



**CONESTOGA-ROVERS  
& ASSOCIATES**

**RECEIVED**

3:08 pm, Jan 14, 2008

Alameda County  
Environmental Health

5900 Hollis Street, Suite A, Emeryville, California 94608  
Telephone: 510-420-0700 Facsimile: 510-420-9170  
www.CRAworld.com

January 7, 2008

Mr. Steven Plunkett  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

Re: **Request for Review and Fourth Quarter 2007 Monitoring Report**  
Former Olympic Service Station  
1436 Grant Avenue  
San Lorenzo, California  
Alameda County RO #373

Dear Mr. Plunkett:

Conestoga-Rovers & Associates, Inc. (CRA) prepared this monitoring report for the site referenced on behalf of Encinal Properties. The site is a former Olympic Service Station that currently operates as San Lorenzo Auto Repair located at 1436 Grant Avenue in San Lorenzo (Figure 1). From 1999 to 2002 soil and groundwater assessments were completed and five quarterly groundwater monitoring and sampling events were conducted during 1999 and 2000. Alameda County Environmental Health Department (ACEHD) requested to reinstate the groundwater monitoring program at the site in a letter dated December 4, 2006. The property is owned by Mr. George Jaber (Encinal Properties) and Mr. Tony Malonzo operates the auto repair shop at the site. Commercial properties are located south and southwest of the site. A school is located north of the site. The remainder of the surrounding area properties are residential homes.

On July 10, 1998, four steel, single-walled underground storage tanks (USTs) were removed from the site: one 10,000-gallon gasoline UST, one 8,000-gallon gasoline UST; one 5,000-gallon diesel UST; and one 250-gallon used-oil UST (Figure 2). Six dispensers located on two islands north of the auto repair building were also removed. Fourth quarter 2007 activities are summarized below.

#### **FOURTH QUARTER 2007 ACTIVITIES**

On November 1, 2007, Muskan Environmental Sampling (Muskan) monitored and sampled groundwater in wells MW-1, MW-2 and MW-3 (Figure 2). Monitoring well construction details are presented in Table 1. Groundwater monitoring and analytical data are summarized in Table 2. The associated field data sheets are presented as Attachment A. The laboratory analytical report is presented as Attachment B. CRA's standard operating procedures for groundwater monitoring and sampling are presented as Attachment C.

Equal  
Employment  
Opportunity Employer



This quarter, groundwater was approximately 7.78 to 8.00 feet below top of casing and flowed toward the west-southwest at a gradient of approximately 0.004 ft/ft (Figure 2). As shown by the rose diagram on Figure 2, the 2007 groundwater flow direction has been consistently toward the west-southwest.

Total petroleum hydrocarbons as gasoline (TPHg) was only detected in well MW-3 at a concentration of 77 micrograms per liter ( $\mu\text{g/l}$ ). No TPH as diesel (TPHd) was detected. No benzene, toluene, ethylbenzene, or xylenes (BTEX) were detected. Methyl-tertiary butyl ether (MTBE) was detected in wells MW-1, MW-2 and MW-3 at concentrations of 460  $\mu\text{g/l}$ , 19  $\mu\text{g/l}$ , and 68 ( $\mu\text{g/l}$ ), respectively. CRA recommends continued groundwater monitoring to monitor petroleum hydrocarbon concentration trends.

During the last four sampling events, no TPHd, fuel oxygenates, other than MTBE, or lead scavengers have been detected. Therefore, CRA requests that the suite of analytical analyses be reduced. We recommend that samples be analyzed for TPHg by EPA Method 8015C, BTEX by EPA Method 8021C, and MTBE by EPA Method 8260B. This change in analyses will reduce the quarterly monitoring costs and will provide lower detection limits for the BTEX compounds. Please contact us if this reduction in analyses is acceptable.

### **ACTIVITIES PLANNED FOR THE FIRST QUARTER OF 2008**

Muskan will monitor and sample all wells at the site. CRA will prepare a table summarizing the groundwater monitoring and sampling data and a potentiometric map that will be submitted in a monitoring report along with the field data sheets, standard operating procedures, and the laboratory analytical report.

CRA formerly Cambria Environmental Technology, Inc. submitted the *Site Assessment and Preferential Pathway Study Workplan* to ACEHD on March 2, 2007. On May 31, 2007, CRA submitted the *Site Assessment Workplan Addendum*, requested by the ACEHD. On September 28, 2007, CRA submitted the *Site Assessment Workplan Addendum 2*, requested by the ACEHD. CRA will implement this proposed scope of work upon approval of the *Site Assessment Workplan Addendum 2* by the ACEHD.



**CONESTOGA-ROVERS  
& ASSOCIATES**

Four Quarter 2007 Monitoring Report  
Former Olympic Service Station  
January 7, 2008


## CLOSING

We appreciate this opportunity to work with you on this project. Please call Brandon Wilken at (510) 420-3355 if you have any questions or comments.

Conestoga-Rovers & Associates, Inc. (CRA) prepared this document for use by our client and appropriate regulatory agencies. It is based partially on information available to CRA from outside sources and/or in the public domain, and partially on information supplied by CRA and its subcontractors. CRA makes no warranty or guarantee, expressed or implied, included or intended in this document, with respect to the accuracy of information obtained from these outside sources or the public domain, or any conclusions or recommendations based on information that was not independently verified by CRA. This document represents the best professional judgment of CRA. None of the work performed hereunder constitutes or shall be represented as a legal opinion of any kind or nature.

Sincerely,  
**Conestoga-Rovers & Associates, Inc.**

  
Bryan A. Fong  
Staff Geologist

  
Brandon S. Wilken, P.G.  
Senior Project Geologist



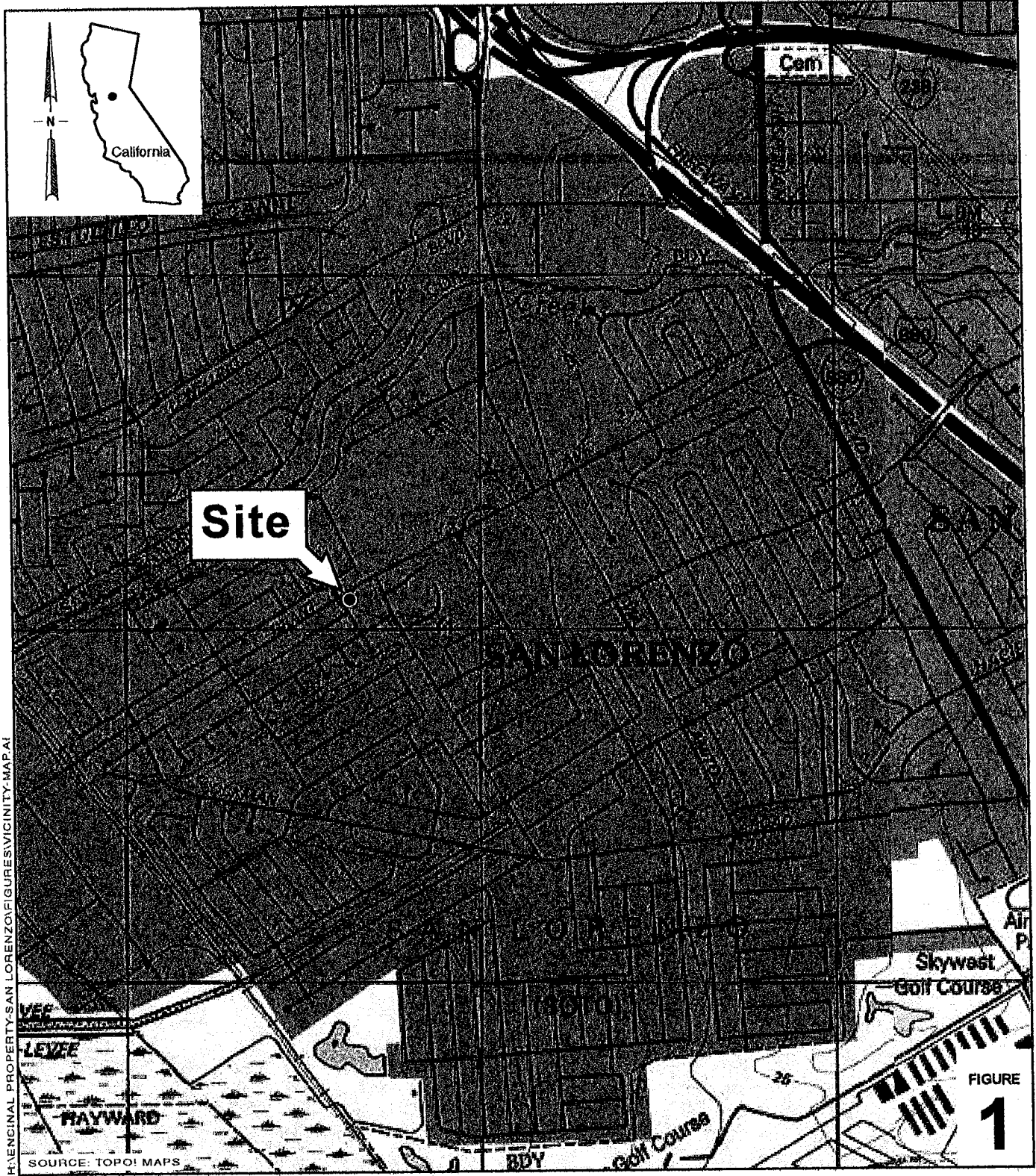
Figures:        1 – Vicinity Map  
                  2 – Groundwater Elevation and Hydrocarbon Concentration Map

Tables:         1 – Well Construction Details  
                  2 – Groundwater Monitoring and Analytical Data

Attachments:   A – Field Data Sheets  
                     B – Laboratory Analytical Report  
                     C – Standard Operating Procedures

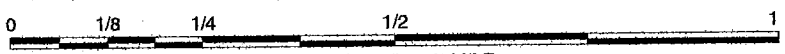
Cc:        Mr. George Jaber, Encinal Properties, 2801 Encinal Avenue, Alameda, CA 94501-4726

I:\IR\Encinal Property-San Lorenzo\QM\2007\4Q07\4Q07 QMR.doc



HALENCIAL PROPERTY-SAN LORENZO-FIGURES-VICINITY-MAP-A1

SOURCE: TOPO! MAPS



SCALE : 1" = 1/4 MILE

FIGURE 1

**Olympic Service Station**  
 1436 Grant Avenue  
 San Lorenzo, California



**Vicinity Map**

**EXPLANATION**

- MW-1 ● Monitoring well location
- BH-A ● Soil boring location
- Confirmation soil sample location (July 1998)
- Confirmation soil sample location (December 1998)
- 7.80 Groundwater elevation contour line
- Well ID  
ELEV  
TPHg  
Benzene  
MTBE
- Well designation
- Groundwater elevation
- Hydrocarbon concentrations in micrograms per liter (µg/L)
- Groundwater flow direction and gradient

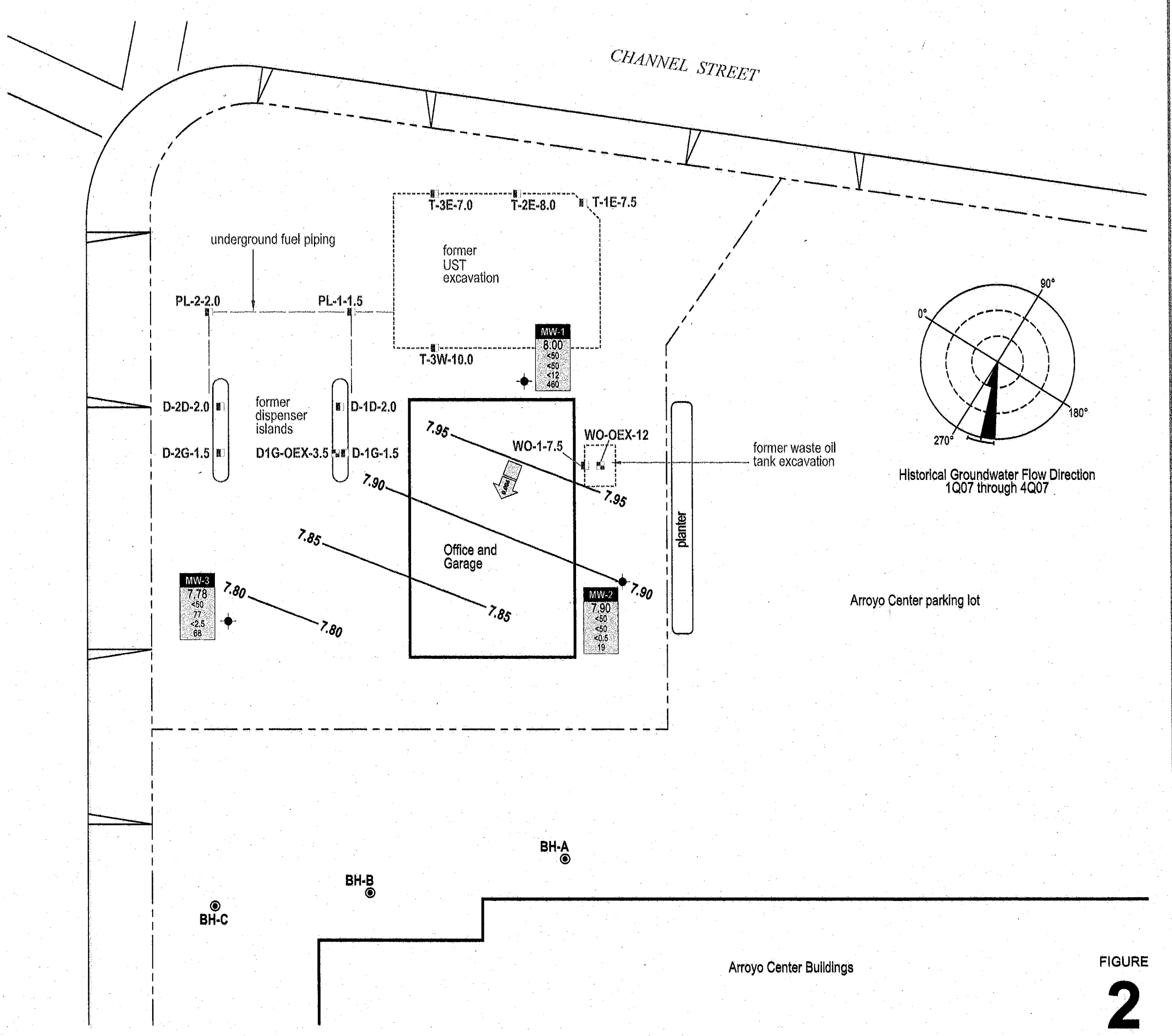


FIGURE 2

H:\ENCA\PROPERTY-SAN LORENZO\FIGURES\ENCA\4007-HCGW.DWG

# Conestoga-Rovers & Associates

**Table 1. Monitoring Well Construction Details - Encinal Properties, Former Olympic Service Station, 1436 Grant Avenue, San Lorenzo, California**

Well ID	Date Installed	Borehole diameter (in)	Depth of borehole (ft)	Casing diameter (in)	Screened interval (ft bgs)	Slot Size (in)	Filter Pack (ft bgs)	Bentonite seal (ft bgs)	Cement (ft bgs)	TOC elevation (ft above msl)
MW-1	9/24/1999	8	26.5	2	5-26.5	0.020	3.5-26.5	3-3.5	1.5-3	15.71
MW-2	9/24/1999	8	20.0	2	5-20	0.020	3.5-20	3-3.5	1.5-3	15.17
MW-3	9/24/1999	8	21.5	2	5-21	0.020	3.5-21.5	3-3.5	1.5-3	15.13

**Abbreviations / Notes**

ft = feet

in = inches

ft bgs = feet below grade surface

ft above msl = feet above mean sea level

TOC = top of casing

TOC elevations were surveyed on March 8, 2007 by Virgil Chavez Land Surveying.





**McC Campbell Analytical, Inc.**

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701  
Web: www.mcccampbell.com E-mail: main@mcccampbell.com  
Telephone: 877-252-9262 Fax: 925-252-9269

Conestoga-Rovers & Associates 5900 Hollis St, Suite A Emeryville, CA 94608	Client Project ID: #629100; Encinal Properties	Date Sampled: 11/01/07
		Date Received: 11/01/07
	Client Contact: Brandon Wilken	Date Reported: 11/08/07
	Client P.O.:	Date Completed: 11/08/07

**WorkOrder: 0711032**

November 08, 2007

Dear Brandon:

Enclosed are:

- 1). the results of **3** analyzed samples from your **#629100; Encinal Properties project**,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

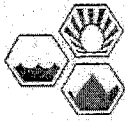
If you have any questions please contact me. McC Campbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Best regards,

Angela Rydelius, Lab Manager



0711032 CETE



**McCAMPBELL ANALYTICAL, INC.**  
 1534 WILLOW PASS ROAD  
 PITTSBURG, CA 94565-1701  
 Website: [www.mccampbell.com](http://www.mccampbell.com) Email: [main@mccampbell.com](mailto:main@mccampbell.com)  
 Telephone: (877) 252-9262 Fax: (925) 252-9269

**CHAIN OF CUSTODY RECORD**  
 TURN AROUND TIME       
 RUSH 24 HR 48 HR 72 HR 5 DAY  
 GeoTracker EDF  PDF  Excel  Write On (DW)   
 Check if sample is effluent and "J" flag is required

Report To: Brandon Wilken Bill To: Conestoga-Rovers & Associates  
 Company: Conestoga-Rovers & Associates  
5900 Hollis Street, Ste A  
Ameryville, CA E-Mail: bwilken@crworld.com  
 Tele: (510) 420-3355 Fax: (510) 420-9170  
 Project #: 629100 Project Name: Encinal Properties  
 Project Location: 1436 Grant Avenue, San Lorenzo, CA  
 Sampler Signature: Muskan Environmental Sampling

Analysis Request		Other	Comments
<input type="checkbox"/>	BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE		Filter Samples for Metals analysis: Yes / No
<input type="checkbox"/>	TPH as Diesel (8015) <u>MAX 51166-92</u>		
<input type="checkbox"/>	Total Petroleum Oil & Grease (1664 / 6520 E/B&F) <u>cleaning</u>		
<input type="checkbox"/>	Total Petroleum Hydrocarbons (418.1)		
<input type="checkbox"/>	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)		
<input type="checkbox"/>	MTBE / BTEX ONLY (EPA 602 / 8021)		
<input type="checkbox"/>	EPA 505 / 608 / 8081 (CI Pesticides)		
<input type="checkbox"/>	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners		
<input type="checkbox"/>	EPA 507 / 8143 (NP Pesticides)		
<input type="checkbox"/>	EPA 515 / 8151 (Acidic CI Herbicides)		
<input type="checkbox"/>	EPA 524.2 / 624 / 8260 (VOCs)		
<input type="checkbox"/>	EPA 525.2 / 625 / 8270 (SVOCs)		
<input type="checkbox"/>	EPA 8270 SIM / 4310 (PAHs / PNAs)		
<input type="checkbox"/>	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)		
<input type="checkbox"/>	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)		
<input type="checkbox"/>	Lead (200.7 / 200.8 / 6010 / 6020)		

Handwritten notes in 'Other' column:  
TOX SOILS  
BTEX, SVOC, PAH, MTBE, TPH  
ETBE, STP, TBA, FIGH, TBA

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING		CONTAINERS		MATRIX					METHOD PRESERVED			
		Date	Time	# Containers	Type Containers	Water	Soil	Air	Sludge	Other	ICE	HCL	HNO <sub>3</sub>	Other
MW-1		11:07	11:30	2	2	X					X	X		
MW-2			10:30											
MW-3			11:00	X	X									
TB		X		1	VOC	X					X	X		

Relinquished By: [Signature] Date: 11/01/07 Time: 1253 Received By: Muskan V.  
 Relinquished By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_  
 Relinquished By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_

COMMENTS:  
ICE/TPH  
 GOOD CONDITION  
 HEAD SPACE ABSENT  
 DECHLORINATED IN LAB  
 APPROPRIATE CONTAINERS  
 PRESERVED IN LAB  
 VOAS O&G METALS OTHER  
 PRESERVATION pH<2

Handwritten 'L' and 'X' marks in the left margin.

Handwritten 'Hold' in the comments column.

# McC Campbell Analytical, Inc.



1534 Willow Pass Rd  
 Pittsburg, CA 94565-1701  
 (925) 252-9262

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 0711032

ClientID: CETE

EDF   
  Excel   
  Fax   
  Email   
  HardCopy   
  ThirdParty

**Report to:**

Brandon Wilken  
 Conestoga-Rovers & Associates  
 5900 Hollis St, Suite A  
 Emeryville, CA 94608

Email: bwilken@CRAworld.com  
 TEL: (510) 420-0700    FAX: (510) 420-9170  
 ProjectNo: #629100; Encinal Properties  
 PO:

**Bill to:**

Accounts Payable  
 Conestoga-Rovers & Associates  
 5900 Hollis St, Ste. A  
 Emeryville, CA 94608

**Requested TAT: 5 days**

**Date Received: 11/01/2007**

**Date Printed: 11/01/2007**

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
0711032-001	MW-1	Water	11/01/07 11:30:00	<input type="checkbox"/>	A	B	C										
0711032-002	MW-2	Water	11/01/07 10:30:00	<input type="checkbox"/>	A	B	C										
0711032-003	MW-3	Water	11/01/07 11:00:00	<input type="checkbox"/>	A	B	C										

**Test Legend:**

1	G-MBTEX_W
6	
11	

2	MBTEXOXY-8260B_W
7	
12	

3	TPH(D)WSG_W
8	

4	
9	

5	
10	

**Prepared by: Nickole White**

**Comments:**

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.





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Telephone: 877-252-9262 Fax: 925-252-9269

Conestoga-Rovers & Associates  5900 Hollis St, Suite A  Emeryville, CA 94608	Client Project ID: #629100; Encinal Properties	Date Sampled: 11/01/07
	Client Contact: Brandon Wilken	Date Received: 11/01/07
	Client P.O.:	Date Extracted: 11/05/07
		Date Analyzed: 11/05/07

### Oxygenates and BTEX by GC/MS\*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 0711032

Lab ID	0711032-001B	0711032-002B	0711032-003B	Reporting Limit for DF =1	S	W
Client ID	MW-1	MW-2	MW-3			
Matrix	W	W	W			
DF	25	1	5			

Compound	Concentration			ug/kg	µg/L
tert-Amyl methyl ether (TAME)	ND<12	ND	ND<2.5	NA	0.5
Benzene	ND<12	ND	ND<2.5	NA	0.5
t-Butyl alcohol (TBA)	ND<120	ND	ND<2.5	NA	5.0
1,2-Dibromoethane (EDB)	ND<12	ND	ND<2.5	NA	0.5
1,2-Dichloroethane (1,2-DCA)	ND<12	ND	ND<2.5	NA	0.5
Diisopropyl ether (DIPE)	ND<12	ND	ND<2.5	NA	0.5
Ethanol	ND<1200	ND	ND<250	NA	50
Ethylbenzene	ND<12	ND	ND<2.5	NA	0.5
Ethyl tert-butyl ether (ETBE)	ND<12	ND	ND<2.5	NA	0.5
Methyl-t-butyl ether (MTBE)	460	19	68	NA	0.5
Toluene	ND<12	ND	ND<2.5	NA	0.5
Xylenes	ND<12	ND	ND<2.5	NA	0.5

### Surrogate Recoveries (%)

%SS1:	113	113	114
%SS2:	96	97	96
%SS3:	92	92	91

**Comments**

\* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

# surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) sample diluted due to high organic content/matrix interference; k) reporting limit near, but not identical to our standard reporting limit due to variable Encore sample weight; m) reporting limit raised due to insufficient sample amount; n) results are reported on a dry weight basis; p) see attached narrative.



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Telephone: 877-252-9262 Fax: 925-252-9269

Conestoga-Rovers & Associates  5900 Hollis St, Suite A  Emeryville, CA 94608	Client Project ID: #629100; Encinal Properties	Date Sampled: 11/01/07
	Client Contact: Brandon Wilken	Date Received: 11/01/07
	Client P.O.:	Date Extracted: 11/01/07
		Date Analyzed 11/01/07

### Diesel Range (C10-C23) Extractable Hydrocarbons with Silica Gel Clean-Up\*

Extraction method SW3510C/3630C

Analytical methods SW8015C

Work Order: 0711032


Lab ID	Client ID	Matrix	TPH(d)	DF	% SS
0711032-001C	MW-1	W	ND	1	92
0711032-002C	MW-2	W	ND	1	90
0711032-003C	MW-3	W	ND	1	90

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	µg/L
	S	NA	NA

\* water samples are reported in µg/L, wipe samples in µg/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all DISTLC / STLC / SPLP / TCLP extracts are reported in µg/L.

# cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract/matrix interference.

+The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) unknown medium boiling point pattern that does not appear to be derived from diesel; f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; k) kerosene/kerosene range; l) bunker oil; m) fuel oil; n) stoddard solvent/mineral spirit; p) see attached narrative.

 Angela Rydelius, Lab Manager



**QC SUMMARY REPORT FOR SW8021B/8015Cm**

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder 0711032

Analyte	Extraction SW5030B		BatchID: 31667						Spiked Sample ID: 0711018-009A			
	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex) <sup>f</sup>	ND	60	80.2	80.2	0	102	108	6.17	70 - 130	30	70 - 130	30
MTBE	ND	10	97.5	95.2	2.43	100	105	4.35	70 - 130	30	70 - 130	30
Benzene	ND	10	98.5	103	4.16	101	102	1.02	70 - 130	30	70 - 130	30
Toluene	ND	10	97.1	101	3.65	98	99.4	1.36	70 - 130	30	70 - 130	30
Ethylbenzene	ND	10	99	104	4.46	100	101	1.07	70 - 130	30	70 - 130	30
Xylenes	ND	30	91.7	96.3	4.96	95	95.7	0.699	70 - 130	30	70 - 130	30
%SS:	91	10	101	106	4.43	113	104	8.17	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

BATCH 31667 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0711032-001A	11/01/07 11:30 AM	11/02/07	11/02/07 9:55 AM	0711032-002A	11/01/07 10:30 AM	11/02/07	11/02/07 3:27 PM
0711032-003A	11/01/07 11:00 AM	11/07/07	11/07/07 9:46 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

# cluttered chromatogram; sample peak coelutes with surrogate peak.



**QC SUMMARY REPORT FOR SW8260B**

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder 0711032

Analyte	Extraction SW5030B		BatchID: 31651						Spiked Sample ID: 0711011-001A			
	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
tert-Amyl methyl ether (TAME)	ND<1.0	10	93.1	95.7	2.82	110	112	1.69	70 - 130	30	70 - 130	30
Benzene	ND<1.0	10	104	106	1.80	123	122	0.843	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND<10	50	78.2	78.9	0.872	84	82.5	1.74	70 - 130	30	70 - 130	30
1,2-Dibromoethane (EDB)	ND<1.0	10	98.1	104	5.55	123	125	1.18	70 - 130	30	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	ND<1.0	10	83.5	88.7	6.01	102	105	3.13	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND<1.0	10	99.8	103	3.07	114	116	1.56	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND<1.0	10	89.3	93	4.12	107	109	1.82	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	ND<1.0	10	82.1	86.1	4.71	106	110	3.48	70 - 130	30	70 - 130	30
Toluene	ND<1.0	10	96.2	98.7	2.59	113	112	0.918	70 - 130	30	70 - 130	30
%SS1:	108	10	90	92	1.64	100	99	0.970	70 - 130	30	70 - 130	30
%SS2:	99	10	88	89	1.77	92	92	0	70 - 130	30	70 - 130	30
%SS3:	90	10	103	102	1.12	104	105	0.288	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
NONE

BATCH 31651 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0711032-001B	11/01/07 11:30 AM	11/05/07	11/05/07 11:22 AM	0711032-002B	11/01/07 10:30 AM	11/05/07	11/05/07 12:53 PM
0711032-003B	11/01/07 11:00 AM	11/05/07	11/05/07 1:39 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.



**QC SUMMARY REPORT FOR SW8015C**

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder: 0711032

EPA Method SW8015C		Extraction SW3510C/3630C			BatchID: 31681			Spiked Sample ID: N/A				
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(d)	N/A	1000	N/A	N/A	N/A	119	115	3.03	N/A	N/A	70 - 130	30
%SS:	N/A	2500	N/A	N/A	N/A	108	106	2.13	N/A	N/A	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
NONE

BATCH 31681 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0711032-001C	11/01/07 11:30 AM	11/01/07	11/01/07 8:29 PM	0711032-002C	11/01/07 10:30 AM	11/01/07	11/01/07 9:40 PM
0711032-003C	11/01/07 11:00 AM	11/01/07	11/01/07 10:50 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

QA/QC Officer



ATTACHMENT C

Standard Operating Procedures

# Conestoga-Rovers & Associates

## STANDARD FIELD PROCEDURES FOR GROUNDWATER MONITORING AND SAMPLING

This document presents standard field methods for groundwater monitoring, purging and sampling, and well development. These procedures are designed to comply with Federal, State and local regulatory guidelines. CRA's specific field procedures are summarized below.

### Groundwater Elevation Monitoring

Prior to performing monitoring activities, the historical monitoring and analytical data of each monitoring well shall be reviewed to determine if any of the wells are likely to contain non-aqueous phase liquid (NAPL) and to determine the order in which the wells will be monitored (i.e. cleanest to dirtiest). Groundwater monitoring should not be performed when the potential exists for surface water to enter the well (i.e. flooding during a rainstorm).

Prior to monitoring, each well shall be opened and the well cap removed to allow water levels to stabilize and equilibrate. The condition of the well box and well cap shall be observed and recommended repairs noted. Any surface water that may have entered and flooded the well box should be evacuated prior to removing the well cap. In wells with no history of NAPL, the static water level and total well depth shall be measured to the nearest 0.01 foot with an electronic water level meter. Wells with the highest contaminant concentrations shall be measured last. In wells with a history of NAPL, the NAPL level/thickness and static water level shall be measured to the nearest 0.01 foot using an electronic interface probe. The water level meter and/or interface probe shall be thoroughly cleaned and decontaminated at the beginning of the monitoring event and between each well. Monitoring equipment shall be washed using soapy water consisting of Liqui-nox™ or Alconox™ followed by one rinse of clean tap water and then two rinses of distilled water.

### Groundwater Purging and Sampling

Prior to groundwater purging and sampling, the historical analytical data of each monitoring well shall be reviewed to determine the order in which the wells should be purged and sampled (i.e. cleanest to dirtiest). No purging or groundwater sampling shall be performed on wells with a measurable thickness of NAPL or floating NAPL globules. If a sheen is observed, the well should be purged and a groundwater sample collected only if no NAPL is present. Wells shall be purged either by hand using a disposal or PVC bailer or by using an aboveground pump (e.g. peristaltic or Wattera™) or down-hole pump (e.g. Grundfos™ or DC Purger pump).

Groundwater wells shall be purged approximately three to ten well-casing volumes (depending on the regulatory agency requirements) or until groundwater parameters of temperature, pH, and conductivity have stabilized to within 10% for three consecutive readings. Temperature, pH, and conductivity shall be measured and recorded at least once per well casing volume removed. The total volume of groundwater removed shall be recorded along with any other notable physical characteristic such as color and odor. If required, field parameters such as turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP) shall also be measured prior to collection of each groundwater sample.

Groundwater samples shall be collected after the well has been purged. If the well is slow to recharge, a sample shall be collected after the water column is allowed to recharge to 80% of the pre-purging static water level. If the well does not recover to 80% in 2 hours, a sample shall be collected once there is enough groundwater in the well. Groundwater samples shall be collected using clean disposable bailers or pumps (if an operating remediation system exists on site and the project manager approves of its use for sampling) and shall be decanted into clean containers

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supplied by the analytical laboratory. New latex gloves and disposable tubing or bailers shall be used for sampling each well. If a PVC bailer or down-hole pump is used for groundwater purging, it shall be decontaminated before purging each well by using soapy water consisting of Liqui-nox™ or Alconox™ followed by one rinse of clean tap water and then two rinses of distilled water. If a submersible pump with non-dedicated discharge tubing is used for groundwater purging, both the inside and outside of pump and discharge tubing shall be decontaminated as described above.

## Sample Handling

Except for samples that will be tested in the field, or that require special handling or preservation, samples shall be stored in coolers chilled to 4° C for shipment to the analytical laboratory. Samples shall be labeled, placed in protective foam sleeves or bubble wrap as needed, stored on crushed ice at or below 4° C, and submitted under chain-of-custody (COC) to the laboratory. The laboratory shall be notified of the sample shipment schedule and arrival time. Samples shall be shipped to the laboratory within a time frame to allow for extraction and analysis to be performed within the standard sample holding times.

Sample labels shall be filled out using indelible ink and must contain the site name; field identification number; the date, time, and location of sample collection; notation of the type of sample; identification of preservatives used; remarks; and the signature of the sampler. Field identification must be sufficient to allow easy cross-reference with the field datasheet.

All samples submitted to the laboratory shall be accompanied by a COC record to ensure adequate documentation. A copy of the COC shall be retained in the project file. Information on the COC shall consist of the project name and number; project location; sample numbers; sampler/recorder's signature; date and time of collection of each sample; sample type; analyses requested; name of person receiving the sample; and date of receipt of sample.

Laboratory-supplied trip blanks shall accompany the samples and be analyzed to check for cross-contamination, if requested by the project manager.

## Waste Handling and Disposal

Groundwater extracted during sampling shall be stored onsite in sealed U.S. DOT H17 55-gallon drums and shall be labeled with the contents, date of generation, generator identification, and consultant contact. Extracted groundwater may be disposed offsite by a licensed waste handler or may be treated and discharged via an operating onsite groundwater extraction/treatment system.

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