AVOCET
ENVIRONMENTAL, INC.

June 26, 2008 Project No. 1155.006

Ms. Jennifer L. Wiley, PG, CEM
THE BOEING COMPANY
Environment, Health & Safety – Environmental Remediation
4501 Conant Street
Long Beach, California 90808

Field Data Report
June 2008 Quarterly WDR Sampling
Former Building 1/36 WDR Biorecirculation Pilot Test
Waste Discharge Requirements Order No. R4-2007-0040
Boeing Corporate Real Estate Former C-6 Facility
Los Angeles, California

Dear Ms. Wiley:

This report has been prepared by Avocet Environmental, Inc. (Avocet) to summarize and present the field data collected during the June 2008 quarterly Building 1/36 Waste Discharge Requirements (WDR) groundwater monitoring event. The monitoring was conducted pursuant to and in accordance with the following:

Avocet Environmental, Inc., June 9, 2008, Technical Memorandum, June 2008 Quarterly WDR Sampling and Analysis Plan, June 2008 Monitoring - Building 1/36 Area, Boeing Corporate Real Estate Former C-6 Facility, Los Angeles, California (Attachment 1).

California Regional Water Quality Control Board, Los Angeles Region (LARWQCB), February 15, 2008, Approval of Revised Monitoring and Reporting Program CI9310, Individual Waste Discharge Requirements Order No. R4-2007-0040, Boeing Corporate Real Estate, Former C-6 Facility, 19503 South Normandie, Los Angeles, California (File No. 95-036; SLIC No. 0410; Site ID No. 1846000).

Field activities performed during the June 2008 Monitoring Program are discussed in the following section. Figure 1 (Attachment 1) presents the locations of the groundwater monitoring wells included as part of this program

GOUNDWATER SAMPLING ACTIVITIES

All 13 wells scheduled for ground water level measurement were gauged for depth to water on June 17, 2008 using Solinst water level. The wells were also inspected for any damage or missing materials. All wells were in good condition, but all were missing the bolts that secure the lids. The wells are frequently accessed during the pilot test and it is suspected that the bolts were temporarily removed by the remediation contractor.

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The ten scheduled wells were purged and sampled on May 17 and 18, 2008 using low-flow bladder pumps and a QED MP20 flow-through cell. Amendment Wells AW0066UB and AW0067UB were sampled with a portable pump, while all other wells were sampled with dedicated pumps. All wells were purged for sampling using the low-flow (~0.2 liters/minute) method. Ferrous iron testing was performed in all wells using a HACH DR/890 Colorimeter. The field instruments were calibrated prior to the event and the calibration data sheets are included in Attachment 2.

At the completion of low-flow purging, groundwater samples were collected in laboratory supplied containers, properly labeled, identified on the chain-of-custody, and submitted to TestAmerica Laboratory, an appropriately certified environmental testing laboratory located in Irvine, California. A normal 10-day turn-around time was requested for the lab analyses. The samples were analyzed for one or more of the following:

- Volatile organic compounds (VOCs) by EPA Method 8260B,
- Total organic carbon (TOC) by EPA Method 9060,
- Volatile fatty acids (VFAs) by IC Method 8M23G (subcontracted by TestAmerica to Microseeps, Inc., Pittsburg, PA),
- Dissolved gases (ethane, ethane, and methane) by RSK 175 (subcontracted by TestAmerica to Air Technology Laboratory, Inc., City of Industry, CA),
- Total Alkalinity by EPA Method 310.1,
- Dissolved minerals (sulfate, nitrate, nitrite, and chloride) by EPA Method 300 Series,
- Total dissolved solids (EPA Method 160.1); and
- Quantitative polymerase chain reaction (qPCR) analysis for DHC 16S rRNA gene and functional genes tceA, bvcA, and vcrA (subcontracted by TestAmerica to North Wind, Inc., Pocatello, ID).

Purge water (approximately 44 liters) was transported to a storage tank located in the treatment compound. Field data forms are included in Attachment 2.

If you have any questions regarding this field data report or require additional information, please do not hesitate to call.

Respectfully submitted,

AVOCET ENVIRONMENTAL, INC.

Michael A. Rendina, C.Hg.
Principal

MAR:sh
Attachments:
Attachment 1: May 2008 Groundwater Sampling and Analysis Plan
Attachment 2: Field Data Forms

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Attachment 1

June 2008 Groundwater Sampling and Analysis Plan

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June 9, 2008 Project No. 1155.006

Ms. Jennifer Wiley, P.G. (via electronic mail only)
THE BOEING COMPANY
Environment, Health & Safety –
Environmental Remediation
4501 East Conant Street, M/C D851-0097
Long Beach, California 90808

Technical Memorandum
June 2008 Quarterly WDR Sampling and Analysis Plan
June 2008 Monitoring - Building 1/36 Area
Waste Discharge Requirements Order No. R4-2007-0040
Boeing Corporate Real Estate Former C-6 Facility
Los Angeles, California

Dear Ms. Wiley:

This memorandum has been prepared by Avocet Environmental, Inc. (Avocet) and presents the sampling and analysis plan (SAP) for the June 2008 required monitoring at Boeing Corporate Real Estate's (CRE's) Former C-6 Facility in Los Angeles, California. This monitoring is being conducted pursuant to and in accordance with California Regional Water Quality Control Board, Los Angeles Region (LARWQCB) *Approval of Revised Monitoring and Reporting Program CI-9310, Individual Waste Discharge Requirements (WDR) Order No. R4-2007-0040* (the WDR Order) issued February 15, 2008. This memorandum discusses the ground water monitoring activities to be conducted and the analyses to be performed as pertains to the WDR Order. Additional details are provided in the *2008 Groundwater Monitoring Work Plan* (the Work Plan; Avocet, February 4, 2008).

Field Activities

In accordance with the WDR Order, ten wells are to be monitored during June of 2008. These ten wells consist of the two Group A1 Wells, the five Group B1 Wells, the two Group C wells, and the Group D Well, each of which will be gauged for water level and sampled. Since the Group A2 Wells have not been used for amendment injection, gauging and sampling of the Group A2 Wells and Group B2 Wells is not required (C-6 Weekly Status Reports, Camp Dresser McKee, Inc., various dates through June 3, 2008). However, comments received from Camp Dresser McKee, Inc. (electronic mail, February 21, 2008) recommend gauging of the Group A2 and Group B2 Wells, so these wells were added to the June 2008 gauging program. A list of the WDR wells to be monitored (and not monitored), broken out by Group, is provided in Table 1. A map showing the well locations is provided in Figure 1. The scope of work will include all tasks associated with collecting the field measurements and laboratory samples required to comply with the WDR Order. In brief, these activities will include water level measurements,

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groundwater well purging and sampling using low-flow methods, and sample analyses. Additional activities such as pre-field documentation, waste management, and reporting are addressed in the Work Plan. Overall, the ground water monitoring activities associated with the WDR Order are as follows:

- Prior to any ground water disturbance, depth to water measurements will be taken from each of the thirteen wells using a Solinst (or equivalent) well sounder. To minimize disturbance of the water column in wells scheduled for sampling, total depths in these wells will be verified after purging using a weighted depth sounder.
- Groundwater samples will be collected from ten wells during the June 2008 monitoring event (Table 1). Prior to sampling, the wells will be purged using low-flow methods to assure representative samples are collected from the formation. During purging, the flow rate at each location will be maintained between 0.1 and 0.5 L/min, dependent on site-specific and well-specific factors as drawdown is not to exceed 0.3 feet in any well.
- During well purging, biogeochemical parameters including pH, temperature, electric conductivity (EC), dissolved oxygen (DO), and oxygen-reduction potential (ORP) will be periodically measured using a flow-thru cell and QED multiparameter meter. In addition, turbidity will be measured using a standard turbidimeter, ferrous iron (Fe(II)) will be measured using a Hach DR890 Colorimeter, and the QED dissolved oxygen measurements will be confirmed using a CHEMetrics, Inc. test kit. Purging will continue until three consecutive measurements are within +/-0.2 for pH, +/-3% for EC, +/-10% for DO, and +/-20 mV for ORP (ATSM, 2002).
- At the completion of purging, groundwater samples will be collected in laboratory-supplied containers, labeled in accordance with Boeing's Data Management Plan (CH2M Hill, 2007), placed on ice in a cooler, identified on the chain-of-custody, submitted to appropriately certified environmental testing laboratories, and analyzed, according to the WDR Order, for the following:
  - volatile organic compounds (EPA Method 8260B);
  - total organic carbon (EPA 9060);
  - volatile fatty acids by IC Method 8M23G (Microseeps, Inc., Pittsburg, PA);
  - dissolved hydrocarbon gases (ethene, ethane, and methane by RSK 175);
  - total alkalinity (EPA Method 310.1);
  - dissolved minerals (sulfate, nitrate, nitrite, and chloride by EPA Method 300 Series);
  - total dissolved solids (EPA Method 160.1); and

- Quantitative Polymerase Chain Reaction (qPCR) analysis for DHC 16S rRNA gene and functional genes tceA, bvcA, and vcrA (North Wind, Inc., Pocatello, ID).

A summary of the analytical program is presented in Table 1.

Closing Remarks

Ground water monitoring is scheduled to commence at the site on Tuesday, June 17, 2008. Avocet Environmental, Inc. appreciates the opportunity to be of service to Boeing Corporate Real Estate. If you have any questions, please do not hesitate to call.

Respectfully submitted,

AVOCET ENVIRONMENTAL, INC.

Michael A. Rendina

Michael A. Rendina, P.G.
Principal

MAR:sh
Enclosure

cc: Mr. Joe Weidmann – Haley & Aldrich
Mr. Ravi Subramanian - CDM

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Table

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Table 1
June 2008 WDR Groundwater Monitoring Program
BCRE Former C-6 Facility,
Los Angeles, California

Well Information			Field Program				Laboratory Program								
Well Name	Sampling Group	Hydrostratigraphic Unit	Total VOCs Concentration (µg/l)	Sampling Order	Water Level Measurement	Field Parameters	VOCs EPA 8260B	TOC EPA 9060 Modified	Volatile Fatty Acids IC Method 8M23G (Microseeps)	Dissolved Hydrocarbon Gases (DHGs) Methane, Ethane, Ethene RSK 175	Alkalinity EPA 310.1	Anions (NO_3, NO_2, Cl, SO_4) EPA 300.0	Total Dissolved Solids EPA 160.1	DHC 16S rRNA gene and functional genes tceA, bvcA, and vcrA: by qPCR analysis (North Wind)	Comments
Group A Wells															
AW0066UB	A1	B-Sand	1,007	2	x	x	x	x	x	x	x	x	-	x	
AW0067UB	A1	B-Sand	1,796	4	x	x	x	x	x	x	x	x	-	x	
AW0064UB	A2	B-Sand	29,880	-	x										Water level measurement only
AW0065UB	A2	B-Sand	150,178	-	x										Water level measurement only
Group B Wells															
AW0075UB	B1	B-Sand	85,309	8	x	x	x	x	x	x	x	x	-	x	
AW0076UB	B1	B-Sand	512,820	10	x	x	x	x	x	x	x	x	-	x	
AW0077UB	B1	B-Sand	96,402	9	x	x	x	x	x	x	x	x	-	x	
EWB002	B1	B-Sand	10,758	6	x	x	x	x	x	x	x	x	-	x	
AW0073C	B1	B-Sand	5,760	5	x	x	x	x	x	x	x	x	-	x	
WCC_06S	B2	B-Sand	703	-	x										Water level measurement only
AW0074UB	B2	C-Sand	7,540	-	x										Water level measurement only
Group C Wells															
TMW_07	C	B-Sand	1325	3	x	x	x	x	x	x	x	x	x	x	
WCC_12S	C	B-Sand	62	1	x	x	x	x	x	x	x	x	x	x	
Group D Well															
AW0055UB	D	B-Sand	40704	7	x	x	x	x	x	x	x	x	x	x	
Quality Control Samples															
Duplicates (1 per 20 wells)							x (est. 1)								
Rinsate Blanks (1 per day)							(est. 0)								
Trip Blanks (1 per cooler)							x (est. 2)								
			Totals:		14	10	14	10	10	10	10	10	3	10	

Notes: Field Parameters = pH, DO, ORP, EC, temp, turb, and ferrous iron.
pH = Potential of Hydrogen
DO = Dissolved Oxygen
ORP = Oxidation Reduction Potential
EC = Electrical Conductivity
Temp = Temperature
Turb = Turbidity
µg/l = Micrograms per liter
Total VOCs Concentration - B1 Wells March 2008 monitoring.

VOCs = Volatile organic compounds
EPA = U.S. Environmental Protection Agency
TOC = Total Organic Carbon
DHGs = Dissolved hydrocarbon gases
NO_3 = Nitrate, NO_2 = Nitrite, Cl = Chloride, SO_4 = Sulfate
DHC = *dehalococcoides spp.* strains
qPCR = Quantitative Polymerase Chain Reaction

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Figure

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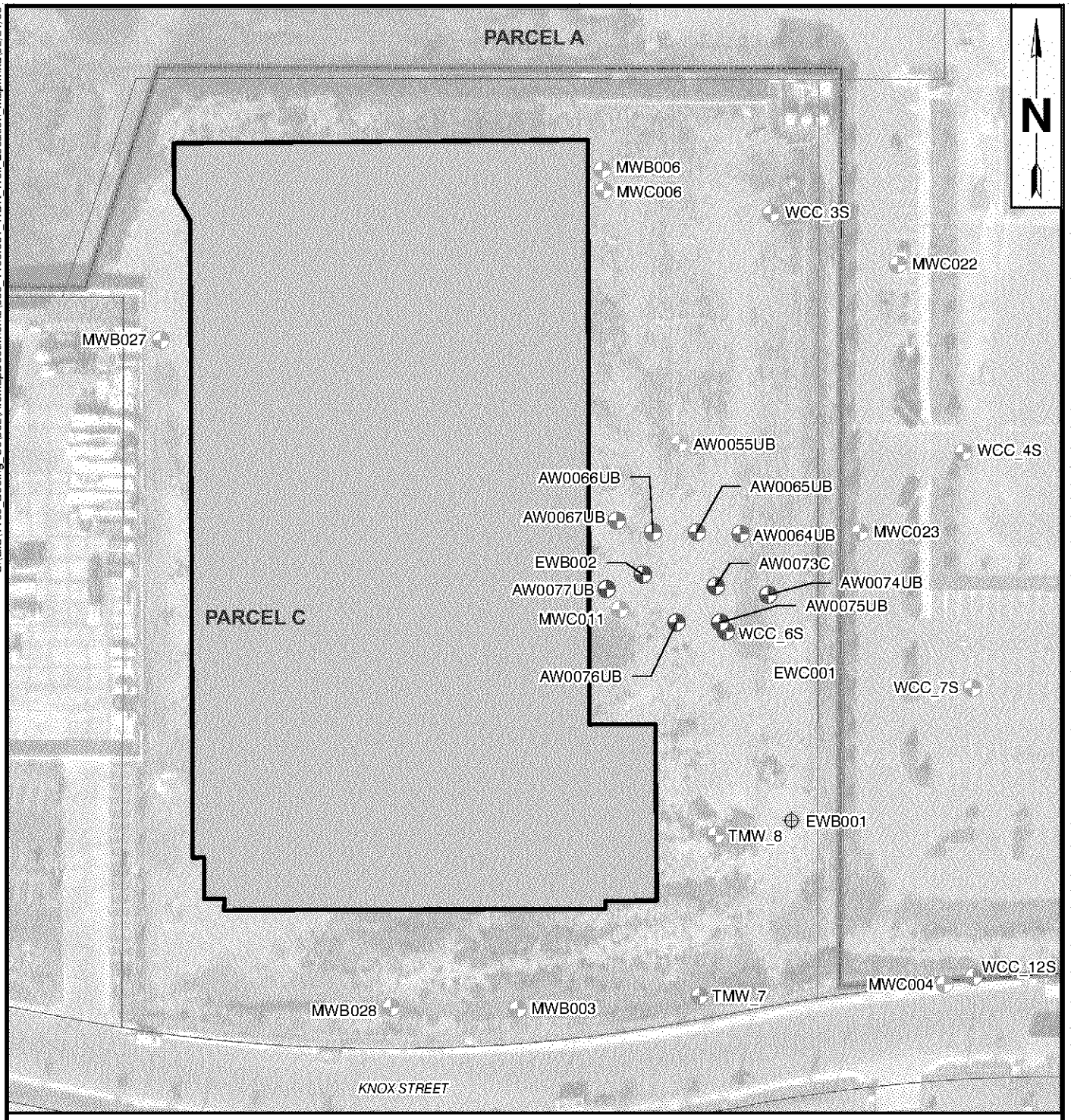
S:\GIS\1155_Boeing_C6\02\ArcMapDocuments\006_1155.001_WDR_Well_Location_Map.mxd\02/21/08



LEGEND

- Group A1 WDR Monitoring Well
- Group A2 WDR Monitoring Well
- Group B1 WDR Monitoring Well
- Group B2 WDR Monitoring Well
- Group C WDR Monitoring Well
- Group D WDR Monitoring Well
- Non-WDR Groundwater Monitoring Well
- Pilot Test Groundwater Extraction Well
- 1451 Knox St.
- Parcel Boundary

0 100 200

SCALE

FIGURE 1

WDR WELL LOCATION MAP

BOEING CORPORATE REAL ESTATE
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

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Attachment 2

Field Data Forms

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Groundwater Monitoring Well Gauging Sheet

Project Name: Boeing C-6 June 2008 Gauging Event **Project Manager:** Michael Rendina **Project No.:** 1155.006

Location: Long Beach, CA **Field Personnel:** DML **Date:** 6/17/2008

Field Conditions: Clear/Warm

Well ID	Previous Measurement Date	Previous Depth to Water	Previous Total Depth	Date	Time	Well Diameter	PID (ppm)	Measurement Point	Depth to Water	Depth to Water #2	Total Depth	Comments/Well Conditon
WCC_12S	03/24/08	58.18	90.29	6/17/2008	7:08	4"	0.4	TOC-N	58.07	58.07	NM	Good, bolts missing.
AW0066UB	03/24/08	59.79	89.37	6/17/2008	7:45	4"	0.3	TOC-N	58.98	58.98	NM	Good, bolts missing.
TMW_07	03/24/08	60.88	82.61	6/17/2008	7:35	2"	0.3	TOC-N	60.78	60.78	NM	Good, bolts missing.
AW0067UB	05/20/08	59.64	93.00	6/17/2008	7:55	4"	4.1	TOC-N	58.52	58.52	NM	Good, bolts missing.
AW0073C	05/20/08	60.09	120.00	6/17/2008	8:00	2"	17.2	TOC-N	60.04	60.04	NM	Good, bolts missing.
EWB002	05/20/08	60.19	90.00	6/17/2008	8:10	4"	10.2	TOC-N	60.28	60.28	NM	Good, bolts missing.
AW0055UB	03/24/08	60.18	88.45	6/17/2008	8:20	2"	36.7	TOC-N	60.03	60.03	NM	Good, bolts missing.
AW0075UB	05/20/08	59.85	95.00	6/17/2008	8:45	2"	48.2	TOC-N	59.85	59.85	NM	Good, bolts missing.
AW0077UB	05/20/08	60.54	86.00	6/17/2008	8:50	2"	18.4	TOC-N	60.53	60.53	NM	Good, bolts missing.
AW0076UB	05/20/08	60.27	92.00	6/17/2008	9:05	2"	21.8	TOC-N	60.34	60.34	NM	Good, bolts missing.
AW0065UB	2/26/2008	60.15	92.00	6/17/2008	8:55	2"	18.6	TOC-N	59.32	59.32	NM	Good, bolts missing.
AW0064UB	2/26/2008	60.39	92.00	6/17/2008	8:15	2"	12.5	TOC-N	58.85	58.85	NM	Good, bolts missing.
AW0074UB	2/26/2008	59.65	95.00	6/17/2008	8:05	2"	0.9	TOC-N	59.34	59.34	NM	Good, bolts and well plug missing.
WCC_06S	2/26/2008	59.62	90.00	6/17/2008		Operating extraction well - inaccessible for fluid level gauging.						

NM - Indicates "Not Measured"

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GROUNDWATER SAMPLING DATA SHEET

Project Name:	BCRE Former C-6 Facility	Date:	6/18/08
Project No.:	1155.006	Prepared by:	BCB
Well Identification:	AW0076UB	Weather:	Clear / Hot
Measurement Point Description:	TOC-N	Pump Intake:	COS
		Screen:	

	A	B	C		E					
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (A-B=C)	LNAPL Thickness (ft-bmp)	One (1) Casing Volume (gallons) (CXD=E)	Three (3) Casing Volumes (gallons) (Ex3)	1/2 Casing Volume (E/2)	Above screen Volume (Top Screen - DTW)xD	Screen Volume (Screen Length x D)	1/2 Screen Volume
—	60.32	92.00	31.68	—	—	—	—	—	—	—

	Gallons/Foot			
Well Diameter (in)	0.75	2	4	6
D Gallons per foot of casing	0.02	0.16	0.65	1.47

Field Equipment: QED

Purge Method: Micropurge

Well Condition: Good

Time	Casing/ Screen	Volume Purged ~~(gallons)~~	Flow Rate ~~(gpm)~~	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (M S/CM)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
1252	—	—	250 ml/m	60.32	6.59	33.07	14.7	3.51	0.22	-128	Colorless
1255		750		60.37	6.42	24.18	3.16	3.73	0.11	-117	"
1258		1500		60.38	6.41	23.32	2.94	3.67	0.10	-124	"
1301		2250		60.37	6.44	23.24	2.77	3.69	0.10	-129	"
1304		3000		60.37	6.45	23.17	2.34	3.72	0.09	-130	"
1307		3750		60.38	6.44	23.12	1.71	3.75	0.09	-131	"
1310		4500		60.39	6.46	23.18	1.27	3.74	0.09	-134	"

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~	Total ~~Gallons~~ Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Cx0.80) – B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
1252	1310	250 ml/m	4.5 L	—	—	60.39	1310	AW0076UB_WG200806 1801

Ferrous Iron = 1.62 mg/L

AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name:	BCRE Former C-6 Facility	Date: 6/18/08	
Project No.:	1155.006	Prepared by: BCB	
Well Identification:	AW0075UB	Weather: Clear / Hot	
Measurement Point Description:	TOC-N	Pump Intake: 60S	Screen:

	A	B	C		E					
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (A-B=C)	LNAPL Thickness (ft-bmp)	One (1) Casing Volume (gallons) (CXD=E)	Three (3) Casing Volumes (gallons) (Ex3)	1/2 Casing Volume (E/2)	Above screen Volume (Top Screen - DTW)xD	Screen Volume (Screen Length x D)	1/2 Screen Volume
—	59.79	93.00	33.21	—	—	—	—	—	—	—

	Gallons/Foot				
Well Diameter (in)	0.75	2	4	6	Field Equipment: QED
D Gallons per foot of casing	0.02	0.16	0.65	1.47	Purge Method: Micropurge
					Well Condition: Good

Time	Casing/ Screen	Volume Purged ~~(gallons)~~	Flow Rate ~~(gpm)~~	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (M S/CM)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
1122	—	—	250 ml/m	59.79	6.44	32.19	26.4	3.27	0.21	-193	colorless
1125		750		59.85	6.45	24.21	15.7	3.39	0.09	-168	"
1128		1500		59.84	6.41	23.65	15.1	3.46	0.08	-162	"
1131		2250		59.87	6.41	23.53	14.3	3.48	0.08	-159	"
1134		3000		59.89	6.42	23.42	17.1	3.49	0.07	-157	"
1137		3750		59.87	6.43	23.40	16.3	3.50	0.07	-156	"
1140		4500			6.44	23.39	16.0	3.53	0.07	-156	"

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~	Total ~~Gallons~~ Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Cx0.80) – B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
1122	1140	250 ml/m	4.5 L	—	—		1140	AW0075UB_WG200806~~18~~01

Ferrous Iron = 1.49 mg/L

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AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name:	BCRE Former C-6 Facility	Date:	6/18/08
Project No.:	1155.006	Prepared by:	BCB
Well Identification:	AW0077UB	Weather:	Clear / Hot
Measurement Point Description:	TOC - N	Pump Intake:	COS
		Screen:	

	A	B	C		E					
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (A-B=C)	LNAPL Thickness (ft-bmp)	One (1) Casing Volume (gallons) (CXD=E)	Three (3) Casing Volumes (gallons) (Ex3)	1/2 Casing Volume (E/2)	Above screen Volume (Top Screen - DTW)xD	Screen Volume (Screen Length x D)	1/2 Screen Volume
—	60.59	86.00	35.41	—	—	—	—	—	—	—

	Gallons/Foot			
Well Diameter (in)	0.75	2	4	6
D Gallons per foot of casing	0.02	0.16	0.65	1.47

Field Equipment: QED

Purge Method: Micropurge

Well Condition: Good

Time	Casing/ Screen	Volume Purged (~~gallons~~)	Flow Rate (~~gpm~~)	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (M S/CM)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
0952	—	—	250 ml/m	60.59	6.24	23.19	5.37	3.40	0.47	-118	colorless
0955		750		60.78	6.14	22.60	35.4	3.58	0.34	-120	"
0958		1500		60.92	6.12	22.33	31.6	3.52	0.22	-128	"
1001		2250		61.11	6.17	22.41	17.2	3.26	0.11	-144	light yellow
1004		3000		61.95	6.20	22.38	6.94	3.21	0.08	-154	" "
1007		3750		61.98	6.24	22.38	6.10	3.19	0.08	-157	" "
1010		4500	—	62.05	6.26	22.48	8.37	3.21	0.08	-157	" "

Purge Start Time	Purge End Time	Average Flow (~~gpm~~)	Total ~~Gallons~~ Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Cx0.80) – B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
0952	1010	250 ml/m	4.5 L	—	—	62.05	1010	AW0077UB_WG200806 18 01

Ferrous Iron

2.64 mg/L

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AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name:	BCRE Former C-6 Facility	Date:	6/18/08
Project No.:	1155.006	Prepared by:	BCB
Well Identification:	AW0055UB	Weather:	Clear / Warm
Measurement Point Description:	TOC-N	Pump Intake:	COS
		Screen:	69 - 89

	A	B	C		E					
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (A-B=C)	LNAPL Thickness (ft-bmp)	One (1) Casing Volume (gallons) (CXD=E)	Three (3) Casing Volumes (gallons) (Ex3)	1/2 Casing Volume (E/2)	Above screen Volume (Top Screen - DTW)xD	Screen Volume (Screen Length x D)	1/2 Screen Volume
—	60.02	89.30	39.28	—	—	—	—	—	—	—

	Gallons/Foot				
Well Diameter (in)	0.75	2	4	6	Field Equipment: QED
D Gallons per foot of casing	0.02	0.16	0.65	1.47	Purge Method: Micropurge
					Well Condition:

Time	Casing/ Screen	Volume Purged ~~(gallons)~~	Flow Rate ~~(gpm)~~	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (M S/CM)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
0847		—	250 ml/m	60.02	6.65	23.96	~~2.50~~ 53.1	2.50	2.04	-58	colorless
0850		750		60.18	6.55	22.44	12.0	3.05	1.06	-77	"
0853		1500		60.20	6.54	22.29	2.02	3.05	0.52	-103	"
0856		2250		60.23	6.54	22.29	0.44	3.05	0.39	-107	"
0859		3000		60.25	6.56	22.24	1.09	3.05	0.24	-114	"
0902		3750		60.23	6.56	22.27	1.25	3.06	0.20	-117	"
0905		4500		60.19	6.57	22.25	0.77	3.06	0.16	-120	"

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~	Total ~~Gallons~~ Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Cx0.80) – B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
0847	0905	250 ml/m	4.5 L	—	?	60.19	0905	AW0055UB_WG200806 18 01

DUP: AW0055UB_WG20080618_02

Ferrous Iron = 1.11 mg/L

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AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name:	BCRE Former C-6 Facility	Date:	6/18/08
Project No.:	1155.006	Prepared by:	BCB
Well Identification:	EWB002	Weather:	Clear / Warm
Measurement Point Description:	TOC-N	Pump Intake:	60s
		Screen:	

	A	B	C		E					
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (A-B=C)	LNAPL Thickness (ft-bmp)	One (1) Casing Volume (gallons) (CXD=E)	Three (3) Casing Volumes (gallons) (Ex3)	1/2 Casing Volume (E/2)	Above screen Volume (Top Screen - DTW)xD	Screen Volume (Screen Length x D)	1/2 Screen Volume
—	60.33	90.00	29.67	—	—	—	—	—	—	—

	Gallons/Foot				
Well Diameter (in)	0.75	2	4	6	Field Equipment: QED
D Gallons per foot of casing	0.02	0.16	0.65	1.47	Purge Method: Micropurge
					Well Condition: Good

Time	Casing/ Screen	Volume Purged ~~(gallons)~~	Flow Rate ~~(gpm)~~	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (M S/CM)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
0746	—	—	250 ml/m	60.33	6.01	22.98	10.13	3.04	1.24	-79	colorless
0749		750		60.59	6.35	22.27	3.34	3.19	0.67	-113	"
0752		1500		60.60	6.38	22.22	3.17	3.20	0.35	-126	"
0755		2250		60.62	6.40	22.22	2.37	3.21	0.19	-136	"
0758		3000		60.64	6.42	22.21	2.40	3.21	0.15	-139	"
0801		3750		60.67	6.42	22.23	2.47	3.21	0.07	-140	"
0804		4500		60.68	6.43	22.22	2.94	3.21	0.07	-141	"

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~	Total ~~Gallons~~ Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Cx0.80) – B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
0746	0804	250 ml/m	4.5 L	—	—		0804	EWB002_WG200806~~18~~01

Ferrous Iron = 3.30 mg/L

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AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name:	BCRE Former C-6 Facility	Date:	6/17/08
Project No.:	1155.006	Prepared by:	BCB
Well Identification:	WCC_12S	Weather:	Clear / Cool
Measurement Point Description:	TOC-N	Pump Intake: 60s	Screen: 60-90

	A	B	C		E					
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (A-B=C)	LNAPL Thickness (ft-bmp)	One (1) Casing Volume (gallons) (CXD=E)	Three (3) Casing Volumes (gallons) (Ex3)	1/2 Casing Volume (E/2)	Above screen Volume (Top Screen - DTW)xD	Screen Volume (Screen Length x D)	1/2 Screen Volume
—	58.07	92.00	33.93	—	—	—	—	—	—	—

	Gallons/Foot			
Well Diameter (in)	0.75	2	4	6
D Gallons per foot of casing	0.02	0.16	0.65	1.47

Field Equipment: QED

Purge Method: Micropurge

Well Condition: need to chase threads w/ tap

Time	Casing/ Screen	Volume Purged ~~(gallons)~~	Flow Rate ~~(gpm)~~	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (M S/CM)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
0740		—	250 ml/m	58.07	6.50	21.75	29.7	1.78	4.47	154	Colorless
0743		750		58.19	6.77	21.82	14.2	1.77	4.34	149	"
0746		1500		58.22	6.95	21.85	5.51	1.79	4.22	139	"
0749		2250		58.24	6.99	21.87	2.94	1.78	4.20	137	"
0752		3000		58.25	7.01	21.87	2.03	1.80	4.21	133	"
0755		3750		58.24	7.04	21.87	1.18	1.82	4.20	130	"
0758		4500		58.25	7.03	21.88	1.05	1.81	4.20	129	"

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~	Total ~~Gallons~~ Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Cx0.80) – B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
0740	0758	250 ml/m	4.5 L	—	—	58.25	0758	WCC_12S_WG200806 17 01

Ferrous Iron = 0.06 mg/L

AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name:	BCRE Former C-6 Facility	Date:	6/17/08
Project No.:	1155.006	Prepared by:	BCB
Well Identification:	AW0067UB	Weather:	Clear / Warm
Measurement Point Description:	TOC- N	Pump Intake: COS	Screen: 70-90'

	A	B	C		E					
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (A-B=C)	LNAPL Thickness (ft-bmp)	One (1) Casing Volume (gallons) (CXD=E)	Three (3) Casing Volumes (gallons) (Ex3)	1/2 Casing Volume (E/2)	Above screen Volume (Top Screen - DTW)xD	Screen Volume (Screen Length x D)	1/2 Screen Volume
—	58.32	90.00	31.68	—	—	—	—	—	—	—

	Gallons/Foot				
Well Diameter (in)	0.75	2	4	6	Field Equipment: QED
D Gallons per foot of casing	0.02	0.16	0.65	1.47	Purge Method: Micropurge
					Well Condition: Good

Time	Casing/ Screen	Volume Purged ~~(gallons)~~	Flow Rate ~~(gpm)~~	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (M S/CM)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
1207	—	—	200 ml/m	58.32	4.09	25.15	218	2.48	1.81	-49	slightly cloudy
1210		600		58.67	4.05	24.88	233	2.52	0.57	-66	" " "
1213		1200		58.72	4.06	24.92	230	2.52	0.33	-78	" "
1216		1800		58.69	4.07	25.03	234	2.52	0.16	-87	" "
1219		2400		58.62	4.07	24.44	218	2.54	0.18	-94	" "
1222		3000		58.60	4.08	24.47	212	2.53	0.17	-97	" "
1225		3600		58.61	4.07	24.49	207	2.53	0.17	-101	" "

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~	Total ~~Gallons~~ Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Cx0.80) – B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
1207	1225	200 ml/m	3.6 L	—	—	58.61	1225	AW0067UB_WG200806 17 01

* Duplicates collected for DHG analysis Ferrous Iron = 1.79 mg/L AW0067UB_WG20080617-02

AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name:	BCRE Former C-6 Facility	Date:	6/17/08
Project No.:	1155.006	Prepared by:	BCB
Well Identification:	AW0073C	Weather:	Clear/Warm
Measurement Point Description:	TOC-N	Pump Intake: COS	Screen:

	A	B	C		E					
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (A-B=C)	LNAPL Thickness (ft-bmp)	One (1) Casing Volume (gallons) (CXD=E)	Three (3) Casing Volumes (gallons) (Ex3)	1/2 Casing Volume (E/2)	Above screen Volume (Top Screen - DTW)xD	Screen Volume (Screen Length x D)	1/2 Screen Volume
—	59.99	117.00	57.01	—	—	—	—	—	—	—

	Gallons/Foot			
Well Diameter (in)	0.75	2	4	6
D Gallons per foot of casing	0.02	0.16	0.65	1.47

Field Equipment: QED
Purge Method: Micropurge
Well Condition: Good

Time	Casing/ Screen	Volume Purged ~~(gallons)~~	Flow Rate ~~(gpm)~~	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (M S/CM)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
0915		—	250 ml/m	59.99	7.10	27.28	2.58	1.033	3.43	-126	colorless
0918		750		60.29	6.91	23.01	48.7	0.896	0.67	-146	slightly cloudy
0921		1500		60.32	6.96	22.93	75.7	0.871	0.34	-163	" "
0924		2250		60.36	7.00	22.84	63.4	0.846	0.15	-165	" "
0927		3000		60.35	7.04	22.83	44.9	0.829	0.12	-171	" "
0930		3750		60.34	7.08	22.85	30.2	0.817	0.11	-175	colorless
0933		4500		60.33	7.09	22.84	16.7	0.809	0.10	-179	"

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~	Total ~~Gallons~~ Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Cx0.80) – B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
0915	0918	250 ml/m	4.5 L	—	—	60.33	0933	AW0073C_WG20080617-01

AW0073C_WG20080617-02

* Duplicates collected for DHG analysis D.O. = 0.1 mg/L Ferrous Iron = 1.87 mg/L

AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name:	BCRE Former C-6 Facility	Date:	6/17/08
Project No.:	1155.006	Prepared by:	BCB
Well Identification:	AW0066UB	Weather:	Clear / Warm
Measurement Point Description:	TOC-N	Pump Intake:	cos
		Screen:	69.5 - 89.5

	A	B	C		E					
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (A-B=C)	LNAPL Thickness (ft-bmp)	One (1) Casing Volume (gallons) (CXD=E)	Three (3) Casing Volumes (gallons) (Ex3)	1/2 Casing Volume (E/2)	Above screen Volume (Top Screen - DTW)xD	Screen Volume (Screen Length x D)	1/2 Screen Volume
—	58.65	90.00	31.35	—	—	—	—	—	—	—

	Gallons/Foot			
Well Diameter (in)	0.75	(2)	4	6
D Gallons per foot of casing	0.02	0.16	0.65	1.47

Field Equipment: QED
Purge Method: Micropurge
Well Condition: Good

Time	Casing/ Screen	Volume Purged (~~gallons~~)	Flow Rate (~~gpm~~)	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (M S/CM)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
1047	—	—	250 ml/m	58.65	4.55	24.72	767	2.96	0.64	-61	v. cloudy w/ white
1050		750		59.79	4.09	24.67	764	2.97	0.51	-73	"
1053		1500		59.82	4.15	24.58	752	3.01	0.37	-114	"
1056		2250		59.74	4.22	24.51	754	3.09	0.21	-158	cloudy
1059		3000		59.71	4.24	24.44	737	3.12	0.21	-161	"
1102		3750		59.69	4.27	24.66	742	3.14	0.21	-164	"
1105		4500		59.67	4.26	24.49	731	3.16	0.22	-166	"

Purge Start Time	Purge End Time	Average Flow (~~gpm~~)	Total ~~Gallons~~ Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Cx0.80) – B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
1047	1105	250 ml/m	4.5 L	—	—	59.67	1105	AW0066UB_WG200806_1701

Ferrous Iron = 6.18 mg/L

AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name:	BCRE Former C-6 Facility	Date: 6/17/08	
Project No.:	1155.006	Prepared by: RLB	
Well Identification:	TMW_07	Weather: Clear / Warm	
Measurement Point Description:	TOC-N	Pump Intake: COS	Screen: 65-85

	A	B	C		E					
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (A-B=C)	LNAPL Thickness (ft-bmp)	One (1) Casing Volume (gallons) (CXD=E)	Three (3) Casing Volumes (gallons) (Ex3)	1/2 Casing Volume (E/2)	Above screen Volume (Top Screen - DTW)xD	Screen Volume (Screen Length x D)	1/2 Screen Volume
—	60.79	82.60	21.81	—	—	—	—	—	—	—

	Gallons/Foot				
Well Diameter (in)	0.75	(2)	4	6	Field Equipment: QED
					Purge Method: Micropurge
D Gallons per foot of casing	0.02	0.16	0.65	1.47	Well Condition: TOC - wedge & casing broken out ~ 1"x1" section

Time	Casing/ Screen	Volume Purged ~~(gallons)~~	Flow Rate ~~(gpm)~~	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (M S/CM)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
1329	—	—	250 ml/m	60.79	6.84	23.50	4.29	1.61	4.22	-6	colorless
1332		750		60.82	6.82	22.46	4.93	1.61	4.30	12	"
1335		1500		60.84	6.89	22.72	4.30	1.61	4.31	31	"
1338		2250		60.83	6.92	22.72	2.19	1.61	4.32	34	"
1341		3000		60.82	6.93	22.73	0.61	1.60	4.31	38	"
1344		3750		60.83	6.96	22.70	0.34	1.61	4.29	42	
1347		4500		60.83	6.97	22.69	0.27	1.60	4.30	47	

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~	Total ~~Gallons~~ Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Cx0.80) – B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
1329	1347	250 ml/m	4.5 L	—	—	60.83	1347	TMW_07_WG200806 1701

Ferrous Iron = 0.0 mg/L

AVOCET ENVIRONMENTAL, INC.

QA/QC SAMPLE IDENTIFICATION FORM

Project Name:	Boeing Former C-6 Facility, Monthly WDR Sampling, June 2008	Project No.:	1155.006

Date	Time	QA/QC Sample Type (Duplicate, Field Blank, Equipment Blank, Split)	Sample ID	Sample Location	Primary Sample Reference	Analytical Methods	Organic-Free Water Source	Field Personnel	Comments
6-17-08	—	Trip Blank	TB_AV020080617_01	—	—	8260B	TA-1	TA-1	
6-17-08	13:25	Equip Blank	EB_AV020080617_01	—	—	8260B	TA-1	BCB	
6-18-08	—	Trip Blank	TB_AV020080618_01	—	—	8260B	TA-1	TA-1	
6-18-08	9:05	Duplicate	AW0055UB_W620080618_01		AW0055UB	8260B	—	BCB	

S:\Projects\1146 Boeing C-1\005_Ground Water Monitoring\Field Forms\[QAQC Sample ID Form.xls]Sheet1

QED MP20

CALIBRATION CERTIFICATE

Service Technician: CJ

Date: 6/13/08

INSTRUMENT INFORMATION

EQUIPMENT I.D.: MP-20. 1

SERIAL NUMBER:_____

CALIBRATION INFORMATION

PARAMETERS:	STANDARDS:	PASS ( )	LOT#
1. Conductivity	1000 µMhos	✓	#6016
2. pH Zero	pH 7	✓	2704402
3. pH Slope	pH 4	✓	2704233
pH Slope	pH 10	✓	2706360
4. Dissolved Oxygen	Air Calibration		
	Barometric pressure = 760mmHg	✓	N/A
5. Dissolved Oxygen Zero Test	(sodium sulfite)		
6. Turbidity Zero	0.0 NTU's	N/A	100A
7. Turbidity Span	_____NTU's	N/A	
8. Redox (ORP)	232 mV (YSI Zobell solution)	✓	051107