#67

Quarterly

Groundwater Monitoring Report

October 1992

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

Prepared by:

The Earth Technology Corporation (Earth Technology)
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TABLE OF CONTENTS

1.0 BACKGROUND 1

2.0 SAMPLING ACTIVITIES 3

3.0 ANALYTICAL RESULTS 5

4.0 GROUNDWATER FLOW DIRECTION 14

5.0 CONCLUSIONS 15

APPENDICES

Appendix A Certified Laboratory Results - July 1992

Appendix B Table of the Historical Results of Laboratory Analyses

1.0 BACKGROUND

This report presents the results of the quarterly groundwater monitoring performed in October 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 on the site and analyses were performed to determine the distribution of fuel compounds, solvents and lead 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.

diesel mineral spirits otb ?

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 source. Verification samples were collected along the excavation sidewalls to determine excavation limits. 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, thought to originate from lead paint chips generated from sandblasting operations

on a large above-ground gas storage tank. The tank was removed in May 1990 and at the time of quarterly sampling a contaminant mitigation cap was being constructed over the contaminated soil in its vicinity. This soil was 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 (ppm) and the Soluble Threshold Limit Concentration for lead is 5 mg/l (ppm). The Alameda County Health Care Services Agency approved of capping as the selected remedial option for this area. Continued groundwater monitoring for lead was agreed upon by the County as part of this remedial option.

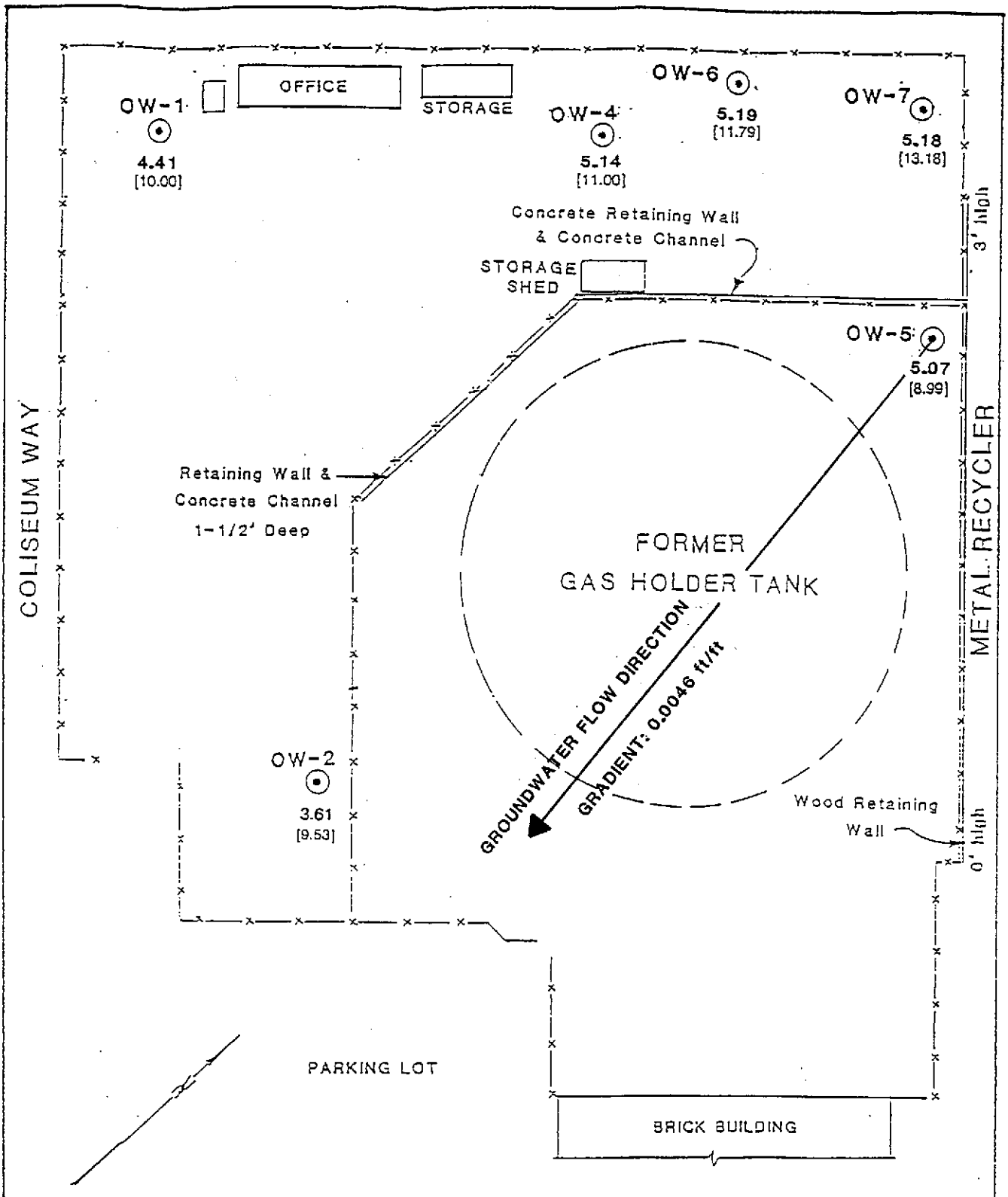
2.0 SAMPLING ACTIVITIES

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 2.1 presents the site plan including all present monitoring well locations. On October 1, 1992, groundwater samples were collected by Earth Technology 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 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.

and that TOG should it be run?

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
- 3.47 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 and Gradient

JOB NO. 90262.

FIGURE 2.1

DATE **Oct 1, 1992**

October 1992 report

3.0 ANALYTICAL RESULTS

Table 3.1 summarizes the analytical results for petroleum hydrocarbons detected in the groundwater samples collected on October 1, 1992. TPH-d was detected in each of the monitoring wells and was found in the highest concentration in wells OW-6 and OW-7. The highest concentration of TVH-g continues to be that detected in the upgradient well OW-7.

Table 3.1 Petroleum Hydrocarbons in Groundwater, in mg/l

Well	TPH-Diesel	TVH-gasoline
OW-1	1.00	ND
OW-2	0.41	ND
OW-4	1.30	ND
OW-5	1.00	0.16
OW-6	3.90	ND
OW-7	3.90	1.40

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 1991 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

Figure 3.1

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

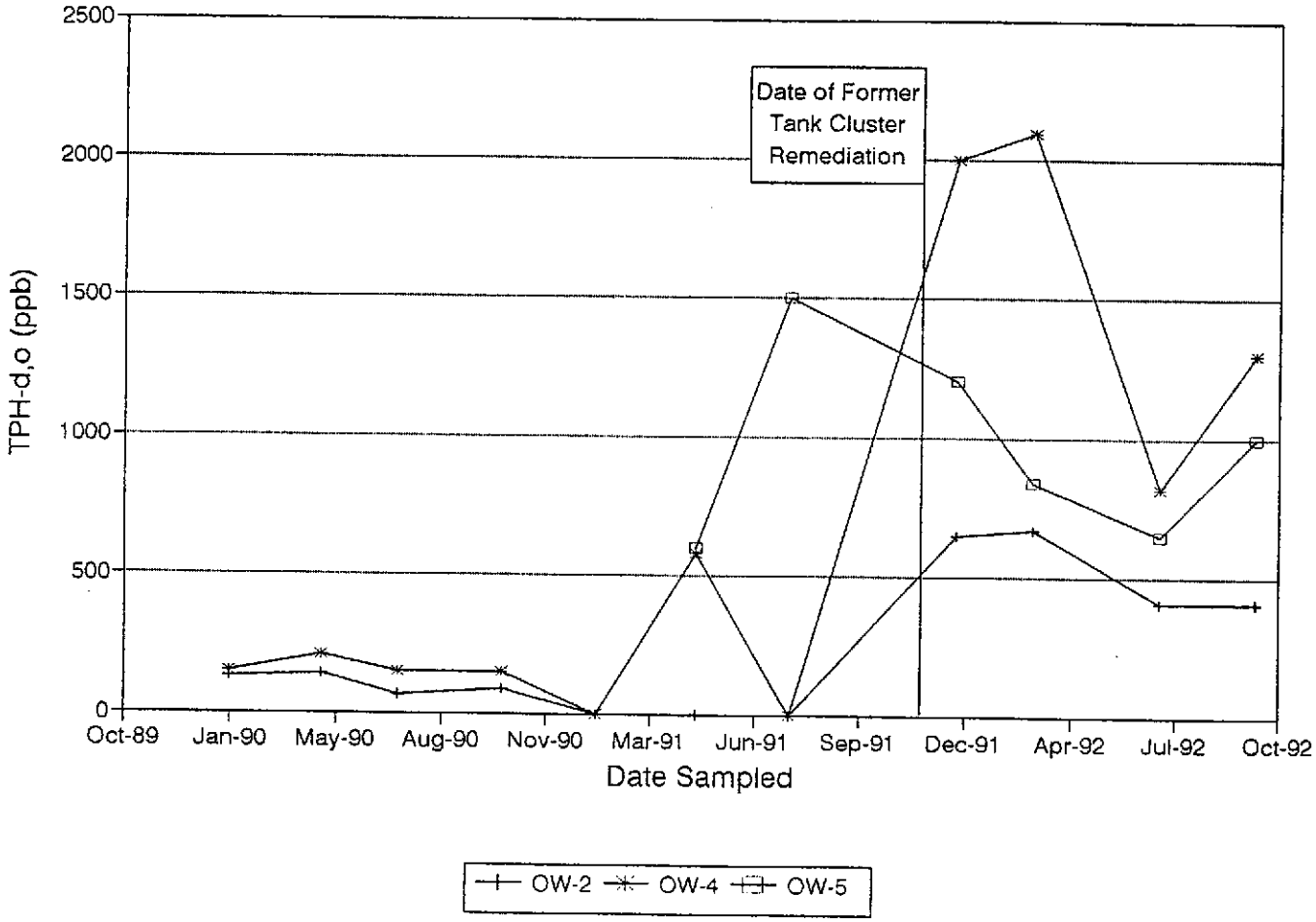
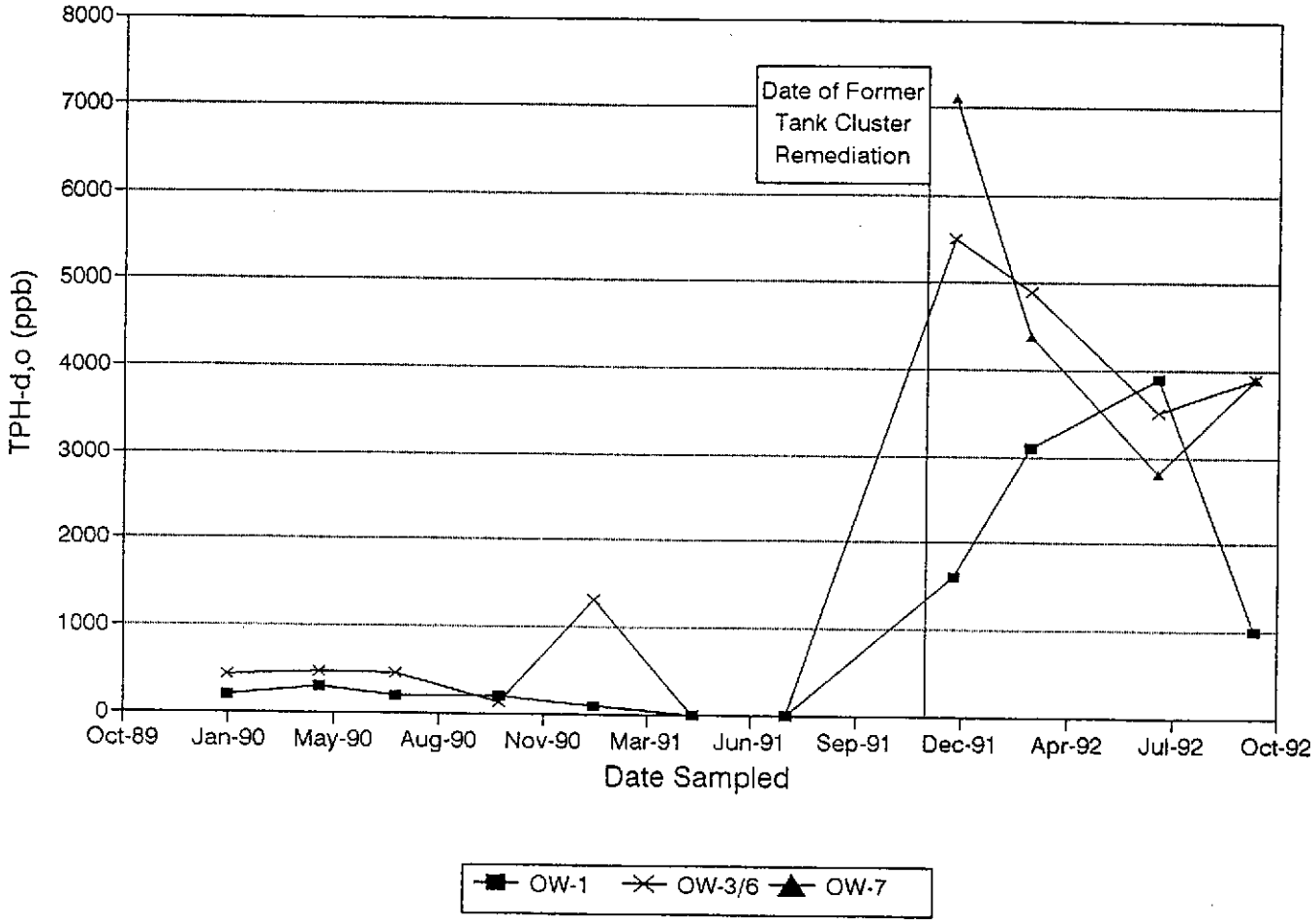


Figure 3.2

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



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

As the figures illustrate, TPH has been trending downward in wells OW-4, OW-5, OW-6 and OW-7 since reaching a peak around the time of the remedial excavation performed in their vicinity in November of 1991. OW-1 and OW-2, which is distant from the hydrocarbon remediation area, continue to contain detectable concentrations of TPH as diesel. OW-1 has shown a dramatic drop in TPH concentration over the last two quarters of sampling, while in OW-2 the concentration has remained fairly constant at about 500 ppb over the past year.

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 well OW-5 and in well OW-1. The highest concentrations of TVH-g have been observed in upgradient well OW-7 ever since its installation. This quarter TVH-g was not detected OW-1 but continues to be present in the wells at the upgradient end of the site, OW-5 and OW-7.

Figure 3.3

Total Volatile Hydrocarbons as Gasoline
in Monitoring Wells Versus Time

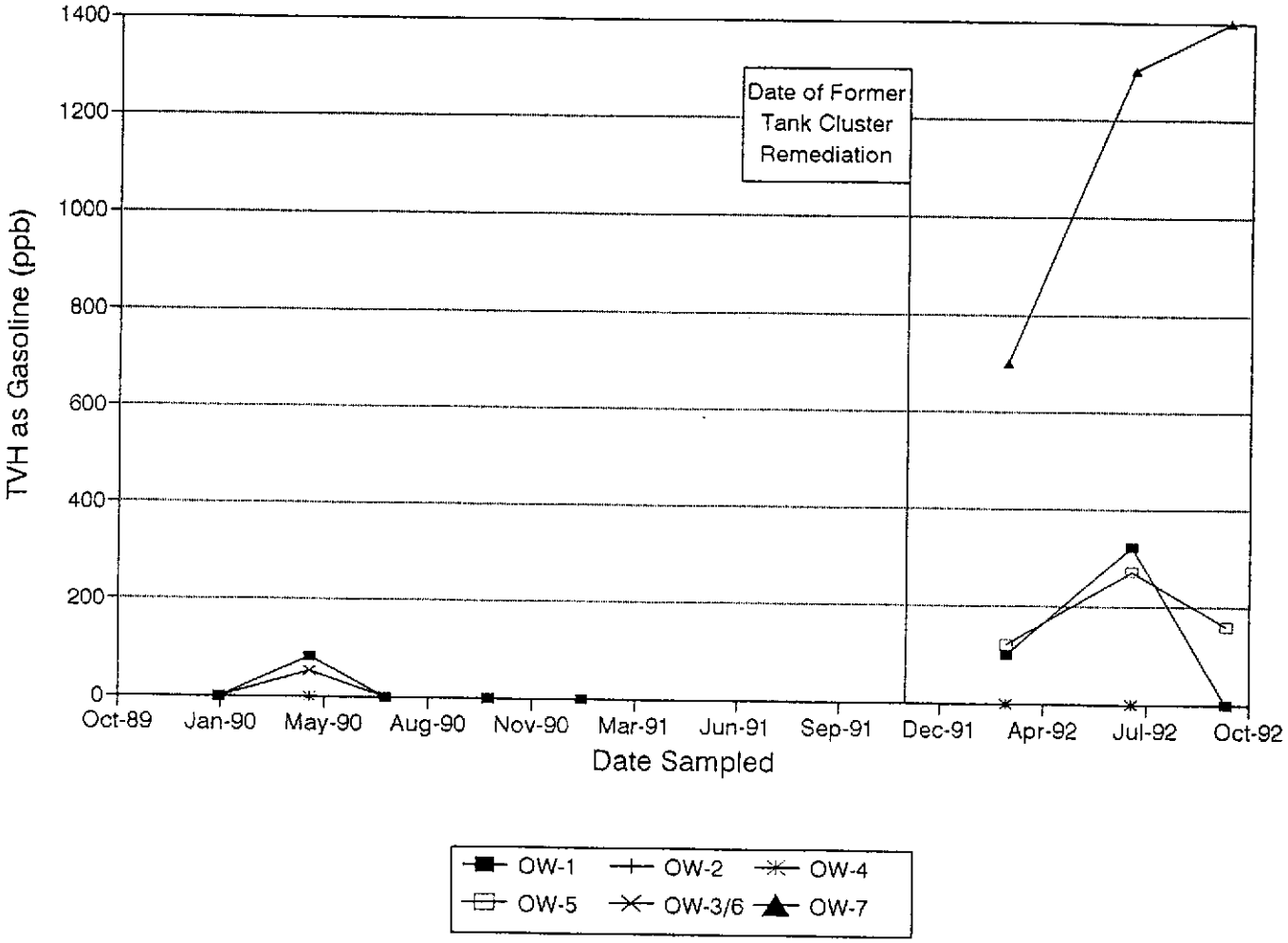


Table 3.2 presents the results of this quarter's groundwater analyses for soluble lead. The EPA and State maximum contaminant level (MCL) for lead in drinking water is 50 μg/l. Lead was not detected above the Method Detection Limit of 3 μg/l in any well during this quarter of sampling. Lead has been detected in the monitoring wells only once, in well OW-4 on July 1, 1992. The concentration of lead in that sample was 5 μg/l.

Table 3.3 presents the analytical results of volatile organic compounds (VOCs) in groundwater. The State MCLs for three compounds; 1,1-Dichloroethane (DCA, 5 μg/l), 1,4-Dichlorobenzene (1,4-DCB, 5 μg/l), and Benzene (BZ, 1 μg/l), were each exceeded: upgradient well OW-5 had 13 μg/l of DCA and 13 μg/l of BZ, while the second upgradient well, OW-7, had 1.4 μg/l of BZ and 290 μg/l of 1,4-DCB. Concentrations of 1,1,1-Trichloroethane (1,1,1-TCA) were 28 and 80 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 are located down-gradient of well OW-7.

Figure 3.4 illustrates the historical concentrations of total VOCs from 8010/8020 analyses in the monitoring wells on site. Since the installation of upgradient well OW-7, it has been found to have the highest concentration of VOCs, an order of magnitude larger than any of the other wells. Prior to the November 1991 remedial excavation, well OW-3, which lay in the excavated area and was later replaced by OW-6 contained the largest VOC concentrations. The water quality at OW-6 now appears to be improved (2 μg/l total VOCs during last quarter) 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	ND
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

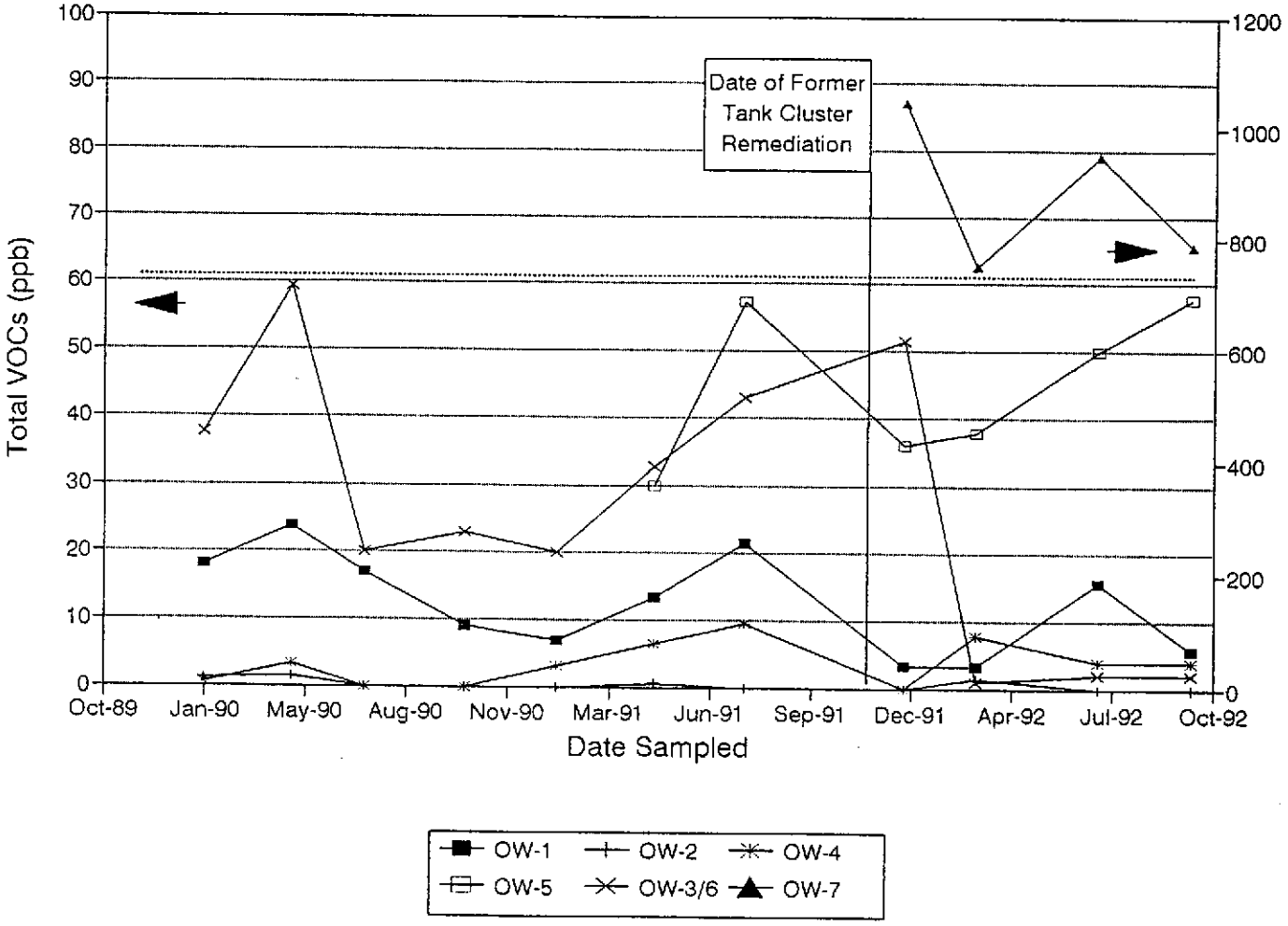
PURGEABLE HALOCARBONS	MCL	Well Number					
		OW-1	OW-2	OW-4	OW-5	OW-6	OW-7
Chloromethane		ND	ND	ND	ND	ND	ND
Bromomethane		ND	ND	ND	ND	ND	ND
Vinyl chloride	0.5	ND	ND	ND	ND	ND	ND
Chloroethane		ND	ND	ND	ND	ND	ND
Methylene Chloride	5#	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	150	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	6	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	1	ND	4	13	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	28	ND	80
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	8
1,3-Dichlorobenzene		ND	ND	ND	ND	ND	330
1,2-Dichlorobenzene	600#	ND	ND	ND	ND	ND	77
1,4-Dichlorobenzene	5	3	ND	ND	ND	ND	290
PURGEABLE AROMATICS							
Benzene	1	ND	ND	ND	13	ND	1.4
Toluene	1000#	ND	ND	ND	ND	ND	ND
Ethylbenzene	680	ND	ND	ND	ND	ND	ND
Total Xylenes	1750**	1.7	ND	ND	3.6	ND	ND

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)

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 October 1, 1992. The measurements were made on each well prior to well purging. 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. In late September 1992, the wellhead of OW-2 was raised to match the new grade of the lead mitigation cap. A 1.10 foot riser was placed on the existing casing and the TOC reference elevation for this well was adjusted appropriately.

The groundwater elevations measured October 1, 1992 are presented in Figure 2.1 along with the relative TOC elevations of each of the wells. The groundwater flow direction calculated from groundwater elevations in OW-1, OW-2, and OW-5 indicates the local groundwater flow direction on this date to be to the south at a gradient of approximately 0.0046 ft/ft. This flow direction is consistent with the one observed last quarter (July 1, 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 the results of analyses performed on groundwater samples collected on October 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 well OW-6 (3900 μg/l) and in upgradient well OW-7 (3900 μg/l).

- TPH-d concentrations have been trending downwards in wells OW-4, OW-5, and OW-6 since reaching a peak around the time of the hydrocarbon remedial excavation.

- The TPH-d concentration dropped in well OW-1 since the last quarter of sampling from 3900 μg/l to 1000 μg/l.

- Well OW-2, although distant from the suspected former sources of hydrocarbons, continues to contain a fairly constant concentration of TPH-d at about 500 μg/l.

- Lead was not detected at concentrations above the RL (3 μg/l) in any of the six wells on site.

- Upgradient wells OW-5 (DCA and BZ) and OW-7 (1,4-DCB and BZ) 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 upgradient well OW-7 (total DCB 697 μg/l).

- The solvent TCA continues to be present in upgradient wells OW-7 (80 μg/l) and OW-5 (28 μg/l).

- TVH-g was detected in the two upgradient wells: OW-7 (1400 μg/l) and OW-5 (160 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 (510) 486-0900

DATE RECEIVED: 10/01/92
DATE REPORTED: 10/15/92

LABORATORY NUMBER: 108829

CLIENT: AQUA RESOURCES

PROJECT ID: 690262.03

LOCATION: PG&E: COLISEUM WAY

RESULTS: SEE ATTACHED

AQUA RESOURCES, INC
RECEIVED
OCT 19 1992
JOB NO. 690262.03
FILE Analytical Results

Reviewed by

Reviewed by

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 108829
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.03
LOCATION: PG&E: COLISEUM WAY

DATE SAMPLED: 10/01/92
DATE RECEIVED: 10/01/92
DATE ANALYZED: 10/05/92
DATE REPORTED: 10/15/92

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7421

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
108829-1	W-1	ND	ug/L	3
108829-2	W-2	ND	ug/L	3
108829-3	W-4	ND	ug/L	3
108829-4	W-5	ND	ug/L	3
108829-5	W-6	ND	ug/L	3
108829-6	W-7	ND	ug/L	3

ND = Not detected at or above reporting limit.

QA/QC SUMMARY:

RPD, %	<1
RECOVERY, %	91

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 108829-1
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.03
LOCATION: PG&E: COLISEUM WAY
SAMPLE ID: W-1

DATE SAMPLED: 10/01/92
DATE RECEIVED: 10/01/92
DATE ANALYZED: 10/07/92
DATE REPORTED: 10/15/92

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	1	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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	3	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	110

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 108829-2
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.03
LOCATION: PG&E: COLISEUM WAY
SAMPLE ID: W-2

DATE SAMPLED: 10/01/92
DATE RECEIVED: 10/01/92
DATE ANALYZED: 10/07/92
DATE REPORTED: 10/15/92

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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	108

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 108829-3
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.03
LOCATION: PG&E: COLISEUM WAY
SAMPLE ID: W-4

DATE SAMPLED: 10/01/92
DATE RECEIVED: 10/01/92
DATE ANALYZED: 10/07/92
DATE REPORTED: 10/15/92

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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	105

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 108829-4
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.03
LOCATION: PG&E: COLISEUM WAY
SAMPLE ID: W-5

DATE SAMPLED: 10/01/92
DATE RECEIVED: 10/01/92
DATE ANALYZED: 10/07/92
DATE REPORTED: 10/15/92

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	13	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	28	1
Carbon tetrachloride	ND	1
Bromodichloromethane	ND	1
1,2-Dichloropropane	ND	1
cis-1,3-Dichloropropene	ND	1
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	91

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 108829-5
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.03
LOCATION: PG&E: COLISEUM WAY
SAMPLE ID: W-6

DATE SAMPLED: 10/01/92
DATE RECEIVED: 10/01/92
DATE ANALYZED: 10/07/92
DATE REPORTED: 10/15/92

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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	108

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 108829-6
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.03
LOCATION: PG&E: COLISEUM WAY
SAMPLE ID: W-7

DATE SAMPLED: 10/01/92
DATE RECEIVED: 10/01/92
DATE ANALYZED: 10/07/92
DATE REPORTED: 10/15/92

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	80	5
Carbon tetrachloride	ND	5
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
1,1,2-Trichloroethane	ND	5
trans-1,3-Dichloropropene	ND	5
Dibromochloromethane	ND	5
2-Chloroethylvinyl ether	ND	10
Bromoform	ND	10
Tetrachloroethene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Chlorobenzene	8	5
1,3-Dichlorobenzene	330	5
1,4-Dichlorobenzene	290	5
1,2-Dichlorobenzene	77	5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	107

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 108829-METHOD BLANK
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.03
LOCATION: PG&E: COLISEUM WAY

DATE ANALYZED: 10/06/92
DATE REPORTED: 10/15/92

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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	108

Curtis & Tompkins, Ltd.

MS/MSD SUMMARY SHEET FOR EPA 8010

Laboratory Number: 108829
Analysis date: 10/07/92 Spike file: 280W023
Sample type: Water Spike dup file: 280W024

8010 MS/MSD DATA (spiked at 20 ppb)

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
1,1-Dichloroethene	20.61	103 %	OK	61 - 145
Trichloroethene	23.06	115 %	OK	71 - 120
Chlorobenzene	22.47	112 %	OK	75 - 130
SPIKE DUP COMPOUNDS				
1,1-Dichloroethene	19.20	96 %	OK	61 - 145
Trichloroethene	23.15	116 %	OK	71 - 120
Chlorobenzene	22.19	111 %	OK	75 - 130
SURROGATES				
Bromobenzene (MS)	103.61	104 %	OK	75 - 115
Bromobenzene (MSD)	108.09	108 %	OK	75 - 115

RPD DATA

8010 COMPOUNDS	SPIKE	SPIKE DUP	RPD	STATUS	LIMITS
1,1-Dichloroethene	20.61	19.20	7 %	OK	<= 14
Trichloroethene	23.06	23.15	0 %	OK	<= 14
Chlorobenzene	22.47	22.19	1 %	OK	<= 13

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 108829
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.03
LOCATION: PG&E: COLISEUM WAY

DATE SAMPLED: 10/01/92
DATE RECEIVED: 10/01/92
DATE ANALYZED: 10/05/92
DATE REPORTED: 10/15/92

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)
108829-1	W-1	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	1.7
108829-2	W-2	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
108829-5	W-6	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

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

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	115

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 108829
CLIENT: AQUA RESOURCES
PROJECT ID: 690262.03
LOCATION: PG&E: COLISEUM WAY

DATE SAMPLED: 10/01/92
DATE RECEIVED: 10/01/92
DATE EXTRACTED: 10/09/92
DATE ANALYZED: 10/10/92
DATE REPORTED: 10/15/92

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)
108829-1	W-1	**	1,000	50
108829-2	W-2	**	410	50
108829-3	W-4	**	1,300	50
108829-4	W-5	**	1,000	50
108829-5	W-6	**	3,900	50
108829-6	W-7	**	3,900	50

* Reporting limit applies to all analytes.

**Kerosene range not reported. Quantitated as diesel range.

QA/QC SUMMARY

RPD, %	12
RECOVERY, %	104

108829

AQUA RESOURCES, INC.

SHIPMENT NO.:

CHAIN OF CUSTODY RECORD

PAGE 1 OF 2

PROJECT NAME: PG+E : Coliseum Way, Oakland DATE 10/1/92

PROJECT NO.:

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-1	OW1	Aq.	Bail	1 l Amber	4°C	—	1	10:44
W-1	"	"	"	250 ml Plastic	"	HNO_3	2	
W-1	"	"	"	2 x VOA	"	—	3	
W-1	"	"	"	2 x VOA	"	HCl	4	
W-2	OW2	"	"	1 l Amber	"	—	1	10:00
W-2	"	"	"	250 ml Plastic	"	HNO_3	2	
W-2	"	"	"	2 x VOA	"	—	3	
W-2	"	"	"	2 x VOA	"	HCl	4	
~~W-3~~								
~~W-3~~								
~~W-3~~								
~~W-3~~								
W-4	OW4	"	"	1 l Amber	"	—	1	14:55
W-4	"	"	"	250 ml Plastic	"	HNO_3	2	
W-4	"	"	"	2 x VOA	"	—	3	
W-4	"	"	"	2 x VOA	"	HCl	4	

Total Number of Samples Shipped: 18/36 | Sampler's Signature:

Relinquished By:
Signature
Printed Name: Aaron N. Stessman
Company: ARI
Reason: for Analysis

Received By:
Signature
Printed Name: Joanne Heath
Company: C+T
Date: 10/1/92
Time: 16:40

Relinquished By:
Signature
Printed Name
Company
Reason

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

REMARKS:

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

Special Shipment / Handling / Storage Requirements:

10882 9

AQUA RESOURCES, INC.

SHIPMENT NO.:

CHAIN OF CUSTODY RECORD

PAGE 2 OF 2

PROJECT NAME: PG&E: Coliseum Way, Oakland

DATE 10/1/92

PROJECT NO.: 690262.03

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required	
		Material	Method		Temp	Chemical		
W-5	OW5	Aq.	Bail	1 l Amber	±4°C	None	1	15:15
W-5	"	"	"	250 ml Plastic	"	HNO_3	2	
W-5	"	"	"	2 x VOA	"	—	3	
W-5	"	"	"	2 x VOA	"	HCl	4	
W-6	OW6	"	"	1 l Amber	"	—	1	13:50
W-6	"	"	"	250 ml Plastic	"	HNO_3	2	
W-6	"	"	"	2 x VOA	"	—	3	
W-6	"	"	"	2 x VOA	"	HCl	4	
W-7	OW7	"	"	1 l Amber	"	—	1	14:35
W-7	"	"	"	250 ml Plastic	"	HNO_3	2	
W-7	"	"	"	2 x VOA	"	—	3	
W-7	"	"	"	2 x VOA	"	HCl	4	

Total Number of Samples Shipped: 18/36 Sampler's Signature:

Relinquished By: Signature: Printed Name: Aaron M. Stessman Company: ARI Reason: For Analysis	Received By: Signature: Printed Name: Company:	Date: 10/01/92 Time: 1640
Relinquished By: Signature: Printed Name: Company: Reason:	Received By: Signature: Printed Name: Company:	Date: / / Time:

REMARKS:

1 = TPHD

2 = Lead

3 = 8010

4 = TVHG + BTEX

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	OW-1
Date	Jan-90	Apr-90	Jul-90	Oct-90	Jan-91	Apr-91	Jul-91	Dec-91	Mar-92	Jul-92	Oct-92
PURGEABLE HALOCARBONS											
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	4	4	2	2	1	2.6	4.6	ND	ND	ND	1
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	0.63	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	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	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	0.58	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	13	11	6	3	6.7	14	3.2	ND	4	3
PURGEABLE AROMATICS											
Benzene	3.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	2.3	0.4	ND	ND	ND	ND	ND	ND	ND	0.7	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND
Total Xylenes	2.6	2.4	ND	ND	ND	ND	ND	ND	3.2	9	1.7
TOTAL VOCs	18.1	23.8	17	9	7	13.41	21.5	3.2	3.2	15.7	5.7
HYDROCARBONS											
TVH-g	ND	82	ND	ND	ND	NA	NA	NA	100	320	ND
TEPH-d	190	300	200	200	90	ND	ND	1600	3100	3900	1000
O&G	NA	NA	NA	NA	NA	NA	ND	ND	ND	NA	NA
TPH (418.1)	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
METALS											
Lead						ND			ND	ND	ND
OTHER											
TDS											
pH											

Notes:

1) MCL = Maximum Contaminant Le MCL if not noted otherwise)
2) # = EPA MCL
3) * = MCL for sum of four compou
4) ** = MCL for sum of all xylene iso
5) *** = MCL for sum of trans- and c
6) ND = Not Detected at or above M
7) Purgeable Halocarbons (EPA met
8) Purgeable Aromatics (EPA metho

Well ID	OW-2	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	Oct-92
PURGEABLE HALOCARBONS											
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND	ND	0.53	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	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	ND
Toluene	0.4	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	0.4	0.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VOCs	1.2	1.4	0	0	0	0.53	0	0	1.4	0	0
HYDROCARBONS											
TVH-g	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND
TEPH-d	130	140	68	90	ND	ND	ND	650	670	410	410
O&G	NA	NA	NA	NA	NA	NA	ND	ND	ND	NA	NA
TPH (418.1)	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
METALS											
Lead						ND			ND	ND	ND
OTHER											
TDS											
pH											

Notes:
1) MCL = Maximum Contaminant Le
2) # = EPA MCL
3) * = MCL for sum of four compou
4) ** = MCL for sum of all xylene iso
5) *** = MCL for sum of trans- and c
6) ND = Not Detected at or above M
7) Purgeable Halocarbons (EPA met
8) Purgeable Aromatics (EPA metho

Well ID	OW-4	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	Oct-92
PURGEABLE HALOCARBONS											
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	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	4
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	0.49	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	ND	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	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PURGEABLE AROMATICS											
Benzene	ND	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	0.6	2	ND	ND	ND	ND	ND	ND	0.7	ND	ND
TOTAL VOCs	0.6	3.4	0	0	3	6.59	9.4	0	7.7	4	4
HYDROCARBONS											
TVH-g	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND
TEPH-d	150	210	150	150	ND	580	ND	2000	2100	820	1300
O&G	NA	NA	NA	NA	NA	NA	ND	ND	ND	NA	NA
TPH (418.1)	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
METALS											
Lead						ND			ND	5	ND
OTHER											
TDS											
pH											

Notes:
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4) ** = MCL for sum of all xylene iso
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6) ND = Not Detected at or above M
7) Purgeable Halocarbons (EPA met
8) Purgeable Aromatics (EPA metho

Well ID	OW-5	OW-5	OW-5	OW-5	OW-5	OW-5
Date	Apr-91	Jul-91	Dec-81	Mar-92	Jul-92	Oct-92
PURGEABLE HALOCARBONS						
Chloromethane	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	1.8	7.2	ND	4	8	13
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND
Freon 113	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	6	26	18	12	25	28
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND
Trichloroethylene	0.75	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	0.7	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND
PURGEABLE AROMATICS						
Benzene	14	20	11	15	11	13
Toluene	0.54	ND	ND	1.1	ND	ND
Ethylbenzene	0.58	ND	ND	0.6	ND	ND
Total Xylenes	5.6	4	6.9	5.1	6	3.6
TOTAL VOCs	29.97	57.2	35.9	37.8	50	57.6
HYDROCARBONS						
TVH-g	NA	NA	NA	120	270	160
TEPH-d	600	1500	1200	840	650	1000
O&G	NA	ND	ND	ND	NA	NA
TPH (418.1)	ND	NA	NA	NA	NA	NA
METALS						
Lead	ND			ND	ND	ND
OTHER						
TDS						
pH						

Notes:

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7) Purgeable Halocarbons (EPA met
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Well ID	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-6	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	Oct-92
PURGEABLE HALOCARBONS											
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	9	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	0.82	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	29	14	17	17	15	16	41	ND	1	2	2
cis-1,2-Dichloroethene	ND	33	ND	1	1	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	0.55	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	2.5	ND	ND	ND	ND	ND
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethytvinyl Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	1	2.3	2	5.7	ND	ND	ND
1,3-Dichlorobenzene	3	ND	2	2	1	3.3	ND	15	ND	ND	ND
1,2-Dichlorobenzene	2	ND	1	1	1	2.3	ND	5.8	ND	ND	ND
1,4-Dichlorobenzene	2	ND	ND	2	1	3.1	ND	23	ND	ND	ND
PURGEABLE AROMATICS											
Benzene	0.5	ND	ND	ND	ND	0.54	ND	ND	ND	ND	ND
Toluene	0.4	0.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	0.7	2.1	ND	ND	ND	ND	ND	2	ND	ND	ND
TOTAL VOCs	37.6	59.4	20	23	20	32.81	43	51.5	1	2	2
HYDROCARBONS											
TVH-g	ND	52	ND	ND	ND	NA	NA	NA	ND	ND	ND
TEPH-d	440	470	450	130	1310	ND	ND	5500	4900	3500	3900
O&G	NA	NA	NA	NA	NA	ND	ND	ND	ND	NA	NA
TPH (418.1)	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
METALS											
Lead						ND			ND	ND	ND
OTHER											
TDS						780					
pH											

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7) Purgeable Halocarbons (EPA met
8) Purgeable Aromatics (EPA metho

Well ID	OW-7	OW-7	OW-7	OW-7
Date	Dec-91	Mar-92	Jul-92	Oct-92
PURGEABLE HALOCARBONS				
Chloromethane	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND
Methylene Chloride	14	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND
1,1-Dichloroethane	ND	16	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND
Freon 113	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	460	29	80
Carbon Tetrachloride	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND
2-Chloroethylvinyl Ether	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND
Chlorobenzene	10	ND	ND	8
1,3-Dichlorobenzene	460	130	420	330
1,2-Dichlorobenzene	120	22	95	77
1,4-Dichlorobenzene	440	120	400	290
PURGEABLE AROMATICS				
Benzene	ND	0.8	1	1.4
Toluene	ND	0.6	0.5	ND
Ethylbenzene	ND	ND	0.5	ND
Total Xylenes	ND	2.1	5	ND
TOTAL VOCs	1044	751.5	951	786.4
HYDROCARBONS				
TVH-g	NA	700	1300	1400
TEPH-d	7100	4400	2800	3900
O&G	ND	ND	NA	NA
TPH (418.1)	NA	NA	NA	NA
METALS				
Lead		ND	ND	ND
OTHER				
TDS				
pH				

Notes:
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