



August 22, 1994

Kevin Graves  
Regional Water Quality Control Board-  
San Francisco Bay Region  
2101 Webster Street, Suite 500  
Oakland, CA 94612

Re: Shell Service Station  
WIC #204-6138-0907  
5251 Hopyard Road  
Pleasanton, California  
WA Job #81-0796-104

Dear Mr. Graves:

This letter describes recently completed and anticipated activities at the Shell service station referenced above (Figure 1). This status report satisfies the quarterly reporting requirements prescribed by California Administrative Code Title 23 Waters, Chapter 3, Subchapter 16, Article 5, Section 2652.d. Included below are descriptions and results of activities performed in the second quarter 1994 and proposed work for the third quarter 1994.

Second Quarter 1994 Activities:

- Blaine Tech Services, Inc. (BTS) of San Jose, California measured ground water depths and collected ground water samples from the site wells. BTS' report describing these activities the analytical report for the ground water samples are included as Attachment A.
- Weiss Associates (WA) calculated ground water elevations and compiled the analytic data (Table 1 and Attachment B) and prepared a ground water elevation contour map (Figure 2).
- WA re-evaluated the gauging and sampling frequency of the site's monitoring wells using WA's sampling frequency modification criteria, which are included as Attachment C. Because hydrocarbons in the subsurface are fully assessed as indicated by the past seven years of ground water analytic data, and because the low permeability of the site's soils appears to be sufficiently impeding hydrocarbon migration, we recommend sampling and gauging all site wells annually. Therefore, unless we are notified otherwise within 60 days of the date of this letter, we will implement site-wide annual sampling beginning in the

Kevin Graves  
August 22, 1994

fourth quarter 1994, sampling only during the second quarter when ground water and therefore dissolved hydrocarbon concentrations are typically highest.

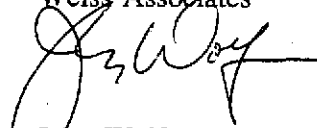
Anticipated Third Quarter 1994 Activities:

- WA will submit a report presenting the results of the third quarter 1994 ground water sampling and ground water depth measurements. The report will include tabulated chemical analytic results, ground water elevations and a ground water elevation contour map. Historical and current data will be compiled into one table.
- Unless we hear otherwise from you, WA will implement annual well gauging and sampling beginning in the fourth quarter 1994.

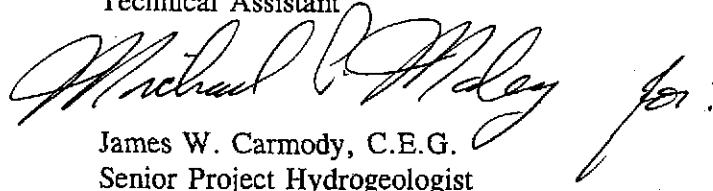
Please call if you have any questions.



Sincerely,  
Weiss Associates



John Wolf  
Technical Assistant



James W. Carmody, C.E.G.  
Senior Project Hydrogeologist

JAW/JWC:jaw

JASHELL\750\796QM\JY4.WP

Attachments: A - Blaine Tech's Ground Water Monitoring Report  
B - Historical Ground Water Elevation and Analytic Data  
C - Sampling Frequency Modification Criteria

cc: Dan Kirk, Shell Oil Company, P.O. Box 4023, Concord, California 94524  
Ted Klenk, Pleasanton Fire Department, 4444 Railroad Street, Pleasanton, California 94566

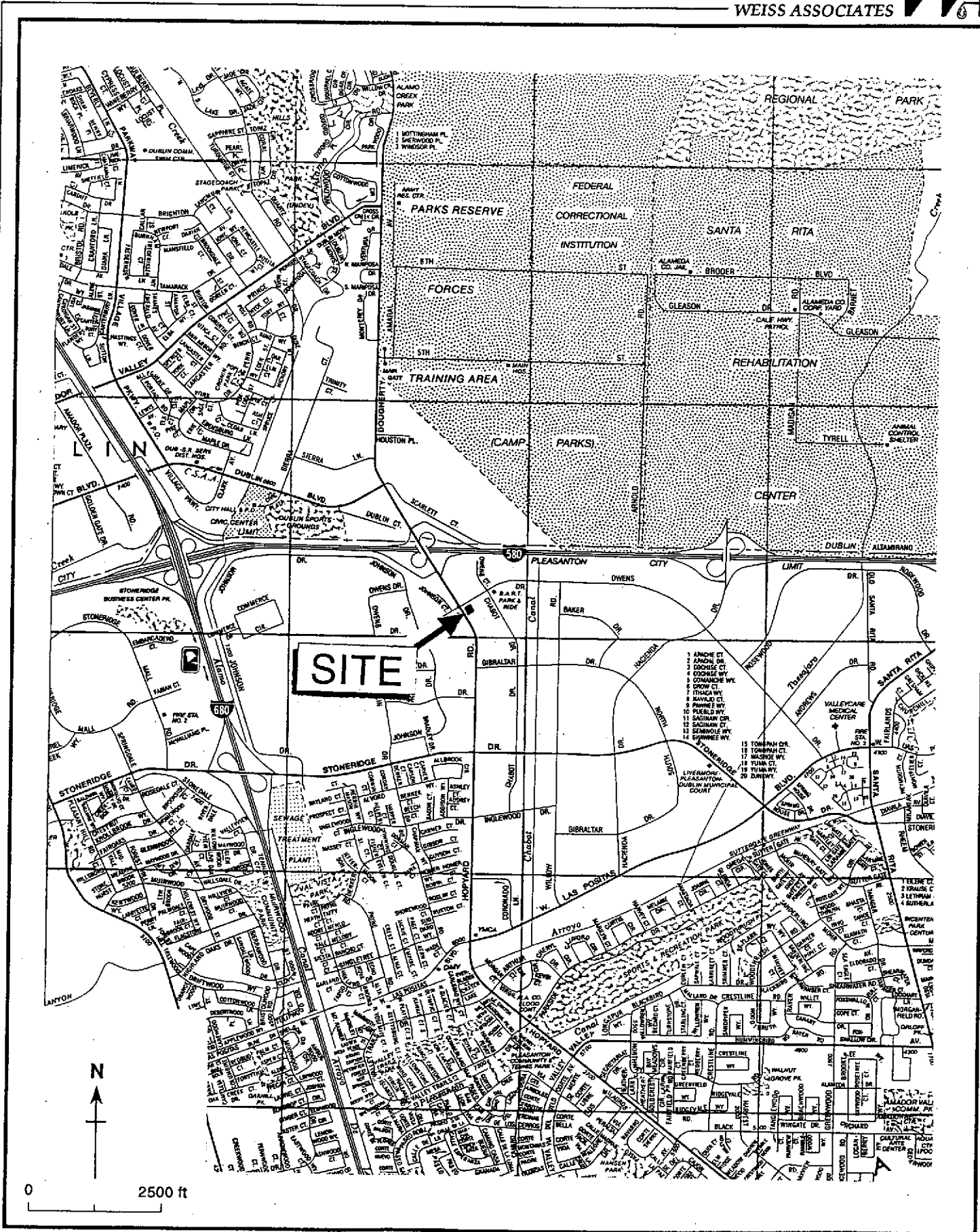


Figure 1. Site Location Map - Shell Service Station WIC# 204-6138-0907, 5251 Hopyard Road, Pleasanton, California

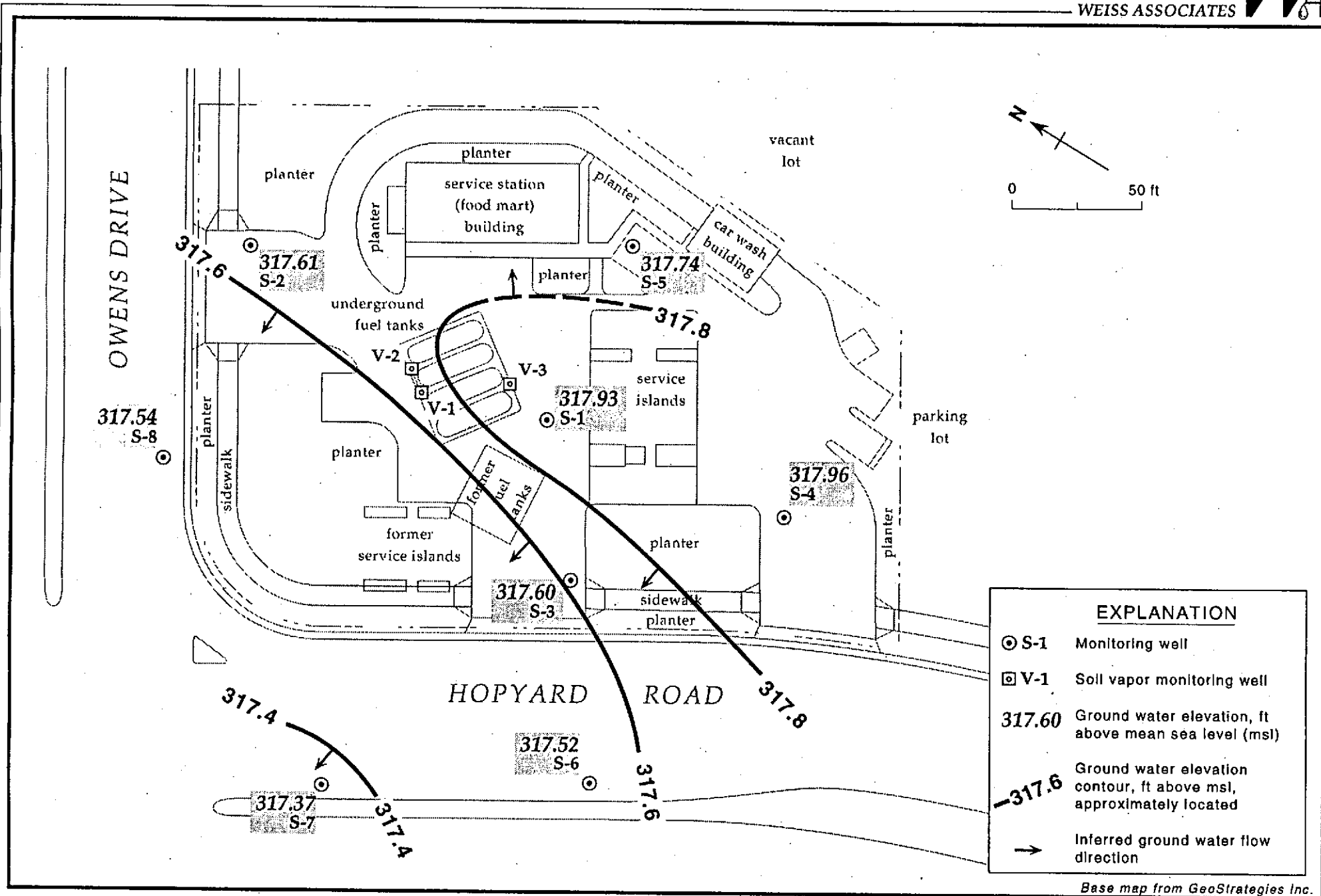


Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - June 16, 1994 - Shell Service Station WIC# 204-6138-0907, 5251 Hopyard Road, Pleasanton, California

Table 1. Ground Water Elevations and Analytic Results - Shell Service Station WIC #204-6138-0907, 5251 Hopyard Road, Pleasanton, California

Well ID (Current Sampling Frequency)	Sampling Date	Top-of- Casing (ft msl)	Depth to Water (ft)	Ground Water Elevation (ft msl)	TPH-G	TPH-D	B	T	E	X	<-----parts per billion (µg/ℓ)----->				
S-1 (All Quarters)	03/04/94	326.73	8.81	317.92	640	---	190	1.4	18	1.3					
	03/04/94 <sup>dup</sup>		8.81	317.92	640	---	180	1.7	17	1.3					
	06/16/94		8.80	317.93	2,500	---	390	9.5	31	7.5					
	06/16/94 <sup>dup</sup>		8.80	317.93	2,000	---	410	7.8	120	20					
S-2 (3rd Quarter)	03/04/94	326.59	8.90	317.69	---	---	---	---	---	---					
	06/16/94		8.98	317.61	---	---	---	---	---	---					
S-3 (All Quarters)	03/04/94	327.38	9.64	317.74	630	---	130	<0.5	17	0.80					
	06/16/94		9.78	317.60	1,800	---	430	19	35	21					
S-4 (3rd Quarter)	03/04/94	327.38	9.60	317.78	---	---	---	---	---	---					
	06/16/94		9.42	317.96	---	---	---	---	---	---					
S-5 (3rd Quarter)	03/04/94	327.76	9.95	317.81	<50	---	<0.5	<0.5	<0.5	<0.5					
	06/16/94		10.02	317.74	<50	---	0.9	<0.5	<0.5	<0.5	<0.5				
S-6 (All Quarters)	03/04/94	326.56	8.88	317.68	<50	---	<0.5	<0.5	<0.5	<0.5					
	06/16/94		9.04	317.52	<50	---	<0.5	<0.5	<0.5	<0.5	<0.5				
S-7 (3rd Quarter)	03/04/94	326.49	8.96	317.53	---	---	---	---	---	---					
	06/16/94		9.12	317.37	---	---	---	---	---	---					
S-8 (All Quarters)	03/04/94	325.32	7.66	317.66	<50	---	<0.5	<0.5	<0.5	<0.5					
	06/16/94		7.78	317.54	<50	---	<0.5	<0.5	<0.5	<0.5	<0.5				
Trip Blank (All Quarters)	03/04/94				<50		<0.5	<0.5	<0.5	<0.5					
	06/16/94				<50		<0.5	<0.5	<0.5	<0.5					
DTSC MCLs					NE	NE	1	100 <sup>a</sup>	680	1,750					

-- Table 1 continues on next page --

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Table 1. Ground Water Elevations and Analytic Results - Shell Service Station WIC #204-6138-0907, 5251 Hopyard Road, Pleasanton, California (continued)

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Abbreviations:

ft msl = Feet above mean seal level  
TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015  
TPH-D = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015  
B = Benzene by EPA Method 8020  
E = Ethylbenzene by EPA Method 8020  
T = Toluene by EPA Method 8020  
X = Xylenes by EPA Method 8020  
NE = Not established

DTSC MCLs = California Department of Toxic Substances Control maximum  
contaminant levels for drinking water  
<n = Not detected at detection limits of n ppb  
dup = Duplicate sample  
--- = Not analyzed

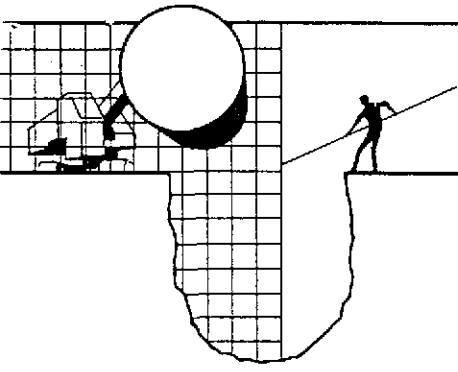
Notes:

a = DTSC recommended action level; MCL not established

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**ATTACHMENT A**

**GROUND WATER MONITORING REPORT AND ANALYTIC REPORT**



# BLAINE TECH SERVICES INC.

985 TIMOTHY DRIVE  
SAN JOSE, CA 95133  
(408) 995-5535  
FAX (408) 293-8773

June 28, 1994

Shell Oil Company  
P.O. Box 5278  
Concord, CA 94520-9998

Attn: Daniel T. Kirk

SITE:  
Shell WIC #204-6138-0907  
5251 Hopyard Road  
Pleasanton, California

QUARTER:  
2nd quarter of 1994

## QUARTERLY GROUNDWATER SAMPLING REPORT 940616-Z-1

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This report contains data collected during routine inspection, gauging and sampling of groundwater monitoring wells performed by Blaine Tech Services, Inc. in response to the request of the consultant who is overseeing work at this site on behalf of our mutual client, Shell Oil Company. Data collected in the course of our field work is presented in a **TABLE OF WELL GAUGING DATA**. The field information was collected during our preliminary gauging and inspection of the wells, the subsequent evacuation of each well prior to sampling, and at the time of sampling.

Measurements taken include the total depth of the well and the depth to water. The surface of water was further inspected for the presence of immiscibles which may be present as a thin film (a sheen on the surface of the water) or as a measurable free product zone (FPZ). At intervals during the evacuation phase, the purge water was monitored with instruments that measure electrical conductivity (EC), potential hydrogen (pH), temperature (degrees Fahrenheit), and turbidity (NTU). In the interest of simplicity, fundamental information is tabulated here, while the bulk of the information is turned over directly to the consultant who is making professional interpretations and evaluations of the conditions at the site.



## STANDARD PROCEDURES

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### Evacuation

Groundwater wells are thoroughly purged before sampling to insure that the sample is collected from water that has been newly drawn into the well from the surrounding geologic formation. The selection of equipment to evacuate each well is based on the physical characteristics of the well and what is known about the performance of the formation in which the well has been installed. There are several suitable devices which can be used for evacuation. The most commonly employed devices are air or gas actuated pumps, electric submersible pumps, and hand or mechanically actuated bailers. Our personnel frequently employ USGS/Middleburg positive displacement pumps or similar air actuated pumps which do not agitate the water standing in the well.

Normal evacuation removes three case volumes of water from the well. More than three case volumes of water are removed in cases where more evacuation is needed to achieve stabilization of water parameters and when requested by the local implementing agency. Less water may be removed in cases where the well dewateres and does not recharge to 80% of its original volume within two hours and any additional time our personnel have reason to remain at the site. In such cases, our personnel return to the site within twenty four hours and collect sample material from the water which has recharged into the well case.

### Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site. Effluent water from purging and on-site equipment cleaning is collected and transported to Shell's Martinez Manufacturing Complex in Martinez, California.

### Free Product Skimmer

The column headed, VOLUME OF IMMISCIBLES REMOVED (ml) is included in the TABLE OF WELL GAUGING DATA to cover situations where a free product skimming device must be removed from the well prior to gauging. Skimmers are installed in wells with a free product zone on the surface of the water. The skimmer is a free product recovery device which often prevents normal well gauging and free product zone measurements. The 2.0" and 3.0" PetroTraps fall into the category of devices that obstruct normal gauging. In cases where the consultant elects to have our personnel pull the skimmers out of the well and gauge the well, our personnel perform the additional task of draining the accumulated free product out of the PetroTrap before putting it back in the well. This

recovered free product is measured and logged in the VOLUME OF IMMISCIBLES REMOVED column. Gauging at such sites is performed in accordance with specific directions from the professional consulting firm overseeing work at the site on Shell's behalf.

### **Sample Containers**

Sample material is collected in specially prepared containers which are provided by the laboratory that performs the analyses.

### **Sampling**

Sample material is collected in stainless steel bailer type devices normally fitted with both a top and a bottom check valve. Water is promptly decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA standard for handling volatile organic and semi-volatile compounds.

Following collection, samples are promptly placed in an ice chest containing prefrozen blocks of an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

### **Sample Designations**

All sample containers are identified with a site designation and a discrete sample identification number specific to that particular groundwater well. Additional standard notations (e.g. time, date, sampler) are also made on the label.

### **Chain of Custody**

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under a standard Shell Oil Company chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date, and signature of the person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

## Hazardous Materials Testing Laboratory

The samples obtained at this site were delivered to National Environmental Testing, Inc. in Santa Rosa, California. NET is a California based Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #178.

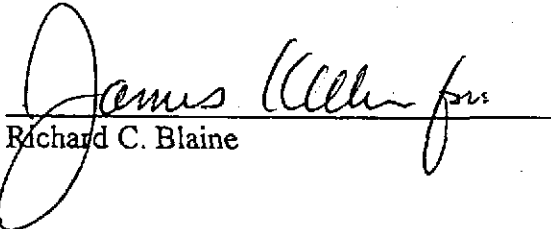
### Objective Information Collection

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. performs no consulting and does not become involved in the marketing or installation of remedial systems of any kind. Blaine Tech Services, Inc. is concerned only with the generation of objective information, not with the use of that information to support evaluations and recommendations concerning the environmental condition of the site. Even the straightforward interpretation of objective analytical data is better performed by interested regulatory agencies, and those engineers and geologists who are engaged in the work of providing professional opinions about the site and proposals to perform additional investigation or design remedial systems.

### Reportage

Submission of this report and the attached laboratory report to interested regulatory agencies is handled by the consultant in charge of the project. Any professional evaluations or recommendations will be made by the consultant under separate cover.

Please call if we can be of any further assistance.

  
Richard C. Blaine

RCB/lp

attachments: table of well gauging data  
chain of custody  
certified analytical report

cc: Weiss Associates  
5500 Shellmound Street  
Emeryville, CA 94608-2411  
ATTN: Michael Asport

## TABLE OF WELL GAUGING DATA

WELL I.D.	DATA COLLECTION DATE	MEASUREMENT REFERENCED TO	QUALITATIVE OBSERVATIONS (sheen)	DEPTH TO FIRST IMMISCIBLES LIQUID (FPZ) (feet)	THICKNESS OF IMMISCIBLES LIQUID ZONE (feet)	VOLUME OF IMMISCIBLES REMOVED (ml)	DEPTH TO WATER (feet)	DEPTH TO WELL BOTTOM (feet)
S-1 *	6/16/94	TOB	ODOR	NONE	--	--	8.80	30.02
S-2	6/16/94	TOB	--	NONE	--	--	8.98	24.64
S-3	6/16/94	TOB	ODOR	NONE	--	--	9.78	24.90
S-4	6/16/94	TOB	--	NONE	--	--	9.42	24.60
S-5	6/16/94	TOB	--	NONE	--	--	10.02	24.80
S-6	6/16/94	TOB	--	NONE	--	--	9.04	26.10
S-7	6/16/94	TOB	--	NONE	--	--	9.12	25.42
S-8	6/16/94	TOB	--	NONE	--	--	7.78	25.25

\* Sample DUP was a duplicate sample taken from well S-1.



# SHELL OIL COMPANY

- RETAIL ENVIRONMENTAL ENGINEERING - WEST

## CHAIN OF CUSTODY RECORD

Serial No: 740616-21

Date: 6/16/94

Page 1 of 1

Site Address: 5251 Hopyard Road, Pleasanton, CA

WIC#: 204-6138-0907

### Analysis Required

LAB: NET

Shell Engineer: Dan Kirk  
Phone No.: (510) 775-6168  
Fax #: 675-6160

Consultant Name & Address: Blaine Tech Services, Inc.  
985 Timothy Drive San Jose, CA 95133

Consultant Contact: Jim Keller  
Phone No.: (408) 295-5535  
Fax #: 293-8773

Comments:

Sampled by: *Brett Blank*

Printed Name: Brett Blank

Sample ID	Date	Sludge	Soil	Water	Air	No. of conds.
S-1	6/16/94			X		3
S-3	"			X		3
S-5	"			X		3
S-6	"			X		3
S-8	"			X		3
EP	"			X		3
DP	"			X		3
TB	"			X		2

TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/802)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020	Asbestos	Container Size	Preparation Used	Composite Y/N
					X				
					X				
					X				
					X				
					X				
					X				
					X				
					X				

CHECK ONE (1) BOX ONLY	CT/DT	TURNS AROUND TIME
Quadrupole Monitoring <input checked="" type="checkbox"/> 8441		24 hours <input type="checkbox"/>
220 Ion Chromatog <input type="checkbox"/> 8441		48 hours <input type="checkbox"/>
Soil Classfy/Disposal <input type="checkbox"/> 8441		15 days <input checked="" type="checkbox"/> (Normal)
Water Classfy/Disposal <input type="checkbox"/> 8441		Other <input type="checkbox"/>
Soil/Air Lem. or Sys. O & M <input type="checkbox"/> 8442		
Water Lem. or Sys. O & M <input type="checkbox"/> 8443		
Other <input type="checkbox"/>		

NOTE: Holdy Lab as soon as Possible of 24/48 hr. L.A.T.

(CUSTODY SEALED)  
6/17/94  
seals intact - AL

Relinquished By (signature): <i>[Signature]</i>	Printed Name: Brett Blank	Date: 6/16/94	Received (signature): <i>[Signature]</i>	Printed Name: G. LUMBER	Date: 6/16/94
Relinquished By (signature): <i>[Signature]</i>	Printed Name: G. LUMBER	Date: 6/16/94	Received (signature): <i>[Signature]</i>	Printed Name: G. LUMBER	Date: 6/16/94
Relinquished By (signature): <i>[Signature]</i>	Printed Name: <i>[Signature]</i>	Date: 6/16/94	Received (signature): <i>[Signature]</i>	Printed Name: Amy Lopez	Date: 6/16/94

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN OF CUSTODY WITH INVOICE AND RESULTS



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

Santa Rosa Division  
435 Tesconi Circle  
Santa Rosa, CA 95401  
Tel: (707) 526-7200  
Fax: (707) 526-9623

Jim Keller  
Blaine Tech Services  
985 Timothy Dr.  
San Jose, CA 95133


Date: 06/29/1994  
NET Client Acct. No: 1821  
NET Pacific Job No: 94.02574  
Received: 06/18/1994


Client Reference Information

SHELL, 5251 Hopyard Rd., Pleasanton, Job No. 940616-Z1

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

  
Judy Ridley  
Project Coordinator

  
Jim Hoch  
Operations Manager

Enclosure (s)





Client Acct: 1821  
Client Name: Blaine Tech Services  
NET Job No: 94.02574

Date: 06/29/1994  
ELAP Certificate: 1386  
Page: 2

Ref: SHELL, 5251 Hopyard Rd., Pleasanton, Job No. 940616-Z1

SAMPLE DESCRIPTION: S-1  
Date Taken: 06/16/1994  
Time Taken:  
NET Sample No: 197459

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed
TPH (Gas/BTEXE, Liquid)							
METHOD 5030/M8015	--						06/23/1994
DILUTION FACTOR*	1						06/21/1994
as Gasoline	2,500		50	ug/L	5030		06/21/1994
METHOD 8020 (GC, Liquid)	--						06/21/1994
Benzene	390	FC	0.5	ug/L	8020		06/23/1994
Toluene	9.5		0.5	ug/L	8020		06/21/1994
Ethylbenzene	31		0.5	ug/L	8020		06/23/1994
Xylenes (Total)	7.5		0.5	ug/L	8020		06/21/1994
SURROGATE RESULTS	--						06/21/1994
Bromofluorobenzene (SURR)	113			% Rec.	5030		06/21/1994

FC : Compound quantitated at a 10X dilution factor.

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.



Client Acct: 1821  
Client Name: Blaine Tech Services  
NET Job No: 94.02574

Date: 06/29/1994  
ELAP Certificate: 1386  
Page: 3

Ref: SHELL, 5251 Hopyard Rd., Pleasanton, Job No. 940616-Z1

SAMPLE DESCRIPTION: S-3

Date Taken: 06/16/1994

Time Taken:

NET Sample No: 197460

Parameter	Results	Flags	Reporting			Date	
			Limit	Units	Method	Extracted	Analyzed
TPH (Gas/BTXE,Liquid)							
METHOD 5030/M8015	--						06/22/1994
DILUTION FACTOR*	1						06/21/1994
as Gasoline	1,800		50	ug/L	5030		06/21/1994
METHOD 8020 (GC,Liquid)	--						06/21/1994
Benzene	430	FC	0.5	ug/L	8020		06/22/1994
Toluene	19		0.5	ug/L	8020		06/21/1994
Ethylbenzene	35		0.5	ug/L	8020		06/21/1994
Xylenes (Total)	21		0.5	ug/L	8020		06/21/1994
SURROGATE RESULTS	--						06/21/1994
Bromofluorobenzene (SURR)	201	MI		% Rec.	5030		06/21/1994

FC : Compound quantitated at a 10X dilution factor.

MI : Matrix Interference Suspected

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.





Client Acct: 1821  
Client Name: Blaine Tech Services  
NET Job No: 94.02574

Date: 06/29/1994  
ELAP Certificate: 1386  
Page: 4

Ref: SHELL, 5251 Hopyard Rd., Pleasanton, Job No. 940616-Z1

SAMPLE DESCRIPTION: S-5  
Date Taken: 06/16/1994  
Time Taken:  
NET Sample No: 197461

Parameter	Results	Flags	Reporting		Method	Date	Date
			Limit	Units		Extracted	Analyzed
TPH (Gas/BTEX, Liquid)							
METHOD 5030/M8015	--						06/21/1994
DILUTION FACTOR*	1						06/21/1994
as Gasoline	ND		50	ug/L	5030		06/21/1994
METHOD 8020 (GC, Liquid)	--						06/21/1994
Benzene	0.9	C	0.5	ug/L	8020		06/21/1994
Toluene	ND		0.5	ug/L	8020		06/21/1994
Ethylbenzene	ND		0.5	ug/L	8020		06/21/1994
Xylenes (Total)	ND		0.5	ug/L	8020		06/21/1994
SURROGATE RESULTS	--						06/21/1994
Bromofluorobenzene (SURR)	86			% Rec.	5030		06/21/1994

C : Positive result confirmed by secondary column or GC/MS analysis.

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.



Client Acct: 1821  
Client Name: Blaine Tech Services  
NET Job No: 94.02574

Date: 06/29/1994  
ELAP Certificate: 1386  
Page: 5

Ref: SHELL, 5251 Hopyard Rd., Pleasanton, Job No. 940616-Z1

SAMPLE DESCRIPTION: S-6  
Date Taken: 06/16/1994  
Time Taken:  
NET Sample No: 197462

Parameter	Results	Flags	Reporting			Date	
			Limit	Units	Method	Extracted	Analyzed
TPH (Gas/BTXE,Liquid)							
METHOD 5030/M8015	--						06/21/1994
DILUTION FACTOR*	1						06/21/1994
as Gasoline	ND		50	ug/L	5030		06/21/1994
METHOD 8020 (GC,Liquid)	--						06/21/1994
Benzene	ND		0.5	ug/L	8020		06/21/1994
Toluene	ND		0.5	ug/L	8020		06/21/1994
Ethylbenzene	ND		0.5	ug/L	8020		06/21/1994
Xylenes (Total)	ND		0.5	ug/L	8020		06/21/1994
SURROGATE RESULTS	--						06/21/1994
Bromofluorobenzene (SURR)	87			% Rec.	5030		06/21/1994

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.



Client Acct: 1821  
Client Name: Blaine Tech Services  
NET Job No: 94.02574

Date: 06/29/1994  
ELAP Certificate: 1386  
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Ref: SHELL, 5251 Hopyard Rd., Pleasanton, Job No. 940616-Z1

SAMPLE DESCRIPTION: S-8

Date Taken: 06/16/1994

Time Taken:

NET Sample No: 197463

Parameter	Results	Flags	Reporting		Method	Date	Date
			Limit	Units		Extracted	Analyzed
TPH (Gas/BTEX, Liquid)							
METHOD 5030/M8015	--						06/22/1994
DILUTION FACTOR*	1						06/22/1994
as Gasoline	ND		50	ug/L	5030		06/22/1994
METHOD 8020 (GC, Liquid)	--						06/22/1994
Benzene	ND		0.5	ug/L	8020		06/22/1994
Toluene	ND		0.5	ug/L	8020		06/22/1994
Ethylbenzene	ND		0.5	ug/L	8020		06/22/1994
Xylenes (Total)	ND		0.5	ug/L	8020		06/22/1994
SURROGATE RESULTS	--						06/22/1994
Bromofluorobenzene (SURR)	77			‡ Rec.	5030		06/22/1994

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.



Client Acct: 1821  
Client Name: Blaine Tech Services  
NET Job No: 94.02574

Date: 06/29/1994  
ELAP Certificate: 1386  
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Ref: SHELL, 5251 Hopyard Rd., Pleasanton, Job No. 940616-Z1

SAMPLE DESCRIPTION: EB  
Date Taken: 06/16/1994  
Time Taken:  
NET Sample No: 197464

Parameter	Results	Flags	Reporting		Method	Date	Date
			Limit	Units		Extracted	Analyzed
TPH (Gas/BTEX, Liquid)							
METHOD 5030/M8015	--						06/22/1994
DILUTION FACTOR*	1						06/22/1994
as Gasoline	ND		50	ug/L	5030		06/22/1994
METHOD 8020 (GC, Liquid)	--						06/22/1994
Benzene	ND		0.5	ug/L	8020		06/22/1994
Toluene	ND		0.5	ug/L	8020		06/22/1994
Ethylbenzene	ND		0.5	ug/L	8020		06/22/1994
Xylenes (Total)	ND		0.5	ug/L	8020		06/22/1994
SURROGATE RESULTS	--						06/22/1994
Bromofluorobenzene (SURR)	83			† Rec.	5030		06/22/1994

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.



Client Acct: 1821  
Client Name: Blaine Tech Services  
NET Job No: 94.02574

Date: 06/29/1994  
ELAP Certificate: 1386  
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Ref: SHELL, 5251 Hopyard Rd., Pleasanton, Job No. 940616-21

SAMPLE DESCRIPTION: DUP  
Date Taken: 06/16/1994  
Time Taken:  
NET Sample No: 197465

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed
TPH (Gas/BTXE,Liquid)							
METHOD 5030/M8015	--						06/25/1994
DILUTION FACTOR*	1						06/23/1994
as Gasoline	2,000		50	ug/L	5030		06/23/1994
METHOD 8020 (GC,Liquid)	--						06/23/1994
Benzene	410	FC	0.5	ug/L	8020		06/25/1994
Toluene	7.8		0.5	ug/L	8020		06/23/1994
Ethylbenzene	120	FC	0.5	ug/L	8020		06/25/1994
Xylenes (Total)	20		0.5	ug/L	8020		06/23/1994
SURROGATE RESULTS	--						06/23/1994
Bromofluorobenzene (SURR)	143	MI		% Rec.	5030		06/23/1994

FC : Compound quantitated at a 10X dilution factor.  
MI : Matrix Interference Suspected

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.



Client Acct: 1821  
Client Name: Elaine Tech Services  
NET Job No: 94.02574

Date: 06/29/1994  
ELAP Certificate: 1386  
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Ref: SHELL, 5251 Hopyard Rd., Pleasanton, Job No. 940616-Z1

SAMPLE DESCRIPTION: TB

Date Taken: 06/16/1994

Time Taken:

NET Sample No: 197466

Parameter	Results	Flags	Reporting		Method	Date	Date
			Limit	Units		Extracted	Analyzed
TPH (Gas/BTXE,Liquid)							
METHOD 5030/M8015	--						06/22/1994
DILUTION FACTOR*	1						06/22/1994
as Gasoline	ND		50	ug/L	5030		06/22/1994
METHOD 8020 (GC,Liquid)	--						06/22/1994
Benzene	ND		0.5	ug/L	8020		06/22/1994
Toluene	ND		0.5	ug/L	8020		06/22/1994
Ethylbenzene	ND		0.5	ug/L	8020		06/22/1994
Xylenes (Total)	ND		0.5	ug/L	8020		06/22/1994
SURROGATE RESULTS	--						06/22/1994
Bromofluorobenzene (SURR)	93			% Rec.	5030		06/22/1994

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.



Client Acct: 1821  
Client Name: Blaine Tech Services  
NET Job No: 94.02574

Date: 06/29/1994  
ELAP Certificate: 1386  
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Ref: SHELL, 5251 Hopyard Rd., Pleasanton, Job No. 940616-Z1

## CONTINUING CALIBRATION VERIFICATION STANDARD REPORT

Parameter	CCV	CCV	CCV	Units	Date Analyzed	Analyst Initials
	Standard % Recovery	Standard Amount Found	Standard Amount Expected			
TPH (Gas/BTXE, Liquid)						
as Gasoline	104.0	1.04	1.00	mg/L	06/21/1994	aal
Benzene	99.2	4.96	5.00	ug/L	06/21/1994	aal
Toluene	102.2	5.11	5.00	ug/L	06/21/1994	aal
Ethylbenzene	110.4	5.52	5.00	ug/L	06/21/1994	aal
Xylenes (Total)	110.7	16.6	15.0	ug/L	06/21/1994	aal
Bromofluorobenzene (SURR)	105.0	105	100	% Rec.	06/21/1994	aal
TPH (Gas/BTXE, Liquid)						
as Gasoline	88.0	0.88	1.00	mg/L	06/22/1994	aal
Benzene	112.8	5.64	5.00	ug/L	06/22/1994	aal
Toluene	92.6	4.63	5.00	ug/L	06/22/1994	aal
Ethylbenzene	89.4	4.47	5.00	ug/L	06/22/1994	aal
Xylenes (Total)	89.3	13.4	15.0	ug/L	06/22/1994	aal
Bromofluorobenzene (SURR)	94.0	94	100	% Rec.	06/22/1994	aal
TPH (Gas/BTXE, Liquid)						
as Gasoline	110.0	1.10	1.00	mg/L	06/22/1994	aal
Benzene	90.8	4.54	5.00	ug/L	06/22/1994	aal
Toluene	95.4	4.77	5.00	ug/L	06/22/1994	aal
Ethylbenzene	103.4	5.17	5.00	ug/L	06/22/1994	aal
Xylenes (Total)	101.3	15.2	15.0	ug/L	06/22/1994	aal
Bromofluorobenzene (SURR)	102.0	102	100	% Rec.	06/22/1994	aal
TPH (Gas/BTXE, Liquid)						
as Gasoline	102.0	1.02	1.00	mg/L	06/25/1994	aal
Benzene	89.4	4.47	5.00	ug/L	06/25/1994	aal
Toluene	98.8	4.94	5.00	ug/L	06/25/1994	aal
Ethylbenzene	93.4	4.67	5.00	ug/L	06/25/1994	aal
Xylenes (Total)	102.7	15.4	15.0	ug/L	06/25/1994	aal
Bromofluorobenzene (SURR)	94.0	94	100	% Rec.	06/25/1994	aal

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.



Client Acct: 1821  
Client Name: Blaine Tech Services  
NET Job No: 94.02574

Date: 06/29/1994  
ELAP Certificate: 1386  
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Ref: SHELL, 5251 Hopyard Rd., Pleasanton, Job No. 940616-Z1

## METHOD BLANK REPORT

Parameter	Method			Date Analyzed	Analyst Initials
	Blank Amount Found	Reporting Limit	Units		
TPH (Gas/BTXE, Liquid)					
as Gasoline	ND	0.05	mg/L	06/21/1994	aal
Benzene	ND	0.5	ug/L	06/21/1994	aal
Toluene	ND	0.5	ug/L	06/21/1994	aal
Ethylbenzene	ND	0.5	ug/L	06/21/1994	aal
Xylenes (Total)	ND	0.5	ug/L	06/21/1994	aal
Bromofluorobenzene (SURR)	88		% Rec.	06/21/1994	aal
TPH (Gas/BTXE, Liquid)					
as Gasoline	ND	0.05	mg/L	06/22/1994	aal
Benzene	ND	0.5	ug/L	06/22/1994	aal
Toluene	ND	0.5	ug/L	06/22/1994	aal
Ethylbenzene	ND	0.5	ug/L	06/22/1994	aal
Xylenes (Total)	ND	0.5	ug/L	06/22/1994	aal
Bromofluorobenzene (SURR)	95		% Rec.	06/22/1994	aal
TPH (Gas/BTXE, Liquid)					
as Gasoline	ND	0.05	mg/L	06/22/1994	aal
Benzene	ND	0.5	ug/L	06/22/1994	aal
Toluene	ND	0.5	ug/L	06/22/1994	aal
Ethylbenzene	ND	0.5	ug/L	06/22/1994	aal
Xylenes (Total)	ND	0.5	ug/L	06/22/1994	aal
Bromofluorobenzene (SURR)	90		% Rec.	06/22/1994	aal
TPH (Gas/BTXE, Liquid)					
as Gasoline	ND	0.05	mg/L	06/25/1994	aal
Benzene	ND	0.5	ug/L	06/25/1994	aal
Toluene	ND	0.5	ug/L	06/25/1994	aal
Ethylbenzene	ND	0.5	ug/L	06/25/1994	aal
Xylenes (Total)	ND	0.5	ug/L	06/25/1994	aal
Bromofluorobenzene (SURR)	77		% Rec.	06/25/1994	aal

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.





Client Acct: 1821  
 Client Name: Blaine Tech Services  
 NET Job No: 94.02574

Date: 06/29/1994  
 ELAP Certificate: 1386  
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Ref: SHELL, 5251 Hopyard Rd., Pleasanton, Job No. 940616-21

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE

Parameter	Matrix Spike			Spike Amount	Sample Conc.	Matrix Spike			Units	Date Analyzed	Analyst Initials
	% Rec.	Dup % Rec.	RPD			Conc.	Dup. Conc.				
TPH (Gas/BTXE, Liquid)											
as Gasoline	114.0	110.0	3.6	1.00	ND	1.14	1.10	mg/L	06/21/1994	aal	
Benzene	117.6	114.4	2.8	34.7	ND	40.8	39.7	ug/L	06/21/1994	aal	
Toluene	106.7	106.3	0.4	79.6	ND	84.9	84.6	ug/L	06/21/1994	aal	
TPH (Gas/BTXE, Liquid)											
as Gasoline	87.0	88.0	1.1	1.00	ND	0.87	0.88	mg/L	06/22/1994	aal	
Benzene	97.9	99.2	1.3	38.7	ND	37.9	38.4	ug/L	06/22/1994	aal	
Toluene	97.7	99.0	1.3	97.0	0.9	95.7	96.9	ug/L	06/22/1994	aal	
TPH (Gas/BTXE, Liquid)											
as Gasoline	103.0	106.0	2.9	1.00	ND	1.03	1.06	mg/L	06/22/1994	aal	
Benzene	86.0	94.7	9.6	39.3	ND	33.8	37.2	ug/L	06/22/1994	aal	
Toluene	96.6	99.1	2.6	81.8	ND	79.0	81.1	ug/L	06/22/1994	aal	
TPH (Gas/BTXE, Liquid)											
as Gasoline	104.0	114.0	9.2	1.00	ND	1.04	1.14	mg/L	06/25/1994	aal	
Benzene	109.9	116.9	6.2	33.2	ND	36.5	38.8	ug/L	06/25/1994	aal	
Toluene	98.3	102.0	3.6	81.0	ND	79.6	82.6	ug/L	06/25/1994	aal	

NOTE: Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety.



## KEY TO ABBREVIATIONS and METHOD REFERENCES

- < : Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
- \* : Reporting Limits are a function of the dilution factor for any given sample. Actual reporting limits and results have been multiplied by the listed dilution factor. Do not multiply the reporting limits or reported values by the dilution factor.
- dw : Result expressed as dry weight.
- mean : Average; sum of measurements divided by number of measurements.
- mg/Kg (ppm) : Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
- mg/L : Concentration in units of milligrams of analyte per liter of sample.
- mL/L/hr : Milliliters per liter per hour.
- MPN/100 mL : Most probable number of bacteria per one hundred milliliters of sample.
- N/A : Not applicable.
- NA : Not analyzed.
- ND : Not detected; the analyte concentration is less than the applicable listed reporting limit.
- NTU : Nephelometric turbidity units.
- RPD : Relative percent difference,  $100 \text{ [Value 1 - Value 2] / mean value}$ .
- SNA : Standard not available.
- ug/Kg (ppb) : Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
- ug/L : Concentration in units of micrograms of analyte per liter of sample.
- umhos/cm : Micromhos per centimeter.

### Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, Rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, Rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986., Rev. 1, December 1987.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

COOLER RECEIPT FORM

Project: Shell Pleasanton 940616-21 Log No: 9912  
Cooler received on: 6-18-94 and checked on 6-20-94 by J. Sorenson  
(signature)

- Were custody papers present?.....  YES NO
- Were custody papers properly filled out?.....  YES NO
- Were the custody papers signed?.....  YES NO
- Was sufficient ice used?.....  YES NO 6.2°C
- Did all bottles arrive in good condition (unbroken)?.....  YES NO
- Did bottle labels match COC?.....  YES NO
- Were proper bottles used for analysis indicated?.....  YES NO
- Correct preservatives used?.....  YES NO
- VOA vials checked for headspace bubbles?.....  YES NO

Note which voas (if any) had bubbles:\*

Sample descriptor:	Number of vials:
<u>TB</u>	<u>1 of 2</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

All VOAs with headspace bubbles have been set aside so they will not be used for analysis..... YES NO

List here all other jobs received in the same cooler:

Client Job #	NET log #
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

(coolerrec)

**ATTACHMENT B**

**HISTORICAL GROUND WATER ELEVATION AND ANALYTIC DATA**

Table 1

## SUMMARY OF GROUND WATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS

Former Shell Service Station

5251 Hopyard Road

Pleasanton, California

WIC#204-6138-0907

Well Number	Sampling Date	TOB (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	TPHd (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
S-2	10/16/89	—	—	—	<50	<100	<0.5	<1	<1	<3
	1/5/90	—	—	—	<50	<100	<0.5	<0.5	<0.5	<1
	4/11/90	—	—	—	<50	NA	<0.5	<0.5	<0.5	<1
	7/12/90	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	10/25/90	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	1/25/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	4/16/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	7/24/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	10/18/91	326.59	8.83	317.76	<50	<50	<0.5	<0.5	<0.5	<0.5
	1/23/92	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	4/27/92	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	7/17/92	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	10/16/92	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	1/23/93	326.59	8.10	318.49	<50	140*+	<0.5	<0.5	<0.5	<0.5
	4/28/93	326.59	9.06	317.53	<50	<50	<0.5	<0.5	<0.5	<0.5
9/22/93	326.59	8.91	317.68	NA	NA	NA	NA	NA	NA	
To be sampled annually. Next sampling date 7/94.										
S-3	5/11/89	—	—	—	2600	1400	330	14	220	200
	7/20/89	327.38	9.55	317.83	9700	2200	2300	30	880	160
	10/16/89	—	—	—	3400	2800	700	8.0	360	60
	1/5/90	—	—	—	860	1600	140	1.6	78	2.0
	4/11/90	—	—	—	1000	NA	210	<2	150	13

Table 1

## SUMMARY OF GROUND WATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS

Former Shell Service Station

5251 Hopyard Road

Pleasanton, California

WIC#204-6138-0907

Well Number	Sampling Date	TOB (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	TPHd (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
S-3	7/12/90	—	—	—	2800	2000	490	8.5	210	81
	10/25/90	—	—	—	1200	860	120	<2.5	82	5.1
	1/25/91	—	—	—	870	330	230	<2.5	130	<2.5
	4/16/91	—	—	—	190	140*	12	0.8	6.2	1.5
	7/24/91	—	—	—	1700	1200*	450	4.4	150	2.9
	10/18/91	327.38	9.64	317.74	1900	500	370	3.1	120	220
	1/23/92	—	—	—	2000	650*	580	3.0	200	<0.5
	4/27/92	—	—	—	1100	230*	150	<3	76	14
	7/17/92	—	—	—	810	58	200	<2.5	57	3.8
	10/16/92	—	—	—	440	190@	79	1.8	18	4.6
	1/23/93	327.38	8.81	318.57	670	170**	79	1.5	46	15
	4/28/93	327.38	9.87	317.51	2000	<50	300	3.4	210	38
	9/22/93	327.38	9.65	317.73	4800	670*	2000	34	150	51
	S-4	5/11/89	—	—	—	<50	<100	<0.5	<1	<1
7/20/89		327.38	8.03	319.35	<50	<100	<0.5	<1	<1	<3
10/16/89		—	—	—	<50	<100	<0.5	<1	<1	<3
1/5/90		—	—	—	<50	<100	<0.5	<0.5	<0.5	<1
4/11/90		—	—	—	<50	NA	<0.5	<0.5	<0.5	<1
7/12/90		—	—	—	<50	<50	<0.5	1.7	<0.5	2.1
10/25/90		—	—	—	<50	<50	<0.5	<0.5	<0.5	0.6
1/25/91		—	—	—	<50	<50	<0.5	1.5	<0.5	2.8
4/16/91		—	—	—	<50	<50	0.7	<0.5	<0.5	<0.5

Table 1

## SUMMARY OF GROUND WATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS

Former Shell Service Station  
 5251 Hopyard Road  
 Pleasanton, California  
 WIC#204-6138-0907

Well Number	Sampling Date	TOB (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	TPHd (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
S-4	7/24/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	10/18/91	327.38	8.82	318.56	<50	<50	<0.5	<0.5	<0.5	<0.5
	1/23/92	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	4/27/92	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	7/17/92	—	—	—	<500	74	<0.5	<0.5	<0.5	<0.5
	10/16/92	—	—	—	<500	<50	<0.5	<0.5	<0.5	<0.5
	1/23/93	327.38	8.32	319.06	<500	94*+	<0.5	<0.5	<0.5	<0.5
	4/28/93	327.38	9.76	317.62	<50	<50	<0.5	<0.5	<0.5	<0.5
	9/22/93	327.38	9.30	318.08	NA	NA	NA	NA	NA	NA
	To be sampled annually. Next sampling date 7/94.									
S-5	5/11/89	—	—	—	50	<100	<0.5	<1	1.0	3.0
	7/20/89	327.76	9.62	318.14	<50	<100	10	<1	<1	<3
	10/16/89	—	—	—	<50	<100	<0.5	<1	<1	<3
	1/5/90	—	—	—	<50	<100	<0.5	<0.5	<0.5	<1
	4/11/90	—	—	—	<50	NA	0.5	3.4	0.8	4.0
	7/12/90	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	10/25/90	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	1/25/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	0.7
	4/16/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	0.8
	7/24/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
10/18/91	327.76	10.00	317.76	120^	<50	43	<0.5	1.0	0.7	
1/23/92	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5	

Table 1

## SUMMARY OF GROUND WATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS

Former Shell Service Station

5251 Hopyard Road

Pleasanton, California

WIC#204-6138-0907

Well Number	Sampling Date	TOB (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	TPHd (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
S-5	4/27/92	—	—	—	50	<50	<0.5	<0.5	<0.5	0.6
	7/17/92	—	—	—	<50	70	<0.5	<0.5	<0.5	<0.5
	10/16/92	—	—	—	230	57	13	<0.5	4.9	4.3
	1/23/93	327.76	8.88	318.88	<50	150*+	<0.5	<0.5	<0.5	<0.5
	4/30/93	327.76	10.20	317.56	<50	<50	<0.5	<0.5	<0.5	<0.5
	9/22/93	327.76	9.92	317.84	<50	<50	<0.5	<0.5	<0.5	<0.5
	S-6	11/15/89	—	—	—	<50	<100	<0.5	<0.5	<0.5
1/5/90		—	—	—	<50	<100	<0.5	0.5	<0.5	<1
4/11/90		—	—	—	<50	NA	<0.5	<0.5	<0.5	<1
7/12/90		—	—	—	<50	<50	<0.5	0.5	<0.5	0.6
10/25/90		—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
1/25/91		—	—	—	<50	<50	<0.5	1.7	<0.5	2.8
4/16/91		—	—	—	<50	<50	<0.5	<0.5	<0.5	0.6
7/24/91		—	—	—	<50	<50	<0.5	<0.5	<0.5	0.5
10/18/91		326.56	8.84	317.72	<50	<50	<0.5	<0.5	<0.5	0.5
1/23/92		—	—	—	<50	<50	<0.5	<0.5	<0.5	0.5
4/27/92		—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
7/17/92		—	—	—	400	130	<0.5	<0.5	<0.5	<0.5
10/16/92		—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
1/23/93		326.56	7.82	318.74	<50	230*+	<0.5	<0.5	<0.5	<0.5
4/28/93		326.56	9.00	317.56	<50	<50	<0.5	<0.5	<0.5	<0.5
9/22/93	326.56	8.61	317.95	<50	<50	<0.5	<0.5	<0.5	<0.5	



Table 1

## SUMMARY OF GROUND WATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS

Former Shell Service Station

5251 Hopyard Road

Pleasanton, California

WIC#204-6138-0907

Well Number	Sampling Date	TOB (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	TPHd (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
S-7	1/15/89	—	—	—	<50	<100	<0.5	<0.5	<0.5	<1
	11/15/89	—	—	—	<50	<100	<0.5	<0.5	<0.5	<1
	1/5/90	—	—	—	<50	NA	<0.5	<0.5	<0.5	<1
	4/11/90	—	—	—	<50	NA	<0.5	<0.5	<0.5	0.7
	7/12/90	—	—	—	<50	<50	<0.5	0.6	<0.5	1.0
	10/25/90	—	—	—	<50	<50	<0.5	0.5	<0.5	<0.5
	1/25/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	4/16/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	7/24/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	10/18/91	326.49	8.92	317.57	<50	140&	<0.5	<0.5	<0.5	<0.5
	1/23/92	—	—	—	<50	140&	<0.5	<0.5	<0.5	<0.5
	4/27/92	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	7/17/92	—	—	—	<50	<50	<0.5	1.8	0.6	4.1
	10/16/92	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	1/23/93	326.49	8.06	318.43	<50	110*+	<0.5	<0.5	<0.5	<0.5
4/28/93	326.49	8.94	317.55	<50	<50	<0.5	<0.5	<0.5	<0.5	
9/22/93	326.49	8.57	317.92	NA	NA	NA	NA	NA	NA	
To be sampled annually. Next sampling date 7/94.										
S-8	11/15/89	—	—	—	<50	<100	<0.5	<0.5	<0.5	<1
	1/5/90	—	—	—	<50	<100	<0.5	<0.5	<0.5	<1
	4/11/90	—	—	—	<50	NA	<0.5	<0.5	<0.5	<1
	7/12/90	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5

Table 1

## SUMMARY OF GROUND WATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS

Former Shell Service Station

5251 Hopyard Road

Pleasanton, California

WIC#204-6138-0907

Well Number	Sampling Date	TOB (feet)	DTW (feet)	GWE (feet)	TPHg (ppb)	TPHd (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
S-8	10/25/90	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	1/25/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	4/16/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	7/24/91	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	10/18/91	325.32	7.62	317.70	<50	360&	<0.5	<0.5	<0.5	<0.5
	1/23/92	—	—	—	<50	90	<0.5	<0.5	<0.5	<0.5
	4/27/92	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	7/21/92	—	—	—	53	<50	<0.5	1.0	<0.5	1.8
	10/16/92	—	—	—	<50	<50	<0.5	<0.5	<0.5	<0.5
	1/23/93	325.32	7.00	318.32	<50	<50	<0.5	<0.5	<0.5	<0.5
	4/28/93	325.32	7.77	317.55	<50	<50	<0.5	<0.5	<0.5	<0.5
	9/22/93	325.32	7.67	317.65	<50	160	<0.5	<0.5	<0.5	<0.5
V-1	12/14/88	—	—	—	770	4500	6.4	21	9.0	87
V-2	12/14/88	—	—	—	160	1000	3.8	<1	<1	4.0
V-3	12/14/88	—	—	—	140	800	9.0	<1	<1	3.0

Notes :

- TOB Top of well casing referenced to mean sea level
- DTW : Depth to water
- GWE : Ground water elevation
- TPHg : Total low-to-medium boiling point petroleum hydrocarbons by EPA Method 8015 (DHS-modified)
- TPHd Total high boiling point hydrocarbons by EPA method 8015
- BTEX : Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020
- NA: Not analyzed
- # Ethylbenzene and xylenes were combined in January 1988, well S-1.
- \* Compounds detected as diesel appear to be the less volatile constituents of gasoline.
- \*\* Concentration reported as diesel includes a heavier petroleum product.
- ^ Compounds detected within the chromatographic range of gasoline but not characteristic of the standard gasoline pattern.
- & Compounds detected within the chromatographic range of diesel but not characteristic of the standard diesel pattern.
- + The chromatographic pattern of the purgeable hydrocarbons found in the sample is similar to the pattern of weathered gasoline.
- \*+ The concentration reported as diesel primarily due to the presence of a heavier petroleum product.
- @ The concentration reported as diesel primarily due to the presence of a lighter petroleum product.

ATTACHMENT C  
SAMPLING FREQUENCY MODIFICATION CRITERIA

## SAMPLING FREQUENCY CRITERIA

Weiss Associates (WA) has developed a technical approach for determining appropriate ground water monitoring well sampling frequencies for service station monitoring programs. Ground water monitoring wells are typically sampled quarterly at service stations to monitor the concentration and extent of hydrocarbons and/or volatile organic compounds (VOCs) in ground water. This satisfies California Regional Water Quality Control Board (RWQCB) ground water monitoring guidelines which state: "Quarterly (ground water) monitoring is the maximum sampling interval typically allowed when ground water contamination is present unless other arrangements are made with Regional (Water Quality Control) Board staff"<sup>1</sup>. San Francisco Bay RWQCB personnel have indicated that the RWQCB will allow well sampling frequency reductions on a site specific basis if the frequency reductions are justified by site conditions. Presented below are generalized criteria we have developed for determining the appropriate well sampling frequencies based on specific site conditions.

### CRITERIA FOR REDUCING SAMPLING FREQUENCY

Sampling frequency modifications may be modified either uniformly across a site, based on how site-specific data satisfies our site criteria, or by each individual well, based on how data from each well satisfies our well criteria. The criteria are presented below.

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<sup>1</sup> North Coast, San Francisco Bay, Central Valley Regional Water Quality Control Boards, June 2, 1988 (revised May 18, 1989), "Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks; pg. 12

## Site Criteria

The following technical site criteria are assessed to determine if site-wide sampling frequency modifications are appropriate:

- Reliability of previous ground water analytic data from all site wells;
- Spatial definition of the contaminant plume and the extent to which natural or engineered processes have controlled contaminant migration; and
- The magnitude of contaminant concentrations in ground water from all the site wells.

Each of these factors is discussed below.

### Reliability of Ground Water Analytic Data

The reproducibility of ground water analytic data is highly sensitive to geologic conditions, ground water elevations, field sampling procedures and laboratory analytic procedures. Of these controlling factors, ground water fluctuations usually have the greatest impact on data reproducibility. Since ground water elevations at most sites fluctuate during the course of a year, ground water should be monitored for at least one year to assess the impact of ground water fluctuations on data reproducibility. RWQCB guidelines also stipulate sampling all monitoring wells at least quarterly for one year when hydrocarbons are detected in the well. Therefore, WA recommends reducing the sampling frequency only for wells which:

- Have been sampled at least four times over a period of one year, and
- Have consistent historical analytic results allowing a reliable assessment of the representative hydrocarbon concentrations in the ground water.

If the variability of the analytic data prevents a reliable assessment of concentrations, then we recommend sampling the well(s) quarterly until a reliable assessment can be made.

## Plume Definition and Migration Control

The extent of contaminants in the subsurface must be assessed and migration control of these contaminants must be attained before site-wide sampling frequency modifications can be justified. A number of natural and engineered phenomena may control the migration of contaminants in the subsurface:

- Soils with low permeabilities;
- Natural or enhanced contaminant biodegradation; and
- Remedial measures such as ground water extraction and subsurface containment walls.

If the plume is sufficiently assessed and controlled, we recommend annual sampling for all site wells, preferably in the winter or spring months when water levels are typically high and therefore dissolved contaminant concentrations may be at their maximum.

## Overall Dissolved Contaminant Concentrations

If dissolved contaminant concentrations for all site wells have consistently been near or below California Department of Toxic Substances Control (DTSC) maximum contaminant levels (MCLs) for drinking water, then there probably is no significant risk to ground water quality. Therefore, we recommend annual sampling in the winter or spring for all site wells until any detectable contaminants biodegrade to concentrations acceptable for regulatory case closure.

## Well Criteria

The generalized criteria we have developed for determining the sampling frequency for a given well include:

- The reliability of the ground water analytic data;
- The trend of the dissolved contaminant concentrations in samples from the well; and
- The location of the well in relation to the contaminant source.

These criteria are discussed below, except for the reliability of the ground water analytic data, which was discussed previously.

### Concentration Trends

Sampling frequency should be reduced only for wells showing stable or decreasing concentration trends. Wells showing increasing concentration trends should be sampled quarterly to monitor the trends and determine whether the hydrocarbon concentration in a particular well is approaching a threshold, such as the saturation concentration, DTSC MCL or the recommended action level.

### Well Location

For most sites, four to ten ground water monitoring wells are typically required to fully define the extent of contaminants in ground water. These wells generally fall into one of four classifications relative to the contaminant source:

- 1) Clean upgradient and crossgradient wells;



- 2) Source-area wells with high contaminant concentrations;
- 3) Intermediate wells with low to high contaminant concentrations located between the source area wells and clean crossgradient and downgradient wells, and
- 4) Clean downgradient wells.

WA's recommended sampling frequency for each of these classifications is as follows:

- 1) If no hydrocarbons are detected in the upgradient and crossgradient wells, and if no offsite sources are suspected upgradient or crossgradient of the site, WA recommends sampling these wells annually.
- 2) Source area wells are used to monitor concentrations from source area releases and determine the effectiveness of natural biodegradation and/or site remediation. To ensure that increasing source area concentration trends are detected, WA recommends sampling these wells semiannually.
- 3) Intermediate wells are used to track dissolved hydrocarbon concentrations and the rates of natural biodegradation or the effectiveness of site remediation. However, because the number of intermediate wells and their proximity to other wells may determine the usefulness of data from these wells, WA will recommend sampling frequencies for these wells on a case by case basis.
- 4) Since clean downgradient wells define the "leading edge" of dissolved hydrocarbons in ground water and are used to determine hydrocarbon breakthrough, WA recommends sampling these wells quarterly. If a downgradient well is not clean, we will assess the appropriate sampling frequency on a case by case basis.

#### Other Considerations

Several other factors may influence our sampling frequency recommendations:

- Wells located near each other often produce redundant data and therefore we may recommend staggering samplings among these wells or ceasing sampling from some wells altogether.

- Large fluctuations in ground water depths or an inconsistent ground water flow gradient or direction may not allow us to confidently predict contaminant concentration trends. Therefore, quarterly sampling may be necessary.
- Upgradient and/or crossgradient wells may contain detectable contaminant concentrations. These wells should be sampled semiannually to assess if an offsite source is contributing contaminants to the site.

A decision flow chart graphically presenting the recommended sampling frequency based on these criteria is included. Although there may be wells that do not fall into the location and concentration classifications listed in the flow chart, the generalized criteria may be used to evaluate the appropriate sampling frequency on a case by case basis.

## SUMMARY

In summary, WA recommends site-wide sampling modifications for sites with reliable ground water analytic data from all ground water monitoring wells and that have:

- Fully defined plumes and contaminant migration control; or
- Contaminant concentrations near or below DTSC MCLs in all site wells.

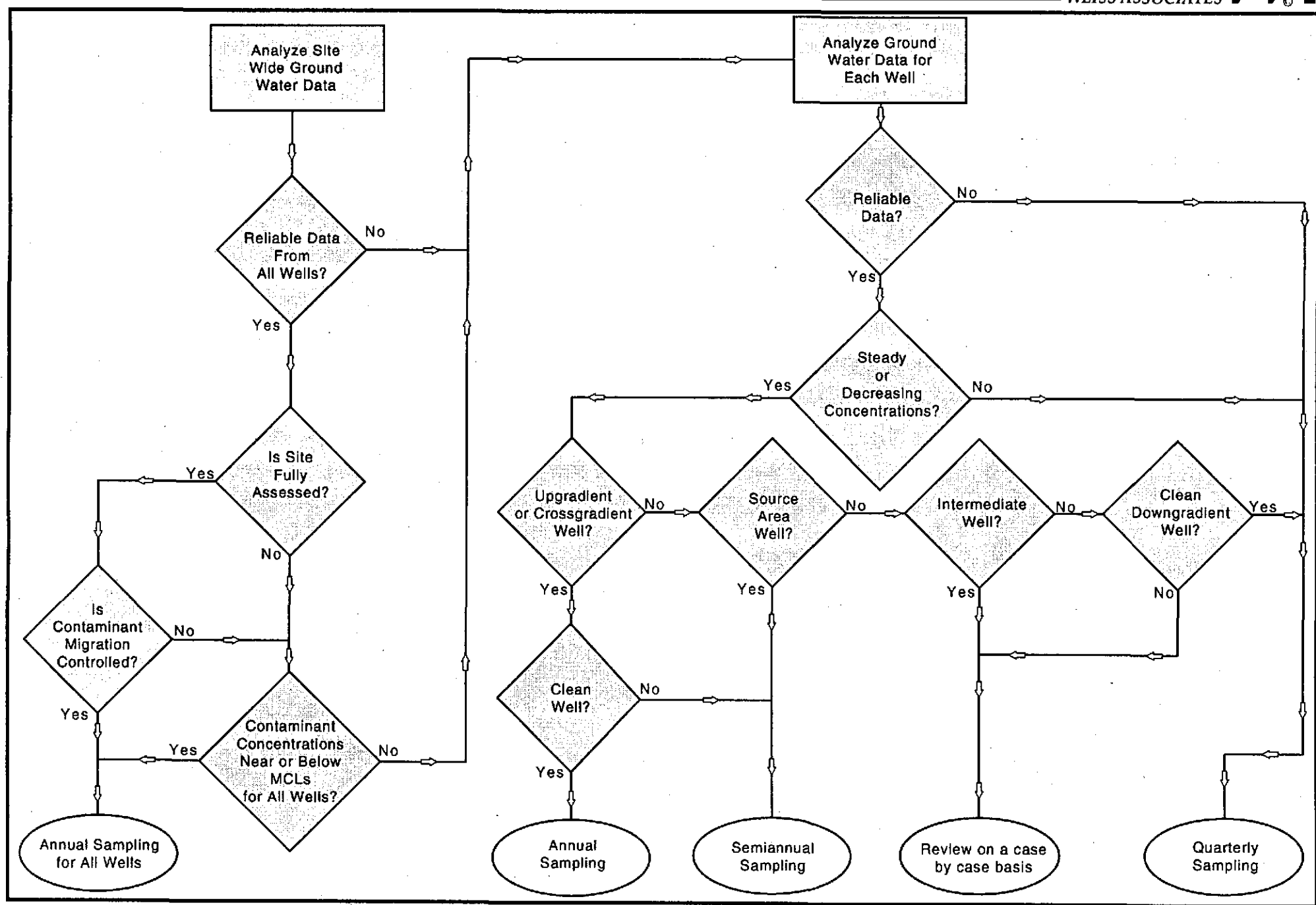
Sampling frequency modifications are appropriate for an individual site well if:

- Ground water analytic data from the well is reliable;
- Data from the well shows that contaminant concentrations in ground water from the well are stable and decreasing.

The sampling frequency for individual wells should be modified based on the well location relative to the contaminant source, as follows:

- Annually for clean upgradient and crossgradient wells,

- Semiannually for upgradient and crossgradient wells containing hydrocarbons or other contaminants from an offsite, upgradient source,
- Semiannually for high concentration source-area wells,
- On a case by case basis for intermediate wells, and
- Quarterly for clean downgradient wells.



Ground Water Sampling Frequency Determination Chart