



**GROUNDWATER MONITORING REPORT
JULY 2010 EVENT
(FIRST ANNUAL POST-CONSTRUCTION)
MARJOL BATTERY SITE
THROOP, PENNSYLVANIA**

Prepared For:

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**October 7, 2010
Project No. 92-002-221**



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1.0 INTRODUCTION

1.2 PURPOSE

Advanced GeoServices Corp. (Advanced GeoServices) was retained by Gould Electronics Inc. (Gould) to fulfill the Marjol Battery Site (the Site) groundwater monitoring requirements presented in the Final (100%) Remedial Design, Appendix I, Sampling and Analysis Plan, Tab 6, dated April 11, 2008. Groundwater beneath the Site is the regional mine pool located 115 to 275 feet beneath the ground surface. The mine pool has been degraded due to past mining activities and is not a source of drinking water. As shown on Figure 1-1, a network of five monitoring wells (MSB-1, MSB-3, MSB-4, MSB-6, and MSB-8R) was selected to monitor the groundwater conditions beneath the Site. A summary of the construction of these wells is provided in Table 1-1., and the monitoring well installation logs were included as Appendix A of the Baseline Groundwater Monitoring Report (Advanced GeoServices, November 17, 2008)

In accordance with the Final (100%) Remedial Design, one round of groundwater sampling of the five monitoring wells occurred in June 2008 prior to the start of significant excavation of contaminated materials to establish a baseline. In addition, groundwater sampling of the five wells is scheduled to occur annually for the first five years post-construction. The frequency of groundwater monitoring will be reviewed as part of the five year review and may be reduced from annually with the approval of USEPA and PADEP. The ultimate duration of the monitoring activities is addressed in Final (100%) Remedial Design, Appendix K, the Operations and Maintenance Plan.

Advanced GeoServices conducted the first annual post-construction groundwater monitoring activities at the Site between July 12 and 14, 2010. This report presents the groundwater monitoring, groundwater quality, and hydrological conditions at the Site during this sampling event.



2.0 GROUNDWATER SAMPLING AND ANALYSIS PROCEDURES

2.1 SAMPLING EQUIPMENT

The following equipment was used for the groundwater well sampling:

- Low-flow bladder pump and control box capable of sampling groundwater at depths up to 500 feet;
- Nitrogen tanks;
- Electronic depth to water meter;
- Flow-through-cell consisting of pH/temperature meter, conductivity meter, dissolved oxygen meter and an oxidation-reduction potential meter;
- Turbidity Meter;
- Laboratory supplied containers for the collection of samples; and,
- Teflon[®] tubing.

2.2 SAMPLING PROCEDURES

The groundwater sampling is comprised of synoptic water level measurement, field measurements, well purging procedures, low-flow sample collection procedures, and decontamination procedures.

2.2.1 Synoptic Water Level Measurement

Prior to the groundwater sampling activities, the depth-to-water was measured in each well using an electronic water level indicator. The synoptic measurements includes the measurement of water levels and well depths in the monitoring wells in as short a time frame as possible to determine the potentiometric surface across the Site (See Figure 1-1). The water levels in the wells were measured to the nearest 0.01 foot using the surveyed point at the top of the inner PVC well casing for reference¹. Measurements were repeated at each well until two consecutive

¹ The groundwater monitoring wells were damaged during final construction at the site. The wells were repaired and resurveyed after completion of the July 2010 groundwater sampling event. Both survey elevations are presented on Table 1-1, however the potentiometric map is based on the survey conducted on June 30, 2010.



readings were within 0.01 feet. Additionally, depth-to-bottom measurements were performed to determine if any significant silting or collapse of the monitoring wells had occurred. Two wells, MSB-1 and MSB-4, were found to have an apparent blockage at elevations 531.96 and 552.20, respectively, during the baseline event in 2008 and during this sampling event.

The July 2010 potentiometric surface of the groundwater beneath the Site is shown in Figure 1-1. Free flowing groundwater sounds were heard within the bedrock interval at MSB-8R during construction and baseline sampling activities in June 2008. No free flowing groundwater sounds were heard during the July 2010 event. These sounds are most likely indicative of groundwater fracture flow within the bedrock. Additionally, the presence of a barrier wall located northeast of MSB-8R along the Site's southern property line from the former mining activities appears to be affecting the groundwater level within the mine pool in this area. Based on this information, the groundwater level at MSB-8R does not appear to be in direct connection with the groundwater levels of the mine pool beneath the Marjol Battery Site. Therefore, the groundwater level from MSB-8R was not used in developing the potentiometric surface map.

2.2.2 Field Measurements

Field measurements performed during well purging included pH, specific conductivity, temperature, oxidation/reduction potential (ORP), dissolved oxygen (DO), and turbidity. Measurements were collected by inserting the appropriate probe in a closed, non-dedicated, plastic container (flow-through-cell) that is rinsed with deionized water prior to purging the well. Turbidity samples were collected from the flow-through-cell outflow using a separate turbidity meter.

Calibration of the instruments was completed at the beginning of each sampling day, checked in the middle of the day, and was conducted as otherwise necessary based on the functioning of the meters and equipment. The following items outline the calibration of each meter. Each meter was field calibrated in accordance with the manufacturer's specifications and appropriate calibration solutions. All calibrations were recorded in the field logbook. Field calibration procedures at a minimum included the following:



- Calibration of the field instruments were performed by trained technicians prior to the mobilization of equipment to the Site. All the instruments were calibrated as specified by the manufacturer. Standard solutions were also checked to determine stability and operating conditions. All results of field calibrations and measurements were maintained in bound field logbooks when the instrument was in use. The recorded calibration information included date and time of calibration results.
- pH meters were calibrated according to the manufacturer's instructions prior to each use and consisted of two standard buffer solutions (pH 4 and 7) obtained from chemical supply houses. The pH values of the buffers were compensated for the temperature at which the pH sample is measured.
- All temperature measurements were measured using a field thermometer and recorded to $\pm 0.2^{\circ}\text{C}$.
- Dissolved oxygen (DO) meters were calibrated to ambient air conditions.
- Specific conductance meters were calibrated prior to each use using a potassium chloride solution prepared by a qualified laboratory or chemical supplier.
- Turbidity meters were calibrated daily prior to use by a minimum of two standards of known turbidity as prepared by the manufacturer of the instrument.
- Oxidation – Reduction Potential (ORP) probes were checked against a standard solution prepared by a qualified laboratory or chemical supplier.

All calibration procedures performed were documented in the field logbook and included the date and time of calibration, name of the person performing the calibration, reference standards used and instrument readings.



2.2.3 Well Purging Procedures

Well purging procedures included water level measurements, calculation of well volumes, field measurements, purging, and sampling activities. The following step-by-step procedures are in adherence to the Pennsylvania Department of Environmental Protection (PADEP) *Groundwater Monitoring Guidance Manual* (December 1999) and USEPA Region III groundwater sampling protocols for low flow pump purging and sampling, which are based upon the method of Puls and Barcelona (EPA/540/S-9S/504).

- Step 1 Measure depth-to-water of every well at the Site.

- Step 2 Calculate one well volume.

- Step 3 Lower the low-flow pump in the well to collect groundwater samples. The pump intake was placed at the same elevation as the baseline sample collected during the June 2008 sampling event. Groundwater sample elevations are presented in Table 1-1 and range from approximately 517 to 601 feet above mean sea level (MSL).

- Step 4 Calibrate meters.

- Step 5 Begin to purge well. USEPA recommends a purge rate of 200 to 300 milliliters/minute (ml/min).

- Step 6 Measure purging parameters at a minimum of every 3 to 5 minutes. Measurements will be collected via a flow-through-cell for pH, temperature, specific conductivity, ORP, and DO. Turbidity will also be measured at the outflow of the flow through cell at every 3 to 5 minutes. All measurements will be recorded in the field logbook.



- Step 7 After conductivity and temperature have stabilized to within 3% over three readings, pH readings differ <0.1 standard pH units, ORP readings differ within 10 mV, and turbidity measurements differ within $\pm 10\%$, sampling began after the flow-through-cell was disconnected.
- Step 8 Using the well purging pump, the flow rate will be reduced to 100 ml/min and the sample will be collected out of the discharge line. The date and time of the sample collection will be recorded in the field logbook.

The pump and sampling equipment were decontaminated before and after sampling activities were performed at each well. Decontamination and waste handling procedures are presented in Section 2.2.5. Tabulation of the purging parameters for each well is presented in Appendix A.

2.2.4 Low-Flow Sample Collection Procedures

Groundwater samples were collected for total and dissolved metals (lead, calcium, iron, magnesium, manganese, potassium, and sodium), sulfate, pH, and alkalinity (carbonate and bicarbonate) analysis using the low-flow pump and tubing at a rate of approximately 100 ml/min with the flow-through-cell disconnected. For total metal analyses, groundwater was collected directly into a laboratory prepared, pre-preserved container. For dissolved metal analyses, groundwater was transferred through a new 0.45 micron filter and then collected into a laboratory supplied, pre-preserved container. For all other analyses, groundwater was collected directly into a laboratory prepared container with no preservative. Metal analyses samples (total and dissolved) were collected in 500 milliliter high-density polyethylene (HDPE) bottles that were preserved with nitric acid to a pH value of less than 2 standard units, and all remaining analyses were collected in a single unpreserved 1 liter HDPE container. All samples were placed on ice in on-site storage containers immediately after collection, and the samples were shipped to the laboratory for analysis daily. Sample tubing was dedicated specifically to the individual wells, and filters were discarded after each use.



The selected analytical laboratory performed all analyses in accordance with accepted USEPA publication SW-846 methods so that the detection limits are lower than the performance standard for lead of 15 µg/L. The unfiltered groundwater samples were analyzed for total metals, with both filtered and unfiltered samples submitted to the laboratory for metals analysis. Filtered samples are not analyzed for metals unless the corresponding total lead concentrations exceed 15 µg/L for the well. This is in accordance with Tab 6 of the Sampling and Analysis Plan in the Final (100%) Remedial Design submitted by Advanced GeoServices on April 11, 2008.

Sample handling was in accordance with the procedures outlined in the Final (100%) Remedial Design, Appendix I, Sampling and Analysis Plan, Tab 10. The appropriate methods for extraction and analysis and required holding times to be met are given in the Final (100%) Remedial Design, Appendix I, Sampling and Analysis Plan, Tab 11, Table 11-2.

2.2.5 Decontamination Procedures and Waste Handling

The sampling pump was decontaminated in the following manner.

- Exterioralconox and water wash,
- Exterior potable water rinse,
- Exterior nitric acid rinse (10% solution),
- Exterior potable water rinse,
- Exterior isopropyl alcohol rinse,
- Exterior potable water rinse,
- Cycle approximately 10 pump volumes ofalconox and water through the pump assembly,
- Nitric acid rinse (10% solution) by spraying solution into screen of pump,
- Distilled water rinse,
- Isopropyl alcohol rinse by spraying solution into screen of pump,
- Distilled water rinse,
- Cycle approximately 10 pump volumes of distilled water through the pump assembly, and,



- Air dry and store pump in plastic.

Decontamination water was collected and containerized in storage containers on-site along with the purged groundwater from each well. The amount of decontamination water and purge water generated during the 2010 sampling event was about 65 gallons. In accordance with the Sampling and Analyses Plan, once the groundwater analytical data indicates lead concentrations are below 15 µg/L, the purge water and decontamination water is allowed to be discharged on-site at a location where it would not migrate off-site or to surface water. The groundwater analytical data presented in Section 3 demonstrates the July 2010 lead concentrations in groundwater are below 15 µg/L. Based on this information and USEPA and PADEP approval via e-mail dated September 10, 2010, the purge water and decontamination water collected during the July 2010 sampling event was discharged in the vicinity of well MSB-8R on September 28, 2010.

2.3 SAMPLE CUSTODY

Custody of the samples was maintained in accordance with the Final (100%) Remedial Design, Appendix I, Sampling and Analysis Plan, Tab 10.



3.0 GROUNDWATER QUALITY

The validated laboratory results for the Baseline June 2008 and the July 2010 sampling events are presented on Table 3-1. The complete laboratory data package is presented in Appendix B. The range of total lead concentrations in 2008 was 0.092 µg/L to 9 µg/L with a mean concentration of 2.2 µg/L. In 2010, the range of total lead concentrations was from 0.37 µg/L to 4.3 µg/L with a mean of 1.2 µg/L indicating that the construction activities did not cause an increase in total lead concentrations in the groundwater. The total lead results are below the lead performance standard of 15 µg/L, and consequently, no dissolved metal samples were analyzed based on the total lead results. All data are acceptable and usable as validated.



4.0 CONCLUSIONS AND RECOMMENDATIONS

The first annual groundwater sampling event was performed during July 2010 to monitor the groundwater conditions after completion of significant excavation activities at the Site. The data indicate that the groundwater lead results are below the applicable performance standard. The next groundwater monitoring event is tentatively scheduled for July 2011.



TABLES



TABLE 1-1
MONITORING WELL CONSTRUCTION SUMMARY
MARJOL BATTERY SITE

Monitoring Well Identification Number	Date Installed	Boring Depth (BGS ¹)	Coordinates ²		Overburden Thickness	Overburden Steel Casing		HQ Size Rock Core Interval(s) ³	6-inch Diameter Borehole Reaming Interval	4-inch PVC Liner Screen Interval from Concrete Pad		Top of Steel Overburden Casing ⁵	Top of Inner (PVC) Casing ⁵	Top of Inner (PVC) Casing ⁶	Top of Concrete Pad ⁶	Estimated Interval of the Remnants of the Diamond Seam Based on Examination of Recovered Rock core and Downhole Video Survey		Groundwater Sample Depth/Elevation	
			X	Y		Diameter (inches)	Depth			Depth (BGS ¹)	Elevation (MSL ⁴)					Depth (BGS ¹)	Elevation (MSL ⁴)	Depth (TOIC ⁷)	Elevation (MSL ⁴)
MSB-1	September 1 - October 14, 1998	260	1550.8	3614.0	37	8	42	42-61 & 76-265.5	76-269	110-260	492.6-642.6	762.46	760.06	762.27	760.40	241.1-249 (coal pillar)	503.6-511.5 (coal pillar)	173	587
MSB-3	September 2 - October 14, 1998	313.5	2278.0	3600.0	32	8	68	68.5-328	68-330	173.5-313.5	508.9-648.9	819.64	819.31	819.22	817.33	308.5-315.9 (coal pillar)	506.5-513.9 (coal pillar)	302	517
MSB-4	September 8 - October 14, 1998	295	2875.6	3443.2	30	8	39	41-51 & 61-306	60-306	185-295	540.2-650.2	839.24	839.20	838.90	837.05	292.5-296	539.2-542.7	238	601
MSB-6	September 9 - October 14, 1998	243	2694.7	3162.6	10.5	8	55	55-243 & 244-28	55-244	183-243	575.3-635.3	826.58	826.51	826.16	824.42	228-234.2	584.1-590.3	235	592
MSB-8R	May 28 - June 3, 2008	220	1637.0	3313.7	55	8	60	N/A ⁸	60-220	80-220	540.21-680.21	762.20	761.70	761.82	760.28	188-203 ⁹	555-570 ⁹	211	551

Notes:

- 1) BGS - Below Ground Surface
- 2) Coordinates - Easting (X) and Northing (Y) as collected by Carroll Engineering on June 30, 2010.
- 3) HQ rock core techniques were used only at specified intervals during well construction.
- 4) MSL - Mean Sea Level
- 5) Elevations collected by Carroll Engineering on June 30, 2010.
- 6) Elevations collected by Carroll Engineering on August 18, 2010.
- 7) TOIC - Top of Inner (PVC) Casing.
- 8) Not Applicable - well MSB-8R was completed using air rotary techniques only.
- 9) The diamond coal seam was not observed during construction of well MSB-8R. The provided depth and elevation range is estimated based on data from surrounding wells.



TABLE 3-1
GROUNDWATER SAMPLING ANALYTICAL SUMMARY
Marjol Battery Site
Throop, Pennsylvania

Sample Location		MSB-1			MSB-1			MSB-3			MSB-3			MSB-4			MSB-4			MSB-6			MSB-6			MSB-8R			MSB-8R			
Lab ID		C8F180239001 / C8H270225002			C0G140497001			C8F190222001 / C8H270225005			C0G150494002			C8F180239003 / C8H270225004			C0G150494001			C8F170194001 / C8H270225001			C0G130479001			C8F190222003 / C8H270225007			C0G140497002			
Sample Date		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			
Matrix		6/17/2008			7/13/2010			6/18/2008			7/14/2010			6/17/2008			7/14/2010			6/16/2008			7/12/2010			6/18/2008			7/13/2010			
Remarks		Baseline Event			First Annual Event			Baseline Event			First Annual Event			Baseline Event			First Annual Event			Baseline Event			First Annual Event			Baseline Event			First Annual Event			
Parameter	Units	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	Result	Q	RL	
Total Metals																																
Calcium	µg/L	40900		100	29100		100	131000	J	100	75900		100	205000		100	161000		100	76300		100	74700		100	31900	J	100	23000		100	
Iron	µg/L	19600		50	8990		50	58000	J	50	22300		50	144000		50	82000		50	22600		50	23100		50	7320	J	50	10200		50	
Lead	µg/L	0.37	J	1	1	U	1	9		1	0.37	J	1	1.3		1	0.61	J	1	0.092	J	1	4.3		1	1	U	1	1	U	1	
Magnesium	µg/L	18900		100	16400		100	62600		100	41300		100	64500		100	61600		100	37400		100	38400		100	17200		100	13700		100	
Manganese	µg/L	1120		0.5	1060		0.5	2060		0.5	1840		0.5	13400		0.5	8700		0.5	2120		0.5	1900		0.5	1440		0.5	1060		0.5	
Potassium	µg/L	1330		100	1550		100	2440		100	2310		100	1110		100	1150		100	2330		100	3270		100	1590		100	1320		100	
Sodium	µg/L	36000		100	17900		100	40400	J	100	35100		100	15000		100	17600		100	37200		100	31600		100	54900	J	100	43300		100	
Dissolved Metals																																
Calcium	µg/L	40800		100		NA		133000		100		NA		217000		100		NA		778000		100		NA		34500		100		NA		NA
Iron	µg/L	9180		50		NA		19200		50		NA		83800		50		NA		21600		50		NA		6930		50		NA		NA
Lead	µg/L	1	U	1		NA		1	U	1		NA		1	U	1		NA		0.33	J	1		NA		1	U	1		NA		NA
Magnesium	µg/L	21000		100		NA		69100		100		NA		75200		100		NA		42700		100		NA		20600		100		NA		NA
Manganese	µg/L	1040		0.5		NA		2040		0.5		NA		13100		0.5		NA		1970		0.5		NA		1560		0.5		NA		NA
Potassium	µg/L	1300		100		NA		2120		100		NA		1120		100		NA		2330		100		NA		1730		100		NA		NA
Sodium	µg/L	29900		100		NA		35200		100		NA		12400		100		NA		31200		100		NA		51700		100		NA		NA
Conventionals																																
Bicarbonate Alkalinity	mg/L	104		5	78.3		5	123		5	148		5	41.4		5	73.4		5	111		5	125		5	59.8		5	55.3		5	
Carbonate Alkalinity	mg/L		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5		U	5	
pH	pH units	6.9	R		6.4	J		6.4	R		6.3			5.8	R		6			6.5	R		6.4	R		6.3	R		6.1	J		
Sulfate	mg/L	67.7		1	68.3		1	423		25	197		10	893		25	596		25	228		10	195		10	66.5		1	58.8		1	

Notes:

Q = Qualifier

Reporting Limit (RL) - The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions.

U = Undetected at or below the detection limit

J = Estimated

UJ = Undetected, detection limit is qualified as estimated

R = The value reported has been rejected

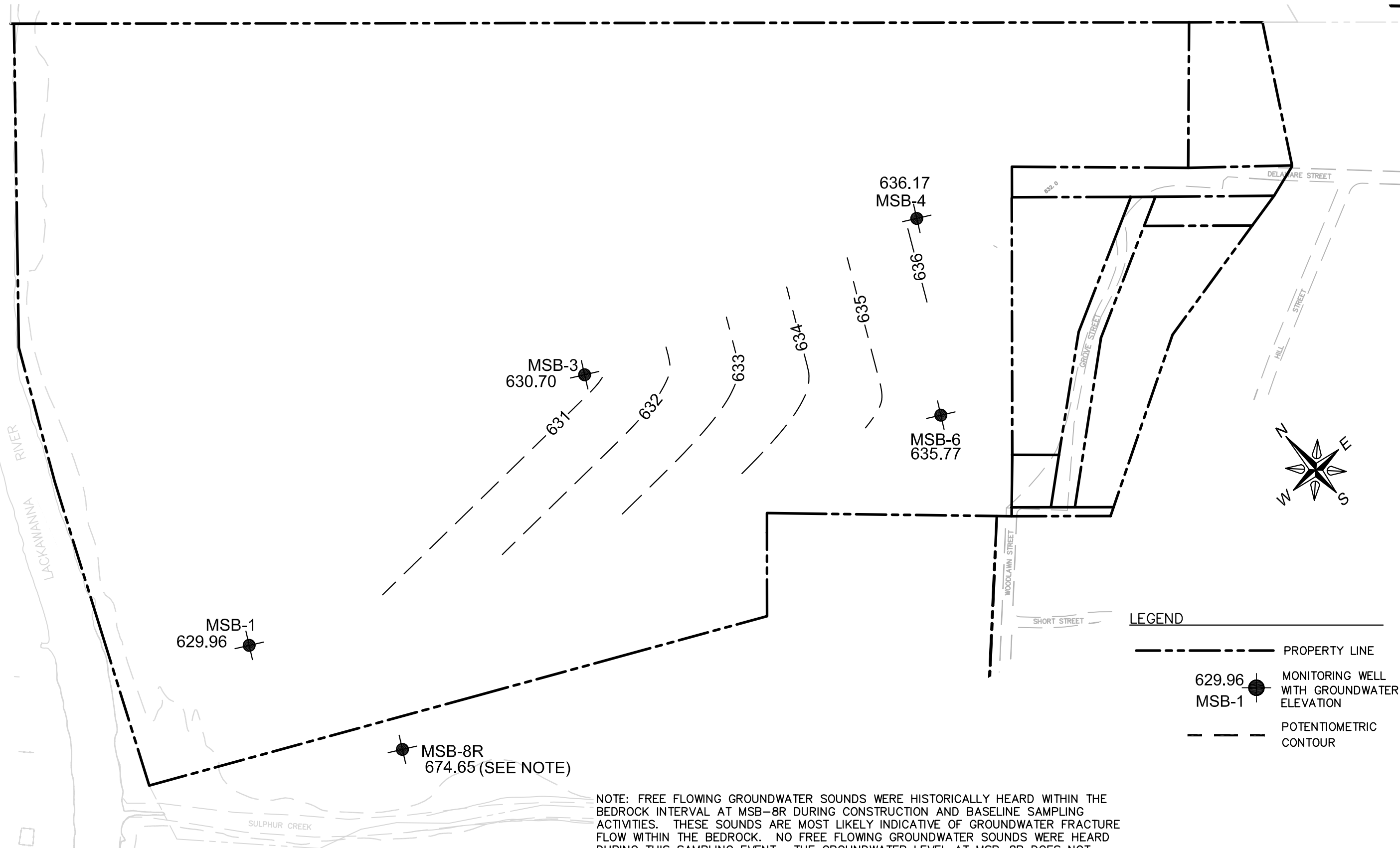
mg/L = milligrams per liter

µg/L = micrograms per liter

NA = Not Analyzed



FIGURE



NOTE: FREE FLOWING GROUNDWATER SOUNDS WERE HISTORICALLY HEARD WITHIN THE BEDROCK INTERVAL AT MSB-8R DURING CONSTRUCTION AND BASELINE SAMPLING ACTIVITIES. THESE SOUNDS ARE MOST LIKELY INDICATIVE OF GROUNDWATER FRACTURE FLOW WITHIN THE BEDROCK. NO FREE FLOWING GROUNDWATER SOUNDS WERE HEARD DURING THIS SAMPLING EVENT. THE GROUNDWATER LEVEL AT MSB-8R DOES NOT APPEAR TO BE IN DIRECT CONTACT WITH THE GROUNDWATER LEVELS BENEATH THE MARJOL BATTERY SITE. THEREFORE, THE GROUNDWATER LEVEL FROM MSB-8R WAS NOT USED IN DEVELOPING THE POTENTIOMETRIC SURFACE MAP.

LEGEND

	PROPERTY LINE
	MONITORING WELL WITH GROUNDWATER ELEVATION
	POTENTIOMETRIC CONTOUR

POTENTIOMETRIC SURFACE MAP

JULY 12, 2010

PROJECT MANAGER:	B.L.F.	SCALE:	1"=160'
CHECKED BY:	J.W.D.	PROJECT NUMBER:	92-002-221
DRAWN BY:	C.E.P.	DATE:	OCT. 7, 2010

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MARJOL BATTERY SITE
 THROOP BOROUGH,
 LACKAWANNA COUNTY



APPENDIX A

July 2010 Groundwater Sampling Event Purge Parameters



JULY 2010
GROUNDWATER SAMPLING EVENT
PURGE PARAMETERS

Marjol Battery Site
Throop, Pennsylvania
Project #92-002-221

Well: MSB-1

Date: 7/13/2010
DTW (ft. TOC): 130.10
DTB (ft. TOC): 228.1
Well Diameter: 6 inch
1 Volume (Gal): 144.0
Pump Setting (ft. TOC): 173
Pump Elevation: 580.69
Purge Rate (ml/min): 150
By: David Benson

Time	pH (pH units)	Temp. (°C)	Sp. Cond. (µS)	D.O. (mg/L)	O.R.P. (mV)	Turbidity (NTU)
1108	6.03	24.6	0.394	4.92	22.4	49.9
1112	6.04	22.13	0.418	3.75	21.3	32
1116	6.05	20.94	0.436	2.80	19.4	19
1120	6.01	21.81	0.437	2.21	17.3	18.5
1124	5.95	23.81	0.438	1.60	15.1	18.6
1128	5.99	25.49	0.437	1.43	11.4	18.9
1131	6.12	27.62	0.442	1.44	9.0	19.4
1134	6.15	23.69	0.433	1.77	11.6	18.7
1137	6.10	21.91	0.433	1.61	15.1	16.8
1140	6.11	20.18	0.434	1.50	19.2	15.1
1143	6.08	20.94	0.431	1.38	19.4	13.2
1147	6.10	24.06	0.443	1.23	13.0	11.7
1150	6.12	25.62	0.446	1.17	9.9	9.6
1153	6.12	25.59	0.449	1.15	8.4	9.51

Sample Time: 1155

Collected: (1) - HNO3 Plas. 500ml (Unfiltered)
(1) - HNO3 Plas. 500ml (Filtered)
(1) - Unfixed Plas. 500ml
(1) - Unfixed Plas. 250ml

Comments: Removed 2.5 gallons
Final depth to water - 130.19

JULY 2010
GROUNDWATER SAMPLING EVENT
PURGE PARAMETERS



Marjol Battery Site
Throop, Pennsylvania
Project #92-002-221

Well: MSB-3

Date: 7/14/2010
DTW (ft. TOC): 188.61
DTB (ft. TOC): 324.35
Well Diameter: 6 inch
1 Volume (Gal): 199.4
Pump Setting (ft. TOC): 303
Pump Elevation: 520.12
Purge Rate (ml/min): 215
By: David Benson

Time	pH (pH units)	Temp. (°C)	Sp. Cond. (µS)	D.O. (mg/L)	O.R.P. (mV)	Turbidity (NTU)
1505	6.16	18.65	0.975	3.64	-9.5	92.8
1510	6.16	18.62	0.970	3.15	-10.3	55.4
1515	6.16	18.60	0.977	2.25	-11.0	27.1
1518	6.17	18.55	0.978	1.97	-14.4	11.5
1521	6.16	19.09	0.977	1.67	-15.0	12.0
1524	6.16	19.27	0.977	1.63	-16.2	12.4
1527	6.16	20.06	0.976	1.59	-17.6	13.1
1530	6.17	20.54	0.979	1.58	-14.8	13.2
1533	6.17	20.58	0.979	1.57	-15.1	12.8

Sample Time: 1535

Collected: (2) - HNO3 Plas. 500ml (Unfiltered)
(2) - HNO3 Plas. 500ml (Filtered)
(2) - Unfixed Plas. 500ml
(2) - Unfixed Plas. 250ml

Comments:

Removed 2.5 gallons
Final depth to water - 188.95
Collected Field Duplicate MSB-3D with time of 1555



JULY 2010
GROUNDWATER SAMPLING EVENT
PURGE PARAMETERS

Marjol Battery Site
Throop, Pennsylvania
Project #92-002-221

Well: MSB-4
Date: 7/14/2010
DTW (ft. TOC): 203.31
DTB (ft. TOC): 287
Well Diameter: 6 inch
1 Volume (Gal): 122.9
Pump Setting (ft. TOC): 238
Pump Elevation: 598.51
Purge Rate (ml/min): 140
By: David Benson

Time	pH (pH units)	Temp. (°C)	Sp. Cond. (µS)	D.O. (mg/L)	O.R.P. (mV)	Turbidity (NTU)
1135	5.74	24.71	1.604	3.54	25.3	93.6
1140	5.76	24.09	1.576	3.24	22.5	70.6
1145	5.77	24.18	1.567	2.71	18.1	72.3
1150	5.77	24.27	1.556	2.54	14.3	71.5
1155	5.82	24.46	1.53	2.05	6.8	67.1
1200	5.84	24.39	1.528	2.04	5.1	64.0
1203	5.84	23.95	1.514	2.01	5.2	72.1
1206	5.76	23.71	1.508	1.98	4.1	75.0
1209	5.74	22.89	1.494	1.97	5.3	73.4
1212	5.74	22.81	1.49	1.97	5.5	72.8

Sample Time: 1215

Collected: (1) - HNO3 Plas. 500ml (Unfiltered)
(1) - HNO3 Plas. 500ml (Filtered)
(1) - Unfixed Plas. 500ml
(1) - Unfixed Plas. 250ml

Comments: Removed 2 gallons
Final depth to water - 203.08



JULY 2010
GROUNDWATER SAMPLING EVENT
PURGE PARAMETERS

Marjol Battery Site
Throop, Pennsylvania
Project #92-002-221

Well: MSB-6

Date: 7/12/2010
DTW (ft. TOC): 190.79
DTB (ft.TOC): 252.05
Well Diameter 6 inch
1 Volume (Gal) 90.0
Pump Setting (ft. TOC): 235
Pump Elevation: 584.23
Purge Rate (ml/min): 120
By: David Benson

Time	pH (pH units)	Temp. (°C)	Sp. Cond. (µS)	D.O. (mg/L)	O.R.P. (mV)	Turbidity (NTU)
1515	6.28	20.77	0.933	6.70	13.3	248.0
1520	6.00	19.65	0.929	3.80	12.4	248.0
1524	6.11	19.43	0.929	4.01	9.9	237.0
1528	6.13	19.37	0.928	3.86	6.1	213.0
1531	6.08	19.11	0.929	3.51	6.4	222.0
1535	6.04	18.97	0.93	2.88	6.9	226.0
1539	6.05	18.99	0.931	2.82	7.1	211.0
1543	6.06	19.01	0.932	2.76	7.8	198.0
1546	6.03	18.90	0.933	2.43	6.4	185.0
1549	5.99	19.13	0.932	2.20	1.7	141.0
1552	5.98	19.21	0.933	2.14	0.9	149.0
1555	5.98	19.29	0.933	2.09	0.3	159.0
1558	5.99	19.27	0.934	2.00	0.4	158.0
1625	6.27	18.96	0.941	1.87	6.7	126.0
1628	6.23	18.78	0.939	1.90	2.5	127.0
1631	6.17	18.6	0.937	1.93	-2.9	128.0
1634	6.08	18.21	0.937	1.72	-3.8	106.3
1637	6.03	17.97	0.935	1.61	-4.1	106.3
1641	6.03	17.91	0.935	1.56	-4.2	103.1
1644	6.03	17.89	0.934	1.51	-4.4	100.7
1647	6.02	17.93	0.934	1.46	-5.7	103.0
1650	6.03	17.84	0.934	1.44	-5.9	96.6
1653	6.02	17.65	0.933	1.39	-5.3	97.1
1656	6.01	17.45	0.933	1.40	-5.3	102.1
1659	5.19	17.39	0.933	1.39	-4.6	101.3

Sample Time: 1701

Collected: (1) - HNO3 Plas. 500ml (Unfiltered)
(1) - HNO3 Plas. 500ml (Filtered)
(1) - Unfixed Plas. 500ml
(1) - Unfixed Plas. 250ml

Comments: MS/MSD collected
Removed 5 gallons
Final depth to water - 191.15

JULY 2010
GROUNDWATER SAMPLING EVENT
PURGE PARAMETERS



Marjol Battery Site
Throop, Pennsylvania
Project #92-002-221

Well: MSB-8R

Date: 7/13/2010
DTW (ft. TOC): 87.05
DTB (ft.TOC): 219.65
Well Diameter 6 inch
1 Volume (Gal) 194.8
Pump Setting (ft. TOC): 210
Pump Elevation: 551.73
Purge Rate (ml/min): 150
By: David Benson

Time	pH (pH units)	Temp. (°C)	Sp. Cond. (µS)	D.O. (mg/L)	O.R.P. (mV)	Turbidity (NTU)
1432	5.96	20.03	0.527	6.90	69.4	*
1445	5.84	20.47	0.510	3.38	81.9	*
1450	5.87	18.46	0.527	3.00	77.2	*
1455	5.81	17.33	0.526	2.86	78.9	*
1500	5.75	17.28	0.523	2.80	80.7	*
1505	5.71	17.07	0.521	2.93	83.1	*
1510	5.72	17.31	0.518	2.56	85.0	*
1515	5.70	17.63	0.515	2.07	87.2	*
1520	5.72	18.06	0.513	1.66	90.1	*
1525	5.74	17.77	0.512	2.10	94.2	*
1530	5.73	17.51	0.513	2.12	97.8	*
1535	5.72	17.31	0.512	2.18	94.6	*
1540	5.68	16.28	0.514	2.62	90.2	*
1545	5.70	16.31	0.52	2.62	83.1	*
1550	5.73	16.34	0.529	2.62	76.7	*
1555	5.74	16.32	0.53	2.52	73.8	779.00
1600	5.81	16.59	0.531	2.56	69.5	198.00
1605	5.77	16.77	0.531	2.03	67.5	159.00
1610	5.76	17.04	0.532	1.87	66.0	101.20
1615	5.78	17.05	0.532	1.82	71.5	69.80
1620	5.78	16.71	0.533	1.73	64.0	50.80
1625	5.76	16.84	0.532	1.71	61.9	38.60
1630	5.77	16.91	0.53	1.59	60.1	34.70
1633	5.79	17.92	0.532	1.63	58.4	29.30
1636	5.81	17.79	0.534	1.66	56.9	25.50
1639	5.78	16.88	0.533	1.66	59.3	20.40
1642	5.75	16.60	0.533	1.67	60.1	18.50
1645	5.75	16.63	0.533	1.67	60.4	18.70

Sample Time: 1647

Collected: (1) - HNO3 Plas. 500ml (Unfiltered)
(1) - HNO3 Plas. 500ml (Filtered)
(1) - Unfixed Plas. 500ml
(1) - Unfixed Plas. 250ml

Comments: Removed 5 gallons
Final depth to water - 86.79
* - Turbidity was too high for instrument to calculate.



APPENDIX B

Data Validation Report
of
Groundwater Samples Collected July 12-14, 2010

DATA VALIDATION REPORT
OF
GROUNDWATER SAMPLES
COLLECTED
JULY 12-14, 2010
FOR
INORGANIC AND CONVENTIONAL ANALYSES

Laboratory Case Numbers
C0G130479, C0G140497, and C0G150494

PREPARED FOR:

GOULD ELECTRONICS INC.
MARJOL BATTERY SITE
THROOP BOROUGH, PENNSYLVANIA

PREPARED BY:

ADVANCED GEOSERVICES CORP
WEST CHESTER, PENNSYLVANIA

August 10, 2010
Project Number 92-022-324

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DATA VALIDATION REVIEW INORGANIC

INTRODUCTION

This data validation review addresses the inorganic results from the groundwater samples collected from the Marjol Battery Site, Throop Borough, Pennsylvania. The samples were collected July 12-14, 2010. Samples were analyzed for total metals (calcium, iron, lead, magnesium, manganese, potassium, and sodium) using USEPA SW-846 Method 6020. All samples were analyzed by Test America located in Pittsburgh, PA under Case Numbers C0G130479, C0G140497, and C0G150494.

This review has been performed with guidance from the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", July 2002, with Region III Modifications, April 1993, when applicable. The findings presented in this report are based upon a review of all data supplied by the laboratory. The information examined consists of sample results, analytical holding times, initial and continuing calibration standard recoveries, ICP interference check sample recoveries, serial dilution results, laboratory control sample recoveries, blank analysis results, matrix spike recoveries, laboratory and field duplicate relative percent differences, and laboratory control sample results. Samples not meeting criteria for the abovementioned parameters are listed in the "Qualifiers" section of this report under the Case No. for which they are related.

The analytical results are presented on the data summary table. The data summary table lists the analytes sampled and the associated results. Support documentation summarizing the specifics of this review is presented at the end of this report.

QUALIFIERS

C0G140497

Blank Analysis

- The initial calibration blank (ICB1) had a detection of lead (0.05 µg/L). The lead results for samples MSB-1 and MSB-8R were qualified as undetected (U) due to blank contamination.
- The continuing calibration blank (CCB3) had a detection of lead (0.04 µg/L). The lead results for samples MSB-1 and MSB-8R were qualified as undetected (U) due to blank contamination.

C0G150494

Blank Analysis

- The method blank (batch: 0198030) had detections of magnesium (3 µg/L) and sodium (94.5 µg/L). The magnesium and sodium results for sample EB-1-071410 were qualified as undetected (U) due to blank contamination.

- The initial calibration blank (ICB1) had detections of iron (10.5 µg/L), lead (0.05 µg/L), and magnesium (5.08 µg/L). The iron, lead, and magnesium results for sample EB-1-071410 were qualified as undetected (U) due to blank contamination.
- The continuing calibration blank (CCB4) had detections of lead (0.03 µg/L), magnesium (7.7 µg/L), manganese (0.08 µg/L), and sodium (104.2 µg/L). The lead, magnesium, manganese, and sodium results for sample EB-1-071410 were qualified as undetected (U) due to blank contamination.

SUMMARY

Sample results are acceptable as qualified.

DATA VALIDATION REVIEW CONVENTIONALS

INTRODUCTION

This data validation review addresses the conventional results from the groundwater samples collected from the Marjol Battery Site, Throop Borough, Pennsylvania. The samples were collected July 12-14, 2010. Samples were analyzed for alkalinity (bicarbonate and carbonate), pH, and sulfate by USEPA Methods, by Test America located in Pittsburgh, PA under Case Numbers COG130479, COG140497, and COG150494

This conventional data review has been performed with guidance from "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", July 2002, with Region III Modifications, April 1993, when applicable. The findings presented in this report are based upon a review of all data supplied by the laboratory. The information examined consists of sample results, analytical holding times, initial and continuing calibration standard recoveries, calibration curves, blank analysis results, matrix spike (MS) recoveries, matrix spike duplicate (MSD) recoveries, laboratory and field duplicate relative percent differences (RPD), and laboratory control sample results.

The analytical results are presented on the data summary table. The data summary table lists the analytes sampled and the associated results. Support documentation summarizing the specifics of this review is presented at the end of this report.

QUALIFIERS

COG130479

Holding times

- Holding times (24 hours) for pH were exceeded by 3 days. The pH result for sample MSB-6 was qualified rejected (R).

COG140497

Holding times

- Holding times (24 hours) for pH were exceeded by 2 days. The pH result for samples MSB-1 and MSB-8R were qualified estimated (J).

COG150494

Blank Analysis

- The method blank (BLK-COG190000052B) had a detection of Alkalinity-bicarbonate (2.8 mg/L). The Alkalinity-bicarbonate result for sample EB-1-071410 was qualified as undetected (U) due to blank contamination.

SUMMARY

Sample results are acceptable as qualified.

QUALIFIER CODES

- U - Denotes an analyte not detected at or above the associated reporting limit.
- J - Denotes an estimated result.
- UJ - Denotes an estimated reporting limit.
- R - Denotes a rejected result or reporting limit.

TABLES
DATA SUMMARY

MARJOL BATTERY SITE
 7/2010 GW Sampling, 7/12/2010
 Test America Pittsburgh# COG130479 Project# 92-002-234

Sample Location	MSB-6		
Lab ID	COG130479001		
Sample Date	Groundwater		
Matrix	7/12/2010		
Remarks			
Parameter	Units	Result	Q RL
Total Metals			
Calcium	ug/L	74700	100
Iron	ug/L	23100	50
Lead	ug/L	4.3	1
Magnesium	ug/L	38400	100
Manganese	ug/L	1900	0.5
Potassium	ug/L	3270	100
Sodium	ug/L	31600	100
Conventionals			
Bicarbonate Alkalinity	mg/L	125	5
Carbonate Alkalinity	mg/L		U 5
pH	ph units	6.4	R
Sulfate	mg/L	195	10

QA Scientist Janel M. Stealy
 Date 8/10/2010

MARJOL BATTERY SITE
 7/2010 GW Sampling , 7/13/2010
 Test America Pittsburgh# COG140497 Project# 92-002-234

Sample Location	MSB-1		MSB-8R	
Lab ID	COG140497001	COG140497002		
Sample Date	Groundwater	Groundwater		
Matrix	7/13/2010	7/13/2010		
Remarks				
Parameter	Units	Result	Q	RL
Total Metals				
Calcium	ug/L	29100		100
Iron	ug/L	8990		50
Lead	ug/L	1	U	1
Magnesium	ug/L	16400		100
Manganese	ug/L	1060		0.5
Potassium	ug/L	1550		100
Sodium	ug/L	17900		100
Conventionals				
Bicarbonate Alkalinity	mg/L	78.3		5
Carbonate Alkalinity	mg/L		U	5
pH	pH units	6.4	J	
Sulfate	mg/L	68.3		1

QA Scientist *Jenny M. Steady*
 Date 8/12/2010

MARJOL BATTERY SITE
 7/2010 GW Sampling, 7/14/2010
 Test America Pittsburgh# C0G150494 Project# 92-002-221

Sample Location	MSB-4	MSB-3	MSB-3D	EB-1-071410									
Lab ID	C0G150494001	C0G150494002	C0G150494003	C0G150494004									
Sample Date	Groundwater 7/14/2010	Groundwater 7/14/2010	Groundwater 7/14/2010	Aqueous									
Matrix				7/14/2010									
Remarks			FD of MSB-3	Equipment Blank									
Parameter	Units	Result	Q	RL	Result	Q	RL						
Total Metals													
Calcium	ug/L	161000		100	75900		100	74800		100	82	J	100
Iron	ug/L	82000		50	22300		50	21600		50	50	U	50
Lead	ug/L	0.61	J	1	0.37	J	1	0.32	J	1	1	U	1
Magnesium	ug/L	61600		100	41300		100	41000		100	100	U	100
Manganese	ug/L	8700		0.5	1840		0.5	1810		0.5	0.5	U	0.5
Potassium	ug/L	1150		100	2310		100	2270		100	100	U	100
Sodium	ug/L	17600		100	35100		100	35000		100	151	U	100
Conventionals													
Bicarbonate Alkalinity	mg/L	73.4		5	148		5	149		5	5	U	5
Carbonate Alkalinity	mg/L		U	5		U	5		U	5		U	5
pH	pH units	6			6.3			6.3			5.8		
Sulfate	mg/L	596		25	197		10	200		10		U	1

QA Scientist  Date 8/10/2010

APPENDIX A
SUPPORT DOCUMENTATION

INORGANIC DATA VALIDATION SUMMARY

Site Name: Marjol
 Project Number: 92-002-234
 Sampling Date(s): 7/14/2010

Laboratory: Test America - Pittsburgh
 Case /Order No.: COG150494

Compound List: TAL Priority Pollutant Appendix IX Other _____
 Method: CLP SOW ILMO4. 40 CFR 136 SW-846 Method 6020 Other _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	X			DA = 5
Initial Calibrations	X			
Continuing Calibrations	X			
CRDL Standards	X			
Blank Analysis Results			X	
ICP Interference Check Sample Recoveries	X			
Duplicate Results				NA
Field Duplicate Results	X			MSB-3/ MSB-3D
Spike Analysis Recoveries		X		
Serial Dilution Results				NA
Laboratory Control Sample Results	X			
Furnace AA QC Analysis				NA
Quantitation/Detection Limits	X			
Overall Assessment of Data	X			
Other:				

General Comments: Cooler Temp: 1.7°C

Accept - No qualification required.
 FYI - For your information only, no qualification necessary.
 Qualify - Qualify as rejected, estimated or biased
 NA - Not applicable.
 NR - Not reviewed.

gms

QA Scientist Briaa Nicholson
 Date 8/4/2010

Advanced GeoServices Corporation

Client Sample ID: MSB-4

TOTAL Metals

Lot-Sample #...: COG150494-001

Matrix.....: WATER

Date Sampled...: 07/14/10

Date Received...: 07/15/10

PARAMETER	RESULT	REPORTING			PREPARATION-		WORK ORDER #
		LIMIT	UNITS	METHOD	ANALYSIS DATE		
Prep Batch #...: 0198030							
Calcium	161000	100	ug/L	SW846 6020	07/17-07/19/10	L38AT1AP	
		Dilution Factor: 1		Analysis Time...: 17:28		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 2.8	
Iron	82000	50.0	ug/L	SW846 6020	07/17-07/19/10	L38AT1AH	
		Dilution Factor: 1		Analysis Time...: 17:28		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 6.1	
Potassium	1150	100	ug/L	SW846 6020	07/17-07/19/10	L38AT1AJ	
		Dilution Factor: 1		Analysis Time...: 17:28		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 5.8	
Magnesium	61600 J	100	ug/L	SW846 6020	07/17-07/19/10	L38AT1AK	
		Dilution Factor: 1		Analysis Time...: 17:28		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 1.2	
Manganese	8700	0.50	ug/L	SW846 6020	07/17-07/19/10	L38AT1AL	
		Dilution Factor: 1		Analysis Time...: 17:28		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 0.039	
Sodium	17600 J	100	ug/L	SW846 6020	07/17-07/19/10	L38AT1AM	
		Dilution Factor: 1		Analysis Time...: 17:28		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 3.8	
Lead	0.61 B J	1.0	ug/L	SW846 6020	07/17-07/19/10	L38AT1AN	
		Dilution Factor: 1		Analysis Time...: 17:28		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 0.019	

NOTE(S):

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

CGM
8/4/2010

Advanced GeoServices Corporation

Client Sample ID: MSB-3

TOTAL Metals

Lot-Sample #...: COG150494-002
 Date Sampled...: 07/14/10

Date Received...: 07/15/10

Matrix.....: WATER

PARAMETER	RESULT	REPORTING			METHOD	PREPARATION-	WORK
		LIMIT	UNITS			ANALYSIS DATE	ORDER #
Prep Batch #...: 0198030							
Calcium	75900	100	ug/L	SW846 6020	07/17-07/19/10	L38CH1AP	
		Dilution Factor: 1		Analysis Time...: 17:32	Analyst ID.....: 400149		
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 2.8		
Iron	22300	50.0	ug/L	SW846 6020	07/17-07/19/10	L38CH1AH	
		Dilution Factor: 1		Analysis Time...: 17:32	Analyst ID.....: 400149		
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 6.1		
Potassium	2310	100	ug/L	SW846 6020	07/17-07/19/10	L38CH1AJ	
		Dilution Factor: 1		Analysis Time...: 17:32	Analyst ID.....: 400149		
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 5.8		
Magnesium	41300 J	100	ug/L	SW846 6020	07/17-07/19/10	L38CH1AK	
		Dilution Factor: 1		Analysis Time...: 17:32	Analyst ID.....: 400149		
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 1.2		
Manganese	1840	0.50	ug/L	SW846 6020	07/17-07/19/10	L38CH1AL	
		Dilution Factor: 1		Analysis Time...: 17:32	Analyst ID.....: 400149		
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 0.039		
Sodium	35100 J	100	ug/L	SW846 6020	07/17-07/19/10	L38CH1AM	
		Dilution Factor: 1		Analysis Time...: 17:32	Analyst ID.....: 400149		
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 3.8		
Lead	0.37 B J	1.0	ug/L	SW846 6020	07/17-07/19/10	L38CH1AN	
		Dilution Factor: 1		Analysis Time...: 17:32	Analyst ID.....: 400149		
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 0.019		

NOTE(S) :

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

CGM
 8/4/2010

Advanced GeoServices Corporation

Client Sample ID: MSB-3D

TOTAL Metals

Lot-Sample #...: COG150494-003

Matrix.....: WATER

Date Sampled...: 07/14/10

Date Received...: 07/15/10

PARAMETER	RESULT	REPORTING			METHOD	PREPARATION-	WORK
		LIMIT	UNITS			ANALYSIS DATE	ORDER #
Prep Batch #...: 0198030							
Calcium	74800	100	ug/L	SW846 6020		07/17-07/19/10	L38CJ1AP
		Dilution Factor: 1		Analysis Time...: 17:37		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 2.8	
Iron	21600	50.0	ug/L	SW846 6020		07/17-07/19/10	L38CJ1AH
		Dilution Factor: 1		Analysis Time...: 17:37		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 6.1	
Potassium	2270	100	ug/L	SW846 6020		07/17-07/19/10	L38CJ1AJ
		Dilution Factor: 1		Analysis Time...: 17:37		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 5.8	
Magnesium	41000 J	100	ug/L	SW846 6020		07/17-07/19/10	L38CJ1AK
		Dilution Factor: 1		Analysis Time...: 17:37		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 1.2	
Manganese	1810	0.50	ug/L	SW846 6020		07/17-07/19/10	L38CJ1AL
		Dilution Factor: 1		Analysis Time...: 17:37		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 0.039	
Sodium	35000 J	100	ug/L	SW846 6020		07/17-07/19/10	L38CJ1AM
		Dilution Factor: 1		Analysis Time...: 17:37		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 3.8	
Lead	0.32 B J	1.0	ug/L	SW846 6020		07/17-07/19/10	L38CJ1AN
		Dilution Factor: 1		Analysis Time...: 17:37		Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017		MDL.....: 0.019	

NOTE(S) :

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

CGM
8/4/2010

Advanced GeoServices Corporation

Client Sample ID: EB-1-071410

TOTAL Metals

Lot-Sample #....: COG150494-004

Matrix.....: WATER

Date Sampled....: 07/14/10

Date Received...: 07/15/10

PARAMETER	RESULT	REPORTING			PREPARATION-	WORK
		LIMIT	UNITS	METHOD	ANALYSIS DATE	ORDER #
Prep Batch #....: 0198030						
Calcium	82.0 B J	100	ug/L	SW846 6020	07/17-07/19/10	L38CK1AP
		Dilution Factor: 1		Analysis Time...: 17:41	Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 2.8	
Iron	50.0 36.5 B U	50.0	ug/L	SW846 6020	07/17-07/19/10	L38CK1AH
		Dilution Factor: 1		Analysis Time...: 17:41	Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 6.1	
Potassium	ND	100	ug/L	SW846 6020	07/17-07/19/10	L38CK1AJ
		Dilution Factor: 1		Analysis Time...: 17:41	Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 5.8	
Magnesium	100 1.9 B, J U	100	ug/L	SW846 6020	07/17-07/19/10	L38CK1AK
		Dilution Factor: 1		Analysis Time...: 17:41	Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 1.2	
Manganese	0.05 0.31 B U	0.50	ug/L	SW846 6020	07/17-07/19/10	L38CK1AL
		Dilution Factor: 1		Analysis Time...: 17:41	Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 0.039	
Sodium	151 J U	100	ug/L	SW846 6020	07/17-07/19/10	L38CK1AM
		Dilution Factor: 1		Analysis Time...: 17:41	Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 3.8	
Lead	0.038 0.038 B U	1.0	ug/L	SW846 6020	07/17-07/19/10	L38CK1AN
		Dilution Factor: 1		Analysis Time...: 17:41	Analyst ID.....: 400149	
		Instrument ID...: ICPMS2		MS Run #.....: 0198017	MDL.....: 0.019	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CGM
8/4/2010

Blanks COG150494
Total Metals

Blank ID	Analyte	Blank Conc	Units	Blank*10 or Blank*5	Units	Samples	Sample Conc	Units	Qualify?
Method Blank (batch: 0198030)	Magnesium	3	ug/L	15	ug/L	MSB-4	61600	ug/L	
Method Blank (batch: 0198030)	Magnesium	3	ug/L	15	ug/L	MSB-3	41300	ug/L	
Method Blank (batch: 0198030)	Magnesium	3	ug/L	15	ug/L	MSB-3D	41000	ug/L	
Method Blank (batch: 0198030)	Magnesium	3	ug/L	15	ug/L	EB-1-071410	1.9	ug/L	*
Method Blank (batch: 0198030)	Sodium	94.5	ug/L	472.5	ug/L	MSB-4	17600	ug/L	
Method Blank (batch: 0198030)	Sodium	94.5	ug/L	472.5	ug/L	MSB-3	35100	ug/L	
Method Blank (batch: 0198030)	Sodium	94.5	ug/L	472.5	ug/L	MSB-3D	35000	ug/L	
Method Blank (batch: 0198030)	Sodium	94.5	ug/L	472.5	ug/L	EB-1-071410	151	ug/L	*
Initial Calibration Blank (ICB1)	Calcium	5.93	ug/L	29.65	ug/L	MSB-4	161000	ug/L	
Initial Calibration Blank (ICB1)	Calcium	5.93	ug/L	29.65	ug/L	MSB-3	75900	ug/L	
Initial Calibration Blank (ICB1)	Calcium	5.93	ug/L	29.65	ug/L	MSB-3D	74800	ug/L	
Initial Calibration Blank (ICB1)	Calcium	5.93	ug/L	29.65	ug/L	EB-1-071410	82	ug/L	
Initial Calibration Blank (ICB1)	Iron	10.5	ug/L	52.5	ug/L	MSB-4	82000	ug/L	
Initial Calibration Blank (ICB1)	Iron	10.5	ug/L	52.5	ug/L	MSB-3	22300	ug/L	
Initial Calibration Blank (ICB1)	Iron	10.5	ug/L	52.5	ug/L	MSB-3D	21600	ug/L	
Initial Calibration Blank (ICB1)	Iron	10.5	ug/L	52.5	ug/L	EB-1-071410	36.5	ug/L	*
Initial Calibration Blank (ICB1)	Lead	0.05	ug/L	0.25	ug/L	MSB-4	0.61	ug/L	
Initial Calibration Blank (ICB1)	Lead	0.05	ug/L	0.25	ug/L	MSB-3	0.37	ug/L	
Initial Calibration Blank (ICB1)	Lead	0.05	ug/L	0.25	ug/L	MSB-3D	0.32	ug/L	
Initial Calibration Blank (ICB1)	Lead	0.05	ug/L	0.25	ug/L	EB-1-071410	0.038	ug/L	*
Initial Calibration Blank (ICB1)	Magnesium	5.08	ug/L	25.4	ug/L	MSB-4	61600	ug/L	
Initial Calibration Blank (ICB1)	Magnesium	5.08	ug/L	25.4	ug/L	MSB-3	41300	ug/L	
Initial Calibration Blank (ICB1)	Magnesium	5.08	ug/L	25.4	ug/L	MSB-3D	41000	ug/L	
Initial Calibration Blank (ICB1)	Magnesium	5.08	ug/L	25.4	ug/L	EB-1-071410	1.9	ug/L	*
Initial Calibration Blank (ICB1)	Potassium	8.95	ug/L	44.75	ug/L	MSB-4	1150	ug/L	
Initial Calibration Blank (ICB1)	Potassium	8.95	ug/L	44.75	ug/L	MSB-3	2310	ug/L	
Initial Calibration Blank (ICB1)	Potassium	8.95	ug/L	44.75	ug/L	MSB-3D	2270	ug/L	
Initial Calibration Blank (ICB1)	Potassium	8.95	ug/L	44.75	ug/L	EB-1-071410	ND	ug/L	
Initial Calibration Blank (ICB1)	Sodium	9.67	ug/L	48.35	ug/L	MSB-4	17600	ug/L	
Initial Calibration Blank (ICB1)	Sodium	9.67	ug/L	48.35	ug/L	MSB-3	35100	ug/L	
Initial Calibration Blank (ICB1)	Sodium	9.67	ug/L	48.35	ug/L	MSB-3D	35000	ug/L	
Initial Calibration Blank (ICB1)	Sodium	9.67	ug/L	48.35	ug/L	EB-1-071410	151	ug/L	
Continuing Calibration Blank (CCB4)	Calcium	4.87	ug/L	24.35	ug/L	MSB-4	161000	ug/L	
Continuing Calibration Blank (CCB4)	Calcium	4.87	ug/L	24.35	ug/L	MSB-3	75900	ug/L	
Continuing Calibration Blank (CCB4)	Calcium	4.87	ug/L	24.35	ug/L	MSB-3D	74800	ug/L	
Continuing Calibration Blank (CCB4)	Calcium	4.87	ug/L	24.35	ug/L	EB-1-071410	82	ug/L	
Continuing Calibration Blank (CCB4)	Iron	4.66	ug/L	23.3	ug/L	MSB-4	82000	ug/L	
Continuing Calibration Blank (CCB4)	Iron	4.66	ug/L	23.3	ug/L	MSB-3	22300	ug/L	
Continuing Calibration Blank (CCB4)	Iron	4.66	ug/L	23.3	ug/L	MSB-3D	21600	ug/L	
Continuing Calibration Blank (CCB4)	Iron	4.66	ug/L	23.3	ug/L	EB-1-071410	36.5	ug/L	
Continuing Calibration Blank (CCB4)	Lead	0.03	ug/L	0.15	ug/L	MSB-4	0.61	ug/L	
Continuing Calibration Blank (CCB4)	Lead	0.03	ug/L	0.15	ug/L	MSB-3	0.37	ug/L	
Continuing Calibration Blank (CCB4)	Lead	0.03	ug/L	0.15	ug/L	MSB-3D	0.32	ug/L	
Continuing Calibration Blank (CCB4)	Lead	0.03	ug/L	0.15	ug/L	EB-1-071410	0.038	ug/L	*
Continuing Calibration Blank (CCB4)	Magnesium	7.7	ug/L	38.5	ug/L	MSB-4	61600	ug/L	
Continuing Calibration Blank (CCB4)	Magnesium	7.7	ug/L	38.5	ug/L	MSB-3	41300	ug/L	
Continuing Calibration Blank (CCB4)	Magnesium	7.7	ug/L	38.5	ug/L	MSB-3D	41000	ug/L	
Continuing Calibration Blank (CCB4)	Magnesium	7.7	ug/L	38.5	ug/L	EB-1-071410	1.9	ug/L	*
Continuing Calibration Blank (CCB4)	Manganese	0.08	ug/L	0.4	ug/L	MSB-4	8700	ug/L	
Continuing Calibration Blank (CCB4)	Manganese	0.08	ug/L	0.4	ug/L	MSB-3	1840	ug/L	
Continuing Calibration Blank (CCB4)	Manganese	0.08	ug/L	0.4	ug/L	MSB-3D	1810	ug/L	
Continuing Calibration Blank (CCB4)	Manganese	0.08	ug/L	0.4	ug/L	EB-1-071410	0.31	ug/L	*
Continuing Calibration Blank (CCB4)	Sodium	104.2	ug/L	521	ug/L	MSB-4	17600	ug/L	
Continuing Calibration Blank (CCB4)	Sodium	104.2	ug/L	521	ug/L	MSB-3	35100	ug/L	
Continuing Calibration Blank (CCB4)	Sodium	104.2	ug/L	521	ug/L	MSB-3D	35000	ug/L	
Continuing Calibration Blank (CCB4)	Sodium	104.2	ug/L	521	ug/L	EB-1-071410	151	ug/L	*
Equipment Blank (EB-1-071410)	Calcium	82	ug/L	410	ug/L	MSB-4	16100	ug/L	
Equipment Blank (EB-1-071410)	Calcium	82	ug/L	410	ug/L	MSB-3	75900	ug/L	
Equipment Blank (EB-1-071410)	Calcium	82	ug/L	410	ug/L	MSB-3D	74800	ug/L	

* Sample Concentration is < 10X (or 5X) blank concentration, Qualified as "U"

CPM

8/4/2010

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: COG150494

Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: COG170000-030 Prep Batch #...: 0198030						
Calcium	ND	100	ug/L	SW846 6020	07/17-07/19/10	L4CEG1AG
		Dilution Factor: 1				
		Analysis Time..: 15:44		Analyst ID.....: 400149	Instrument ID...: ICP	
Iron	ND	50.0	ug/L	SW846 6020	07/17-07/19/10	L4CEG1AM
		Dilution Factor: 1				
		Analysis Time..: 15:44		Analyst ID.....: 400149	Instrument ID...: ICP	
Lead	ND	1.0	ug/L	SW846 6020	07/17-07/19/10	L4CEG1AU
		Dilution Factor: 1				
		Analysis Time..: 15:44		Analyst ID.....: 400149	Instrument ID...: ICP	
Magnesium	3.0 B	100	ug/L	SW846 6020	07/17-07/19/10	L4CEG1AP
		Dilution Factor: 1				
		Analysis Time..: 15:44		Analyst ID.....: 400149	Instrument ID...: ICP	
Manganese	ND	0.50	ug/L	SW846 6020	07/17-07/19/10	L4CEG1AQ
		Dilution Factor: 1				
		Analysis Time..: 15:44		Analyst ID.....: 400149	Instrument ID...: ICP	
Potassium	ND	100	ug/L	SW846 6020	07/17-07/19/10	L4CEG1AN
		Dilution Factor: 1				
		Analysis Time..: 15:44		Analyst ID.....: 400149	Instrument ID...: ICP	
Sodium	94.5 B	100	ug/L	SW846 6020	07/17-07/19/10	L4CEG1AR
		Dilution Factor: 1				
		Analysis Time..: 23:13		Analyst ID.....: 400149	Instrument ID...: ICP	

NOTE (S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

CGM
8/4/2010

Test America Pittsburgh

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: ADVANCED GEOSERVICES

SDG No.: C0G150494

Instrument: ICPMS

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	MDL	CRQL	M	Analysis Date	Analysis Time	Run
ICB1		ICB1								
*	Calcium	5.93	+/-100.00	J	2.84	100.00	MS	7/19/2010	13:40	M00719A, ge
*	Iron	10.50	+/-50.00	J	6.09	50.00	MS	7/19/2010	13:40	M00719A, ge
*	Lead	0.05	+/-1.00	J	0.02	1.00	MS	7/19/2010	13:40	M00719A, ge
*	Magnesium	5.08	+/-100.00	J	1.17	100.00	MS	7/19/2010	13:40	M00719A, ge
	Manganese	-0.07	+/-0.50	J	0.04	0.50	MS	7/19/2010	13:40	M00719A, ge
*	Potassium	8.95	+/-100.00	J	5.82	100.00	MS	7/19/2010	13:40	M00719A, ge
*	Sodium	9.67	+/-100.00	J	3.81	100.00	MS	7/19/2010	13:40	M00719A, ge
CCB1		CCB1								
	Calcium	-1.52	+/-100.00	U	2.84	100.00	MS	7/19/2010	14:08	M00719A, ge
NA	Iron	12.72	+/-50.00	J	6.09	50.00	MS	7/19/2010	14:08	M00719A, ge
	Lead	-0.01	+/-1.00	U	0.02	1.00	MS	7/19/2010	14:08	M00719A, ge
	Magnesium	-0.27	+/-100.00	U	1.17	100.00	MS	7/19/2010	14:08	M00719A, ge
	Manganese	-0.18	+/-0.50	J	0.04	0.50	MS	7/19/2010	14:08	M00719A, ge
	Potassium	4.71	+/-100.00	U	5.82	100.00	MS	7/19/2010	14:08	M00719A, ge
NA	Sodium	7.23	+/-100.00	J	3.81	100.00	MS	7/19/2010	14:08	M00719A, ge
CCB2		CCB2								
NA	Calcium	5.27	+/-100.00	J	2.84	100.00	MS	7/19/2010	15:15	M00719A, ge
NA	Iron	14.84	+/-50.00	J	6.09	50.00	MS	7/19/2010	15:15	M00719A, ge
NA	Lead	0.03	+/-1.00	J	0.02	1.00	MS	7/19/2010	15:15	M00719A, ge
NA	Magnesium	4.63	+/-100.00	J	1.17	100.00	MS	7/19/2010	15:15	M00719A, ge
	Manganese	-0.11	+/-0.50	J	0.04	0.50	MS	7/19/2010	15:15	M00719A, ge
NA	Potassium	10.16	+/-100.00	J	5.82	100.00	MS	7/19/2010	15:15	M00719A, ge
NA	Sodium	82.84	+/-100.00	J	3.81	100.00	MS	7/19/2010	15:15	M00719A, ge
CCB3		CCB3								
	Calcium	0.69	+/-100.00	U	2.84	100.00	MS	7/19/2010	16:19	M00719A, ge
	Iron	5.67	+/-50.00	U	6.09	50.00	MS	7/19/2010	16:19	M00719A, ge
NA	Lead	0.04	+/-1.00	J	0.02	1.00	MS	7/19/2010	16:19	M00719A, ge
NA	Magnesium	5.41	+/-100.00	J	1.17	100.00	MS	7/19/2010	16:19	M00719A, ge
	Manganese	-0.10	+/-0.50	J	0.04	0.50	MS	7/19/2010	16:19	M00719A, ge
	Potassium	-14.17	+/-100.00	J	5.82	100.00	MS	7/19/2010	16:19	M00719A, ge
NA	Sodium	95.12	+/-100.00	J	3.81	100.00	MS	7/19/2010	16:19	M00719A, ge

* = All samples associated

NA = No sample associated

CPM

8/4/2010

6020

Test America Pittsburgh

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: ADVANCED GEOSERVICES

SDG No.: C0G150494

Instrument: ICPMS

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	MDL	CRQL	M	Analysis Date	Analysis Time	Run
CCB4			CCB4							
*	Calcium	4.87	+/-100.00	J	2.84	100.00	MS	7/19/2010	17:19	M00719A, ge
*	Iron	4.66	+/-50.00	U	6.09	50.00	MS	7/19/2010	17:19	M00719A, ge
*	Lead	0.03	+/-1.00	J	0.02	1.00	MS	7/19/2010	17:19	M00719A, ge
*	Magnesium	7.70	+/-100.00	J	1.17	100.00	MS	7/19/2010	17:19	M00719A, ge
*	Manganese	0.08	+/-0.50	J	0.04	0.50	MS	7/19/2010	17:19	M00719A, ge
	Potassium	-18.79	+/-100.00	J	5.82	100.00	MS	7/19/2010	17:19	M00719A, ge
*	Sodium	104.20	+/-100.00	J	3.81	100.00	MS	7/19/2010	17:19	M00719A, ge
CCB5			CCB5							
NA	Calcium	5.99	+/-100.00	J	2.84	100.00	MS	7/19/2010	18:16	M00719A, ge
	Iron	5.60	+/-50.00	U	6.09	50.00	MS	7/19/2010	18:16	M00719A, ge
NA	Lead	0.04	+/-1.00	J	0.02	1.00	MS	7/19/2010	18:16	M00719A, ge
NA	Magnesium	10.12	+/-100.00	J	1.17	100.00	MS	7/19/2010	18:16	M00719A, ge
	Manganese	-0.02	+/-0.50	U	0.04	0.50	MS	7/19/2010	18:16	M00719A, ge
	Potassium	-12.21	+/-100.00	J	5.82	100.00	MS	7/19/2010	18:16	M00719A, ge
NA	Sodium	99.45	+/-100.00	J	3.81	100.00	MS	7/19/2010	18:16	M00719A, ge

* = All samples associated

NA = No sample associated

CPM

8/4/2010

6020

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: COG150494

Matrix.....: WATER

Date Sampled...: 07/08/10

Date Received...: 07/09/10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Sodium	1250000	50000	1250000	ug/L			SW846 6020	07/17-07/19/10	L30T01D4
			Qualifiers: NC						
	1250000	50000	1290000	ug/L			SW846 6020	07/17-07/19/10	L30T01D5
			Qualifiers: NC						
			Dilution Factor: 1						
			Analysis Time...: 16:04				Instrument ID...: ICPMS2	Analyst ID.....: 400149	
			MS Run #.....: 0198017						

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

NC The recovery and/or RPD were not calculated.

FYI: Sample concentration > 4 times spike amount added

COG
8/4/2010

**FD C0G150494
Metals**

Site Name: Marjol
Project Number: 92-002-221

Laboratory: Test America - Pittsburgh
Matrix: Groundwater

Field Duplicates

Sample ID	Analyte	Units	Result	Q	RL	RPD	Qualify?
MSB-3	Calcium	ug/L	75900		100		
MSB-3D	Calcium	ug/L	74800		100	1.46	no

Sample ID	Analyte	Units	Result	Q	RL	RPD	Qualify?
MSB-3	Iron	ug/L	22300		50		
MSB-3D	Iron	ug/L	21600		50	3.19	no

Sample ID	Analyte	Units	Result	Q	RL	Difference	Qualify?
MSB-3	Lead	ug/L	0.37	B	1		
MSB-3D	Lead	ug/L	0.32	B	1	0.05	no

Sample ID	Analyte	Units	Result	Q	RL	RPD	Qualify?
MSB-3	Magnesium	ug/L	41300	J	100		
MSB-3D	Magnesium	ug/L	41000	J	100	0.73	no

Sample ID	Analyte	Units	Result	Q	RL	RPD	Qualify?
MSB-3	Manganese	ug/L	1840		0.5		
MSB-3D	Manganese	ug/L	1810		0.5	1.64	no

Sample ID	Analyte	Units	Result	Q	RL	RPD	Qualify?
MSB-3	Potassium	ug/L	2310		100		
MSB-3D	Potassium	ug/L	2270		100	1.75	no

Sample ID	Analyte	Units	Result	Q	RL	RPD	Qualify?
MSB-3	Sodium	ug/L	35100	J	100		
MSB-3D	Sodium	ug/L	35000	J	100	0.29	no

Duplicate Criteria: Aqueous matrices <30 % RPD or < ± 1*RL, Soil/Solid matrices <40 %RPD or < ± 2*RL.

* - Denotes %RPD or difference outside criteria.

NA - Duplicate relative percent difference or difference cannot be calculated.

U / ND - Not detected.

CGM
8/4/2010

WET CHEMISTRY DATA VALIDATION SUMMARY

Site Name: Marjol
 Project Number: 92-002-234
 Sampling Date(s): 7/14/2010

Laboratory: Test America - Pittsburgh
 Case /Order No.: COG150494

Parameter List: Bicarbonate and Carbonate Alkalinity, pH, Sulfate
 Method: _____

The following table indicates the data validation criteria examined, any problems identified, and the QA action applied.

Data Validation Criteria:	accept	FYI	qualify	Comments
Holding Times	X			
Calibration Curve	X			
Initial Calibration	X			
Continuing Calibration	X			
Laboratory Control Sample Results	X			
Blank Analysis Results			X	
Duplicate Analysis Results	X			
Field Duplicate Analysis Results	X			MSB-3/ MSB-3D
Matrix Spike Analysis Results				NA
Quantitation/Detection Limits	X			
Overall Assessment of Data	X			
Other:				

General Comments: Cooler Temp: 1.7°C

Accept - No qualification required.
 FYI - For your information only, no qualification necessary.
 Qualify - Qualify as rejected, estimated or biased
 NA - Not applicable

QA Scientist *Erica Nicholson*
 Date 8/4/2010

AGC - Marjol Scranton, PA

Bicarbonate Alkalinity

Lab Name: TESTAMERICA PITTSBURGH

Method: SM18 2320 B

Client Name: Advanced GeoServices Corporation

Lot Number: COG150494

Matrix: WATER

Result obtained by calculation

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
MSB-4	COG150494 001	L38AT1AF	73.4 <i>J</i>	mg/L	0.41	5.0	1	7/19/2010 - 7/19/2010 00:00	0200052
MSB-3	COG150494 002	L38CH1AF	148 <i>J</i>	mg/L	0.41	5.0	1	7/19/2010 - 7/19/2010 00:00	0200052
MSB-3D	COG150494 003	L38CJ1AF	149 <i>J</i>	mg/L	0.41	5.0	1	7/19/2010 - 7/19/2010 00:00	0200052
EB-1-071410	COG150494 004	L38CK1AF	5.0 U 80 <i>BJ</i>	mg/L	0.41	5.0	1	7/19/2010 - 7/19/2010 00:00	0200052

CRML

AGC - Marjol Scranton, PA

Carbonate Alkalinity

Lab Name: TESTAMERICA PITTSBURGH
Client Name: Advanced GeoServices Corporation
Matrix: WATER

Method: SM18 2320 B
Lot Number: C0G150494

Result obtained by calculation

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
MSB-4	C0G150494 001	L38AT1AG	ND	mg/L	0.41	5.0	1	7/19/2010 - 7/19/2010 00:00	0200054
MSB-3	C0G150494 002	L38CH1AG	ND	mg/L	0.41	5.0	1	7/19/2010 - 7/19/2010 00:00	0200054
MSB-3D	C0G150494 003	L38CJ1AG	ND	mg/L	0.41	5.0	1	7/19/2010 - 7/19/2010 00:00	0200054
EB-1-071410	C0G150494 004	L38CK1AG	ND	mg/L	0.41	5.0	1	7/19/2010 - 7/19/2010 00:00	0200054

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pH

Lab Name: TESTAMERICA PITTSBURGH

Method: SM20 4500-H+B

Client Name: Advanced GeoServices Corporation

Lot Number: COG150494

Matrix: WATER

pH

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
MSB-4	COG150494 001	L38AT1AE	6.0	--	0.0	--	1	7/15/2010 - 7/15/2010 17:06	0196324
MSB-3	COG150494 002	L38CH1AE	6.3	--	0.0	--	1	7/15/2010 - 7/15/2010 17:08	0196324
MSB-3D	COG150494 003	L38CJ1AE	6.3	--	0.0	--	1	7/15/2010 - 7/15/2010 17:10	0196324
EB-1-071410	COG150494 004	L38CK1AE	5.8	--	0.0	--	1	7/15/2010 - 7/15/2010 17:12	0196324

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Sulfate

Lab Name: TESTAMERICA PITTSBURGH
Client Name: Advanced GeoServices Corporation
Matrix: WATER

Method: MCAWW 300.0A
Lot Number: C0G150494

Sulfate

Client Sample ID	Sample Number	Workorder	Result	Units	Method Detection Limit	Reporting Limit	Dilution Factor	Prep Date - Analysis Date/Time	QC Batch
MSB-4	C0G150494 001	L38AT1AD	596	mg/L	5.4	25.0	25	7/16/2010 - 7/16/2010 15:46	0200126
MSB-3	C0G150494 002	L38CH1AD	197	mg/L	2.1	10.0	10	7/16/2010 - 7/16/2010 16:14	0200126
MSB-3D	C0G150494 003	L38CJ1AD	200	mg/L	2.1	10.0	10	7/16/2010 - 7/16/2010 17:10	0200126
EB-1-071410	C0G150494 004	L38CK1AD	ND	mg/L	0.21	1.0	1	7/16/2010 - 7/16/2010 17:24	0200126

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**HOLDING TIMES
C0G150494 - WC**

Site Name: **Marjol**

Conventionals

Sample ID Field	Lab	Analyte	Matrix	Sample Date	Date of Analysis	Hold Time	DA	QA Decision
MSB-4	C0G150494001	Alkalinity - Bicarbonate	Groundwater	7/14/2010	7/19/2010	14 days	5	
		Alkalinity - Carbonate	Groundwater	7/14/2010	7/19/2010	14 days	5	
		pH	Groundwater	7/14/2010	7/15/2010	24 hours	1	
		Sulfate	Groundwater	7/14/2010	7/16/2010	28 days	2	
MSB-3	C0G150494002	Alkalinity - Bicarbonate	Groundwater	7/14/2010	7/19/2010	14 days	5	
		Alkalinity - Carbonate	Groundwater	7/14/2010	7/19/2010	14 days	5	
		pH	Groundwater	7/14/2010	7/15/2010	24 hours	1	
		Sulfate	Groundwater	7/14/2010	7/16/2010	28 days	2	
MSB-3D	C0G150494003	Alkalinity - Bicarbonate	Groundwater	7/14/2010	7/19/2010	14 days	5	
		Alkalinity - Carbonate	Groundwater	7/14/2010	7/19/2010	14 days	5	
		pH	Groundwater	7/14/2010	7/15/2010	24 hours	1	
		Sulfate	Groundwater	7/14/2010	7/16/2010	28 days	2	
EB-1-071410	C0G150494004	Alkalinity - Bicarbonate	Groundwater	7/14/2010	7/19/2010	14 days	5	
		Alkalinity - Carbonate	Groundwater	7/14/2010	7/19/2010	14 days	5	
		pH	Groundwater	7/14/2010	7/15/2010	24 hours	1	
		Sulfate	Groundwater	7/14/2010	7/16/2010	28 days	2	

Note:

DA = Number of days elapsed from sampling to analysis.

Blanks COG150494
Conventionals

Blank ID	Analyte	Blank Conc	Units	Blank*10 or Blank*5	Units	Samples	Sample Conc	Units	Qualify?
BLK-COG190000052B	Alkalinity - Bicarbonate	2.8	mg/L	14	mg/L	MSB-4	73.4	mg/L	
BLK-COG190000052B	Alkalinity - Bicarbonate	2.8	mg/L	14	mg/L	MSB-3	148	mg/L	
BLK-COG190000052B	Alkalinity - Bicarbonate	2.8	mg/L	14	mg/L	MSB-3D	149	mg/L	
BLK-COG190000052B	Alkalinity - Bicarbonate	2.8	mg/L	14	mg/L	EB-1-071410	0.8	mg/L	*
BLK-COG190000054B	Alkalinity - Carbonate	2.8	mg/L	14	mg/L	MSB-4	ND	mg/L	
BLK-COG190000054B	Alkalinity - Carbonate	2.8	mg/L	14	mg/L	MSB-3	ND	mg/L	
BLK-COG190000054B	Alkalinity - Carbonate	2.8	mg/L	14	mg/L	MSB-3D	ND	mg/L	
BLK-COG190000054B	Alkalinity - Carbonate	2.8	mg/L	14	mg/L	EB-1-071410	ND	mg/L	

* Sample Concentration is < 10X (or 5X) blank concentration, Qualified as "U"

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Bicarbonate Alkalinity

Lab Name: TESTAMERICA PITTSBURGH
Client Name: Advanced GeoServices Corporation
Matrix: WATER

Method: SM18 2320 B
Report ID: COG150494
Date/Time Received: 7/13/2010 10:15:00AM

Client Sample ID	Sample Number	Workorder	Result	Units	Reporting Limit	Prep Date-Analysis Date/Time	QC Batch	RPD / Limit (%)
INTRA-LAB QC	001 DUP	L34RG1D0	126	mg/L	5.0	7/19/2010 - 7/19/2010 00:00	0200052	0.47 / 20
BLK - COG190000052B	052 MB	L4C031AA	2.8 B	mg/L	5.0	7/19/2010 - 7/19/2010 00:00	0200052	

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Carbonate Alkalinity

Lab Name: TESTAMERICA PITTSBURGH
 Client Name: Advanced GeoServices Corporation
 Matrix: WATER

Method: SM18 2320 B
 Report ID: C0G150494
 Date/Time Received: 7/13/2010 10:15:00AM

Client Sample ID	Sample Number	Workorder	Result	Units	Reporting Limit	Prep Date-Analysis Date/Time	QC Batch	RPD / Limit (%)
BLK - C0G190000054B	054 MB	L4C021AA	2.8 B	mg/L	5.0	7/19/2010 - 7/19/2010 00:00	0200054	

CPM

Site Name: Marjol
Project Number: 92-002-221

Laboratory: Test America - Pittsburgh
Matrix: Groundwater

Field Duplicates

Sample ID	Analyte	Units	Result	Q	RL	Difference	Qualify?
MSB-3	Bicarbonate Alkalinity	mg/L	148	J	100		
MSB-3D	Bicarbonate Alkalinity	mg/L	149	J	100	1.00	no

Sample ID	Analyte	Units	Result	Q	RL	RPD	Qualify?
MSB-3	pH	pH units	6.3				
MSB-3D	pH	pH units	6.3			0.00	no

Sample ID	Analyte	Units	Result	Q	RL	RPD	Qualify?
MSB-3	Sulfate	mg/L	197		10		
MSB-3D	Sulfate	mg/L	200		10	1.51	no

Duplicate Criteria: Aqueous matrices <30 % RPD or < ± 1*RL, Soil/Solid matrices <40 %RPD or < ± 2*RL.

* - Denotes %RPD or difference outside criteria.

NA - Duplicate relative percent difference or difference cannot be calculated.

U / ND - Not detected.

CRML
8/4/2010