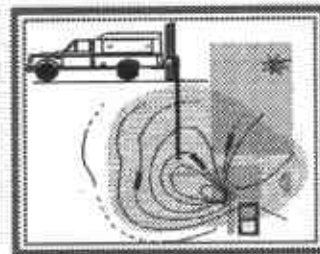


Franklin J. Goldman

Environmental and Hydrogeological Consulting
PO Box 59, Sonoma, CA 95476
Phone: (707) 235-9979
franklingoldman1@yahoo.com

10382 ✓



November 30, 2004

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 laboratory results of analyses performed for gasoline constituents in groundwater. Eight (8) groundwater monitoring and four (4) groundwater extraction wells were purged and sampled. Seventeen (17) wells were measured for water level measurements.

Although the overall trend in concentrations of TPHg and benzene identified in groundwater have decreased over time, some wells have undergone an increase. Most notably, TPHg and benzene were identified in MW-3, MW-6, as well as EW-14, 15, & 17 which are located in the vicinity of the existing kiosk located south of the former tank pit.

If you have any questions, please call me.

Sincerely,

Franklin J. Goldman
Certified Hydrogeologist No. 466



Alameda County
Environmental Health
DEC 03 2004

GROUNDWATER FLOW DIRECTION

On November 05, 2004, 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.

Groundwater was encountered at depths of approximately eight (8) & ten (10) feet bgs. The predominant groundwater gradient direction is to the south-southwest at 0.004 feet/foot (See Figure 1 for Gradient Map) and (Table 1 for Depth to Water Level Measurements). Water levels were measured with an electronic water level sounder after sampling and the water levels were allowed to stabilize. 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

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

GROUNDWATER SAMPLING FROM WELLS

Water samples were collected by lowering a 1½ inch diameter plastic disposable check valve 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 on 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

Although the overall trend in concentrations of TPHg and benzene identified in groundwater have decreased over time, some wells have undergone an increase. Most notably, TPHg and benzene were identified in MW-3, MW-6, as well as EW-14, 15, & 17 which are located in the vicinity of the existing kiosk located south of the former tank pit (See Appendix B 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).

CONCLUSIONS

Dissolved benzene may still be migrating to the southeast in the direction of the predominant groundwater gradient flow direction.

RECOMMENDATIONS

Perform an additional round of groundwater sampling. Include perimeter wells after remediation activities are initiated.

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.

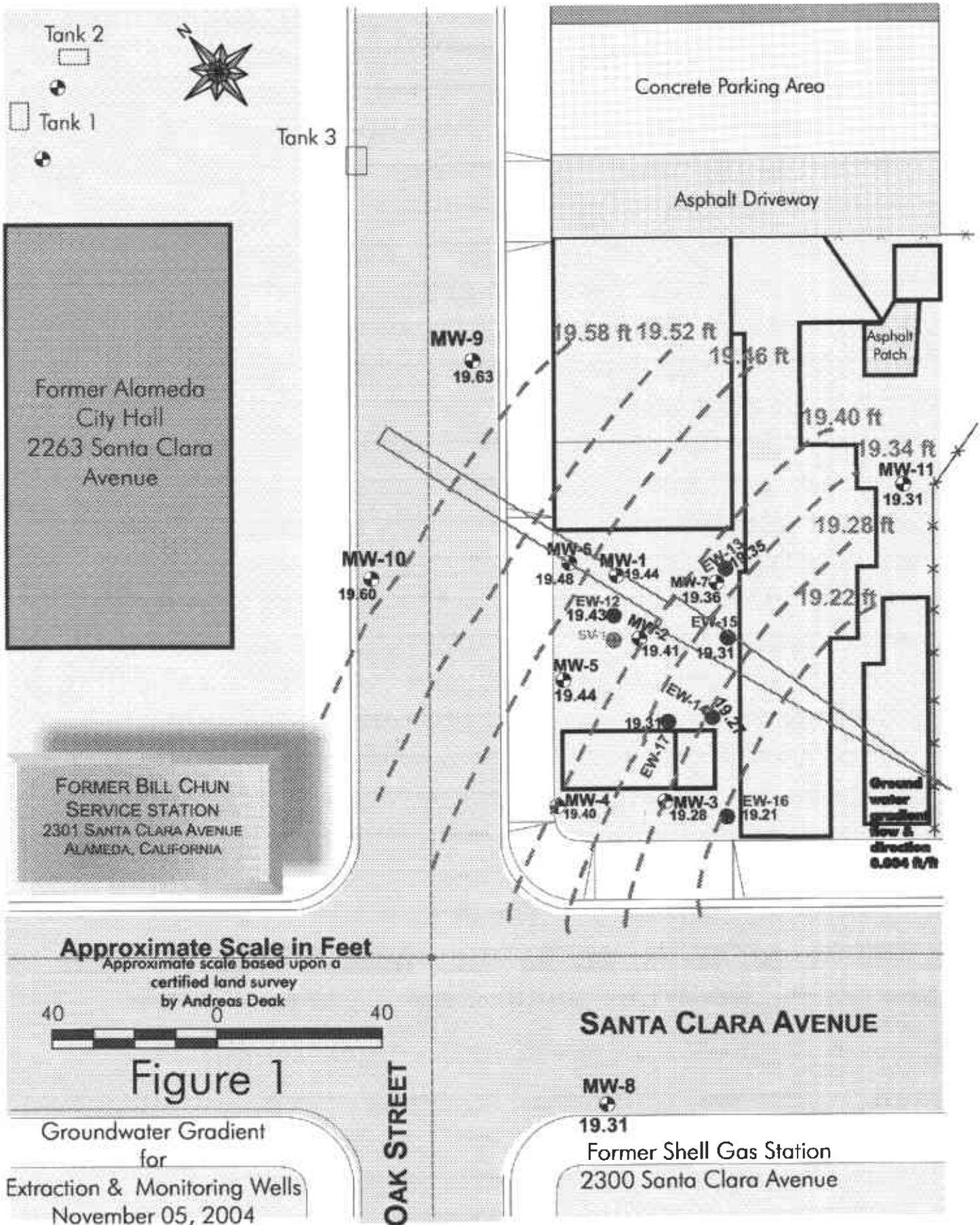
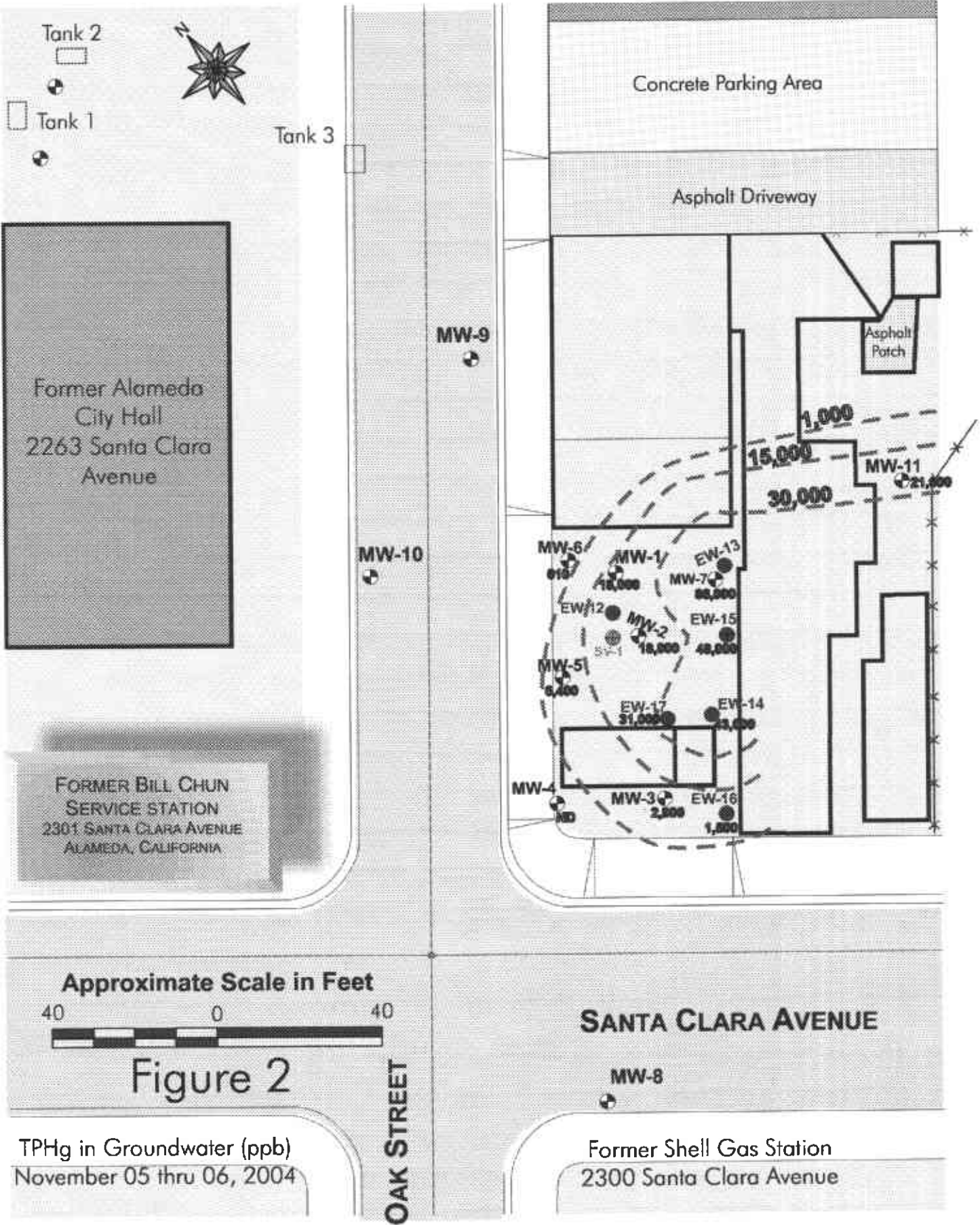


Figure 1

Groundwater Gradient
 for
 Extraction & Monitoring Wells
 November 05, 2004



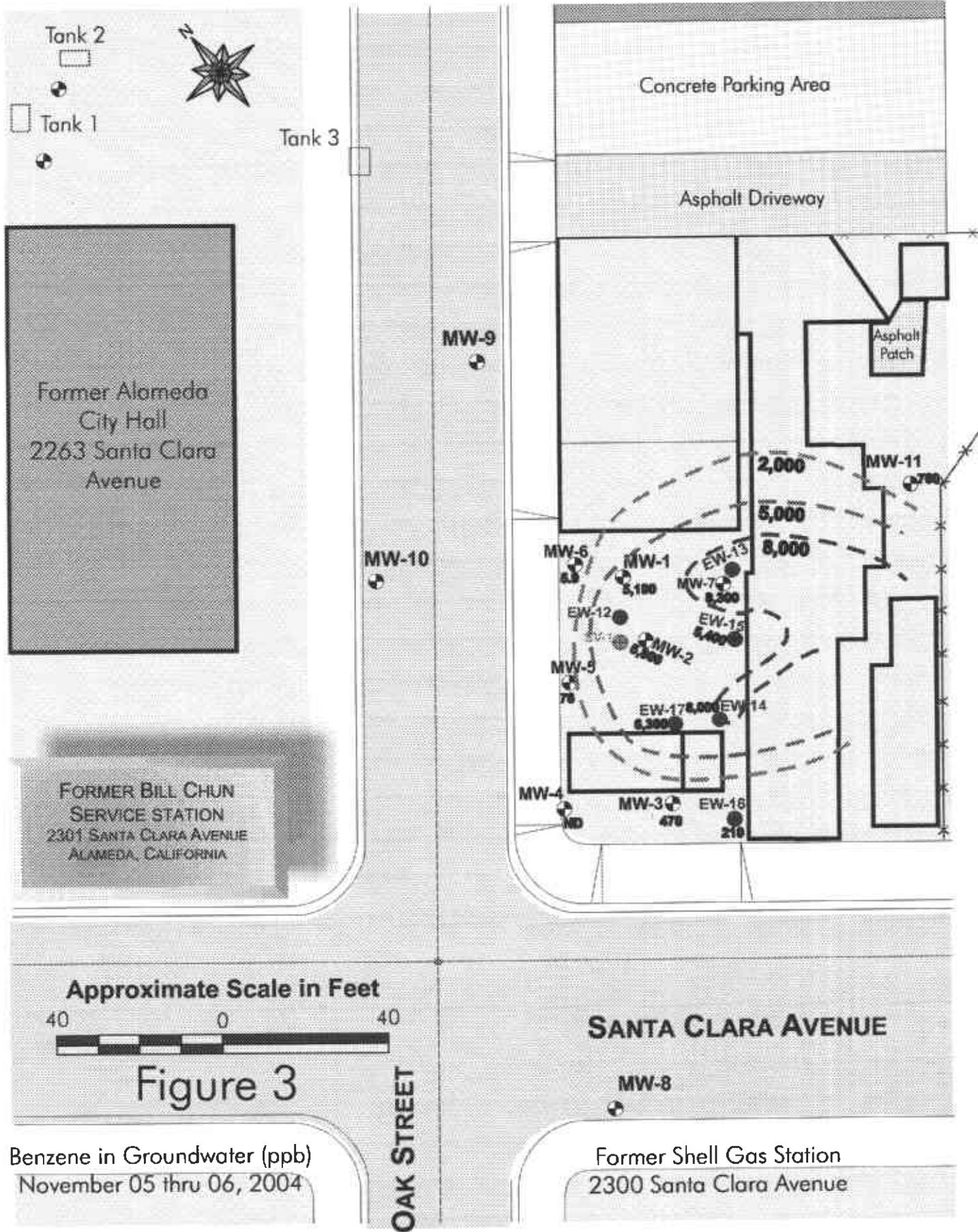


TABLE 1
Depth to Groundwater Measurements
November 05, 2004

Well No	Depth to Groundwater from TOC (feet bgs)	TOC Elevation (feet) MSN	Water Table Elevation (feet)
MW-1	9.05	28.49	19.44
MW-2	9.06	28.47	19.41
MW-3	9.50	28.78	19.28
MW-4	9.13	28.53	19.40
MW-5	8.89	28.33	19.44
MW-6	8.88	28.36	19.48
MW-7	9.08	28.44	19.36
MW-8	8.86	28.17	19.31
MW-9	7.82	27.45	19.63
MW-10	7.72	27.32	19.60
MW-11	9.25	28.56	19.31
EW-12	8.82	28.25	19.43
EW-13	9.29	28.64	19.35
EW-14	9.94	29.21	19.27
EW-15	9.40	28.71	19.31
EW-16	9.81	29.02	19.21
EW-17	9.64	28.95	19.31

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

Well No	TPHg	Benzene
MW-1 (11-05-04)	18,000	5,100
(08-08-04)	29,000	9,700
(04-24-04)	33,000	8,000
(12-25-03)	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 (11-05-04)	18,000	5,800
(08-08-04)	21,000	6,800
(04-24-04)	44,000	8,400
(12-25-03)	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 (11-05-04)	2,900	470
(08-08-04)	2,500	400
(04-24-04)	3,100	1,000
(12-25-03)	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 (11-05-04)	ND	ND
(08-08-04)	ND	ND
(04-24-04)	3,000	0.97
(12-25-03)	ND	ND
(09-20-03)	ND	ND
(07-04-02)	ND	ND
(09-17-00)	ND	ND

MW-5	(11-05-04)	8,400	76
	(08-08-04)	13,000	82
	(04-24-04)	13,000	97
	(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	(11-05-04)	610	5.9
	(08-08-04)	320	2.7
	(04-24-04)	110	3.6
	(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	(11-05-04)	86,000	8,300
	(08-08-04)	92,000	9,300
	(04-24-04)	100,000	10,000
	(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	(11-05-04)	NA	NA
	(08-08-04)	NA	NA
	(04-24-04)	ND	ND
	(12-25-03)	ND	ND
	(09-20-03)	ND	ND
	(07-03-02)	ND	1.1
	(09-17-00)	ND	1.4
MW-9	(11-05-04)	NA	NA
	(04-24-04)	NA	NA
	(04-24-04)	ND	ND
	(12-25-03)	ND	ND

	(09-20-03)	ND	ND
	(07-03-02)	ND	ND
	(09-17-00)	ND	ND
MW-10	(11-05-04)	NA	NA
	(04-24-04)	NA	NA
	(04-24-04)	ND	ND
	(12-25-03)	ND	ND
	(09-20-03)	ND	ND
	(07-03-02)	ND	ND
	(09-17-00)	ND	ND
MW-11	(11-05-04)	21,000	760
	(08-08-04)	29,000	3,100
	(04-24-04)	38,000	5,000
	(12-25-03)	14,000	1,400
	(09-22-03)	46,000	1,700
	(10-24-02)	59,000	5,100
SV-1	(11-05-04)	NA	NA
	(08-08-04)	NA	NA
	(04-24-04)	9,600	740
	(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	(11-05-04)	NA	NA
	(08-08-04)	NA	NA
	(04-24-04)	12,000	920
	(12-25-03)	9,900	790
	(09-21-03)	19,000	590
	(10-31-02)	5,840	75.7
EW-13	(11-05-04)	NA	NA
	(08-08-04)	NA	NA
	(04-24-04)	100,000	19,000

	(12-25-03)	110,000	17,000
	(09-21-03)	71,000	10,000
	(10-31-02)	109,200	9,120
EW-14	(11-06-04)	43,000	8,000
	(08-08-04)	14,000	6,300
	(04-24-04)	9,400	4,100
	(12-25-03)	26,000	5,300
	(09-22-03)	68,000	4,100
EW-15	(11-06-04)	48,000	5,400
	(08-08-04)	36,000	3,300
	(01-21-04)	72,000	8,400
EW-16	(11-06-04)	1,500	210
	(08-08-04)	2,500	590
	(01-21-04)	1,500	290
EW-17	(11-06-04)	31,000	6,300
	(08-08-04)	30,000	6,800
	(01-21-04)	18,000	2,600

Appendix A
Sampling Event Sheets

PROJECT: Chun EVENT: _____ SAMPLER: FG DATE: Nov 05, 2004

WELL HYDROLOGIC STATISTICS MW-6

DTW: 8.88

paucer
inside
bailer
depth

Action	Time	Pump Rate	RM (flow yield)

Stop
Sampled
(Final RM)

Burys Calculator
 gal/ft _____ ft _____ gals X 3 = _____ gals
 SWL to BOP or one purge volume
 paucer to BOP volume 3 casings
 Hand Burys Calculation (AMR Only)
 gal/ft _____ ft _____ gals
 paucer 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 ID: _____ Analyte: _____ Lab: _____

Additional Comments:

Gallons purged	TEMP C/F (Circle One)	EC (µs/cm)	PH	TURBIDITY NTU	HEAD (FT)	TIME
1. 2.0	69.3	934	6.9			6:25
2. 2.5	70.1	941	6.9			7:00
3. 2.0	70.0	941	6.9			7:25 am
4.						
5.						

* Take measurement of approximately each casing volume purged II-Minimal WL drop
 M - WL drop - able to purge 3 volumes during one siting by reducing pump rate or cycling pump. IY - able to purge 3 volumes by returning later or next day. IY - Minimal recharge unable to purge 3 volumes.

PROJECT: Chun EVENT: _____ SAMPLER: FG DATE: Nov 05, 2004

WELL HYDROLOGIC STATISTICS MW-4

DTW: 9.13

paucer
inside
bailer
depth

Action	Time	Pump Rate	RM (flow yield)

Stop
Sampled
(Final RM)

Burys Calculator
 gal/ft _____ ft _____ gals X 3 = _____ gals
 SWL to BOP or one purge volume
 paucer to BOP volume 3 casings
 Hand Burys Calculation (AMR Only)
 gal/ft _____ ft _____ gals
 paucer 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 ID: _____ Analyte: _____ Lab: _____

Additional Comments:

Gallons purged	TEMP C/F (Circle One)	EC (µs/cm)	PH	TURBIDITY NTU	HEAD (FT)	TIME
1. 2.0	68.8	934	7.0			7:55
2. 2.0	70.3	931	7.0			8:25
3. 2.0	70.2	941	7.0			8:45 am
4.						
5.						

* Take measurement of approximately each casing volume purged II-Minimal WL drop
 M - WL drop - able to purge 3 volumes during one siting by reducing pump rate or cycling pump. IY - able to purge 3 volumes by returning later or next day. IY - Minimal recharge unable to purge 3 volumes.

PROJECT: Chun EVENT: _____ SAMPLER: FG DATE: Nov 05, 2004

WELL HYDROLOGIC STATISTICS MW-5

DTW: 8.89

paucer
inside
bailer
depth

Action	Time	Pump Rate	RM (flow yield)

Stop
Sampled
(Final RM)

Burys Calculator
 gal/ft _____ ft _____ gals X 3 = _____ gals
 SWL to BOP or one purge volume
 paucer to BOP volume 3 casings
 Hand Burys Calculation (AMR Only)
 gal/ft _____ ft _____ gals
 paucer 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 ID: _____ Analyte: _____ Lab: _____

Additional Comments:

Gallons purged	TEMP C/F (Circle One)	EC (µs/cm)	PH	TURBIDITY NTU	HEAD (FT)	TIME
1. 2.0	70.9	969	7.1			9:00
2. 2.0	71.0	969	7.1			9:30
3. 2.0	71.2	957	7.1			10:15am
4.						
5.						

* Take measurement of approximately each casing volume purged II-Minimal WL drop
 M - WL drop - able to purge 3 volumes during one siting by reducing pump rate or cycling pump. IY - able to purge 3 volumes by returning later or next day. IY - Minimal recharge unable to purge 3 volumes.

PROJECT: Chun EVENT: _____ SAMPLER: FG DATE: Nov 05, 2004

WELL HYDROLOGIC STATISTICS MW-3

DTW: 9.50

paucer
inside
bailer
depth

Action	Time	Pump Rate	RM (flow yield)

Stop
Sampled
(Final RM)

Burys Calculator
 gal/ft _____ ft _____ gals X 3 = _____ gals
 SWL to BOP or one purge volume
 paucer to BOP volume 3 casings
 Hand Burys Calculation (AMR Only)
 gal/ft _____ ft _____ gals
 paucer 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 ID: _____ Analyte: _____ Lab: _____

Additional Comments:

Gallons purged	TEMP C/F (Circle One)	EC (µs/cm)	PH	TURBIDITY NTU	HEAD (FT)	TIME
1. 2.0	70.9	996	6.9			10:30am
2. 2.0	70.5	983	6.9			11:10
3. 2.0	70.1	1001	6.8			11:55am
4.						
5.						

* Take measurement of approximately each casing volume purged II-Minimal WL drop
 M - WL drop - able to purge 3 volumes during one siting by reducing pump rate or cycling pump. IY - able to purge 3 volumes by returning later or next day. IY - Minimal recharge unable to purge 3 volumes.

PROJECT: <u>CH20</u> EVENT: _____ SAMPLER: <u>EG</u> DATE: <u>Nov 05, 2004</u>
--

WELL/HYDROLOGIC STATISTICS MW-2

SWL 9.06

packer
inside
bottle
depth

Action: _____ Time: _____ Pump Rate: _____ YL (low yield): _____

Stop

Sampled (Final MW)

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

Action	Time	Pump Rate	YL (low 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 ID: _____ Analysis: _____ Lab: _____

Additional Comments: _____

Gallons purged	TEMP °C/F (Circle One)	EC (µs/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 2.0	71.3	931	7.1			12:25pm
2. 1.5	71.7	931	7.1			12:45
3. 1.5	70.9	941	7.2			1:15 pm
4. _____	_____	_____	_____			
5. _____	_____	_____	_____			

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

PROJECT: <u>CH20</u> EVENT: _____ SAMPLER: <u>EG</u> DATE: <u>Nov 05, 2004</u>
--

WELL/HYDROLOGIC STATISTICS MW-1

DTW 9.05

packer
inside
bottle
depth

Action: _____ Time: _____ Pump Rate: _____ YL (low yield): _____

Stop

Sampled (Final MW)

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

Action	Time	Pump Rate	YL (low 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 ID: _____ Analysis: _____ Lab: _____

Additional Comments: Clear moderate strong odor

Gallons purged	TEMP °C/F (Circle One)	EC (µs/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 2.0	71.0	966	6.9			1:30
2. 1.5	71.0	966	7.0			2:00
3. 1.5	71.0	982	7.0			2:40 pm
4. _____	_____	_____	_____			
5. _____	_____	_____	_____			

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

PROJECT: <u>CH20</u> EVENT: _____ SAMPLER: <u>EG</u> DATE: <u>Nov 05, 2004</u>
--

WELL/HYDROLOGIC STATISTICS MW-7

DTW 9.08

packer
inside
bottle
depth

Action: _____ Time: _____ Pump Rate: _____ YL (low yield): _____

Stop

Sampled (Final MW)

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

Action	Time	Pump Rate	YL (low 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 ID: _____ Analysis: _____ Lab: _____

Additional Comments: _____

Gallons purged	TEMP °C/F (Circle One)	EC (µs/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 2.0	71.1	1011	7.0			3:10
2. 1.5	71.3	1111	7.0			4:05
3. 1.5	69.9	1104	7.0			4:25 pm
4. _____	_____	_____	_____			
5. _____	_____	_____	_____			

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

PROJECT: <u>CH20</u> EVENT: _____ SAMPLER: <u>EG</u> DATE: <u>Nov 05, 2004</u>
--

WELL/HYDROLOGIC STATISTICS MW-11

DTW 9.25

packer
inside
bottle
depth

Action: _____ Time: _____ Pump Rate: _____ YL (low yield): _____

Stop

Sampled (Final MW)

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

Action	Time	Pump Rate	YL (low 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 ID: _____ Analysis: _____ Lab: _____

Additional Comments: _____

Gallons purged	TEMP °C/F (Circle One)	EC (µs/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 2.0	70.1	978	6.9			5:00pm
2. 2.0	68.9	989	7.0			5:30
3. 2.0	70.1	988	7.0			6:25 pm
4. _____	_____	_____	_____			
5. _____	_____	_____	_____			

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

PROJECT: GMU EVENT: _____ SAMPLER: EG DATE: Nov 06, 2004

WELL/HYDROLOGIC STATISTICS **EW-14**

DTW: 9.94

Stop

Sampled (Final MW)

Purge Calculator
 gal/ft _____ ft _____ gal X 3 = _____ gal
 SWL to BOP or one purge volume
 packer to BOP volume 3 casings
 Head Purge Calculation (AMR Only)
 gal/ft _____ ft _____ gal
 packer to SWL

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 ID, Analysis, Lab

Additional Comments: _____

Gallons purged	TEMP C/F (Circle One)	EC (µm/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 2.5	70.9	1089	7.0			5:55am
2. 2.5	70.1	1101	7.0			6:30
3. 2.5	69.7	1100	7.0			6:55 am
4.						
5.						

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

PROJECT: GMU EVENT: _____ SAMPLER: EG DATE: Nov 06, 2004

WELL/HYDROLOGIC STATISTICS **EW-15**

DTW: 9.40

Stop

Sampled (Final MW)

Purge Calculator
 gal/ft _____ ft _____ gal X 3 = _____ gal
 SWL to BOP or one purge volume
 packer to BOP volume 3 casings
 Head Purge Calculation (AMR Only)
 gal/ft _____ ft _____ gal
 packer to SWL

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 ID, Analysis, Lab

Additional Comments: _____

Gallons purged	TEMP C/F (Circle One)	EC (µm/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 2.5	70.1	920	6.8			7:45am
2. 2.5	70.9	943	6.9			8:40
3. 2.5	71.6	933	6.9			9:15 am
4.						
5.						

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

PROJECT: GMU EVENT: _____ SAMPLER: EG DATE: Nov 06, 2004

WELL/HYDROLOGIC STATISTICS **EW-16**

DTW: 9.81

Stop

Sampled (Final MW)

Purge Calculator
 gal/ft _____ ft _____ gal X 3 = _____ gal
 SWL to BOP or one purge volume
 packer to BOP volume 3 casings
 Head Purge Calculation (AMR Only)
 gal/ft _____ ft _____ gal
 packer to SWL

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 ID, Analysis, Lab

Additional Comments: _____

Gallons purged	TEMP C/F (Circle One)	EC (µm/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 2.5	67.1	935	6.9			9:55 am
2. 2.5	68.6	942	7.0			10:25
3. 2.5	691.0	946	7.0			11:10am
4.						
5.						

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

PROJECT: GMU EVENT: _____ SAMPLER: EG DATE: Nov 06, 2004

WELL/HYDROLOGIC STATISTICS **EW-17**

DTW: 9.64

Stop

Sampled (Final MW)

Purge Calculator
 gal/ft _____ ft _____ gal X 3 = _____ gal
 SWL to BOP or one purge volume
 packer to BOP volume 3 casings
 Head Purge Calculation (AMR Only)
 gal/ft _____ ft _____ gal
 packer to SWL

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 ID, Analysis, Lab

Additional Comments: _____

Gallons purged	TEMP C/F (Circle One)	EC (µm/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 2.5	69.4	1089	7.0			11:40am
2. 2.5	69.8	1099	7.0			12:20pm
3. 2.5	69.3	1101	7.0			1:05 pm
4.						
5.						

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

Appendix B
Laboratory Data Sheets



LABORATORY ANALYSIS RESULTS

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

AA Project No.: A57206
Date Received: 11/11/04
Date Reported: 11/24/04
Units: mg/L

AA I.D. No.	Client I.D. No.	Date Sampled	Date Analyzed	DF	Results	MRL
179120	MW-6	11/05/04	11/19/04	1.0	0.61	0.1
179121	MW-4	11/05/04	11/19/04	1.0	<0.1	0.1
179122	MW-5	11/05/04	11/19/04	10.0	6.4	0.1
179123	MW-3	11/05/04	11/19/04	5.0	2.9	0.1
179124	MW-2	11/05/04	11/19/04	50.0	18	0.1
179125	MW-1	11/05/04	11/19/04	50.0	18	0.1
179126	MW-7	11/05/04	11/19/04	100.0	86	0.1
179127	MW-11	11/05/04	11/19/04	20.0	21	0.1
179128	EW-14	11/06/04	11/19/04	20.0	43	0.1
179129	EW-15	11/06/04	11/19/04	50.0	48	0.1
179130	EW-16	11/06/04	11/19/04	10.0	1.5	0.1
179131	EW-17	11/06/04	11/19/04	50.0	31	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.: NA
Project Name: Chun
Sample Matrix: Water
Method: EPA 8260B

AA Project No.: A57206
Date Received: 11/11/04
Date Reported: 11/24/04
Units: ug/L

Date Sampled:	11/05/04	11/05/04	11/05/04	11/05/04	
Date Analyzed:	11/16/04	11/16/04	11/16/04	11/16/04	
AA ID No.:	179120	179121	179122	179123	
Client ID No.:	MW-6	MW-4	MW-5	MW-3	
Dilution Factor:	1.0	1.0	10.0	2.0	MRL
Compounds:					
Benzene	5.9	<0.5	76	470	0.5
Di-isopropyl Ether	<2	<2	<20	<4	2
1,2-Dibromoethane (EDB)	<0.5	<0.5	<5	<1	0.5
1,2-Dichloroethane (EDC)	<0.5	<0.5	<5	57	0.5
Ethyl tert-Butyl Ether	<2	<2	<20	<4	2
Ethylbenzene	25	<0.5	730	4.3	0.5
Methyl tert-Butyl Ether	<2	<2	<20	<4	2
Tert-Amyl Methyl Ether	<2	<2	<20	<4	2
Toluene	3.3	<0.5	450	1.9	0.5
m,p-Xylenes	28	<1	2000	5.3	1
o-Xylene	17	<0.5	660	<1	0.5
tert-Butanol	<10	<10	<100	<20	10

Viorel Vasile
Project Manager



LABORATORY ANALYSIS RESULTS

Client: Chun
Project No.: NA
Project Name: Chun
Sample Matrix: Water
Method: EPA 8260B

AA Project No.: A57206
Date Received: 11/11/04
Date Reported: 11/24/04
Units: ug/L

	11/05/04	11/05/04	11/05/04	11/05/04	
Date Sampled:	11/05/04	11/05/04	11/05/04	11/05/04	
Date Analyzed:	11/17/04	11/17/04	11/17/04	11/17/04	
AA ID No.:	179124	179125	179126	179127	
Client ID No.:	MW-2	MW-1	MW-7	MW-11	
Dilution Factor:	20.0	50.0	200.0	50.0	MRL

Compounds:					
Benzene	5800	5100	8300	760	0.5
Di-isopropyl Ether	<40	<100	<400	<100	2
1,2-Dibromoethane (EDB)	<10	<25	<100	<25	0.5
1,2-Dichloroethane (EDC)	33	38	<100	<25	0.5
Ethyl tert-Butyl Ether	<40	<100	<400	<100	2
Ethylbenzene	720	930	2800	1800	0.5
Methyl tert-Butyl Ether	<40	<100	<400	<100	2
Tert-Amyl Methyl Ether	<40	<100	<400	<100	2
Toluene	1200	2000	39000	930	0.5
m,p-Xylenes	2000	2600	14000	8800	1
o-Xylene	630	540	6800	1700	0.5
tert-Butanol	<200	<500	<2000	<500	10

Viorel Vasile
Project Manager



LABORATORY ANALYSIS RESULTS

Client: Chun
Project No.: NA
Project Name: Chun
Sample Matrix: Water
Method: EPA 8260B

AA Project No.: A57206
Date Received: 11/11/04
Date Reported: 11/24/04
Units: ug/L

	11/06/04	11/06/04	11/06/04	11/06/04	
Date Sampled:	11/06/04	11/06/04	11/06/04	11/06/04	
Date Analyzed:	11/17/04	11/17/04	11/17/04	11/17/04	
AA ID No.:	179128	179129	179130	179131	
Client ID No.:	EW-14	EW-15	EW-16	EW-17	
Dilution Factor:	20.0	50.0	2.0	50.0	MRL
Compounds:					
Benzene	8000	5400	210	6300	0.5
Di-isopropyl Ether	<40	<100	<4	<100	2
1,2-Dibromoethane (EDB)	<10	<25	<1	<25	0.5
1,2-Dichloroethane (EDC)	39	<25	46	43	0.5
Ethyl tert-Butyl Ether	<40	<100	<4	<100	2
Ethylbenzene	2500	2200	<1	1300	0.5
Methyl tert-Butyl Ether	<40	<100	<4	<100	2
Tert-Amyl Methyl Ether	<40	<100	<4	<100	2
Toluene	14000	7800	1.2	7800	0.5
m,p-Xylenes	7600	8900	2.2	4600	1
o-Xylene	3000	3300	<1	2200	0.5
tert-Butanol	<200	<500	<20	<500	10

MRL: Method Reporting Limit

J: Estimated Value

Viorel Vasile
Project Manager



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

Project No.: NA
AA Project No.: A57206
Date Analyzed: 11/16/04
Date Reported: 11/24/04

Compounds	Result 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



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

Project No.: NA
AA Project No.: A57206
Date Analyzed: 11/19/04
Date Reported: 11/24/04

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

MRL: Method Reporting Limit

Viorel Vasile
Project Manager



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

Project No.: NA
AA Project No.: A57206
Date Analyzed: 11/19/04
Date Reported: 11/24/04

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

MRL: Method Reporting Limit

Viorel Vasile
Project Manager



LABORATORY QA/QC REPORT

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

Project No.: NA
AA Project No. A57206
Date Analyzed: 11/16/04
Date Reported: 11/24/04

Compounds	Recovered Amount (ug/L)	Recovery (%)	Acceptable Range (%)
Benzene	19.0	95	50 - 150
Ethylbenzene	19.9	100	50 - 150
Methyl tert-Butyl Ether	20.0	100	50 - 150
Toluene	18.3	92	50 - 150
o-Xylene	20.7	104	50 - 150

Viorel Vasile
Project Manager



LABORATORY QA/QC REPORT

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

Project No.: NA
AA Project No. A57206
Date Analyzed: 11/19/04
Date Reported: 11/24/04

Compounds	Recovered Amount (mg/L)	Recovery (%)	Acceptable Range (%)
Gasoline Range Organics	0.505	101.0	48.0 - 152



Viorel Vasile
Project Manager



LABORATORY QA/QC REPORT

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

Project No.: NA
AA Project No.: A57206
Date Analyzed: 11/19/04
Date Reported: 11/24/04

Compounds	Recovered Amount (mg/L)	Recovery (%)	Acceptable Range (%)
Gasoline Range Organics	0.477	95.0	48.0 - 152

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: 179121
Project No.: NA
AA Project No. A57206
Date Analyzed: 11/16/04
Date Reported: 11/24/04

Compounds	Result (ug/L)	Spike Recovery (%)	Dup. Result (ug/L)	Spike/Dup. Recovery (%)	RPD (%)	Accept. Rec. Range (%)
Benzene	19.8	99	17.5	88	12	50 - 150
Ethylbenzene	20.4	102	20.5	103	1	50 - 150
Methyl tert-Butyl Ether	21.5	108	18.6	93	15	50 - 150
Toluene	19.2	96	18.8	94	2	50 - 150
o-Xylene	21.0	105	21.6	108	3	50 - 150

Viorel Vasile
Project Manager



AMERICAN ANALYTICAL CHAIN-OF-CUSTODY RECORD

8785 ETON AVE, CHATSWORTH, GA 30111

TEL: 678-255-8547 FAX: 678-255-7222

DATE: 11/09/04

PAGE: 1 of 1

AA Client: CHUM					Page: 510610489A	Sample Name (FID): Frank Godman	
Project Manager: Frank Godman					P.O. No.:	Sample's Signature: <i>Frank Godman</i>	
Project Name: Chum					Client's Project No.:	Project Manager's Signature: <i>Frank Godman</i>	
Job Name and Address: Chum Santas Clara Ave Alameda					ANALYSIS REQUESTED (Test Name): <i>See below</i>		
					Special Test Requirements / Comments: i.e., Turnaround Time, Delivery Units, Chain Package, ...		
Class ID	Lot	Qty	Unit	Sample Description	Requestor	Request Date	Request Time
MW-6	179120	11/05/04	2.33	2.33	3/1/04		
MW-4	179121	11/05/04	0.50				
MW-9	179122		0.50				
MW-3	179123		0.50				
MW-2	179124		0.50				
MW-7	179125		0.50				
MW-2	179126		0.50				
MW-1	179127		0.50				
EW-12	179128		0.50				
EW-5	179129		0.50				
EW-16	179130		0.50				
EW-7	179131		0.50				
LAB COMMENTS:					Requested by: <i>Frank Godman</i>	Date: <i>11/09/04</i>	Requested by:
					Requested by: PETER	Date: <i>11/09/04</i>	Requested by:
Approved as Work Order by: AA Project No. A57266					Requested by:	Date: <i>11/09/04</i>	Requested by:

NOV 11 PM 2:37

DISTRIBUTION: Page 1 - AA Lab - Laboratory Page 2 - AA Lab - Laboratory Page 3 - AA Lab - Account Executive Page 4 - AA Lab - Client

approval as work order 11/14/04 15:15 H. *[Signature]*