

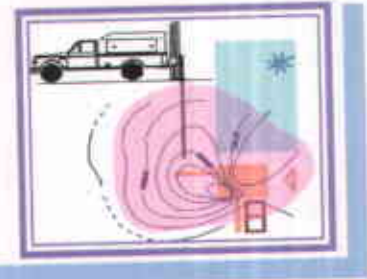
Franklin J. Goldman

Environmental and Hydrogeological Consulting

PO Box 725, Sebastopol, CA 95473

Phone: (707) 235-9979

fjgoldman@sbcglobal.net



February 27, 2004

R0382

Barney M. Chan
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-9335

Telephone: (510) 567-6765
FAX: (510) 337-9335

Subject: Groundwater Monitoring of Hydrocarbons related to the Former Underground Storage Tanks at the FORMER BILL CHUN SERVICE STATION @ 2301 SANTA CLARA AVENUE, ALAMEDA, CA 94501

Dear Barney:

This report summarizes the groundwater level measurements and laboratory results of analyses performed for gasoline constituents in groundwater obtained from twelve (12) groundwater monitoring and three (3) groundwater extraction wells.

Concentrations of TPHg and benzene identified in groundwater have increased, most likely due to seasonal groundwater elevation fluctuations. The overall trend, however, has reflected an overall decrease in gasoline related compounds in the groundwater monitoring wells since September 2000. No free product was identified.

If you have any questions, please call me.

Sincerely,

Franklin J. Goldman
Registered Geologist No. 5557
Certified Hydrogeologist No. 466



Alameda County
MAR 10 2004
Environmental Health

GROUNDWATER FLOW DIRECTION

On December 24, 2003, a Slope Indicator water level meter was used to measure the depth to groundwater in the groundwater extraction wells prior to well development and sampling. The measurements were read to the nearest 100th of an inch from the top of casing. The survey performed for the three previous extraction wells was revised on February 04, 2004 to reflect a benchmark reference relative to mean sea level. The three new extraction wells were incorporated into the new survey plat (See Appendix A for Well Survey).

Groundwater was encountered at depths of approximately 8 feet bgs in the vicinity of the former tank pit during a low water table elevation period. The predominant groundwater gradient direction is to the south at 0.004 feet/foot (See Figure 1 for Gradient Map) and (Table 1 for Depth to Water Table Measurements). Water levels were measured with an electronic water level sounder prior to sampling. A Slope Indicator water level meter was used to measure the depth to groundwater prior to purging and sampling. The measurements were read to the nearest 100th of an inch. The groundwater gradient was determined by comparing water levels with elevations provided by a certified land survey.

WELL PURGING AND DEVELOPMENT

Depth to groundwater was measured prior to purging to use as a reference elevation. Purging of the wells was performed by the use of 1 3/4 inch diameter steel disposable check valve bailors. Each well was sampled after well development which entailed the removal of approximately three (3) or more borehole volumes from each well, allowing the water level to recover to at least 80% of the original, static water level. Temperature, electrical conductivity, and pH was monitored during the bailing process, so that the three parameters demonstrated an error difference of within 10% from one another, over three consecutive readings wells (See Appendix B for Sampling Event Sheets). The recorded data was used to verify that a sufficient volume of groundwater had been removed from the each well casing so that anomalies caused by remnant well casing storage would not preclude us from obtaining a groundwater sample which would be more representative of the aquifer contaminant distribution as a whole.

GROUNDWATER SAMPLING FROM WELLS

Water samples were collected by lowering a plastic disposable bailer down the center of the well casing. Water samples were contained in 40-milliliter VOA vials for TPH-g, MTBE, and BTEX analyses. EPA Method 8260b for 5 oxygenates and two lead scavengers was used to confirm the presence of MTBE ^{and} other gasoline constituents. The samples were labeled and stored on ice until delivered, under chain-of-custody procedures, to American Analytics, Inc. of Chatsworth, California, a State-certified analytical laboratory.

LABORATORY RESULTS OF HYDROCARBONS IN GROUNDWATER

TPHg and BTEX concentrations indicate decreases in all groundwater monitoring wells (See Appendix C for Laboratory Data Sheets) and (Table 2 for Lab Results). The plumes of benzene and TPHg in groundwater still appear to be centered in the general vicinity of the former USTs on site (See Figures 2 and 3 for TPHg and benzene concentration maps). Concentrations of TPHg and benzene identified in SV-

1 are likely anomalous as there was not enough water in the well to properly purge prior to sampling.

FIELD CLEANUP

Well purge water was placed in properly labeled 55 gallon drums left on-site pending laboratory analysis to determine a legal point of disposal.

CONCLUSIONS

Dissolved benzene may still be migrating to the south in the direction of the predominant groundwater gradient direction. Considering, the significant decreases in concentrations over the past three years, however, the plume may be degrading at a rate greater than its migration to the east.

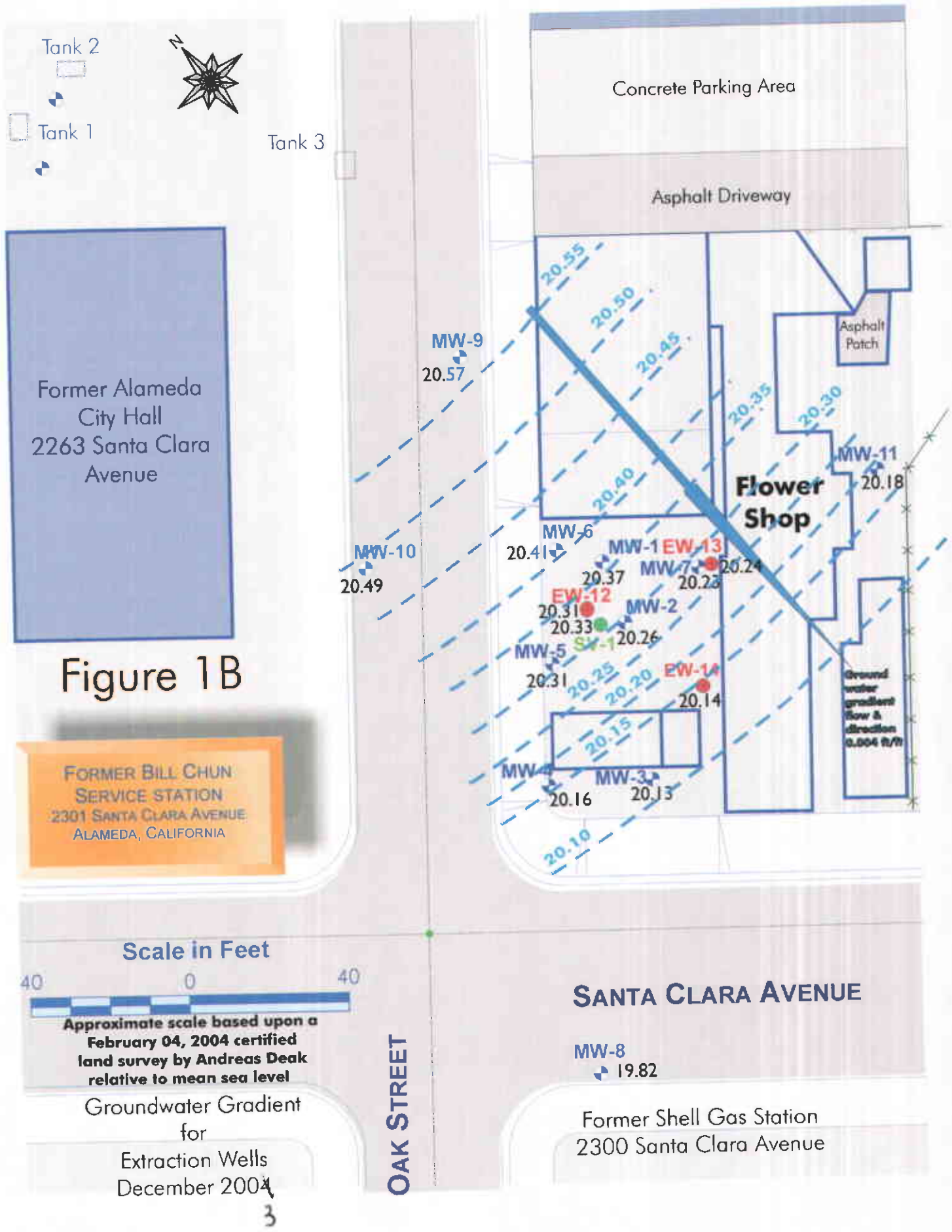
RECOMMENDATIONS

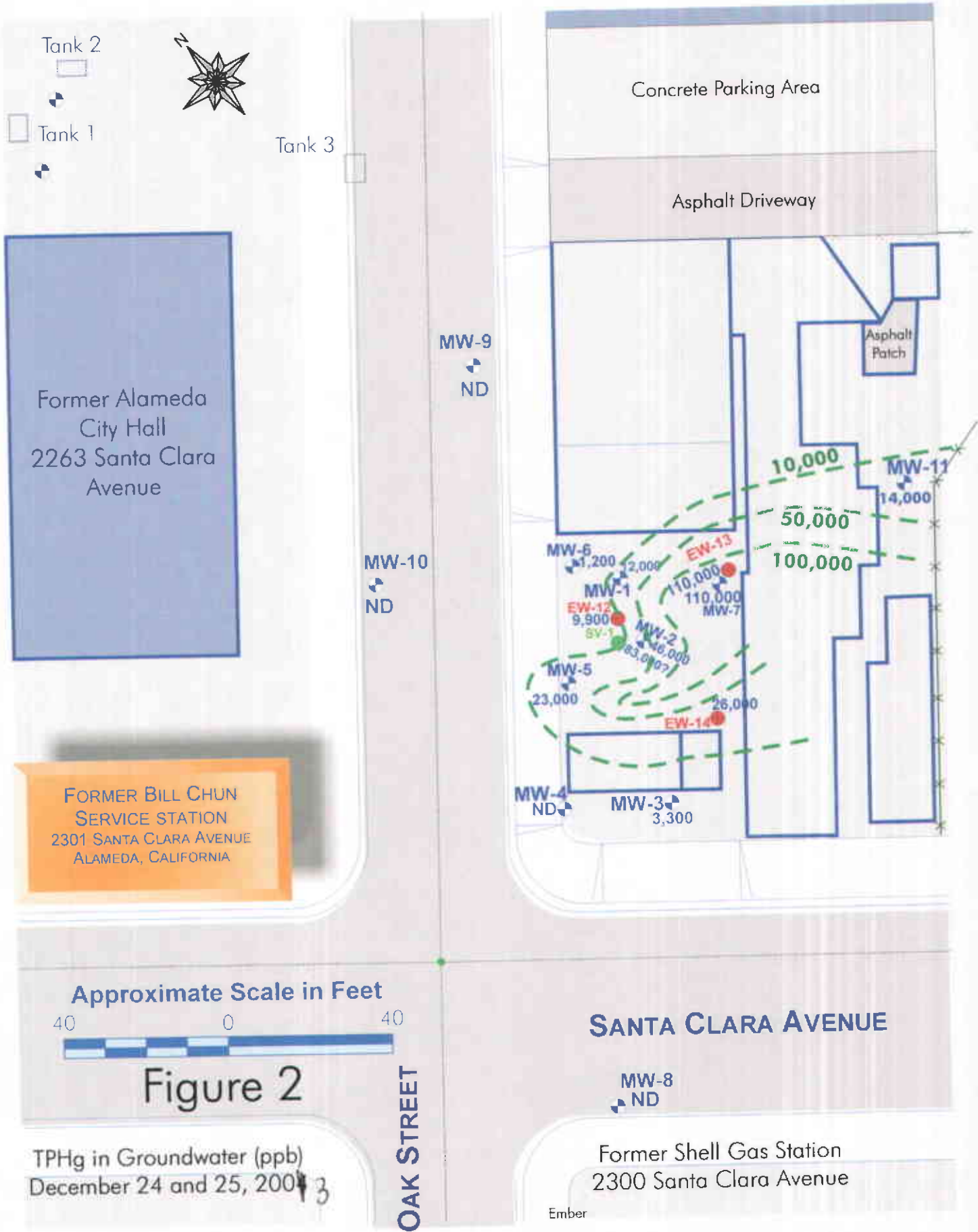
Perform an additional round of groundwater sampling and exclude Well SV-1 for sampling. Abandon well SV-1.

LIMITATIONS

This report has been prepared in accordance with generally accepted environmental, geological and engineering practices. No warranty, either expressed or implied, is made as to the professional advice presented herein. The analyses, conclusions and recommendations contained in this report are based upon site conditions as they existed at the time of the investigation and they are subject to change.

The conclusions presented in this report are professional opinions based solely upon visual observations of the site and vicinity, and interpretation of available information as described in this report. Franklin J. Goldman, recognizes that the limited scope of services performed in execution of this investigation may not be appropriate to satisfy the needs, or requirements of other state agencies, or of other users. Any use or reuse of this document or its findings, conclusions or recommendations presented herein, is done so at the sole risk of the said user.





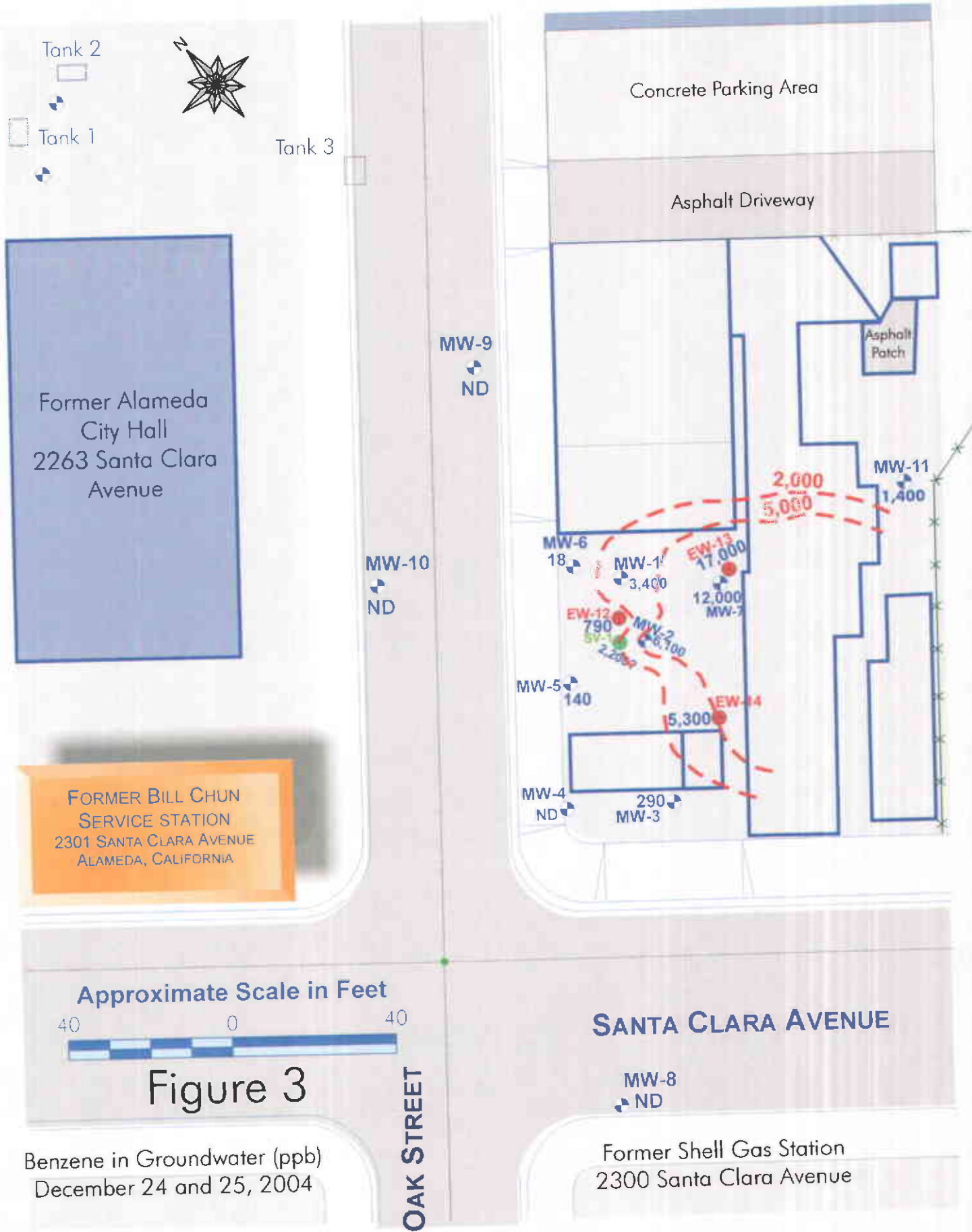


Figure 3

Benzene in Groundwater (ppb)
 December 24 and 25, 2004

TABLE 1
Depth to Groundwater Measurements
December 24 and 25, 2003

Well No.	Depth to Groundwater from TOC (feet bgs)	TOC Elevation (feet) MSN	Water Table Elevation (feet)
MW-1	8.17	28.49	20.37
MW-2	8.21	28.47	20.26
MW-3	8.65	28.78	20.13
MW-4	8.37	28.53	20.16
MW-5	8.02	28.33	20.31
MW-6	7.95	28.36	20.41
MW-7	8.21	28.44	20.23
MW-8	8.35	28.17	19.82
MW-9	6.96	27.45	20.49
MW-10	6.75	27.32	20.57
MW-11	8.38	28.56	20.18
SV-1	8.09	28.42	20.33
EW-12	7.94	28.25	20.31
EW-13	8.40	28.64	20.24
EW-14	9.07	29.21	20.14

TABLE 2
Representative Analytical for Gasoline in Groundwater (ppb)
Chun

Well No	TPHg	Benzene
MW-1 (09-25-04)	12,000	3,400
(09-20-03)	19,000	4,900
(07-04-02)	43,000	7,200
(09-17-00)	65,000	15,000
MW-2 (09-25-04)	46,000	6,100
(09-21-03)	27,000	2,400
(07-04-02)	41,000	5,600
(09-17-00)	140,000	21,000
MW-3 (09-25-04)	3,300	290
(09-21-03)	2,700	320
(07-04-02)	10,000	2,300
(09-17-00)	9,300	3,000
MW-4 (12-25-03)	ND	ND
(09-20-03)	ND	ND
(07-04-02)	ND	ND
(09-17-00)	ND	ND
MW-5 (12-25-03)	2,300	140
(09-21-03)	8,700	ND
(07-04-02)	16,000	89
(09-17-00)	44,000	490
MW-6 (12-25-03)	1,200	18
(09-20-03)	500	15
(07-04-02)	3,900	29
(09-17-00)	10,000	110
MW-7 (12-25-03)	110,000	12,000
(09-21-03)	110,000	4,200
(07-04-02)	140,000	15,000

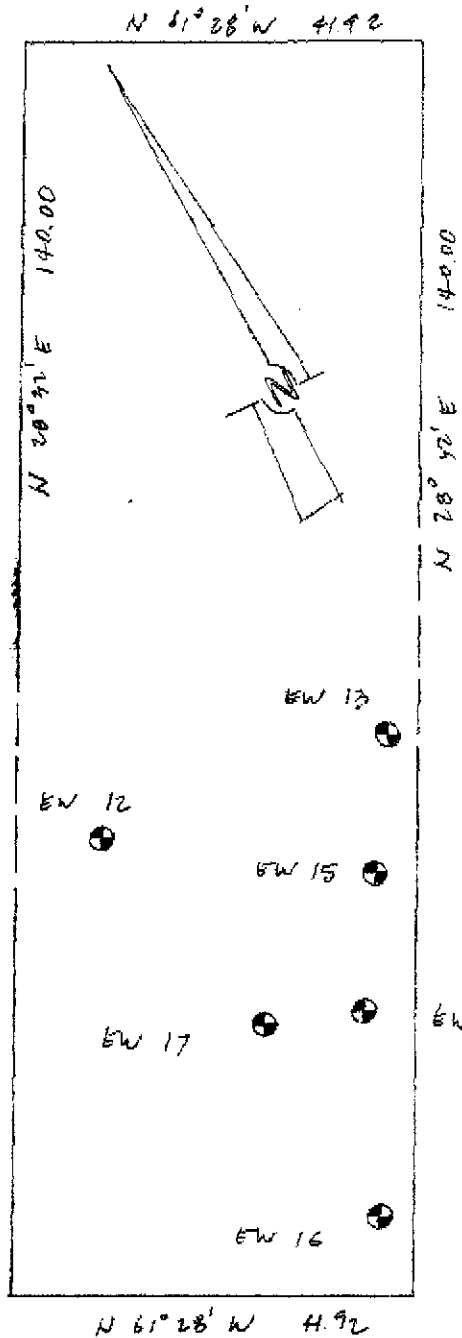
	(09-17-00)	220,000	32,000
MW-8	(12-25-03)	ND	ND
	(09-20-03)	ND	ND
	(07-03-02)	ND	1.1
	(09-17-00)	ND	1.4
MW-9	(12-25-03)	ND	ND
	(09-20-03)	ND	ND
	(07-03-02)	ND	ND
	(09-17-00)	ND	ND
MW-10	(12-25-03)	ND	ND
	(09-20-03)	ND	ND
	(07-03-02)	ND	ND
	(09-17-00)	ND	ND
MW-11	(12-25-03)	14,000	1,400
	(09-22-03)	46,000	1,700
	(10-24-02)	59,000	5,140
SV-1	(12-25-03)	83,000	2,200
	(09-21-03)	89,000	2,300
	(07-04-02)	210,000	7,900
	(09-17-00)	560,000	10,000
EW-12	(12-25-03)	9,900	790
	(09-21-03)	19,000	590
	(10-31-02)	5,840	75.7
EW-13	(12-25-03)	110,000	17,000
	(09-21-03)	71,000	10,000
	(10-31-02)	109,200	9,120
EW-14	(12-25-03)	26,000	5,300
	(09-22-03)	68,000	4,100
	(10-31-02)	101,880	7,360

Appendix A
Well Survey

AMENDED ELEVATIONS

NO.	U.S.C.S. X	U.S.C.S. Y	CASING	CASING
EW 13	465708.13	1496520.86	25.23	28.64
EW 14	465682.48	1496503.76	25.80	29.21
EW 15	465695.44	1496511.44	25.30	28.71
EW 16	465661.82	1496491.76	25.61	29.02
EW 17	465686.30	1496493.52	25.54	28.95
EW 12	465712.49	1496489.17	24.84	28.25
		BM	ALAMEDA	MEAN SEA LVL.

D A K STREET



SANTA CLARA AV

MONITORING WELLS, 2301 SANTA CLARA AVENUE ALAMEDA	DATE 2-9-2004
	SCALE 1" = 20'
CLIENT: MR WAYNE CHUN	SURVEY DEAK
	PLAT DEAK
ANDREAS DEAK LICENSED LAND SURVEYOR 2116 BUENA VISTA AVENUE ALAMEDA CA 94501 PHONE: 865-4289	JOB NO.

TABLE 1
Depth to Groundwater Measurements
September 20, 2003

Well No	Depth to Groundwater from TOC (feet bgs)	TOC Elevation (feet) <i>MEAN SEA LEVEL</i>	Water Table Elevation (feet)
MW-1	9.38	28.49	19.11
MW-2	9.33	28.47	19.14
MW-3	9.56	28.78	19.22
MW-4	9.24	28.53	19.29
MW-5	9.13	28.33	19.20
MW-6	9.22	28.36	19.14
MW-7	9.38	28.44	19.06
MW-8	8.76	28.17	19.41
MW-9	8.25	27.45	19.20
MW-10	8.04	27.32	19.28
MW-11	9.61	28.56	18.95
SV-1	9.27	28.42	19.15
		<i>ALAMEDA CITY DADUM</i>	
EW-12	9.12	24.84	15.72
EW-13	9.59	25.22	15.63
EW-14	10.09	25.80	15.71

ALAMEDA
 CITY
 DADUM

25.08

25.06

25.37

25.12

24.92

24.95

25.03

24.76

24.04

23.91

25.15

25.01

Alameda County
MAR 10 2004
Environmental Health

**Appendix B
Sampling Event Sheets**

PROJECT: Chun EVENT: _____ SAMPLER: FG DATE: Dec 24, 2003

WELL/HYDROLOGIC STATISTICS MW-4

DTW: 8.37

Action: _____ Time: _____ Pump Rate: _____ WL (flow yield): _____

Stop: _____
Sampled: _____
(Final MW): _____

Purge Calculator:
gal/ft. _____ ft. _____ gals. X 3 = _____ gals.
SWL to BOP or _____ one _____ purge volume-
packer to BOP _____ volume _____ 3 casings
Head Purge Calculation (AMT Only)
gal/ft. _____ ft. _____ gals.
packer to SWL _____

Equipment Used/Sampling method/Description of Event:
Electronic water level indicator, weighted plastic disposable bailer, Hydac kit

Actual Gallons Purged: _____
Actual Volumes Purged: _____
Well Yield: (See Below)

COC #: _____
Sample I.D. _____ Analysis _____ Lab _____

Additional Comments: _____

Gallons purged	TEMP °C/F (Circle One)	EC (µs/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 1.5	72.1	952	7.2			12:10 pm
2. 1.5	71.9	951	7.2			12:25
3. 1.5	71.9	951	7.1			12:55
4.						
5.						

*Take measurement of approximately each casing volume purged
 III - Minimal W.L. drop
 MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.
 IV - able to purge 3 volumes by returning later or next day.
 V - Minimal recharge unable to purge 3 volumes.

PROJECT: Chun EVENT: _____ SAMPLER: FG DATE: Dec 24, 2003

WELL/HYDROLOGIC STATISTICS MW-5

DTW: 8.02

Action: _____ Time: _____ Pump Rate: _____ WL (flow yield): _____

Stop: _____
Sampled: _____
(Final MW): _____

Purge Calculator:
gal/ft. _____ ft. _____ gals. X 3 = _____ gals.
SWL to BOP or _____ one _____ purge volume-
packer to BOP _____ volume _____ 3 casings
Head Purge Calculation (AMT Only)
gal/ft. _____ ft. _____ gals.
packer to SWL _____

Equipment Used/Sampling method/Description of Event:
Electronic water level indicator, weighted plastic disposable bailer, Hydac kit

Actual Gallons Purged: _____
Actual Volumes Purged: _____
Well Yield: (See Below)

COC #: _____
Sample I.D. _____ Analysis _____ Lab _____

Additional Comments: _____

Gallons purged	TEMP °C/F (Circle One)	EC (µs/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 1.5	69.9	989	6.9			1:15 pm
2. 1.5	69.1	999	7.0			1:35
3. 1.5	69.9	989	7.1			1:55
4.						
5.						

*Take measurement of approximately each casing volume purged
 III - Minimal W.L. drop
 MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.
 IV - able to purge 3 volumes by returning later or next day.
 V - Minimal recharge unable to purge 3 volumes.

PROJECT: Chun EVENT: _____ SAMPLER: FG DATE: Dec 24, 2003

WELL/HYDROLOGIC STATISTICS MW-3

SWL: 8.65

Action: _____ Time: _____ Pump Rate: _____ WL (flow yield): _____

Stop: _____
Sampled: _____
(Final MW): _____

Purge Calculator:
gal/ft. _____ ft. _____ gals. X 3 = _____ gals.
SWL to BOP or _____ one _____ purge volume-
packer to BOP _____ volume _____ 3 casings
Head Purge Calculation (AMT Only)
gal/ft. _____ ft. _____ gals.
packer to SWL _____

Equipment Used/Sampling method/Description of Event:
Electronic water level indicator, weighted plastic disposable bailer, Hydac kit

Actual Gallons Purged: _____
Actual Volumes Purged: _____
Well Yield: (See Below)

COC #: _____
Sample I.D. _____ Analysis _____ Lab _____

Additional Comments: _____

Gallons purged	TEMP °C/F (Circle One)	EC (µs/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 1.5	70.9	1016	6.9			2:20 pm
2. 1.5	70.8	1013	7.0			2:45
3. 1.5	71.1	1021	7.1			3:05
4.						
5.						

*Take measurement of approximately each casing volume purged
 III - Minimal W.L. drop
 MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.
 IV - able to purge 3 volumes by returning later or next day.
 V - Minimal recharge unable to purge 3 volumes.

PROJECT: Chun EVENT: _____ SAMPLER: FG DATE: Dec 24, 2003

WELL/HYDROLOGIC STATISTICS MW-2

SWL: 8.21

Action: _____ Time: _____ Pump Rate: _____ WL (flow yield): _____

Stop: _____
Sampled: _____
(Final MW): _____

Purge Calculator:
gal/ft. _____ ft. _____ gals. X 3 = _____ gals.
SWL to BOP or _____ one _____ purge volume-
packer to BOP _____ volume _____ 3 casings
Head Purge Calculation (AMT Only)
gal/ft. _____ ft. _____ gals.
packer to SWL _____

Equipment Used/Sampling method/Description of Event:
Electronic water level indicator, weighted plastic disposable bailer, Hydac kit

Actual Gallons Purged: _____
Actual Volumes Purged: _____
Well Yield: (See Below)

COC #: _____
Sample I.D. _____ Analysis _____ Lab _____

Additional Comments: _____

Gallons purged	TEMP °C/F (Circle One)	EC (µs/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 1.5	71.3	942	6.8			3:35 pm
2. 1.5	70.9	947	6.9			4:00
3. 1.5	70.9	950	6.9			4:30
4.						
5.						

*Take measurement of approximately each casing volume purged
 III - Minimal W.L. drop
 MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.
 IV - able to purge 3 volumes by returning later or next day.
 V - Minimal recharge unable to purge 3 volumes.

PROJECT: CHUD EVENT: _____ SAMPLER: FG DATE: Dec 25, 2004

WELL HYDROLOGIC STATISTICS EW-13

DRW 8.40

packer
inlet
batter
depth

Action	Time	Pump Rate	WL (flow yield)

Equipment Used/Sampling method/Description of Event: Electronic water level indicator, weighted plastic disposable ballot, Hydac kit

Actual Gallons Purged: _____

Actual Volumes Purged: _____

Well Yield: (See Below)

COC #: _____

Sample I.D.	Analysis	Lab

Additional Comments:

Gallons purged	TEMP C/F (Circle One)	EC (us/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 2.5	67.2	1222	7.1			11:05am
2. 2.5	67.1	1211	7.2			11:50
3. 2.0	67.9	1212	7.2			12:25pm
4.						
5.						

* Take measurement of approximately each casing volume purged

● HW - Minimal W.L. drop MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump. LY - able to purge 3 volumes by returning later or next day. VLY - Minimal recharge unable to purge 3 volumes.

PROJECT: CHUD EVENT: _____ SAMPLER: FG DATE: Dec 25, 2004

WELL HYDROLOGIC STATISTICS EW-14

DRW 9.07

packer
inlet
batter
depth

Action	Time	Pump Rate	WL (flow yield)

Equipment Used/Sampling method/Description of Event: Electronic water level indicator, weighted plastic disposable ballot, Hydac kit

Actual Gallons Purged: _____

Actual Volumes Purged: _____

Well Yield: (See Below)

COC #: _____

Sample I.D.	Analysis	Lab

Additional Comments:

Gallons purged	TEMP C/F (Circle One)	EC (us/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 2.5	70.1	1234	7.0			1:10pm
2. 2.5	69.9	1232	7.0			1:45
3. 2.5	69.7	1249	7.1			2:20
4.						
5.						

* Take measurement of approximately each casing volume purged

● HW - Minimal W.L. drop MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump. LY - able to purge 3 volumes by returning later or next day. VLY - Minimal recharge unable to purge 3 volumes.

PROJECT: CHUD EVENT: _____ SAMPLER: FG DATE: Dec 25, 2004

WELL HYDROLOGIC STATISTICS MW-11

DRW 8.38

packer
inlet
batter
depth

Action	Time	Pump Rate	WL (flow yield)

Equipment Used/Sampling method/Description of Event: Electronic water level indicator, weighted plastic disposable ballot, Hydac kit

Actual Gallons Purged: _____

Actual Volumes Purged: _____

Well Yield: (See Below)

COC #: _____

Sample I.D.	Analysis	Lab

Additional Comments:

Gallons purged	TEMP C/F (Circle One)	EC (us/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 2.5	69.6	1000	6.9			2:55pm
2. 2.5	69.3	1029	7.0			3:35
3. 2.5	70.1	1039	7.1			3:50
4.						
5.						

* Take measurement of approximately each casing volume purged

● HW - Minimal W.L. drop MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump. LY - able to purge 3 volumes by returning later or next day. VLY - Minimal recharge unable to purge 3 volumes.

Appendix C
Laboratory Data Sheets



LABORATORY ANALYSIS RESULTS

Client: Chun
Project No.: N/A
Project Name: Chun
Sample Matrix: Water
Method: EPA 8015M (GRO)

AA Project No.: A57202
Date Received: 12/29/03
Date Reported: 01/19/04
Units: mg/L

AA I.D. No.	Client I.D. No.	Date Sampled	Date Analyzed	DF	Results	MRL
165504	MW-10	12/24/03	12/31/03	1.0	<0.1	0.1
165505	MW-9	12/24/03	12/31/03	1.0	<0.1	0.1
165506	MW-8	12/24/03	12/31/03	1.0	<0.1	0.1
165507	MW-6	12/24/03	12/31/03	1.0	1.2	0.1
165508	MW-4	12/24/03	12/31/03	1.0	<0.1	0.1
165509	MW-5	12/24/03	12/31/03	5.0	23	0.1
165510	MW-3	12/24/03	12/31/03	2.0	3.3	0.1
165511	MW-2	12/24/03	12/31/03	50.0	46	0.1
165512	SV-1	12/24/03	01/02/04	50.0	83	0.1
165513	EW-12	12/25/03	01/02/04	10.0	9.9	0.1
165514	MW-1	12/25/03	01/02/04	5.0	12	0.1
165515	MW-7	12/25/03	01/02/04	100.0	110	0.1
165516	EW-13	12/25/03	01/02/04	200.0	110	0.1
165517	EW-14	12/25/03	01/02/04	50.0	26	0.1
165518	MW-11	12/25/03	01/02/04	20.0	14	0.1

MRL: Method Reporting Limit

J: Estimated Value

DF: Dilution Factor

NOTES:

GRO: Gasoline Range Organics

Viorel Vasile
Project Manager



LABORATORY ANALYSIS RESULTS

Client: Chun
Project No.: N/A
Project Name: Chun
Sample Matrix: Water
Method: EPA 8260B

AA Project No.: A57202
Date Received: 12/29/03
Date Reported: 01/19/04
Units: ug/L

	12/24/03	12/24/03	12/24/03	12/24/03	
Date Sampled:	12/24/03	12/24/03	12/24/03	12/24/03	
Date Analyzed:	12/31/03	12/31/03	12/31/03	12/31/03	
AA ID No.:	165504	165505	165506	165507	
Client ID No.:	MW-10	MW-9	MW-8	MW-6	
Dilution Factor:	1.0	1.0	1.0	1.0	MRL
Compounds:					
Benzene	<0.5	<0.5	<0.5	18	0.5
Di-isopropyl Ether	<2	<2	<2	<2	2
1,2-Dibromoethane (EDB)	<0.5	<0.5	<0.5	<0.5	0.5
1,2-Dichloroethane (EDC)	<0.5	<0.5	<0.5	<0.5	0.5
Ethyl tert-Butyl Ether	<2	<2	<2	<2	2
Ethylbenzene	<0.5	<0.5	<0.5	82	0.5
Methyl tert-Butyl Ether	<2	<2	<2	<2	2
Tert-Amyl Methyl Ether	<2	<2	<2	<2	2
Toluene	<0.5	<0.5	<0.5	12	0.5
m,p-Xylenes	<1	<1	<1	160	1
o-Xylene	<0.5	<0.5	<0.5	90	0.5
tert-Butanol	<10	<10	<10	<10	10

Viorel Vasile
Project Manager



LABORATORY ANALYSIS RESULTS

Client: Chun
Project No.: N/A
Project Name: Chun
Sample Matrix: Water
Method: EPA 8260B

AA Project No.: A57202
Date Received: 12/29/03
Date Reported: 01/19/04
Units: ug/L

Table with 6 columns: Compound, Date Sampled, Date Analyzed, AA ID No., Client ID No., Dilution Factor, and MRL. Rows include Benzene, Di-isopropyl Ether, 1,2-Dibromoethane (EDB), 1,2-Dichloroethane (EDC), Ethyl tert-Butyl Ether, Ethylbenzene, Methyl tert-Butyl Ether, Tert-Amyl Methyl Ether, Toluene, m,p-Xylenes, o-Xylene, and tert-Butanol.

Viorel Vasile
Project Manager



LABORATORY ANALYSIS RESULTS

Client: Chun
Project No.: N/A
Project Name: Chun
Sample Matrix: Water
Method: EPA 8260B

AA Project No.: A57202
Date Received: 12/29/03
Date Reported: 01/19/04
Units: ug/L

Table with 5 columns: Date Sampled, Date Analyzed, AA ID No., Client ID No., Dilution Factor, and MRL. Rows include various compounds like Benzene, Di-isopropyl Ether, 1,2-Dibromoethane (EDB), etc., with their respective values and MRLs.

Viorel Vasile
Project Manager



LABORATORY ANALYSIS RESULTS

Client: Chun
Project No.: N/A
Project Name: Chun
Sample Matrix: Water
Method: EPA 8260B

AA Project No.: A57202
Date Received: 12/29/03
Date Reported: 01/19/04
Units: ug/L

Table with 4 columns: Date Sampled, Date Analyzed, AA ID No., Client ID No., Dilution Factor, and MRL. Rows include Benzene, Di-isopropyl Ether, 1,2-Dibromoethane (EDB), 1,2-Dichloroethane (EDC), Ethyl tert-Butyl Ether, Ethylbenzene, Methyl tert-Butyl Ether, Tert-Amyl Methyl Ether, Toluene, m,p-Xylenes, o-Xylene, and tert-Butanol.

MRL: Method Reporting Limit

J: Estimated Value

Viorel Vasile
Project Manager



LABORATORY QA/QC REPORT

Client: Chun
Project Name: Chun
Method: EPA 8260B
Sample ID: Reagent Blank

Project No.: N/A
AA Project No.: A57202
Date Analyzed: 12/31/03
Date Reported: 01/19/04

Compounds	Results ug/L	MRL
Benzene	<0.5	0.5
Di-isopropyl Ether	<2	2
1,2-Dibromoethane (EDB)	<0.5	0.5
1,2-Dichloroethane (EDC)	<0.5	0.5
Ethyl tert-Butyl Ether	<2	2
Ethylbenzene	<0.5	0.5
Methyl tert-Butyl Ether	<2	2
Tert-Amyl Methyl Ether	<2	2
Toluene	<0.5	0.5
m,p-Xylenes	<1	1
o-Xylene	<0.5	0.5
tert-Butanol	<10	10

MRL: Method Reporting Limit

Viorel Vasile
Project Manager



LABORATORY QA/QC REPORT

Page 1 of 1

Client: Chun
Project Name: Chun
Method: EPA 8015M (GRO)
Sample ID: Reagent Blank

Project No.: N/A
AA Project No.: A57202
Date Analyzed: 12/31/03
Date Reported: 01/19/04

Compounds	Results mg/L	MRL
Gasoline Range Organics	<0.1	0.1

MRL: Method Reporting Limit

A handwritten signature in black ink, appearing to read 'V. Vasile'.

Viorel Vasile
Project Manager



LABORATORY QA/QC REPORT

Client: Chun
Project Name: Chun
Method: EPA 8015M (GRO)
Sample ID: Reagent Blank

Project No.: N/A
AA Project No.: A57202
Date Analyzed: 01/02/04
Date Reported: 01/19/04

Compounds	Results mg/L	MRL
Gasoline Range Organics	<0.1	0.1

MRL: Method Reporting Limit

Viorel Vasile
Project Manager



LABORATORY QA/QC REPORT

Page 1 of 1

Client: Chun
Project Name: Chun
Method: EPA 8260B
Sample ID: Laboratory Control Standard
Concentration: 20 ug/L

Project No.: N/A
AA Project No.: A57202
Date Analyzed: 12/31/03
Date Reported: 01/19/04

Compounds	Recovered Amount (ug/L)	Recovery (%)	Acceptable Range (%)
Benzene	19.6	98	50 - 150
Ethylbenzene	22.1	111	50 - 150
Methyl tert-Butyl Ether	18.5	93	50 - 150
Toluene	19.8	99	50 - 150
o-Xylene	22.3	112	50 - 150

Viorel Vasile
Project Manager



LABORATORY QA/QC REPORT

Page 1 of 1

Client: Chun
Project Name: Chun
Method: EPA 8015M (GRO)
Sample ID: Laboratory Control Standard
Concentration: 0.5 mg/L

Project No.: N/A
AA Project No.: A57202
Date Analyzed: 12/31/03
Date Reported: 01/19/04

Compounds	Recovered Amount (mg/L)	Recovery (%)	Acceptable Range (%)
Gasoline Range Organics	0.513	103.0	48.0 - 152

A handwritten signature in black ink, appearing to read 'Viorel Vasile'.

Viorel Vasile
Project Manager



LABORATORY QA/QC REPORT

Page 1 of 1

Client: Chun
Project Name: Chun
Method: EPA 8015M (GRO)
Sample ID: Laboratory Control Standard
Concentration: 0.5 mg/L

Project No.: N/A
AA Project No.: A57202
Date Analyzed: 01/02/04
Date Reported: 01/19/04

Compounds	Recovered Amount (mg/L)	Recovery (%)	Acceptable Range (%)
Gasoline Range Organics	0.564	113.0	48.0 - 152

A handwritten signature in black ink, appearing to be 'V. Vasile'.

Viorel Vasile
Project Manager



LABORATORY QA/QC REPORT

Client: Chun
Project Name: Chun
Method: EPA 8260B
Sample ID: Matrix Spike
Concentration: 20 ug/L

AA ID No: 165504
Project No.: N/A
AA Project No. A57202
Date Analyzed: 12/31/03
Date Reported: 01/19/04

Compounds	Result (ug/L)	Spike Recovery (%)	Dup. Result (ug/L)	Spike/Dup. Recovery (%)	RPD (%)	Accept. Rec. Range (%)
Benzene	23.4	117	19.8	99	17	50 - 150
Ethylbenzene	21.3	107	22.0	110	3	50 - 150
Methyl tert-Butyl Ether	29.9	150	19.1	96	44	50 - 150
Toluene	19.9	100	19.5	98	2	50 - 150
o-Xylene	22.7	114	21.1	106	7	50 - 150

Viorel Vasile
Project Manager



LABORATORY QA/QC REPORT

Client: Chun
Project Name: Chun
Method: EPA 8015M (GRO)
Sample ID: Matrix Spike
Concentration: 0.5 mg/L

AA ID No: 165504
Project No.: N/A
AA Project No. A57202
Date Analyzed: 12/31/03
Date Reported: 01/19/04

Compounds	Result (mg/L)	Spike Recovery (%)	Dup. Result (mg/L)	Spike/Dup. Recovery (%)	RPD (%)	Accept. Rec. Range (%)
Gasoline Range Organics	0.509	102.0	0.458	92.0	10.	51.0 - 149

Viorel Vasile
Project Manager

Chun
2301 Santa Clara Avenue
Alameda, CA

CHAIN OF CUSTODY RECORD

Laboratory Analysis P.O. No. _____
Laboratory Please Call Accounts Payable for P.O. No. _____
Date: 12/25/03 Sheet 1 of 2

				Parameters										American Analytics							
				TPHg/BTEX 8015/8020 & 5 Oxygenates 2 Lead Scavengers														Chatsworth, CA			
																		Volatile Organics (8010)		Pr. Pollutant Metals (13)	
Sampler's Name: Frank Goldman																		Phone _____		Turnaround Time	
Sampler's Signature: <i>Frank Goldman</i>																		<input type="checkbox"/> Rush		<input type="checkbox"/> 24 Hour	
Sample Number	Location	Date	Time															Comments			
MW-10	165504	12/24/03	8:40 AM	X															Run tests after receipt of payment from Wayne Chun (510)610-4889 cell		
MW-9	165505		9:50 AM																		
MW-8	165506		10:45 AM																		
MW-6	165507		11:55 AM																		
MW-4	165508		1:00 PM																		
MW-5	165509		2:05 PM																		
MW-3	165510		3:15 PM																		
MW-2	165511		4:40 PM																		
SV-1	165512		5:05 PM																		
EW-12	165513	12/25/03	8:10 AM																		
Relinquished By		Date	Time	Received By		Date	Time	Total Number of Containers this Sheet:													
<i>Frank Goldman</i>		12/27/03	4:20 PM	<i>[Signature]</i>		10/28/03	10:30 AM														
Dispatched By		Date	Time	Received in Lab By		Date	Time	Method of Shipment:													
<i>[Signature]</i>				<i>NA</i>		12/29/03	10:15	Special Shipment/Handling or Storage Requirements:													
								Keep on Ice													

'03 DEC 29 AM 10:41

approved as work order 12/29/03/ 12011 vms/le

