629	6.98	1584	-64	0.05	12.69	65.55	150	5.78	
	1634	6.98	1582	-66	0.05	16.70	65.52	150	5.86	
		6.98	1566	-66	0.05	26.91	64.97			
a	1645	6.99	1550	-66	0.04	33.79	64.47	150	6.07	← skipped reading
"	1655	6.99	1538	-66	0.03	80.72	63.93	155	6.26	
	1700	7.00	1533	-66	0.02	28.74	63.53	155	6.34	
	1706	7.00	1526	-66	0.00	44.99	63.41	155	6.46	

Observations
(color, condition, etc.):
PID = 0.0
Good for Snap Samplers
cut 15 ft of dedicated tubing
3.25 gallons purged

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/29/10
WELL NO.: MW-5I
PERSONNEL INITIALS: EMH/KLP

WELL DEPTH: 42 ft
PRE-PURGE GW DEPTH w/o pump: 6.89 ft
PRE-PURGE GW DEPTH w/ pump: 5.60 ft
SCREENED INTERVAL: 32-42 ft
PUMP INTAKE DEPTH: 37 ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE w/Teflon bonded / 0.17"
PURGE START TIME: 1800
SAMPLE START TIME: 1910
SAMPLE END TIME: 1925

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)	
1809	6.77	848.2	-62	0.62	66.87	66.38	125	7.60	
1815	6.79	846.3	-65	0.32	107.4	65.70	135	9.04	
1822	6.79	846.3	-67	0.20	282.9	65.54	130	9.38	
1828	6.78	840.8	-65	0.13	490.0	65.62	130	9.92	
1836	6.78	836.1	-61	0.10	2250	65.46	130	10.51	← reduced flow rate
1842	6.77	827.9	-60	0.07	848.9	65.53	120	10.69	
1849	6.77	834.2	-62	0.05	1140	65.86	110	9.96	
1855	6.77	834.4	-65	0.03	2818	65.98	105	10.06	
1901	6.77	838.1	-66	0.01	91.54	66.01	120	11.23	
1908	6.76	841.2	-67	0.00	212.2	65.95	110	11.39	

Observations (color, condition, etc.):
cut 42 ft dedicated tubing
PID = 204 ppm
Good for snap samplers

Monitor Well Low Flow Data

SITE NAME: BOEING, MO
DATE: 4/29/10
WELL NO.: MW-8S
PERSONNEL INITIALS: BR, MB

WELL DEPTH: 16'
PRE-PURGE GW DEPTH w/o pump: 6.46'
PRE-PURGE GW DEPTH w/ pump: –
SCREENED INTERVAL: 8-16'
PUMP INTAKE DEPTH: ~~12~~ 11

PUMP TYPE: BLADDER-2"
TUBING TYPE/SIZE: LDPE-TEFLON/0.17
PURGE START TIME: 1835
SAMPLE START TIME: 1950
SAMPLE END TIME: 2010

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)	
1843	7.06	861.7	61	0.90	4.67	65.01	110	6.70	
1850	7.05	853.6	59	0.52	3.52	63.38	110	7.15	REDUCED PUR RATE TO 85 ML
1853							85	7.21	DTW = 7.21'
1855	7.04	852.2	58	0.39	2.68	63.25	82	7.30	
1902	7.03	850.9	57	0.32	5.23	63.12	85	7.44	
1909	7.02	847.1	56	0.28	6.33	62.95	85	7.55	
1915	7.02	846.4	55	0.25	9.167	62.84	85	7.62	
1921	7.01	843.3	55	0.22	15.25	62.31	85	7.70	
1928	7.00	838.8	54	0.20	33.16	62.14	85	7.77	
1934	7.00	834.9	53	0.18	49.77	62.00	85	7.80	
1940	6.99	834.3	53	0.16	69.12	61.81	85	7.85	
1947	7.00	831.8	52	0.15	112.1	61.62	85	7.88	

Observations
(color, condition, etc.):

TPH VOC TOTAL - As, Cd,

CUT TUBING TO 17'
PURGE VOL - 1.5 GAL
CAN INSTALL SNAP SAMPLER

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/30/10
WELL NO.: B42N6
PERSONNEL INITIALS: BRJ MB

WELL DEPTH: 15
PRE-PURGE GW DEPTH w/o pump: 2.08
PRE-PURGE GW DEPTH w/ pump: ~~0.88~~ 1.4
SCREENED INTERVAL: 5-15
PUMP INTAKE DEPTH: 10

PUMP TYPE: BLADDER-0.67"
TUBING TYPE/SIZE: LDPE-TEFLON/0.17"
PURGE START TIME: 8:20
SAMPLE START TIME: 9:02
SAMPLE END TIME: 9:20

PID=0.0ppm

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
8:35	6.69	6411	64	1.51	37.52	64.25	70	4.43
8:38	–	–	–	–	–	–	–	4.75
8:42	–	–	–	–	–	–	–	5.19
8:44	6.69	6046	46	1.73	54.12	63.78	60	5.50
8:46	–	–	–	–	–	–	–	5.70
8:48	–	–	–	–	–	–	–	5.85
8:50	–	–	–	–	–	–	–	6.08
8:52	–	–	–	–	–	–	–	6.28
8:54	6.71	5999	35	1.89	30.09	63.77	45	6.60
8:59	–	–	–	–	–	–	–	6.90
9:01	–	–	–	–	–	–	–	7.03
STARTED SAMPLING @ 9:02 AS DTW WAS DROPPING.								

TIME	DTW
8:24	2.8
8:26	2.8
8:27	3.[illegible]
8:28	3.[illegible]
8:29	3.5
8:31	3.[illegible]
8:33	4.1

Observations
(color, condition, etc.):

~~St~~ PURGE WATER = 0.5 GAL
DTW = Depth to water
COULD NOT SAMPLE FOR TPH GRO AS ~~WELL W~~ NOT ENOUGH GROUND WATER AVAILABLE

TIME	DTW
8:24	2.88
8:26	2.95
8:27	3.24

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/30/10
WELL NO.: MW-A16
PERSONNEL INITIALS: EMH/KLP

WELL DEPTH: 12.5ft
PRE-PURGE GW DEPTH w/o pump: 4.59
PRE-PURGE GW DEPTH w/ pump: 4.48
SCREENED INTERVAL: 2.5-12.5' ft
PUMP INTAKE DEPTH: 8.5 ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE w/Teflon bonded/0.17"
PURGE START TIME: 0843
SAMPLE START TIME: 10:00
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°~~Celsius~~ F) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
0853	6.73	544.1	-78	-0.04	68.70	59.04	130	5.15
0859	6.74	471.8	-71	+0.05	65.63	58.70	140	5.27
0904.	6.75	450.9	-68	0.24	43.71	58.56	135	5.45
0909	6.76	459.3	-69	0.36	26.01	58.44	135	5.58
0915	6.77	478.2	-71	0.37	18.42	58.57	120	5.68
0920	6.78	494.8	-74	0.33	13.18	58.75	120	5.77
0926	6.79	511.1	-78	0.28	9.30	58.92	120	5.89
0930	6.80	522.3	-81	0.23	9.140	59.05	120	5.99
0936	6.81	533.3	-83	0.19	6.629	59.08	120	6.09
0941	6.81	542.6	-86	0.15	5.076	59.21	120	6.16
0946	6.82	552.6	-88	0.12	6.659	59.37	120	6.24
0951	6.83	561.3	-90	0.09	3.751	59.41	120	6.32
0956	6.83	569.2	-92	0.07	3.413	59.62	115	6.38

Observations
(color, condition, etc.):
cut 13 ft of dedicated tubing
can be converted to snap sampler
PID = 0.1
Purge vol = 2.75 gallons

Monitor Well Low Flow Data

SITE NAME: BOEING, MO
DATE: 4/30/10
WELL NO.: MW-A4
PERSONNEL INITIALS: BR, MB

WELL DEPTH: 12'
PRE-PURGE GW DEPTH w/o pump: 9.33'
PRE-PURGE GW DEPTH w/ pump: 9.257
SCREENED INTERVAL: 2'-12'
PUMP INTAKE DEPTH: ~~7'~~ 10.4'
$\left(\frac{12' - 9.33'}{2} + 9.33 = 10.7'\right)$

PUMP TYPE: 2" BLADDER
TUBING TYPE/SIZE: LDPE - TEFLON / 0.17"
PURGE START TIME: 10:26
SAMPLE START TIME: 10:50
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
10:32	6.77	779.2	64	1.18	0.80	65.95	~~85~~ 70 MB	~~10.6~~ 9.60
10:40	6.73	788.1	67	1.33	0.04	67.62	65	9.71
10:48	6.73	793.5	66	1.30	-0.24	68.01	65	9.85

Observations
(color, condition, etc.):

Half of the well cap was broken. CAN INSTALL SNAP SAMPLE!
Measured TD = 11.74' & BLADDER PUMP LENGTH ~ 1'. SET
PUMP INTAKE @ 10.4'. CUT TUBING LENGTH @ 13'
PURGE VOL = ~~0.5~~ 1.0 GAL

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/30/10
WELL NO.: MW-A8
PERSONNEL INITIALS: EMH/KLP

WELL DEPTH: 12.5
PRE-PURGE GW DEPTH w/o pump: 5.53
PRE-PURGE GW DEPTH w/ pump: 5.30
SCREENED INTERVAL: 2.5-12.5 ft
PUMP INTAKE DEPTH: 9.0 ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE w/ Teflon bonded / 0.17"
PURGE START TIME: 1106
SAMPLE START TIME: 1218
SAMPLE END TIME: 1219

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)	
1111	6.71	1132	-83	0.44	28.20	64.98	100	5.51	
1118	6.77	1105	-88	0.22	19.53	63.56	105	5.68	
1126	6.80	1083	-92	0.13	14.47	63.04	115	5.87	← reduced rate
1133	6.81	1068	-95	0.08	13.10	62.72	120	6.00	
1138	6.81	1042	-96	0.05	10.75	62.87	95	6.04	
1146	6.81	1043	-98	0.04	13.60	63.14	105	6.13	
1152	6.81	1036	-99	0.02	14.91	63.58	100	6.18	
1159	6.81	1035	-100	0.01	18.52	63.38	90	6.26	
1206	6.81	1046	-100	-0.00	17.05	63.23	95	6.31	
1213	6.81	1044	-101	-0.01	20.66	63.32	95	6.36	

Observations
(color, condition, etc.):

PID = 1.1 ppm
cut 13 ft of dedicated tubing
Can accept snap samplers (tight fit)
2.5 gallons purge water
Well Depth = 12.75 ft.

purge vol. 2.75 gal

tubing in orange band

Monitor Well Low Flow Data

Page 1

SITE NAME: BOEING, MO
DATE: 4/30/10
WELL NO.: MW-A12
PERSONNEL INITIALS: BR/MB

WELL DEPTH: 14.5
PRE-PURGE GW DEPTH w/o pump: 4.57
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 4.5-14.5
PUMP INTAKE DEPTH: 9.5

PUMP TYPE: 0.67" BLADDER
TUBING TYPE/SIZE: LDPE-TEFLON 0.17" PED = 2.3
PURGE START TIME: 1300
SAMPLE START TIME: 1415
SAMPLE END TIME: 1440

2
TPH GRO, VOC
DRO, ORO

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1313	6.85	539.8	74	0.90	29.83	67.52	90	5.72
1320	6.73	540.2	79	0.55	32.23	66.94	75	5.87
1328	6.68	537.4	80	0.40	43.37	66.51	75	6.15
1335	6.66	542	79	0.33	57.23	67.33	70	6.40
1344	6.68	553.4	75	0.29	67.74	68.76	65	6.50
1351	6.70	556.6	71	0.28	48.11	69.0	65	6.60
1359	6.73	559.6	67	0.26	41.28	69.28	65	6.65
1406	6.73	561.9	62	0.26	43.35	69.38	55	6.66
1414	6.82	561.9	56	0.25	44.26	69.04	60	6.75

Observations
(color, condition, etc.):

CUT TUBING LENGTH TO 15'
PURGE VOL - 1.5 GAL
CANNOT INSTALL SNAP SAMPLER - NEED A LARGER MW WELL OPENING

Monitor Well Low Flow Data

SITE NAME: Boeing
DATE: 4/30/10
WELL NO.: MW-A25
PERSONNEL INITIALS: EMH/KLP

WELL DEPTH: 13 ft
PRE-PURGE GW DEPTH w/o pump: 3.25 ft
PRE-PURGE GW DEPTH w/ pump: 2.88 ft
SCREENED INTERVAL: 3-13 ft
PUMP INTAKE DEPTH: 8 ft

PUMP TYPE: QED Bladder 2"
TUBING TYPE/SIZE: LDPE w/ Teflon bonded / 0.17"
PURGE START TIME: 1328
SAMPLE START TIME: 1453
SAMPLE END TIME: 1505

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1342	7.10	512.3	51	0.41	22.50	67.22	105	3.91
1349	7.10	566.1	51	0.30	17.01	67.16	100	3.99
1356	7.11	612.8	50	0.25	28.07	67.27	100	4.02
1402	7.12	653.8	50	0.21	45.44	67.17	100	4.02
1409	7.13	689.5	50	0.19	67.06	66.70	100	4.04
1415	7.14	714.5	50	0.16	80.22	66.51	95	4.05
1422	7.14	734.2	50	0.15	120.1	66.68	100	4.05
1429	7.15	746.0	50	0.14	61.79	66.02	100	4.07
1436	7.16	759.3	51	0.13	37.83	65.61	100	4.09
1441	7.16	770.7	52	0.12	38.70	65.61	100	4.09
1448	7.17	777.0	52	0.11	30.46	65.36	105	4.10

Observations
(color, condition, etc.):

Cannot install snap samplers — manway too small
Cut 14 ft of dedicated tubing
PID = 0.8 ppm
Purge Water Vol = 2 gallons

Monitor Well Low Flow Data

SITE NAME: BOEING, MO
DATE: 4/30/10
WELL NO.: MW-A26
PERSONNEL INITIALS: BR, MB

WELL DEPTH: 14'
PRE-PURGE GW DEPTH w/o pump: 4.79'
PRE-PURGE GW DEPTH w/ pump: 4.48'
SCREENED INTERVAL: 4'-14'
PUMP INTAKE DEPTH: 9.5'

PUMP TYPE: 2" BLADDER
TUBING TYPE/SIZE: LDPE-TEFLON/0.17"
PURGE START TIME: 1515
SAMPLE START TIME: 1625
SAMPLE END TIME: 1645

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)	
1521	6.97	559.7	56	0.93	11.78	65.38	100	5.16	
1528	6.94	562.3	52	0.52	11.76	64.97	70	5.68	REDUCED PUR RATE
1535	6.93	571.7	48	0.41	7.32	65.97	67	5.81	
1542	6.94	575.1	43	0.35	5.72	66.18	65	5.98	
1549	6.95	576.2	38	0.30	10.45	66.16	65	6.10	
1555	6.96	577.1	32	0.25	5.24	66.18	65	6.24	
1603	6.96	582.6	27	0.21	5.31	66.95	65	6.30	
1609	6.97	586.1	21	0.17	3.489	67.15	65	6.35	
1617	6.98	588.3	15	0.15	2.53	67.16	65	6.45	
1624	6.99	585.5	10	0.13	2.06	66.99	70	6.47	

Observations
(color, condition, etc.):

CUT TUBING TO 15'
PURGE VOL = 1.5 GAL

Monitor Well Low Flow Data

SITE NAME: BOEING, MD
DATE: 5/3/10
WELL NO.: MW-A29
PERSONNEL INITIALS: BR, MB

WELL DEPTH: 14.5'
PRE-PURGE GW DEPTH w/o pump: 2.38'
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 4.5'-14.5'
PUMP INTAKE DEPTH: 9.5'

PUMP TYPE: 2" BLADDER PUMP
TUBING TYPE/SIZE: LDPE-TEFLON/0.17"
PURGE START TIME: 8:05
SAMPLE START TIME: 8:45
SAMPLE END TIME: 9:00

PID = 0.0ppm

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
8:12	7.42	283.5	83	2.70	0.52	60.33	110	2.46
8:18	7.34	281.1	85	2.31	0.39	59.97	105	2.50
8:24	7.32	280.6	86	2.10	0.33	59.99	105	2.51
8:30	7:30	281.9	87	1.98	0.22	60.48	100	2.56
8:36	7:30	283.5	86	1.91	-0.33	61	100	2.57
Parameters Stabilized								

Observations
(color, condition, etc.):

DTP - 2.37' (DTP = Depth to Product). Heard a solid tone for product using the interface probe but ~~there~~ there was NO EVIDENCE of product when the probe was dipped in water & wipped w/ a paper towel

cut tubing length to 15.5'

Purge vol. = 0.75 GAL

No snap-

Monitor Well Low Flow Data

SITE NAME: BOEING, MO
DATE: 5/3/10
WELL NO.: MW-A28-LF
PERSONNEL INITIALS: BR, MB

WELL DEPTH: 14.5'
PRE-PURGE GW DEPTH w/o pump: 3.47'
PRE-PURGE GW DEPTH w/ pump: 3.43'
SCREENED INTERVAL: 4.5'-14.5'
PUMP INTAKE DEPTH:

PUMP TYPE: 2" BLADDER
TUBING TYPE/SIZE: LDPE-TEFLON/0.17"
PURGE START TIME: 855
SAMPLE START TIME: 1002
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
9:02	7.46	674.3	-116	0.67	90.93	61.62	125	3.68
9:07	7.52	674.9	-134	0.41	89.97	61.15	128	3.72
9:12	7.56	678.3	-140	0.31	86.05	61.35	127	3.76
918	7.54	677.5	-140	0.27	55.37	61.81	127	3.82
925	7.48	674.3	-137	0.22	44.08	62.06	127	3.87
929	7.43	669.6	-135	0.18	29.46	62.14	125	3.89
934	7.41	668.9	-134	0.15	21.82	62.16	125	3.95
940	7.40	670.2	-135	0.12	17.38	62.45	125	3.99
946	7.40	672.3	-136	~~1.40~~ 0.11	13.54	62.40	125	4.03
952	7.41	673.4	-137	0.10	12.48	62.44	125	4.05
957	7.42	677.2	-139	0.09	10.31	62.72	125	4.09
1002	7.41	678.1	-139	0.08	9.959	62.97	125	4.12

Observations
(color, condition, etc.):

DTW (W/SNAP SAMPLER) - 3.41' observed ~~the~~ black sheen on the passive sampler. No product signal on the gauge.
purge water is black in color. ~~the~~ has petroleum odor.
purge volume 2 gal

Monitor Well Low Flow Data

SITE NAME: BOEING, MO
DATE: 5/3/10
WELL NO.: MW-A22
PERSONNEL INITIALS: BR, MB

WELL DEPTH: 14.5'
PRE-PURGE GW DEPTH w/o pump: 3.91'
PRE-PURGE GW DEPTH w/ pump: 4.30'
SCREENED INTERVAL: 4.5'-14.5'
PUMP INTAKE DEPTH: 9.5'

PUMP TYPE: 2" BLADDER PUMP
TUBING TYPE/SIZE: LDPE-TEFLON / 0.17"
PURGE START TIME: 10:20
SAMPLE START TIME: 11:30
SAMPLE END TIME: 11:45

PID 10.2 ppm

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
10:38	7.01	534.1	94	0.66	6.52	64.37	65	4.86
10:50	7.01	546	87	0.76	3.25	66.21	65	5.16
11:01	7.03	546.5	83	0.55	3.90	66.75	50	5.26
11:10	7.03	546.4	79	0.50	4.64	67.26	50	5.32
11:21	7.04	551.7	76	0.44	4.11	68.27	50	5.37

Observations
(color, condition, etc.):

CUT TUBING LENGTH TO 15.5' purge vol. 1.25 gal
DTP = 3.90' DTW = 3.91 MEASURED SHEEN ON INTERPHASE PROBE
BUT GOT NO INDICATION OF PRODUCT WHEN THE PROBE WAS PULLED OUT
SNAP SAMPLER WILL NOT FIT DUE TO SMALL WELL OPENING

Monitor Well Low Flow Data

Page ___ of ___

SITE NAME: Boeing
DATE: 5/3/10
WELL NO.: MW-A23
PERSONNEL INITIALS: BR/MG

WELL DEPTH: 12.7
PRE-PURGE GW DEPTH w/o pump: 4.46
PRE-PURGE GW DEPTH w/ pump: 4.48
SCREENED INTERVAL: 2.7-12.7
PUMP INTAKE DEPTH: 8.8

PUMP TYPE: 1.75' Bladder QED
TUBING TYPE/SIZE: 13.7'
PURGE START TIME: 1130
SAMPLE START TIME: 12.00
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1141	6.93	503.6	-86	0.50	9.852	68.20	115	4.94
1146	6.94	500.8	-89	0.32	8.789	67.88	115	4.99
1152	6.95	504.1	-89	0.23	8.434	68.07	115	5.04
1151	6.94	506.9	-91	0.18	7.870	68.15	115	5.21

Observations
(color, condition, etc.):
Clear water, no odor.
Purge vol. 1 gal

No snapsampler.
well head is small.

Monitor Well Low Flow Data

SITE NAME: BOEING, MO
DATE: 5/3/10
WELL NO.: MW-A27
PERSONNEL INITIALS: BR, MB

WELL DEPTH: 13.7'
PRE-PURGE GW DEPTH w/o pump: 3.48'
PRE-PURGE GW DEPTH w/ pump: 3.35'
SCREENED INTERVAL: 3.7' - 13.7'
PUMP INTAKE DEPTH: 8.7'

PUMP TYPE: 2" BLADDER PUMP
TUBING TYPE/SIZE: LDPE - TEFLON / 0.17"
PURGE START TIME: 1250
SAMPLE START TIME: 1355
SAMPLE END TIME: 1420

PID = 0.0

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1255	7.36	515.0	88	1.15	4.362	71.64	105	3.67
1303	7.39	509.6	76	0.68	3.94	70.63	105	3.79
1310	7.39	510.4	70	0.48	2.592	70.38	105	3.82
1318	7.38	522.5	65	0.47	2.72	70.77	105	3.97
1325	7.36	531.5	64	0.38	4.579	70.79	105	4.11
1332	7.35	541.2	63	0.33	9.695	70.83	100	4.35
1339	7.35	548.1	62	0.30	11.57	71.00	100	4.67
1346	7.36	551.7	60	0.31	31.15	70.84	100	4.84
1353	7.38	557.0	58	0.36	38.24	71.12	100	4.98

Observations
(color, condition, etc.):
Cut tubing length to 14.7' Purge volume 1.75 gal
collected DUPLICATES
Can accept snap sample

Monitor Well Low Flow Data

SITE NAME: BOEING, MO
DATE: 5/3/10
WELL NO.: MW-A1
PERSONNEL INITIALS: MB

WELL DEPTH: 15'
PRE-PURGE GW DEPTH w/o pump: 4.55'
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 5'-15'
PUMP INTAKE DEPTH: 10'

PUMP TYPE: 2" BLADDER
TUBING TYPE/SIZE: LDPE-TEFLON/0.17'
PURGE START TIME: 1445
SAMPLE START TIME:
SAMPLE END TIME:

PID = 18.6 PPM

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1454	6.96	416.0	-91	0.33	12.03	66.11	75	4.77
1503	7.01	436.1	-104	0.22	7.3	68.94	75	4.78
1512	7.03	434.3	-107	0.14	5.35	68.12	75	4.83
1521	7.02	441.0	-109	0.09	7.26	68.90	70	4.85
1530	7.02	443.2	-110	0.07	9.02	69.22	65	4.85

Brian Ryleson (Airport Escort) had to leave at 16:00. So did not have sufficient time to finish. Will come back on 5/4/10

Observations
(color, condition, etc.):
CUT TUBING LENGTH TO 16'

Monitor Well Low Flow Data

Page ____ of ____

SITE NAME: Boeing
DATE: 5/3/10
WELL NO.: MW-A3
PERSONNEL INITIALS: BR/MB

WELL DEPTH: 15
PRE-PURGE GW DEPTH w/o pump: 3.61
PRE-PURGE GW DEPTH w/ pump: 3.57
SCREENED INTERVAL: 5-15
PUMP INTAKE DEPTH:

PUMP TYPE:
TUBING TYPE/SIZE:
PURGE START TIME: 14:57
SAMPLE START TIME:
SAMPLE END TIME:

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)
1507	7.02	633.9	48	0.90	4.970	72.49	75	3.61
~~6~~ 1515	6.98	633.1	30	0.45	4.594	71.72	70	3.63
1525	6.97	621.6	20	0.27	5.457	71.49	72	3.65
1534	6.96	612.7	14	0.18	8.640	71.52	70	3.67
1543	6.95	608.4	10	0.12	6.844	71.19	70	3.68
~~abo~~	aborted	purging	as	airport	escort	personal	had to	leave.

Observations (color, condition, etc.): observed product on 5/4/10 at 8:00 AM. ~~Did~~ not measure it with gauge but observed product on the probe.
DTW: 3.63'.

Did not sample.

Monitor We[illegible]ow Flow Data

Page 1 [illegible] 1

SITE NAME: BOEING, MO
DATE: 5/4/10
WELL NO.: MW-A1
PERSONNEL INITIALS: MB

WELL DEPTH: 15'
PRE-PURGE GW DEPTH w/o pump: 4.61'
PRE-PURGE GW DEPTH w/ pump:
SCREENED INTERVAL: 5'-15'
PUMP INTAKE DEPTH: 10'

PUMP TYPE:
TUBING TYPE/SIZE:
PURGE START TIME:
SAMPLE START TIME:
SAMPLE END TIME:

PID = 52.2 ppm

TIME	PH (units) (+/- 0.1 units)	Conductivity (uS/cm) (+/- 3%)	Redox (ORP) (mV) (+/- 10 units)	Dissolved Oxygen (mg/L) (+/- 10%)	Turbidity (NTU) (+/- 10%)	Water Temperature (°Celsius) (+/- 3%)	Purge Rate (ml/min)	Water Depth (ft btoc)

Observations
(color, condition, etc.):

CUT TUBING LENGTH TO 16'
Did not measure any product using the interphase probe but observed product on probe when it was pulled out. Product observed when wiped the probe w/a paper towel & ~~[illegible]~~ got an odor. The well was purged for ~ 35 mins on 5/3/10.

4/[illegible]/10 - Boeing GW Gauging

7AM - Meeting with Joe Haake & Elmer Dwyer with Kendall Pickett & Bhoom Korpal of RAM and Sandy Brith of Prob Hydro

Clear, Calm, Low to mid 80s

Go over schedule

Safety Meeting

Leave QAPP reports with Joe Haake

Travel to MW10D & MW10S

MW10S Gauging

Deployment of Snap Sampler

7/32" pilot holes drill into top of casing after installing O-ring and cap base

install 3 screws

* shortened deployment by 4' from 15' to 11' (top of sampler string (pneumatic tap)

→ ≈ 6" bgs to TOC

MW10D - could not install screws - need straight cordless screw driver/drill

9:10 Am - Move to B220N4 & B220N6

9:35 Am - MW4

9:50 Am - MW6

deploying snap sampler

TOC ≈ 9" bgs

10:10 Am - MW6D

10:25 Am - B4MW-9

Cannot deploy since TOC is too close to well manway edge - Needs well cover - probably best to replace well.

2 photos

10:40 Am - B4MW-10

- waited to deploy as replacement to B4MW-9 but well manway dia too small

MW 8 AS
TOC ≈ 6" bgs
due to sampling vols & historically low wtr. levels - decided to drop dissolved metals per Christine Kump onsite.
∴ 2 40ml VOAs
3 125ml plastic instead of 4 planned.
few photos

Lunch 11:40—12:30

12:30 At GKN gate

12:55 MW 3
No bolts on well cover
Since manway has no screw receptables
Deploy snap samples
reduce from 8 to 7 since does not call for Cr^{+6}

1400 Looking for wells S of Bldg 45
MW-A15 will not fit - too small clearance & too deep bgs

Possible Substitutes
~~2" dia MW-A5 need~~
4" dia MW-A29 - need 4" dia well cap setup & check deployment depths

1450 Setting up on MW-11I & 11S

1600 Setting up on SWMU 17-08-1

1630 Leaving Site

[illegible] Boeing - GW Gauging
0700 Bhoom Karpal > RAM
Kendall Pickett
Elmer Dwyer - Boeing
weather: clear
calm
mid 80's predicted
Safety Meeting
Calibrated PID

0730 Setup on MW7 at GKN
0740 B27W3D
TOC cut at steep angle
~~no cap on casing~~
manway - no bolts
0750 B28MW3
manway - no bolts
0755 B28MW4
0805 MW9D - artesian
0807 MW9S
- one bolt missing
0820 RC8D
Bolts missing
Cap off
0823 RC14 - special tool - manway
* Need long pipe wrench
Could not open manway cover

0850 - MW1
- missing one bolt
(bolt broken off in receptacle)
- other receptacle missing
0910 - B41MW-5
- no bolts
0925 - B41 MW-18

0945 - MW-A-25

0950 - MW-A26

0955 - MW-A27
(*) 0.005ft FSH
1003 - MW-A23

1011 - MW-A22

1015 - MW-A15

1045 - MW-A8 & A16
MW-A8 depth was way too shallow at 9.58 for a 15' well that was measured at 12.6' 7/08
MW-A16 - poss. covered with trailers. Measured at 6" dia well in general area

11:10 - 12:00 Lunch

12:05 MW-A16 - found it
photo on iphone under * luggage cart
* sheen when put probe in cup of water

1220 MW-A12

1230 MW-A13
- lost PID filter in well

1245 - ~~B4~~ B4ZN6
missing one bolt
TOC crooked cut

1258 - MW-A4
Cap is broken

1310 - MW-A3 Hush house
well cap too high - keeps manway cover elevated above ground

1320 - MW-A1

1415 MW-10S

1430 B48N1

1440 MW-9S

1455 ~~B48N~~ B41S5D

1515 B2E3 & B2E5

1535 TP-6

1545 MW-11D
could not access well cover

1555 TP-3

1600 MW-6S & 5I
↳ broken bolt receptor

1618 TP-4
↳ No bolts for manway

1623 MW-8I & 8S
↳ missing bolt

1650 MW5CS

1654 MW5DS
no bolts

1700 B25MW1

1713 MW8AD
1 bolt missing

1730 Left site

Location St. Louis Date 4/26/10 3

Project / Client Boeing GW Sampling

TEAM 1 - Bhoom Korpol / Marty Hughes

arrived at MW10S at 10:25 AM.
water in the well head.
~~MW 10S~~ PID = Ø
DTW = 3.43 FILLED VOC vials with water from the 125ML BOTTLE
SAMPLE TIME 11:00 AM
NOTE: All 3 SAMPLE BOTTLES OF THE SNAP SAMPLER HAD A BUBBLE IN THE BOTTLE

11:58 - CUT 18 FT. OF DEDICATED TUBING. WILL SET THE PUMP AT 13 FT. BGS

12:17 Start pumping

Initial Porging Rate was too high. Resulted in DTW dropping TO 5 FT BGS. Slowed Rate to 110 ML/Min Seeing DTW Rise as porging Continuing

Location _____ Date _____

Project / Client _____

MW10S CONTINUED

Low Flow ~~Sampling~~ Purging Began at 12:15pm

SAMPLE ID: MW10S-LF
Sample Time: 1330
DTW: 4.08 Ft BGS

HELPED CREW #2 Sample and Clean-up our Equipment

100 ML of water was pumped thru the in-Line Filter before collecting water from it.

14:45 Break For Lunch

30 Sample time

Location BOEING Date 4/26/10

Project / Client _____

1530 - ARRIVE AT MW8AS AND SETUP to Check DTW

10.41' = DTW
Collected Snap samples.
Collected sample bottles by keeping the SNAP setup vertically.
The bottles were not closed and they were partially empty.
Filled VOC bottles with water from plastic bottles.

Began Purging at 1659

SAMPLE TIME = 1743

Completed these samples, Cleaned equip. and Returned to the hotel. Clean/organized Vans. Completed at 8PM.

Location BOEING, ST. LOUIS Date 4/27/10

Project / Client BOEING GROUNDWATER SAMPLING

6:30 AM
STARTED the day with checking the Calibration of the meters.

7:40 AM Depart the hotel for the site.

TODAYS WEATHER IS RAIN IN THE MORNING. AS A RESULT, THE PARAMETERS WILL NOT BE RECORDED ON THE PAPER SHEETS (FIELD FORMS).

MW-6 DTW = 7.14 @ 8:20AM
DTW = 7.00 8:36
After Removal of Snap Sampler
DTW w/ PUMP IN = 6.75 @ 852
SAMPLE TIME FOR MW6-SS = 8:45AM
Both vials for 8260 were full & No Bubbles

MW-6 PID READING = 0.5 PRIOR to PURGING

Location Date

Project / Client

MW6 Continued / MW5CS

Restarted the purging at 9:14AM due to lack of Flow.
DTW = 6.75'

Sampled MW6-LF at 10:25 AM
3 Bottles
2 vials for VOC 8260
1 Bottle for Total Chromium & Arsenic

DECONED & HELPED CREW 2 Finish.
LUNCH BREAK AT 11:45AM

ARRIVED AT MW5CS at 12:35pm.

PID = 0.0

DTW = 8.89 FT BGS
DTW = 8.50 BGS with pump in.

Begin purging at 12:58

Location Boeing Date 4/27/10

Project / Client

MW5CS Continued

DTW before starting 10.15' purge
Rate = 135 mL/Min
Reduced to 125 mL/min

Sample Time:

Location Date 4/27/10

Project / Client

B25MW1

ARRIVED AT B25MW1 at 1440
opened well and checked the PID
(0.0 ppm)

DTW = 8.74 ft

Sample Bottles
2- 40 mL vials VOC-GRO, TPH
1- 250 Lm Plastic - Arsenic, Barium, Cadmium, Chromium
1- 250 mL Plastic - Mercury
1- 500 mL Plastic - Hex Chrom.
1- L Amber - TPH-ORO-GRO

Sample Time: 1607

Location _____ Date 4-27-10

Project / Client
B4MW-10

Arrive at this well at 1730 & Find it covered w/ a thornbush.
PID = 0
DTW = 8.86' BGS

Need to modify the HASP to incl. the bush - A cutting tool would be helpful.

After beating the bush up with a long metal pole, it was guaged.

Well was pumped dry

Location _____ Date 4/28/10

Project / Client
B41MW-18

Arrived at 7:05 Am
Head space PID 0.0ppm

DTW w/o pump = 3.95 ft^{b} toc
Sampled the well at 8:45 Am.

9:35 arrived at B4MW-10
Sampled the well at 9:45 AM using bladder pump.

10:10 arrived at B42N6.
Could not start sampling as the well ~~and~~ is 1" well.
Team 2 already using 1" Bladder pump.

Location Boeing Date 4/28/10

Project / Client

B220MW4 / B28MW4

10:45AM arrived at B220MW4.
DTW. 4.89 ft

Sampled at 12:30pm using the bladder pump

DECON & pack up - off at ESCORT at 1300

At Lunch at 1315 - Return to GKN at 1345. VENDOR photo passes, at GKN Security Gate

Setup on B28MW4 at ~~1500~~ 1445
Begin purging at 1500

Purged for 1 hour. TURBIDITY ~~increased~~.
Jumped after 5th Reading.

Sampled at 1615, ended at 1650

Location Date 4/28/10

Project / Client

B28MW4 Cont/

Met Teklab outside the gate at 1700

1745 ARRIVED AT
MW-11 I & MW-11 D

Removed Snap sampler & collected Samples - No Bubbles. (1800 Sampled)

Sampled MW-11 I LF at 2000

~~Sampled MW-11D at~~ (crew 2)

DECON & pack up both vehicles.

off site at 2045.

Location _____ Date 4/29/10

Project / Client _____

STARTED AT 6:30

LEFT ~~FIELD~~ SITE AT 20:30

4/30/10

~~STARTED AT~~

LEFT SITE AT 17:05

5/3/10

Started at 7:00.
Sampled at wells
MW-A29, A28, A22, A23
and A27
Aborted sampling at
A3, A1 as Brian had
to leave and we did
not have airport access
anymore
Left the site at 1630.

Location _____ Date 5/4/10

Project / Client _____

Started at 6:30 Calibrating
the instruments.
7:30 arrived at airport.
observed product on MW-A1
and MW-A3.
Hence did not sample at
both these wells.

Location St. Louis Date 4/26/10 3

Project / Client Boeing GW Sampling

Team 2 - Mihika Barwah / Kendall Pickett

Weather - Overcast, cool 50s-60s
moderate wind

Safety Meeting 10 AM

Calibrate In-Situ Sonde

10:15 AM - Setting up on MW-10D

11:20 AM MW10D
PID 0.0
4.46 Wtr. Depth

11:35 Snap Sampler - Sampled
125ml had 1-inch air bubble
one 40ml had very small
air bubble

12:40 Set pump at 74.5 ft bgs
for Low-flow

14:15 Sampling MW10D

1430 Break for Lunch

1530 Set up on MW8AD

1612 Start Purge on MW8AD

1755 Sampling MW8AD

* Also took Duplicate #1
will take snap sampler

Location _____ Date _____

Project / Client _____

1900 Left Site
2015 Finished sorting supplies, equipment, storing samples, preparing vehicles for tomorrow.

4/27/10
7Am - Calibrate equipment
7:45Am - access badges at Boeing
8:00 Set up on MW6D
8:15 PID = 0.6 ppm at well opening
well can be converted to snap sampler
8:20 6.97 ft btoc wtr depth
11:30 - 12:30 Lunch
12:30 - Setting up on MW5D
PID = 0.6 ppm

Location _____ Date _____

Project / Client _____

1445 Setting up on MW 1
Gw Depth 7.55 ft
PID = 0.4 ppm
1507 begin purging MW 1
1700 Setting up on B4MW-9
PID = 0.6 ppm
Wtr. depth = 8.84 ft btoc
Manway cover has been changed - can now accept snap sampler however, well casing riser has been cut at angle - may need to re-survey TOC elevation after snap sampler installed & poss for all wells with snap sampler dock.
2045 - Leaving Site

Location _____ Date _____

Project / Client _____

4/28/10 - Calibrate equip
7:10 Setting up on B41MW-5
0.1 PID
3.11 wtr depth
well is kinked just below surface
Safety Meeting
cannot ~~possibly~~ use snap samplers ~~it can get~~ due to small manway ~~by~~ kinked casing.
Cannot use 2" bladder pump due to kinked casing.
Setup w/ small dia bladder pump
10:10 Setting up of ~~B41~~ B41S5D
PID = 0.0 ppm
4.60 ft depth to wtr
during purging - air bubbles coming up tubing from well
well dia too small for snap samplers

Location _____ Date _____

Project / Client _____

13:00 - 13:30 Lunch

1:30 - 2:30 Getting badges at GKN
14:30 Setting up on MW7
3.0 ft wtr depth
0.2 PID

1700 Drop off samples with Lab
1745 Set up on MW-11D
PID = 0.1
21.54 ft wtr depth
Manway cover was replaced
Snap Samplers can be added
2050 Left Site

2100 Finish prep for tomorrow

Location _____ Date _____

Project / Client _____

4/29/10
Calibrate equip
Load & travel to site
7:20 Setting up on B28 MW3
0.4 PID
4.33 ft wtr depth
will accept snap sampler
9:30 Setting up on MW95
PID = 0.0
wtr depth = 6.07 ft
will accept snap sampler

12:00 - 12:30 Lunch
12:30 - 13:00 Pick up ice for Samples
13:00 Setting up on MW-8I
PID = 0.0
wtr depth = 7.97 ft
15:45 Setting up on MW-65
PID = 0.0
wtr Depth = 3.95 ft

Location _____ Date _____

Project / Client _____

1745 Setting up on MW-5I
PID = 204 ppm
wtr Depth = 6.89 ft btoc

2015 Check wells for snap sampler use & missing GPS locations
2045 Leaving site

4/30/10 - Calibrate equip
Safety meeting
7:15 Arrive onsite
7:30 Setting up on MW-A12
PID = ~~[illegible]~~ 6.8 ppm
wtr depth = 4.30 ft
Obstruction at 4.6 ft
- need small div pump to sample
Snap sampler may not be able to get below obstruction

Location _____ Date _____

Project / Client _____

8:15 Setting up on MW-A16
PID = 0.1 ppm
* Cannot seal well cap
(needs to be replaced)
Wtr. depth = 4.59 ft

10:30 Setting up on MW-A8
PID = 1.1 ppm
Wtr depth = 5.53
Can accept snapsamplers
but tight fit.

12:45 - 1:00 Lunch
13:00 - 1:15 Fix Pump
13:15 Setup on MW-A25
3.25 wtr depth
PID = 0.8 ppm
14:45 accidently disconnected
pump after purging
re-connected and flowed
3 purge cycles before
sampling

Location _____ Date _____

Project / Client _____

1600 Left site

APPENDIX C
LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY FORMS

(Refer to CD in Front Sleeve of Report)