

B.O

H. GREG WEATHERFORD

Sep 21, 1992

Mr Ravi Arulanantham
Alameda Co. Health Agency
50 Swan Way, Room 200
Oakland, Ca 94621

Dear Mr. Arulanantham,

Enclosed is the report from
Crocker and Weston which your
office required prior to granting
permission to close the wells
at 5903 Christie Avenue, Emeryville
California. I have forwarded a
copy of the enclosed report plus
a recommendation for case closure
to Mr Richard Heith SFBRWACB

Should you require anything
further, please call me at
619-568-2224

Sincerely,

H. Greg Weatherford

by the State of California for the analyses requested.

RESULTS

All groundwater monitoring well samples yielded not detected levels for VOC's and the metals Cr, Cd, Ni, Pb (see table 1 for analytic results).

Only the metal zinc yielded any measurable concentrations with well MW-1 indicating 0.017 parts per million (ppm), well MW-2 indicating 0.022 ppm and well MW-3 indicating 0.014ppm- all of which are well below the soluble threshold limit concentration (STLC) of 250 ppm for zinc. ↪

Groundwater elevations were measured at 2.53 feet above sea level (ASL) for well MW-1, 2.52 feet ASL for well MW-2, and 2.49 feet ASL for well MW-3 (see table 2 for all groundwater measurements).

Groundwater gradient was measured at 0.004 ft/ft to the west (see figure 2).

TABLE 1
ANALYTIC RESULTS OF GROUNDWATER MONITORING WELL SAMPLING

Date	Sample	Voc	Cr	Cd	Pb	Ni	Zn
8-17-92	MW-1	ND	ND	ND	ND	ND	0.017
8-17-92	MW-2	ND	ND	ND	ND	ND	0.022
8-17-92	MW-3	ND	ND	ND	ND	ND	0.014

All Values In Parts Per Million
 ND = Not Detected
 VOC = Volatile Organic Compounds
 Cr = Chromium
 Cd = Cadmium
 Pb = Lead
 Ni = Nickel
 Zn = Zinc

TABLE 2
GROUNDWATER GRADIENT AND ELEVATION

Date	Well MW-1	Well MW-2	Well MW-3	Groundwater Gradient	Groundwater Direction
9-28-89	3.10'	2.98'	2.95'	0.014 ft/ft	west
5-22-92	2.70'	2.66'	2.95'	0.004 ft/ft	west
1-9-92	2.86'	2.81'	2.77'	0.008 ft/ft	west
3-25-92	4.05'	4.01'	4.02'	0.004 ft/ft	west
8-17-92	2.53'	2.52'	2.49'	0.004 ft/ft	west

All Measurements Adjusted to Mean Sea Level

REPORTAGE

SFBRWQCB
2101 Webster Street
Oakland, CA 94612
Attn: **Richard Heitt**

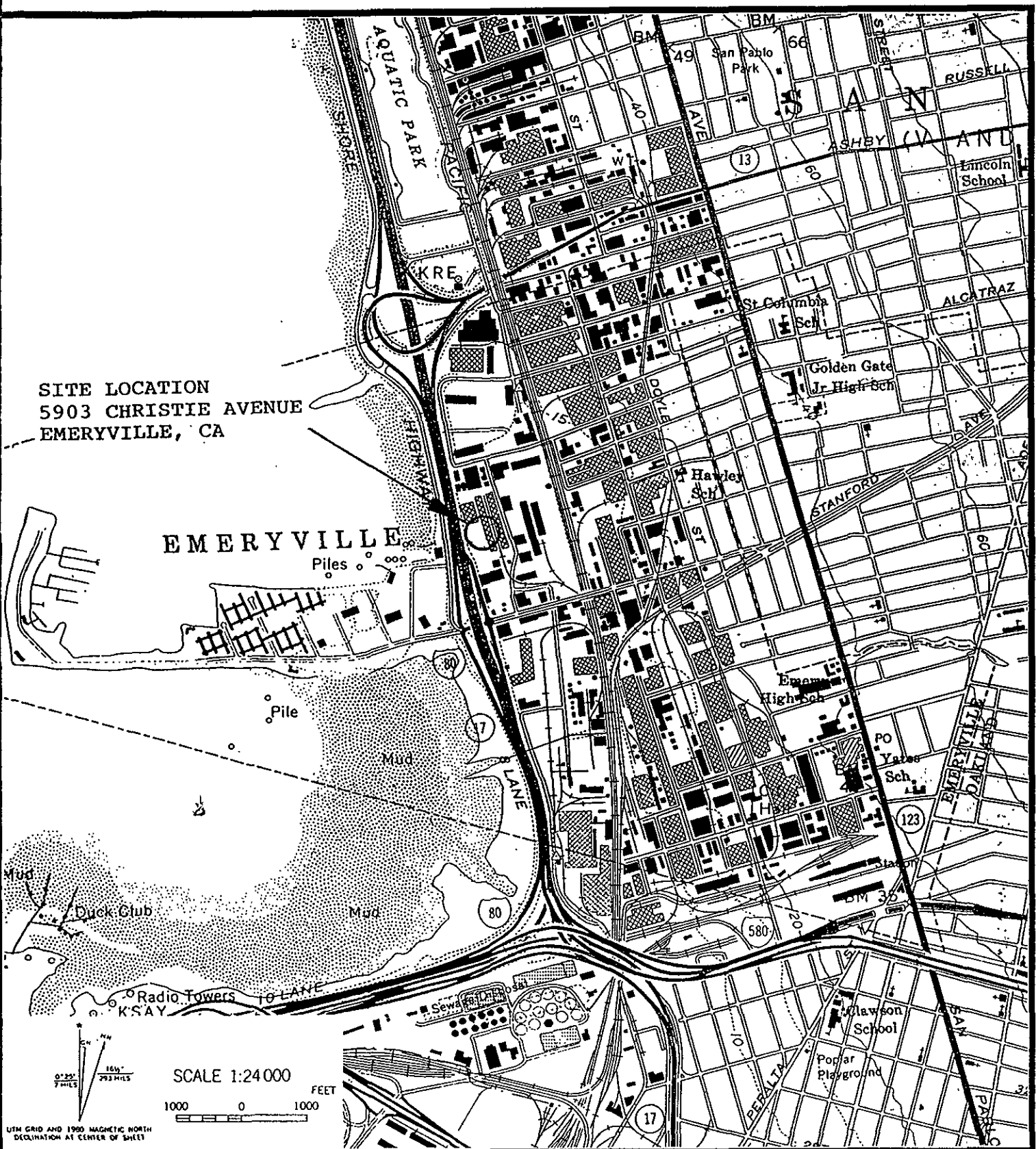
Alameda Co Health Agency
Division of Hazardous Materials
Dept of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621
Attn: **Ravi Arulanantham**

Should you have any questions or comments, or if we may be of further service, please do not hesitate to call me at (510) 633-0336.

Sincerely,



Darrell Taylor
Environmental Geologist



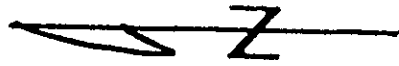
CROSBY & OVERTON, INC.

FIGURE 1
AREA MAP

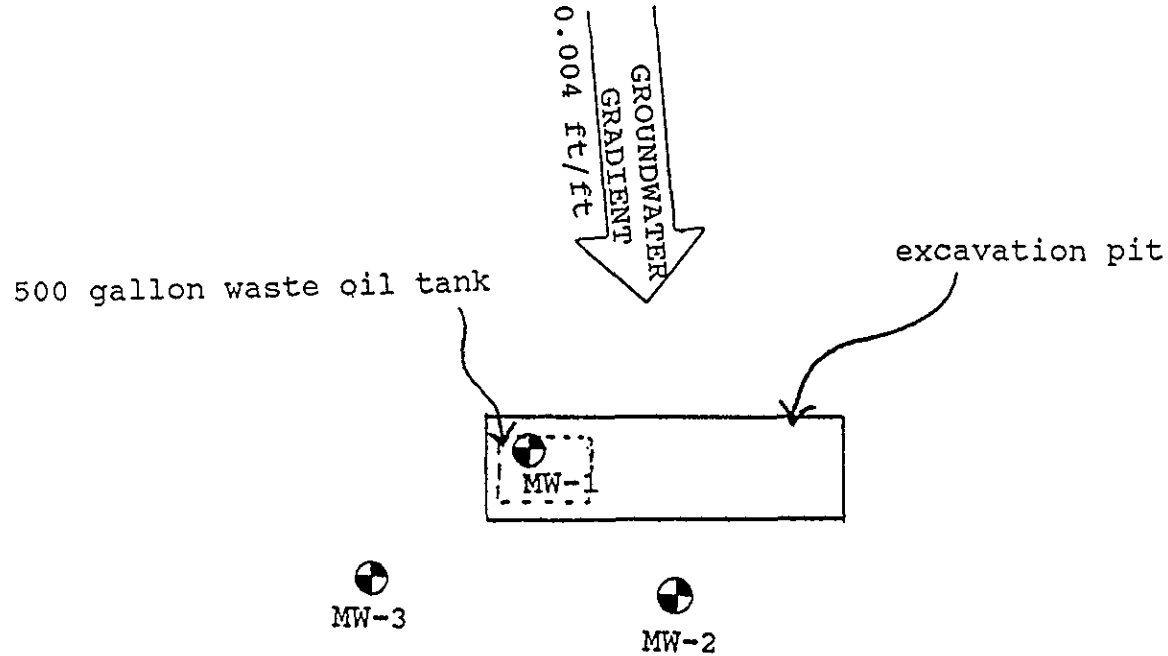
DATE: 3-30-92

JOB NUMBER: 9343-S

D. Taylor After USGS
DRAWN BY: Oakland West, Calif. 1980



building
5903 Christie Avenue
Emeryville, California



⊕ groundwater monitoring well

0 10'



CROSBY & OVERTON, INC.

8430 AMELIA STREET • OAKLAND, CA 94621

FIGURE 2

SITE MAP OF FORMER WASTE OIL TANK
AND GROUNDWATER MONITORING WELL PLACEMENT

DATE: 7-27-92

JOB NUMBER: 9343-S

DRAWN BY: D. Taylor

STANDARD OPERATING PROCEDURES

Monitoring Well Sampling

A minimum of three well volumes are pumped from each well, each well is permitted to recharge to $\geq 80\%$ of original capacity and stabilize. Stabilization is determined by measuring the parameters of pH; temperature; and electrical conductivity. When two subsequent measurements of these three parameters are within 10% of each other, the well is considered stabilized and is sampled.

The samples are collected using a new polyethylene bailer with a bottom siphon and nylon cord. The bailers are disposable, and therefore, never reused. Duplicate water samples for volatile organic compounds are collected from the well and siphoned into three (3) clear 40 ml VOA vials with all headspace removed, and preserved with hydrochloric acid. For all other analyses, samples are collected in 950 ml amber glass bottles. All samples are labeled, chilled to 4°C (utilizing either crushed ice or Blue-Ice®) in an ice chest, and sent to a California State Certified hazardous materials testing laboratory under chain-of-custody documentation.

Groundwater sampling is performed in accordance with the California Regional Water Quality Control Board (RWQCB) procedures described in the *Leaking Underground Fuel Tank (LUFT) Field Manual*, the *Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites*, and local regulatory guidelines.

Standard Environmental Protection Agency (EPA), San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), and Department of Health Services (DHS) methodologies are routinely utilized.

Chain of Custody documentation accompanies all samples to the laboratory. A copy of the Chain of Custody documentation is attached to the Certificate of Analysis.

Certificate of Analysis

DOHS CERTIFICATION NO. E772

AIHA ACCREDITATION NO. 332

CROSBY & OVERTON, INC.
8430 AMELIA STREET
OAKLAND, CA 94612

ATTN: DARRELL TAYLOR

CLIENT PROJ. ID: 9889-S
P.O. NO: 14007

REPORT DATE: 09/04/92

DATE SAMPLED: 08/17/92

DATE RECEIVED: 08/24/92

QUANTEQ JOB NO: 9208218

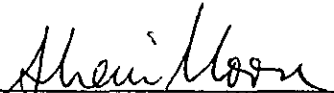
PROJECT SUMMARY:


On August 24, 1992 this laboratory received three (3) water samples. Samples were received cold and in appropriate containers.

Samples MW-1, MW-2 and MW-3 (9208218-01D, 02D and 03D) were filtered through a 0.45um filter and preserved to a pH of less than (<)2 with Nitric Acid upon receipt. Samples were analyzed for inorganic and organic parameters.

Sample identification, methodologies, results and dates analyzed are summarized on the following pages of this report.

All laboratory quality control parameters were found to be within established limits. Batch QC data is included on the last page.


Sherri Moore, Manager
Inorganic Laboratory


Andrew Bradeen, Manager
Organic Laboratory

Results FAXed 08/26-09/02/92

CROSBY & OVERTON, INC.

DATE SAMPLED: 08/17/92
DATE RECEIVED: 08/24/92
CLIENT PROJ. ID: 9889-S

REPORT DATE: 09/04/92
QUANTEQ JOB NO: 9208218

Client Sample Id.	Quanteq Lab Id.	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)	Nickel (mg/L)	Zinc (mg/L)
MW-1	01D *	ND	ND	ND	ND	0.017
MW-2	02D *	ND	ND	ND	ND	0.022
MW-3	03D *	ND	ND	ND	ND	0.014
Detection limit		0.005	0.01	0.02	0.01	0.005

Method: 6010

Instrument: ICP

Date Analyzed: 08/28/92

ND = Not Detected

* Samples were filtered through a 0.45um filter and preserved with HNO₃ on 08/24/92.

CROSBY & OVERTON, INC.

SAMPLE ID: MW-1
 CLIENT PROJ. ID: 9889-S
 DATE SAMPLED: 08/17/92
 DATE RECEIVED: 08/24/92
 REPORT DATE: 09/04/92

QUANTEQ LAB NO: 9208218-01A
 QUANTEQ JOB NO: 9208218
 DATE ANALYZED: 08/25/92
 INSTRUMENT: 12

EPA METHOD 8240 (WATER MATRIX)
 GC/MS VOLATILE ORGANIC COMPOUNDS

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Acetone	67-64-1	ND	100
Benzene	71-43-2	ND	5
Bromodichloromethane	75-27-4	ND	5
Bromoform	75-25-2	ND	5
Bromomethane	74-83-9	ND	10
2-Butanone	78-93-3	ND	100
Carbon Disulfide	75-15-0	ND	10
Carbon Tetrachloride	56-23-5	ND	5
Chlorobenzene	108-90-7	ND	5
Chloroethane	75-00-3	ND	10
2-Chloroethyl Vinyl Ether	110-75-8	ND	10
Chloroform	67-66-3	ND	5
Chloromethane	74-87-3	ND	10
Dibromochloromethane	124-48-1	ND	5
1,1-Dichloroethane	75-34-3	ND	5
1,2-Dichloroethane	107-06-2	ND	5
1,1-Dichloroethene	75-35-4	ND	5
cis-1,2-Dichloroethene	156-59-2	ND	5
trans-1,2-Dichloroethene	156-60-5	ND	5
1,2-Dichloropropane	78-87-5	ND	5
cis-1,3-Dichloropropene	10061-01-5	ND	5
trans-1,3-Dichloropropene	10061-02-6	ND	5
Ethylbenzene	100-41-4	ND	5
2-Hexanone	591-78-6	ND	50
Methylene Chloride	75-09-2	ND	5
4-Methyl-2-pentanone	108-10-1	ND	50
Styrene	100-42-5	ND	5
1,1,2,2-Tetrachloroethane	79-34-5	ND	5
Tetrachloroethene	127-18-4	ND	5
Toluene	108-88-3	ND	5
1,1,1-Trichloroethane	71-55-6	ND	5
1,1,2-Trichloroethane	79-00-5	ND	5
Trichloroethene	79-01-6	ND	5
Vinyl Acetate	108-05-4	ND	50
Vinyl Chloride	75-01-4	ND	10
Xylenes, total	1330-20-7	ND	10

ND = Not Detected

CROSBY & OVERTON, INC.

SAMPLE ID: MW-2
 CLIENT PROJ. ID: 9889-S
 DATE SAMPLED: 08/17/92
 DATE RECEIVED: 08/24/92
 REPORT DATE: 09/04/92

QUANTEQ LAB NO: 9208218-02A
 QUANTEQ JOB NO: 9208218
 DATE ANALYZED: 08/25/92
 INSTRUMENT: 12

EPA METHOD 8240 (WATER MATRIX)
 GC/MS VOLATILE ORGANIC COMPOUNDS

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Acetone	67-64-1	ND	100
Benzene	71-43-2	ND	5
Bromodichloromethane	75-27-4	ND	5
Bromoform	75-25-2	ND	5
Bromomethane	74-83-9	ND	10
2-Butanone	78-93-3	ND	100
Carbon Disulfide	75-15-0	ND	10
Carbon Tetrachloride	56-23-5	ND	5
Chlorobenzene	108-90-7	ND	5
Chloroethane	75-00-3	ND	10
2-Chloroethyl Vinyl Ether	110-75-8	ND	10
Chloroform	67-66-3	ND	5
Chloromethane	74-87-3	ND	10
Dibromochloromethane	124-48-1	ND	5
1,1-Dichloroethane	75-34-3	ND	5
1,2-Dichloroethane	107-06-2	ND	5
1,1-Dichloroethene	75-35-4	ND	5
cis-1,2-Dichloroethene	156-59-2	ND	5
trans-1,2-Dichloroethene	156-60-5	ND	5
1,2-Dichloropropane	78-87-5	ND	5
cis-1,3-Dichloropropene	10061-01-5	ND	5
trans-1,3-Dichloropropene	10061-02-6	ND	5
Ethylbenzene	100-41-4	ND	5
2-Hexanone	591-78-6	ND	50
Methylene Chloride	75-09-2	ND	5
4-Methyl-2-pentanone	108-10-1	ND	50
Styrene	100-42-5	ND	5
1,1,2,2-Tetrachloroethane	79-34-5	ND	5
Tetrachloroethene	127-18-4	ND	5
Toluene	108-88-3	ND	5
1,1,1-Trichloroethane	71-55-6	ND	5
1,1,2-Trichloroethane	79-00-5	ND	5
Trichloroethene	79-01-6	ND	5
Vinyl Acetate	108-05-4	ND	50
Vinyl Chloride	75-01-4	ND	10
Xylenes, total	1330-20-7	ND	10

ND = Not Detected

CROSBY & OVERTON, INC.

SAMPLE ID: MW-3
 CLIENT PROJ. ID: 9889-S
 DATE SAMPLED: 08/17/92
 DATE RECEIVED: 08/24/92
 REPORT DATE: 09/04/92

QUANTEQ LAB NO: 9208218-03A
 QUANTEQ JOB NO: 9208218
 DATE ANALYZED: 08/25/92
 INSTRUMENT: 12

EPA METHOD 8240 (WATER MATRIX)
 GC/MS VOLATILE ORGANIC COMPOUNDS

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Acetone	67-64-1	ND	100
Benzene	71-43-2	ND	5
Bromodichloromethane	75-27-4	ND	5
Bromoform	75-25-2	ND	5
Bromomethane	74-83-9	ND	10
2-Butanone	78-93-3	ND	100
Carbon Disulfide	75-15-0	ND	10
Carbon Tetrachloride	56-23-5	ND	5
Chlorobenzene	108-90-7	ND	5
Chloroethane	75-00-3	ND	10
2-Chloroethyl Vinyl Ether	110-75-8	ND	10
Chloroform	67-66-3	ND	5
Chloromethane	74-87-3	ND	10
Dibromochloromethane	124-48-1	ND	5
1,1-Dichloroethane	75-34-3	ND	5
1,2-Dichloroethane	107-06-2	ND	5
1,1-Dichloroethene	75-35-4	ND	5
cis-1,2-Dichloroethene	156-59-2	ND	5
trans-1,2-Dichloroethene	156-60-5	ND	5
1,2-Dichloropropane	78-87-5	ND	5
cis-1,3-Dichloropropene	10061-01-5	ND	5
trans-1,3-Dichloropropene	10061-02-6	ND	5
Ethylbenzene	100-41-4	ND	5
2-Hexanone	591-78-6	ND	50
Methylene Chloride	75-09-2	ND	5
4-Methyl-2-pentanone	108-10-1	ND	50
Styrene	100-42-5	ND	5
1,1,2,2-Tetrachloroethane	79-34-5	ND	5
Tetrachloroethene	127-18-4	ND	5
Toluene	108-88-3	ND	5
1,1,1-Trichloroethane	71-55-6	ND	5
1,1,2-Trichloroethane	79-00-5	ND	5
Trichloroethene	79-01-6	ND	5
Vinyl Acetate	108-05-4	ND	50
Vinyl Chloride	75-01-4	ND	10
Xylenes, total	1330-20-7	ND	10

ND = Not Detected

QUALITY CONTROL DATA

INSTRUMENT: 12

QUANTEQ JOB NO: 9208218

CLIENT PROJ. ID: 9889-S

SURROGATE STANDARD RECOVERY SUMMARY

METHOD 8240
(WATER MATRIX)

SAMPLE IDENTIFICATION			SURROGATE RECOVERY (PERCENT)		
Date Analyzed	Client Id.	Lab Id.	1,2-Dichloro-ethane-d ₄	Toluene-d ₈	p-Bromofluorobenzene
08/25/92	MW-1	01A	94.5	101.6	98.0
08/25/92	MW-2	02A	107.0	98.9	98.6
08/25/92	MW-3	03A	109.5	97.2	100.2

CURRENT QC LIMITS (Revised 08/13/91)

<u>ANALYTE</u>	<u>PERCENT RECOVERY</u>
1,2-Dichloroethane-d ₄	(83-127)
Toluene-d ₈	(90-108)
p-Bromofluorobenzene	(91-109)

QUALITY CONTROL DATA

DATE ANALYZED: 08/25/92
 SAMPLE SPIKED: 9208218-01A
 CLIENT PROJ. ID: 9889-S

QUANTEQ JOB NO: 9208218
 INSTRUMENT: 12

MATRIX SPIKE RECOVERY SUMMARY

METHOD 8240
 (WATER MATRIX)

ANALYTE	Spike Conc. (ug/L)	Sample Result (ug/L)	MS Result (ug/L)	MSD Result (ug/L)	Average Percent Recovery	RPD
1,1-Dichloroethene	50.0	ND	46.6	48.3	94.9	3.6
Trichloroethene	50.0	ND	50.8	52.0	102.8	2.3
Benzene	50.0	ND	48.2	47.6	95.8	1.3
Toluene	50.0	ND	49.1	49.4	98.5	0.6
Chlorobenzene	50.0	ND	53.4	52.5	105.9	1.7

CURRENT QC LIMITS (Revised 08/13/91)

Analyte	Percent Recovery	RPD
1,1-Dichloroethene	(65-133)	13.5
Trichloroethene	(84-120)	8.7
Benzene	(84-121)	9.4
Toluene	(89-119)	8.4
Chlorobenzene	(83-116)	7.5

MS = Matrix Spike
 MSD = Matrix Spike Duplicate
 RPD = Relative Percent Difference
 ND = Not Detected

QUALITY CONTROL DATA

MATRIX: WATER

QUANTEQ JOB NO: 9208218

CLIENT PROJ. ID: 9889-S

SAMPLE SPIKED: 9208218-02D

MATRIX SPIKE RECOVERY SUMMARY

COMPOUND	INST./METHOD	SAMPLE RESULT	SPIKE ADDED	OBSERVED RECOVERIES (ug/L)			RPD	QC CONTROL LIMITS	
				MS	MSD	% REC.		REC. % LIMIT	RPD LIMIT
Cd, Cadmium	ICP/6010	ND	0.10	0.0974	0.0957	96.6	1.80	68.2-116.9	11.2
Cr, Chromium	ICP/6010	ND	0.50	0.453	0.454	90.7	0.20	70.4-118.8	7.0
Ni, Nickel	ICP/6010	ND	0.50	0.418	0.421	83.9	0.90	64.4-116.3	6.0
Pb, Lead	ICP/6010	ND	0.50	0.450	0.452	90.3	0.54	74.6-118.9	7.0
Zn, Zinc	ICP/6010	0.022	0.50	0.477	0.475	90.8	0.54	71.7-119.2	6.6

ND = Not Detected

PROJECT: 5903 CHRISTIE
 7587.5 WEATHERFORD BMW 14007

NO. OF CONTAINERS
 CHROMIUM
 624/8240 (V)
 CADMIUM
 CHROMIUM (TOTAL)
 LEAD (TOTAL)
 NICKEL
 ZINC

SAMPLERS: Signature *Pamell Zepf* Send report attention to

STA NO	DATE	TIME	COMP.	GRAB	STATION LOCATION	300A/1A00X	CHROMIUM	CADMIUM	CHROMIUM (TOTAL)	LEAD (TOTAL)	NICKEL	ZINC	REMARKS
1A-D MW-1	8-17-92	12:30		X	WELL 1 5903 CHRISTIE, WEATHERFORD	300A/1A00X	X	X	X	X	X	X	
2A-D MW-2	8-17-92	11:00		X	WELL 2 5903 CHRISTIE, WEATHERFORD	300A/1A00X	X	X	X	X	X	X	
3A-D MW-3	8-17-92	1:30		X	WELL 3 5903 CHRISTIE, WEATHERFORD	300A/1A00X	X	X	X	X	X	X	

Relinquished by: Signature <i>Pamell Zepf</i>	Date/Time 8-24-92/10:33	Received by: Signature <i>Mick Horvath</i>	Date/Time 8/24/92 10:33
Relinquished by: Signature <i>Mick Horvath</i>	Date/Time 8-24-92 12:50	Received by: Signature <i>Anna Gillespie</i>	Date/Time 8-24-92 12:50
Relinquished by: Signature	Date/Time	Received by: Signature	Date/Time

REMARKS: FILTER METALS SAMPLES AT LAB
 Company Name
 Address
 QUANTICO
 (510) 970-9090

