QUARTERLY REPORT OCTOBER-DECEMBER 1998

TONY'S EXPRESS AUTO SERVICE
3609 EAST 14TH STREET
OAKLAND, CALIFORNIA

FOR

Mr. ABOLGHASSEM RAZI
TONY'S EXPRESS AUTO SERVICE
3609 EAST 14TH STREET
OAKLAND, CA 94601

BY

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1 INTRODUCTION

The following Report documents the performance of a groundwater monitoring round at Tony's Express Auto Services, 3609 East 14th Street, Oakland, California. The property is primarily used as a service station.

During the groundwater monitoring round the following information and samples were gathered; with the results presented in this report.

1. Depth to water.

2. Electron Acceptor concentrations

3. Groundwater samples for TPHg and MBTEX, certified analysis.

2 SITE HISTORY

In July 1993, Alpha Geo Services removed three fuel tanks and a waste oil tank from the site. During the tank pull, Soil Tech Engineering Inc. (STE) collected soil samples from the tank excavation area and the old piping associated with the tanks. Soil samples from the tank area were taken at approximately 12 feet below the surface and range in TPHg concentration from 2.1 to 640 mg/kg . The soil samples from the beneath the old piping, 2 to 5 feet below grade, range in concentration from 75 to 4,100 mg/kg TPHg. No gasoline range hydrocarbons were found in the sample from the waste oil tank excavation.

Since the initial tank pull, STE installed 11 groundwater monitor wells including MW09, which was destroyed (see figure 3 for location of wells). MW09 was destroyed to allow for construction.

In addition to the borings completed as monitor wells, a number of other soil borings have been performed in order to determine the extent of contaminated soil at the site.

3 SITE ACTIVITY OCTOBER – DECEMBER, 1998

3.1 GROUNDWATER MONITORING ROUND

A groundwater monitoring round was preformed on December 16, 1998, see Appendix A for methods and procedures. The all of the monitor wells were purged, the water was analyzed for Electron Acceptors and water samples for TPHg/MBTEX were collected.

4 RESULTS

4.1 DEPTH TO WATER, GROUNDWATER GRADIENT.

The groundwater at this site is shallow and unconfined. During the initial construction of monitor wells MW01, MW02 and MW03, groundwater was encountered at 15 feet below the surface. The current depth to groundwater in the wells is between 10.19 and 11.60 feet below the surface and the groundwater gradient is to the south, see Figure 4.

4.2 WATER SAMPLES

4.2.1 TPHg/MBTEX

The water samples from all of the wells contained significant levels of TPHg and MBTEX, see Table 2.

4.2.2 Electron Acceptors

During the December 16, 1998 monitor round the acceptors were sampled, dissolved Oxygen, O_2, and Ferrous iron, Fe^{++}, were present in all of the monitor wells, see Table 3.

5 DISCUSSION

5.1 HYDROCARBONS

Significant levels of TPHg and BTEX continue to exist at this site. The benzene and TPHg plumes continue offsite, see Figures 6 and 7. The amount of petroleum hydrocarbon moving of the site indicates that it might be beneficial, to pump and treat groundwater in order to help control the contamination plume.

5.2 BIOREMEDIATION

The results of the December 30, 1997, bioremediation sampling indicated that natural attenuation/bioremediation is active at this site. This continued to be the case in the December 16, 1998 sampling.

All of the tested wells have reduced levels of dissolved oxygen. Six of the nine wells had less than 0.1 mg/l of dissolve oxygen in the December 97 sampling. During the December 16, 1998, monitor round all of the wells contained low levels of dissolved Oxygen.

The presence of Ferrous iron in the wells indicates that biodegradation has progressed to the point that the system is oxygen deficient and the bacteria have started to reduce the iron to provide

oxygen for the degradation. With the increase of dissolved oxygen in the wells the amount of Ferrous iron has deceased in a majority of the wells, see table 3.

In December biodegradation in MW02, which is in the heart of the plume, had consumed all of the available electron acceptors. With the start-up of airsparging into P4 and LW1there has been an increase in the amount of dissolved oxygen in the vicinity of MW02.

The levels of electron acceptors present and the presence of the reaction products, carbon dioxide, methane and ferrous iron indicate that the bacteria in the soil and the compounds in the groundwater have the capability to consume a significant amount of hydrocarbons.

Introducing ambient air (O_2) into the system during vapor vacuum extraction and/or sparging will greatly increase this bioactivity

6 CONCLUSIONS

1. Continue to add sodium hexametaphosphate and ammonium sulfate to the groundwater monitoring wells, in order increase the nutrition level.

2. Continue air sparging to increase Oxygen levels in the groundwater plume.

3. Permit and start vapor extraction in order to remove the hydrocarbon contamination remaining in the soil, and to further increase the amount of oxygen available in the groundwater.

4. Research the practicality of performing pump and treat at the site.

If you have any questions concerning this report or if we can be of further assistance, please don't hesitate to contact us at (530) 668-5300.

7 CONCERNED PARTIES

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8 LIMITATIONS

This report is based upon the following:

- The observations of field personnel.
- The results of laboratory analyses performed by a state certified laboratory.
- Referenced documents.
- Our understanding of the regulations of the State of California and Alameda County, Hazardous Materials Section and/or City of Oakland, California.

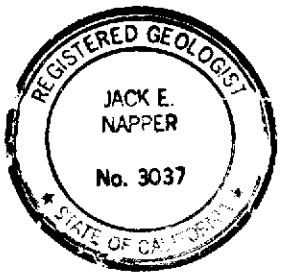
Changes in groundwater conditions can occur due to variations in rainfall, temperature, local and regional water usage and local construction practices. In addition, variations in the soil and groundwater conditions could exist beyond the points explored in this investigation.

State certified analytical results are included in this report. This laboratory follows EPA and State of California approved procedures; however, WEGE is not responsible for errors in these laboratory results.

The services performed by Western Geo-Engineers, a corporation, under California Registered Geologist #3037 and/or Contractors License #513857, have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the State of California and the Woodland area. Our work and/or supervision of remediation and/or abatement operations, active or preliminary, at this site is in no way meant to imply that we are owners or operators of this site. Please note that known contamination of soil and/or groundwater must be reported to the appropriate agencies in a timely manner. No other warranty, expressed or implied, is made.

If you have any questions concerning this report or if we can be of further assistance, please don't hesitate to contact us at (530) 668-5300.

Respectfully,



Roy Butler
Project Geologist

Jack E. Napper
Registered Geologist #3037

Table 1, Tony's Express, Groundwater Elevations						
	DEPTH TO TOP SLOTS	DEPTH TO WATER	DEPTH TO WATER	DEPTH TO WATER	DEPTH TO WATER	DEPTH TO WATER
DATE		12/30/97	03/04/98	06/30/98	09/29/98	12/16/98
MW01	10	9.3	7.53	10.62	13.58	11.10
MW02	10	9.05	7.44	10.58	13.58	10.94
MW03	10	9.74	8.21	11.13	14.68	11.55
MW04	7	9.43	7.96	10.72	13.64	11.13
MW05	6	9.15	7.53	10.85	13.82	11.20
MW06	6	9.3	8.30	11.26	14.10	11.60
MW07	6	8.65	6.93	10.22	13.09	10.52
MW08	7	8.95	7.38	10.33	13.02	10.75
MW09	8	DESTROYED				
MW10	8	8.78	7.23	9.52	11.93	10.19
MW11	8	10.2	8.81	11.02	13.24	11.58
	CASING ELEVATION	GROUND-WATER ELEVATION	GROUND-WATER ELEVATION	GROUND-WATER ELEVATION	GROUND-WATER ELEVATION	GROUND-WATER ELEVATION
MW01	97.99	88.69	90.46	87.37	84.41	86.89
MW02	98.58	89.53	91.14	88	85	87.64
MW03	97.78	88.04	89.57	86.65	83.1	86.23
MW04	97.85	88.42	89.89	87.13	84.21	86.72
MW05	99.04	89.89	91.51	88.19	85.22	87.84
MW06	98.77	89.47	90.47	87.51	84.67	87.17
MW07	97.83	89.18	90.9	87.61	84.74	87.31
MW08	97.25	88.3	89.87	86.92	84.23	86.5
MW09	95.94					
MW10	94.54	85.76	87.31	85.02	82.61	84.35
MW11	95.94	85.74	87.13	84.92	82.7	84.36
Avg	97.41	88.30	89.83	86.93	84.09	86.50

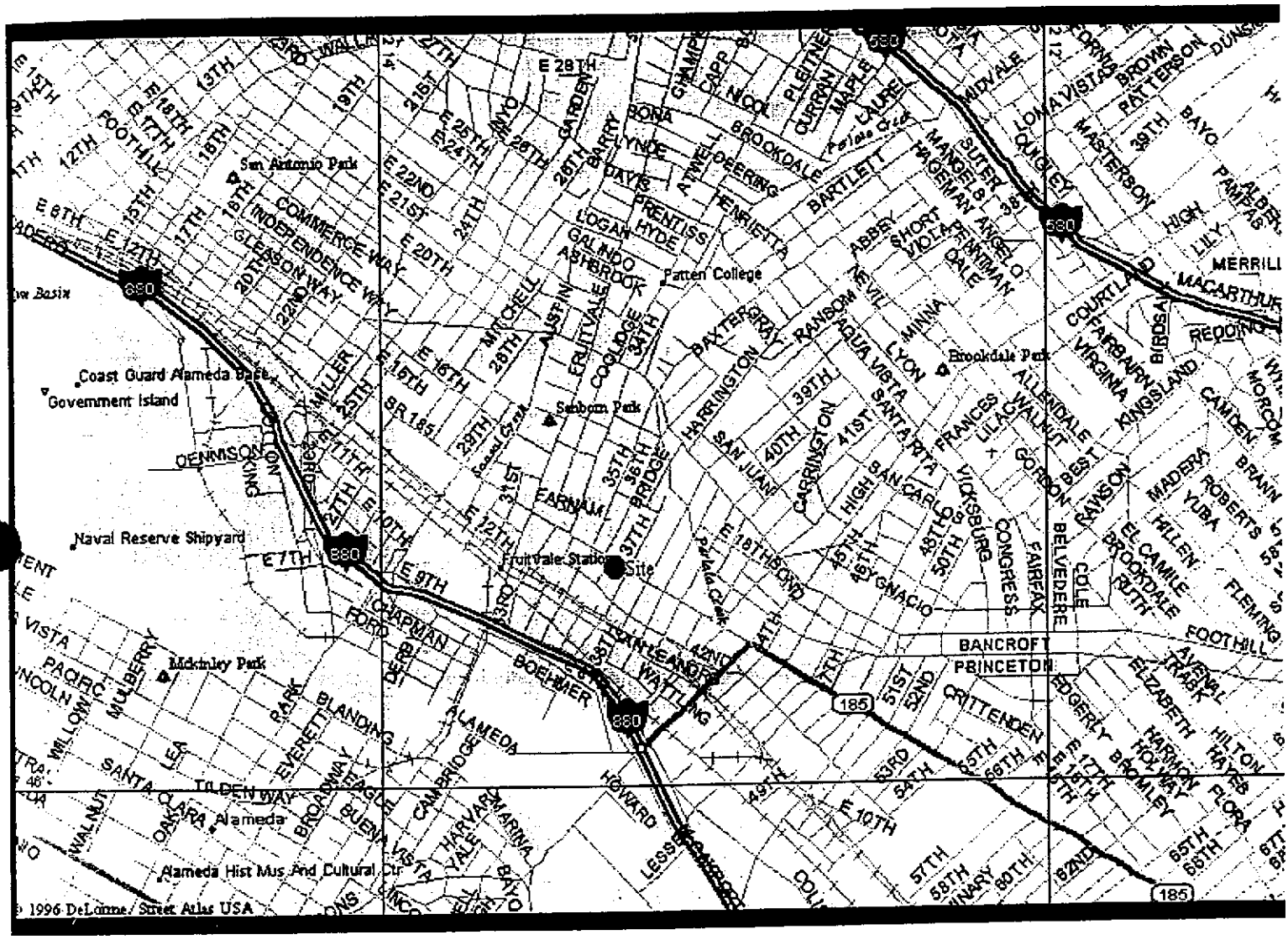
Table 2, ug/l, Gasoline Range Hydrocarbons in Groundwater											
DATE	10/5/93	12/2/94	3/6/95	6/5/95	10/2/95	1/3/96	4/3/96	9/12/96	12/9/96	4/10/97	12/30/97
MW1 Product	sheen	sheen	sheen	sheen	sheen	sheen	sheen			sheen	
MW01, TPHg	320000	80000	32000	21000	5900	30000	31000				27000
MW01, Benzene	24000	3800	190	950	140	71	98				2300
MW01, Toluene	21000	6600	150	650	130	73	120				2100
MW01, Ethylbenzene	2600	2300	150	570	140	50	63				1400
MW01, Xylene	15000	11000	490	1500	390	120	170				5100
MW01, MTBE											
MW02, TPHg	260000	42000	490	8000	46000	3400	27000	19000	6200	53000	35000
MW02, Benzene	17000	1700	3.2	220	160	7.6	100	210	110	150	4900
MW02, Toluene	19000	2200	2.6	330	130	13	92	220	6.6	110	4900
MW02, Ethylbenzene	570	1200	1.6	350	93	7.4	44	110	2.1	37	1600
MW02, Xylene	15000	3600	5.9	660	240	26	130	400	14	1120	7000
MW02, MTBE										<0.5	
MW03					sheen	sheen	sheen			sheen	film
MW03, TPHg	3000000	250000	21000	350000	15000	19000	70000	66000	54000	54000	
MW03, Benzene	190000	19000	80	20000	510	290	310	430	320	130	
MW03, Toluene	740000	22000	73	42000	410	270	260	420	280	120	
MW03, Ethylbenzene	310000	4400	35	5800	210	97	89	210	90	38	
MW03, Xylene	13000	28000	130	36000	650	890	280	510	250	120	
MW03, MTBE										<0.5	
MW04, TPHg					9300	1100	1900	2100	4000	<50	2300
MW04, Benzene					23	4	12	46	14	<0.5	410
MW04, Toluene					11	1.3	7.5	24	6.3	<0.5	270
MW04, Ethylbenzene					9.9	0.9	5.2	31	4.2	<0.5	100
MW04, Xylene					29	3.3	14	73	12	<0.5	1500
MW04, MTBE										<0.5	
MW05, TPHg					1500	830	780				790
MW05, Benzene					1.1	<0.5	1.3				82
MW05, Toluene					1.3	<0.5	1				66
MW05, Ethylbenzene					3.9	1.3	4.8				59
MW05, Xylene					5.3	2.2	3.8				160
MW05, MTBE											
MW06, Product						sheen	sheen	sheen	sheen		
MW06, TPHg					12000	68000	48000	23000	57000	29000	36000
MW06, Benzene					350	60	140	150	480	60	660
MW06, Toluene					310	61	110	160	450	70	7600
MW06, Ethylbenzene					200	27	62	110	160	24	1500
MW06, Xylene					610	180	170	310	460	71	7700
MW06, MTBE										<0.5	
MW07, Product					sheen						
MW07, TPHg					3300	1500	1900				1400
MW07, Benzene					8.9	1.5	2.1				130
MW07, Toluene					12	0.9	2.6				98
MW07, Ethylbenzene					17	3	5.1				75
MW07, Xylene					45	4.1	6.9				200
MW7, MTBE											
MW08, Product					sheen	sheen	sheen				
MW08, TPHg					94000	23000	58000	46000	27000	24000	28000
MW08, Benzene					310	19	250	210	88	86	6000
MW08, Toluene					250	12	170	150	43	55	1600
MW08, Ethylbenzene					180	8.8	140	160	44	50	2100
MW08, Xylene					480	47	330	360	80	100	4700
MW08, MTBE										<0.5	
MW10, TPHg								26000	3000	1000	10000
MW10, Benzene								98	8.1	21	5300
MW10, Toluene								37	2.2	9.3	76
MW10, Ethylbenzene								63	1.5	3.3	1100
MW10, Xylene								99	5.1	33	780
MW10, MTBE										<0.5	
MW11, TPHg								2300	650	<50	710
MW11, Benzene								7	1.8	<0.5	66
MW11, Toluene								7.2	0.5	<0.5	97
MW11, Ethylbenzene								12	0.8	<0.5	59
MW11, Xylene								31	0.42	<0.5	190
MW11, MTBE										<0.5	

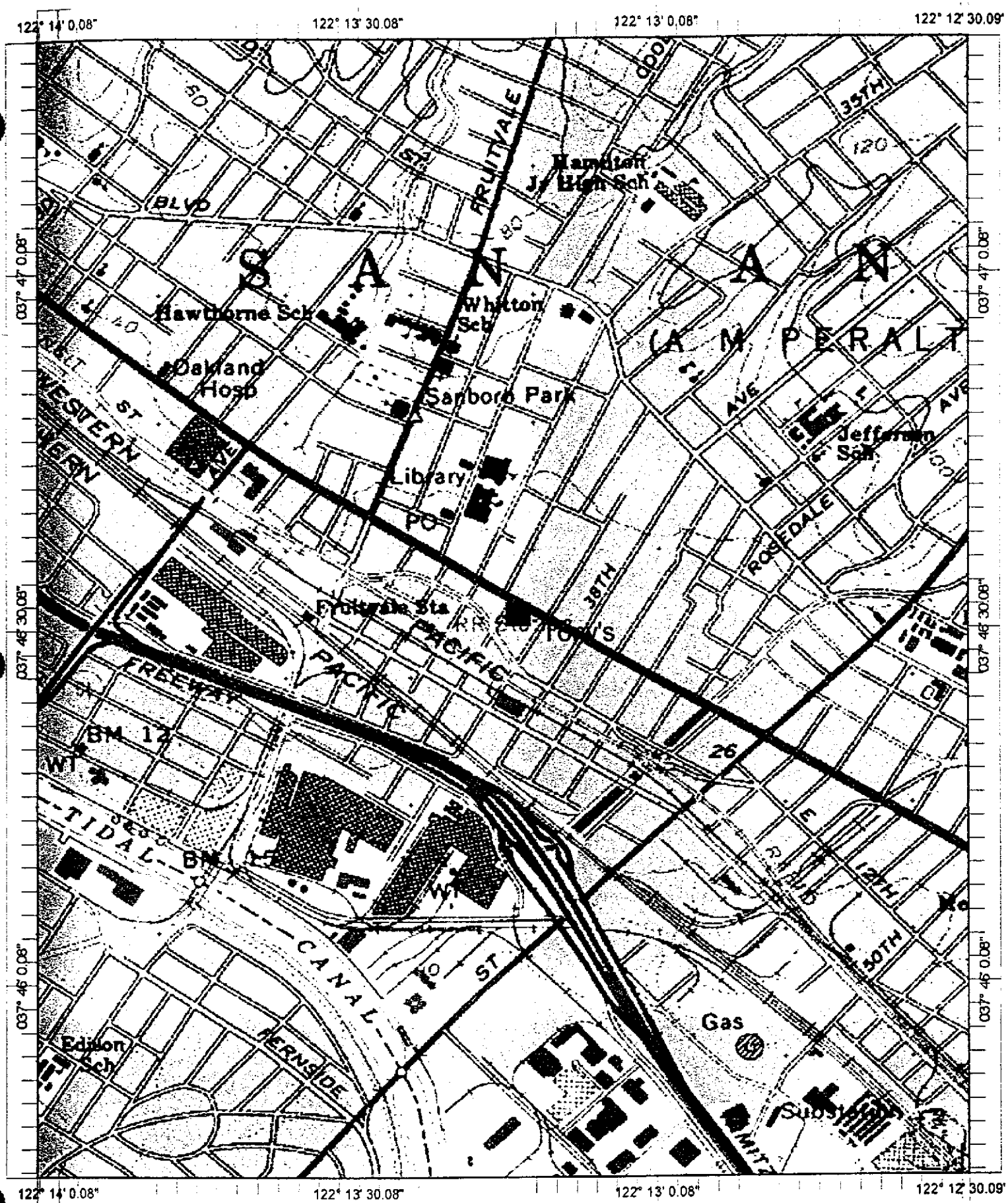
Table 2, ug/l, Gasoline Range Hydrocarbons in Groundwater				
DATE	3/4/98	6/30/98	9/29/98	12/16/98
MW1 Product	sheen	sheen	sheen	
MW01, TPHg				65000
MW01, Benzene				2500
MW01, Toluene				2400
MW01, Ethylbenzene				2300
MW01, Xylene				9500
MW01, MTBE				160
MW02, TPHg	51000	25000	2900	26000
MW02, Benzene	4200	2000	290	1400
MW02, Toluene	6000	2000	180	1600
MW02, Ethylbenzene	1600	1300	160	880
MW02, Xylene	8800	4300	360	9500
MW02, MTBE			<0.5	<5
MW03				
MW03, TPHg	150000	33000	83000	51000
MW03, Benzene	7100	2000	35000	5700
MW03, Toluene	9500	1900	8800	3900
MW03, Ethylbenzene	2700	900	2600	1200
MW03, Xylene	12000	4600	1400	6300
MW03, MTBE			450	410
MW04, TPHg	2000	1700	6200	1400
MW04, Benzene	600	780	910	590
MW04, Toluene	950	160	77	33
MW04, Ethylbenzene	100	54	68	28
MW04, Xylene	500	200	200	94
MW04, MTBE			18	24
MW05, TPHg	400	400	270	1400
MW05, Benzene	3	<5	2	1
MW05, Toluene	<0.5	<5	1	0.6
MW05, Ethylbenzene	14	15	3	<0.5
MW05, Xylene	5	<10	3	2
MW05, MTBE			<0.5	<0.5
MW06, Product			sheen	
MW06, TPHg	65000	28000		54000
MW06, Benzene	6100	3100		3800
MW06, Toluene	11000	4300		4600
MW06, Ethylbenzene	1800	1300		1400
MW06, Xylene	9900	4900		6400
MW06, MTBE				360
MW07, Product				
MW07, TPHg	800	620	1800	990
MW07, Benzene	25	4	1	5
MW07, Toluene	47	<5	0.6	10
MW07, Ethylbenzene	22	9	1	5
MW07, Xylene	76	<10	2	20
MW7, MTBE			68	160
MW08, Product			Film	
MW08, TPHg	70000	54000		61000
MW08, Benzene	8400	4600		6300
MW08, Toluene	3500	2800		1700
MW08, Ethylbenzene	3700	3500		2200
MW08, Xylene	11000	7300		4400
MW08, MTBE				1300
MW10, TPHg	9000	8900	9900	8700
MW10, Benzene	2600	3700	5400	3800
MW10, Toluene	1200	60	66	51
MW10, Ethylbenzene	1300	980	970	790
MW10, Xylene	3400	420	620	420
MW10, MTBE			2600	1800
MW11, TPHg	1800	1100	170	650
MW11, Benzene	160	45	7	27
MW11, Toluene	31	24	0.6	4
MW11, Ethylbenzene	120	71	4	25
MW11, Xylene	250	100	9	33
MW11, MTBE			22	<0.5

Table 3. Bioremediation Sampling

WELL	Date	TPHg	Dissolved Oxygen	Nitrate as Nitrogen	Ferrous Iron	Sulfate
UNITS		mg/l	mg/l	mg/l	mg/l	mg/l
MW01	12/30/97	27	0.5	<0.1	3.04	<1
MW01	6/30/98	FLOATING PRODUCT NOT SAMPLED				
MW01	12/16/98	65	0.5	<0.1	3.25	<1
MW02	12/30/97	35	<0.1	<0.1	>3.30	<1
MW02	6/30/98	25	3.2	<0.1	0.50	14
MW02	12/16/98	26	2.5	<0.1	0.80	24
MW03	12/30/97	FLOATING PRODUCT NOT SAMPLED				
MW03	6/30/68	33	2	0.1	0.37	77
MW03	12/16/98	51	5.3	0.1	0.30	77
MW04	12/30/97	2.3	<0.1	4.5	0.39	42
MW04	6/30/98	1.7	1.3	0.9	0.93	7
MW04	12/16/98	1.4	2	0.7	1.00	27
MW05	12/30/97	0.79	<0.1	0.3	0.94	18
MW05	6/30/98	0.4	0.6	1.6	0.50	6
MW05	6/30/98	1.4	1	1.4	0.50	10
MW06	12/30/97	36	<0.1	<0.1	0.30	5
MW06	6/30/98	28	2.5	0.7	0.40	4
MW06	12/16/98	54	1.8	<0.1	0.40	10
MW07	12/30/97	1.4	1.2	0.2	0.23	32
MW07	6/30/98	0.62	1	0.5	0.78	4
MW07	12/16/98	0.99	1	0.5	0.58	34
MW08	12/30/97	28	2.5	0.1	>3.30	0
MW08	6/30/98	54	1.3	<0.1	2.82	3
MW08	12/16/98	61	1	<01.1	3.00	5
MW09	12/30/97	WELL DESTROYED				
MW10	12/30/97	10	<0.1	0.3	2.21	<1
MW10	6/30/98	8.9	0.9	<0.1	0.38	<1
MW10	12/16/98	8.7	1	<0.1	1.30	<1
MW11	12/30/97	0.71	<0.1	3.5	0.32	35
MW11	6/30/98	1.1	2.2	1.2	0.15	6
MW11	12/16/98	0.65	2.3	1.0	0.10	20

Figure 1, Location Map



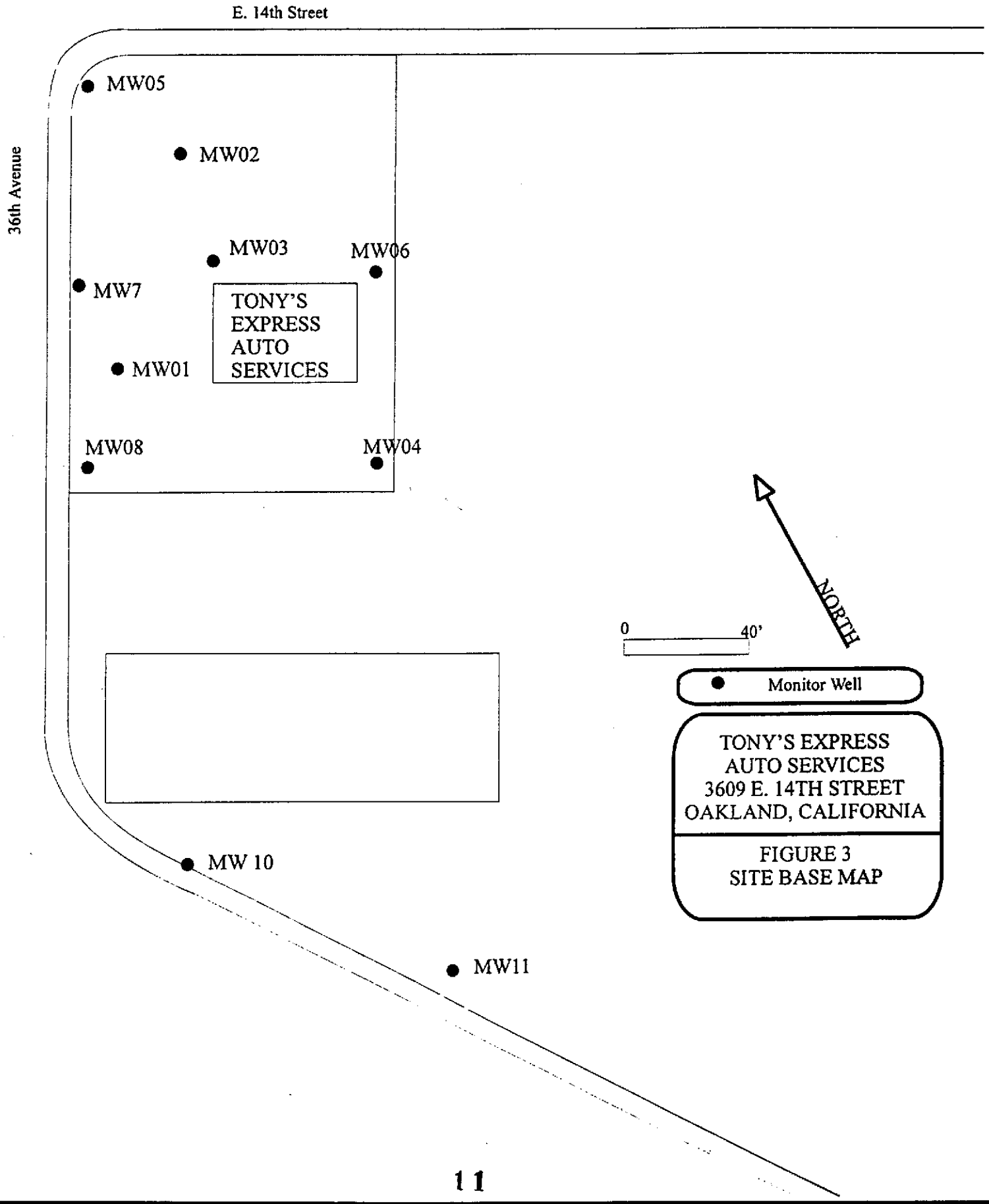


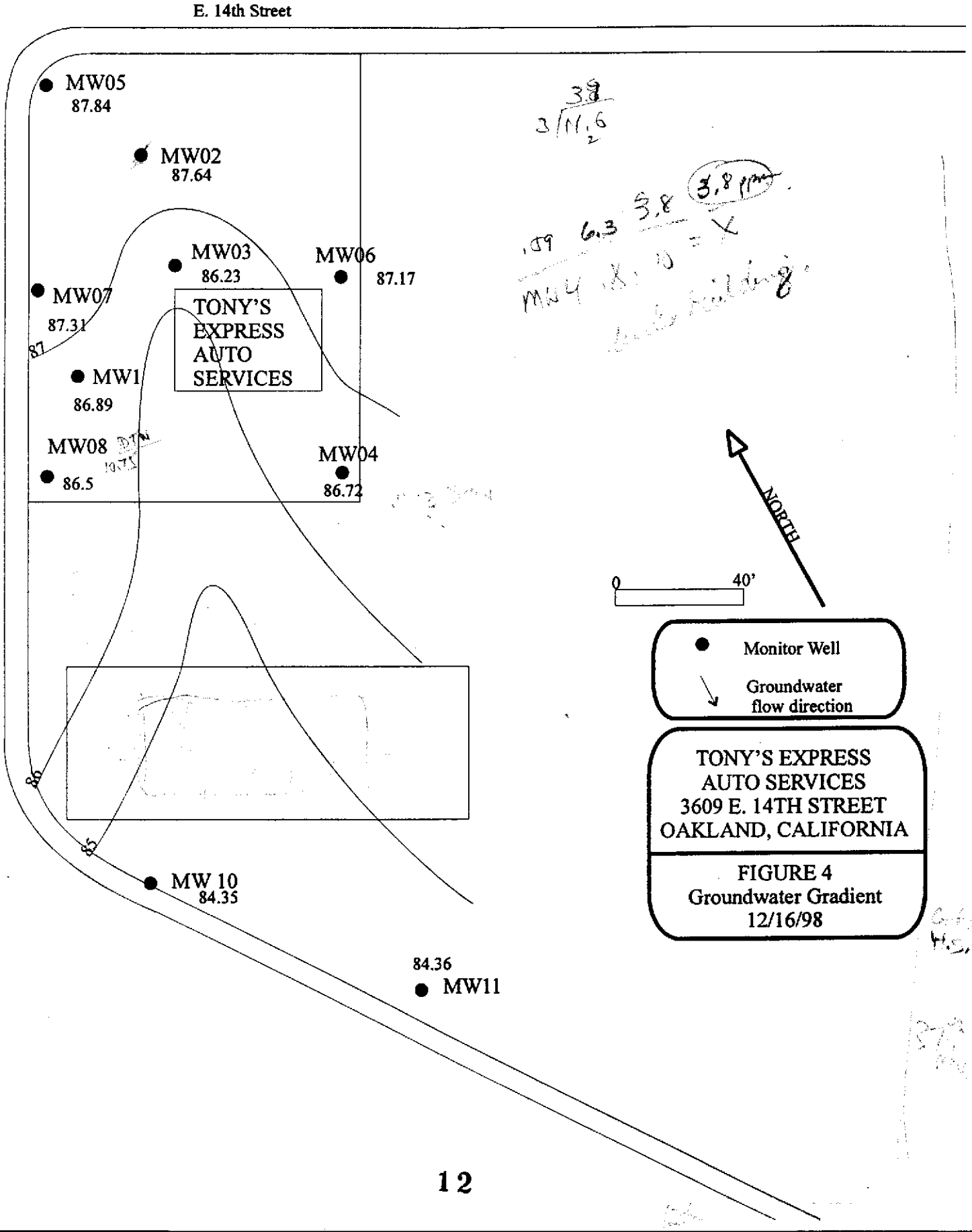
<Default> - 1 Markers, Length = 0 feet

Tony's - 037° 46' 31.3" N, 122° 13' 13.8" W

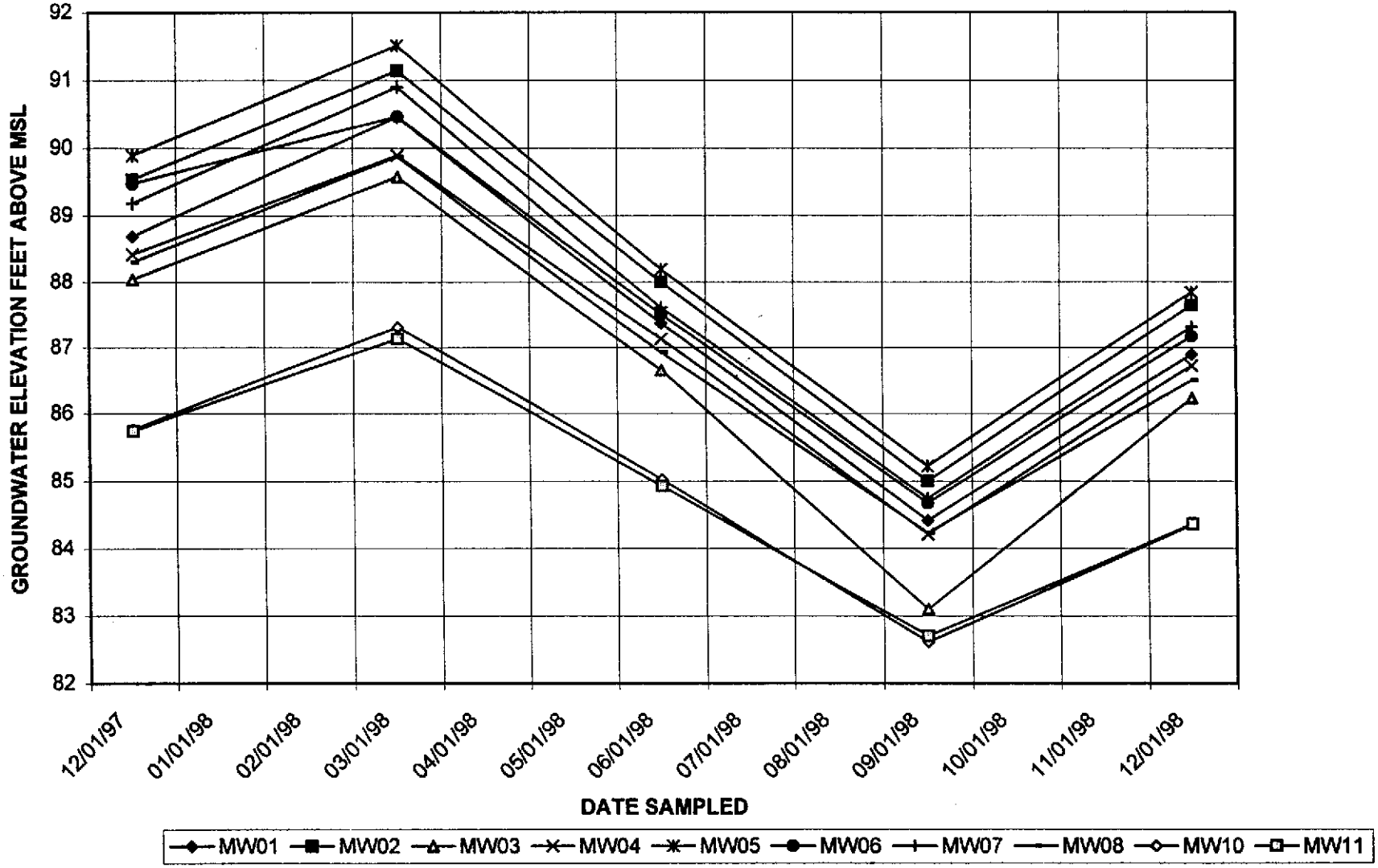
Name: OAKLAND EAST
Date: 5/11/98
Scale: 1 inch equals 1000 feet

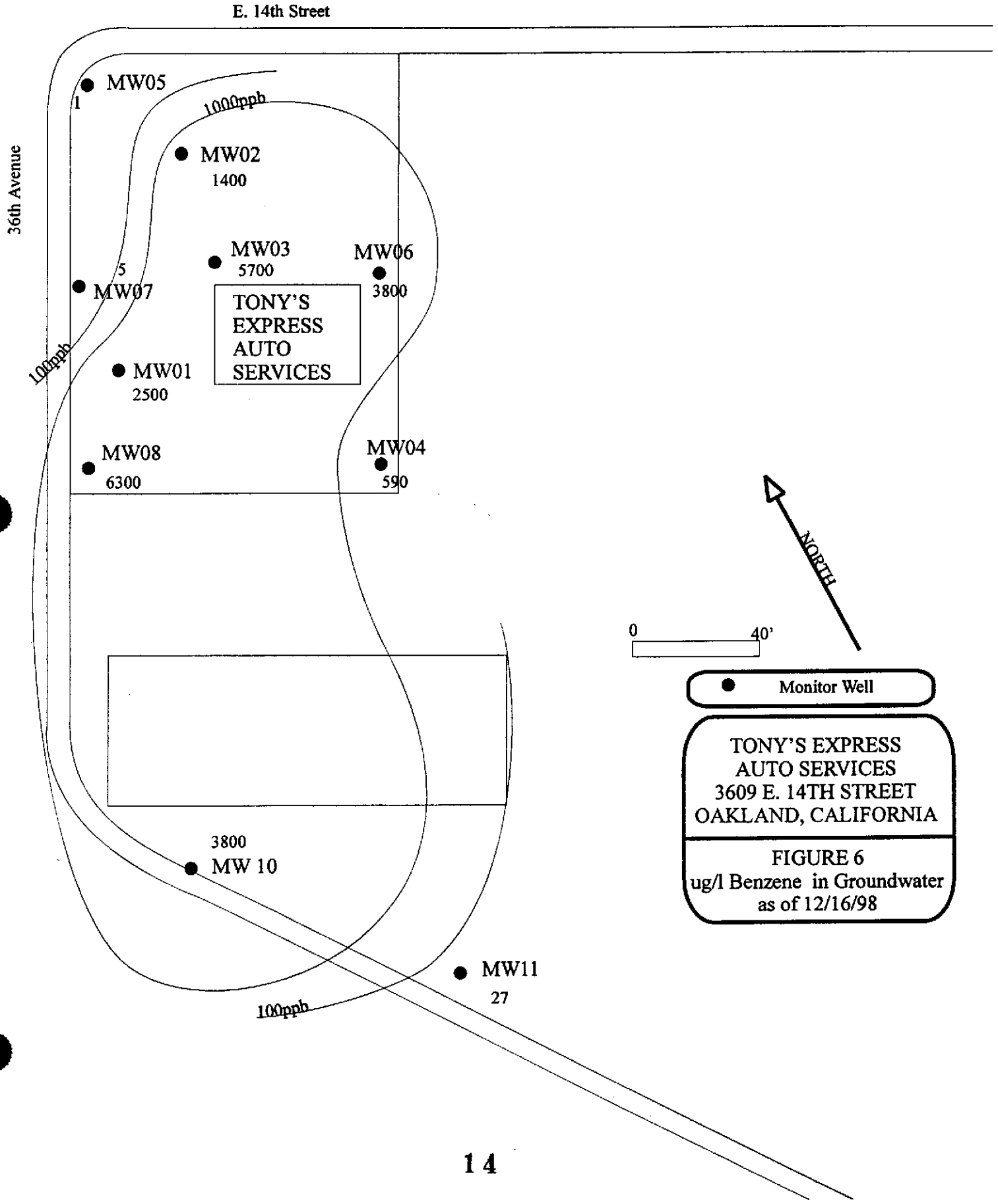
Location: 037° 46' 31.7" N 122° 13' 15.9" W
Caption: Figure 2, USGS Topographic Map

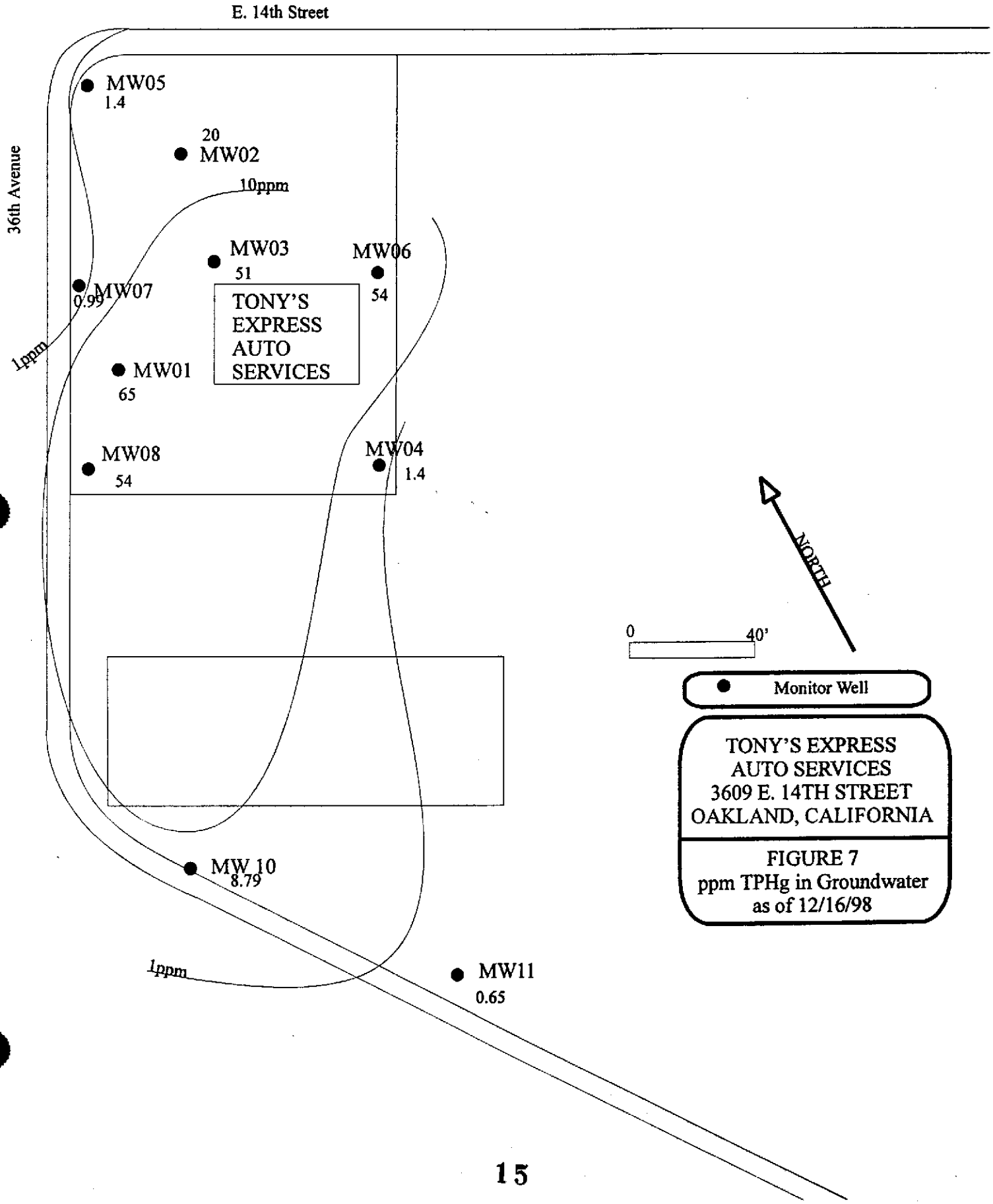

E. 14th Street
36th Avenue
MW05
MW02
MW03
MW06
MW7
TONY'S EXPRESS AUTO SERVICES
MW01
MW08
MW04
MW 10
MW11
NORTH
0
40'
Monitor Well
TONY'S EXPRESS AUTO SERVICES
3609 E. 14TH STREET
OAKLAND, CALIFORNIA
FIGURE 3
SITE BASE MAP


E. 14th Street
36th Avenue
MW05
87.84
MW02
87.64
MW03
86.23
MW06
87.17
MW07
87.31
TONY'S EXPRESS AUTO SERVICES
MW1
86.89
MW08
86.5
MW04
86.72
87
86
85
MW 10
84.35
84.36
MW11
NORTH
0
40'
Monitor Well
Groundwater flow direction
TONY'S EXPRESS AUTO SERVICES
3609 E. 14TH STREET
OAKLAND, CALIFORNIA
FIGURE 4
Groundwater Gradient
12/16/98

GROUNDWATER ELEVATION
Figure 5

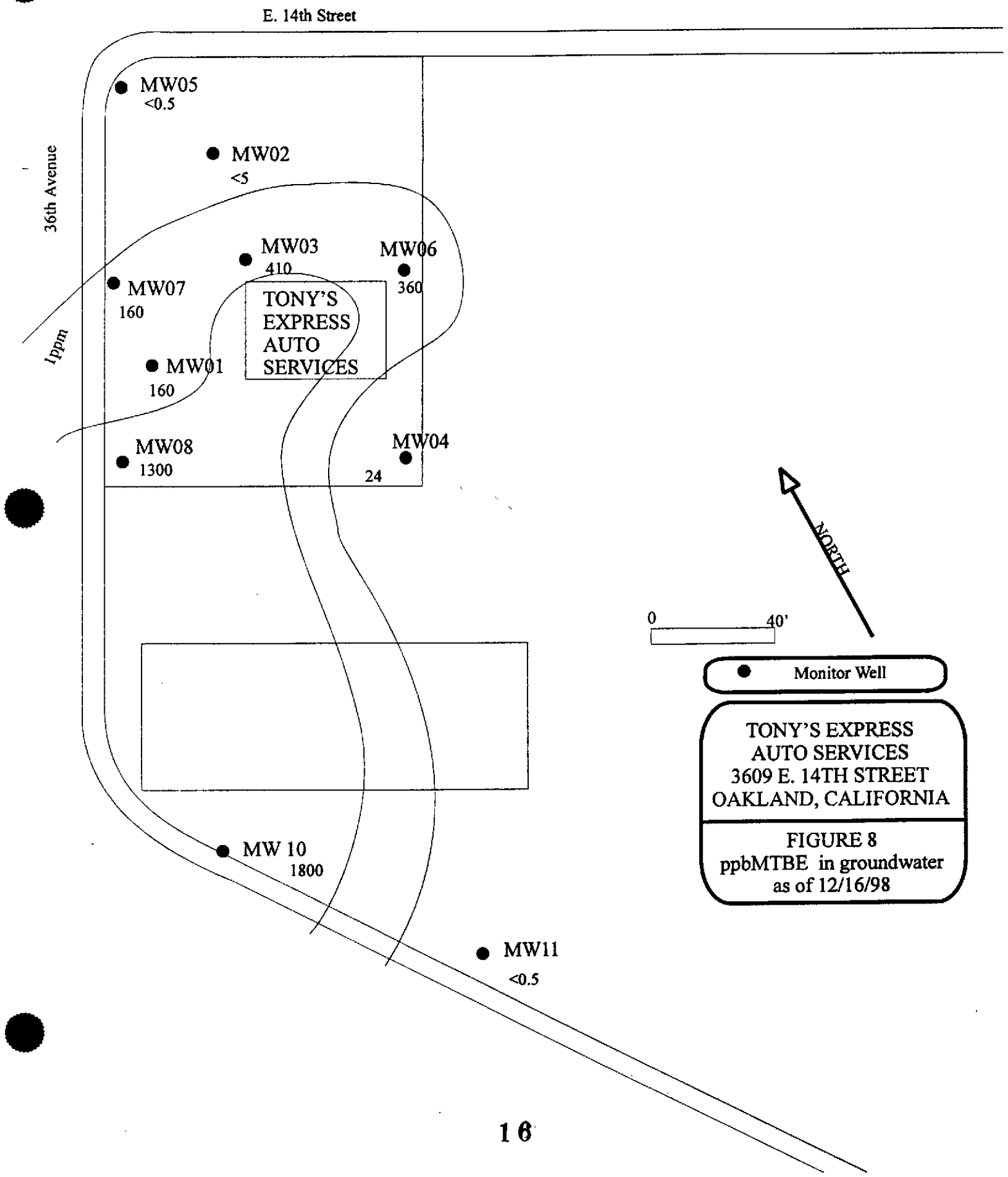



E. 14th Street
36th Avenue
MW05
1
1000ppb
MW02
1400
MW03
5700
MW06
3800
5
MW07
TONY'S EXPRESS AUTO SERVICES
100ppb
MW01
2500
MW08
6300
MW04
590
NORTH
0
40'
Monitor Well
TONY'S EXPRESS AUTO SERVICES
3609 E. 14TH STREET
OAKLAND, CALIFORNIA
FIGURE 6
ug/l Benzene in Groundwater
as of 12/16/98
3800
MW 10
MW11
27
100ppb

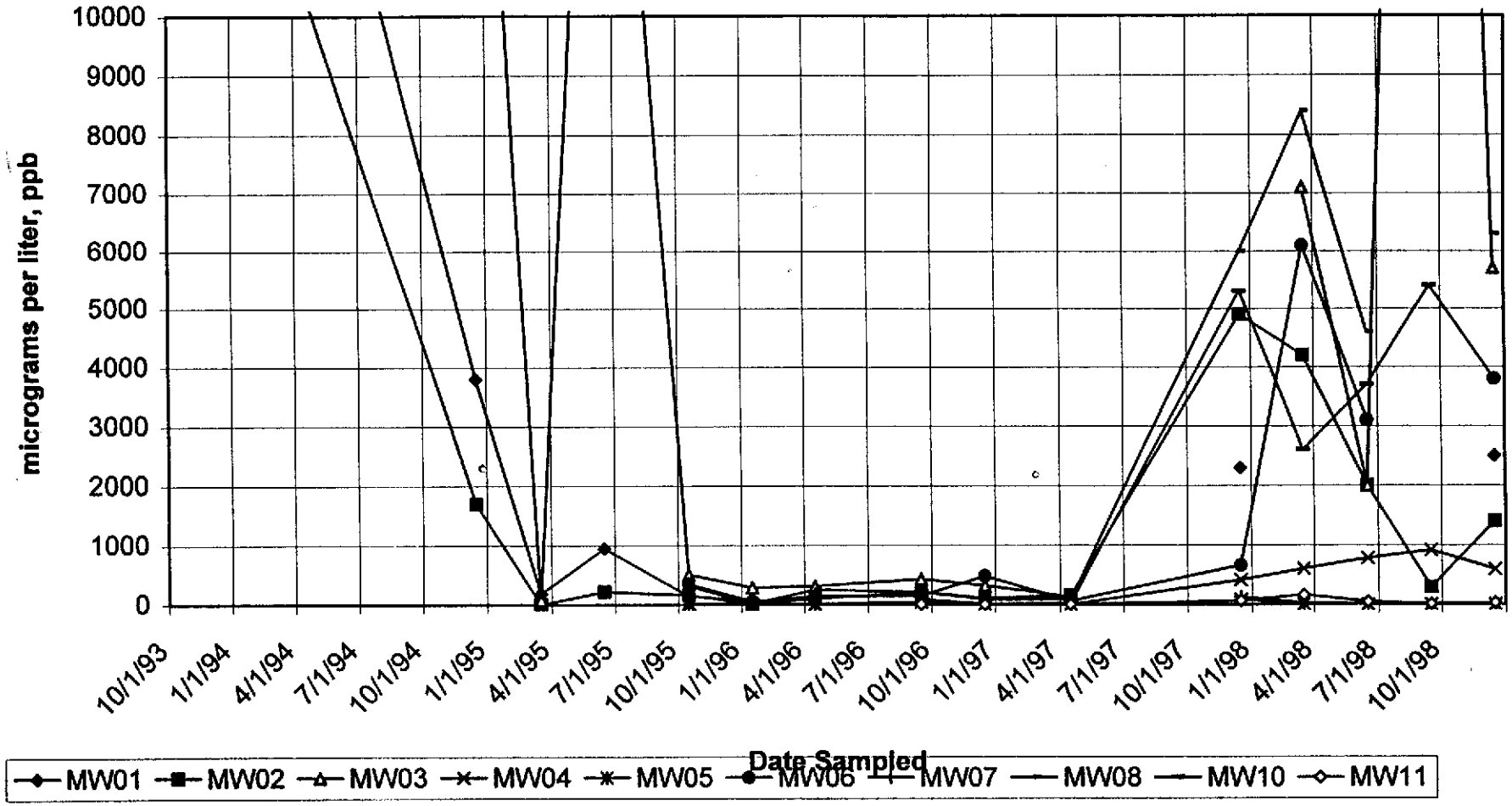


TONY'S EXPRESS
AUTO SERVICES
3609 E. 14TH STREET
OAKLAND, CALIFORNIA

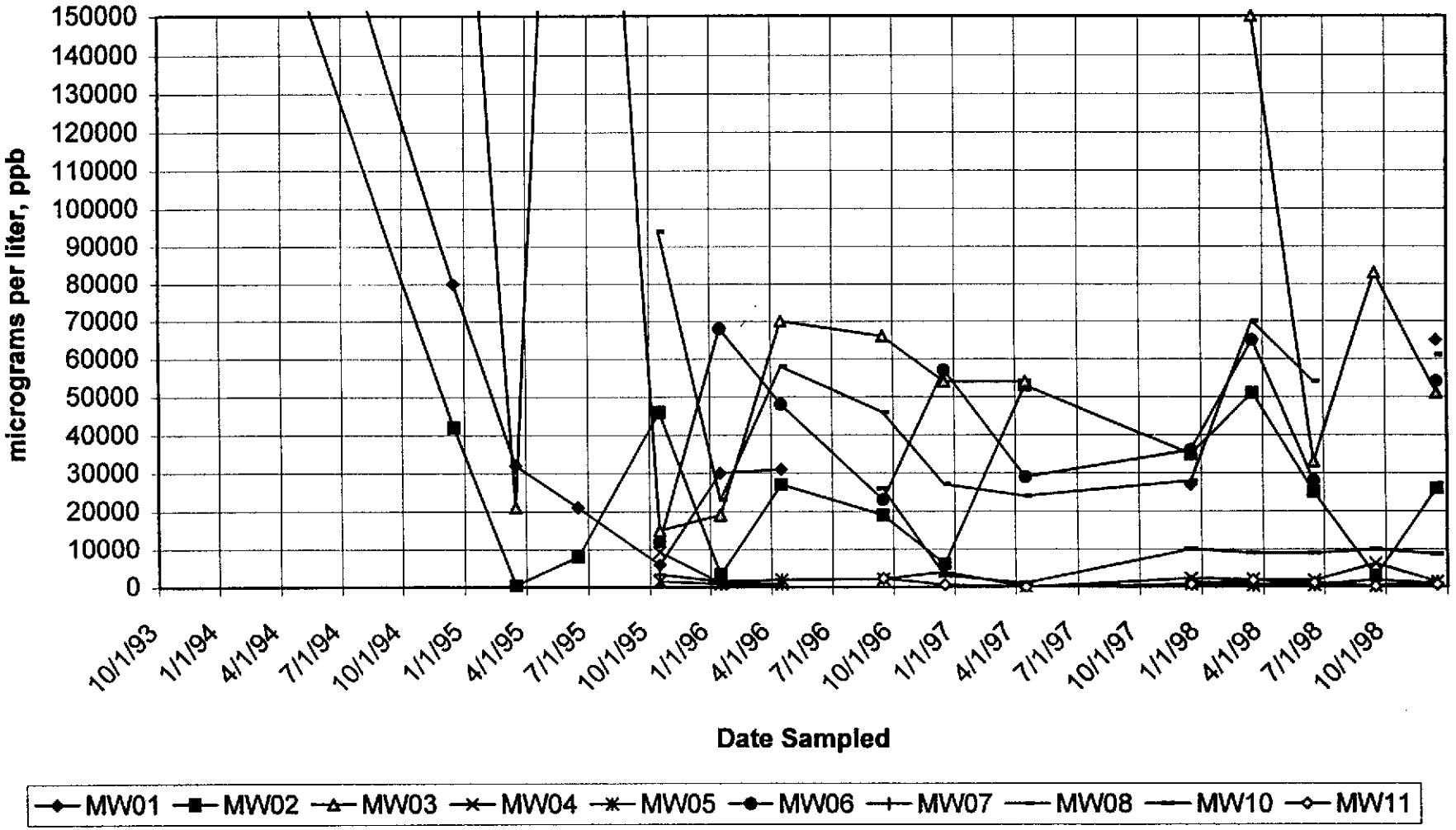
FIGURE 7
ppm TPHg in Groundwater
as of 12/16/98


E. 14th Street
36th Avenue
MW05
<0.5
MW02
<5
MW03
410
MW06
360
MW07
160
TONY'S
EXPRESS
AUTO
SERVICES
1ppm
MW01
160
MW08
1300
MW04
24
MW 10
1800
MW11
<0.5
NORTH
0
40'
Monitor Well
TONY'S EXPRESS
AUTO SERVICES
3609 E. 14TH STREET
OAKLAND, CALIFORNIA
FIGURE 8
ppbMTBE in groundwater
as of 12/16/98

Tony's Express Auto Services, Micrograms per liter Benzene
Figure 9



Tony's Express Auto Services, Micrograms per liter TPHg
Figure 10



APPENDIX A

METHODS AND PROCEDURES
QA/QC

APPENDIX A:
METHODS AND PROCEDURES
QA/QC

This Appendix documents the specific methods, procedures, and materials used to collect and analyze groundwater samples.

GAUGING AND MEASURING MONITOR WELLS

Prior to sampling a well, WEGE personnel obtain three measurements:

1. the depth to groundwater (DTW);
2. the product thickness using a battery powered depth to water-product interface probe and/or by using a specially designed bailer;
3. the total depth of casing, to calculate the total water volume in the well.

The DTW-product interface probe is lowered into the well casing until the instrument signals when the top of free phase floating product (if present) and/or the top of water is reached. The distance from the top of free phase floating product and/or water to the top of casing is read from the tape that is attached to the probe. The probe is then lowered to the bottom of the well and the tape is read again. The tape is calibrated in 0.01-foot intervals for accuracy to 0.01 foot. The measured distance is subtracted from the established elevation at the top of casing to determine the elevation of groundwater with respect to mean sea level and the difference between the top of groundwater and the base of the well is noted to establish water volume in the well. The probe and tape is washed with TSP (Tri Sodium Phosphate) and rinsed in distilled water before each measurement. WEGE has designed and built bailers that will collect a sample of the contents of a well to show the exact thickness of any floating product.

Some of the abbreviations used in water sampling and or measuring or monitoring are: BGS, Below Ground Surface; DTW, Depth to Water (from surface reference i.e. usually TOC); TOC, Top of Casing; MSL, Mean Sea Level; AMSL and BMSL, Above and Below MSL; BS, Below Surface; TOW, Top of Water; TSP, Tri Sodium Phosphate.

PURGING STANDING WATER FROM MONITOR WELLS

If no product is present, WEGE personnel purge the well by removing groundwater until the water quality parameters (temperature, pH, and conductivity) stabilize, or until the well is emptied of water. Periodic measurements of groundwater temperature, pH, and conductivity are taken with a Hydac Monitor or other meter and recorded along with the volume of groundwater removed from the well. Purging is done by one or more methods singularly or in combination. Bailers, pneumatic or electric sample pumps, or vacuum pump tanks or trucks may be used. The usual amount of water removed is three borehole volumes, unless otherwise stated.

$$BV = (7.48/4) \times (CD2+P\ (BD2-CD)\ 2) \times (WD-GW)$$

BV borehole volume (gallons)
CD casing diameter (feet)
GW depth to groundwater (feet)
BD borehole diameter (feet)
WD well depth (feet)
P porosity of the gravel pack, 25%

Table of Common Boring and Casing Diameters

Boring diameter inches	Casing diameter inches	Volume gallons/ foot	3 VolumesX (WD-GW) gallons /foot
4	1	0.042	0.126
6	1	0.082	0.246
6	2	0.173	0.519
8	2	0.277	0.831
8	4	0.671	2.013
10	2	0.572	1.716
10	4	0.844	2.532

EXAMPLE: An 8 inch boring with 2 inch casing requires removal of 0.831 gallons of water per foot of water column.

The water collected during purging is either safely stored on- site in 55 gallon DOT 17H drums for later disposition, transported to an approved on-site/off-site treatment facility or to a sewer discharge system.

COLLECTION OF WATER SAMPLE FOR ANALYSIS

The groundwater in the well is allowed to recover to at least 80% of its volume prior to purging, if practical, before the groundwater sample is collected.

$$\text{Percent Recovery} = \left(1 - \frac{\text{Residual drawdown}}{\text{Maximum drawdown}}\right) \times 100.$$

A fresh bailer is used to collect enough water for the requirements of the laboratory for the analyses needed or required. The water samples are decanted from the bailer into the appropriate number and size containers. These containers are furnished pre-cleaned to exact EPA protocols, with and without preservatives added, by the analytical laboratory or a chemical supply company. The bottles are filled, with no headspace, and then capped with plastic caps with teflon liners.

The vials or bottles containing the groundwater samples are labeled with site name, station, date, time, sampler, and analyses to be performed, and documented on a chain of custody form. They are placed in ziplock bags and stored in a chest cooled to 4 °C with

ice. The preserved samples are COC (chain of custody) delivered to the chosen laboratory.

ANALYTICAL RESULTS

TPH is the abbreviations used for Total Petroleum Hydrocarbons used by the laboratories for water and soil analyses. The letter following TPH indicates a particular distinction or grouping for the results. The letters "g", "d", "k", or "o" indicate gasoline, diesel, kerosene, or oil, respectively, i.e. TPH-d for diesel ranges TPH.

BTEX or MTBE are acronyms or abbreviations used for Benzene, Toluene, Ethylbenzene and all of the Xylenes (BTEX) and Methyl tertiary-Butyl Ether (MTBE), respectively. MBTEX is the designation for the combination of the above five compounds.

Laboratory lower detection limits unless otherwise noted, due to matrix interference or elevated concentrations of target compounds, are as follows:

TPHg	50 ug/L	MTBE	0.5 ug/L
Benzene	0.5 ug/L	Toluene	0.5 ug/L
Ethyl Benzene	0.5 ug/L	Total Xylenes	1.0 ug/L

The less than symbol, <, used with a "parts per value" indicates the lower detection limit for a given analytical result and the level, if present, of that particular analyte is below or less than that lower detection limit.

Other abbreviations commonly used are ppm, ppb, mg/Kg, ug/Kg, ml/l and ul/l are parts per million, parts per billion, milligrams per kilogram, micrograms per kilogram, milliliters per liter, microliters per liter, respectively.

CHAIN OF CUSTODY DOCUMENTATION

All water samples that are collected by WEGE and transported to a certified analytical laboratory are accompanied by chain-of- custody (COC) documentation. This documentation is used to record the movement and custody of a sample from collection in the field to final analysis and storage. Samples to be analyzed at the certified laboratory were logged on the COC sheet provided by the laboratory. The same information provided on the sample labels (site name, sample location, date, time, and analysis to be performed) is also noted on the COC form. Each person relinquishing custody of the sample set signs the COC form indicating the date and time of the transfer to the recipient. A copy of the COC follows the samples or their extracts throughout the laboratory to aid the analyst in identifying the samples and to assure analysis within holding times. Copies of the COC documentation are included with the laboratory results in Appendix B of the sampling report.

APPENDIX B

CERTIFIED ANALYTICAL
LABORATORY REPORT

COC DOCUMENTATION

North State Environmental
Chemical Waste Disposal · Trucking · Consulting

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 98-1718
Client: Western Geo-Engineers
Project: Tony's / 14th & 36th Oakland

Date Reported: 12/31/98

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 98-1718-01 Client ID: MW-1				12/16/98	WATER
Gasoline	8015M	65000	ug/L		12/28/98
Benzene	8020	2500	ug/L		
Ethylbenzene	8020	2300	ug/L		
MTBE	8020	*160	ug/L		
Toluene	8020	2400	ug/L		
Xylenes	8020	9500	ug/L		
Sample: 98-1718-02 Client ID: MW-2				12/16/98	WATER
Gasoline	8015M	26000	ug/L		12/28/98
Benzene	8020	1400	ug/L		
Ethylbenzene	8020	880	ug/L		
MTBE	8020	ND			
Toluene	8020	1600	ug/L		
Xylenes	8020	3300	ug/L		
Sample: 98-1718-03 Client ID: MW-3				12/16/98	WATER
Gasoline	8015M	51000	ug/L		12/28/98
Benzene	8020	5700	ug/L		
Ethylbenzene	8020	1200	ug/L		
MTBE	8020	*410	ug/L		
Toluene	8020	3900	ug/L		
Xylenes	8020	6300	ug/L		

*Confirmed by GC/MS method 8260.

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North State Environmental
Chemical Waste Disposal · Trucking · Consulting

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 98-1718
Client: Western Geo-Engineers
Project: Tony's / 14th & 36th Oakland

Date Reported: 12/31/98

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 98-1718-04 Client ID: MW-4				12/16/98	WATER
Gasoline	8015M	1400	ug/L		12/28/98
Benzene	8020	590	ug/L		
Ethylbenzene	8020	28	ug/L		
MTBE	8020	*24	ug/L		
Toluene	8020	33	ug/L		
Xylenes	8020	94	ug/L		
Sample: 98-1718-05 Client ID: MW-5				12/16/98	WATER
Gasoline	8015M	1400	ug/L		12/28/98
Benzene	8020	1	ug/L		
Ethylbenzene	8020	ND			
MTBE	8020	ND			
Toluene	8020	0.6	ug/L		
Xylenes	8020	2	ug/L		
Sample: 98-1718-06 Client ID: MW-6				12/16/98	WATER
Gasoline	8015M	54000	ug/L		12/28/98
Benzene	8020	3800	ug/L		
Ethylbenzene	8020	1400	ug/L		
MTBE	8020	*360	ug/L		
Toluene	8020	4600	ug/L		
Xylenes	8020	6400	ug/L		

*Confirmed by GC/MS method 8260.

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 98-1718
Client: Western Geo-Engineers
Project: Tony's / 14th & 36th Oakland

Date Reported: 12/31/98

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 98-1718-07 Client ID: MW-7				12/16/98	WATER
Gasoline	8015M	990	ug/L		12/28/98
Benzene	8020	5	ug/L		
Ethylbenzene	8020	5	ug/L		
MTBE	8020	*160	ug/L		
Toluene	8020	10	ug/L		
Xylenes	8020	20	ug/L		
Sample: 98-1718-08 Client ID: MW-8				12/16/98	WATER
Gasoline	8015M	61000	ug/L		12/28/98
Benzene	8020	6300	ug/L		
Ethylbenzene	8020	2200	ug/L		
MTBE	8020	*1300	ug/L		
Toluene	8020	1700	ug/L		
Xylenes	8020	4400	ug/L		
Sample: 98-1718-09 Client ID: MW-10				12/16/98	WATER
Gasoline	8015M	8700	ug/L		12/28/98
Benzene	8020	3800	ug/L		
Ethylbenzene	8020	790	ug/L		
MTBE	8020	*1800	ug/L		
Toluene	8020	51	ug/L		
Xylenes	8020	420	ug/L		

*Confirmed by GC/MS method 8260.

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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 98-1718
Client: Western Geo-Engineers
Project: Tony's / 14th & 36th Oakland

Date Reported: 12/31/98

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 98-1718-10 Client ID: MW-11				12/16/98	WATER
Gasoline	8015M	650	ug/L		12/28/98
Benzene	8020	27	ug/L		
Ethylbenzene	8020	25	ug/L		
MTBE	8020	ND			
Toluene	8020	4	ug/L		
Xylenes	8020	33	ug/L		

*Confirmed by GC/MS method 8260.

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CERTIFICATE OF ANALYSIS

Quality Control/Quality Assurance

Lab Number: 98-1718
Client: Western Geo-Engineers
Project: Tony's / 14th & 36th Oakland

Date Reported: 12/31/98

Gasoline,BTEX and MTBE by Methods 8015M and 8020

Analyte	Method	Reporting Limit	Unit	Blank	MS/MSD Recovery	RPD
Gasoline	8015M	50	ug/L	ND	93	12
Benzene	8020	0.5	ug/L	ND	101	2
Ethylbenzene	8020	0.5	ug/L	ND	104	2
Toluene	8020	0.5	ug/L	ND	101	1
Xylenes	8020	1.0	ug/L	ND	104	2
MTBE	8020	0.5	ug/L	ND	114	21

ELAP Certificate NO:1753
Reviewed and Approved

John A.Murphy,Laboratory Director

P. O. Box 5624 • South San Francisco, California 94083 • 650-588-2838 FAX 588-1950

98-1718

North State Environmental Analytical Laboratory

Phone: (415) 588-9652 Fax: (415) 588-1950

Chain of Custody / Request for Analysis

Lab Job No.: _____ Page ___ of ___

Client: Tonys	Report to: WEGE	Phone: 530-668-5300	Turnaround Time
Mailing Address: Western Geo-Engineers 1386 E. Beamer St Woodland CA 95776-6003	Billing to: Same	Fax: 530-662-0273	
		PO# / Billing Reference:	Date: 12-16-98
			Sampler: Broadway

Project / Site Address: Tony's 14th & 36th Oakland

Analysis Requested

	Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	TPH/BTEX	MTBE						Comments / Hazards
1	MW-1	H_2O	2/VOAS	HCL	12/16/98/ 1657								
2	MW-2				1452								
3	MW-3				1530								
4	MW-4				1351								
5	MW-5				1122								
6	MW-6				1559								
7	MW-7				1147								
8	MW-8				1633								
9	MW 10				1245								
10	MW 11				1220								

Relinquished by: Stephen Broadway	Date: 12/17/98	Time: 11:50	Received by: Matt Fuleman	Lab Comments
Relinquished by: Matt Fuleman	Date: 12/17/98	Time: 2009	Received by:	
Relinquished by:	Date:	Time:	Received by:	

APPENDIX C

MONITOR WELL
SAMPLING DATA SHEETS

WESTERN GEO-ENGINEERS
1386 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE Tony's	DATE 12-16-98	TIME 1645
WELL MW-1	SAMPLED BY.	Broadway
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	DTW: 11.10	DTB: 29.89
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	~~David~~ LTT Portable	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1643	1st bailer	No	Test	x1000
1652	8 gal			
1657	1			

FINAL VOLUME PURGED	9 gal
TIME SAMPLED	1657
SAMPLE ID.	MW-1
SAMPLE CONTAINERS	2/ VOAs
ANALYSIS TO BE RUN	TPHg / BTEX / MTBE
LABORATORY	NSE
NOTES:	1st bailer Thin film STRong odor

VAS =

fRES =

261

WESTERN GEO-ENGINEERS
1386 EAST BEAMER
WOODLAND, CALIFORNIA 95695
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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 12-16-98	TIME 1359
WELL MW-2	SAMPLED BY.	Broadway
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	DTW: 10.94	DTB: 30.00
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	~~David LFF~~ Portable	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1401	1st bailer	76.3	6.57	3.26 x1000
1420	35 gal	75.9	6.51	3.70
1445	.5	80.1	6.54	3.28
1448	.5	79.0	6.61	3.16
1450	.5	78.8	6.62	3.14

FINAL VOLUME PURGED	36.5 gal
TIME SAMPLED	1452
SAMPLE ID.	MW-2
SAMPLE CONTAINERS	2/ VOAs
ANALYSIS TO BE RUN	TPHg / BTEX / MTBE
LABORATORY	NSE
NOTES:	1st bailer Particulate Slight odor

VAC = PRES =

2 to 1

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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 12-16-98	TIME 1500
WELL MW-3	SAMPLED BY.	Broadway

WELL ELEVATION
PRODUCT THICKNESS
DEPTH TO WATER DTW: 11.55 DTB: 29.96
FLUID ELEVATION
BAILER TYPE Disposable Bailer
PUMP ~~David LTF~~ Portable

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1503	1st bailer	13.4	6.92	2.87 x1000
1523	30 gal	71.2	7.03	2.64
1527	15	72.4	6.93	2.64
1529	5	72.4	6.94	2.65

FINAL VOLUME PURGED 31 gal
TIME SAMPLED 1530
SAMPLE ID. MW-3
SAMPLE CONTAINERS 2/VOAs
ANALYSIS TO BE RUN TPHg/BTEX/MTBE
LABORATORY NSE
NOTES: 1st bailer Cloudy Slight Odor

VAS = PRES =

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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 12-16-98	TIME 1307
WELL MW-4	SAMPLED BY. Broadway	
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER DTW: 11.13	DTB: 25.12	
FLUID ELEVATION		
BAILER TYPE Disposable Bailer		
PUMP ~~David - LTF~~ Portable		

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1310	1st bailer	70.4	5.42	4.03 x1000
1345	8 gal	69.3	6.30	3.96
1347	5	69.1	6.34	3.74
1349	5	69.1	6.34	3.70

FINAL VOLUME PURGED	9 gal
TIME SAMPLED	1351
SAMPLE ID.	MW-4
SAMPLE CONTAINERS	2/ VOAs
ANALYSIS TO BE RUN	TPHg/BTEX/MTBE
LABORATORY	NSE
NOTES:	1st bailer CLEAR No Odor

VAS = FRES =

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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 12-16-98	TIME 10:05
WELL MW-5	SAMPLED BY.	Broadway
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	DTW: 11.2	DTB: 27.60
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	~~David LTF~~	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1050	1st bailer	74.7	6.03	8.97 x1000
1109	8 gal	74.1	6.09	4.01
1101	.5	74.3	6.12	3.62
1114	.5	74.5	6.26	3.55
1116	.5	74.3	6.36	3.45
1118	.5	73.2	6.46	3.33
1120	.5	73.2	6.45	3.34

FINAL VOLUME PURGED	10.5 gal
TIME SAMPLED	11:22
SAMPLE ID.	MW-5
SAMPLE CONTAINERS	3/VOAs
ANALYSIS TO BE RUN	TPHg/BTEX/MTBE
LABORATORY	NSE
NOTES:	1st bailer Clear No Odor

VAC = PRES =

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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 12-16-98	TIME 1540
WELL MW-6	SAMPLED BY.	Broadway
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	DTW: 11.60	DTB: 26.33
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	~~David~~ LTT Portable	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1543	1st bailer	69.8	6.63	2.98 x1000
51	5 gal	69.8	6.87	2.82
53	.5	76.7	6.67	2.96
55	.5	70.7	6.64	2.91
57	.5	70.6	6.64	2.91

FINAL VOLUME PURGED	6.5 gal
TIME SAMPLED	1559
SAMPLE ID.	MW-6
SAMPLE CONTAINERS	2/VOAs
ANALYSIS TO BE RUN	TPHg/BTEX/MTBE
LABORATORY	NSE
NOTES:	1st bailer Clear No Odor
VAC =	PRES =

2 to 1

WESTERN GEO-ENGINEERS
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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 12-16-98	TIME 1129
WELL MW-7	SAMPLED BY.	Broadway
WELL ELEVATION		
PRODUCT THICKNESS		
DEPTH TO WATER	DTW: 10.52	DTB: 26.12
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	~~David~~ ~~LTF~~ Portable	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1132	1st bailer	72.8	6.73	4.18 x1000
1138	8 gal	75.1	6.56	3.21
1140	.5	75.1	6.24	5.54
1142	.5	74.1	6.30	5.42
1144	.5	73.9	6.28	5.29
1146	.5	73.9	6.29	5.28

FINAL VOLUME PURGED	10 gal
TIME SAMPLED	1147
SAMPLE ID.	MW-7
SAMPLE CONTAINERS	3/VOAs
ANALYSIS TO BE RUN	TPHg/BTEX/MTBE
LABORATORY	NSE
NOTES:	1st bailer Cloudy No Odor
VAC =	PRES =

WESTERN GEO-ENGINEERS
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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 12-16-98	TIME 1605
WELL MW-8	SAMPLED BY.	Beaudin

WELL ELEVATION
PRODUCT THICKNESS
DEPTH TO WATER DTW: 10.75 DTB: 26.08
FLUID ELEVATION
BAILER TYPE Disposable Bailer
PUMP ~~David~~ LTT Portable

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1607	1st bailer	72.1	6.84	3.01 x1000
1624	8 gal	70.0	6.93	3.06
1626	.5	70.5	6.75	3.05
1628	.5	70.5	6.63	3.06
1630	.5	70.6	6.61	3.12
1632	.5	70.5	6.60	3.13

FINAL VOLUME PURGED 10 gal
TIME SAMPLED 1633
SAMPLE ID. MW-8
SAMPLE CONTAINERS 2/VOAs
ANALYSIS TO BE RUN TPHg/BTEX/MTBE
LABORATORY NSE
NOTES: 1st bailer floating white layer STRONG ODOR

VAC = fRES =

2b1

WESTERN GEO-ENGINEERS
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WELL SAMPLING DATA SHEET

SITE Tony's	DATE 12-16-98	TIME 1226
WELL MW-10	SAMPLED BY.	Broadway
WELL ELEVATION		
PRODUCT THICKNESS	10.19	
DEPTH TO WATER	DTW: ~~11.25~~	DTB: 24.33
FLUID ELEVATION		
BAILER TYPE	Disposable Bailer	
PUMP	David ~~LTF~~ Bor Table	

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1228	1st bailer	74.3	6.26	5.32 x1000
1236	7 gal	74.0	6.24	4.20
1239	.5	73.8	6.31	3.85
1241	.5	72.4	6.36	3.75
1243	.5	72.8	6.36	3.76

FINAL VOLUME PURGED	8.5 gal
TIME SAMPLED	1245
SAMPLE ID.	MW-10
SAMPLE CONTAINERS	2/VOAs
ANALYSIS TO BE RUN	TPHg/BTEX/MTBE
LABORATORY	NSE
NOTES:	1st bailer Turbid No Odor

VAC = fRes =

2b1

WESTERN GEO-ENGINEERS
1386 EAST BEAMER
WOODLAND, CALIFORNIA 95695
(916) 668-5300, FAX (916) 662-0273

WELL SAMPLING DATA SHEET

SITE Tony's	DATE 12-16-98	TIME 1200
WELL MW-11	SAMPLED BY:	Beardsley

WELL ELEVATION
PRODUCT THICKNESS
DEPTH TO WATER DTW: 11.58 ~~11.85~~ DTB: 26.50
FLUID ELEVATION
BAILER TYPE Disposable Bailer
PUMP ~~Grund~~ ~~ETT~~ Portable

WELL PURGING RECORD

TIME	VOLUME REMOVED	TEMP.	pH	COND.
1202	1st bailer	72.4	6.17	5.63 x1000
1208	8 gal	71.3	6.16	6.87
1211	5	71.7	6.17	6.73
1213	5	71.4	6.16	6.60
1215	5	71.3	6.16	6.99

FINAL VOLUME PURGED 9.5 gal
TIME SAMPLED 1220
SAMPLE ID. MW-11
SAMPLE CONTAINERS 2/ VOAs
ANALYSIS TO BE RUN TPHg/BTEX/MTBE
LABORATORY NSE
NOTES: 1st bailer Clear No Odor

VAC = PRES =

2/01