VIA FEDERAL EXPRESS

Pacific Gas and Electric Company

One California Street, Room F-235
San Francisco, CA 94106
415/973-5615

July 23, 1992

Alameda County Health Care Agency
Division of Hazardous Materials
80 Sway Way, Room 350
Oakland, CA 94621

Attention: Mr. Britt Johnson

Dear Mr. Johnson:

Enclosed are the results of ground water monitoring performed on July 1, 1992, at the PG&E ENCON Gas T&D yard located at 4930 Coliseum Way in Oakland.

Item 1.0 provides the background summary; Item 2.0 provides the sampling activities; Item 3.0 provides the analytical results of petroleum hydrocarbons detected in ground water and quality assurance samples collected on July 1, 1992.

Due to differences in reporting TPH by three different laboratories used during the time period of prior ground water monitoring, TPH prior to April 1991 was reported as diesel and/or oil. The April 1992 samples were strictly diesel and the following April 1991 as diesel and/or kerosene. TPH characterized as kerosene has been detected.

As the figures in Item 3.0 illustrate, TPH has decreased recently in all of the Wells except OW-1. TPH concentrations have dropped significantly in Wells OW-4, OW-6, and OW-7 after reaching a maximum following the remedial excavation performed in their vicinity of November 1991.

Between January 1991 and March 1992, the concentration of TVH-g was observed in upgradient Wells OW-5, OW-7, and OW-1. This increase occurred over the last quarter of testing which ended on June 30, 1992.

The next quarterly sampling report will be performed in late September or early October 1992. Please phone me at (415) 973-5615/5616 if you have any questions regarding this report.

Sincerely,

Wally A. Pearce
Staff Safety Engineer

WAP:nm

Enclosure

Quarterly

Groundwater Monitoring Report

July 1992

PG&E
ENCON-GAS Transmission and Distribution Construction Yard
4930 Coliseum Way
Oakland, California

Prepared by:

Aqua Resources Inc. (ARI)
a wholly owned subsidiary of The Earth Technology Corp.
2030 Addison Street, Suite 500
Berkeley, CA 94704

Report issued:
July 20, 1992

TABLE OF CONTENTS

APPENDICES

1.0 BACKGROUND

This report presents the results of the quarterly groundwater monitoring performed in July 1992 at the PG&E ENCON-Gas Transmission and Distribution Construction Yard in accordance with the directive issued by Alameda County Health Care Agency. This report also presents a summary of the results from groundwater sampling performed at the site between January 1990 and the present. The yard is located at 4930 Coliseum Way in Oakland, California. As part of the groundwater monitoring program, samples were collected from shallow wells and analyses were performed to determine the distribution of waste oil, solvents, and fuel compounds in the uppermost aquifer beneath the northern part of the yard. This area includes the former sites of five underground storage tanks.

The underground tanks were removed in January 1988. Analyses of their contents revealed that of the four tanks formerly located in a cluster near the north corner of the yard, two contained mineral spirits and two tanks contained heavy oil. A concrete sump formerly connected to the tank cluster was located approximately 50 feet northeast of the tank cluster. The fifth tank formerly located near the west corner of the yard contained diesel fuel.

An area of approximately 6,600 square feet was excavated in November and December of 1991 as a remedial action for the petroleum hydrocarbon soil contamination believed to originate from one or more of the following: the four-tank cluster, the concrete sump, the former shop location, or a possible offsite release. The removed contaminated soil, which generally extended from the ground surface to the groundwater free surface at about 8 to 8 1/2 feet below grade, was replaced with clean compacted backfill.

The surface area south of the former location of underground tanks is contaminated with lead. The lead probably originates from the sandblasting operations performed on a large gas storage tank which was removed in May 1990. Soil at this area has been found contaminated with total and soluble lead above California Code of Regulations (CCR)

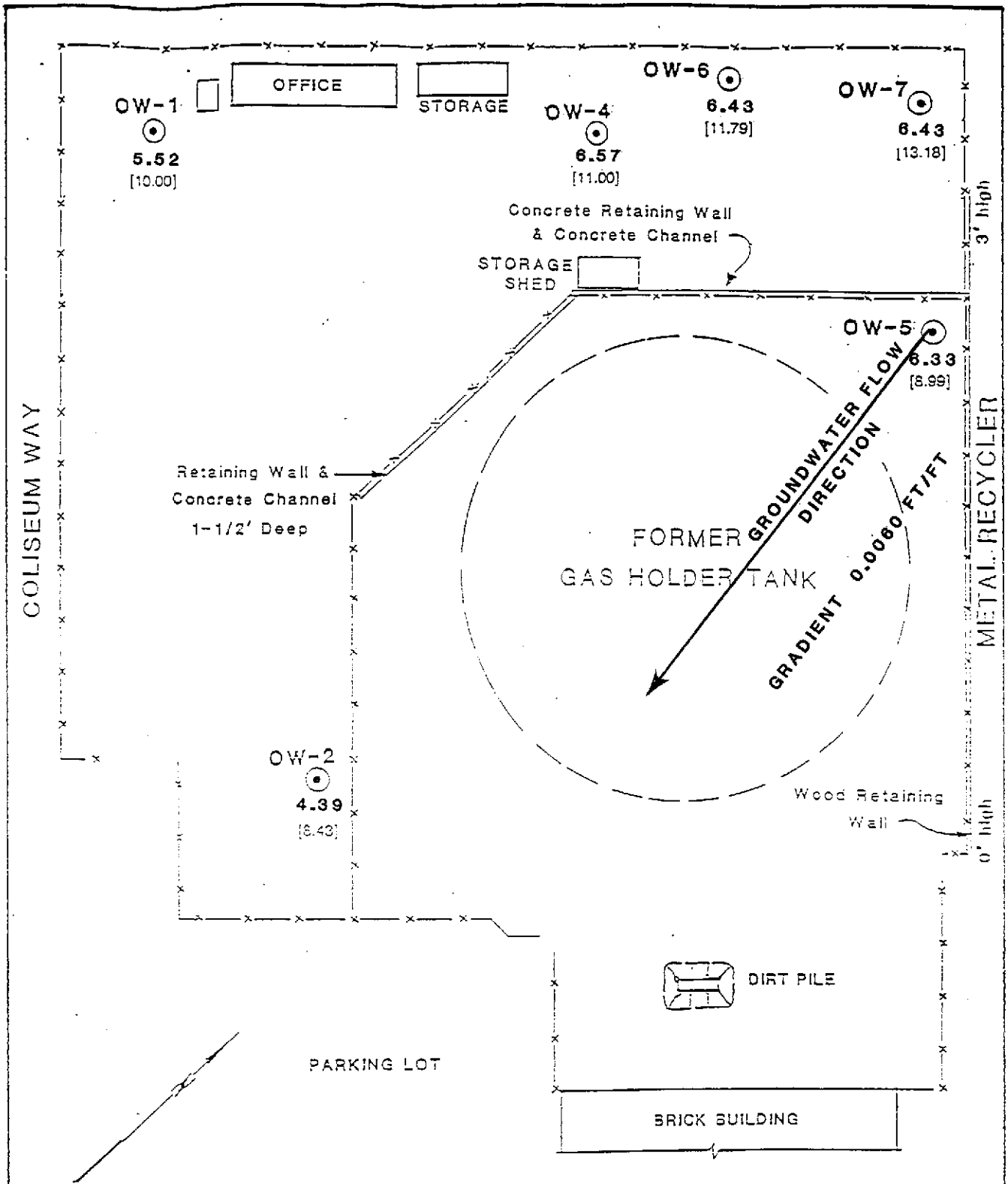
levels for hazardous wastes. CCR Total Threshold Limit Concentration for lead is 1,000 mg/kg and the Soluble Threshold Limit Concentration for lead is 5 mg/l.

2.0 SAMPLING ACTIVITIES

Four of the originally-installed five monitoring wells remain in existence on the site. One monitoring well, OW-3, was destroyed during remedial excavations performed in November 1991 in the northern corner of the yard. Two new monitoring wells were installed on December 19, 1991. A fifth well, OW-6, was installed in the general vicinity of well OW-3 to act as its replacement. A sixth monitoring well, OW-7, was installed at the northeastern end of the remediation area to gauge the likelihood of upgradient contamination in the shallow groundwater underlying the PG&E site. The locations of these new wells were approved by the Alameda County Health Care Services Agency. Figure 1 presents the site plan including all present monitoring well locations. On July 1, 1992, groundwater samples were collected by ARI personnel from monitoring wells OW-1, OW-2, OW-4, OW-5, OW-6, and OW-7. Prior to sampling, three to six casing volumes of groundwater were purged with a bailer or pump from each well. Conductivity, pH, and temperature were measured after approximately every two to four gallons of groundwater was removed, ensuring the stability of these parameters prior to sampling.

The groundwater samples collected from each well were analyzed by Curtis & Tompkins, Ltd. Analytical Laboratories, Berkeley, California for extractable petroleum hydrocarbons as diesel or kerosene (TPH-d,k; LUFT Manual, October 1989); purgeable halocarbon compounds (EPA method 8010); total volatile hydrocarbons as gasoline (TVG-g; LUFT Manual October 1989); benzene, toluene, xylenes, and ethylbenzene (BTXE, EPA 5030/ 8020); and for lead (EPA 7421). In addition, method blank analyses were performed for the purposes of quality assurance (QA) on the groundwater sample results.

Certified laboratory results for the July samples are presented in Appendix A along with chain-of-custody documentation. A table of the historical results of laboratory analyses is included in Appendix B.



LEGEND

- ⊙ MONITORING WELL
- 6.57 Site-relative Groundwater Elevation (feet)
- [10.00] Site-relative Casing Elevation (feet)

Scale: ~1"=60'

0 30 60 90 120 150

AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG & E ENCON-Gas T & D Construction Yard

GROUNDWATER ELEVATIONS 7/1/92

JOB NO. 90262.

FIGURE 1

DATE **JULY 1992**

3.0 ANALYTICAL RESULTS

Table 3.1 summarizes the analytical results for petroleum hydrocarbons detected in the groundwater and QA samples collected on July 1, 1992. TPH-d was detected in each of the monitoring wells and was found in the highest concentration in wells OW-1, OW-6, and OW-7. The highest concentration of TVH-g was detected in the upgradient well OW-7. Samples were not analyzed for hydrocarbon oil and grease because previous analyses confirmed the absence of this type of contamination in groundwater.

Table 3.1 Petroleum Hydrocarbons in Groundwater, in mg/l

Well	TPH-Diesel	TVH-gasoline
OW-1	3.90	0.32
OW-2	0.41	ND
OW-4	0.82	ND
OW-5	0.65	0.27
OW-6	3.50	ND
OW-7	2.80	1.30

Notes:

1) ND = Not Detected at or above the method reporting limit (RL)
2) TPH-Diesel = Extractable Petroleum Hydrocarbons, Diesel Range, LUFT Manual October 1989; RL = 0.05 mg/l.
3) TVH-Gasoline = Total Volatile Hydrocarbons by California DHS Method LUFT Manual October 1989; RL = 0.05 mg/l.

Figures 3.1 and 3.2 illustrate the historical concentrations of TPH in the monitoring wells on site. The data from monitoring wells OW-3 and OW-6 are combined in the figures since OW-6 was installed to replace OW-3 following its destruction.

Due to differences in reporting TPH by the three different laboratories used throughout this time, TPH prior to April 1991 was reported as diesel and/or oil (Brown and Caldwell Analytical), in the April 1992 samples as strictly diesel (The Earth Technology Corporation Analytical Laboratory), and following April 1991 as diesel and/or kerosene (Curtis and Tompkins Ltd.). TPH characterized as kerosene has never been detected. In an attempt

to compare results the TPH presented in these figures is the sum of these distinguished characterizations.

As the figures illustrate, TPH has decreased recently in all of the wells except OW-1. TPH concentrations have dropped dramatically in wells OW-4, OW-6, and OW-7, after reaching a maximum following the remedial excavation performed in their vicinity in November of 1991.

Figure 3.3 illustrates the historical concentrations of TVH-g. Between January 1991 and March 1992 this analysis was not performed. During that time a large increase in TVH-g concentration was observed in upgradient wells OW-5 and OW-7 as well as in well OW-1. The concentration of TVH-g in these wells increased over the last quarter.

Figure 3.1

Total Petroleum Hydrocarbons as Diesel and Oil in Monitoring Wells Versus Time

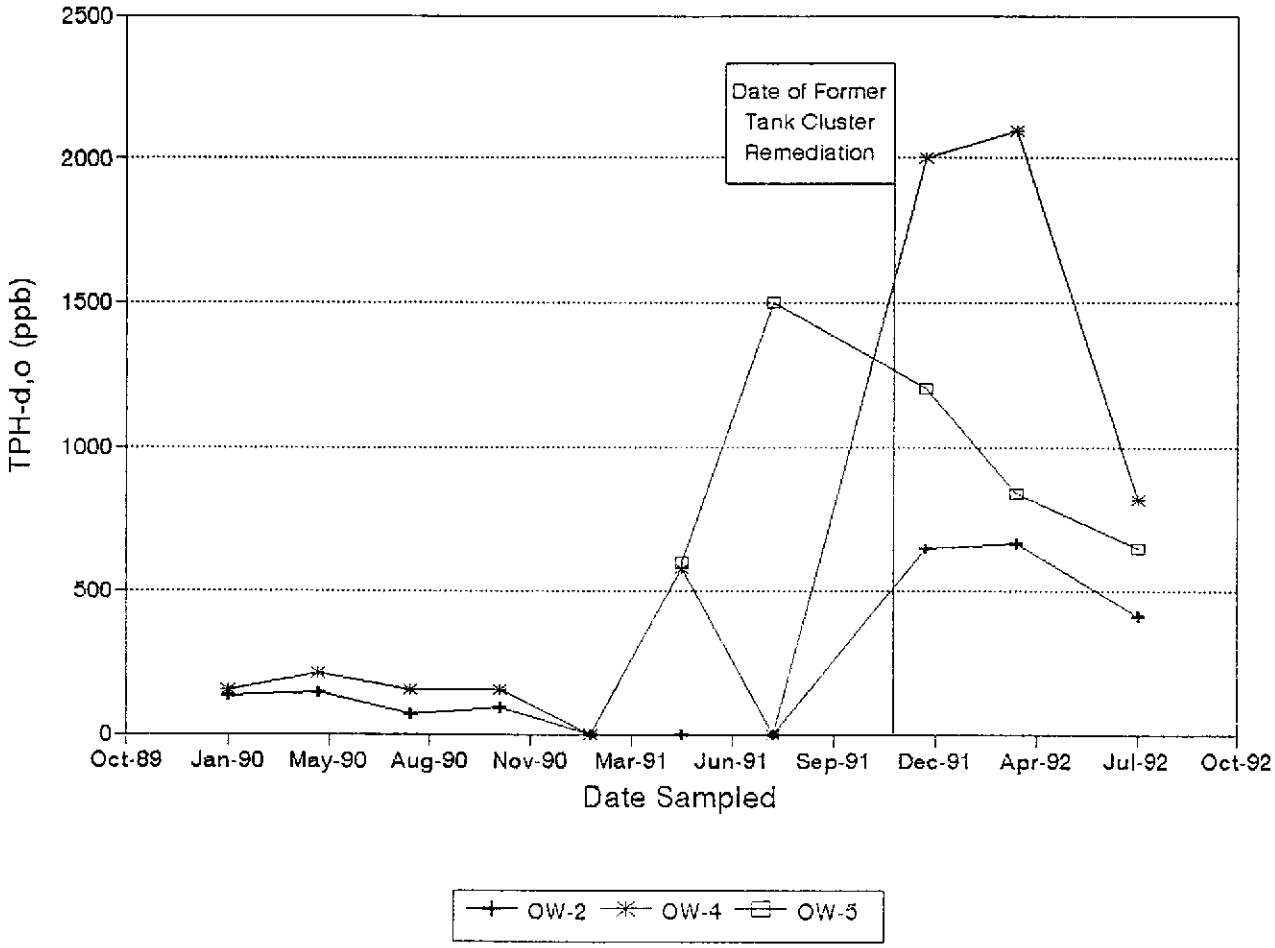


Figure 3.2

Total Petroleum Hydrocarbons as Diesel and Oil in Monitoring Wells Versus Time

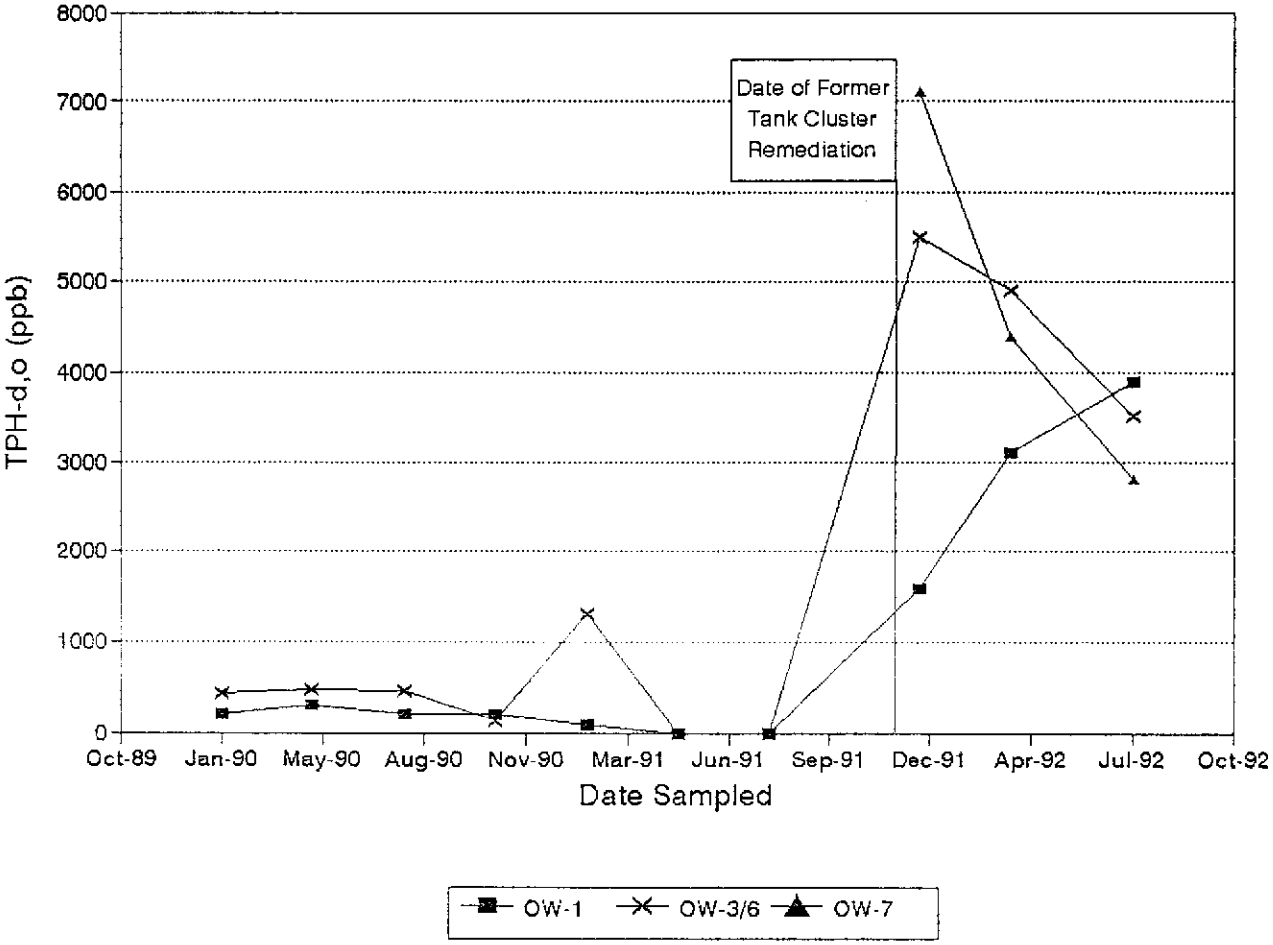


Figure 3.3

Total Volatile Hydrocarbons as Gasoline
in Monitoring Wells Versus Time

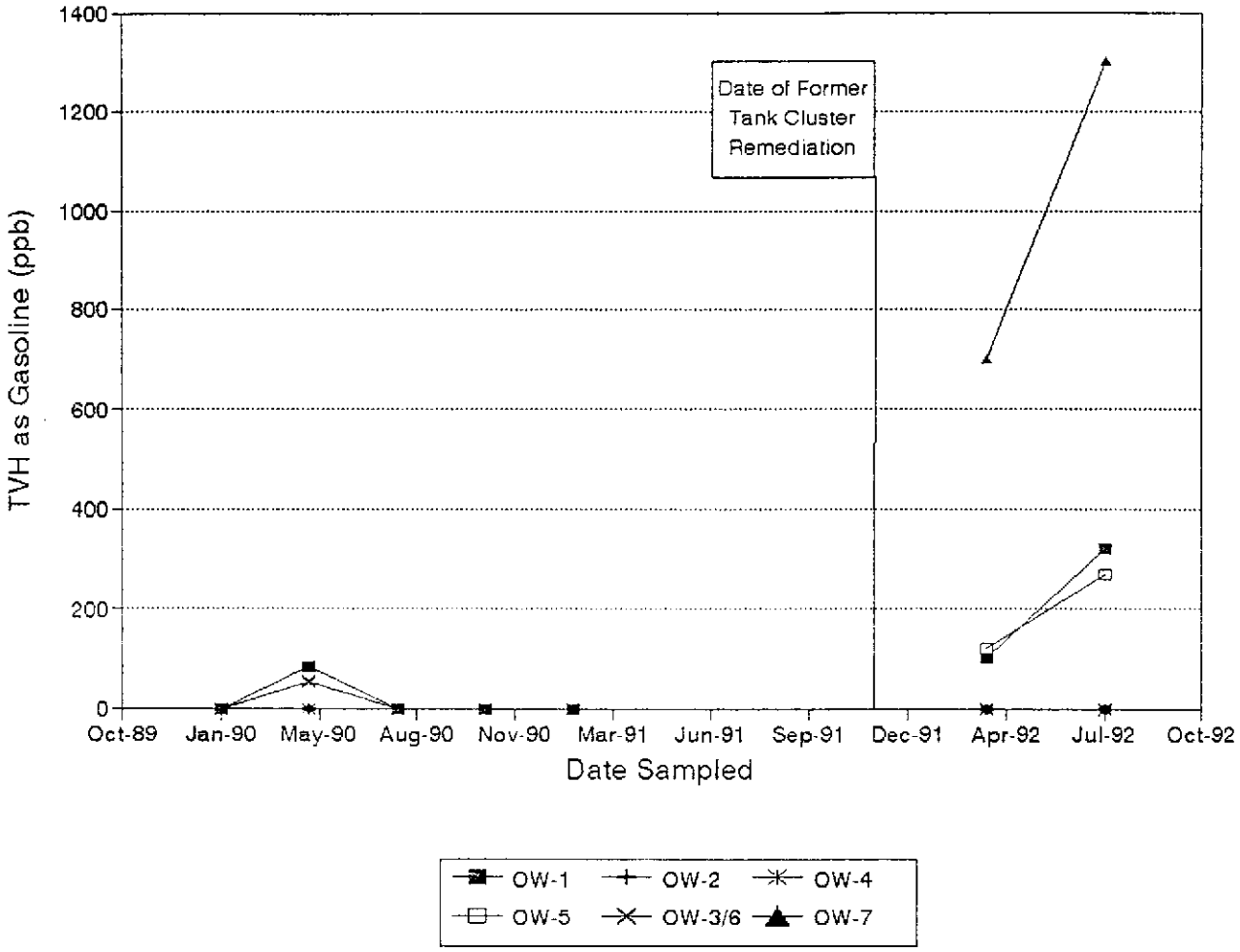


Table 3.2 presents the results of groundwater analyses for soluble lead. The EPA and State maximum contaminant level (MCL) for lead in drinking water is 50 µg/l. None of the samples contained lead concentrations above 50 µg/l. Only in sample OW-4 was lead detected above the RL of 3 µg/l. The water in this well was found to have 5 µg/l of lead.

Table 3.3 presents the analytical results of volatile organic compounds (VOCs) in groundwater. The State MCLs for three compounds; 1,1-Dichloroethane (DCA), 1,4-Dichlorobenzene (1,4-DCB), and Benzene (BZ), were each exceeded: upgradient well OW-5 had 8 µg/l of DCA and 11 µg/l of BZ while the second upgradient well, OW-7, had 400 µg/l of 1,4-DCB. Concentrations of 1,1,1-Trichloroethane (1,1,1-TCA) were 25 and 28 µg/l in wells OW-5 and OW-7, respectively, well below the MCL of 200 mg/l. DCA was also detected at low concentrations in wells OW-4 and OW-6 which lie down gradient of well OW-7

Figure 3.4 illustrates the historical concentrations of total VOCs in the monitoring wells on site. Since the installation of upgradient well OW-7, whose data is plotted using the right hand scale, this well has been found to have the highest concentration of VOCs, an order of magnitude larger than the other wells. Prior to the November 1991 remedial excavation wells OW-3, which lay in the excavated area and was later replaced by OW-6, and OW-7 contained the largest VOC concentrations. The water quality at OW-6 now appears to be improved following the remedial effort.

Table 3.2 Lead in Groundwater, in µg/l

Well	Reporting Limit	Soluble Lead
OW-1	3.0	ND
OW-2	3.0	ND
OW-4	3.0	5.0
OW-5	3.0	ND
OW-6	3.0	ND
OW-7	3.0	ND

1) Method EPA 7421
2) ND = Not Detected or above Method Detection Limit (MDL)

Table 3.3 Volatile Organic Compounds in Groundwater, in ug/l

PURGEABLE HALOCARBONS	MCL	Well Number					
		OW-1	OW-2	OW-4	OW-5	OW-6	OW-7
Chloromethane		ND	ND	ND	ND	ND	ND
Bromomethane		ND	ND	ND	ND	ND	ND
Vinyl chloride	0.5	ND	ND	ND	ND	ND	ND
Chloroethane		ND	ND	ND	ND	ND	ND
Methylene Chloride	5#	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	150	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	4	8	2	ND
cis-1,2-Dichloroethene	6	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	10	ND	ND	ND	ND	ND	ND
Chloroform	100#*	ND	ND	ND	ND	ND	ND
Freon 113	1200	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	ND	ND	ND	25	ND	29
Carbon Tetrachloride	0.5	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100#*	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	5***	ND	ND	ND	ND	ND	ND
Trichloroethylene	5	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	32	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	5***	ND	ND	ND	ND	ND	ND
Dibromochloromethane	100#*	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether		ND	ND	ND	ND	ND	ND
Bromoform	100#*	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	5	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND	ND	ND	ND	ND
Chlorobenzene	30	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene		ND	ND	ND	ND	ND	420
1,2-Dichlorobenzene	600#	ND	ND	ND	ND	ND	95
1,4-Dichlorobenzene	5	4	ND	ND	ND	ND	400
PURGEABLE AROMATICS							
Benzene	1	ND	ND	ND	11	ND	1
Toluene	1000#	0.7	ND	ND	ND	ND	0.5
Ethylbenzene	680	2	ND	ND	ND	ND	0.5
Total Xylenes	1750**	9	ND	ND	6	ND	5

Notes:

1) MCL = Maximum Contaminant Level in drinking water (State MCL, if not noted otherwise)

2) # = EPA MCL

3) * = MCL for sum of four compounds

4) ** = MCL for sum of all xylene isomers

5) *** = MCL for sum of trans- and cis-1,3-Dichloropropene

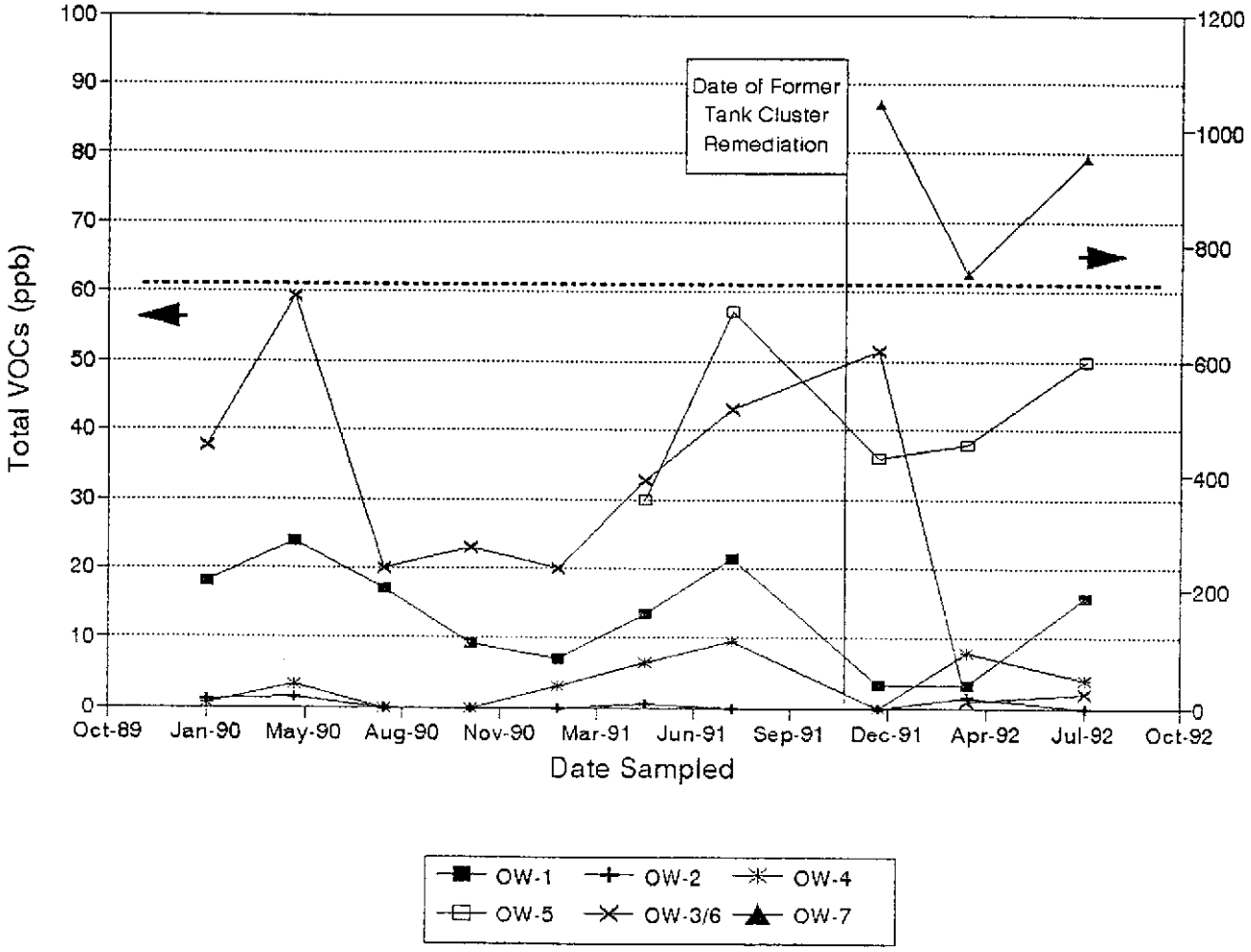
6) ND = Not Detected at or above reporting limit

7) Purgeable Halocarbons (EPA method 8010)

8) Purgeable Aromatics (EPA method 8020)

Figure 3.4

Total VOCs from EPA 8010/8020 Analyses
in Monitoring Wells Versus Time



4.0 GROUNDWATER FLOW DIRECTION

Water level measurements in the monitoring wells were made on July 1, 1992, prior to sampling groundwater in the six onsite wells. Groundwater elevations are shown in relation to a site specific coordinate system reported in previous reports. The top of casing (TOC) elevations for each of these wells is based upon an assumed TOC elevation of 10 feet at well OW-1. The TOC of the two new wells were surveyed by a registered surveyor relative to OW-1 on January 9, 1992. Wells OW-2, OW-4 and OW-5 were resurveyed at this time and found to be within 0.01 feet of their previously measured elevations.

The measured groundwater elevations are presented in Figure 1 along with the relative TOC elevations of each of the wells. The groundwater flow direction calculated from elevations in OW-1, OW-2, and OW-5 indicates the general regional groundwater flow to be to the south at a gradient of approximately 0.0060 ft/ft. This flow direction is consistent with the one observed last quarter (March 1992). It has been noticed that the direction of groundwater flow varies from southwest to south depending on the elevation of groundwater.

5.0 CONCLUSIONS

The following conclusions are made based upon results of analyses performed on groundwater samples collected on July 1, 1992 from monitoring wells OW-1, OW-2, OW-4, OW-5, OW-6 and OW-7 and from prior quarterly sampling results.

- Diesel fuel was detected in each well above the method reporting limit (RL). The highest concentration of TPH-d was observed in wells OW-1 (3900 µg/l), OW-6 (3500 µg/l) and upgradient well OW-7 (2800 µg/l).

- TPH-d concentrations have decreased since last quarter in all wells except OW-1.

- Lead was not detected at concentrations above the RL in any of the wells except OW-4, where it was found at 5 µg/l, well below the MCL for lead in drinking water of 50 µg/l.

- Upgradient wells OW-5 (DCA and BZ) and OW-7 (1,4-DCB) were the only wells found to have VOCs whose concentrations exceed the MCLs for drinking water.

- The three isomers of dichlorobenzene continue to be the VOCs found at the highest concentrations. They are found predominantly in well OW-7 (total DCB 915 µg/l).

- The solvent TCA continues to be present in wells OW-5 (25 µg/l) and OW-7 (29 µg/l).

- TVH-g was detected in three wells: OW-7 (1300 µg/l), OW-1 (320 µg/l) and OW-5 (270 µg/l).

- Wells OW-5 and OW-7 both lie at the upgradient end of the site. Both have historically contained the highest concentrations of TVH-g and VOCs, possibly indicating an upgradient, i.e. from the northwest, source of fuel and/or solvent contamination.

- Groundwater flow across the site appears to be to the south and southwest.

APPENDIX A

Certified Laboratory Results

July 1992

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 07/01/92
DATE REPORTED: 07/08/92

LABORATORY NUMBER: 107842

CLIENT: AQUA RESOURCES

PROJECT ID: 690262.3

LOCATION: PG&E

RESULTS: SEE ATTACHED

Reviewed By

Reviewed By

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 107842
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.3
LOCATION: PG&E

DATE SAMPLED: 07/01/92
DATE RECEIVED: 07/01/92
DATE ANALYZED: 07/05/92
DATE REPORTED: 07/08/92

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
107842-1	W-1	320	ND(0.5)	0.7	2	9
107842-2	W-2	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107842-3	W-4	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107842-4	W-5	270	11	ND(0.5)	ND(0.5)	6
107842-5	W-6	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107842-6	W-7	1,300	1	0.5	0.5	5

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	92

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 107842
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.3
LOCATION: PG&E

DATE SAMPLED: 07/01/92
DATE RECEIVED: 07/01/92
DATE EXTRACTED: 07/07/92
DATE ANALYZED: 07/07-08/92
DATE REPORTED: 07/08/92

Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
107842-1	W-1	**	3,900	50
107842-2	W-2	**	410	50
107842-3	W-4	**	820	50
107842-4	W-5	**	650	50
107842-5	W-6	**	3,500	50
107842-6	W-7	**	2,800	50

ND = Not detected at or above reporting limit.

*Reporting limit applies to all analytes.

** Quantitated as diesel.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	99

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 107842
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.3
LOCATION: PG&E

DATE SAMPLED: 07/01/92
DATE RECEIVED: 07/01/92
DATE ANALYZED: 07/03/92
DATE REPORTED: 07/08/92

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7421

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
107842-1	W-1	ND	ug/L	3
107842-2	W-2	ND	ug/L	3
107842-3	W-4	5	ug/L	3
107842-4	W-5	ND	ug/L	3
107842-5	W-6	ND	ug/L	3
107842-6	W-7	ND	ug/L	3

ND = Not detected at or above reporting limit.

QA/QC SUMMARY:

RPD, %	3
RECOVERY, %	95

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 107842-1
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.3
LOCATION: PG&E
SAMPLE ID: W-1

DATE SAMPLED: 07/01/92
DATE RECEIVED: 07/01/92
DATE ANALYZED: 07/02/92
DATE REPORTED: 07/08/92

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	ND	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethylene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	1
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	4	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	100

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 107842-2
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.3
LOCATION: PG&E
SAMPLE ID: W-2

DATE SAMPLED: 07/01/92
DATE RECEIVED: 07/01/92
DATE ANALYZED: 07/02/92
DATE REPORTED: 07/08/92

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	ND	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethylene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	1
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	103

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 107842-4
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.3
LOCATION: PG&E
SAMPLE ID: W-5

DATE SAMPLED: 07/01/92
DATE RECEIVED: 07/01/92
DATE ANALYZED: 07/07/92
DATE REPORTED: 07/08/92

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	8	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	25	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethylene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	1
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	108

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 107842-3
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.3
LOCATION: PG&E
SAMPLE ID: W-4

DATE SAMPLED: 07/01/92
DATE RECEIVED: 07/01/92
DATE ANALYZED: 07/02/92
DATE REPORTED: 07/08/92

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	4	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	ND	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethylene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	1
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	99

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 107842-5
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.3
LOCATION: PG&E
SAMPLE ID: W-6

DATE SAMPLED: 07/01/92
DATE RECEIVED: 07/01/92
DATE ANALYZED: 07/02/92
DATE REPORTED: 07/08/92

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	2	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	ND	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethylene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	1
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	103

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 107842-6
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.3
LOCATION: PG&E
SAMPLE ID: W-7

DATE SAMPLED: 07/01/92
DATE RECEIVED: 07/01/92
DATE ANALYZED: 07/03/92
DATE REPORTED: 07/08/92

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	100
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	29	5
Carbon tetrachloride	ND	5
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethylene	ND	5
1,1,2-Trichloroethane	ND	5
trans-1,3-Dichloropropene	ND	5
Dibromochloromethane	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	5
Tetrachloroethene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Chlorobenzene	ND	5
1,3-Dichlorobenzene	420	5
1,2-Dichlorobenzene	95	5
1,4-Dichlorobenzene	400	5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	105

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 107842
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.3
LOCATION: PG&E
SAMPLE ID: METHOD BLANK

DATE ANALYZED: 07/02/92
DATE REPORTED: 07/08/92

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	ND	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethylene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	1
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	100

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 107842
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.3
LOCATION: PG&E
SAMPLE ID: METHOD BLANK

DATE ANALYZED: 07/07/92
DATE REPORTED: 07/08/92

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	ND	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethylene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	1
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	104

LABORATORY CONTROL SAMPLE SUMMARY SHEET FOR EPA 8010/8020

Operator:	MBP	Spike file:	188W/X014
Analysis date:	7/6/92	Instrument:	GC12 (QUANT COLUMN)
Sample type:	WATER	Sequence name:	JUL06

LCS SPIKE DATA (spiked at 20 ppb)

8010 COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
1,1-Dichloroethene	22.98	115 %	OK	78 - 132
Trichloroethene	23.97	120 %	OK	85 - 124
Chlorobenzene	21.61	108 %	OK	70 - 128
SURROGATES				
Bromobenzene	103.17	103 %	OK	93 - 121

8020 COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
Benzene	21.29	106 %	OK	86 - 119
Toluene	21.67	108 %	OK	85 - 120
Chlorobenzene	21.50	108 %	OK	87 - 128
SURROGATES				
Bromobenzene	99.77	100 %	OK	93 - 109

SPIKE AND SURROGATE RECOVERY LIMITS
FROM LCS WATER CONTROL CHARTS (APR. 92).

MS/MSD SUMMARY SHEET FOR EPA 8010/8020

INSTRUMENT: HP-5890 COLUMN: RESTEK 502.2 DETECTORS: HALL/PID

Operator:	MBP	Spike file:	188W/X019
Analysis date:	7/7/92	Spike dup file:	188W/X020
Sample type:	WATER	Instrument:	GC12
Sample ID:	205015-002 1:4	Sequence name:	JUL06

8010 MS/MSD DATA (spiked at 20 ppb) Ave Rec= 113 %

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
1,1-Dichloroethene	22.29	111 %	OK	61 - 145
Trichloroethene	23.52	118 %	OK	71 - 120
Chlorobenzene	21.34	107 %	OK	75 - 130
SPIKE DUP COMPOUNDS				
1,1-Dichloroethene	22.96	115 %	OK	61 - 145
Trichloroethene	23.81	119 %	OK	71 - 120
Chlorobenzene	21.37	107 %	OK	75 - 130
SURROGATES				
BROMOBENZENE (MS)	103.33	103 %	OK	75 - 115
BROMOBENZENE (MSD)	106.34	106 %	OK	75 - 115

8020 MS/MSD DATA (spiked at 20 ppb) Ave Rec= 107 %

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
Benzene	21.23	106 %	OK	76 - 127
Toluene	22.01	110 %	OK	76 - 125
Chlorobenzene	21.90	109 %	OK	75 - 130
SPIKE DUP COMPOUNDS				
Benzene	20.90	105 %	OK	76 - 127
Toluene	20.95	105 %	OK	76 - 125
Chlorobenzene	21.44	107 %	OK	75 - 130
SURROGATES				
BROMOBENZENE (MS)	100.45	100 %	OK	75 - 120
BROMOBENZENE (MSD)	100.42	100 %	OK	75 - 120

RPD DATA 8010 RPD= 1.4 % 8020 RPD= 2.9 %

8010 COMPOUNDS	SPIKE	SPIKE DUP	RPD	STATUS	LIMITS
1,1-Dichloroethene	22.29	22.96	3 %	OK	< 14
Trichloroethene	23.52	23.81	1 %	OK	< 14
Chlorobenzene	21.34	21.37	0 %	OK	< 13
8020 COMPOUNDS					
Benzene	21.23	20.90	2 %	OK	< 11
Toluene	22.01	20.95	5 %	OK	< 13
Chlorobenzene	21.90	21.44	2 %	OK	< 13

SPIKE RECOVERY LIMITS FROM SW-846 METHODS 8010/8020 TABLE 3;
SURROGATE RECOVERY LIMITS FROM LCS CONTROL CHARTS (NOV. 91);
RPD LIMITS FROM CLP SOW 2/88 VOLATILES.

LABORATORY CONTROL SAMPLE SUMMARY SHEET FOR EPA 8010/8020

Operator:	MBP	Spike file:	184W/X002
Analysis date:	7/2/92	Instrument:	GC12 (QUANT COLUMN)
Sample type:	WATER	Sequence name:	JUL02

LCS SPIKE DATA (spiked at 20 ppb)

8010 COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
1,1-Dichloroethene	20.09	100 %	OK	78 - 132
Trichloroethene	21.17	106 %	OK	85 - 124
Chlorobenzene	18.92	95 %	OK	70 - 128
SURROGATES				
Bromobenzene	100.26	100 %	OK	93 - 121

8020 COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
Benzene	20.69	103 %	OK	86 - 119
Toluene	21.13	106 %	OK	85 - 120
Chlorobenzene	20.79	104 %	OK	87 - 128
SURROGATES				
Bromobenzene	99.86	100 %	OK	93 - 109

SPIKE AND SURROGATE RECOVERY LIMITS
FROM LCS WATER CONTROL CHARTS (APR. 92).

MS/MSD SUMMARY SHEET FOR EPA 8010/8020

INSTRUMENT: HP-5890 COLUMN: RESTEK 502.2 DETECTORS: HALL/PID

Operator:	MBP	Spike file:	184W/X005
Analysis date:	7/2/92	Spike dup file:	184W/X006
Sample type:	WATER	Instrument:	GC12
Sample ID:	107807-003	Sequence name:	JUL02

8010 MS/MSD DATA (spiked at 20 ppb) Ave Rec= 102 %

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
1,1-Dichloroethene	18.22	91 %	OK	61 - 145
Trichloroethene	21.96	110 %	OK	71 - 120
Chlorobenzene	20.14	101 %	OK	75 - 130
SPIKE DUP COMPOUNDS				
1,1-Dichloroethene	19.15	96 %	OK	61 - 145
Trichloroethene	22.70	114 %	OK	71 - 120
Chlorobenzene	20.30	102 %	OK	75 - 130
SURROGATES				
BROMOBENZENE (MS)	99.08	99 %	OK	75 - 115
BROMOBENZENE (MSD)	95.58	96 %	OK	75 - 115

8020 MS/MSD DATA (spiked at 20 ppb) Ave Rec= 106 %

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
Benzene	20.70	104 %	OK	76 - 127
Toluene	20.97	105 %	OK	76 - 125
Chlorobenzene	20.51	103 %	OK	75 - 130
SPIKE DUP COMPOUNDS				
Benzene	21.82	109 %	OK	76 - 127
Toluene	22.13	111 %	OK	76 - 125
Chlorobenzene	21.60	108 %	OK	75 - 130
SURROGATES				
BROMOBENZENE (MS)	100.23	100 %	OK	75 - 120
BROMOBENZENE (MSD)	100.30	100 %	OK	75 - 120

RPD DATA 8010 RPD= 3.0 % 8020 RPD= 5.3 %

8010 COMPOUNDS	SPIKE	SPIKE DUP	RPD	STATUS	LIMITS
1,1-Dichloroethene	18.22	19.15	5 %	OK	< 14
Trichloroethene	21.96	22.70	3 %	OK	< 14
Chlorobenzene	20.14	20.30	1 %	OK	< 13
8020 COMPOUNDS					
Benzene	20.70	21.82	5 %	OK	< 11
Toluene	20.97	22.13	5 %	OK	< 13
Chlorobenzene	20.51	21.60	5 %	OK	< 13

SPIKE RECOVERY LIMITS FROM SW-846 METHODS 8010/8020 TABLE 3;
SURROGATE RECOVERY LIMITS FROM LCS CONTROL CHARTS (NOV. 91);
RPD LIMITS FROM CLP SOW 2/88 VOLATILES.

107842

AQUA RESOURCES, INC.

SHIPMENT NO.: _____

PAGE 1 OF 2

CHAIN OF CUSTODY RECORD

DATE 7/1/92

PROJECT NAME: PG&E

PROJECT NO.: ~~[illegible]~~ 6.90262.03

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
SW-1	OW1	Water	Mail	1 l Amber	±4°C	—	1
W-1	OW1	"	|	2xVOAs	|	HCl	2
W-1	OW1	"	|	2xVOAs	|	HCl	3
W-1	OW1	"	|	Plastic Btl.	|	HNO_3	4
W-2	OW2	"	|	1 l Amber	|	—	1
W-2	"	"	|	2xVOAs	|	HCl	2
W-2	"	|	|	"	|	HCl	3
W-2	"	|	|	Plastic Btl.	|	HNO_3	4
W-2	"	|	|	1 l Amber	|	—	1
W-4	OW4	|	|	2xVOAs	|	HCl	2
W-4	"	|	|	"	|	HCl	3
W-4	"	|	|	Plastic Btl	|	HNO_3	4
W-4	"	|	|	1 l Amber	|	—	1
W-5	OW5	|	|	2xVOAs	|	HCl	2
W-5	"	|	|	"	|	HCl	3
W-5	"	|	|	Plastic Btl.	|	HNO_3	4
W-5	"	|	|	1 l Amber	|	—	1
SW-6	OW6	|	|	2xVOAs	|	HCl	2
W-6	"	|	|	"	|	HCl	3
W-6	"	|	|	Plastic Btl.	↓	HNO_3	4
W-6	"	↓	↓				

Total Number of Samples Shipped: 20/24 Sampler's Signature: [signature] / Waiting for

Relinquished By:
Signature: [signature]
Printed Name: Aaron N. Steinman
Company: Aqua Resources / TETC
Reason: For Analysis

Received By:
Signature: [signature]
Printed Name: Lourinda Brouwer
Company: C+L Berkeley
Date: 7/1/92
Time: 17:55

Relinquished By:
Signature: _____
Printed Name: _____
Company: _____
Reason: _____

Received By:
Signature: _____
Printed Name: _____
Company: _____
Date: / /
Time: _____

REMARKS:

1 = TPHD
2 = TVHG + BTEX
3 = 8010
4 = Lead

Special Shipment / Handling / Storage Requirements:

10784 2

AQUA RESOURCES, INC.

SHIPMENT NO.: _____

CHAIN OF CUSTODY RECORD

PAGE 2 OF 2

DATE 7/1/92

PROJECT NAME: PG&E

PROJECT NO.: ~~[illegible]~~ 690262.03

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
W-7	DW-7	Water	Bail	1 l Amber	±4°C	—	TPH D
W-7	DW7	"	"	2 x VOAs	"	HCl	TVHG, BTEX
W-7	DW7	"	"	2 x VOAs	"	HCl	3010
W-7	DW7	↓	↓	Plastic Bt.	↓	HNO_3	Lead

Total Number of Samples Shipped: 4/24 Sampler's Signature: [signature]

Relinquished By:	Received By:	Date
Signature: [signature]	Signature: [signature]	7/1/92
Printed Name: Aaron N. Stessman	Printed Name: Lourinda Brouwer	Time
Company: ARI / TETC	Company: C&T Berkeley	17:55
Reason: For Analysis		
Relinquished By:	Received By:	Date
Signature:	Signature:	/ /
Printed Name:	Printed Name:	Time:
Company:	Company:	
Reason:		

REMARKS:

Special Shipment / Handling / Storage Requirements:

APPENDIX B

Table of the Historical Results
of Laboratory Analyses

Well ID		OW-1	OW-1	OW-1	OW-1	OW-1	OW-1	OW-1	OW-1	OW-1	OW-1
Date		Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	Apr-91	Jul-91	Dec-91	Mar-92	Jul-92
PURGEABLE HALOCARBONS	MCL										
Chloromethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	5#	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	4	4	2	2	1	2.6	4.6	ND	ND	ND
cis-1,2-Dichloroethene	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	100#*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	1200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND	ND	ND	0.63	ND	ND	ND	ND
1,1,1-Trichloroethane	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100#*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	5***	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	5***	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	100#*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100#*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	5	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene		1	4	4	1	3	1.8	2.9	ND	ND	ND
1,2-Dichlorobenzene	600#	ND	ND	ND	ND	ND	0.58	ND	ND	ND	ND
1,4-Dichlorobenzene	5	5	13	11	6	3	6.7	14	3.2	ND	4
PURGEABLE AROMATICS											
Benzene	1	3.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1000#	2.3	0.4	ND	ND	ND	ND	ND	ND	ND	0.7
Ethylbenzene	680	ND	ND	ND	ND	ND	ND	ND	ND	ND	2
Total Xylenes	1750**	2.6	2.4	ND	ND	ND	ND	ND	ND	3.2	9
TOTAL VOCs		19.1	23.8	17	9	7	13.41	21.5	3.2	3.2	15.7
HYDROCARBONS											
TVH-g		ND	82	ND	ND	ND	NA	NA	NA	100	320
TEPH-d		190	300	200	200	90	ND	ND	1600	3100	3900
O&G		NA	NA	NA	NA	NA	NA	ND	ND	ND	NA
TPH (418.1)		ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
METALS											
Lead	50						ND			ND	ND
OTHER											
TDS											
pH											

Notes:

1) MCL = Maximum Contaminant Level in drinking water (State MCL, if not noted otherwise)

2) # = EPA MCL

3) * = MCL for sum of four compounds

4) ** = MCL for sum of all xylene isomers

5) *** = MCL for sum of trans and cis-1, 3 Dichloropropene

6) ND = Not Detected at or above MDL

7) Purgeable Halocarbons (EPA method 8010)

8) Purgeable Aromatics (EPA method 8020)

Well ID	OW-2	OW-2	OW-2	OW-2	OW-2	OW-2	OW-2	OW-2	OW-2	OW-2
Date	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	Apr-91	Jul-91	Dec-91	Mar-92	Jul-92
PURGEABLE HALOCARBONS										
Chloromethane	ND	ND	ND	ND	ND	NO	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND	ND	0.53	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PURGEABLE AROMATICS										
Benzene	0.4	ND	ND	ND	ND	ND	ND	ND	1.4	ND
Toluene	0.4	0.6	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	0.4	0.8	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VOCs	1.2	1.4	0	0	0	0.53	0	0	1.4	0
HYDROCARBONS										
TVH-g	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND
TEPH-d	130	140	68	90	ND	ND	ND	650	670	410
O&G	NA	NA	NA	NA	NA	NA	ND	ND	ND	NA
TPH (418.1)	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
METALS										
Lead						ND			ND	ND
OTHER										
TDS										
pH										

Notes:

1) MCL = Maximum Contaminant Level in

2) # = EPA MCL

3) * = MCL for sum of four compounds

4) ** = MCL for sum of all xylene isomers

5) *** = MCL for sum of trans- and cis-1,

6) ND = Not Detected at or above MDL

7) Purgeable Halocarbons (EPA method 6

8) Purgeable Aromatics (EPA method 602

Well ID	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-6	OW-6	OW-6
Date	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	Apr-91	Jul-91	Dec-91	Mar 92	Jul-92
PURGEABLE HALOCARBONS										
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	9	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	0.82	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	29	14	17	17	15	16	41	ND	1	2
cis-1,2-Dichloroethene	ND	33	ND	1	1	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	0.55	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	2.5	ND	ND	ND	ND
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	1	2.3	2	5.7	ND	ND
1,3-Dichlorobenzene	3	ND	2	2	1	3.3	ND	15	ND	ND
1,2-Dichlorobenzene	2	ND	1	1	1	2.3	ND	5.8	ND	ND
1,4-Dichlorobenzene	2	ND	ND	2	1	3.1	ND	23	ND	ND
PURGEABLE AROMATICS										
Benzene	0.5	ND	ND	ND	ND	0.54	ND	ND	ND	ND
Toluene	0.4	0.6	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	0.5	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	0.7	2.1	ND	ND	ND	ND	ND	2	ND	ND
TOTAL VOCs	37.6	59.4	20	23	20	32.81	43	51.5	1	2
HYDROCARBONS										
TVH-g	ND	52	ND	ND	ND	NA	NA	NA	ND	ND
TEPH-d	440	470	450	130	1310	ND	ND	5500	4900	3500
O&G	NA	NA	NA	NA	NA	ND	ND	ND	ND	NA
TPH (418.1)	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
METALS										
Lead						ND			ND	ND
OTHER										
TDS						760				
pH										

Notes:

1) MCL = Maximum Contaminant Level in

2) # = EPA MCL

3) * = MCL for sum of four compounds

4) ** = MCL for sum of all xylene isomers

5) *** = MCL for sum of trans- and cis-1,

6) ND = Not Detected at or above MDL

7) Purgeable Halocarbons (EPA method 8

8) Purgeable Aromatics (EPA method 602

Well ID	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4
Date	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	Apr-91	Jul-91	Dec-91	Mar-92	Jul-92
PURGEABLE HALOCARBONS										
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	3	6.1	9.4	ND	7	4
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	0.49	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PURGEABLE AROMATICS										
Benzene	ND	0.5	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	0.3	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	0.6	2	ND	ND	ND	ND	ND	ND	0.7	ND
TOTAL VOCs	0.6	3.4	0	0	3	6.59	9.4	0	7.7	4
HYDROCARBONS										
TVH-g	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND
TEPH-d	150	210	150	150	ND	580	ND	2000	2100	820
O&G	NA	NA	NA	NA	NA	NA	ND	ND	ND	NA
TPH (418.1)	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
METALS										
Lead						ND			ND	5
OTHER										
TDS										
pH										

Notes:

1) MCL = Maximum Contaminant Level in
2) # = EPA MCL
3) * = MCL for sum of four compounds
4) ** = MCL for sum of all xylene isomers
5) *** = MCL for sum of trans- and cis-1,
6) ND = Not Detected at or above MDL
7) Purgeable Halocarbons (EPA method 8
8) Purgeable Aromatics (EPA method 602

Well ID	OW-5	OW-5	OW-5	OW-5	OW-5
Date	Apr-91	Jul-91	Dec-91	Mar-92	Jul-92
PURGEABLE HALOCARBONS					
Chloromethane	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND
1,1-Dichloroethane	1.8	7.2	ND	4	8
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND
Freon 113	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	6	26	18	12	25
Carbon Tetrachloride	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND
Trichloroethylene	0.75	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND
Tetrachloroethylene	0.7	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND
PURGEABLE AROMATICS					
Benzene	14	20	11	15	11
Toluene	0.54	ND	ND	1.1	ND
Ethylbenzene	0.58	ND	ND	0.6	ND
Total Xylenes	5.6	4	6.9	5.1	6
TOTAL VOCs	29.97	57.2	35.9	37.8	50
HYDROCARBONS					
TVH-g	NA	NA	NA	120	270
TEPH-d	600	1500	1200	840	650
O&G	NA	ND	ND	ND	NA
TPH (418.1)	ND	NA	NA	NA	NA
METALS					
Lead	ND			ND	ND
OTHER					
TDS					
pH					

Notes:

1) MCL = Maximum Contaminant Level in

2) # = EPA MCL

3) * = MCL for sum of four compounds

4) ** = MCL for sum of all xylene isomers

5) *** = MCL for sum of trans- and cis-1,

6) ND = Not Detected at or above MDL

7) Purgeable Halocarbons (EPA method 8

8) Purgeable Aromatics (EPA method 602

Well ID	OW-7	OW-7	OW-7
Date	Dec-91	Mar-92	Jul-92
PURGEABLE HALOCARBONS			
Chloromethane	ND	ND	ND
Bromomethane	ND	ND	ND
Vinyl chloride	ND	ND	ND
Chloroethane	ND	ND	ND
Methylene Chloride	14	ND	ND
Trichlorofluoromethane	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND
1,1-Dichloroethane	ND	16	ND
cis-1,2-Dichloroethene	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND
Chloroform	ND	ND	ND
Freon 113	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND
1,1,1-Trichloroethane	ND	460	29
Carbon Tetrachloride	ND	ND	ND
Bromodichloromethane	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND
Trichloroethylene	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND
Dibromochloromethane	ND	ND	ND
2-Chloroethylvinyl Ether	ND	ND	ND
Bromoform	ND	ND	ND
Tetrachloroethylene	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND
Chlorobenzene	10	ND	ND
1,3-Dichlorobenzene	460	130	420
1,2-Dichlorobenzene	120	22	95
1,4-Dichlorobenzene	440	120	400
PURGEABLE AROMATICS			
Benzene	ND	0.6	1
Toluene	ND	0.6	0.5
Ethylbenzene	ND	ND	0.5
Total Xylenes	ND	2.1	5
TOTAL VOCs	1044	751.5	951
HYDROCARBONS			
TVH-g	NA	700	1300
TEPH-d	7100	4400	2800
O&G	ND	ND	NA
TPH (418.1)	NA	NA	NA
METALS			
Lead		ND	ND
OTHER			
TDS			
pH			

Notes:

1) MCL = Maximum Contaminant Level in

2) # = EPA MCL

3) * = MCL for sum of four compounds

4) ** = MCL for sum of all xylene isomers

5) *** = MCL for sum of trans- and cis-1,

5) ND = Not Detected at or above MDL

7) Purgeable Halocarbons (EPA method 6

8) Purgeable Aromatics (EPA method 602