

ENVIRONMENTAL PROTECTION AGENCY  
97 FEB 11 AM 10:03



The Hertz Corporation  
225 Brae Boulevard, Park Ridge, NJ 07656-0713

**VIA CERTIFIED MAIL**  
**Return Receipt Requested**

February 4, 1997

Mr. Barney Chan  
Alameda County  
Environmental Health Services  
1131 Harbor Bay Pkwy., #250  
Alameda, CA 94502-6577

**Re: Hertz Service Center**  
**#1 Airport Drive**  
**Oakland, California**

Dear Mr. Chan:

Attached for your files is a copy of the Quarterly Groundwater Monitoring Report for the Hertz property at the International Airport in Oakland, California. The report presents groundwater monitoring and sampling data for the fourth quarter 1996.

Monitoring wells MW-4 and MW-6 were sampled and gauged by Clearwater Group, Inc. The results of sampling, conducted on November 27, 1996, are discussed in the report.

If you have any questions or require additional information, I may be contacted at (201)307-2526.

Sincerely,

Patricia Woods  
Project Manager  
Environmental Affairs

cc: file

6oakland



**QUARTERLY GROUNDWATER MONITORING REPORT  
FOURTH QUARTER 1996**  
Hertz Service Center, 1 Airport Drive, Oakland, California  
December 30, 1996

**BACKGROUND**

The property, located adjacent to the passenger terminal at Oakland International Airport, is currently used as a rental car service facility. Reports previously submitted by Environmental Science & Engineering, Inc. (ESE) indicate that one underground storage tank (UST) is present at the site, and that three USTs have been removed from the facility. Two additional USTs, located adjacent to the property, are used by the Port of Oakland and the Federal Aviation Administration for fuel storage.

Nine monitoring wells were installed as part of the site investigation; groundwater monitoring has been conducted since December, 1993. In accordance with a directive from the Alameda County Environmental Health Services, monitoring wells MW-4 and MW-6 will be monitored on a quarterly basis, and wells MW-5, MW-7, MW-8, and MW-9 will be monitored annually during the first quarter.

**GROUNDWATER MONITORING AND SAMPLING ACTIVITIES (THIRD QUARTER, 1996)**

Date of groundwater sampling:	November 27, 1996
Wells gauged:	MW-1 through MW-7 (MW-8, MW-9 were not gauged)
Wells purged and sampled:	MW-4 and MW-6
Analytes tested:	TPHd, TPHg, BTEX, MTBE
Laboratory:	American Environmental Network (Pleasant Hill, CA)

**GROUNDWATER MONITORING AND SAMPLING RESULTS**

Depth to groundwater:	3.18 to 4.35 feet below top of casing
Flow direction:	Southwest
TPHd concentration range:	Not detected
TPHg concentration range:	<50 ppb (MW-6) to 14,000 (MW-4)
Benzene concentration range:	<0.5 ppb (MW-6) to 5,100 ppb (MW-4)
MTBE concentration range:	<300 ppb (MW-4), 7.0 ppb (MW-6)

**PROJECT STATUS**

Monitoring well MW-8 could not be located during the third or fourth quarter monitoring events; MW-9 was obstructed by a parked car during the fourth quarter monitoring event.

**APPENDIX**

- Site Location Map (Figure 1)
- Site Plan (Figure 2)
- Groundwater Contour Map - 11/27/96 (Figure 3)
- Hydrocarbon Distribution Map - 11/27/96 (Figure 4)
- Groundwater Elevations and Analytical Results (Table 1)
- Clearwater Gauging Data/Purge Calculations and Well Purging Data
- Certified Laboratory Reports and Chain-of-Custody Form
- Clearwater Groundwater Monitoring and Sampling Protocols

**CERTIFICATION**

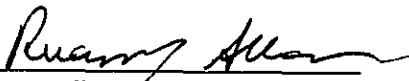
This report was prepared under the supervision of a professional registered geologist at Clearwater Group, Inc. All statements, conclusions, and recommendations are based solely upon field observations by Clearwater Group, Inc. and analyses performed by a State-certified laboratory related to the work performed by Clearwater Group, Inc.

It is possible that variations in the soil or groundwater conditions exist beyond the points explored in this investigation. Also, site conditions are subject to change at some time in the future due to variations in rainfall, temperature, regional water usage or other factors.

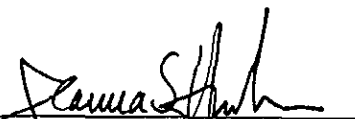
The service performed by Clearwater Group, Inc. has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

Clearwater Group, Inc. includes in this report chemical analytical data from a State-certified laboratory. These analyses are performed according to procedures suggested by the U.S. EPA and the State of California. Clearwater Group, Inc. is not responsible for laboratory errors in procedure or result reporting.

Prepared by:

  
Ruary Allan  
Staff Geologist

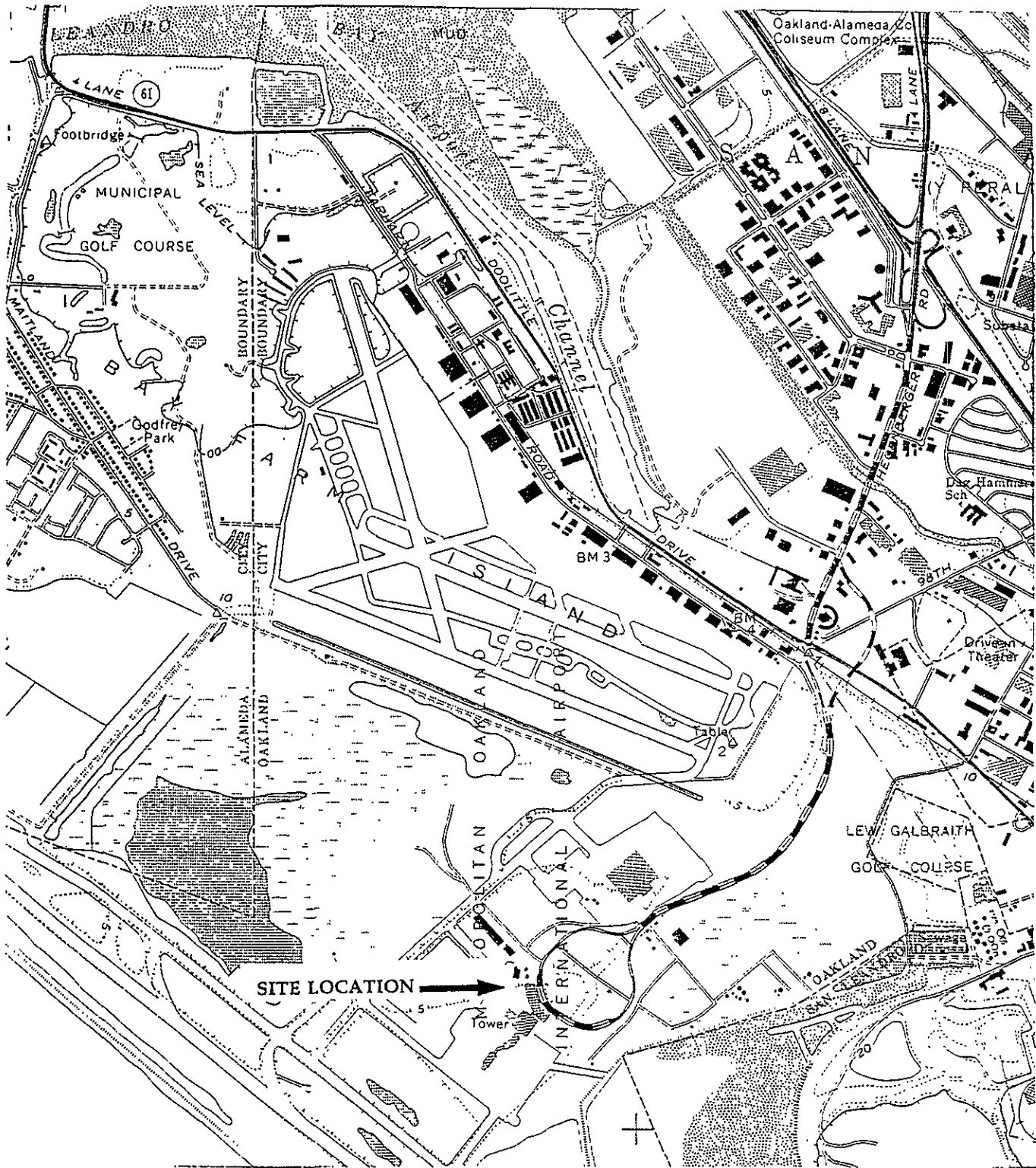
Reviewed by:

  
Jeanna S. Hudson, R.G.  
Senior Geologist



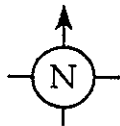


# APPENDIX



0 1000 2000

APPROXIMATE SCALE IN FEET



BASE MAP FROM U.S.G.S. 7.5 MINUTE SERIES: SAN LEANDRO, CALIFORNIA

**SITE LOCATION MAP**  
 Hertz Service Center,  
 1 Airport Drive,  
 Oakland, California

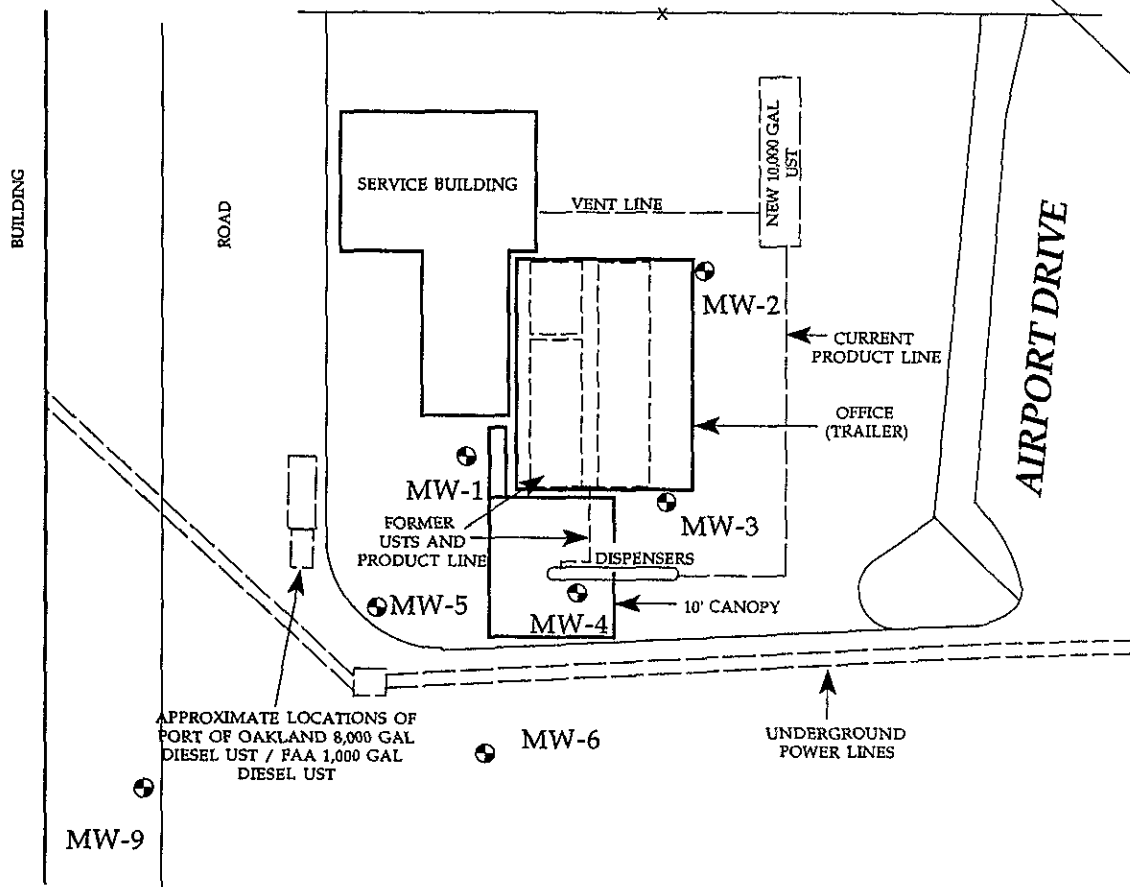
**CLEARWATER GROUP, INC.**

Project No.  
 C-156

Figure Date  
 10/96

Figure  
 1

# ALAN SHEPARD WAY



APPROXIMATE LOCATIONS OF  
PORT OF OAKLAND 8,000 GAL  
DIESEL UST / FAA 1,000 GAL  
DIESEL UST

PARKING LOT

MW-8



MW-7

LOADING AREA

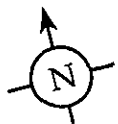
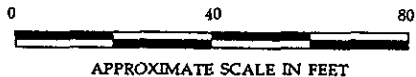
PLANTER

BUILDING

## EXPLANATION

-  GROUNDWATER MONITORING WELL
-  FENCELINE

SITE PLAN BASED ON MAP BY ESE, INC.  
JANUARY 4, 1994



**SITE PLAN**  
Hertz Service Center,  
1 Airport Drive,  
Oakland, California

**CLEARWATER GROUP, INC.**

Project No.  
C-156

Figure Date  
10/96

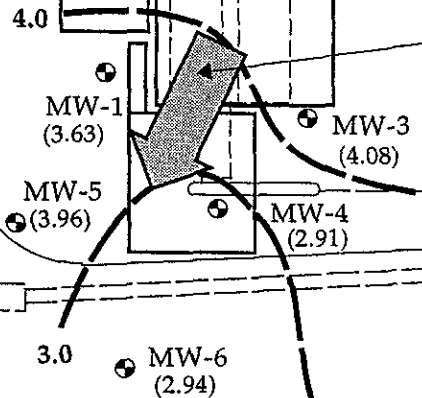
Figure  
2

ALAN SHEPARD WAY

AIRPORT DRIVE

GENERALIZED DIRECTION OF GROUNDWATER FLOW

MW-9  
(NM)



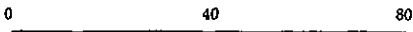
MW-8  
(NM)

MW-7  
(2.58)

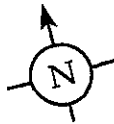
EXPLANATION

- GROUNDWATER MONITORING WELL
- MW-2  
(2.41) GROUNDWATER ELEVATION (IN FEET) - REFERENCED TO MEAN SEA LEVEL
- NM GROUNDWATER ELEVATION NOT MEASURED
- 4.0 ——— GROUNDWATER ELEVATION CONTOUR - CONTOUR INTERVAL 1.0 FEET

SITE PLAN BASED ON MAP BY ESE, INC.  
JANUARY 4, 1994



APPROXIMATE SCALE IN FEET



GROUNDWATER CONTOUR MAP- 11/27/96

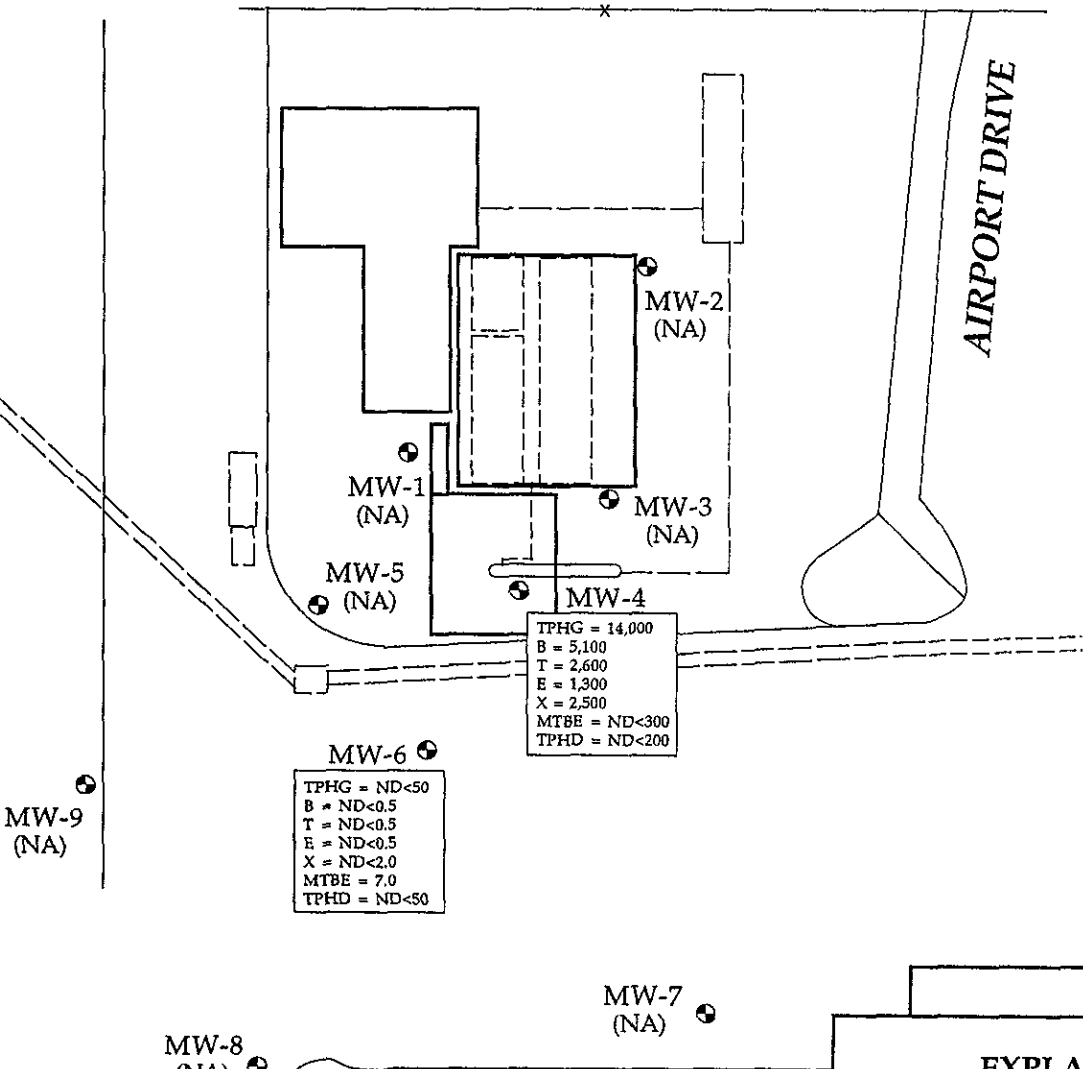
Hertz Service Center,  
1 Airport Drive,  
Oakland, California

CLEARWATER GROUP, INC.

Project No. C-156	Figure Date 12/96	Figure 3
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ALAN SHEPARD WAY

AIRPORT DRIVE

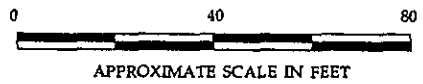


EXPLANATION

- GROUNDWATER MONITORING WELL
- (2.41) GROUNDWATER ELEVATION (IN FEET) - REFERENCED TO MEAN SEA LEVEL
- NA GROUNDWATER SAMPLES NOT COLLECTED

TPHG = ND<50  
 B = ND<0.5  
 T = ND<0.5  
 E = ND<0.5  
 X = ND<2.0  
 MTBE = 7.0  
 TPHD = ND<50

CONCENTRATIONS OF TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (TPHG) & DIESEL (TPHD), BENZENE, TOLUENE, ETHYLBENZENE & XYLENES (BTEX) AND METHYL TERT-BUTYL ETHER (MTBE) DETECTED IN GROUNDWATER SAMPLE FROM DESIGNATED WELL - IN PARTS PER BILLION.



SITE PLAN BASED ON MAP BY ESE, INC. JANUARY 4, 1994

HYDROCARBON DISTRIBUTION MAP - 11/27/96

Hertz Service Center,  
 1 Airport Drive,  
 Oakland, California

CLEARWATER GROUP, INC.

Project No. C-156	Figure Date 12/96	Figure 4
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**Table 1**  
**GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS**

Hertz Service Center  
 1 Airport Drive  
 Oakland, California

MW-No.	Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	TPHd (ppb)
MW-1	8/20/91	7.45	5.15	2.30	ND	ND	ND	ND	ND	--	ND
	11/12/91	7.45	4.39	3.06	ND	ND	ND	ND	ND	--	ND
	2/18/92	7.45	4.39	3.06	ND	ND	ND	ND	ND	--	ND
	5/13/92	7.45	4.52	2.93	ND	ND	ND	ND	ND	--	--
	9/1/92	7.45	4.90	2.55	ND	ND	ND	ND	ND	--	--
	11/5/92	7.45	5.06	2.39	ND	ND	ND	ND	ND	--	--
	2/3/93	7.45	4.11	3.34	ND	ND	ND	ND	ND	--	--
	5/27/93	7.45	4.14	3.31	ND	ND	ND	ND	ND	--	ND
	12/2/93	7.45	4.54	2.91	ND	ND	ND	ND	ND	--	ND
	9/17/96	7.45	4.09	3.36	--	--	--	--	--	--	--
	11/27/96	7.45	3.82	3.63	--	--	--	--	--	--	--
MW-2	8/20/91	8.09	4.00	4.09	ND	ND	ND	ND	ND	--	ND
	11/12/91	8.09	4.23	3.86	ND	ND	ND	ND	ND	--	52
	2/18/92	8.09	4.23	3.86	ND	ND	ND	ND	ND	--	ND
	5/13/92	8.09	3.43	4.66	ND	ND	ND	ND	ND	--	--
	9/1/92	8.09	3.94	4.15	56	2.0	3.0	0.8	3.1	--	--
	11/5/92	8.09	4.04	4.05	ND	ND	ND	ND	ND	--	--
	2/3/93	8.09	3.25	4.84	ND	ND	ND	ND	ND	--	--
	5/27/93	8.09	3.27	4.82	ND	ND	ND	ND	ND	--	ND
	12/2/93	8.09	3.65	4.44	ND	ND	ND	ND	ND	--	ND
	9/17/96	8.09	3.35	4.74	--	--	--	--	--	--	--
	11/27/96	8.09	3.18	4.91	--	--	--	--	--	--	--
MW-3	8/20/91	7.66	4.60	3.06	ND	ND	ND	ND	ND	--	ND
	11/12/91	7.66	4.74	2.92	ND	ND	ND	ND	ND	--	ND
	2/18/92	7.66	4.74	2.92	ND	ND	ND	ND	ND	--	ND
	5/13/92	7.66	4.02	3.64	ND	ND	ND	ND	ND	--	--
	9/1/92	7.66	4.45	3.21	ND	1.1	1.6	ND	1.9	--	--
	11/5/92	7.66	4.59	3.07	ND	ND	ND	ND	ND	--	--
	2/3/93	7.66	3.63	4.03	ND	ND	ND	ND	ND	--	--
	5/27/93	7.66	3.82	3.84	ND	ND	ND	ND	ND	--	55
	12/2/93	7.66	4.06	3.60	ND	ND	ND	ND	ND	--	ND
	9/17/96	7.66	3.76	3.90	--	--	--	--	--	--	--

**Table 1**  
**GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS**

Hertz Service Center  
 1 Airport Drive  
 Oakland, California

MW-No.	Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	TPHd (ppb)
MW-3	11/27/96	7.66	3.58	4.08	--	--	--	--	--	--	--
MW-4	2/18/92	7.11	3.68	3.43	6,600	910	1,900	280	1,700	--	ND
	5/13/92	7.11	3.54	3.57	62,000	3,400	5,200	990	5,200	--	--
	9/1/92	7.11	3.97	3.14	120,000	8,800	14,000	2,100	11,000	--	--
	11/5/92	7.11	5.23	1.88	24,000	2,600	3,300	510	2,100	--	--
	2/3/93	7.11	4.22	2.89	50,000	4,700	5,000	1,500	6,600	--	--
	5/27/93	7.11	4.33	2.78	48,000	6,300	7,200	1,600	6,800	--	4,900
	12/2/93	7.11	4.72	2.39	21,000	3,500	3,800	640	2,000	--	770
	9/17/96	7.11	4.38	2.73	16,000	4,300	1,900	750	1,900	100	220
	11/27/96	7.11	4.20	2.91	14,000	5,100	2,600	1,300	2,500	ND<300	ND<200
MW-5	11/5/92	7.76	4.76	3.00	ND	ND	ND	ND	ND	--	170
	2/3/93	7.76	--	--	--	--	--	--	--	--	--
	5/27/93	7.76	3.88	3.88	ND	ND	ND	ND	ND	--	75
	12/2/93	7.76	4.36	3.40	ND	ND	ND	ND	ND	--	60
	9/17/96	7.76	3.99	3.77	--	--	--	--	--	--	--
	11/27/96	7.76	3.80	3.96	--	--	--	--	--	--	--
MW-6	11/5/92	7.17	5.28	1.89	820	250	ND	5.9	ND	--	--
	2/3/93	7.17	4.27	2.90	330	120	2.8	19	5.3	--	--
	5/27/93	7.17	4.35	2.82	1,300	370	ND	87	19	--	960
	12/2/93	7.17	4.81	2.36	280	11	1.0	65	3.0	--	700
	9/17/96	7.17	4.39	2.78	ND<50	1.0	0.5	ND<0.5	ND<2.0	ND<5	270
	11/27/96	7.17	4.23	2.94	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<2.0	7.0	ND<50
MW-7	5/27/93	6.93	4.58	2.35	ND	ND	ND	ND	ND	--	76
	12/2/93	6.93	4.78	2.15	ND	ND	ND	ND	ND	--	ND
	9/17/96	6.93	4.52	2.41	--	--	--	--	--	--	--
	11/27/96	6.93	4.35	2.58	--	--	--	--	--	--	--
MW-8	5/27/93	6.75	4.84	1.91	ND	ND	ND	ND	ND	--	91
	12/2/93	6.75	5.44	1.31	ND	ND	ND	ND	ND	--	54
	9/17/96 (a)	6.75	--	--	--	--	--	--	--	--	--

**Table 1**  
**GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS**

Hertz Service Center  
1 Airport Drive  
Oakland, California

MW-No.	Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	TPHd (ppb)
MW-8	11/27/96	6.75	--	--	--	--	--	--	--	--	--
MW-9	5/27/93	6.55	4.97	1.58	ND	ND	ND	ND	ND	--	72
	12/2/93	6.55	5.53	1.02	ND	ND	ND	ND	ND	--	72
	9/17/96	6.55	4.95	1.60	--	--	--	--	--	--	--
	11/27/96	6.55	--	--	--	--	--	--	--	--	--

**Notes:**

- TOC Elevation at the north side of the top of the well casing referenced to mean sea level (wells were surveyed by others)
- DTW Depth to water
- GWE Groundwater elevation
- TPHg Total petroleum hydrocarbons as gasoline using EPA Method 8015 (modified)
- TPHd Total petroleum hydrocarbons as diesel fuel using EPA Method 8015 (modified)
- BTEX Benzene, toluene, ethylbenzene and total xylenes using EPA Method 8020 (modified)
- ppb Parts per billion ( $\mu\text{g/L}$ )
- Not tested, not measured
- ND Not detected in concentrations at or above laboratory reporting limit (indicated if available).
- (a) MW-8 could not be located on September 17, 1996.

Clearwater Group, Inc. collected groundwater samples on September 17, 1996. Analytical results prior to that date were taken from the *Report of Findings, Fourth Quarter 1993 Ground Water Monitoring* by Environmental Science & Engineering (January 4, 1994). Analytical results for metals, oil and grease, halogenated volatile compounds, and semi-volatile organics are not included in this table.

# WELL GAUGING DATA/PURGE CALCULATIONS

Job No.: C-156 Location: Hertz Oakland Airport Date: 11-27-96 Tech(s): RA

WELL NO.	DIAM (in)	DTB (ft)	DTW (ft)	ST (ft)	CV (gal)	PV (gal)	SPL (ft)	NOTES
1112-1	2		3.82					
2	↓		3.18					
3	↓		3.58					
4	↓	7.9	4.20	3.70	0.6	1.8	—	
5	↓		3.80					
6	↓	11.6	4.23	7.37	1.17	3.6	—	
7	↓		4.35					
8	↓		—					Not located
9	↓		—					Not accessible — failed cap.

**Explanation:**  
 DIAM = Well Diameter  
 DTB = Depth to Bottom  
 DTW = Depth to Water  
 ST = Saturated Thickness (DTB-DTW)  
 CV = Casing Volume (ST x cf)  
 PV = Purge Volume (standard 3 x CV, well development 10 x CV)  
 SPL = Thickness of Separate Phase Liquid

**Conversion Factors (cf)**  
 2 inch diameter well cf = 0.16 gal/ft  
 4 inch diameter well cf = 0.65 gal/ft  
 6 inch diameter well cf = 1.44 gal/ft

**CLEARWATER GROUP, INC.**  
 520 Third St., Ste. 104  
 Oakland, California 94607  
 Phone: (510) 893-5160  
 Fax: (510) 893-5947

# WELL PURGING DATA

SHEET 1 OF 1

Job No.: C-156 Location: Herk Oakland Apt Date: 11-27-76 Tech: RA

WELL No.	TIME	VOLUME (gal)	TEMP. (deg. F.)	COND. (mS/cm)	pH	Sample time: 1235	Sample for: (circle)
MW-6	1215	0	68.5	1.08	6.39		TPHg TPHd
Calc. purge volume		1	67.6	0.99	6.51		BTEX 8010
		2 1/2	67.0	6.01	6.60		Other:
3.6	1220	4	66.7	1.01	6.64		Other:
						Sampling Method:	
						<del>Dedicated</del> / Disposable bailer	
COMMENTS: color, turbidity, recharge, etc.						Purging Method:	
<u>tan grey, mod, fair.</u>						<u>PVC bailer</u> / Pump	

WELL No.	TIME	VOLUME (gal)	TEMP. (deg. F.)	COND. (mS/cm)	pH	Sample time: 1245	Sample for: (circle)
MW-4	1225	0	62.9	0.88	6.82		TPHg TPHd
Calc. purge volume		1	63.2	1.00	6.88		BTEX 8010
		1 1/2	63.3	1.00	6.85		Other:
1.8		<u>Dry @ 1 1/2 gal</u>					Other:
						Sampling Method:	
						<del>Dedicated</del> / Disposable bailer	
COMMENTS: color, turbidity, recharge, etc.						Purging Method:	
<u>black, mod, poor.</u>						<u>PVC bailer</u> / Pump	

WELL No.	TIME	VOLUME (gal)	TEMP. (deg. F.)	COND. (mS/cm)	pH	Sample time:	Sample for: (circle)
							TPHg TPHd
Calc. purge volume							BTEX 8010
							Other:
						Sampling Method:	
						Dedicated / Disposable bailer	
COMMENTS: color, turbidity, recharge, etc.						Purging Method:	
						PVC bailer / Pump	

# American Environmental Network

## Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

PAGE 1

CLEARWATER GROUP, INC.  
520 THIRD ST., STE. 104  
OAKLAND, CA 94607

ATTN: RUARY ALLEN  
CLIENT PROJ. ID: C-156  
CLIENT PROJ. NAME: HERTZ

P.O. NUMBER: C-156

REPORT DATE: 12/13/96

DATE(S) SAMPLED: 11/27/96

DATE RECEIVED: 11/27/96

AEN WORK ORDER: 9611401

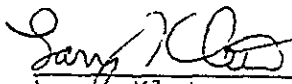
### PROJECT SUMMARY:

On November 27, 1996, this laboratory received 2 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

  
Larry Klein  
Laboratory Director

## CLEARWATER GROUP, INC.

SAMPLE ID: MW-6  
 AEN LAB NO: 9611401-01  
 AEN WORK ORDER: 9611401  
 CLIENT PROJ. ID: C-156

DATE SAMPLED: 11/27/96  
 DATE RECEIVED: 11/27/96  
 REPORT DATE: 12/13/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5 ug/L		12/09/96
Toluene	108-88-3	ND	0.5 ug/L		12/09/96
Ethylbenzene	100-41-4	ND	0.5 ug/L		12/09/96
Xylenes, Total	1330-20-7	ND	2 ug/L		12/09/96
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05 mg/L		12/09/96
Methyl t-Butyl Ether	1634-04-4	7 *	5 ug/L		12/09/96
#Extraction for TPH	EPA 3510	-		Extrn Date	12/05/96
TPH as Diesel	GC-FID	ND	0.05 mg/L		12/09/96

ND = Not detected at or above the reporting limit  
 \* = Value at or above reporting limit

## CLEARWATER GROUP, INC.

SAMPLE ID: MW-4  
 AEN LAB NO: 9611401-02  
 AEN WORK ORDER: 9611401  
 CLIENT PROJ. ID: C-156

DATE SAMPLED: 11/27/96  
 DATE RECEIVED: 11/27/96  
 REPORT DATE: 12/13/96

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	5,100 *	30	ug/L	12/09/96
Toluene	108-88-3	2,600 *	30	ug/L	12/09/96
Ethylbenzene	100-41-4	1,300 *	30	ug/L	12/09/96
Xylenes, Total	1330-20-7	2,500 *	100	ug/L	12/09/96
Purgeable HCs as Gasoline	5030/GCFID	14 *	3	mg/L	12/09/96
Methyl t-Butyl Ether	1634-04-4	ND	300	ug/L	12/09/96
#Extraction for TPH	EPA 3510	-		Extrn Date	12/05/96
TPH as Diesel	GC-FID	ND	0.2	mg/L	12/09/96

RLs elevated for gas/BTEX due to high levels of target compounds; RL elevated for diesel due to high levels of non-target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit  
 \* = Value at or above reporting limit



AEN (CALIFORNIA)  
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9611401

CLIENT PROJECT ID: C-156

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 3510 GCFID

AEN JOB NO: 9611401  
 DATE EXTRACTED: 12/05/96  
 INSTRUMENT: C  
 MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery n-Pentacosane
12/09/96	MW-6	01	98
12/09/96	MW-4	02	78
QC Limits:			65-125

DATE EXTRACTED: 12/04/96  
 DATE ANALYZED: 12/05/96  
 SAMPLE SPIKED: 9611125-03  
 INSTRUMENT: C

Matrix Spike Recovery Summary

Analyte	Spike Added (mg/L)	MS Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Diesel	4.00	99	2	60-110	15

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

## QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9611401  
 INSTRUMENT: H  
 MATRIX: WATER

## Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery	
			Fluorobenzene	
12/09/96	MW-6	01	98	
12/09/96	MW-4	02	103	
QC Limits:			70-130	

DATE ANALYZED: 12/06/96  
 SAMPLE SPIKED: 9611352-01  
 INSTRUMENT: H

## Matrix Spike Recovery Summary

Analyte	Spike Added (ug/L)	Average Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Benzene	26.0	102	<1	85-109	17
Toluene	82.1	101	<1	87-111	16
Hydrocarbons as Gasoline	500	96	2	66-117	19

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

\*\*\* END OF REPORT \*\*\*

AEN Job No: 9611401

Client Project ID: C-156

**Project Footnotes**

The following footnotes apply to the indicated project samples and will appear on the final report (except as noted):

Client IDs	AEN IDs	Test	Footnotes
	2	3510 GC-FID EAS	05

- Footnotes**
- 01: Reporting limits (RLs) elevated due to matrix interference.
  - 02: RL(s) elevated for \_\_\_\_\_ due to hydrocarbon interference.
  - 03: RL(s) elevated for \_\_\_\_\_ due to hydrocarbon interference in the \_\_\_\_\_ range.
  - 04: RL(s) elevated due to high levels of target compounds. Sample(s) run at dilution.
  - 05: RL(s) elevated due to high levels of non-target compounds. Sample(s) run at dilution. *CASOLINE*
  - 06: RL(s) elevated for \_\_\_\_\_ due to background contamination.
  - 07: Duplicate analysis showed surrogate recoveries outside of QC limits. Results are estimated concentrations.
  - 08: Due to an apparent matrix effect, it was necessary to dilute sample(s) to achieve adequate surrogate recoveries. RL(s) have been adjusted accordingly.
  - 09: Sample showed non-target compounds. (Will not appear on report unless requested by client).
  - 10: Non-typical \_\_\_\_\_ pattern observed. (Will not appear on report unless requested by client).
  - \* : \_\_\_\_\_
  - \*\* : \_\_\_\_\_

The following information will not appear on the final report unless requested:

If you have any questions, please contact Client Services at (510) 930-9090. *Thank you!*

1. Client: 11212 CAE REMEDIATION  
 Address: 1 AIRPORT DRIVE  
OAKLAND CA  
 Contact: \_\_\_\_\_  
 Alt. Contact: \_\_\_\_\_

3410 Vincent Road, Pleasant Hill, CA 94523  
 Phone (510) 930-9090  
 FAX (510) 930-0256  
K-5, S-4    K-3, S-3

Page \_\_\_\_\_ of \_\_\_\_\_  
**REQUEST FOR ANALYSIS / CHAIN OF CUSTODY**  
9611401

Lab Job Number: \_\_\_\_\_  
 Lab Destination: \_\_\_\_\_  
 Date Samples Shipped: \_\_\_\_\_  
 Lab Contact: \_\_\_\_\_  
 Date Results Required: \_\_\_\_\_  
 Date Report Required: \_\_\_\_\_  
 Client Phone No.: (510) 833 5160  
 Client FAX No.: (510) 833 5947

Address Report To:  
 2. CLEARWATER GROUP  
320 THIRD ST #104  
OAKLAND CA 94607

Send Invoice To:  
 3. 451.

Send Report To: 1 of 2 (Circle one)  
 Client P.O. No.: C-156    Client Project I.D. No.: C-156  
 Sample Team Member (s) \_\_\_\_\_

Lab Number	Client Sample Identification	Air Volume	Date/Time Collected	Sample Type*	Pres.	No. of Cont.	Type of Cont.	ANALYSIS											Comments / Hazards				
								TPH	BTEX	MTBE	TPH												
<u>01A-E</u>	<u>NW-6</u>		<u>11-27-96 12:30</u>	<u>HCl/pack</u>		<u>5</u>	<u>SOV</u>	X	X	X													
<u>02A-E</u>	<u>NW-4</u>		<u>11-27-96 12:45</u>	<u>↓</u>		<u>5</u>	<u>↓</u>	X	X	X													

Relinquished by: (Signature) <u>Ruany Alder</u>	DATE <u>11-27-96</u>	TIME <u>15:25</u>	Received by: (Signature) <u>Michael E. ...</u>	DATE <u>11/27/96</u>	TIME <u>15:25</u>
Relinquished by: (Signature) <u>Michael E. ...</u>	DATE <u>11/27/96</u>	TIME <u>16:35</u>	Received by: (Signature) <u>Jurana ...</u>	DATE <u>11/27/96</u>	TIME <u>16:50</u>
Relinquished by: (Signature) _____	DATE _____	TIME _____	Received by: (Signature) _____	DATE _____	TIME _____
Method of Shipment _____			Lab Comments _____		

\*Sample type (Specify): 1) 37mm 0.8 µm MCEF 2) 25mm 0.8 µm MCEF 3) 25mm 0.4 µm polycarb. filter  
 4) PVC filter, diam. \_\_\_\_\_ pore size \_\_\_\_\_ 5) Charcoal tube 6) Silica gel tube 7) Water 8) Soil 9) Bulk Sample  
 10) Other \_\_\_\_\_ 11) Other \_\_\_\_\_

CLEARWATER GROUP, INC.  
Groundwater Monitoring and Sampling Protocols

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Groundwater Monitoring

Prior to beginning, a decontamination area is established. Decontamination procedures consist of scrubbing downhole equipment in an Alconox® solution wash (wash solution is pumped through any purging pumps used), and rinsing in a first rinse of potable water and a second rinse of potable water or deionized water if the latter is required. Any non-dedicated down hole equipment is decontaminated prior to use.

Prior to purging and sampling a well, the static water level is measured to the nearest 0.01 feet with an electronic water sounder. Depth to bottom is typically measured once per year, at the request of the project manager, and during Clearwater's first visit to a site. If historical analytical data are not available, with which to establish a reliable order of increasing well contamination, the water sounder and tape will be decontaminated between each well. If floating separate-phase hydrocarbons (SPH) are suspected or observed, SPH is collected using a clear, open-ended product bailer, and the thickness is measured to the nearest 0.01 feet in the bailer. SPH may alternatively be measured with an electronic interface probe. Any monitoring well containing a measurable thickness of SPH before or during purging is not additionally purged and no sample is collected from that well. Wells containing a hydrocarbon sheen are sampled unless otherwise specified by the project manager. Field observations such as well integrity as well as water level measurements and floating product thicknesses are noted on the Gauging Data/Purge Calculations form.

Well Purging

Each monitoring well to be sampled is purged using either a PVC bailer or a submersible pump. Physical parameters (pH, temperature and conductivity) of the purge water are monitored during purging activities to assess if the water sample collected is representative of the aquifer. If required, parameters such as dissolved oxygen, turbidity, salinity etc. are also measured. Samples are considered representative if parameter stability is achieved. Stability is defined as a change of less than 0.25 pH units, less than 10% change in conductivity in micro mhos, and less than 1.0 degree centigrade (1.8 degrees Fahrenheit) change in temperature. Parameters are measured in a discreet sample decanted from the bailer separately from the rest of the purge water. Parameters are measured at least four times during purging; initially, and at volume intervals of one well volume. Purging continues until three well casing volumes have been removed or until the well completely dewater. Wells which dewater or demonstrate a slow recharge, may be sampled after fewer than three well volumes have been removed. Well purging information is recorded on the Purge Data sheet. All meters used to measure parameters are calibrated daily. Purge water is sealed, labeled, and stored on site in D.O.T.-approved 55-gallon drums. After being chemically profiled, the water is removed to an appropriate disposal facility by a licensed waste hauler.

Groundwater Sample Collection

Groundwater samples are collected immediately after purging or, if purging rate exceeds well recharge rate, when the well has recharged to at least 80% of its static water level. If recharge is extremely slow, the well is allowed to recharge for at least two hours, if practicable, or until sufficient volume has accumulated for sampling. The well is sampled within 24 hours of purging or repurged. Samples are collected using polyethylene bailers, either disposable or dedicated to the well. Samples being analyzed for compounds most sensitive to volatilization are collected first. Water samples are placed in appropriate laboratory-supplied containers, labeled, documented on a chain of custody form and placed on ice in a cooler for transport to a state-certified analytical laboratory. Analytical detection limits match or surpass standards required by relevant local or regional guidelines.

Quality Assurance Procedures

To prevent contamination of the samples, CGI personnel adhere to the following procedures in the field:

- A new, clean pair of latex gloves are put on prior to sampling each well.
- Wells are gauged, purged and groundwater samples are collected in the expected order of increasing degree of contamination based on historical analytical results.
- All purging equipment will be thoroughly decontaminated between each well, using the procedures previously described at the beginning of this section.
- During sample collection for volatile organic analysis, the amount of air passing through the sample is minimized. This helps prevent the air from stripping the volatiles from the water. Sample bottles are filled by slowly running the sample down the side of the bottle until there is a convex meniscus over the mouth of the bottle. The lid is carefully screwed onto the bottle such that no air bubbles are present within the bottle. If a bubble is present, the cap is removed and additional water is added to the sample container. After resealing the sample container, if bubbles still are present inside, the sample container is discarded and the procedure is repeated with a new container.

CLEARWATER GROUP, INC.  
Groundwater Monitoring and Sampling Protocols

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Laboratory and field handling procedures may be monitored, if required by the client or regulators, by including quality control (QC) samples for analysis with the groundwater samples. Examples of different types of QC samples are as follows:

- Trip blanks are prepared at the analytical laboratory by laboratory personnel to check field handling procedures. Trip blanks are transported to the project site in the same manner as the laboratory-supplied sample containers to be filled. They are not opened, and are returned to the laboratory with the samples collected. Trip blanks are analyzed for purgable organic compounds.
- Equipment blanks are prepared in the field to determine if decontamination of field sampling equipment has been effective. The sampling equipment used to collect the groundwater samples is rinsed with distilled water which is then decanted into laboratory-supplied containers. The equipment blanks are transported to the laboratory, and are analyzed for the same chemical constituents as the samples collected at the site.
- Duplicates are collected at the same time that the standard groundwater samples are being collected and are analyzed for the same compounds in order to check the reproducibility of laboratory data. They are typically only collected from one well per sampling event. The duplicate is assigned an identification number that will not associate it with the source well.

Generally, trip blanks and field blanks check field handling and transportation procedures. Duplicates check laboratory procedures. The configuration of QC samples is determined by CGI depending on site conditions and regulatory requirements.