

GW - 40

INSPECTIONS & DATA

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-1

<u>SAMPLER</u>	GIANT	GIANT	GIANT
<u>DATE</u>	<u>9/6/89</u>	<u>12/12/89</u>	<u>6/19/90</u>
<u>PARAMETER</u>			
DETECTION LIMIT	(BELOW)	(BELOW)	(BELOW)
BENZENE	ND(10.0)	ND(50.0)	ND(2.0)
BROMODICHLOROMETHANE	ND(10.0)	ND(0.5)	ND(1.0)
BROMOFORM	ND(200.0)	ND(2.5)	ND(5.0)
BROMOMETHANE	ND(100.0)	ND(5.9)	ND(12.0)
CARBON TETRACHLORIDE	ND(20.0)	ND(0.6)	ND(1.2)
CHLOROBENZENE	ND(10.0)	ND(50.0)	4.4
CHLOROETHANE	ND(50.0)	ND(2.6)	ND(5.2)
CHLOROFORM	ND(10.0)	5.7	ND(1.0)
CHLOROMETHANE	ND(50.0)	ND(1.5)	ND(3.0)
DIBROMOCHLOROMETHANE	ND(20.0)	ND(1.0)	ND(2.0)
1,2-DICHLOROBENZENE	ND(20.0)	ND(100.0)	ND(4.0)
1,3-DICHLOROBENZENE	ND(40.0)	ND(100.0)	ND(4.0)
1,4-DICHLOROBENZENE	ND(20.0)	ND(75.0)	ND(3.0)
DICHLORODIFLUOROMETHANE	NA	NA	NA
1,1-DICHLOROETHANE	ND(10.0)	0.72	ND(5.0)
1,2-DICHLOROETHANE	ND(10.0)	7.1	7.1
1,1-DICHLOROETHENE	ND(10.0)	ND(1.0)	ND(2.0)
CIS-1,2-DICHLOROETHENE	NA	NA	39.0
TRANS-1,2-DICHLOROETHENE	NA	21.0	ND(2.0)
TOTAL 1,2-DICHLOROETHENE	ND(10.0)	NA	NA
1,2-DICHLOROPROPANE	ND(10.0)	ND(0.5)	ND(1.0)
ETHYLBENZENE	140.0	ND(50.0)	57.0
METHYLENE CHLORIDE	ND(40.0)	ND(2.0)	ND(4.0)
1,1,2,2-TETRACHLOROETHANE	ND(20.0)	ND(0.75)	ND(1.5)
TETRACHLOROETHENE	ND(10.0)	ND(0.5)	1.2
TOLUENE	ND(30.0)	ND(50.0)	ND(2.0)
1,1,1-TRICHLOROETHANE	ND(20.0)	ND(1.0)	ND(2.0)
1,1,2-TRICHLOROETHANE	ND(20.0)	ND(1.0)	ND(2.0)
TRICHLOROETHENE	22.2	6.2	2.9
TRICHLOROFLUOROMETHANE	ND(10.0)	ND(1.0)	ND(2.0)
VINYL CHLORIDE	ND(20.0)	ND(1.0)	ND(2.0)
TOTAL XYLENES	280.0	330.0	24.0

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
** - SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-151

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:

9006191515

9006191745

9006201410

9006201350

Factor:

1

10

10

1

Results in:

ug/L

ug/L

ug/L

ug/L

01C

02C

03C

04C

Matrix:

water

water

water

water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Chlorobenzene	ND	0.20	4.4 G ^a	2.0	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	4.0	ND	4.0	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	4.0	ND	4.0	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	3.0	ND	3.0	ND	0.30
Ethylbenzene	ND	0.20	57 C	2.0	ND	2.0	ND	0.20
Toluene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Xylenes (total)	ND	0.20	24 G	2.0	ND	2.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	102		98		102		98	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

^a Est. result less than 5 times detection limit

G Indicates an estimated GC value due to interferences.

C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-151

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:

9006191515

9006191745

9006201410

9006201350

Factor:

1

10

10

1

Results in:

ug/L

ug/L

ug/L

ug/L

Matrix:

 01A
 water

 02A
 water

 03A
 water

 04A
 water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	1.0	ND	1.0	ND	0.10
Bromoform	ND	0.50	ND	5.0	ND	5.0	ND	0.50
Bromomethane	ND	1.2	ND	12	ND	12	ND	1.2
Carbon tetrachloride	ND	0.12	ND	1.2	ND	1.2	ND	0.12
Chlorobenzene	ND	0.25	ND	2.5	ND	2.5	ND	0.25
Chloroethane	ND	0.52	ND	5.2	ND	5.2	ND	0.52
2-Chloroethylvinyl ether	ND	0.50	ND	5.0	ND	5.0	ND	0.50
Chloroform	ND	0.10	ND	1.0	ND	1.0	ND	0.10
Chloromethane	ND	0.30	ND	3.0	ND	3.0	ND	0.30
Dibromochloromethane	ND	0.20	ND	2.0	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	5.0	ND	5.0	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	3.2	ND	3.2	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	2.4	ND	2.4	ND	0.24
1,1-Dichloroethane	ND	0.50	ND	5.0	ND	5.0	ND	0.50
1,2-Dichloroethane	ND	0.10	7.1 C	1.0	ND	1.0	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
cis-1,2-Dichloroethene	ND	0.20	39 CI	2.0	14 CI	2.0	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	1.0	ND	1.0	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	3.4	ND	3.4	ND	0.34
Methylene chloride	ND	0.40	ND	4.0	ND	4.0	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	1.5	ND	1.5	ND	0.15
Tetrachloroethene	ND	0.10	1.2 C10	1.0	2.7 C10	1.0	0.42 X10	0.10
1,1,1-Trichloroethane	ND	0.20	ND	2.0	ND	2.0	0.35 C0	0.20
1,1,2-Trichloroethane	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Trichloroethene	ND	0.20	2.9 C0	2.0	3.0 C0	2.0	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Vinyl chloride	ND	0.20	ND	2.0	ND	2.0	ND	0.20

ND Not detected at specified detection limit

I Result differs from last report - see report narrative

X See definition in report narrative

C Confirmed on second column or by GC/MS

0 Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-06-256

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9006191515	9006191745	9006201410	9006201350
	SHS 4	SHS 1	SHS 5	SHS 6
Factor:	1	5	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	1.8	ND	9.0	ND	1.8	ND	1.8
Acenaphthylene	ND	2.3	ND	12	ND	2.3	ND	2.3
Anthracene	ND	0.66	ND	3.3	ND	0.66	ND	0.66
Benzo(a)anthracene	ND	0.013	0.60	0.065	ND	0.013	ND	0.013
Benzo(a)pyrene	ND	0.023	0.14 @	0.12	ND	0.023	ND	0.023
Benzo(b)fluoranthene	ND	0.018	0.44 @	0.090	ND	0.018	ND	0.018
Benzo(g,h,i)perylene	ND	0.076	0.52 @	0.38	ND	0.076	ND	0.076
Benzo(k)fluoranthene	ND	0.017	ND	0.085	ND	0.017	ND	0.017
Chrysene	ND	0.15	3.9	0.75	ND	0.15	ND	0.15
Dibenzo(a,h)anthracene	ND	0.030	ND	0.15	ND	0.030	ND	0.030
Fluoranthene	ND	0.21	ND	1.0	ND	0.21	ND	0.21
Fluorene	ND	0.21	5.2	1.0	ND	0.21	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.043	ND	0.22	ND	0.043	ND	0.043
Naphthalene	ND	1.8	ND	9.0	ND	1.8	ND	1.8
Phenanthrene	ND	0.64	11 @	3.2	ND	0.64	ND	0.64
Pyrene	ND	0.27	ND	1.4	ND	0.27	ND	0.27
Surrogate Recovery(%)								
Terphenyl-d14	99		82		96		74	
Control Limits: 24 to 146								

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Volatile aromatics (1)				
List: SW8020				
Sample ID:	8912121410	8912121145E	8912121145I	8912121130
Factor:	250	1	5	10
Results in:	ug/L	ug/L	ug/L	ug/L
	05B	06B	07B	08B
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	50	3.3	0.20	110	1.0	21	2.0
Chlorobenzene	ND	50	ND	0.20	ND	1.0	ND	2.0
1,2-Dichlorobenzene	ND	100	ND	0.40	ND	2.0	ND	4.0
1,3-Dichlorobenzene	ND	100	ND	0.40	ND	2.0	ND	4.0
1,4-Dichlorobenzene	ND	75	1.4 *	0.30	8.6	1.5	ND	3.0
Ethylbenzene	ND	50	0.55 *	0.20	18	1.0	27	2.0
Toluene	ND	50	ND	0.20	ND	1.0	ND	2.0
Total xylenes	330	50	ND	0.20	9.1	1.0	6.9 *	2.0
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	113		94		114		110	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Halogenated volatiles (1)

List: SW8010

Sample ID:

8912121410

8912121145E

8912121145I

8912121130

Factor:

5

1

1

1

Results in:

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.50	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	2.5	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	5.9	ND	1.2	ND	1.2	ND	1.2
Carbon Tetrachloride	ND	0.60	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	1.3	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	2.6	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	2.5	ND	0.50	ND	0.50	ND	0.50
Chloroform	5.7	0.50	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	1.5	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane-(2)	ND	1.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	2.5	ND	0.50	ND	0.50	0.60 *	0.50
1,3-Dichlorobenzene	ND	1.6	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	1.2	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	0.72 *	2.5	ND	0.50	1.9 *	0.50	ND	0.50
1,2-Dichloroethane	7.1	0.50	1.0	0.10	3.5	0.10	18	0.10
1,1-Dichloroethene	ND	1.0	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	21	1.0	0.97 *	0.20	9.3	0.20	ND	0.20
1,2-Dichloropropane	ND	0.50	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene-(2)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
trans-1,3-Dichloropropene	ND	1.5	ND	0.30	ND	0.30	ND	0.30
Methylene Chloride	ND	2.0	ND	0.40	1.0 *	0.40	ND	0.40
1,1,2,2-Tetrachloroethane-(3)	ND	0.75	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene-(3)	ND	0.50	ND	0.10	1.3	0.10	ND	0.10
1,1,2-Trichloroethane-(2)	ND	1.0	ND	0.20	ND	0.20	ND	0.20
1,1,1-Trichloroethane	ND	1.0	ND	0.20	0.80 *	0.20	ND	0.20
Trichloroethene	6.2	1.0	ND	0.20	2.0	0.20	ND	0.20
Trichlorofluoromethane	ND	1.0	ND	0.20	ND	0.20	ND	0.20
Vinyl Chloride	ND	1.0	ND	0.20	ND	0.20	ND	0.20

 ND Not detected at specified detection limit
 N/A Not available

* Est. result less than 5 times detection limit

- (1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
- (2) Dibromochloromethane, 1,1,2-Trichloroethane, and cis-1,3-Dichloropropene coelute. Quantitated as Dibromochloromethane unless otherwise noted.
- (3) Tetrachloroethene and 1,1,2,2-Tetrachloroethane coelute. Quantitated as Tetrachloroethene unless otherwise noted.

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Received: 09/08/89

RAS Sacramento

REPORT

Work Order # S9-09-049

Results by Sample

SAMPLE ID 8907061455 H2O S/S-1

FRACTION O1C

TEST CODE 602B

NAME Purgeable Aromatics - H2O

Date & Time Collected 09/06/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST INSTRMT	MC B	INJECTD 09/19/89	FILE # FACTOR	EB091912 100 UNITS	VERIFIED ug/L	JD
CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR		
71-43-2	Benzene	ND	10	100		
108-88-3	Toluene	ND	30	100		
100-41-4	Ethylbenzene	140 C	10	100		
108-90-7	Chlorobenzene	ND	10	100		
1330-20-7	Total xylenes	280 C	20	100		
106-46-7	1,4-Dichlorobenzene	ND	20	100		
541-73-1	1,3-Dichlorobenzene	ND	40	100		
95-50-1	1,2-Dichlorobenzene	ND	20	100		
SURROGATE						
460-00-4	1-Bromo-4-Fluorobenzene		77% recovery			

(1) See Appendix A for Glossary of Report and Data Flag Definitions

Page 2
Received: 09/08/89

RAS Sacramento

REPORT
Results by Sample

Work Order # S9-09-049

SAMPLE ID 8909061455 H20

SHS-1

FRACTION 01A TEST CODE 601

NAME Purgeable Halocarbons H20

Date & Time Collected 09/06/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST INSTRMT	CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR	VERIFIED	
						UNITS	ug/L
	74-87-3	Chloromethane	ND	50	100		
	74-83-9	Bromomethane	ND	100	100		
	75-01-4	Vinyl Chloride	ND	20	100		
	75-00-3	Chloroethane	ND	50	100		
	75-09-2	Methylene Chloride	ND	40	100		
	75-69-4	Trichlorofluoromethane	ND	10	100		
	75-35-4	1,1-Dichloroethene	ND	10	100		
	75-34-3	1,1-Dichloroethane	ND	10	100		
	540-59-0	Total 1,2-Dichloroethene (2)	ND	10	100		
	67-66-3	Chloroform	ND	10	100		
	107-06-2	1,2-Dichloroethane	ND	10	100		
	71-55-6	1,1,1-Trichloroethane	ND	20	100		
	56-23-5	Carbon Tetrachloride	ND	20	100		
	75-27-4	Bromodichloromethane	ND	10	100		
	78-87-5	1,2-Dichloropropane	ND	10	100		
	10061-01-5	cis-1,3-Dichloropropene	ND	40	100		
	79-01-6	Trichloroethene	22 C	20	100		
	124-48-1	Dibromochloromethane (3)	ND	20	100		
	79-00-5	1,1,2-Trichloroethane (3)	ND	20	100		
	10061-02-6	trans-1,3-Dichloropropene (3)	ND	40	100		
	110-75-8	2-Chloroethylvinyl Ether	ND	200	100		
	75-25-2	Bromoform	ND	200	100		
	79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	20	100		
	127-18-4	Tetrachloroethene (4)	ND	10	100		
	108-90-7	Chlorobenzene	ND	20	100		
	541-73-1	1,3-Dichlorobenzene	ND	50	100		
	95-50-1	1,2-Dichlorobenzene	ND	20	100		
	106-46-7	1,4-Dichlorobenzene	ND	20	100		





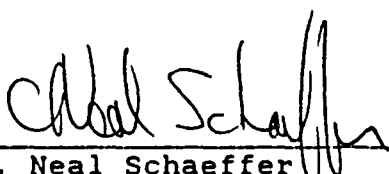
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9006191745
SITE: SHS-1
LAB NO: F4493

DATE REPORTED: 06/27/90
DATE RECEIVED: 06/20/90
DATE COLLECTED: 06/19/90

Lab pH (s.u.).....	7.93
Lab conductivity, umhos/cm.....	5034
Lab resistivity, ohm-m.....	1.9865
Total dissolved solids (180), mg/l..	3344
Total dissolved solids (calc), mg/l.	3227
Total alkalinity as CaCO ₃ , mg/l.....	687.60
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1174.68
Sodium absorption ratio.....	8.99

	mg/l	meq/l
Bicarbonate as HCO ₃	838.9	13.75
Carbonate as CO ₃	0.0	0.00
Chloride.....	685.3	19.33
Sulfate.....	983.5	20.49
Calcium.....	373.5	18.64
Magnesium.....	59.1	4.86
Potassium.....	4.7	0.12
Sodium.....	708.5	30.82
Major cations.....		54.43
Major anions.....		53.57
Cation/anion difference.....		0.79 %


C. Neal Schaeffer
Lab Director



Inter-Mountain
Laboratories, Inc.

CLIENT: Geoscience Consultants

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

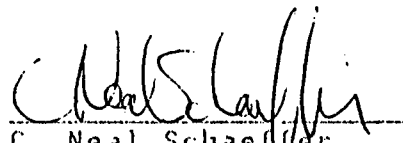
DATE REPORTED: 12/20/89

SITE: SHS-17
LAB NO: F3663

DATE RECEIVED: 12/13/89
DATE COLLECTED: 12/12/89

Lab pH (s.u.).....	7.64
Lab Conductivity, umhos/cm.....	4829
Lab resistivity, ohm-m.....	2.0708
Total Dissolved Solids (TDS), mg/l.....	3304
Total Dissolved Solids (calc), mg/l.....	3303
Total Alkalinity as CaCO ₃ , mg/l.....	816.75
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1271.54
Sodium Absorption Ratio.....	8.34

	mg/l	meq/l
Bicarbonate as HCO ₃	996.44	16.34
Carbonate as CO ₃	0.00	0.00
Chloride.....	749.44	21.14
Sulfate.....	893.78	18.62
Calcium.....	444.26	22.17
Magnesium.....	39.67	3.26
Potassium.....	1.80	0.05
Sodium.....	684.00	29.75
Major Cations.....		55.23
Major Anions.....		56.10
Cation/Anion Difference.....		0.78 %


C. Neal Schaeffer
Senior Chemist



Inter-Mountain
Laboratories, Inc.

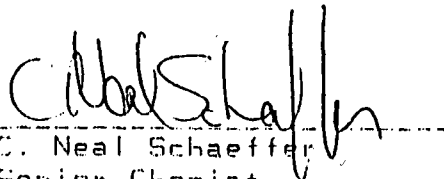
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/21/89
SAMPLE: 8909061455
SITE: SHS-1 }
LAB NO: F3123 DATE RECEIVED: 09/07/89
DATE COLLECTED: 09/07/89

Lab pH.....	7.14
Lab Conductivity, umhos/cm.....	5043
Lab resistivity, ohm-m.....	1.9829
Total Dissolved Solids (180°), mg/L.....	5325
Total Dissolved Solids (calc), mg/l.....	3126
Total Alkalinity as CaCO ₃ , mg/l.....	807.34
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1172.60
Sodium Absorption Ratio.....	8.88
Nitrate, mg/l.....	0.02

	mg/l	meq/l
Bicarbonate as HCO ₃	984.95	16.15
Carbonate as CO ₃	0.00	0.00
Chloride.....	483.92	19.29
Sulfate.....	857.57	17.87
Calcium.....	289.50	14.45
Magnesium.....	107.51	9.01
Potassium.....	2.58	0.07
Sodium.....	699.00	30.40
Major Cations.....		53.92
Major Anions.....		53.31
Cation/Anion Difference.....		0.57 %

~~TDS (180°) could not be accurately determined apparently due to hydrogen carbon interferences.~~


C. Neal Schaeffer
Senior Chemist



Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method/Analyte		Sample Identifications					
		8912121000		8912121410		METHOD BLANK	
Matrix		04 water		05 water		19 water	
		Result		Det. Limit		Result	
						Det. Limit	
Silver by ICPEs							
Silver		ND	mg/L	0.010		ND	mg/L 0.010
Arsenic by GF - SW846							
Arsenic		0.0048 *	mg/L	0.0020		ND	mg/L 0.0020
Barium by ICPEs							
Barium		0.40	mg/L	0.010		ND	mg/L 0.010
Cadmium by ICPEs							
Cadmium		ND	mg/L	0.0050		ND	mg/L 0.0050
Chromium by ICPEs							
Chromium		ND	mg/L	0.010		ND	mg/L 0.010
Mercury by cold vapor							
Mercury		ND	mg/L	0.0002		ND	mg/L 0.0002
Lead by GF - SW846							
Lead		0.0045 *	mg/L	0.0020		ND	mg/L 0.0020
Selenium by GF - SW846							
Selenium		ND	mg/L	0.0020		ND	mg/L 0.0020

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

SAMPLE ID 8909061455 H2O SHS-2 SAMPLE # 01 FRACTIONS: A
 Date & Time Collected 09/06/89 Category
 3015WS 09/12/89 AG_EM <0.007 mg/L AS_EM <0.053 mg/L BA_EM 0.27 mg/L CD_EM <0.004 mg/L CR_EM 0.011 mg/L
 DATE COMPLETED
 HG_CV <0.0002 mg/L SE_EM <0.075 mg/L

SAMPLE ID 8909061535 H2O SHS-2 SAMPLE # 02 FRACTIONS: A
 Date & Time Collected 09/06/89 Category
 3015WS 09/12/89 AG_EM <0.007 mg/L AS_EM <0.053 mg/L BA_EM 1.5 mg/L CD_EM <0.004 mg/L CR_EM 0.029 mg/L
 DATE COMPLETED
 HG_CV <0.0002 mg/L SE_EM <0.075 mg/L

SAMPLE ID 8909061600 H2O 04M-37 SAMPLE # 03 FRACTIONS: A
 Date & Time Collected 09/06/89 Category
 3015WS 09/12/89 AG_EM <0.007 mg/L AS_EM <0.053 mg/L BA_EM 0.36 mg/L CD_EM <0.004 mg/L CR_EM 0.043 mg/L
 DATE COMPLETED
 HG_CV <0.0002 mg/L SE_EM <0.075 mg/L



Page 2

Received: 09/08/89

RAS Sacramento

REPORT

Work Order # 87-09-051

Results By Test

SHS-2 BLM37 BLM30 Blank

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)

301SW3	09/12/89	09/12/89	09/12/89	09/12/89	09/12/89
Date Completed	DATE COMPLETED	DATE COMPLETED	DATE COMPLETED	DATE COMPLETED	DATE COMPLETED
AG EM .05	<0.007	<0.007	<0.007	<0.007	<0.007
AS EM .1	<0.053 mg/L	<0.053 mg/L	<0.053 mg/L	<0.053 mg/L	<0.053 mg/L
BA EM 1.0	0.27	1.5	0.35	0.57	<0.002
CD EM .01	<0.004	<0.004	<0.004	<0.004	<0.004
CR EM .05	0.011 *	0.029 *	0.043	0.043	<0.007
HG CV .062	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
FB EM .05	<0.042	0.062 *	8.7	0.056 *	<0.042
SE EM .05	<0.075	<0.075	<0.075	<0.075	<0.075 mg/L

BLM27 BLM2

TEST CODE	Sample 06	Sample 07
default units	(entered units)	(entered units)
301SW3	09/12/89	09/12/89
Date Completed	DATE COMPLETED	DATE COMPLETED
AG EM .05	<0.007	<0.007
AS EM .1	<0.053	<0.053 mg/L

SAMPLE	Test: 3015MS	Test: AG EN	Test: AS EN	Test: BA EN	Test: CD EN
Sample Id	Date Completed	mg/L	mg/Kg	mg/L	mg/L
<i>SHS-1</i> 01	09/12/89	<0.007	<0.053	0.27	<0.004
2909061455 H2O	DATE COMPLETED				
<i>SHS-2</i> 02	09/12/89	<0.007	<0.053	1.5	<0.004
2909061535 H2O	DATE COMPLETED				
<i>BLM-37</i> 03	09/12/89	<0.007	<0.053	0.36	<0.004
2909061600 H2O	DATE COMPLETED				
<i>BLM-30</i> 04	09/12/89	<0.007	<0.053	0.57	<0.004
2909070820 H2O	DATE COMPLETED				
<i>Blank</i> 05	09/12/89	<0.007	<0.053	<0.002	<0.004
2909070750 H2O	DATE COMPLETED				
<i>BLM-27</i> 06	09/12/89	<0.007	<0.053	1.4	<0.004
2909071100 H2O	DATE COMPLETED				
<i>07</i>	09/12/89	<0.007	<0.053	<0.002	<0.004
2909070750 H2O	DATE COMPLETED				

SAMPLE	Test: CR EN	Test: HG CV	Test: PB EN	Test: SE EN
Sample Id	mg/L	mg/L	mg/L	mg/Kg
<i>SHS-1</i> 01	0.011 *	<0.0002	<0.042	<0.075
2909061455 H2O				mg/L
<i>SHS-2</i> 02	0.029 *	<0.0002	0.062 *	<0.075
2909061535 H2O				mg/L
<i>BLM-37</i> 03	0.043	<0.0002	8.7	<0.075
2909061600 H2O				mg/L
<i>BLM-30</i> 04	0.043	<0.0002	0.055 *	<0.075
2909070820 H2O				mg/L
<i>Blank</i> 05	<0.007	<0.0002	<0.042	<0.075
2909070750 H2O				mg/L

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS -2

<u>SAMPLER</u>	GIANT	GIANT	GIANT
<u>DATE</u>	<u>9/6/89</u>	<u>12/12/89</u>	<u>6/20/90</u>
<u>PARAMETER</u>			
DETECTION LIMIT	(BELOW)	(BELOW)	(BELOW)
BENZENE	ND(10.0)	10.0	5.4
BROMODICHLOROMETHANE	ND(10.0)	ND(<1.0)	ND(1.0)
BROMOFORM	ND(200.0)	ND(<1.0)	ND(5.0)
BROMOMETHANE	ND(100.0)	ND(1.2)	ND(12.0)
CARBON TETRACHLORIDE	ND(20.0)	ND(<1.0)	ND(1.2)
CHLOROBENZENE	ND(10.0)	ND(2.0)	230.0
CHLOROETHANE	ND(50.0)	ND(<1.0)	ND(5.2)
CHLOROFORM	ND(10.0)	ND(<1.0)	ND(1.0)
CHLOROMETHANE	ND(50.0)	ND(<1.0)	ND(3.0)
DIBROMOCHLOROMETHANE	ND(20.0)	ND(<1.0)	ND(2.0)
1,2-DICHLOROBENZENE	ND(20.0)	ND(4.0)	ND(4.0)
1,3-DICHLOROBENZENE	ND(40.0)	ND(4.0)	ND(4.0)
1,4-DICHLOROBENZENE	ND(20.0)	ND(3.0)	ND(3.0)
1,1-DICHLOROETHANE	ND(10.0)	ND(<1.0)	ND(5.0)
1,2-DICHLOROETHANE	68.0	ND(<1.0)	ND(1.0)
1,1-DICHLOROETHENE	ND(10.0)	ND(<1.0)	ND(2.0)
CIS-1,2-DICHLOROETHENE	NA	NA	ND(2.0)
TRANS-1,2-DICHLOROETHENE	NA	ND(<1.0)	ND(2.0)
TOTAL 1,2-DICHLOROETHENE	ND	NA	NA
1,2-DICHLOROPROPANE	ND(10.0)	ND(<1.0)	ND(1.0)
ETHYLBENZENE	120.0	120.0	78.0
METHYLENE CHLORIDE	ND(40.0)	ND(<1.0)	ND(4.0)
1,1,2,2-TETRACHLOROETHANE	ND(20.0)	ND(<1.0)	ND(1.5)
TETRACHLOROETHENE	13.0	1.7	2.1
TOLUENE	ND(30.0)	2.2	19.0
1,1,1-TRICHLOROETHANE	ND(20.0)	ND(<1.0)	ND(2.0)
1,1,2-TRICHLOROETHANE	ND(20.0)	ND(<1.0)	ND(2.0)
TRICHLOROETHENE	ND(20.0)	ND(<1.0)	ND(2.0)
TRICHLOROFLUOROMETHANE	ND(10.0)	ND(<1.0)	ND(2.0)
VINYL CHLORIDE	ND(20.0)	ND(<1.0)	ND(2.0)
TOTAL XYLENES	48.0	37.0	730.0

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
** - SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: SD-06-151

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:	9006201100	9006200945	DECON BLANK	TRIP BLANK
Factor:	10	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	05C	06C	07C	08C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	5.4 C ^a	2.0	ND	0.20	ND	0.20	ND	0.20
Chlorobenzene	230 C	2.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	4.0	ND	0.40	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	4.0	ND	0.40	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	3.0	ND	0.30	ND	0.30	ND	0.30
Ethylbenzene	78 G	2.0	ND	0.20	ND	0.20	ND	0.20
Toluene	19 C	2.0	ND	0.20	ND	0.20	ND	0.20
Xylenes (total)	730 C	2.0	ND	0.20	ND	0.20	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	51		66		84		115	
Control Limits: 40 to 140								

C Confirmed on second column or by GC/MS

ND Not detected at specified detection limit

^a Est. result less than 5 times detection limit

G Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
Radian Work Order: SO-06-151

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006201100	9006200945	DECON BLANK	TRIP BLANK
Factor:	10	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	05A	06A	07A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	5.0	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	12	ND	1.2	ND	1.2	ND	1.2
Carbon tetrachloride	ND	1.2	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	2.5	ND	0.25	0.59 Xa	0.25	ND	0.25
Chloroethane	ND	5.2	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinyl ether	ND	5.0	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	1.0	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	3.0	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane	ND	2.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	5.0	ND	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	ND	1.0	ND	0.10	ND	0.10	ND	0.10
1,1-Dichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	0.34	ND	0.34	ND	0.34
Methylene chloride	ND	6.0	ND	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	1.5	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene	2.1 C1a	1.0	ND	0.10	ND	0.10	ND	0.10
1,1,1-Trichloroethane	ND	2.0	ND	0.20	0.44 Xa	0.20	0.33 Xa	0.20
1,1,2-Trichloroethane	ND	2.0	ND	0.20	ND	0.20	ND	0.20
Trichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
Trichlorofluoromethane	ND	2.0	ND	0.20	ND	0.20	ND	0.20
Vinyl chloride	ND	2.0	ND	0.20	ND	0.20	ND	0.20

ND Not detected at specified detection limit

I Result differs from last report - see report narrative

X See definition in report narrative

C Confirmed on second column or by GC/MS

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-06-256

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9006201100	9006200945	REAGENT BLANK
	SHS 12	SHS 3	
Factor:	50	1	1
Results in:	ug/L	ug/L	ug/L
	05A	06A	07A
Matrix:	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND D	180	ND	1.8	ND	1.8		
Acenaphthylene	ND D	230	ND	2.3	ND	2.3		
Anthracene	ND	33	ND	0.66	ND	0.66		
Benzo(a)anthracene	1.4 @	0.65	ND	0.013	ND	0.013		
Benzo(a)pyrene	ND	1.2	ND	0.023	ND	0.023		
Benzo(b)fluoranthene	ND	0.90	ND	0.018	ND	0.018		
Benzo(g,h,i)perylene	ND	3.8	ND	0.076	ND	0.076		
Benzo(k)fluoranthene	ND	0.85	ND	0.017	ND	0.017		
Chrysene	9.3 @	7.5	ND	0.15	ND	0.15		
Dibenzo(a,h)anthracene	ND	1.5	ND	0.030	ND	0.030		
Fluoranthene	ND	10	ND	0.21	ND	0.21		
Fluorene	64 Da	21	ND	0.21	ND	0.21		
Indeno(1,2,3-cd)pyrene	ND D	4.3	ND	0.043	ND	0.043		
Naphthalene	230 Da	180	ND	1.8	ND	1.8		
Phenanthrene	150 @	32	ND	0.64	ND	0.64		
Pyrene	ND	14	ND	0.27	ND	0.27		
Surrogate Recovery(%)								
Terphenyl-d14	196 Q		78		97			
Control Limits: 24 to 146								

 ND Not detected at specified detection limit
 @ Est. result less than 5 times detection limit

 D Sample dilution necessary for this analyte
 Q Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Volatile aromatics (1)

List: SW8020

Sample ID:

 BLM 30
 8912111150

 BLM 27
 8912111255

 BLM 37
 8912111520

 BLM 37
 8912121000

Factor:

1

1

2000

10

Results in:

ug/L

ug/L

ug/L

ug/L

01B

02B

03B

04B

Matrix:

water

water

water

water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	16000	400	10	2.0
Chlorobenzene	ND	0.20	ND	0.20	ND	400	ND	2.0
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	800	ND	4.0
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	800	ND	4.0
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	600	ND	3.0
Ethylbenzene	ND	0.20	ND	0.20	16000	400	120	2.0
Toluene	ND	0.20	ND	0.20	1800 *	400	2.2 *	2.0
Total xylenes	ND	0.20	ND	0.20	75000	400	37	2.0

Surrogate Recovery(%)

1-Bromo-4-fluorobenzene

87

94

117

96

Control Limits: 76 to 140

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Halogenated volatiles (1)

List: SW8010

Sample ID:

 89111-30
 8912111150

 89111-27
 8912111255

 89111-37
 8912111520

 89111-2
 8912121000

Factor:

1

1

5

1

Results in:

ug/L

ug/L

ug/L

ug/L

Matrix:

 01A
 water

 02A
 water

 03A
 water

 04A
 water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.50	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	2.5	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	5.9	ND	1.2
Carbon Tetrachloride	ND	0.12	ND	0.12	ND	0.60	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	1.3	ND	0.25
Chloroethane	ND	0.52	ND	0.52	6.0 *Q	2.6	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	2.5	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.50	ND	0.10
Chloromethane	ND	0.30	ND	0.30	6.0 *Q	1.5	ND	0.30
Dibromochloromethane-(2)	ND	0.20	ND	0.20	ND	1.0	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	2.5	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	1.6	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	1.2	ND	0.24
1,1-Dichloroethane	ND	0.50	0.30 *	0.50	ND	2.3	ND	0.50
1,2-Dichloroethane	ND	0.10	ND	0.10	6.0	0.50	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	1.0	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	8.0	1.0	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.50	ND	0.10
cis-1,3-Dichloropropene-(2)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
trans-1,3-Dichloropropene	ND	0.30	ND	0.30	ND	1.5	ND	0.30
Methylene Chloride	ND	0.40	ND	0.40	ND	2.0	ND	0.40
1,1,2,2-Tetrachloroethane-(3)	ND	0.15	ND	0.15	ND	0.75	ND	0.15
Tetrachloroethene-(3)	ND	0.10	ND	0.10	ND	0.50	1.7	0.10
1,1,2-Trichloroethane-(2)	ND	0.20	ND	0.20	ND	1.0	ND	0.20
1,1,1-Trichloroethane	ND	0.20	0.71 *	0.20	ND	1.0	ND	0.20
Trichloroethene	ND	0.20	ND	0.20	ND	1.0	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	1.0	ND	0.20
Vinyl Chloride	ND	0.20	ND	0.20	ND	1.0	ND	0.20

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Received: 09/08/89

RAS Sacramento

REPORT

Work Order # S9-09-049

Results by Sample

SAMPLE ID 8909061535 H2O SHS-2 FRACTION Q2C TEST CODE 6028 NAME Purgeable Aromatics - H2O
Date & Time Collected 09/06/89 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST INSTRMT	MG B	INJECTD 09/19/89	FILE # EBO71914 FACTOR 100 UNITS	VERIFIED uq/L	JD
CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR	
71-43-2	Benzene	ND	10	100	
108-88-3	Toluene	ND	30	100	
100-41-4	Ethylbenzene	120 C	10	100	
108-90-7	Chlorobenzene	ND	10	100	
1330-20-7	Total Xylenes	48 C	20	100	
106-46-7	1,4-Dichlorobenzene	ND	20	100	
541-73-1	1,3-Dichlorobenzene	ND	40	100	
95-50-1	1,2-Dichlorobenzene	ND	20	100	

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 86% recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions

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Received: 09/08/89

RAS Sacramento
Results by Sample

REPORT

Work Order # 89-09-049

SAMPLE ID 8909061535 H2O SHS-2

FRACTION 02A TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/06/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST
INSTRMT

MG
B

INJECTD 09/19/89

FILE # DB091913
FACTOR 100

VERIFIED
UNITS ug/L

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloromethane	ND	50	100
74-83-9	Bromomethane	ND	100	100
75-01-4	Vinyl Chloride	ND	20	100
75-00-3	Chloroethane	ND	50	100
75-09-2	Methylene Chloride	ND	40	100
75-69-4	Trichlorofluoromethane	ND	10	100
75-35-4	1,1-Dichloroethene	ND	10	100
75-34-3	1,1-Dichloroethane	ND	10	100
540-59-0	Total 1,2-Dichloroethene (2)	ND	10	100
67-66-3	Chloroform	ND	10	100
107-06-2	1,2-Dichloroethane	ND	10	100
71-55-6	1,1,1-Trichloroethane	ND	20	100
56-23-5	Carbon Tetrachloride	ND	20	100
75-27-4	Bromodichloromethane	ND	10	100
78-87-5	1,2-Dichloropropene	ND	10	100
10061-01-5	cis-1,3-Dichloropropene	ND	40	100
79-01-6	Trichloroethene	ND	20	100
124-48-1	Dibromochloromethane (3)	ND	20	100
79-00-5	1,1,2-Trichloroethane (3)	ND	20	100
10061-02-6	trans-1,3-Dichloropropene (3)	ND	40	100
110-75-8	2-Chloroethylvinyl Ether	ND	200	100
75-25-2	Bromoform	ND	200	100
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	20	100
127-18-4	Tetrachloroethene (4)	13 C	10	100
108-90-7	Chlorobenzene	ND	20	100
541-73-1	1,3-Dichlorobenzene	ND	50	100
95-50-1	1,2-Dichlorobenzene	ND	20	100
106-46-7	1,4-Dichlorobenzene	ND	20	100





Inter Mountain
Laboratories, Inc.

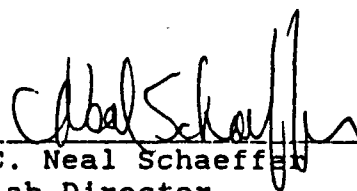
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9006201100 SHS-2
SITE: SHS-2
LAB NO: F4494

DATE REPORTED: 06/27/90
DATE RECEIVED: 06/20/90
DATE COLLECTED: 06/20/90

Lab pH (s.u.)..... 7.92
Lab conductivity, umhos/cm..... 4440
Lab resistivity, ohm-m..... 2.2523
Total dissolved solids (180), mg/l.. 3394
Total dissolved solids (calc), mg/l. 3009
Total alkalinity as CaCO₃, mg/l..... 773.55
Total acidity as CaCO₃, mg/l..... 0.00
Total hardness as CaCO₃, mg/l..... 1194.76
Sodium absorption ratio..... 7.44

	mg/l	meq/l
Bicarbonate as HCO ₃	943.7	15.47
Carbonate as CO ₃	0.0	0.00
Chloride.....	380.7	10.74
Sulfate.....	1150.6	23.97
Calcium.....	317.3	15.83
Magnesium.....	98.1	8.06
Potassium.....	6.8	0.17
Sodium.....	591.0	25.71
Major cations.....		49.78
Major anions.....		50.18
Cation/anion difference.....		0.41 %


C. Neal Schaeffer
Lab Director



Inter-Mountain
Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Geoscience Consultants

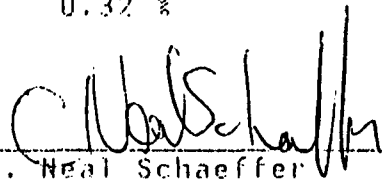
DATE REPORTED: 12/20/89

SITE: SHS-27
LAB NO: F3662

DATE RECEIVED: 12/13/89
DATE COLLECTED: 12/12/89

Lab pH (s.u.).....	7.53
Lab Conductivity, umhos/cm.....	4239
Lab resistivity, ohm-m.....	2.3590
Total Dissolved Solids (180), mg/l.....	3066
Total Dissolved Solids (calc), mg/l.....	3066
Total Alkalinity as CaCO ₃ , mg/l.....	978.12
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1282.07
Sodium Absorption Ratio.....	7.35

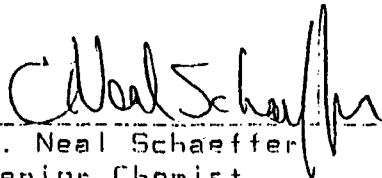
	mg/l	meq/l
Bicarbonate as HCO ₃	1193.31	19.56
Carbonate as CO ₃	0.00	0.00
Chloride.....	401.47	11.33
Sulfate.....	1033.69	21.54
Calcium.....	309.51	15.44
Magnesium.....	123.99	10.20
Potassium.....	5.40	0.14
Sodium.....	604.80	26.31
Major Cations.....		52.09
Major Anions.....		52.42
Cation/Anion Difference.....		0.32 %


C. Neal Schaeffer
Senior Chemist

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/21/89
SAMPLE: 8909061535
SITE: SHS-2 DATE RECEIVED: 09/07/89
LAB NO: F3124 DATE COLLECTED: 09/07/89

Lab pH.....	7.48
Lab Conductivity, umhos/cm.....	4446
Lab resistivity, ohm-m.....	2.2492
Total Dissolved Solids (TDS), mg/l.....	3242
Total Dissolved Solids (TDS), mg/l.....	3089
Total Alkalinity as CaCO ₃ , mg/l.....	894.62
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1346.69
Sodium Absorption Ratio.....	7.23
Nitrate, mg/l.....	0.31

	mg/l	meq/l
Bicarbonate as HCO ₃	1091.44	17.89
Carbonate as CO ₃	0.00	0.00
Chloride.....	297.35	8.39
Sulfate.....	1231.21	25.65
Calcium.....	201.60	10.06
Magnesium.....	205.19	16.87
Potassium.....	6.85	0.18
Sodium.....	610.20	26.54
Major Cations.....		53.65
Major Anions.....		51.95
Cation/Anion Difference.....		1.61 %


C. Neal Schaeffer
Senior Chemist



Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method/Analyte	Sample Identifications					
	8912121000		8912121410		METHOD BLANK	
Matrix	04 water		05 water		19 water	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Silver by ICPEs						
Silver	ND	mg/L 0.010	ND	mg/L 0.010	ND	mg/L 0.010
Arsenic by GF - SW846						
Arsenic	<u>0.0048 *</u>	mg/L 0.0020	<u>0.024</u>	mg/L 0.0020	ND	mg/L 0.0020
Barium by ICPEs						
Barium	<u>0.40</u>	mg/L 0.010	<u>0.24</u>	mg/L 0.010	ND	mg/L 0.010
Cadmium by ICPEs						
Cadmium	ND	mg/L 0.0050	ND	mg/L 0.0050	ND	mg/L 0.0050
Chromium by ICPEs						
Chromium	ND	mg/L 0.010	ND	mg/L 0.010	ND	mg/L 0.010
Mercury by cold vapor						
Mercury	ND	mg/L 0.0002	ND	mg/L 0.0002	ND	mg/L 0.0002
Lead by GF - SW846						
Lead	<u>0.0045 *</u>	mg/L 0.0020	<u>0.030</u>	mg/L 0.0020	ND	mg/L 0.0020
Selenium by GF - SW846						
Selenium	ND	mg/L 0.0020	ND	mg/L 0.0020	ND	mg/L 0.0020

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

Page 6

Received: 09/06/89

RAB Sacramento

REPORT

Work Order # 89-07-051

Results by Sample

SAMPLE ID 8909061455 H2O SHS-1 SAMPLE # 01 FRACTIONS: A
DATE COMPLETED 09/12/89 AG_EM <0.007 mg/L AS_EM <0.053 mg/L BA_EM 0.27 mg/L CD_EM <0.004 mg/L CR_EM 0.011 mg/L
HG_CV <0.0002 mg/L SE_EM <0.075 mg/L

SAMPLE ID 8909061535 H2O SHS-2 SAMPLE # 02 FRACTIONS: A
DATE COMPLETED 09/13/89 AG_EM <0.007 mg/L AS_EM <0.053 mg/L BA_EM 1.5 mg/L CD_EM <0.004 mg/L CR_EM 0.029 mg/L
HG_CV <0.0002 mg/L SE_EM <0.075 mg/L

SAMPLE ID 8909061500 H2O B4M-37 SAMPLE # 03 FRACTIONS: A
DATE COMPLETED 09/13/89 AG_EM <0.007 mg/L AS_EM <0.053 mg/L BA_EM 0.36 mg/L CD_EM <0.004 mg/L CR_EM 0.043 mg/L
HG_CV <0.0002 mg/L SE_EM 8.7 mg/L



Received: 09/08/89

RAS Sacramento

REPORT

Work Order # 89-09-051

Results By Test

SAMPLE	Test: 3015HS	Test: AG EN	Test: AS EN	Test: BA EN	Test: CD EN
Sample Id	Date Completed	mg/L	mg/Kg	mg/L	mg/L
SHS-1 01	09/12/89	<0.007	<0.053	0.27	<0.004
8909061455 H2O	DATE COMPLETED		ng/L		
SHS-2 02	09/12/89	<0.007	<0.053	1.5	<0.004
8909061535 H2O	DATE COMPLETED		mg/L		
BLM-37 03	09/12/89	<0.007	<0.053	0.36	<0.004
8909061600 H2O	DATE COMPLETED		mg/L		
BLM-30 04	09/12/89	<0.007	<0.053	0.57	<0.004
8909070830 H2O	DATE COMPLETED		ng/L		
Blank 05	09/12/89	<0.007	<0.053	<0.002	<0.004
8909070750 H2O	DATE COMPLETED		ng/L		
BLM-27 06	09/12/89	<0.007	<0.053	1.4	<0.004
8909071100 H2O	DATE COMPLETED		mg/L		
07	09/12/89	<0.007	<0.053	<0.002	<0.004
REAGENT BLANK H	DATE COMPLETED		ng/L		

SAMPLE	Test: CR EN	Test: HG CV	Test: PB EN	Test: SE EN
Sample Id	mg/L	mg/L	mg/L	mg/Kg
SHS-1 01	0.011 *	<0.0002	<0.042	<0.075
8909061455 H2O				mg/L
SHS-2 02	0.029 *	<0.0002	0.062 *	<0.075
8909061535 H2O				mg/L
BLM-37 03	0.043	<0.0002	8.7	<0.075
8909061600 H2O				mg/L
BLM-30 04	0.043	<0.0002	0.055 *	<0.075
8909070830 H2O				mg/L
Blank 05	<0.007	<0.0002	<0.042	<0.075
8909070750 H2O				mg/L



Page 2

Received: 09/08/89

RAS Sacramento

REPORT

Work Order # 57-09-051

Results By Test

5413-1
Sample 01
Sample 02
Sample 03
Sample 04
Sample 05

BLM37
BLM30
Blank

(entered units) (entered units) (entered units) (entered units) (entered units)

TEST CODE	default units	DATE COMPLETED	DATE COMPLETED	DATE COMPLETED	DATE COMPLETED
3015NS		09/12/89	09/12/89	09/12/89	09/12/89
AG_EM .05	mg/L	<0.007	<0.007	<0.007	<0.007
AS_EM .1	mg/L	<0.053	<0.053	<0.053	<0.053
BA_EM 1.0	mg/Kg	1.5	0.35	0.57	<0.002
CD_EM .01	mg/L	<0.004	<0.004	<0.004	<0.004
CR_EM .05	mg/L	0.011 *	0.043	0.043	<0.007
HG_CV .062	mg/L	<0.0002	<0.0002	<0.0002	<0.0002
FB_EM .05	mg/L	0.042	8.7	0.056 *	<0.042
SE_EM .05	mg/L	<0.075	<0.075	<0.075	<0.075

5413-1
Sample 06
Sample 07

BLM27
Blank

(entered units) (entered units) (entered units)

TEST CODE	default units	DATE COMPLETED	DATE COMPLETED
3015NS		09/12/89	09/12/89
AG_EM .05	mg/L	<0.007	<0.007
AS_EM .1	mg/L	<0.053	<0.053

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-3

SAMPLER

GIANT

DATE

6/20/90

PARAMETER

DETECTION LIMIT

<1.0

BENZENE	ND
BROMODICHLOROMETHANE	ND
BROMOFORM	ND
BROMOMETHANE	ND
CARBON TETRACHLORIDE	ND
CHLOROBENZENE	ND
CHLOROETHANE	ND
CHLOROFORM	ND
CHLOROMETHANE	ND
DIBROMOCHLOROMETHANE	ND
1,2-DICHLOROBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	ND
1,1-DICHLOROETHANE	ND
1,2-DICHLOROETHANE	ND
1,1-DICHLOROETHENE	ND
CIS-1,2-DICHLOROETHENE	ND
TRANS-1,2-DICHLOROETHENE	ND
1,2-DICHLOROPROPANE	ND
ETHYLBENZENE	ND
METHYLENE CHLORIDE	ND
1,1,2,2-TETRACHLOROETHANE	ND
TETRACHLOROETHENE	ND
TOLUENE	ND
1,1,1-TRICHLOROETHANE	ND
1,1,2-TRICHLOROETHANE	ND
TRICHLOROETHENE	ND
TRICHLOROFLUOROMETHANE	ND
VINYL CHLORIDE	ND
TOTAL XYLENES	ND

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: SO-06-151

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:	9006201100	9006200945	DECON BLANK	TRIP BLANK
Factor:	10	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	05C	06C	07C	08C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	5.4 C@	2.0	ND	0.20	ND	0.20	ND	0.20
Chlorobenzene	230 C	2.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	4.0	ND	0.40	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	4.0	ND	0.40	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	3.0	ND	0.30	ND	0.30	ND	0.30
Ethylbenzene	78 G	2.0	ND	0.20	ND	0.20	ND	0.20
Toluene	19 C	2.0	ND	0.20	ND	0.20	ND	0.20
Xylenes (total)	730 C	2.0	ND	0.20	ND	0.20	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	51		66		84		115	
Control Limits: 40 to 140								

C Confirmed on second column or by GC/MS

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

G Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
Radian Work Order: SO-06-151

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006201100	9006200945	DECON BLANK	TRIP BLANK
Factor:	10	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	05A	06A	07A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	5.0	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	12	ND	1.2	ND	1.2	ND	1.2
Carbon tetrachloride	ND	1.2	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	2.5	ND	0.25	0.59 X@	0.25	ND	0.25
Chloroethane	ND	5.2	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinyl ether	ND	5.0	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	1.0	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	3.0	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane	ND	2.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	5.0	ND	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	ND	1.0	ND	0.10	ND	0.10	ND	0.10
1,1-Dichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	0.34	ND	0.34	ND	0.34
Methylene chloride	ND	4.0	ND	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	1.5	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene	2.1 C1@	1.0	ND	0.10	ND	0.10	ND	0.10
1,1,1-Trichloroethane	ND	2.0	ND	0.20	0.44 X@	0.20	0.33 X@	0.20
1,1,2-Trichloroethane	ND	2.0	ND	0.20	ND	0.20	ND	0.20
Trichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
Trichlorofluoromethane	ND	2.0	ND	0.20	ND	0.20	ND	0.20
Vinyl chloride	ND	2.0	ND	0.20	ND	0.20	ND	0.20

ND Not detected at specified detection limit

I Result differs from last report - see report narrative

X See definition in report narrative

C Confirmed on second column or by GC/MS

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-06-256

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9006201100	9006200945	REAGENT BLANK
	SHS 2	SHS 3	
Factor:	50	1	1
Results in:	ug/L	ug/L	ug/L
	05A	06A	07A
Matrix:	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND D	180	ND	1.8	ND	1.8		
Acenaphthylene	ND D	230	ND	2.3	ND	2.3		
Anthracene	ND	33	ND	0.66	ND	0.66		
Benzo(a)anthracene	1.4 @	0.65	ND	0.013	ND	0.013		
Benzo(a)pyrene	ND	1.2	ND	0.023	ND	0.023		
Benzo(b)fluoranthene	ND	0.90	ND	0.018	ND	0.018		
Benzo(g,h,i)perylene	ND	3.8	ND	0.076	ND	0.076		
Benzo(k)fluoranthene	ND	0.85	ND	0.017	ND	0.017		
Chrysene	9.3 @	7.5	ND	0.15	ND	0.15		
Dibenzo(a,h)anthracene	ND	1.5	ND	0.030	ND	0.030		
Fluoranthene	ND	10	ND	0.21	ND	0.21		
Fluorene	64 D@	21	ND	0.21	ND	0.21		
Indeno(1,2,3-cd)pyrene	ND D	4.3	ND	0.043	ND	0.043		
Naphthalene	230 D@	180	ND	1.8	ND	1.8		
Phenanthrene	150 @	32	ND	0.64	ND	0.64		
Pyrene	ND	14	ND	0.27	ND	0.27		
Surrogate Recovery(%)								
Terphenyl-d14	196 @		78		97			
Control Limits: 24 to 146								

 ND Not detected at specified detection limit
 @ Est. result less than 5 times detection limit

 D Sample dilution necessary for this analyte
 @ Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.





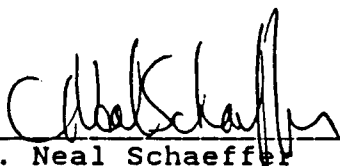
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9006200945
SITE: SHS-3
LAB NO: F4495

DATE REPORTED: 06/27/90
DATE RECEIVED: 06/20/90
DATE COLLECTED: 06/20/90

Lab pH (s.u.)..... 7.76
Lab conductivity, umhos/cm..... 4710
Lab resistivity, ohm-m..... 2.1231
Total dissolved solids (180), mg/l.. 3952
Total dissolved solids (calc), mg/l. 3798
Total alkalinity as CaCO₃, mg/l..... 238.75
Total acidity as CaCO₃, mg/l..... 0.00
Total hardness as CaCO₃, mg/l..... 1827.28
Sodium absorption ratio..... 4.80

	mg/l	meq/l
Bicarbonate as HCO ₃	291.3	4.77
Carbonate as CO ₃	0.0	0.00
Chloride.....	279.2	7.88
Sulfate.....	2221.3	46.28
Calcium.....	578.3	28.86
Magnesium.....	93.5	7.69
Potassium.....	10.7	0.27
Sodium.....	471.6	20.51
Major cations.....		57.33
Major anions.....		58.93
Cation/anion difference.....		1.37 %


C. Neal Schaeffer
Lab Director



Sample Identifications

REAGENT BLANK

01

02

03

WATER

Water

water.

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-4

GIANT

6/19/90

DETECTION LIMIT

<1.0

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

ND - NOT DETECTED

NA - NOT ANALYZED

** - SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-151

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:	9006191515	9006191745	9006201410	9006201350
Factor:	1	10	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Chlorobenzene	ND	0.20	4.4 G ^a	2.0	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	4.0	ND	4.0	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	4.0	ND	4.0	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	3.0	ND	3.0	ND	0.30
Ethylbenzene	ND	0.20	57 C	2.0	ND	2.0	ND	0.20
Toluene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Xylenes (total)	ND	0.20	24 G	2.0	ND	2.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	102		98		102		98	
Control Limits: 40 to 140								

ND Not detected at specified detection limit
^a Est. result less than 5 times detection limit

G Indicates an estimated GC value due to interferences.
 C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
Radian Work Order: S0-06-151

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:

9006191515

9006191745

9006201410

9006201350

Factor:

1

10

10

1

Results in:

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	1.0	ND	1.0	ND	0.10
Bromoform	ND	0.50	ND	5.0	ND	5.0	ND	0.50
Bromomethane	ND	1.2	ND	12	ND	12	ND	1.2
Carbon tetrachloride	ND	0.12	ND	1.2	ND	1.2	ND	0.12
Chlorobenzene	ND	0.25	ND	2.5	ND	2.5	ND	0.25
Chloroethane	ND	0.52	ND	5.2	ND	5.2	ND	0.52
2-Chloroethylvinyl ether	ND	0.50	ND	5.0	ND	5.0	ND	0.50
Chloroform	ND	0.10	ND	1.0	ND	1.0	ND	0.10
Chloromethane	ND	0.30	ND	3.0	ND	3.0	ND	0.30
Dibromochloromethane	ND	0.20	ND	2.0	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	5.0	ND	5.0	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	3.2	ND	3.2	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	2.4	ND	2.4	ND	0.24
1,1-Dichloroethane	ND	0.50	ND	5.0	ND	5.0	ND	0.50
1,2-Dichloroethane	ND	0.10	7.1 C	1.0	ND	1.0	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
cis-1,2-Dichloroethene	ND	0.20	39 CI	2.0	14 CI	2.0	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	1.0	ND	1.0	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	3.4	ND	3.4	ND	0.34
Methylene chloride	ND	0.40	ND	4.0	ND	4.0	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	1.5	ND	1.5	ND	0.15
Tetrachloroethene	ND	0.10	1.2 Cl@	1.0	2.7 Cl@	1.0	0.42 X1@	0.10
1,1,1-Trichloroethane	ND	0.20	ND	2.0	ND	2.0	0.35 Ca	0.20
1,1,2-Trichloroethane	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Trichloroethene	ND	0.20	2.9 Ca	2.0	3.0 Ca	2.0	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Vinyl chloride	ND	0.20	ND	2.0	ND	2.0	ND	0.20

ND Not detected at specified detection limit

I Result differs from last report - see report narrative

X See definition in report narrative

C Confirmed on second column or by GC/MS

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-06-256

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9006191515	9006191745	9006201410	9006201350
Factor:	1	5	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	1.8	ND	9.0	ND	1.8	ND	1.8
Acenaphthylene	ND	2.3	ND	12	ND	2.3	ND	2.3
Anthracene	ND	0.66	ND	3.3	ND	0.66	ND	0.66
Benzo(a)anthracene	ND	0.013	0.60	0.065	ND	0.013	ND	0.013
Benzo(a)pyrene	ND	0.023	0.14 @	0.12	ND	0.023	ND	0.023
Benzo(b)fluoranthene	ND	0.018	0.44 @	0.090	ND	0.018	ND	0.018
Benzo(g,h,i)perylene	ND	0.076	0.52 @	0.38	ND	0.076	ND	0.076
Benzo(k)fluoranthene	ND	0.017	ND	0.085	ND	0.017	ND	0.017
Chrysene	ND	0.15	3.9	0.75	ND	0.15	ND	0.15
Dibenzo(a,h)anthracene	ND	0.030	ND	0.15	ND	0.030	ND	0.030
Fluoranthene	ND	0.21	ND	1.0	ND	0.21	ND	0.21
Fluorene	ND	0.21	5.2	1.0	ND	0.21	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.043	ND	0.22	ND	0.043	ND	0.043
Naphthalene	ND	1.8	ND	9.0	ND	1.8	ND	1.8
Phenanthrene	ND	0.64	11 @	3.2	ND	0.64	ND	0.64
Pyrene	ND	0.27	ND	1.4	ND	0.27	ND	0.27
Surrogate Recovery(%)								
Terphenyl-d14	99		82		96		74	
Control Limits: 24 to 146								

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.





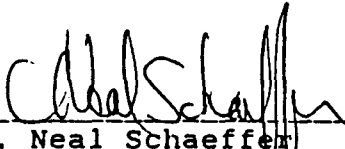
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9006191515
SITE: SHS-4
LAB NO: F4496

DATE REPORTED: 06/27/90
DATE RECEIVED: 06/20/90
DATE COLLECTED: 06/19/90

Lab pH (s.u.).....	8.11
Lab conductivity, umhos/cm.....	3284
Lab resistivity, ohm-m.....	3.0451
Total dissolved solids (180), mg/l..	2806
Total dissolved solids (calc), mg/l.	2626
Total alkalinity as CaCO ₃ , mg/l.....	162.35
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1365.44
Sodium absorption ratio.....	3.36

	mg/l	meq/l
Bicarbonate as HCO ₃	198.1	3.25
Carbonate as CO ₃	0.0	0.00
Chloride.....	25.4	0.72
Sulfate.....	1764.5	36.76
Calcium.....	297.2	14.83
Magnesium.....	151.7	12.48
Potassium.....	4.5	0.12
Sodium.....	285.2	12.41
Major cations.....		39.83
Major anions.....		40.72
Cation/anion difference.....		1.11 %


C. Neal Schaeffer
Lab Director



InterMountain
Laboratories, Inc.

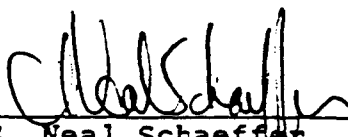
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9006191515
SITE: SHS-4 L/S
LAB NO: F4499

DATE REPORTED: 06/27/90
DATE RECEIVED: 06/20/90
DATE COLLECTED: 06/19/90

Lab pH (s.u.).....	8.12
Lab conductivity, umhos/cm.....	3273
Lab resistivity, ohm-m.....	3.0553
Total dissolved solids (180), mg/l..	2806
Total dissolved solids (calc), mg/l.	2660
Total alkalinity as CaCO ₃ , mg/l.....	171.90
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1395.56
Sodium absorption ratio.....	3.32

	mg/l	meq/l
Bicarbonate as HCO ₃	209.7	3.44
Carbonate as CO ₃	0.0	0.00
Chloride.....	46.2	1.30
Sulfate.....	1762.0	36.71
Calcium.....	305.2	15.23
Magnesium.....	154.2	12.68
Potassium.....	4.6	0.12
Sodium.....	285.0	12.40
Major cations.....		40.43
Major anions.....		41.45
Cation/anion difference.....		1.25 %


C. Neal Schaeffer
Lab Director



Method/Analyte			Sample Identification			
Matrix	9004061125 SHS 4 01 water	9004061235 SHS 3 02 water	REAGENT BLANK 03 water			
Silver by SW6010	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Silver	ND	mg/L 0.0070	ND	mg/L 0.0070	ND	mg/L 0.0070
Aluminum by SW6010	45	mg/L 0.045	210	mg/L 0.045	ND	mg/L 0.045
Arsenic by SW7060	ND	mg/L 0.0020	ND	mg/L 0.0020	ND	mg/L 0.0020
Barium by SW6010	0.93	mg/L 0.0020	3.7	mg/L 0.0020	ND	mg/L 0.0020
Boron by SW6010	0.41	mg/L 0.0060	0.31	mg/L 0.0060	ND	mg/L 0.0060
Cobalt by SW6010	0.053	mg/L 0.0070	0.18	mg/L 0.0070	ND	mg/L 0.0070
Chromium by SW6010	0.094	mg/L 0.0070	0.29	mg/L 0.0070	ND	mg/L 0.0070
Copper by SW6010	0.12	mg/L 0.0060	0.67	mg/L 0.0060	0.006	mg/L 0.0060
Iron by SW6010	82	mg/L 0.0070	300	mg/L 0.014	ND	mg/L 0.0070
Manganese by SW6010	5.3	mg/L 0.0020	5.7	mg/L 0.0020	ND	mg/L 0.0020
Molybdenum by SW6010	ND	mg/L 0.0080	ND	mg/L 0.0080	ND	mg/L 0.0080
Nickel by SW6010	0.047	mg/L 0.015	0.19	mg/L 0.015	ND	mg/L 0.015
Lead by SW7421	0.027	mg/L 0.0030	0.099	mg/L 0.0060	ND	mg/L 0.0030
Selenium by SW7740	ND	mg/L 0.0050	ND	mg/L 0.0050	ND	mg/L 0.0050
Zinc by SW6010	0.19	mg/L 0.0020	0.82	mg/L 0.0020	ND	mg/L 0.0020

ND Not detected at specified detection limit

Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-5

<u>SAMPLER</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>11/27/89</u>	<u>6/20/90</u>
<u>PARAMETER</u>		
DETECTION LIMIT	<1.0	(BELOW)
BENZENE	ND	ND(2.0)
BROMODICHLOROMETHANE	ND	ND(1.0)
BROMOFORM	ND	ND(5.0)
BROMOMETHANE	ND	ND(12.0)
CARBON TETRACHLORIDE	ND	ND(1.2)
CHLOROBENZENE	ND	ND(2.0)
CHLOROETHANE	ND	ND(5.2)
CHLOROFORM	ND	ND(1.0)
CHLOROMETHANE	ND	ND(3.0)
DIBROMOCHLOROMETHANE	ND	ND(2.0)
1,2-DICHLOROBENZENE	0.5	ND(4.0)
1,3-DICHLOROBENZENE	ND	ND(4.0)
1,4-DICHLOROBENZENE	ND	ND(3.0)
1,1-DICHLOROETHANE	ND	ND(5.0)
1,2-DICHLOROETHANE	ND	ND(1.0)
1,1-DICHLOROETHENE	ND	ND(2.0)
CIS-1,2-DICHLOROETHENE	NA	14.0
TRANS-1,2-DICHLOROETHENE	12.0	ND(2.0)
1,2-DICHLOROPROPANE	ND	ND(1.0)
ETHYLBENZENE	ND	ND(2.0)
METHYLENE CHLORIDE	0.72	ND(4.0)
1,1,2,2-TETRACHLOROETHANE	ND	ND(1.5)
TETRACHLOROETHENE	1.3	2.7
TOLUENE	ND	ND(2.0)
1,1,1-TRICHLOROETHANE	0.88	ND(2.0)
1,1,2-TRICHLOROETHANE	ND	ND(2.0)
TRICHLOROETHENE	1.8	3.0
TRICHLOROFLUOROMETHANE	ND	ND(2.0)
VINYL CHLORIDE	ND	ND(2.0)
TOTAL XYLENES	ND	ND(2.0)

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: SO-06-151

Method: Aromatics by EPA 602 (1) List: Complete analyte list				
Sample ID:	4 9006191515	1 9006191745	5 9006201410	6 9006201350
Factor:	1	10	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
Matrix:	01C water	02C water	03C water	04C water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Chlorobenzene	ND	0.20	4.4 G ^a	2.0	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	4.0	ND	4.0	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	4.0	ND	4.0	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	3.0	ND	3.0	ND	0.30
Ethylbenzene	ND	0.20	57 C	2.0	ND	2.0	ND	0.20
Toluene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Xylenes (total)	ND	0.20	24 G	2.0	ND	2.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	102		98		102		98	
Control Limits: 40 to 140								

ND Not detected at specified detection limit	G Indicates an estimated GC value due to interferences.
^a Est. result less than 5 times detection limit	C Confirmed on second column or by GC/MS
(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.	

Geoscience Consultants, Ltd.
 Radian Work Order: SO-06-151

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:

9006191515

9006191745

9006201410

9006201350

Factor:

1

10

10

1

Results in:

ug/L

ug/L

ug/L

ug/L

Matrix:

01A

02A

03A

04A

Matrix:

water

water

water

water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	1.0	ND	1.0	ND	0.10
Bromoform	ND	0.50	ND	5.0	ND	5.0	ND	0.50
Bromomethane	ND	1.2	ND	12	ND	12	ND	1.2
Carbon tetrachloride	ND	0.12	ND	1.2	ND	1.2	ND	0.12
Chlorobenzene	ND	0.25	ND	2.5	ND	2.5	ND	0.25
Chloroethane	ND	0.52	ND	5.2	ND	5.2	ND	0.52
2-Chloroethylvinyl ether	ND	0.50	ND	5.0	ND	5.0	ND	0.50
Chloroform	ND	0.10	ND	1.0	ND	1.0	ND	0.10
Chloromethane	ND	0.30	ND	3.0	ND	3.0	ND	0.30
Dibromochloromethane	ND	0.20	ND	2.0	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	5.0	ND	5.0	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	3.2	ND	3.2	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	2.4	ND	2.4	ND	0.24
1,1-Dichloroethane	ND	0.50	ND	5.0	ND	5.0	ND	0.50
1,2-Dichloroethane	ND	0.10	7.1 C	1.0	ND	1.0	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
cis-1,2-Dichloroethene	ND	0.20	39 CI	2.0	14 CI	2.0	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	1.0	ND	1.0	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	3.4	ND	3.4	ND	0.34
Methylene chloride	ND	0.40	ND	4.0	ND	4.0	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	1.5	ND	1.5	ND	0.15
Tetrachloroethene	ND	0.10	1.2 C1a	1.0	2.7 C1a	1.0	0.42 X1a	0.10
1,1,1-Trichloroethane	ND	0.20	ND	2.0	ND	2.0	0.35 C2a	0.20
1,1,2-Trichloroethane	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Trichloroethene	ND	0.20	2.9 C2a	2.0	3.0 C2a	2.0	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Vinyl chloride	ND	0.20	ND	2.0	ND	2.0	ND	0.20

ND Not detected at specified detection limit

I Result differs from last report - see report narrative

X See definition in report narrative

C Confirmed on second column or by GC/MS

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-06-256

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9006191515	9006191745	9006201410	9006201350
	SHS 4	SHS 1	SHS 5	SHS 6
Factor:	1	5	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	1.8	ND	9.0	ND	1.8	ND	1.8
Acenaphthylene	ND	2.3	ND	12	ND	2.3	ND	2.3
Anthracene	ND	0.66	ND	3.3	ND	0.66	ND	0.66
Benzo(a)anthracene	ND	0.013	0.60	0.065	ND	0.013	ND	0.013
Benzo(a)pyrene	ND	0.023	0.14 @	0.12	ND	0.023	ND	0.023
Benzo(b)fluoranthene	ND	0.018	0.44 @	0.090	ND	0.018	ND	0.018
Benzo(g,h,i)perylene	ND	0.076	0.52 @	0.38	ND	0.076	ND	0.076
Benzo(k)fluoranthene	ND	0.017	ND	0.085	ND	0.017	ND	0.017
Chrysene	ND	0.15	3.9	0.75	ND	0.15	ND	0.15
Dibenzo(a,h)anthracene	ND	0.030	ND	0.15	ND	0.030	ND	0.030
Fluoranthene	ND	0.21	ND	1.0	ND	0.21	ND	0.21
Fluorene	ND	0.21	5.2	1.0	ND	0.21	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.043	ND	0.22	ND	0.043	ND	0.043
Naphthalene	ND	1.8	ND	9.0	ND	1.8	ND	1.8
Phenanthrene	ND	0.64	11 @	3.2	ND	0.64	ND	0.64
Pyrene	ND	0.27	ND	1.4	ND	0.27	ND	0.27

Surrogate Recovery(%)

Terphenyl-d14

Control Limits: 24 to 146

99

82

96

74

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

TABLE 4-2

RESULTS OF SAMPLING FOR AROMATIC VOLATILES

MLA Offsite Samples
Aromatic Volatiles (EPA 602)
Sampling Event 11/27/89 - 11/30/89;
01/02/90 - 01/10/90
Units: ug/L

	SHS-5	SHS-6	SHS-7	SHS-8
1,2-Dichlorobenzene	0.50 (0.40)	ND (0.40)	ND (40)	ND (2.0)
1,3-Dichlorobenzene	ND (0.40)	ND (0.40)	ND (40)	ND (2.0)
1,4-Dichlorobenzene	ND (0.30)	ND (0.30)	ND (30)	ND (1.5)
Benzene (10.0)	ND (0.20)	ND (0.20)	* 190 (20)	* 14 (1.0)
Chlorobenzene	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Ethylbenzene	ND (0.20)	ND (0.20)	ND (20)	85 (1.0)
Toluene	ND (0.20)	ND (0.20)	290 (20)	ND (1.0)
Total Xylenes (620.0)	ND (0.20)	ND (0.20)	* 680 (20)	230 (1.0)
	ND	ND	1,160	329

() = Detection Limit
ND = Not Detected at Detection Limit

* above WACC stds.

TABLE 4-3

RESULTS OF SAMPLING FOR HALOGENATED VOLATILES

M&A Offsite Samples
 Halogenated Volatiles (EPA 601)
 Sampling Event: 11/27/89 - 11/30/89;
 01/02/90 - 01/10/90
 Units ug/L

*Detection limits very high
 why?*

	SHS-5	SHS-6	SHS-7	SHS-8
1,1,1-Trichloroethane	0.68 (0.20)	ND (0.20)	ND (20)	6.2 (1.0)
1,1,2,2-Tetrachloroethane	ND (0.15)	ND (0.15)	ND (15)	ND (0.75)
1,1,2-Trichloroethane	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
1,1-Dichloroethane	ND (0.50)	ND (0.50)	ND (50)	ND (2.5)
1,1-Dichloroethene	ND (0.20)	0.93 (0.20)	ND (20)	ND (1.0)
1,2-Dichlorobenzene	0.66 (0.50)	ND (0.50)	ND (50)	ND (2.5)
1,2-Dichloroethane	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
1,2-Dichloropropane	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
1,3-Dichlorobenzene	ND (0.32)	ND (0.32)	ND (32)	ND (1.6)
1,4-Dichlorobenzene	ND (0.24)	ND (0.24)	ND (24)	ND (1.2)
2-Chloroethylvinyl Ether	ND (0.50)	ND (0.50)	ND (50)	ND (2.5)
Bromodichloromethane	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
Bromoform	ND (0.50)	ND (0.50)	ND (50)	ND (2.5)
Bromomethane	ND (1.2)	ND (1.2)	ND (120)	ND (5.9)
Carbon Tetrachloride	ND (0.12)	ND (0.12)	ND (12)	ND (0.60)
Chlorobenzene	ND (0.25)	ND (0.25)	ND (25)	ND (1.3)
Chloroethane	ND (0.52)	ND (0.52)	ND (52)	ND (2.6)
Chloroform	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
Chloromethane	ND (0.30)	ND (0.30)	ND (30)	ND (1.5)
cis-1,3-Dichloropropene	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Dibromochloromethane	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Methylene Chloride	0.72 (0.40)	ND (0.40)	ND (40)	2.6 (2.0)
Tetrachloroethane	1.3 (0.10)	0.45 (0.10)	ND (10)	ND (0.50)
trans-1,2-Dichloroethene	12 (0.20)	ND (0.20)	ND (20)	24 (1.0)
trans-1,3-Dichloropropene	ND (0.34)	ND (0.34)	ND (34)	ND (1.7)
Trichloroethene	1.8 (0.20)	ND (0.20)	ND (20)	4.7 (1.0)
Trichlorofluoromethane	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Vinyl Chloride	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)

() = Detection Limit
 ND = Not Detected at Detection Limit





2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9006201410
SITE: SHS-5
LAB NO: F4497

DATE REPORTED: 06/27/90
DATE RECEIVED: 06/20/90
DATE COLLECTED: 06/20/90

Lab pH (s.u.)..... 8.09
Lab conductivity, umhos/cm..... 3911
Lab resistivity, ohm-m..... 2.5569
Total dissolved solids (180), mg/l.. 2804
Total dissolved solids (calc), mg/l. 2656
Total alkalinity as CaCO₃, mg/l..... 315.15
Total acidity as CaCO₃, mg/l..... 0.00
Total hardness as CaCO₃, mg/l..... 1044.16
Sodium absorption ratio..... 6.70

	mg/l	meq/l
Bicarbonate as HCO ₃	384.5	6.30
Carbonate as CO ₃	0.0	0.00
Chloride.....	356.8	10.06
Sulfate.....	1272.4	26.51
Calcium.....	208.8	10.42
Magnesium.....	127.2	10.46
Potassium.....	3.9	0.10
Sodium.....	497.6	21.64
Major cations.....		42.63
Major anions.....		42.87
Cation/anion difference.....		0.29 %

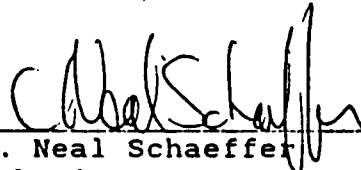

C. Neal Schaeffer
Lab Director

TABLE 4-5

RESULTS OF SAMPLING FOR MAJOR IONS AND TDS

MLA Offsite Samples
General Water Chemistry
Sampling Event 11/27/89 - 11/30/89;
01/02/90 - 01/10/90

L9CC
37ds

	SMS-5	SMS-6	SMS-7	SMS-8
Bicarbonate as HCO ₃	517.88	326.24	1295.84	757.42
Calcium	408.47	467.42	332.67	536.90
Carbonate as CO ₃	0.00	0.00	0.00	0.00
Cation/Anion Difference	0.20	0.07	1.15	0.21
Chloride	* 395.35	172.60	619.33	* 751.31
Conductivity	3423	3398	4438	5416
Hardness/cm @ 25C	8.14	14.35	46.45	50.01
Magnesium	41.83	40.84	49.04	62.40
Major Anions	41.67	40.90	50.18	62.14
Major Cations	NA	NA	NA	NA
Nitrate	7.51	6.97	7.37	7.45
pH	3.90	13.38	5.40	5.52
Potassium	2.7601	2.9429	2.2533	1.8464
Resistivity	471.60	369.00	681.00	714.80
Sodium	6.32	4.59	9.27	7.91
Sodium Absorption Ratio	1119.28	1469.88	495.45	1381.82
Sulfate	0.00	0.00	0.00	0.00
Total Acidity as CaCO ₃	424.49	267.41	1062.16	620.84
Total Alkalinity as CaCO ₃	2634	2634	2838	3910
Total Dissolved Solids (180)	2621	2667	2818	3813
Total Dissolved Solids (calc)	1052.60	1225.23	1021.02	1545.22
Total Hardness as CaCO ₃				

NA = Not Analyzed

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

Geo Science

Radian Work Order: S0-01-085

Method: Metals by SW6010 (1)

List: Priority pollutants list

Sample ID:	7 9001091521	16 9001091421	8 9001101430	5 9001101647
------------	-----------------	------------------	-----------------	-----------------

Factor:	1.00	1.00	1.00	1.00
---------	------	------	------	------

Results in:	mg/L	mg/L	mg/L	mg/L
-------------	------	------	------	------

	01A	02A	03A	04A
--	-----	-----	-----	-----

Matrix:	water	water	water	water
---------	-------	-------	-------	-------

	Result Det. Limit		Result Det. Limit		Result Det. Limit		Result Det. Limit	
Antimony	0.045 *	0.034	0.067 *	0.034	0.059 *	0.034	0.045 *	0.034
Beryllium	0.003 *	0.0010	0.016	0.0010	0.007	0.0010	ND	0.0010
Cadmium	ND	0.0040	0.005 *	0.0040	ND	0.0040	ND	0.0040
Chromium	0.024 *	0.0070	0.20	0.0070	0.042	0.0070	0.009 *	0.0070
Copper	0.075	0.0060	0.19	0.0060	0.12	0.0060	0.036	0.0060
Nickel	0.16	0.015	0.24	0.015	0.26	0.015	0.13	0.015
Silver	ND	0.0070	ND	0.0070	ND	0.0070	ND	0.0070
Zinc	0.12	0.0020	0.75	0.0020	0.24	0.0020	0.20	0.0020

* Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geo Science

Radian Work Order: S0-01-085

Method/Analyte		Sample Identifications					
		9001101647		9001110750		REAGENT BLANK	
Matrix		04 water		05 water		06 water	
		Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic by SW7060		ND	mg/L 0.0040	ND	mg/L 0.020	ND	mg/L 0.0040
Mercury by SW7470		ND	mg/L 0.0002	0.0004 *	mg/L 0.0002	ND	mg/L 0.0002
Lead by SW7421		0.006 *	mg/L 0.0030	0.089	mg/L 0.0060	ND	mg/L 0.0030
Selenium by SW7740		ND	mg/L 0.0050	0.009 *	mg/L 0.0050	ND	mg/L 0.0050
Thallium by SW7841		ND	mg/L 0.0050	ND	mg/L 0.0050	ND	mg/L 0.0050

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

TABLE 4-4

RESULTS OF SAMPLING FOR METALS

M&A Offsite Samples

Metals

Sampling Event 11/27/89 - 11/30/89;

01/02/90 - 01/10/90

Units mg/L

	SHS-5	SHS-6	SHS-7	SHS-8
Antimony	0.049 (0.034)	0.067 (0.034)	0.045 (0.034)	0.059 (0.034)
Beryllium	ND (0.0010)	0.016 (0.0010)	0.003 (0.0010)	0.007 (0.0010)
Cadmium	ND (0.0040)	0.005 (0.0040)	ND (0.0040)	ND (0.0040)
Chromium (0.05)	0.009 (0.0070)	0.20 (0.0070)	0.024 (0.0070)	0.042 (0.0070)
Copper	0.036 (0.0060)	0.19 (0.0060)	0.075 (0.0060)	0.12 (0.0060)
Nickel (0.2)	0.13 (0.015)	* 0.26 (0.015)	0.16 (0.015)	* 0.26 (0.0150)
Silver	ND (0.0070)	ND (0.0070)	ND (0.0070)	ND (0.0070)
Zinc (10.0)	0.20 (0.0020)	0.75 (0.0020)	0.12 (0.0020)	0.24 (0.0020)
Arsenic	ND (0.0040)	ND (0.0020)	ND (0.0040)	ND (0.012)
Mercury	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)
Lead (0.05)	0.006 (0.0030)	* 0.058 (0.0030)	0.024 (0.0030)	0.039 (0.0030)
Selenium	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Thallium	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Barium	NA	NA	NA	NA

() = Detection Limit

ND = Not Detected at Detection Limit

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-6

<u>SAMPLER</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>11/27/89</u>	<u>6/20/90</u>
<u>PARAMETER</u>		
DETECTION LIMIT	<1.0	<1.0
BENZENE	ND	ND
BROMODICHLOROMETHANE	ND	ND
BROMOFORM	ND	ND
BROMOMETHANE	ND	ND
CARBON TETRACHLORIDE	ND	ND
CHLOROBENZENE	ND	ND
CHLOROETHANE	ND	ND
CHLOROFORM	ND	ND
CHLOROMETHANE	ND	ND
DIBROMOCHLOROMETHANE	ND	ND
1,2-DICHLOROBENZENE	ND	ND
1,3-DICHLOROBENZENE	ND	ND
1,4-DICHLOROBENZENE	ND	ND
1,1-DICHLOROETHANE	ND	ND
1,2-DICHLOROETHANE	ND	ND
1,1-DICHLOROETHENE	0.93	ND
CIS-1,2-DICHLOROETHENE	NA	ND
TRANS-1,2-DICHLOROETHENE	ND	ND
1,2-DICHLOROPROPANE	ND	ND
ETHYLBENZENE	ND	ND
METHYLENE CHLORIDE	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND
TETRACHLOROETHENE	0.45	0.42
TOLUENE	ND	ND
1,1,1-TRICHLOROETHANE	ND	0.35
1,1,2-TRICHLOROETHANE	ND	ND
TRICHLOROETHENE	ND	ND
TRICHLOROFLUOROMETHANE	ND	ND
VINYL CHLORIDE	ND	ND
TOTAL XYLENES	ND	ND

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-151

Method: Aromatics by EPA 602 (1)	4	1	5	6
List: Complete analyte list				
Sample ID:	9006191515	9006191745	9006201410	9006201350
Factor:	1	10	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Chlorobenzene	ND	0.20	4.4 G ^a	2.0	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	4.0	ND	4.0	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	4.0	ND	4.0	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	3.0	ND	3.0	ND	0.30
Ethylbenzene	ND	0.20	57 C	2.0	ND	2.0	ND	0.20
Toluene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Xylenes (total)	ND	0.20	24 G	2.0	ND	2.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	102		98		102		98	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

^a Est. result less than 5 times detection limit

G Indicates an estimated GC value due to interferences.

C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
Radian Work Order: S0-06-151

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:

9006191515

9006191745

9006201410

9006201350

Factor:

1

10

10

1

Results in:

ug/L

ug/L

ug/L

ug/L

01A

02A

03A

04A

Matrix:

water

water

water

water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	1.0	ND	1.0	ND	0.10
Bromoform	ND	0.50	ND	5.0	ND	5.0	ND	0.50
Bromomethane	ND	1.2	ND	12	ND	12	ND	1.2
Carbon tetrachloride	ND	0.12	ND	1.2	ND	1.2	ND	0.12
Chlorobenzene	ND	0.25	ND	2.5	ND	2.5	ND	0.25
Chloroethane	ND	0.52	ND	5.2	ND	5.2	ND	0.52
2-Chloroethylvinyl ether	ND	0.50	ND	5.0	ND	5.0	ND	0.50
Chloroform	ND	0.10	ND	1.0	ND	1.0	ND	0.10
Chloromethane	ND	0.30	ND	3.0	ND	3.0	ND	0.30
Dibromochloromethane	ND	0.20	ND	2.0	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	5.0	ND	5.0	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	3.2	ND	3.2	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	2.4	ND	2.4	ND	0.24
1,1-Dichloroethane	ND	0.50	ND	5.0	ND	5.0	ND	0.50
1,2-Dichloroethane	ND	0.10	7.1 C	1.0	ND	1.0	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
cis-1,2-Dichloroethene	ND	0.20	39 CI	2.0	14 CI	2.0	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	1.0	ND	1.0	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	2.0	ND	2.0	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	3.4	ND	3.4	ND	0.34
Methylene chloride	ND	0.40	ND	4.0	ND	4.0	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	1.5	ND	1.5	ND	0.15
Tetrachloroethene	ND	0.10	1.2 Cl@	1.0	2.7 Cl@	1.0	0.42 X1@	0.10
1,1,1-Trichloroethane	ND	0.20	ND	2.0	ND	2.0	0.35 C@	0.20
1,1,2-Trichloroethane	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Trichloroethene	ND	0.20	2.9 C@	2.0	3.0 C@	2.0	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	2.0	ND	2.0	ND	0.20
Vinyl chloride	ND	0.20	ND	2.0	ND	2.0	ND	0.20

ND Not detected at specified detection limit

I Result differs from last report - see report narrative

X See definition in report narrative

C Confirmed on second column or by GC/MS

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-06-256

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9006191515	9006191745	9006201410	9006201350
	SHS 4	SHS 1	SHS 5	SHS 6
Factor:	1	5	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	1.8	ND	9.0	ND	1.8	ND	1.8
Acenaphthylene	ND	2.3	ND	12	ND	2.3	ND	2.3
Anthracene	ND	0.66	ND	3.3	ND	0.66	ND	0.66
Benzo(a)anthracene	ND	0.013	0.60	0.065	ND	0.013	ND	0.013
Benzo(a)pyrene	ND	0.023	0.14 @	0.12	ND	0.023	ND	0.023
Benzo(b)fluoranthene	ND	0.018	0.44 @	0.090	ND	0.018	ND	0.018
Benzo(g,h,i)perylene	ND	0.076	0.52 @	0.38	ND	0.076	ND	0.076
Benzo(k)fluoranthene	ND	0.017	ND	0.085	ND	0.017	ND	0.017
Chrysene	ND	0.15	3.9	0.75	ND	0.15	ND	0.15
Dibenzo(a,h)anthracene	ND	0.030	ND	0.15	ND	0.030	ND	0.030
Fluoranthene	ND	0.21	ND	1.0	ND	0.21	ND	0.21
Fluorene	ND	0.21	5.2	1.0	ND	0.21	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.043	ND	0.22	ND	0.043	ND	0.043
Naphthalene	ND	1.8	ND	9.0	ND	1.8	ND	1.8
Phenanthrene	ND	0.64	11 @	3.2	ND	0.64	ND	0.64
Pyrene	ND	0.27	ND	1.4	ND	0.27	ND	0.27
Surrogate Recovery(%)								
Terphenyl-d14	99		82		96		74	
Control Limits: 24 to 146								

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

TABLE 4-2

RESULTS OF SAMPLING FOR AROMATIC VOLATILES

M&A Offsite Samples
Aromatic Volatiles (EPA 602)
Sampling Event 11/27/89 - 11/30/89;
01/02/90 - 01/10/90
Units: ug/L

	SMS-5	SMS-6	SMS-7	SMS-8
1,2-Dichlorobenzene	0.50 (0.40)	ND (0.40)	ND (40)	ND (2.0)
1,3-Dichlorobenzene	ND (0.40)	ND (0.40)	ND (40)	ND (2.0)
1,4-Dichlorobenzene	ND (0.30)	ND (0.30)	ND (30)	ND (1.5)
Benzene: (10.0)	ND (0.20)	ND (0.20)	* 190 (20)	* 14 (1.0)
Chlorobenzene	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Ethylbenzene	ND (0.20)	ND (0.20)	ND (20)	85 (1.0)
Toluene	ND (0.20)	ND (0.20)	290 (20)	ND (1.0)
Total Xylenes (620.0)	ND (0.20)	ND (0.20)	* 680 (20)	230 (1.0)
	ND	ND	1,160	329

() = Detection Limit
ND = Not Detected at Detection Limit

* above WACC stds.

TABLE 4-3

RESULTS OF SAMPLING FOR HALOGENATED VOLATILES

M&A Offsite Samples
 Halogenated Volatiles (EPA 601)
 Sampling Event: 11/27/89 - 11/30/89;
 01/02/90 - 01/10/90
 Units ug/L

*Station limits very high
 why?*

	SHS-5	SHS-6	SHS-7	SHS-8
1,1,1-Trichloroethane	0.88 (0.20)	ND (0.20)	ND (20)	6.2 (1.0)
1,1,2,2-Tetrachloroethane	ND (0.15)	ND (0.15)	ND (15)	ND (0.75)
1,1,2-Trichloroethane	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
1,1-Dichloroethane	ND (0.50)	ND (0.50)	ND (50)	ND (2.5)
1,1-Dichlorobenzene	ND (0.20)	0.93 (0.20)	ND (20)	ND (1.0)
1,2-Dichlorobenzene	0.86 (0.50)	ND (0.50)	ND (50)	ND (2.5)
1,2-Dichloroethane	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
1,2-Dichloropropane	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
1,3-Dichlorobenzene	ND (0.32)	ND (0.32)	ND (32)	ND (1.6)
1,4-Dichlorobenzene	ND (0.24)	ND (0.24)	ND (24)	ND (1.2)
2-Chloroethylvinyl Ether	ND (0.50)	ND (0.50)	ND (50)	ND (2.5)
Bromodichloromethane	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
Bromoform	ND (0.50)	ND (0.50)	ND (50)	ND (2.5)
Bromomethane	ND (1.2)	ND (1.2)	ND (120)	ND (5.9)
Carbon Tetrachloride	ND (0.12)	ND (0.12)	ND (12)	ND (0.60)
Chlorobenzene	ND (0.25)	ND (0.25)	ND (25)	ND (1.3)
Chloroethane	ND (0.52)	ND (0.52)	ND (52)	ND (2.6)
Chloroform	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
Chloromethane	ND (0.30)	ND (0.30)	ND (30)	ND (1.5)
cis-1,3-Dichloropropene	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Dibromochloromethane	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Methylene Chloride	0.72 (0.40)	ND (0.40)	ND (40)	2.6 (2.0)
Tetrachloroethene	1.3 (0.10)	0.45 (0.10)	ND (10)	ND (0.50)
trans-1,2-Dichloroethene	12 (0.20)	ND (0.20)	ND (20)	24 (1.0)
trans-1,3-Dichloropropene	ND (0.34)	ND (0.34)	ND (34)	ND (1.7)
Trichloroethene	1.8 (0.20)	ND (0.20)	ND (20)	4.7 (1.0)
Trichlorofluoromethane	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Vinyl Chloride	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)

() = Detection Limit
 ND = Not Detected at Detection Limit





2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9006201350
SITE: SHS-6
LAB NO: F4498

DATE REPORTED: 06/27/90
DATE RECEIVED: 06/20/90
DATE COLLECTED: 06/20/90

Lab pH (s.u.).....	7.84
Lab conductivity, umhos/cm.....	3306
Lab resistivity, ohm-m.....	3.0248
Total dissolved solids (180), mg/l..	2572
Total dissolved solids (calc), mg/l.	2480
Total alkalinity as CaCO ₃ , mg/l.....	276.95
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1124.48
Sodium absorption ratio.....	4.42

	mg/l	meq/l
Bicarbonate as HCO ₃	337.9	5.54
Carbonate as CO ₃	0.0	0.00
Chloride.....	126.9	3.58
Sulfate.....	1408.2	29.34
Calcium.....	397.6	19.84
Magnesium.....	32.2	2.65
Potassium.....	8.0	0.20
Sodium.....	340.8	14.82
Major cations.....		37.52
Major anions.....		38.46
Cation/anion difference.....		1.23 %

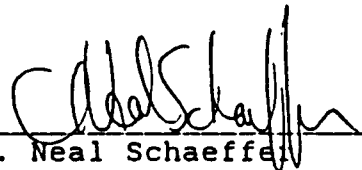

C. Neal Schaeffer
Lab Director

TABLE 4-5

RESULTS OF SAMPLING FOR MAJOR IONS AND TDS

M2A Offsite Samples
General Water Chemistry
Sampling Event 11/27/89 - 11/30/89;
01/02/90 - 01/10/90

L98CC
3765

	SHS-5	SHS-6	SHS-7	SHS-8
Bicarbonate as HCO ₃	517.88	326.24	1295.84	757.42
Calcium	408.47	467.42	332.67	536.90
Carbonate as CO ₃	0.00	0.00	0.00	0.00
Cation/Anion Difference	0.20	0.07	1.15	0.21
Chloride	* 395.35	172.60	619.33	* 751.31
Conductivity	3623	3398	4438	5416
umhos/cm @ 25C	8.14	14.35	46.45	50.01
Magnesium	41.83	40.84	49.04	62.40
Major Anions	41.67	40.90	50.18	62.14
Major Cations	NA	NA	NA	NA
Nitrate	7.51	6.97	7.37	7.45
pH	3.90	13.38	5.40	5.52
Potassium	2.7601	2.9429	2.2533	1.8464
Resistivity	471.60	369.00	681.00	714.80
Sodium	6.32	4.59	9.27	7.91
Sodium Absorption Ratio	1119.28	1469.88	495.45	1381.82
Sulfate	0.00	0.00	0.00	0.00
Total Acidity as CaCO ₃	426.49	267.41	1062.16	620.84
Total Alkalinity as CaCO ₃	2634	2634	2838	3910
Total Dissolved Solids (TDS)	2621	2667	2818	3813
Total Dissolved Solids (calc)	1052.60	1225.23	1021.02	1545.22
Total Hardness as CaCO ₃				

MA = Not Analyzed



Geo Science

Radian Work Order: S0-01-085

Method/Analyte	Sample Identifications					
	7 9001091521		V 9001091421		g 9001101430	
Matrix	01 water		02 water		03 water	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic by SW7060						
Arsenic	ND	mg/L 0.0040	ND	mg/L 0.020	ND	mg/L 0.012
Mercury by SW7470						
Mercury	ND	mg/L 0.0002	ND	mg/L 0.0002	ND	mg/L 0.0002
Lead by SW7421						
Lead	0.028	mg/L 0.0030	0.058	mg/L 0.0030	0.039	mg/L 0.0030
Selenium by SW7740						
Selenium	ND	mg/L 0.0050	ND	mg/L 0.0050	ND	mg/L 0.0050
Thallium by SW7841						
Thallium	ND	mg/L 0.0050	ND	mg/L 0.0050	ND	mg/L 0.0050

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

Geo Science

Radian Work Order: S0-01-085

Method: Metals by SW6010 (1)

List: Priority pollutants list

Sample ID:	7 9001091521	6 9001091421	8 9001101430	5 9001101647
------------	-----------------	-----------------	-----------------	-----------------

Factor:	1.00	1.00	1.00	1.00
---------	------	------	------	------

Results in:	mg/L	mg/L	mg/L	mg/L
-------------	------	------	------	------

	01A	02A	03A	04A
--	-----	-----	-----	-----

Matrix:	water	water	water	water
---------	-------	-------	-------	-------

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Antimony	0.045 *	0.034	0.067 *	0.034	0.059 *	0.034	0.045 *	0.034
Beryllium	0.003 *	0.0010	0.016	0.0010	0.007	0.0010	ND	0.0010
Cadmium	ND	0.0040	0.005 *	0.0040	ND	0.0040	ND	0.0040
Chromium	0.024 *	0.0070	0.20	0.0070	0.042	0.0070	0.009 *	0.0070
Copper	0.075	0.0060	0.19	0.0060	0.12	0.0060	0.036	0.0060
Nickel	0.16	0.015	0.24	0.015	0.26	0.015	0.13	0.015
Silver	ND	0.0070	ND	0.0070	ND	0.0070	ND	0.0070
Zinc	0.12	0.0020	0.75	0.0020	0.24	0.0020	0.20	0.0020

* Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

TABLE 4-4

RESULTS OF SAMPLING FOR METALS

HLA Offsite Samples
Metals
Sampling Event 11/27/89 - 11/30/89;
01/02/90 - 01/10/90
Units mg/L

	SHS-5	SHS-6	SHS-7	SHS-8
<i>Wedge site</i> Antimony	0.043 (0.034)	0.067 (0.034)	0.045 (0.034)	0.059 (0.034)
Beryllium	ND (0.0010)	0.016 (0.0010)	0.003 (0.0010)	0.007 (0.0010)
Cadmium (0.01)	ND (0.0040)	0.005 (0.0040)	ND (0.0040)	ND (0.0040)
Chromium (0.05)	0.009 (0.0070)	0.20 (0.0070)	0.024 (0.0070)	0.042 (0.0070)
Copper (1.0)	0.036 (0.0060)	0.19 (0.0060)	0.075 (0.0060)	0.12 (0.0060)
Nickel (0.2)	0.13 (0.015)	* 0.26 (0.015)	0.16 (0.015)	* 0.26 (0.0150)
Silver	ND (0.0070)	ND (0.0070)	ND (0.0070)	ND (0.0070)
Zinc (10.0)	0.20 (0.0020)	0.75 (0.0020)	0.12 (0.0020)	0.24 (0.0020)
Arsenic	ND (0.0040)	ND (0.0020)	ND (0.0040)	ND (0.012)
Mercury	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)
Lead (0.05)	0.006 (0.0030)	* 0.058 (0.0030)	0.024 (0.0030)	0.039 (0.0030)
Selenium	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Thallium	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Barium	NA	NA	NA	NA

() = Detection Limit
ND = Not Detected at Detection Limit

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-7

<u>SAMPLER</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>11/27/89</u>	<u>6/21/90</u>
<u>PARAMETER</u>		
DETECTION LIMIT	(BELOW)	<1.0
BENZENE	190.0	80.0
BROMODICHLOROMETHANE	ND(10.0)	2.5
BROMOFORM	ND(50.0)	ND
BROMOMETHANE	ND(120.0)	ND
CARBON TETRACHLORIDE	ND(12.0)	ND
CHLOROBENZENE	ND(20.0)	ND
CHLOROETHANE	ND(52.0)	4.0
CHLOROFORM	ND(10.0)	ND
CHLOROMETHANE	ND(30.0)	ND
DIBROMOCHLOROMETHANE	ND(20.0)	ND
1,2-DICHLOROBENZENE	ND(40.0)	ND
1,3-DICHLOROBENZENE	ND(40.0)	ND
1,4-DICHLOROBENZENE	ND(30.0)	ND
1,1-DICHLOROETHANE	ND(50.0)	2.2
1,2-DICHLOROETHANE	ND(10.0)	5.2
1,1-DICHLOROETHENE	ND(20.0)	ND
CIS-1,2-DICHLOROETHENE	NA	1.3
TRANS-1,2-DICHLOROETHENE	ND(20.0)	ND
1,2-DICHLOROPROPANE	ND(10.0)	ND
ETHYLBENZENE	ND(20.0)	140.0
METHYLENE CHLORIDE	ND(40.0)	ND
1,1,2,2-TETRACHLOROETHANE	ND(15.0)	ND
TETRACHLOROETHENE	ND(10.0)	ND
TOLUENE	290.0	1.1
1,1,1-TRICHLOROETHANE	ND(20.0)	ND
1,1,2-TRICHLOROETHANE	ND(20.0)	ND
TRICHLOROETHENE	ND(20.0)	0.28
TRICHLOROFLUOROMETHANE	ND(20.0)	ND
VINYL CHLORIDE	ND(20.0)	ND
TOTAL XYLENES	680.0	27.0

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

Geoscience Consultants, Ltd.

Radian Work Order: S0-06-154

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:	9006211545	9006211730	9006211130	REAGENT BLANK
Factor:	1	5000	2000	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	05A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	80 C	0.20	ND	1000	2400 C	400	ND	0.20
Chlorobenzene	4.0 C	0.20	ND	1000	1800 G@	400	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	2000	ND	800	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	2000	ND	800	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	1500	ND	600	ND	0.30
Ethylbenzene	140 C	0.20	ND	1000	13000 C	400	ND	0.20
Toluene	1.1 G	0.20	ND	1000	1100 G@	400	ND	0.20
Xylenes (total)	27 C	0.20	3600 G@	1000	79000 G	400	ND	0.20
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	95		105		72		110	
Control Limits: 40 to 140								

C Confirmed on second column or by GC/MS

G Indicates an estimated GC value due to interferences.

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-154

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	7 9006211545	8 9006211730	9 9006211130	REAGENT BLANK
Factor:	1	5000	2000	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	<u>2.5 X</u>	0.10	ND	500	ND	200	ND	0.10
Bromoform	ND	0.50	ND	2500	ND	1000	ND	0.50
Bromomethane	ND	1.2	ND	5900	ND	2400	ND	1.2
Carbon tetrachloride	ND	0.12	ND	600	ND	240	ND	0.12
Chlorobenzene	ND	0.25	ND	1300	ND	500	ND	0.25
Chloroethane	ND	0.52	ND	2600	ND	1000	ND	0.52
2-Chloroethylvinyl ether	ND	0.50	ND	2500	ND	1000	ND	0.50
Chloroform	ND	0.10	ND	500	ND	200	ND	0.10
Chloromethane	ND	0.30	ND	1500	ND	600	ND	0.30
Dibromochloromethane	ND	0.20	ND	1000	ND	400	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	2500	ND	1000	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	1600	ND	640	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	1200	ND	480	ND	0.24
1,1-Dichloroethane	<u>2.2 ca</u>	0.50	ND	2500	ND	1000	ND	0.50
1,2-Dichloroethane	<u>5.2 C</u>	0.10	ND	500	ND	200	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	1000	ND	400	ND	0.20
cis-1,2-Dichloroethene	<u>1.3 GI</u>	0.20	ND	1000	ND	400	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	1000	ND	400	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	500	ND	200	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	1000	ND	400	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	1700	ND	680	ND	0.34
Methylene chloride	ND	0.40	ND	2000	ND	800	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	750	ND	300	ND	0.15
Tetrachloroethene	ND	0.10	ND	500	ND	200	ND	0.10
1,1,1-Trichloroethane	ND	0.20	ND	1000	ND	400	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	1000	ND	400	ND	0.20
Trichloroethene	<u>0.28 ca</u>	0.20	<u>3200 Xa</u>	1000	ND	400	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	1000	ND	400	ND	0.20
Vinyl chloride	ND	0.20	ND	1000	ND	400	ND	0.20

X See definition in report narrative

C Confirmed on second column or by GC/MS

G Indicates an estimated GC value due to interferences.

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

I Result differs from last report - see report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-06-292

543

545

8

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:

9006211545

9006211730

REAGENT BLANK

Factor:

5

100

1

Results in:

ug/L

ug/L

ug/L

01A

02A

04A

Matrix:

water

water

water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	19 @	9.0	ND	180	ND	1.8
Acenaphthylene	ND	12	ND	230	ND	2.3
Anthracene	ND	3.3	ND	66	ND	0.66
Benzo(a)anthracene	ND	0.065	8.4	1.3	ND	0.013
Benzo(a)pyrene	ND	0.12	2.8 @	2.3	ND	0.023
Benzo(b)fluoranthene	ND	0.090	7.4 @	1.8	ND	0.018
Benzo(g,h,i)perylene	ND	0.38	10.9 @	7.6	ND	0.076
Benzo(k)fluoranthene	ND	0.085	ND	1.7	ND	0.017
Chrysene	ND	0.75	65 @	15	ND	0.15
Dibenzo(a,h)anthracene	ND	0.15	9.4 @	3.0	ND	0.030
Fluoranthene	ND	1.0	107 @	42	ND	0.21
Fluorene	3.6 @	1.0	91 @	21	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.22	ND	4.3	ND	0.043
Naphthalene	20 @	9.0	320 @	180	ND	1.8
Phenanthrene	ND	3.2	510	64	ND	0.64
Pyrene	ND	1.4	31 @	27	ND	0.27
Surrogate Recovery(%)						
Terphenyl-d14	104		NC		108	
Control Limits: 24	to 146					

@ Est. result less than 5 times detection limit

ND Not detected at specified detection limit

NC Not calculated

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

TABLE 4-2
RESULTS OF SAMPLING FOR AROMATIC VOLATILES

M&A Offsite Samples
Aromatic Volatiles (EPA 602)
Sampling Event 11/27/89 - 11/30/89;
01/02/90 - 01/10/90
Units: ug/L

	SHS-5	SHS-6	SHS-7	SHS-8
	<i>WACC</i>			
	<i>stds</i>			
1,2-Dichlorobenzene	0.50 (0.40)	ND (0.40)	ND (40)	ND (2.0)
1,3-Dichlorobenzene	ND (0.40)	ND (0.40)	ND (40)	ND (2.0)
1,4-Dichlorobenzene	ND (0.30)	ND (0.30)	ND (30)	ND (1.5)
Benzene: (10.0)	ND (0.20)	ND (0.20)	* 190 (20)	* 14 (1.0)
Chlorobenzene	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Ethylbenzene	ND (0.20)	ND (0.20)	ND (20)	85 (1.0)
Toluene	ND (0.20)	ND (0.20)	290 (20)	ND (1.0)
Total Xylenes (620.0)	ND (0.20)	ND (0.20)	* 680 (20)	230 (1.0)
	<i>ND</i>	<i>ND</i>	<i>1,160</i>	<i>229</i>

() = Detection Limit
ND = Not Detected at Detection Limit

* above WACC stds.

TABLE 4-3

RESULTS OF SAMPLING FOR HALOGENATED VOLATILES

M&A Offsite Samples
 Halogenated Volatiles (EPA 601)
 Sampling Event: 11/27/89 - 11/30/89;
 01/02/90 - 01/10/90
 Units ug/L

*Detection limits very high
 why?*

	SHS-5	SHS-6	SHS-7	SHS-8
1,1,1-Trichloroethane	0.88 (0.20)	ND (0.20)	ND (20)	6.2 (1.0)
1,1,2,2-Tetrachloroethane	ND (0.15)	ND (0.15)	ND (15)	ND (0.75)
1,1,2-Trichloroethane	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
1,1-Dichloroethane	ND (0.50)	ND (0.50)	ND (50)	ND (2.5)
1,1-Dichloroethene	ND (0.20)	0.93 (0.20)	ND (20)	ND (1.0)
1,2-Dichloroethane	0.86 (0.50)	ND (0.50)	ND (50)	ND (2.5)
1,2-Dichloroethene	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
1,2-Dichloropropane	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
1,3-Dichlorobenzene	ND (0.32)	ND (0.32)	ND (32)	ND (1.6)
1,4-Dichlorobenzene	ND (0.24)	ND (0.24)	ND (24)	ND (1.2)
2-Chloroethylvinyl Ether	ND (0.50)	ND (0.50)	ND (50)	ND (2.5)
Bromodichloromethane	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
Bromoform	ND (0.50)	ND (0.50)	ND (50)	ND (2.5)
Bromomethane	ND (1.2)	ND (1.2)	ND (120)	ND (5.9)
Carbon Tetrachloride	ND (0.12)	ND (0.12)	ND (12)	ND (0.60)
Chlorobenzene	ND (0.25)	ND (0.25)	ND (25)	ND (1.3)
Chloroethane	ND (0.52)	ND (0.52)	ND (52)	ND (2.6)
Chloroform	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
Chloromethane	ND (0.30)	ND (0.30)	ND (30)	ND (1.5)
cis-1,3-Dichloropropene	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Dibromochloromethane	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Methylene Chloride	0.72 (0.40)	ND (0.40)	ND (40)	2.6 (2.0)
Tetrachloroethane	1.3 (0.10)	0.45 (0.10)	ND (10)	ND (0.50)
trans-1,2-Dichloroethene	12 (0.20)	ND (0.20)	ND (20)	24 (1.0)
trans-1,3-Dichloropropene	ND (0.34)	ND (0.34)	ND (34)	ND (1.7)
Trichloroethene	1.8 (0.20)	ND (0.20)	ND (20)	4.7 (1.0)
Trichlorofluoromethane	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Vinyl Chloride	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)

() = Detection Limit
 ND = Not Detected at Detection Limit





2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9006211545
SITE: SHS-7
LAB NO: F4511

DATE REPORTED: 06/28/90
DATE RECEIVED: 06/22/90
DATE COLLECTED: 06/21/90

Lab pH (s.u.).....	7.84
Lab conductivity, umhos/cm.....	4120
Lab resistivity, ohm-m.....	2.4272
Total dissolved solids (180), mg/l..	2280
Total dissolved solids (calc), mg/l.	2216
Total alkalinity as CaCO ₃ , mg/l.....	1069.60
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	632.52
Sodium absorption ratio.....	11.12

	mg/l	meq/l
Bicarbonate as HCO ₃	1304.9	21.39
Carbonate as CO ₃	0.0	0.00
Chloride.....	570.8	16.10
Sulfate.....	133.3	2.78
Calcium.....	180.7	9.02
Magnesium.....	44.2	3.63
Potassium.....	2.2	0.06
Sodium.....	642.8	27.96
Major cations.....		40.67
Major anions.....		40.27
Cation/anion difference.....		0.49 %

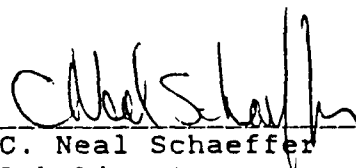

C. Neal Schaeffer
Lab Director

TABLE 4-5

RESULTS OF SAMPLING FOR MAJOR IONS AND TDS

M&A Offsite Samples
General Water Chemistry
Sampling Event 11/27/89 - 11/30/89;
01/02/90 - 01/10/90

WACC
3725

	SNS-5	SNS-6	SNS-7	SNS-8
Bicarbonate as HCO ₃	517.88	326.24	1295.84	757.42
Calcium	408.47	467.42	332.67	536.90
Carbonate as CO ₃	0.00	0.00	0.00	0.00
Cation/Anion Difference	0.20	0.07	1.15	0.21
(Chloride)	* 395.35	172.60	619.33	* 751.31
Conductivity	3623	3398	4438	5416
Hardness/cm @ 25C	8.14	14.35	46.45	50.01
Magnesium	41.83	40.84	49.04	62.40
Major Anions	41.67	40.90	50.18	62.14
Major Cations	NA	NA	NA	NA
Nitrate	7.51	6.97	7.37	7.45
pH	3.90	13.38	5.40	5.52
Potassium	2.7601	2.9429	2.2533	1.8464
Resistivity	471.60	369.00	681.00	714.80
Sodium	6.32	4.59	9.27	7.91
Sodium Absorption Ratio	1119.28	1469.88	495.45	1381.82
Sulfate	0.00	0.00	0.00	0.00
Total Acidity as CaCO ₃	426.49	267.41	1062.16	620.84
Total Alkalinity as CaCO ₃	2634	2634	2838	3910
Total Dissolved Solids (TDS)	2621	2667	2818	3813
Total Dissolved Solids (calc)	1052.60	1225.23	1021.02	1545.22
Total Hardness as CaCO ₃				

NA = Not Analyzed



Geo Science

Radian Work Order: S0-01-085

Method/Analyte	Sample Identifications					
	7 9001091521		6 9001091421		8 9001101430	
Matrix	01 water		02 water		03 water	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic by SW7060						
Arsenic	ND	mg/L 0.0040	ND	mg/L 0.020	ND	mg/L 0.012
Mercury by SW7470						
Mercury	ND	mg/L 0.0002	ND	mg/L 0.0002	ND	mg/L 0.0002
Lead by SW7421						
Lead	0.028	mg/L 0.0030	0.058	mg/L 0.0030	0.039	mg/L 0.0030
Selenium by SW7740						
Selenium	ND	mg/L 0.0050	ND	mg/L 0.0050	ND	mg/L 0.0050
Thallium by SW7841						
Thallium	ND	mg/L 0.0050	ND	mg/L 0.0050	ND	mg/L 0.0050

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

Geo Science

Radian Work Order: S0-01-085

Method: Metals by SW6010 (1)

List: Priority pollutants list

Sample ID:	7 9001091521	10 9001091421	8 9001101430	5 9001101647
Factor:	1.00	1.00	1.00	1.00
Results in:	mg/L	mg/L	mg/L	mg/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Antimony	0.045 *	0.034	0.067 *	0.034	0.059 *	0.034	0.045 *	0.034
Beryllium	0.003 *	0.0010	0.016	0.0010	0.007	0.0010	ND	0.0010
Cadmium	ND	0.0040	0.005 *	0.0040	ND	0.0040	ND	0.0040
Chromium	0.024 *	0.0070	0.20	0.0070	0.042	0.0070	0.009 *	0.0070
Copper	0.075	0.0060	0.19	0.0060	0.12	0.0060	0.036	0.0060
Nickel	0.16	0.015	0.24	0.015	0.26	0.015	0.13	0.015
Silver	ND	0.0070	ND	0.0070	ND	0.0070	ND	0.0070
Zinc	0.12	0.0020	0.75	0.0020	0.24	0.0020	0.20	0.0020

* Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

TABLE 4-4

RESULTS OF SAMPLING FOR METALS

MEA Offsite Samples

Metals

Sampling Event 11/27/89 - 11/30/89;

01/02/90 - 01/10/90

Units mg/L

	SHS-5	SHS-6	SHS-7	SHS-8
Antimony	0.049 (0.034)	0.067 (0.034)	0.045 (0.034)	0.059 (0.034)
Beryllium	ND (0.0010)	0.016 (0.0010)	0.003 (0.0010)	0.007 (0.0010)
Cadmium	ND (0.0040)	0.005 (0.0040)	ND (0.0040)	ND (0.0040)
Chromium (0.05)	0.809 (0.0070)	0.20 (0.0070)	0.024 (0.0070)	0.042 (0.0070)
Copper (1.0)	0.036 (0.0060)	0.19 (0.0060)	0.075 (0.0060)	0.12 (0.0060)
Mercury (0.2)	0.13 (0.015)	* 0.24 (0.015)	0.16 (0.015)	* 0.26 (0.0150)
Silver	ND (0.0070)	ND (0.0070)	ND (0.0070)	ND (0.0070)
Zinc (10.0)	0.20 (0.0020)	0.75 (0.0020)	0.12 (0.0020)	0.24 (0.0020)
Arsenic	ND (0.0040)	ND (0.0020)	ND (0.0040)	ND (0.012)
Mercury	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)
Lead (0.05)	0.006 (0.0030)	* 0.050 (0.0030)	0.024 (0.0030)	0.039 (0.0030)
Selenium	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Thallium	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Barium	NA	NA	NA	NA

() = Detection Limit

ND = Not Detected at Detection Limit

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-8

<u>SAMPLER</u>	GIANT	GIANT
<u>DATE</u>	<u>11/27/89</u>	<u>6/21/90</u>
<u>PARAMETER</u>		
DETECTION LIMIT	(BELOW)	(BELOW)
BENZENE	14.0	ND(1000)
BROMODICHLOROMETHANE	ND(0.5)	ND(500.0)
BROMOFORM	ND(2.5)	ND(2500)
BROMOMETHANE	ND(5.9)	ND(5900)
CARBON TETRACHLORIDE	ND(0.6)	ND(600.0)
CHLOROBENZENE	ND(1.0)	ND(1000)
CHLOROETHANE	ND(2.6)	ND(2600)
CHLOROFORM	ND(0.5)	ND(500.0)
CHLOROMETHANE	ND(1.5)	ND(1500)
DIBROMOCHLOROMETHANE	ND(1.0)	ND(1000)
1,2-DICHLOROBENZENE	ND(2.0)	ND(2000)
1,3-DICHLOROBENZENE	ND(2.0)	ND(2000)
1,4-DICHLOROBENZENE	ND(1.5)	ND(1500)
1,1-DICHLOROETHANE	ND(2.5)	ND(2500)
1,2-DICHLOROETHANE	ND(0.5)	ND(500.0)
1,1-DICHLOROETHENE	ND(1.0)	ND(1000)
CIS-1,2-DICHLOROETHENE	NA	ND(1000)
TRANS-1,2-DICHLOROETHENE	24.0	ND(1000)
1,2-DICHLOROPROPANE	ND(0.5)	ND(500.0)
ETHYLBENZENE	85.0	ND(1000)
METHYLENE CHLORIDE	2.6	ND(2000)
1,1,2,2-TETRACHLOROETHANE	ND(0.75)	ND(750.0)
TETRACHLOROETHENE	ND(0.5)	ND(500.0)
TOLUENE	ND(1.0)	ND(1000)
1,1,1-TRICHLOROETHANE	6.2	ND(1000)
1,1,2-TRICHLOROETHANE	ND(1.0)	ND(1000)
TRICHLOROETHENE	4.7	3,200
TRICHLOROFLUOROMETHANE	ND(1.0)	ND(1000)
VINYL CHLORIDE	ND(1.0)	ND(1000)
TOTAL XYLENES	230.0	3,600

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
** - SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: SO-06-154

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:	9006211545	9006211730	9006211130	REAGENT BLANK
Factor:	1	5000	2000	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	05A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	80 C	0.20	ND	1000	2400 C	400	ND	0.20
Chlorobenzene	4.0 C	0.20	ND	1000	1800 G _a	400	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	2000	ND	800	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	2000	ND	800	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	1500	ND	600	ND	0.30
Ethylbenzene	140 C	0.20	ND	1000	13000 C	400	ND	0.20
Toluene	1.1 G	0.20	ND	1000	1100 G _a	400	ND	0.20
Xylenes (total)	27 C	0.20	3600 G _a	1000	79000 G	400	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	95		105		72		110	
Control Limits: 40 to 140								

C Confirmed on second column or by GC/MS

ND Not detected at specified detection limit

G Indicates an estimated GC value due to interferences.

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
Radian Work Order: SO-06-154

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006211545	9006211730	9006211130	REAGENT BLANK
Factor:	1	5000	2000	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	2.5 X	0.10	ND	500	ND	200	ND	0.10
Bromoform	ND	0.50	ND	2500	ND	1000	ND	0.50
Bromomethane	ND	1.2	ND	5900	ND	2400	ND	1.2
Carbon tetrachloride	ND	0.12	ND	600	ND	240	ND	0.12
Chlorobenzene	ND	0.25	ND	1300	ND	500	ND	0.25
Chloroethane	ND	0.52	ND	2600	ND	1000	ND	0.52
2-Chloroethylvinyl ether	ND	0.50	ND	2500	ND	1000	ND	0.50
Chloroform	ND	0.10	ND	500	ND	200	ND	0.10
Chloromethane	ND	0.30	ND	1500	ND	600	ND	0.30
Dibromochloromethane	ND	0.20	ND	1000	ND	400	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	2500	ND	1000	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	1600	ND	640	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	1200	ND	480	ND	0.24
1,1-Dichloroethane	2.2 ca	0.50	ND	2500	ND	1000	ND	0.50
1,2-Dichloroethane	5.2 C	0.10	ND	500	ND	200	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	1000	ND	400	ND	0.20
cis-1,2-Dichloroethene	1.3 GI	0.20	ND	1000	ND	400	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	1000	ND	400	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	500	ND	200	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	1000	ND	400	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	1700	ND	680	ND	0.34
Methylene chloride	ND	0.40	ND	2000	ND	800	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	750	ND	300	ND	0.15
Tetrachloroethene	ND	0.10	ND	500	ND	200	ND	0.10
1,1,1-Trichloroethane	ND	0.20	ND	1000	ND	400	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	1000	ND	400	ND	0.20
Trichloroethene	0.28 ca	0.20	3200 xa	1000	ND	400	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	1000	ND	400	ND	0.20
Vinyl chloride	ND	0.20	ND	1000	ND	400	ND	0.20

X See definition in report narrative

C Confirmed on second column or by GC/MS

G Indicates an estimated GC value due to interferences.

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

I Result differs from last report - see report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-06-292

 SAT
 7

SAT

 Method: SW8310 PAHs by HPLC (1)
 List: 8310 Method analytes

Sample ID:	9006211545	9006211730	REAGENT BLANK
Factor:	5	100	1
Results in:	ug/L	ug/L	ug/L
	01A	02A	04A
Matrix:	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	19 @	9.0	ND	180	ND	1.8
Acenaphthylene	ND	12	ND	230	ND	2.3
Anthracene	ND	3.3	ND	66	ND	0.66
Benzo(a)anthracene	ND	0.065	8.4	1.3	ND	0.013
Benzo(a)pyrene	ND	0.12	2.8 @	2.3	ND	0.023
Benzo(b)fluoranthene	ND	0.090	7.4 @	1.8	ND	0.018
Benzo(g,h,i)perylene	ND	0.38	10.9 @	7.6	ND	0.076
Benzo(k)fluoranthene	ND	0.085	ND	1.7	ND	0.017
Chrysene	ND	0.75	65 @	15	ND	0.15
Dibenzo(a,h)anthracene	ND	0.15	9.4 @	3.0	ND	0.030
Fluoranthene	ND	1.0	107 @	42	ND	0.21
Fluorene	3.6 @	1.0	91 @	21	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.22	ND	4.3	ND	0.043
Naphthalene	20 @	9.0	320 @	180	ND	1.8
Phenanthrene	ND	3.2	510	64	ND	0.64
Pyrene	ND	1.4	31 @	27	ND	0.27
Surrogate Recovery(%)						
Terphenyl-d14	104		NC		108	
Control Limits: 24 to 146						

 @ Est. result less than 5 times detection limit
 NC Not calculated

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

TABLE 4-2

RESULTS OF SAMPLING FOR AROMATIC VOLATILES

MSA Offsite Samples
Aromatic Volatiles (EPA 602)
Sampling Event 11/27/89 - 11/30/89;
01/02/90 - 01/10/90
Units: ug/L

	SHS-5	SHS-6	SHS-7	SHS-8
	<i>WACC</i>			<i>SHS-8</i>
	<i>stds</i>			
1,2-Dichlorobenzene	ND (0.40)	ND (0.40)	ND (40)	ND (2.0)
1,3-Dichlorobenzene	ND (0.40)	ND (0.40)	ND (40)	ND (2.0)
1,4-Dichlorobenzene	ND (0.30)	ND (0.30)	ND (30)	ND (1.5)
Benzene	ND (0.20)	ND (0.20)	* 190 (20)	* 14 (1.0)
Chlorobenzene	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Ethylbenzene	ND (0.20)	ND (0.20)	ND (20)	85 (1.0)
Toluene	ND (0.20)	ND (0.20)	290 (20)	ND (1.0)
Total Nylenes	ND (0.20)	ND (0.20)	* 680 (20)	230 (1.0)
	<i>ND</i>	<i>ND</i>	<i>1,160</i>	<i>329</i>

() = Detection Limit
ND = Not Detected at Detection Limit

* above WACC stds.

TABLE 4-3

RESULTS OF SAMPLING FOR HALOGENATED VOLATILES

MLA Offsite Samples
 Halogenated Volatiles (EPA 601)
 Sampling Event: 11/27/89 - 11/30/89;
 01/02/90 - 01/10/90
 Units ug/L

*Detection limits very high
 why?*

	SHS-5	SHS-6	SHS-7	SHS-8
1,1,1-Trichloroethane	0.88 (0.20)	ND (0.20)	ND (20)	6.2 (1.0)
1,1,2,2-Tetrachloroethane	ND (0.15)	ND (0.15)	ND (15)	ND (0.75)
1,1,2-Trichloroethane	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
1,1-Dichloroethane	ND (0.50)	ND (0.50)	ND (50)	ND (2.5)
1,1-Dichloroethane	ND (0.20)	0.93 (0.20)	ND (20)	ND (1.0)
1,2-Dichlorobenzene	0.86 (0.50)	ND (0.50)	ND (50)	ND (2.5)
1,2-Dichloroethane	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
1,2-Dichloropropane	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
1,3-Dichlorobenzene	ND (0.32)	ND (0.32)	ND (32)	ND (1.6)
1,4-Dichlorobenzene	ND (0.24)	ND (0.24)	ND (24)	ND (1.2)
2-Chloroethylvinyl Ether	ND (0.50)	ND (0.50)	ND (50)	ND (2.5)
Bromodichloromethane	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
Bromoform	ND (0.50)	ND (0.50)	ND (50)	ND (2.5)
Bromomethane	ND (1.2)	ND (1.2)	ND (120)	ND (5.9)
Carbon Tetrachloride	ND (0.12)	ND (0.12)	ND (12)	ND (0.60)
Chlorobenzene	ND (0.25)	ND (0.25)	ND (25)	ND (1.3)
Chloroethane	ND (0.52)	ND (0.52)	ND (52)	ND (2.6)
Chloroform	ND (0.10)	ND (0.10)	ND (10)	ND (0.50)
Chloromethane	ND (0.30)	ND (0.30)	ND (30)	ND (1.5)
cis-1,3-Dichloropropene	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Dibromochloromethane	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Methylene Chloride	0.72 (0.40)	ND (0.40)	ND (40)	2.6 (2.0)
Tetrachloroethane	1.3 (0.10)	0.45 (0.10)	ND (10)	ND (0.50)
trans-1,2-Dichloroethane	12 (0.20)	ND (0.20)	ND (20)	24 (1.0)
trans-1,3-Dichloropropene	ND (0.34)	ND (0.34)	ND (34)	ND (1.7)
Trichloroethane	1.8 (0.20)	ND (0.20)	ND (20)	4.7 (1.0)
Trichlorofluoromethane	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)
Vinyl Chloride	ND (0.20)	ND (0.20)	ND (20)	ND (1.0)

() = Detection Limit

ND = Not Detected at Detection Limit





2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9006211730
SITE: SHS-8
LAB NO: F4512

DATE REPORTED: 06/28/90
DATE RECEIVED: 06/22/90
DATE COLLECTED: 06/21/90

Lab pH (s.u.).....	7.68
Lab conductivity, umhos/cm.....	4590
Lab resistivity, ohm-m.....	2.1786
Total dissolved solids (180), mg/l..	2734
Total dissolved solids (calc), mg/l.	2720
Total alkalinity as CaCO ₃ , mg/l.....	735.35
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	883.52
Sodium absorption ratio.....	9.70

	mg/l	meq/l
Bicarbonate as HCO ₃	897.1	14.71
Carbonate as CO ₃	0.0	0.00
Chloride.....	614.9	17.35
Sulfate.....	653.5	13.61
Calcium.....	329.3	16.43
Magnesium.....	15.1	1.24
Potassium.....	3.6	0.09
Sodium.....	662.8	28.83
Major cations.....		46.59
Major anions.....		45.67
Cation/anion difference.....		1.00 %

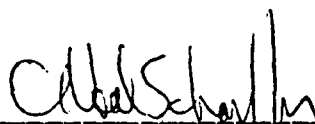

C. Neal Schaeffer
Lab Director

TABLE 4-5

RESULTS OF SAMPLING FOR MAJOR IONS AND TDS

MA Offsite Samples
General Water Chemistry
Sampling Event 11/27/89 - 11/30/89;
01/02/90 - 01/10/90

L/RCC
5/2/90

	SMS-5	SMS-6	SMS-7	SMS-8
Bicarbonate as HCO ₃	517.88	326.24	1295.84	757.42
Calcium	408.47	467.42	332.67	536.90
Carbonate as CO ₃	0.00	0.00	0.00	0.00
Cation/Anion Difference	0.20	0.07	1.15	0.21
Chloride	* 355.35	172.60	619.33	* 751.31
Conductivity	3623	3398	4438	5416
(25°C)				
Magnesium	8.14	14.35	46.45	50.01
Major Anions	41.83	40.84	49.04	62.40
Major Cations	41.67	40.90	50.18	62.14
Nitrate	NA	NA	NA	NA
pH	7.51	6.97	7.37	7.45
Potassium	3.90	13.38	5.40	5.52
Resistivity	2.7601	2.9429	2.2533	1.8464
Sodium	471.60	369.00	681.00	714.80
Sulfate	6.32	4.59	9.27	7.91
Sodium Absorption Ratio	1119.28	1469.88	495.45	1381.82
Total Acidity as CaCO ₃	0.00	0.00	0.00	0.00
Total Alkalinity as CaCO ₃	426.49	267.41	1062.16	620.84
Total Dissolved Solids (TDS)	2634	2634	2838	3910
Total Dissolved Solids (calc)	2621	2667	2818	3813
Total Hardness as CaCO ₃	1052.60	1225.23	1021.02	1545.22

NA = Not Analyzed



Geo Science

Radian Work Order: S0-01-085

Method/Analyte	Sample Identifications					
	7 9001091521		6 9001091421		8 9001101430	
Matrix	01 water		02 water		03 water	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic by SW7060						
Arsenic	ND	mg/L 0.0040	ND	mg/L 0.020	ND	mg/L 0.012
Mercury by SW7470						
Mercury	ND	mg/L 0.0002	ND	mg/L 0.0002	ND	mg/L 0.0002
Lead by SW7421						
Lead	0.028	mg/L 0.0030	0.058	mg/L 0.0030	0.039	mg/L 0.0030
Selenium by SW7740						
Selenium	ND	mg/L 0.0050	ND	mg/L 0.0050	ND	mg/L 0.0050
Thallium by SW7841						
Thallium	ND	mg/L 0.0050	ND	mg/L 0.0050	ND	mg/L 0.0050

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

Geo Science

Radian Work Order: S0-01-085

Method: Metals by SW6010 (1)

List: Priority pollutants list

Sample ID:	9001091521	9001091421	9001101430	9001101647
------------	------------	------------	------------	------------

Factor:	1.00	1.00	1.00	1.00
---------	------	------	------	------

Results in:	mg/L	mg/L	mg/L	mg/L
-------------	------	------	------	------

	01A	02A	03A	04A
--	-----	-----	-----	-----

Matrix:	water	water	water	water
---------	-------	-------	-------	-------

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Antimony	0.045 *	0.034	0.067 *	0.034	0.059 *	0.034	0.045 *	0.034
Beryllium	0.003 *	0.0010	0.016	0.0010	0.007	0.0010	ND	0.0010
Cadmium	ND	0.0040	0.005 *	0.0040	ND	0.0040	ND	0.0040
Chromium	0.024 *	0.0070	0.20	0.0070	0.042	0.0070	0.009 *	0.0070
Copper	0.075	0.0060	0.19	0.0060	0.12	0.0060	0.036	0.0060
Nickel	0.16	0.015	0.24	0.015	0.26	0.015	0.13	0.015
Silver	ND	0.0070	ND	0.0070	ND	0.0070	ND	0.0070
Zinc	0.12	0.0020	0.75	0.0020	0.24	0.0020	0.20	0.0020

* Est. result less than 5 times detection limit

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

TABLE 4-4

RESULTS OF SAMPLING FOR METALS

MLA Offsite Samples

Metals

Sampling Event 11/27/89 - 11/30/89;

01/02/90 - 01/10/90

Units mg/L

	SHS-5	SHS-6	SHS-7	SHS-8
Antimony	0.043 (0.034)	0.047 (0.034)	0.045 (0.034)	0.059 (0.034)
Beryllium	ND (0.0010)	0.016 (0.0010)	0.003 (0.0010)	0.007 (0.0010)
Cadmium	ND (0.0040)	0.003 (0.0040)	ND (0.0040)	ND (0.0040)
Chromium (0.05)	0.009 (0.0070)	0.20 (0.0070)	0.024 (0.0070)	0.042 (0.0070)
Copper (1.0)	0.036 (0.0060)	0.19 (0.0060)	0.075 (0.0060)	0.12 (0.0060)
Nickel (0.2)	0.13 (0.015)	0.24 (0.015)	0.16 (0.015)	0.26 (0.0150)
Silver	ND (0.0070)	ND (0.0070)	ND (0.0070)	ND (0.0070)
Zinc (10.0)	0.20 (0.0020)	0.75 (0.0020)	0.12 (0.0020)	0.24 (0.0020)
Arsenic	ND (0.0040)	ND (0.0020)	ND (0.0040)	ND (0.012)
Mercury	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)
Lead (0.05)	0.006 (0.0030)	0.008 (0.0030)	0.024 (0.0030)	0.039 (0.0030)
Selenium	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Thallium	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Barium	NA	NA	NA	NA

() = Detection Limit

ND = Not Detected at Detection Limit

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-9

SAMPLER

GIANT

DATE

6/21/90

PARAMETER

DETECTION LIMIT

(BELOW)

BENZENE	2,400
BROMODICHLOROMETHANE	ND(200.0)
BROMOFORM	ND(1000)
BROMOMETHANE	ND(2400)
CARBON TETRACHLORIDE	ND(240.0)
CHLOROBENZENE	1,800
CHLOROETHANE	ND(1000)
CHLOROFORM	ND(200.0)
CHLOROMETHANE	ND(600.0)
DIBROMOCHLOROMETHANE	ND(400.0)
1,2-DICHLOROBENZENE	ND(800.0)
1,3-DICHLOROBENZENE	ND(800.0)
1,4-DICHLOROBENZENE	ND(600.0)
1,1-DICHLOROETHANE	ND(1000)
1,2-DICHLOROETHANE	ND(200.0)
1,1-DICHLOROETHENE	ND(400.0)
CIS-1,2-DICHLOROETHENE	ND(400.0)
TRANS-1,2-DICHLOROETHENE	ND(400.0)
1,2-DICHLOROPROPANE	ND(200.0)
ETHYLBENZENE	13,000
METHYLENE CHLORIDE	ND(800.0)
1,1,2,2-TETRACHLOROETHANE	ND(300.0)
TETRACHLOROETHENE	ND(200.0)
TOLUENE	1,100
1,1,1-TRICHLOROETHANE	ND(400.0)
1,1,2-TRICHLOROETHANE	ND(400.0)
TRICHLOROETHENE	ND(400.0)
TRICHLOROFLUOROMETHANE	ND(400.0)
VINYL CHLORIDE	ND(400.0)
TOTAL XYLENES	79,000

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-154

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:	7 9006211545	8 9006211730	9 9006211130	REAGENT BLANK
Factor:	1	5000	2000	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	05A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	80 C	0.20	ND	1000	2400 C	400	ND	0.20
Chlorobenzene	4.0 C	0.20	ND	1000	1800 G@	400	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	2000	ND	800	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	2000	ND	800	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	1500	ND	600	ND	0.30
Ethylbenzene	140 C	0.20	ND	1000	13000 C	400	ND	0.20
Toluene	1.1 G	0.20	ND	1000	1100 G@	400	ND	0.20
Xylenes (total)	27 C	0.20	3600 G@	1000	79000 G	400	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	95		105		72		110	
Control Limits: 40 to 140								

C Confirmed on second column or by GC/MS

G Indicates an estimated GC value due to interferences.

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-154

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006211545	9006211730	9006211130	REAGENT BLANK
Factor:	1	5000	2000	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	2.5 X	0.10	ND	500	ND	200	ND	0.10
Bromoform	ND	0.50	ND	2500	ND	1000	ND	0.50
Bromomethane	ND	1.2	ND	5900	ND	2400	ND	1.2
Carbon tetrachloride	ND	0.12	ND	600	ND	240	ND	0.12
Chlorobenzene	ND	0.25	ND	1300	ND	500	ND	0.25
Chloroethane	ND	0.52	ND	2600	ND	1000	ND	0.52
2-Chloroethylvinyl ether	ND	0.50	ND	2500	ND	1000	ND	0.50
Chloroform	ND	0.10	ND	500	ND	200	ND	0.10
Chloromethane	ND	0.30	ND	1500	ND	600	ND	0.30
Dibromochloromethane	ND	0.20	ND	1000	ND	400	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	2500	ND	1000	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	1600	ND	640	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	1200	ND	480	ND	0.24
1,1-Dichloroethane	2.2 C@	0.50	ND	2500	ND	1000	ND	0.50
1,2-Dichloroethane	5.2 C	0.10	ND	500	ND	200	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	1000	ND	400	ND	0.20
cis-1,2-Dichloroethene	1.3 GI	0.20	ND	1000	ND	400	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	1000	ND	400	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	500	ND	200	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	1000	ND	400	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	1700	ND	680	ND	0.34
Methylene chloride	ND	0.40	ND	2000	ND	800	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	750	ND	300	ND	0.15
Tetrachloroethene	ND	0.10	ND	500	ND	200	ND	0.10
1,1,1-Trichloroethane	ND	0.20	ND	1000	ND	400	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	1000	ND	400	ND	0.20
Trichloroethene	0.28 C@	0.20	3200 X@	1000	ND	400	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	1000	ND	400	ND	0.20
Vinyl chloride	ND	0.20	ND	1000	ND	400	ND	0.20

X See definition in report narrative

C Confirmed on second column or by GC/MS

G Indicates an estimated GC value due to interferences.

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

I Result differs from last report - see report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-07-078

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9007061040 SH-	9007061205 SH-	REAGENT BLANK
	S-9	S-11	
Factor:	24	38	1
Results in:	ug/L	ug/L	ug/L
	01A	02A	03A
Matrix:	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	D	170	ND	D	340
Acenaphthylene	ND	D	220	ND	D	440
Anthracene	ND		16	ND		25
Benzo(a)anthracene	ND		0.31	ND		0.49
Benzo(a)pyrene	ND		0.55	ND		0.87
Benzo(b)fluoranthene	ND		0.43	ND		0.68
Benzo(g,h,i)perylene	ND		1.8	ND		2.9
Benzo(k)fluoranthene	ND		0.41	ND		0.65
Chrysene	ND		3.6	ND		5.7
Dibenzo(a,h)anthracene	ND		0.72	ND		1.1
Fluoranthene	23 @	5.0	22 @	8.0	ND	0.21
Fluorene	74 @	20	85 @	40	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	D	4.0	ND	D	8.2
Naphthalene	210 @	170	540 @	340	ND	1.8
Phenanthrene	190	15	230	24	ND	0.64
Pyrene	68	6.5	67	10	ND	0.27
Surrogate Recovery(%)						
Terphenyl-d14	173	Q	110		102	
Control Limits: 24 to 146						

 ND Not detected at specified detection limit
 @ Est. result less than 5 times detection limit

 D Sample dilution necessary for this analyte
 Q Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.





Inter-Mountain
Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9006211130
SITE: GBR-9
LAB NO: F4513

DATE REPORTED: 06/28/90
DATE RECEIVED: 06/22/90
DATE COLLECTED: 06/21/90

Lab pH (s.u.).....	7.83
Lab conductivity, umhos/cm.....	4266
Lab resistivity, ohm-m.....	2.3441
Total dissolved solids (180), mg/l..	2742
Total dissolved solids (calc), mg/l.	2746
Total alkalinity as CaCO ₃ , mg/l.....	764.00
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	993.96
Sodium absorption ratio.....	7.86

	mg/l	meq/l
Bicarbonate as HCO ₃	932.1	15.28
Carbonate as CO ₃	0.0	0.00
Chloride.....	430.2	12.14
Sulfate.....	899.5	18.74
Calcium.....	357.4	17.84
Magnesium.....	24.9	2.04
Potassium.....	5.8	0.15
Sodium.....	570.0	24.79
Major cations.....		44.82
Major anions.....		46.16
Cation/anion difference.....		1.47 %

C. Neal Schaeffer
Lab Director



Geoscience Consultants, Ltd.
 Radian Work Order: SO-06-154

 Method: Metals by SW6010 (1)
 List: Ep Toxicity list

Sample ID:

9006211130

REAGENT BLANK

Volume:

1.00

1.00

Results in:

mg/L

mg/L

06A

07A

Matrix:

water

water

Arsenic

Result Det. Limit

ND 0.053

Result Det. Limit

ND 0.053

Barium

0.080 0.0020

ND 0.0020

Cadmium

ND 0.0040

ND 0.0040

Chromium

0.016 a 0.0070

ND 0.0070

Lead

0.27 0.042

ND 0.042

Selenium

ND 0.075

ND 0.075

Silver

ND 0.0070

ND 0.0070

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
Radian Work Order: S0-06-154

Method/Analyte		Sample Identifications	
9006211130			
Matrix		06 water	
Mercury by SW7470	Result	Det. Limit	
Mercury	ND	mg/L 0.0002	
ND Not detected at specified detection limit			
(1) For a detailed description of flags and technical terms in this report refer to the glossary.			

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-10

SAMPLER

GIANT

DATE

6/23/90

PARAMETER

DETECTION LIMIT

(BELOW)

BENZENE	ND(2.0)
BROMODICHLOROMETHANE	ND(1.0)
BROMOFORM	ND(5.0)
BROMOMETHANE	ND(12.0)
CARBON TETRACHLORIDE	ND(1.2)
CHLOROBENZENE	3.0
CHLOROETHANE	ND(5.2)
CHLOROFORM	4.3
CHLOROMETHANE	ND(3.0)
DIBROMOCHLOROMETHANE	ND(2.0)
1,2-DICHLOROBENZENE	ND(4.0)
1,3-DICHLOROBENZENE	ND(4.0)
1,4-DICHLOROBENZENE	ND(3.0)
1,1-DICHLOROETHANE	ND(5.0)
1,2-DICHLOROETHANE	ND(1.0)
1,1-DICHLOROETHENE	ND(2.0)
CIS-1,2-DICHLOROETHENE	ND(2.0)
TRANS-1,2-DICHLOROETHENE	ND(2.0)
1,2-DICHLOROPROPANE	ND(1.0)
ETHYLBENZENE	69.0
METHYLENE CHLORIDE	ND(4.0)
1,1,2,2-TETRACHLOROETHANE	5.5
TETRACHLOROETHENE	ND(1.0)
TOLUENE	3.2
1,1,1-TRICHLOROETHANE	ND(2.0)
1,1,2-TRICHLOROETHANE	ND(2.0)
TRICHLOROETHENE	ND(2.0)
TRICHLOROFLUOROMETHANE	ND(2.0)
VINYL CHLORIDE	ND(2.0)
TOTAL XYLENES	150.0

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-165

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:

9006231400

9006231245

9006231430

REAGENT BLANK

Factor:

10

100

10

1

Results in:

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

Benzene

Result Det. Limit

ND 2.0

Result Det. Limit

800 C 20

Result Det. Limit

ND 2.0

Result Det. Limit

ND 0.20

Chlorobenzene

3.0 X@ 2.0

ND 20

ND 2.0

ND 0.20

1,2-Dichlorobenzene

ND 4.0

ND 40

ND 4.0

ND 0.40

1,3-Dichlorobenzene

ND 4.0

ND 40

ND 4.0

ND 0.40

1,4-Dichlorobenzene

ND 3.0

ND 30

ND 3.0

ND 0.30

Ethylbenzene

69 C 2.0

1100 C 20

ND 2.0

ND 0.20

Toluene

3.2 G@ 2.0

ND 20

ND 2.0

ND 0.20

Xylenes (total)

150 G 2.0

5100 C 20

ND 2.0

ND 0.20

Surrogate Recovery(%)

1-Bromo-4-fluorobenzene

90

102

100

110

Control Limits: 40 to 140

ND Not detected at specified detection limit

X See definition in report narrative

@ Est. result less than 5 times detection limit

C Confirmed on second column or by GC/MS

G Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-165

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006231400- 10	9006231245 11	9006231430 12	REAGENT BLANK
Factor:	10	100	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
Matrix:	01A water	02A water	03A water	04A water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	ND	10	ND	1.0	ND	0.10
Bromoform	ND	5.0	ND	50	ND	5.0	ND	0.50
Bromomethane	ND	12	ND	120	ND	12	ND	1.2
Carbon tetrachloride	ND	1.2	ND	12	ND	1.2	ND	0.12
Chlorobenzene	ND	2.5	ND	25	ND	2.5	ND	0.25
Chloroethane	ND	5.2	ND	52	ND	5.2	ND	0.52
2-Chloroethylvinyl ether	ND	5.0	ND	50	ND	5.0	ND	0.50
Chloroform	4.3 C@	1.0	ND	10	5.6 C	1.0	ND	0.10
Chloromethane	ND	3.0	ND	30	ND	3.0	ND	0.30
Dibromochloromethane	ND	2.0	ND	20	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	50	ND	5.0	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	32	ND	3.2	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	24	ND	2.4	ND	0.24
1,1-Dichloroethane	ND	5.0	ND	50	ND	5.0	ND	0.50
1,2-Dichloroethane	ND	1.0	ND	10	ND	1.0	ND	0.10
1,1-Dichloroethene	ND	2.0	ND	20	ND	2.0	ND	0.20
cis-1,2-Dichloroethene	ND	2.0	22 C1@	20	10 C	2.0	ND	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	20	ND	2.0	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	10	ND	1.0	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	20	ND	2.0	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	34	ND	3.4	ND	0.34
Methylene chloride	ND	4.0	ND	40	ND	4.0	ND	0.40
1,1,2,2-Tetrachloroethane	5.5 C1@	1.5	ND	15	ND	1.5	ND	0.15
Tetrachloroethene	ND I	1.0	ND	10	3.1 C1@	1.0	ND	0.10
1,1,1-Trichloroethane	ND	2.0	ND	20	ND	2.0	ND	0.20
1,1,2-Trichloroethane	ND	2.0	ND	20	ND	2.0	ND	0.20
Trichloroethene	ND	2.0	ND	20	2.0 C@	2.0	ND	0.20
Trichlorofluoromethane	ND	2.0	ND	20	ND	2.0	ND	0.20
Vinyl chloride	ND	2.0	ND	20	ND	2.0	ND	0.20

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

C Confirmed on second column or by GC/MS

I Result differs from last report - see report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Giant Refining Co.
 Radian Work Order: 90-06-333

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:

9006271300

REAGENT BLANK

SHS-10

Factor:

0.94

1

Results in:

ug/L

ug/L

01A

02A

Matrix:

water

water

	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND D	17	ND	1.8
Acenaphthylene	ND D	22	ND	2.3
Anthracene	ND	0.62	ND	0.66
Benzo(a)anthracene	ND	0.012	ND	0.013
Benzo(a)pyrene	ND	0.022	ND	0.023
Benzo(b)fluoranthene	ND	0.017	ND	0.018
Benzo(g,h,i)perylene	ND	0.071	ND	0.076
Benzo(k)fluoranthene	ND	0.016	ND	0.017
Chrysene	ND	0.14	ND	0.15
Dibenzo(a,h)anthracene	ND	0.028	ND	0.030
Fluoranthene	ND	0.20	ND	0.21
Fluorene	2.2 D*	2.0	ND	0.21
Indeno(1,2,3-cd)pyrene	ND D	0.40	ND	0.043
Naphthalene	ND D	17	ND	1.8
Phenanthrene	0.84 *	0.60	ND	0.64
Pyrene	ND	0.25	ND	0.27
Surrogate Recovery(%)				
Terphenyl-d14	70		89	
Control Limits: 24 to 146				

ND Not detected at specified detection limit

D Sample diluted for this analyte

* Est. result less than 5 times detection limit

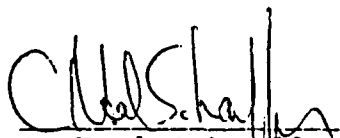
(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.



CLIENT: GBR
ID: 9006271300
SITE: SHS-10
LAB NO: F4524

DATE REPORTED: 07/03/90
DATE RECEIVED: 06/27/90
DATE COLLECTED: 06/27/90

Lab pH (s.u.).....	6.83	
Lab conductivity, umhos/cm.....	2923	
Lab resistivity, ohm-m.....	3.4211	
Total dissolved solids (180), mg/l..	2078*	
Total dissolved solids (calc), mg/l.	2033	
Total alkalinity as CaCO ₃ , mg/l.....	187.18	
Total acidity as CaCO ₃ , mg/l.....	0.00	
Total hardness as CaCO ₃ , mg/l.....	911.63	
Sodium absorption ratio.....	4.13	
	mg/l	meq/l
Bicarbonate as HCO ₃	228.4	3.74
Carbonate as CO ₃	0.0	0.00
Chloride.....	83.9	2.37
Sulfate.....	1197.5	24.95*
Calcium.....	297.2	14.83
Magnesium.....	41.4	3.40
Potassium.....	14.4	0.37
Sodium.....	286.8	12.47
Major cations.....		31.07
Major anions.....		31.06
Cation/anion difference.....		0.03 %


C. Neal Schaeffer
Lab Director



Giant Refining Company
 Radian Work Order: S0-06-186

Method/Analyte	Sample Identifications					
	9006271300/ SHS-10 (SPLY)		REAGENT BLANK		REAGENT BLANK	
Matrix	01 water		02 water		03 water	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Silver by SW6010						
Silver	ND	mg/L 0.0070	ND	mg/L 0.0070		
Aluminum by SW6010						
Aluminum	1.0	mg/L 0.045	ND	mg/L 0.045		
Arsenic by SW7060						
Arsenic	ND	mg/L 0.0040			ND	mg/L 0.0040
Barium by SW6010						
Barium	0.051	mg/L 0.0020	ND	mg/L 0.0020		
Boron by SW6010						
Boron	0.50	mg/L 0.0060	0.007 a	mg/L 0.0060		
Cobalt by SW6010						
Cobalt	ND	mg/L 0.0070	ND	mg/L 0.0070		
Chromium by SW6010						
Chromium	ND	mg/L 0.0070	ND	mg/L 0.0070		
Copper by SW6010						
Copper	ND	mg/L 0.0060	ND	mg/L 0.0060		
Iron by SW6010						
Iron	3.2	mg/L 0.0070	ND	mg/L 0.0070		
Manganese by SW6010						
Manganese	10	mg/L 0.0020	ND	mg/L 0.0020		
Molybdenum by SW6010						
Molybdenum	ND	mg/L 0.0080	ND	mg/L 0.0080		
Nickel by SW6010						
Nickel	ND	mg/L 0.015	ND	mg/L 0.015		
Lead by SW7421						
Lead	ND	mg/L 0.0030			ND	mg/L 0.0030
Selenium by SW7740						
Selenium	ND	mg/L 0.0050			ND	mg/L 0.0050
Zinc by SW6010						
Zinc	0.015	mg/L 0.0020	ND	mg/L 0.0020		

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-11

<u>SAMPLER</u>	<u>GIANT</u>
<u>DATE</u>	<u>6/23/90</u>
<u>PARAMETER</u>	
DETECTION LIMIT	(BELOW)
BENZENE	800.0
BROMODICHLOROMETHANE	ND(10.0)
BROMOFORM	ND(50.0)
BROMOMETHANE	ND(120.0)
CARBON TETRACHLORIDE	ND(12.0)
CHLOROBENZENE	ND(20.0)
CHLOROETHANE	ND(52.0)
CHLOROFORM	ND(10.0)
CHLOROMETHANE	ND(30.0)
DIBROMOCHLOROMETHANE	ND(20.0)
1,2-DICHLOROBENZENE	ND(40.0)
1,3-DICHLOROBENZENE	ND(40.0)
1,4-DICHLOROBENZENE	ND(30.0)
1,1-DICHLOROETHANE	ND(50.0)
1,2-DICHLOROETHANE	ND(10.0)
1,1-DICHLOROETHENE	ND(20.0)
CIS-1,2-DICHLOROETHENE	22.0
TRANS-1,2-DICHLOROETHENE	ND(20.0)
1,2-DICHLOROPROPANE	ND(10.0)
ETHYLBENZENE	1,100
METHYLENE CHLORIDE	ND(40.0)
1,1,2,2-TETRACHLOROETHANE	ND(15.0)
TETRACHLOROETHENE	ND(10.0)
TOLUENE	ND(20.0)
1,1,1-TRICHLOROETHANE	ND(20.0)
1,1,2-TRICHLOROETHANE	ND(20.0)
TRICHLOROETHENE	ND(20.0)
TRICHLOROFLUOROMETHANE	ND(20.0)
VINYL CHLORIDE	ND(20.0)
TOTAL XYLENES	5,100

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-165

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:	9006231400	9006231245	9006231430	REAGENT BLANK
Factor:	10	100	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	05A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	2.0	800 C	20	ND	2.0	ND	0.20
Chlorobenzene	3.0 X _a	2.0	ND	20	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	4.0	ND	40	ND	4.0	ND	0.40
1,3-Dichlorobenzene	ND	4.0	ND	40	ND	4.0	ND	0.40
1,4-Dichlorobenzene	ND	3.0	ND	30	ND	3.0	ND	0.30
Ethylbenzene	69 C	2.0	1100 C	20	ND	2.0	ND	0.20
Toluene	3.2 G _a	2.0	ND	20	ND	2.0	ND	0.20
Xylenes (total)	150 G	2.0	5100 C	20	ND	2.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	90		102		100		110	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

X See definition in report narrative

a Est. result less than 5 times detection limit

C Confirmed on second column or by GC/MS

G Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.

Radian Work Order: S0-06-165

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006231400	9006231245	9006231430	REAGENT BLANK
	10	100	12	
Factor:	10	100	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	ND	10	ND	1.0	ND	0.10
Bromoform	ND	5.0	ND	50	ND	5.0	ND	0.50
Bromomethane	ND	12	ND	120	ND	12	ND	1.2
Carbon tetrachloride	ND	1.2	ND	12	ND	1.2	ND	0.12
Chlorobenzene	ND	2.5	ND	25	ND	2.5	ND	0.25
Chloroethane	ND	5.2	ND	52	ND	5.2	ND	0.52
2-Chloroethylvinyl ether	ND	5.0	ND	50	ND	5.0	ND	0.50
Chloroform	4.3 C@	1.0	ND	10	5.6 C	1.0	ND	0.10
Chloromethane	ND	3.0	ND	30	ND	3.0	ND	0.30
Dibromochloromethane	ND	2.0	ND	20	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	50	ND	5.0	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	32	ND	3.2	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	24	ND	2.4	ND	0.24
1,1-Dichloroethane	ND	5.0	ND	50	ND	5.0	ND	0.50
1,2-Dichloroethane	ND	1.0	ND	10	ND	1.0	ND	0.10
1,1-Dichloroethene	ND	2.0	ND	20	ND	2.0	ND	0.20
cis-1,2-Dichloroethene	ND	2.0	22 C1@	20	10 C	2.0	ND	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	20	ND	2.0	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	10	ND	1.0	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	20	ND	2.0	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	34	ND	3.4	ND	0.34
Methylene chloride	ND	4.0	ND	40	ND	4.0	ND	0.40
1,1,2,2-Tetrachloroethane	5.5 C1@	1.5	ND	15	ND	1.5	ND	0.15
Tetrachloroethene	ND I	1.0	ND	10	3.1 C1@	1.0	ND	0.10
1,1,1-Trichloroethane	ND	2.0	ND	20	ND	2.0	ND	0.20
1,1,2-Trichloroethane	ND	2.0	ND	20	ND	2.0	ND	0.20
Trichloroethene	ND	2.0	ND	20	2.0 C@	2.0	ND	0.20
Trichlorofluoromethane	ND	2.0	ND	20	ND	2.0	ND	0.20
Vinyl chloride	ND	2.0	ND	20	ND	2.0	ND	0.20

ND Not detected at specified detection limit

C Confirmed on second column or by GC/MS

@ Est. result less than 5 times detection limit

I Result differs from last report - see report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-07-078

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9007061040 SH-	9007061205 SH-	REAGENT BLANK
	S-9	S-11	
Factor:	24	38	1
Results in:	ug/L	ug/L	ug/L
	01A	02A	03A
Matrix:	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	D	170	ND	D	340
Acenaphthylene	ND	D	220	ND	D	440
Anthracene	ND		16	ND		25
Benzo(a)anthracene	ND		0.31	ND		0.49
Benzo(a)pyrene	ND		0.55	ND		0.87
Benzo(b)fluoranthene	ND		0.43	ND		0.68
Benzo(g,h,i)perylene	ND		1.8	ND		2.9
Benzo(k)fluoranthene	ND		0.41	ND		0.65
Chrysene	ND		3.6	ND		5.7
Dibenzo(a,h)anthracene	ND		0.72	ND		1.1
Fluoranthene	23 @	5.0	22 @	8.0	ND	0.21
Fluorene	74 D@	20	85 D@	40	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	D	4.0	ND	D	8.2
Naphthalene	210 D@	170	540 D@	340	ND	1.8
Phenanthrene	190	15	230	24	ND	0.64
Pyrene	68	6.5	67	10	ND	0.27
Surrogate Recovery(%)						
Terphenyl-d14	173 @		110		102	
Control Limits: 24 to 146						

 ND Not detected at specified detection limit
 @ Est. result less than 5 times detection limit

 D Sample dilution necessary for this analyte
 @ Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

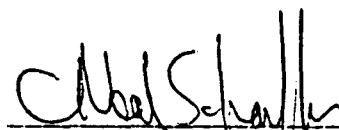


CLIENT: GCL
ID: 9006231245
SITE: SHS-11
LAB NO: F4515

DATE REPORTED: 07/03/90
DATE RECEIVED: 06/26/90
DATE COLLECTED: 06/23/90

11 Lab pH (s.u.).....	7.23
6 Lab conductivity, umhos/cm.....	5106
13 Lab resistivity, ohm-m.....	1.9585
19 Total dissolved solids (180), mg/l..	3298*
20 Total dissolved solids (calc), mg/l.	3300
18 Total alkalinity as CaCO ₃ , mg/l.....	802.20
17 Total acidity as CaCO ₃ , mg/l.....	0.00
21 Total hardness as CaCO ₃ , mg/l.....	1275.08
15 Sodium absorption ratio.....	7.90

	mg/l	meq/l
1 Bicarbonate as HCO ₃	978.7	16.04
3 Carbonate as CO ₃	0.0	0.00
5 Chloride.....	624.3	17.61*
10 Sulfate.....	1065.8	22.20*
2 Calcium.....	421.7	21.04
7 Magnesium.....	54.2	4.46
12 Potassium.....	4.1	0.11
14 Sodium.....	648.4	28.20
9 Major cations.....		53.81
8 Major anions.....		55.86
4 Cation/anion difference.....		1.87 %


C. Neal Schaeffer
Lab Director



Geoscience Consultants, Ltd.
 Radian Work Order: 50-06-165

 Method: Metals by EPA 200.7 (1)
 List: EP Toxicity analyte list

Sample ID:	9006231245	9006231430	REAGENT BLANK
Factor:	1.00	1.00	1.00
Results in:	mg/L	mg/L	mg/L
	06A	07A	08A
Matrix:	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	ND	0.053	ND	0.053	ND	0.053
Barium	0.083	0.0020	0.36	0.0020	ND	0.0020
Cadmium	ND	0.0040	ND	0.0040	ND	0.0040
Chromium	ND	0.0070	0.025 a	0.0070	ND	0.0070
Lead	0.046 a	0.042	ND	0.042	ND	0.042
Selenium	ND	0.075	ND	0.075	ND	0.075
Silver	ND	0.0070	ND	0.0070	ND	0.0070

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
Radian Work Order: SO-06-165

Method/Analyte		Sample Identifications	
9006231245			
Matrix	06 water		
Mercury by SW7470	Result	Det. Limit	
Mercury	ND	mg/L 0.0002	
ND Not detected at specified detection limit.			
(1) For a detailed description of flags and technical terms in this report refer to the glossary.			

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-12

SAMPLER

GIANT

DATE

6/23/88

PARAMETER

DETECTION LIMIT

(BELOW)

BENZENE	ND(2.0)
BROMODICHLOROMETHANE	ND(1.0)
BROMOFORM	ND(5.0)
BROMOMETHANE	ND(12.0)
CARBON TETRACHLORIDE	ND(1.2)
CHLOROBENZENE	ND(2.0)
CHLOROETHANE	ND(5.2)
CHLOROFORM	5.6
CHLOROMETHANE	ND(3.0)
DIBROMOCHLOROMETHANE	ND(2.0)
1,2-DICHLOROBENZENE	ND(4.0)
1,3-DICHLOROBENZENE	ND(4.0)
1,4-DICHLOROBENZENE	ND(3.0)
1,1-DICHLOROETHANE	ND(5.0)
1,2-DICHLOROETHANE	ND(1.0)
1,1-DICHLOROETHENE	ND(2.0)
CIS-1,2-DICHLOROETHENE	10.0
TRANS-1,2-DICHLOROETHENE	ND(2.0)
1,2-DICHLOROPROPANE	ND(1.0)
ETHYLBENZENE	ND(2.0)
METHYLENE CHLORIDE	ND(4.0)
1,1,2,2-TETRACHLOROETHANE	ND(1.5)
TETRACHLOROETHENE	3.1
TOLUENE	ND(2.0)
1,1,1-TRICHLOROETHANE	ND(2.0)
1,1,2-TRICHLOROETHANE	ND(2.0)
TRICHLOROETHENE	2.0
TRICHLOROFLUOROMETHANE	ND(2.0)
VINYL CHLORIDE	ND(2.0)
TOTAL XYLENES	ND(2.0)

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-165

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:

9006231400

9006231245

9006231430

REAGENT BLANK

Factor:

10

100

10

1

Results in:

ug/L

ug/L

ug/L

ug/L

01C

02C

03C

05A

Matrix:

water

water

water

water

Benzene

Result Det. Limit

ND 2.0

Result Det. Limit

800 C 20

Result Det. Limit

ND 2.0

Result Det. Limit

ND 0.20

Chlorobenzene

3.0 Xa 2.0

ND 20

ND 2.0

ND 0.20

1,2-Dichlorobenzene

ND 4.0

ND 40

ND 4.0

ND 0.40

1,3-Dichlorobenzene

ND 4.0

ND 40

ND 4.0

ND 0.40

1,4-Dichlorobenzene

ND 3.0

ND 30

ND 3.0

ND 0.30

Ethylbenzene

69 C 2.0

1100 C 20

ND 2.0

ND 0.20

Toluene

3.2 G 2.0

ND 20

ND 2.0

ND 0.20

Xylenes (total)

150 G 2.0

5100 C 20

ND 2.0

ND 0.20

Surrogate Recovery(%)

1-Bromo-4-fluorobenzene

90

102

100

110

Control Limits: 40 to 140

ND Not detected at specified detection limit

X See definition in report narrative

a Est. result less than 5 times detection limit

C Confirmed on second column or by GC/MS

G Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
Radian Work Order: SD-06-165

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006231400	9006231245	9006231430	REAGENT BLANK
Factor:	10	100	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	ND	10	ND	1.0	ND	0.10
Bromoform	ND	5.0	ND	50	ND	5.0	ND	0.50
Bromomethane	ND	12	ND	120	ND	12	ND	1.2
Carbon tetrachloride	ND	1.2	ND	12	ND	1.2	ND	0.12
Chlorobenzene	ND	2.5	ND	25	ND	2.5	ND	0.25
Chloroethane	ND	5.2	ND	52	ND	5.2	ND	0.52
2-Chloroethylvinyl ether	ND	5.0	ND	50	ND	5.0	ND	0.50
Chloroform	4.3 ca	1.0	ND	10	5.6 C	1.0	ND	0.10
Chloromethane	ND	3.0	ND	30	ND	3.0	ND	0.30
Dibromochloromethane	ND	2.0	ND	20	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	50	ND	5.0	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	32	ND	3.2	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	24	ND	2.4	ND	0.24
1,1-Dichloroethane	ND	5.0	ND	50	ND	5.0	ND	0.50
1,2-Dichloroethane	ND	1.0	ND	10	ND	1.0	ND	0.10
1,1-Dichloroethene	ND	2.0	ND	20	ND	2.0	ND	0.20
cis-1,2-Dichloroethene	ND	2.0	22 CIA	20	10 C	2.0	ND	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	20	ND	2.0	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	10	ND	1.0	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	20	ND	2.0	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	34	ND	3.4	ND	0.34
Methylene chloride	ND	4.0	ND	40	ND	4.0	ND	0.40
1,1,2,2-Tetrachloroethane	5.5 CIA	1.5	ND	15	ND	1.5	ND	0.15
Tetrachloroethene	ND I	1.0	ND	10	3.1 CIA	1.0	ND	0.10
1,1,1-Trichloroethane	ND	2.0	ND	20	ND	2.0	ND	0.20
1,1,2-Trichloroethane	ND	2.0	ND	20	ND	2.0	ND	0.20
Trichloroethene	ND	2.0	ND	20	2.0 ca	2.0	ND	0.20
Trichlorofluoromethane	ND	2.0	ND	20	ND	2.0	ND	0.20
Vinyl chloride	ND	2.0	ND	20	ND	2.0	ND	0.20

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

C Confirmed on second column or by GC/MS

I Result differs from last report - see report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-06-299

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID: 9006231430

SW-512

Factor: 1

Results in: ug/L

02A

Matrix: water

	Result	Det. Limit
Acenaphthene	ND	1.8
Acenaphthylene	ND	2.3
Anthracene	ND	0.66
Benzo(a)anthracene	ND	0.013
Benzo(a)pyrene	ND	0.023
Benzo(b)fluoranthene	ND	0.018
Benzo(g,h,i)perylene	ND	0.076
Benzo(k)fluoranthene	ND	0.017
Chrysene	ND	0.15
Dibenzo(a,h)anthracene	ND	0.030
Fluoranthene	ND	0.21
Fluorene	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.043
Naphthalene	ND	1.8
Phenanthrene	ND	0.64
Pyrene	ND	0.27

Surrogate Recovery(%)

Terphenyl-d14 54

Control Limits: 24 to 146

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.



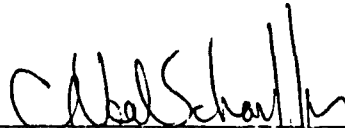
CLIENT: GCL
ID: 9006231430
SITE: SHS-12
LAB NO: F4516

DATE REPORTED: 07/03/90
DATE RECEIVED: 06/26/90
DATE COLLECTED: 06/23/90

// Lab pH (s.u.)..... 7.73
6 Lab conductivity, umhos/cm..... 3325
13 Lab resistivity, ohm-m..... 3.0075
14 Total dissolved solids (180), mg/l.. 2296*
20 Total dissolved solids (calc), mg/l. 2172
18 Total alkalinity as CaCO₃, mg/l..... 276.95
17 Total acidity as CaCO₃, mg/l..... 0.00
21 Total hardness as CaCO₃, mg/l..... 923.68
15 Sodium absorption ratio..... 5.62

	mg/l	meq/l
1 Bicarbonate as HCO ₃	337.9	5.54
3 Carbonate as CO ₃	0.0	0.00
5 Chloride.....	288.6	8.14 *
14 Sulfate.....	997.5	20.78 *
2 Calcium.....	249.0	12.42
7 Magnesium.....	73.6	6.05
12 Potassium.....	4.6	0.12
4 Sodium.....	392.4	17.07
9 Major cations.....		35.66
8 Major anions.....		34.46
4 Cation/anion difference.....		1.71 %

10-NL


C. Neal Schaeffer
Lab Director



Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-165

 Method: Metals by EPA 200.7 (1)
 List: EP Toxicity analyte list

Sample ID:	9006231245	9006231430	REAGENT BLANK
Factor:	1.00	1.00	1.00
Results in:	mg/L	mg/L	mg/L
	06A	07A	08A
Matrix:	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	ND	0.053	ND	0.053	ND	0.053
Barium	0.083	0.0020	0.36	0.0020	ND	0.0020
Cadmium	ND	0.0040	ND	0.0040	ND	0.0040
Chromium	ND	0.0070	0.025 a	0.0070	ND	0.0070
Lead	0.046 a	0.042	ND	0.042	ND	0.042
Selenium	ND	0.075	ND	0.075	ND	0.075
Silver	ND	0.0070	ND	0.0070	ND	0.0070

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
Radian Work Order: S0-06-185

Method/Analyte		Sample Identifications	
		9006231430	REAGENT BLANK
Matrix		07 water	08 water
rcury by SW7470 Mercury	Result	Det. Limit	Result
	ND	mg/L 0.0002	ND
ND Not detected at specified detection limit (1) For a detailed description of flags and technical terms in this report refer to the glossary.			

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-13

SAMPLER

GIANT

DATE

8/23/90

PARAMETER

DETECTION LIMIT

(BELOW)

BENZENE	ND(0.2)
BROMODICHLOROMETHANE	ND(0.1)
BROMOFORM	ND(0.5)
BROMOMETHANE	ND(1.2)
CARBON TETRACHLORIDE	ND(0.12)
CHLOROBENZENE	ND(0.2)
CHLOROETHANE	ND(0.52)
CHLOROFORM	ND(0.1)
CHLOROMETHANE	ND(0.3)
DIBROMOCHLOROMETHANE	ND(0.2)
1,2-DICHLOROBENZENE	ND(0.4)
1,3-DICHLOROBENZENE	ND(0.4)
1,4-DICHLOROBENZENE	ND(0.3)
1,1-DICHLOROETHANE	0.53
1,2-DICHLOROETHANE	11.0
1,1-DICHLOROETHENE	ND(0.2)
CIS-1,2-DICHLOROETHENE	NA
TRANS-1,2-DICHLOROETHENE	NA
TOTAL 1,2-DICHLOROETHENE	0.28
1,2-DICHLOROPROPANE	ND(0.1)
ETHYLBENZENE	ND(0.2)
METHYLENE CHLORIDE	ND(0.4)
1,1,1,2-TETRACHLOROETHANE	ND(5.0)
1,1,2,2-TETRACHLOROETHANE	ND(0.15)
TETRACHLOROETHENE	0.34
TOLUENE	0.79
1,1,1-TRICHLOROETHANE	ND(0.2)
1,1,2-TRICHLOROETHANE	ND(0.2)
TRICHLOROETHENE	0.26
TRICHLOROFLUOROMETHANE	ND(0.2)
VINYL CHLORIDE	ND(0.2)
TOTAL XYLENES	ND(0.2)

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

Geoscience Consultants, Ltd.

Radian Work Order: SO-08-222

Method: Aromatics by SW8020 (1)

List: Complete analyte list

	16	15	14	13
Sample ID:	9088221106 SH-	9008221400 SH-	9008221915 SH-	9008231030 SH-
	S-16	S-15	S-14	S-13
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	06A	07A	08A	09A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	11 C	2.0	ND	0.20
Chlorobenzene	ND	0.20	ND	0.20	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	0.40
1,4-Dichlorobenzene	ND	0.30	0.38 Xa	0.30	140 X	3.0	ND	0.30
Ethylbenzene	ND	0.20	0.24 Ca	0.20	77 C	2.0	ND	0.20
Toluene	ND	0.20	0.33 Ca	0.20	31 C	2.0	0.79 Ca	0.20
Xylenes (total)	ND	0.20	0.97 Ca	0.20	260 C	2.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	96		97		77		99	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

X See definition in report narrative

a Est. result less than 5 times detection limit

C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: SO-08-222

Method: Halocarbons by SW8010 (1)

List: 8010 list with tot. 1,2DCE

Sample ID:	9008221106 SH- S-16	9008221400 SH- S-15	9008221915 SH- S-14	9008231030 SH- S-13
Factor:	1	1	10	1
Results in:	ug/L 01A	ug/L 02A	ug/L 03A	ug/L 04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzyl chloride	ND	10	ND	10	ND	100	ND	10
Bromobenzene	ND	5.0	ND	5.0	ND	50	ND	5.0
Bromodichloromethane	ND	0.10	ND	0.10	ND	1.0	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	5.0	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	12	ND	1.2
Carbon tetrachloride	ND	0.12	ND	0.12	ND	1.2	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	2.5	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	5.2	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	5.0	ND	0.50
Chloroform	0.17 Y@	0.10	ND	0.10	ND	1.0	ND	0.10
1-Chlorohexane	ND	5.0	ND	5.0	ND	50	ND	5.0
bis-Chloroisopropylether	ND	10	ND	10	ND	100	ND	10
Chloromethane	ND	0.30	ND	0.30	ND	3.0	ND	0.30
Chlorotoluene (total)	ND	25	ND	25	ND	250	ND	25
Dibromochloromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Dibromomethane	ND	5.0	ND	5.0	ND	50	ND	5.0
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	5.0	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	3.2	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	2.4	ND	0.24
1,1-Dichloroethane	ND	0.50	ND	0.50	ND	5.0	0.53 X@	0.50
1,2-Dichloroethane	ND	0.10	ND	0.10	ND	1.0	11 C	0.10
1,2-Dichloroethene (total)	0.34 Y@	0.20	ND	0.20	ND	2.0	0.28 C@	0.20
1,1-Dichloroethene	ND	0.20	ND	0.20	2.0 X@	2.0	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	1.0	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	2.0	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	3.4	ND	0.34
Methylene chloride	ND	0.40	ND	0.40	ND	4.0	ND	0.40
1,1,1,2-Tetrachloroethane	ND	5.0	ND	5.0	ND	50	ND	5.0
1,1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	1.5	ND	0.15
Tetrachloroethene	ND	0.10	0.40 X@	0.10	4.6 X@	1.0	0.34 X@	0.10

ND Not detected at specified detection limit

Y See definition in report narrative

@ Est. result less than 5 times detection limit

X See definition in report narrative

C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: SO-08-222

 Method: Halocarbons by SW8010 (1)
 List: 8010 list with tot. 1,2DCE

Sample ID:	9008221106 SH- S-16	9008221400 SH- S-15	9008221915 SH- S-14	9008231030 SH- S-13
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1,1,1-Trichloroethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Trichloroethene	ND	0.20	ND	0.20	ND	2.0	0.26 Xa	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
1,2,3-Trichloropropane	ND	5.0	ND	5.0	ND	50	ND	5.0
Vinyl chloride	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	126		135		131		135	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

X See definition in report narrative

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-08-357

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	10 9008221106	15 9008221400	14 9008221915	13 9008231030
------------	------------------	------------------	------------------	------------------

Factor:	0.95	0.94	4.8	0.95
---------	------	------	-----	------

Results in:	ug/L	ug/L	ug/L	ug/L
-------------	------	------	------	------

	01A	02A	03A	04A
--	-----	-----	-----	-----

Matrix:	water	water	water	water
---------	-------	-------	-------	-------

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	1.7	ND	1.7	ND	8.6	ND	1.7
Acenaphthylene	ND	2.2	ND	2.2	ND	11	7.9 @	2.2
Anthracene	ND	0.63	ND	0.62	ND	3.2	ND	0.63
Benzo(a)anthracene	ND	0.012	ND	0.012	ND	0.062	ND	0.012
Benzo(a)pyrene	ND	0.022	ND	0.022	ND	0.11	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.017	ND	0.086	ND	0.017
Benzo(g,h,i)perylene	ND	0.072	ND	0.071	ND	0.36	ND	0.072
Benzo(k)fluoranthene	ND	0.016	ND	0.016	ND	0.082	ND	0.016
Chrysene	ND	0.14	ND	0.14	ND	0.72	ND	0.14
Dibenzo(a,h)anthracene	ND	0.028	ND	0.028	ND	0.14	ND	0.028
Fluoranthene	ND	0.20	ND	0.20	1.2 @	1.0	ND	0.20
Fluorene	0.77 @	0.20	0.23 @	0.20	3.6 @	1.0	0.56 @	0.20
Indeno(1,2,3-cd)pyrene	ND	0.041	ND	0.040	ND	0.21	ND	0.041
Naphthalene	ND	1.7	ND	1.7	48	8.6	12	1.7
Phenanthrene	ND	0.61	ND	0.60	8.0 @	3.1	2.8 @	0.61
Pyrene	ND	0.26	ND	0.25	1.8 @	1.3	ND	0.26

Surrogate Recovery(%)

Terphenyl-d14 83

88

74

84

Control Limits: 24 to 146

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.





Inter Mountain
Laboratories, Inc.

RECEIVED SEP 10 1990

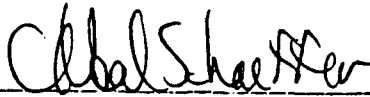
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9008231030
SITE: SHS-13
LAB NO: F4810

DATE REPORTED: 09/05/90
DATE RECEIVED: 08/23/90
DATE COLLECTED: 08/23/90

Lab pH (s.u.).....	7.82
Lab conductivity, umhos/cm.....	3090
Lab resistivity, ohm-m.....	3.2362
Total dissolved solids (180), mg/l..	1790
Total dissolved solids (calc), mg/l.	1773
Total alkalinity as CaCO ₃ , mg/l.....	439.30
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	582.32
Sodium absorption ratio.....	7.99

	mg/l	meq/l
Bicarbonate as HCO ₃	535.9	8.79
Carbonate as CO ₃	0.0	0.00
Chloride.....	402.9	11.37
Sulfate.....	455.1	9.48
Calcium.....	159.0	7.94
Magnesium.....	45.1	3.71
Potassium.....	4.3	0.11
Sodium.....	443.2	19.28
Major cations.....		31.03
Major anions.....		29.63
Cation/anion difference.....		2.31 %


C. Neal Schaeffer
Lab Director



RECEIVED SEP 10 1990

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9008221915
SITE: SHS-13 L/S
LAB NO: F4814

DATE REPORTED: 09/05/90
DATE RECEIVED: 08/23/90
DATE COLLECTED: 08/22/90

Lab pH (s.u.).....	7.94
Lab conductivity, umhos/cm.....	2556
Lab resistivity, ohm-m.....	3.9124
Total dissolved solids (180), mg/l..	2082
Total dissolved solids (calc), mg/l.	2046
Total alkalinity as CaCO ₃ , mg/l.....	305.60
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1255.00
Sodium absorption ratio.....	2.01

	mg/l	meq/l
Bicarbonate as HCO ₃	372.8	6.11
Carbonate as CO ₃	0.0	0.00
Chloride.....	46.2	1.30
Sulfate.....	1181.8	24.62
Calcium.....	413.6	20.64
Magnesium.....	54.2	4.46
Potassium.....	3.7	0.10
Sodium.....	163.5	7.11
Major cations.....		32.31
Major anions.....		32.04
Cation/anion difference.....		0.42 %


C. Neal Schaeffer
Lab Director



Geoscience Consultants, Ltd.
 Radian Work Order: SO-08-224

Method: Metals by SW6010 (1)

List: Ep Toxicity list

	14 9008221106 SH-	15 9008221400 SH-	14 9008221915 SH-	13 9008231030 SH-
Sample ID:	S-16	S-15	S-14	S-13
Factor:	1.00	1.00	1.00	1.00
Results in:	mg/L	mg/L	mg/L	mg/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	ND	0.053	ND	0.053	ND	0.053	ND	0.053
Barium	0.13	0.0020	0.88	0.0020	1.1	0.0020	0.30	0.0020
Cadmium	ND	0.0040	0.004 a	0.0040	0.005 a	0.0040	0.004 a	0.0040
Chromium	0.009 a	0.0070	0.024 a	0.0070	0.029 a	0.0070	0.008 a	0.0070
Lead	ND	0.042	0.063 a	0.042	0.071 a	0.042	ND	0.042
Selenium	ND	0.075	ND	0.075	ND	0.075	ND	0.075
Silver	ND	0.0070	ND	0.0070	ND	0.0070	ND	0.0070

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: S0-08-224

Method/Analyte		Sample Identifications	
		13	
		9008231030 SH-	REAGENT BLANK
		S-13	
		04	05
Matrix		water	water
Mercury by SW7470		Result	Det. Limit
Mercury		ND	0.0002
		mg/L	
		Result	Det. Limit
		ND	0.0002
		mg/L	
ND Not detected at specified detection limit			
(1) For a detailed description of flags and technical terms in this report refer to the glossary.			

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-14

<u>SAMPLER</u>	<u>GIANT</u>
<u>DATE</u>	<u>8/22/90</u>
<u>PARAMETER</u>	
DETECTION LIMIT	(BELOW)
BENZENE	11.0
BROMODICHLOROMETHANE	ND(1.0)
BROMOFORM	ND(5.0)
BROMOMETHANE	ND(12.0)
CARBON TETRACHLORIDE	ND(1.2)
CHLOROBENZENE	ND(2.0)
CHLOROETHANE	ND(5.2)
CHLOROFORM	ND(1.0)
CHLOROMETHANE	ND(3.0)
DIBROMOCHLOROMETHANE	ND(2.0)
1,2-DICHLOROBENZENE	ND(4.0)
1,3-DICHLOROBENZENE	ND(4.0)
1,4-DICHLOROBENZENE	140.0
1,1-DICHLOROETHANE	ND(5.0)
1,2-DICHLOROETHANE	ND(1.0)
1,1-DICHLOROETHENE	2.0
CIS-1,2-DICHLOROETHENE	NA
TRANS-1,2-DICHLOROETHENE	NA
TOTAL 1,2-DICHLOROETHENE	ND(2.0)
1,2-DICHLOROPROPANE	ND(1.0)
ETHYLBENZENE	77.0
METHYLENE CHLORIDE	ND(4.0)
1,1,1,2-TETRACHLOROETHANE	ND(50.0)
1,1,2,2-TETRACHLOROETHANE	ND(1.5)
TETRACHLOROETHENE	4.6
TOLUENE	31.0
1,1,1-TRICHLOROETHANE	ND(2.0)
1,1,2-TRICHLOROETHANE	ND(2.0)
TRICHLOROETHENE	ND(2.0)
TRICHLOROFLUOROMETHANE	ND(2.0)
VINYL CHLORIDE	ND(2.0)
TOTAL XYLENES	260.0

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: SD-08-222

Method: Aromatics by SW8020 (1)

List: Complete analyte list

	16	15	14	13
Sample ID:	9088221106 SH-	9008221400 SH-	9008221915 SH-	9008231030 SH-
	S-16	S-15	S-14	S-13
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	06A	07A	08A	09A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	11 C	2.0	ND	0.20
Chlorobenzene	ND	0.20	ND	0.20	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	0.40
1,4-Dichlorobenzene	ND	0.30	0.38 Xa	0.30	140 X	3.0	ND	0.30
Ethylbenzene	ND	0.20	0.24 Ca	0.20	77 C	2.0	ND	0.20
Toluene	ND	0.20	0.33 Ca	0.20	31 C	2.0	0.79 Ca	0.20
Xylenes (total)	ND	0.20	0.97 Ca	0.20	260 C	2.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	96		97		77		99	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

X See definition in report narrative

a Est. result less than 5 times detection limit

C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: SO-08-222

 Method: Halocarbons by SW8010 (1)
 List: 8010 list with tot. 1,2DCE

	16	15	14	13
Sample ID:	9008221106 SH-S-16	9008221400 SH-S-15	9008221915 SH-S-14	9008231030 SH-S-13
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
Matrix:	01A water	02A water	03A water	04A water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzyl chloride	ND	10	ND	10	ND	100	ND	10
Bromobenzene	ND	5.0	ND	5.0	ND	50	ND	5.0
Bromodichloromethane	ND	0.10	ND	0.10	ND	1.0	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	5.0	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	12	ND	1.2
Carbon tetrachloride	ND	0.12	ND	0.12	ND	1.2	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	2.5	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	5.2	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	5.0	ND	0.50
Chloroform	0.17 Y _a	0.10	ND	0.10	ND	1.0	ND	0.10
1-Chlorohexane	ND	5.0	ND	5.0	ND	50	ND	5.0
bis-Chloroisopropylether	ND	10	ND	10	ND	100	ND	10
Chloromethane	ND	0.30	ND	0.30	ND	3.0	ND	0.30
Chlorotoluene (total)	ND	25	ND	25	ND	250	ND	25
Dibromochloromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Dibromomethane	ND	5.0	ND	5.0	ND	50	ND	5.0
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	5.0	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	3.2	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	2.4	ND	0.24
1,1-Dichloroethane	ND	0.50	ND	0.50	ND	5.0	0.53 X _a	0.50
1,2-Dichloroethane	ND	0.10	ND	0.10	ND	1.0	11 C	0.10
1,2-Dichloroethene (total)	0.34 Y _a	0.20	ND	0.20	ND	2.0	0.28 C _a	0.20
1,1-Dichloroethene	ND	0.20	ND	0.20	2.0 X _a	2.0	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	1.0	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	2.0	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	3.4	ND	0.34
Methylene chloride	ND	0.40	ND	0.40	ND	4.0	ND	0.40
1,1,1,2-Tetrachloroethane	ND	5.0	ND	5.0	ND	50	ND	5.0
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	1.5	ND	0.15
Tetrachloroethene	ND	0.10	0.40 X _a	0.10	4.6 X _a	1.0	0.34 X _a	0.10

ND Not detected at specified detection limit

Y See definition in report narrative

_a Est. result less than 5 times detection limit

X See definition in report narrative

C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: SO-08-222

Method: Halocarbons by SW8010 (1)

List: 8010 list with tot. 1,2DCE

	16	15	14	13
Sample ID:	9008221106 SH-	9008221400 SH-	9008221915 SH-	9008231030 SH-
	S-16	S-15	S-14	S-13
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1,1,1-Trichloroethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Trichloroethene	ND	0.20	ND	0.20	ND	2.0	0.26 Xa	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
1,2,3-Trichloropropane	ND	5.0	ND	5.0	ND	50	ND	5.0
Vinyl chloride	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	126		135		131		135	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

X See definition in report narrative

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-08-357

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9008221106	9008221400	9008221915	9008231030
Factor:	0.95	0.94	4.8	0.95
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	1.7	ND	1.7	ND	8.6	ND	1.7
Acenaphthylene	ND	2.2	ND	2.2	ND	11	7.9 @	2.2
Anthracene	ND	0.63	ND	0.62	ND	3.2	ND	0.63
Benzo(a)anthracene	ND	0.012	ND	0.012	ND	0.062	ND	0.012
Benzo(a)pyrene	ND	0.022	ND	0.022	ND	0.11	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.017	ND	0.086	ND	0.017
Benzo(g,h,i)perylene	ND	0.072	ND	0.071	ND	0.36	ND	0.072
Benzo(k)fluoranthene	ND	0.016	ND	0.016	ND	0.082	ND	0.016
Chrysene	ND	0.14	ND	0.14	ND	0.72	ND	0.14
Dibenzo(a,h)anthracene	ND	0.028	ND	0.028	ND	0.14	ND	0.028
Fluoranthene	ND	0.20	ND	0.20	1.2 @	1.0	ND	0.20
Fluorene	0.77 @	0.20	0.23 @	0.20	3.6 @	1.0	0.56 @	0.20
Indeno(1,2,3-cd)pyrene	ND	0.041	ND	0.040	ND	0.21	ND	0.041
Naphthalene	ND	1.7	ND	1.7	48	8.6	12	1.7
Phenanthrene	ND	0.61	ND	0.60	8.0 @	3.1	2.8 @	0.61
Pyrene	ND	0.26	ND	0.25	1.8 @	1.3	ND	0.26
Surrogate Recovery(%)								
Terphenyl-d14	83		88		74		84	
Control Limits: 24 to 146								

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.



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iml
Inter-Mountain
Laboratories, Inc.

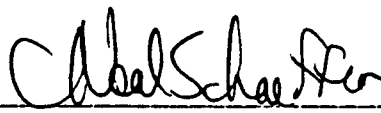
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9008221915
SITE: SHS-14
LAB NO: F4811

DATE REPORTED: 09/05/90
DATE RECEIVED: 08/23/90
DATE COLLECTED: 08/22/90

Lab pH (s.u.).....	7.45
Lab conductivity, umhos/cm.....	2556
Lab resistivity, ohm-m.....	3.9124
Total dissolved solids (180), mg/l..	2078
Total dissolved solids (calc), mg/l.	2013
Total alkalinity as CaCO ₃ , mg/l.....	271.22
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1144.56
Sodium absorption ratio.....	2.13

	mg/l	meq/l
Bicarbonate as HCO ₃	330.9	5.42
Carbonate as CO ₃	0.0	0.00
Chloride.....	46.2	1.30
Sulfate.....	1179.4	24.57
Calcium.....	449.8	22.44
Magnesium.....	5.4	0.45
Potassium.....	3.7	0.10
Sodium.....	166.0	7.22
Major cations.....		30.21
Major anions.....		31.30
Cation/anion difference.....		1.77 %


C. Neal Schaeffer
Lab Director



Geoscience Consultants, Ltd.
 Radian Work Order: SO-08-224

Method: Metals by SW6010 (1)

List: Ep Toxicity list

	14	15	14	13
Sample ID:	9008221106 SH-	9008221400 SH-	9008221915 SH-	9008231030 SH-
S-16	S-16	S-15	S-14	S-13
Factor:	1.00	1.00	1.00	1.00
Results in:	mg/L	mg/L	mg/L	mg/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	ND	0.053	ND	0.053	ND	0.053	ND	0.053
Barium	0.13	0.0020	0.88	0.0020	1.1	0.0020	0.30	0.0020
Cadmium	ND	0.0040	0.004 a	0.0040	0.005 a	0.0040	0.004 a	0.0040
Chromium	0.009 a	0.0070	0.024 a	0.0070	0.029 a	0.0070	0.008 a	0.0070
Lead	ND	0.042	0.063 a	0.042	0.071 a	0.042	ND	0.042
Selenium	ND	0.075	ND	0.075	ND	0.075	ND	0.075
Silver	ND	0.0070	ND	0.0070	ND	0.0070	ND	0.0070

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
Radian Work Order: SO-08-224

Method/Analyte		Sample Identifications					
		14		1E		14	
		9008221106 SH-		9008221400 SH-		9008221915 SH-	
		S-16		S-15		S-14	
		01		02		03	
Matrix		water		water		water	

	Result		Det. Limit		Result		Det. Limit		Result		Det. Limit	
mercury by SW7470												
Mercury	ND	mg/L	0.0002		ND	mg/L	0.0002		ND	mg/L	0.0002	

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-15

<u>SAMPLER</u>	<u>GIANT</u>
<u>DATE</u>	<u>8/22/90</u>
<u>PARAMETER</u>	
DETECTION LIMIT	(BELOW)
BENZENE	ND(0.2)
BROMODICHLOROMETHANE	ND(0.1)
BROMOFORM	ND(0.5)
BROMOMETHANE	ND(1.2)
CARBON TETRACHLORIDE	ND(0.12)
CHLOROBENZENE	ND(0.2)
CHLOROETHANE	ND(0.52)
CHLOROFORM	ND(0.1)
CHLOROMETHANE	ND(0.3)
DIBROMOCHLOROMETHANE	ND(0.2)
1,2-DICHLOROBENZENE	ND(0.4)
1,3-DICHLOROBENZENE	ND(0.4)
1,4-DICHLOROBENZENE	0.38
1,1-DICHLOROETHANE	ND(0.5)
1,2-DICHLOROETHANE	ND(0.1)
1,1-DICHLOROETHENE	ND(0.2)
CIS-1,2-DICHLOROETHENE	NA
TRANS-1,2-DICHLOROETHENE	NA
TOTAL 1,2-DICHLOROETHENE	ND(0.2)
1,2-DICHLOROPROPANE	ND(0.1)
ETHYLBENZENE	0.24
METHYLENE CHLORIDE	ND(0.4)
1,1,1,2-TETRACHLOROETHANE	ND(5.0)
1,1,2,2-TETRACHLOROETHANE	ND(0.15)
TETRACHLOROETHENE	0.4
TOLUENE	0.33
1,1,1-TRICHLOROETHANE	ND(0.2)
1,1,2-TRICHLOROETHANE	ND(0.2)
TRICHLOROETHENE	ND(0.2)
TRICHLOROFLUOROMETHANE	ND(0.2)
VINYL CHLORIDE	ND(0.2)
TOTAL XYLENES	0.97

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: S0-08-222

Method: Aromatics by SW8020 (1)

List: Complete analyte list

	16	15	14	13
Sample ID:	9088221106 SH-	9008221400 SH-	9008221915 SH-	9008231030 SH-
S-16	S-15	S-14	S-13	
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
06A	07A	08A	09A	
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	11 C	2.0	ND	0.20
Chlorobenzene	ND	0.20	ND	0.20	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	0.40
1,4-Dichlorobenzene	ND	0.30	0.38 Xa	0.30	140 X	3.0	ND	0.30
Ethylbenzene	ND	0.20	0.24 Ca	0.20	77 C	2.0	ND	0.20
Toluene	ND	0.20	0.33 Ca	0.20	31 C	2.0	0.79 Ca	0.20
Xylenes (total)	ND	0.20	0.97 Ca	0.20	260 C	2.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	96		97		77		99	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

X See definition in report narrative

a Est. result less than 5 times detection limit

C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.

Radian Work Order: S0-08-222

Method: Halocarbons by SW8010 (1)

List: 8010 list with tot. 1,2DCE

Sample ID: 9008221106 SH-

S-16

Factor: 1

Results in: ug/L

01A

Matrix: water

9008221400 SH-

S-15

1

ug/L

02A

water

9008221915 SH-

S-14

10

ug/L

03A

water

9008231030 SH-

S-13

1

ug/L

04A

water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzyl chloride	ND	10	ND	10	ND	100	ND	10
Bromobenzene	ND	5.0	ND	5.0	ND	50	ND	5.0
Bromodichloromethane	ND	0.10	ND	0.10	ND	1.0	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	5.0	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	12	ND	1.2
Carbon tetrachloride	ND	0.12	ND	0.12	ND	1.2	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	2.5	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	5.2	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	5.0	ND	0.50
Chloroform	0.17 Y@	0.10	ND	0.10	ND	1.0	ND	0.10
1-Chlorohexane	ND	5.0	ND	5.0	ND	50	ND	5.0
bis-Chloroisopropylether	ND	10	ND	10	ND	100	ND	10
Chloromethane	ND	0.30	ND	0.30	ND	3.0	ND	0.30
Chlorotoluene (total)	ND	25	ND	25	ND	250	ND	25
Dibromochloromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Dibromomethane	ND	5.0	ND	5.0	ND	50	ND	5.0
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	5.0	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	3.2	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	2.4	ND	0.24
1,1-Dichloroethane	ND	0.50	ND	0.50	ND	5.0	0.53 X@	0.50
1,2-Dichloroethane	ND	0.10	ND	0.10	ND	1.0	11 C	0.10
1,2-Dichloroethene (total)	0.34 Y@	0.20	ND	0.20	ND	2.0	0.28 C@	0.20
1,1-Dichloroethene	ND	0.20	ND	0.20	2.0 X@	2.0	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	1.0	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	2.0	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	3.4	ND	0.34
Methylene chloride	ND	0.40	ND	0.40	ND	4.0	ND	0.40
1,1,1,2-Tetrachloroethane	ND	5.0	ND	5.0	ND	50	ND	5.0
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	1.5	ND	0.15
Tetrachloroethene	ND	0.10	0.40 X@	0.10	4.6 X@	1.0	0.34 X@	0.10

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

C Confirmed on second column or by GC/MS

Y See definition in report narrative

X See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: SO-08-222

 Method: Halocarbons by SW8010 (1)
 List: 8010 list with tot. 1,2DCE

Sample ID:	9008221106 SH- S-16	9008221400 SH- S-15	9008221915 SH- S-14	9008231030 SH- S-13
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1,1,1-Trichloroethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Trichloroethene	ND	0.20	ND	0.20	ND	2.0	0.26 Xa	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
1,2,3-Trichloropropane	ND	5.0	ND	5.0	ND	50	ND	5.0
Vinyl chloride	ND	0.20	ND	0.20	ND	2.0	ND	0.20
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	126		135		131		135	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

X See definition in report narrative

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-08-357

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9008221106	9008221400	9008221915	9008231030
Factor:	0.95	0.94	4.8	0.95
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	1.7	ND	1.7	ND	8.6	ND	1.7
Acenaphthylene	ND	2.2	ND	2.2	ND	11	7.9 a	2.2
Anthracene	ND	0.63	ND	0.62	ND	3.2	ND	0.63
Benzo(a)anthracene	ND	0.012	ND	0.012	ND	0.062	ND	0.012
Benzo(a)pyrene	ND	0.022	ND	0.022	ND	0.11	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.017	ND	0.086	ND	0.017
Benzo(g,h,i)perylene	ND	0.072	ND	0.071	ND	0.36	ND	0.072
Benzo(k)fluoranthene	ND	0.016	ND	0.016	ND	0.082	ND	0.016
Chrysene	ND	0.14	ND	0.14	ND	0.72	ND	0.14
Dibenzo(a,h)anthracene	ND	0.028	ND	0.028	ND	0.14	ND	0.028
Fluoranthene	ND	0.20	ND	0.20	1.2 a	1.0	ND	0.20
Fluorene	0.77 a	0.20	0.23 a	0.20	3.6 a	1.0	0.56 a	0.20
Indeno(1,2,3-cd)pyrene	ND	0.041	ND	0.040	ND	0.21	ND	0.041
Naphthalene	ND	1.7	ND	1.7	48	8.6	12	1.7
Phenanthrene	ND	0.61	ND	0.60	8.0 a	3.1	2.8 a	0.61
Pyrene	ND	0.26	ND	0.25	1.8 a	1.3	ND	0.26
Surrogate Recovery(%)								
Terphenyl-d14	83		88		74		84	
Control Limits: 24 to 146								

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.



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2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9008221400
SITE: SHS-15
LAB NO: F4812

DATE REPORTED: 09/05/90
DATE RECEIVED: 08/23/90
DATE COLLECTED: 08/22/90

Lab pH (s.u.).....	7.91
Lab conductivity, umhos/cm.....	2778
Lab resistivity, ohm-m.....	3.5997
Total dissolved solids (180), mg/l..	2432
Total dissolved solids (calc), mg/l.	2309
Total alkalinity as CaCO ₃ , mg/l.....	202.46
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1425.68
Sodium absorption ratio.....	2.04

	mg/l	meq/l
Bicarbonate as HCO ₃	247.0	4.05
Carbonate as CO ₃	0.0	0.00
Chloride.....	33.6	0.95
Sulfate.....	1469.9	30.62
Calcium.....	397.6	19.84
Magnesium.....	105.5	8.67
Potassium.....	3.1	0.08
Sodium.....	177.5	7.72
Major cations.....		36.31
Major anions.....		35.62
Cation/anion difference.....		0.97 %

A handwritten signature in dark ink, appearing to read 'C. Neal Schaeffer', is written over a horizontal line.

C. Neal Schaeffer
Lab Director



Geoscience Consultants, Ltd.
 Radian Work Order: SO-08-224

Method: Metals by SW6010 (1)

List: Ep Toxicity list

	16 9008221106 SH-	15 9008221400 SH-	14 9008221915 SH-	13 9008231030 SH-
Sample ID:	S-16	S-15	S-14	S-13
Factor:	1.00	1.00	1.00	1.00
Results in:	mg/L	mg/L	mg/L	mg/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	ND	0.053	ND	0.053	ND	0.053	ND	0.053
Barium	0.13	0.0020	0.88	0.0020	1.1	0.0020	0.30	0.0020
Cadmium	ND	0.0040	0.004 a	0.0040	0.005 a	0.0040	0.004 a	0.0040
Chromium	0.009 a	0.0070	0.024 a	0.0070	0.029 a	0.0070	0.008 a	0.0070
Lead	ND	0.042	0.063 a	0.042	0.071 a	0.042	ND	0.042
Selenium	ND	0.075	ND	0.075	ND	0.075	ND	0.075
Silver	ND	0.0070	ND	0.0070	ND	0.0070	ND	0.0070

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
Radian Work Order: 50-08-224

Method/Analyte		Sample Identifications					
		14		15		14	
		9008221106 SH-		9008221400 SH-		9008221915 SH-	
		S-16		S-15		S-14	
		01		02		03	
Matrix		water		water		water	

Mercury by SW7470	Result		Det. Limit		Mercury	Result		Det. Limit		Mercury	Result		Det. Limit	
	ND	mg/L	0.0002			ND	mg/L	0.0002			ND	mg/L	0.0002	
ND Not detected at specified detection limit														
(1) For a detailed description of flags and technical terms in this report refer to the glossary.														

VOLATILE ORGANIC CONCENTRATIONS IN GROUND WATER (pbb)
GIANT BLOOMFIELD REFINERY

MONITOR WELL SHS-16

SAMPLER

GIANT

DATE

8/22/90

PARAMETER

DETECTION LIMIT

(BELOW)

BENZENE	ND(0.2)
BROMODICHLOROMETHANE	ND(0.1)
BROMOFORM	ND(0.5)
BROMOMETHANE	ND(1.2)
CARBON TETRACHLORIDE	ND(0.12)
CHLOROBENZENE	ND(0.2)
CHLOROETHANE	ND(0.52)
CHLOROFORM	0.17
CHLOROMETHANE	ND(0.3)
DIBROMOCHLOROMETHANE	ND(0.2)
1,2-DICHLOROBENZENE	ND(0.4)
1,3-DICHLOROBENZENE	ND(0.4)
1,4-DICHLOROBENZENE	ND(0.3)
1,1-DICHLOROETHANE	ND(0.5)
1,2-DICHLOROETHANE	ND(0.1)
1,1-DICHLOROETHENE	ND(0.2)
CIS-1,2-DICHLOROETHENE	NA
TRANS-1,2-DICHLOROETHENE	NA
TOTAL 1,2-DICHLOROETHENE	0.34
1,2-DICHLOROPROPANE	ND(0.1)
ETHYLBENZENE	ND(0.2)
METHYLENE CHLORIDE	ND(0.4)
1,1,1,2-TETRACHLOROETHANE	ND(5.0)
1,1,2,2-TETRACHLOROETHANE	ND(0.15)
TETRACHLOROETHENE	ND(0.1)
TOLUENE	ND(0.2)
1,1,1-TRICHLOROETHANE	ND(0.2)
1,1,2-TRICHLOROETHANE	ND(0.2)
TRICHLOROETHENE	ND(0.2)
TRICHLOROFLUOROMETHANE	ND(0.2)
VINYL CHLORIDE	ND(0.2)
TOTAL XYLENES	ND(0.2)

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE

Geoscience Consultants, Ltd.
 Radian Work Order: S0-08-222

Method: Aromatics by SW8020 (1)

List: Complete analyte list

	16	15	14	13
Sample ID:	9088221106 SH-	9008221400 SH-	9008221915 SH-	9008231030 SH-
	S-16	S-15	S-14	S-13
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	06A	07A	08A	09A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	11 C	2.0	ND	0.20
Chlorobenzene	ND	0.20	ND	0.20	ND	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	0.40
1,4-Dichlorobenzene	ND	0.30	0.38 Xa	0.30	140 X	3.0	ND	0.30
Ethylbenzene	ND	0.20	0.24 Ca	0.20	77 C	2.0	ND	0.20
Toluene	ND	0.20	0.33 Ca	0.20	31 C	2.0	0.79 Ca	0.20
Xylenes (total)	ND	0.20	0.97 Ca	0.20	260 C	2.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	96		97		77		99	
Control Limits: 40 to 140								

 ND Not detected at specified detection limit
 a Est. result less than 5 times detection limit

 X See definition in report narrative
 C Confirmed on second column or by GC/MS

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: SO-08-222

 Method: Halocarbons by SW8010 (1)
 List: 8010 list with tot. 1,2DCE

	16	15	14	13
Sample ID:	9008221106 SH-	9008221400 SH-	9008221915 SH-	9008231030 SH-
	S-16	S-15	S-14	S-13
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1,1,1-Trichloroethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Trichloroethene	ND	0.20	ND	0.20	ND	2.0	0.26 Xa	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
1,2,3-Trichloropropane	ND	5.0	ND	5.0	ND	50	ND	5.0
Vinyl chloride	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	126		135		131		135	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

X See definition in report narrative

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.

Radian Work Order: 50-08-222

Method: Halocarbons by SW8010 (1)

List: 8010 list with tot. 1,2DCE

	10	15	14	13
Sample ID:	9008221106 SH-	9008221400 SH-	9008221915 SH-	9008231030 SH-
	S-16	S-15	S-14	S-13
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzyl chloride	ND	10	ND	10	ND	100	ND	10
Bromobenzene	ND	5.0	ND	5.0	ND	50	ND	5.0
Bromodichloromethane	ND	0.10	ND	0.10	ND	1.0	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	5.0	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	12	ND	1.2
Carbon tetrachloride	ND	0.12	ND	0.12	ND	1.2	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	2.5	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	5.2	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	5.0	ND	0.50
Chloroform	0.17 Y@	0.10	ND	0.10	ND	1.0	ND	0.10
1-Chlorohexane	ND	5.0	ND	5.0	ND	50	ND	5.0
bis-Chloroisopropylether	ND	10	ND	10	ND	100	ND	10
Chloromethane	ND	0.30	ND	0.30	ND	3.0	ND	0.30
Chlorotoluene (total)	ND	25	ND	25	ND	250	ND	25
Dibromochloromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Dibromomethane	ND	5.0	ND	5.0	ND	50	ND	5.0
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	5.0	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	3.2	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	2.4	ND	0.24
1,1-Dichloroethane	ND	0.50	ND	0.50	ND	5.0	0.53 X@	0.50
1,2-Dichloroethane	ND	0.10	ND	0.10	ND	1.0	11 C	0.10
1,2-Dichloroethene (total)	0.34 Y@	0.20	ND	0.20	ND	2.0	0.28 C@	0.20
1,1-Dichloroethene	ND	0.20	ND	0.20	2.0 X@	2.0	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	1.0	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	2.0	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	3.4	ND	0.34
Methylene chloride	ND	0.40	ND	0.40	ND	4.0	ND	0.40
1,1,1,2-Tetrachloroethane	ND	5.0	ND	5.0	ND	50	ND	5.0
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	1.5	ND	0.15
Tetrachloroethene	ND	0.10	0.40 X@	0.10	4.6 X@	1.0	0.34 X@	0.10

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

C Confirmed on second column or by GC/MS

Y See definition in report narrative

X See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 90-08-357

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9008221106	9008221400	9008221915	9008231030
Factor:	0.95	0.94	4.8	0.95
Results in:	ug/L	ug/L	ug/L	ug/L
Matrix:	01A	02A	03A	04A
	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	1.7	ND	1.7	ND	8.6	ND	1.7
Acenaphthylene	ND	2.2	ND	2.2	ND	11	7.9 @	2.2
Anthracene	ND	0.63	ND	0.62	ND	3.2	ND	0.63
Benzo(a)anthracene	ND	0.012	ND	0.012	ND	0.062	ND	0.012
Benzo(a)pyrene	ND	0.022	ND	0.022	ND	0.11	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.017	ND	0.086	ND	0.017
Benzo(g,h,i)perylene	ND	0.072	ND	0.071	ND	0.36	ND	0.072
Benzo(k)fluoranthene	ND	0.016	ND	0.016	ND	0.082	ND	0.016
Chrysene	ND	0.14	ND	0.14	ND	0.72	ND	0.14
Dibenzo(a,h)anthracene	ND	0.028	ND	0.028	ND	0.14	ND	0.028
Fluoranthene	ND	0.20	ND	0.20	1.2 @	1.0	ND	0.20
Fluorene	0.77 @	0.20	0.23 @	0.20	3.6 @	3.0	0.56 @	0.20
Indeno(1,2,3-cd)pyrene	ND	0.041	ND	0.040	ND	0.21	ND	0.041
Naphthalene	ND	1.7	ND	1.7	48	8.6	12	1.7
Phenanthrene	ND	0.61	ND	0.60	8.0 @	3.1	2.8 @	0.61
Pyrene	ND	0.26	ND	0.25	1.8 @	1.3	ND	0.26
Surrogate Recovery(%)								
Terphenyl-d14	83		88		74		84	
Control Limits: 24 to 146								

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.



RECEIVED SEP 10 1990



InterMountain
Laboratories, Inc.

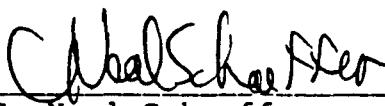
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9008221106
SITE: SHS-16
LAB NO: F4813

DATE REPORTED: 09/05/90
DATE RECEIVED: 08/23/90
DATE COLLECTED: 08/22/90

Lab pH (s.u.).....	7.91
Lab conductivity, umhos/cm.....	3090
Lab resistivity, ohm-m.....	3.2362
Total dissolved solids (180), mg/l..	2714
Total dissolved solids (calc), mg/l.	2511
Total alkalinity as CaCO ₃ , mg/l.....	229.20
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1425.68
Sodium absorption ratio.....	2.72

	mg/l	meq/l
Bicarbonate as HCO ₃	279.6	4.58
Carbonate as CO ₃	0.0	0.00
Chloride.....	42.0	1.18
Sulfate.....	1626.2	33.88
Calcium.....	301.2	15.03
Magnesium.....	164.0	13.48
Potassium.....	3.6	0.09
Sodium.....	236.0	10.27
Major cations.....		38.87
Major anions.....		39.65
Cation/anion difference.....		0.99 %


C. Neal Schaeffer
Lab Director



Geoscience Consultants, Ltd.
 Radian Work Order: SO-08-224

Method: Metals by SW6010 (1)				
List: Ep Toxicity list				
Sample ID:	9008221106 SH-	9008221400 SH-	9008221915 SH-	9008231030 SH-
	S-16	S-15	S-14	S-13
Factor:	1.00	1.00	1.00	1.00
Results in:	mg/L	mg/L	mg/L	mg/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Arsenic	ND	0.053	ND	0.053	ND	0.053	ND	0.053
Barium	0.13	0.0020	0.88	0.0020	1.1	0.0020	0.30	0.0020
Cadmium	ND	0.0040	0.004 a	0.0040	0.005 a	0.0040	0.004 a	0.0040
Chromium	0.009 a	0.0070	0.024 a	0.0070	0.029 a	0.0070	0.008 a	0.0070
Lead	ND	0.042	0.063 a	0.042	0.071 a	0.042	ND	0.042
Selenium	ND	0.075	ND	0.075	ND	0.075	ND	0.075
Silver	ND	0.0070	ND	0.0070	ND	0.0070	ND	0.0070

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Method/Analyte		Sample Identifications			
	9008221106 SH- S-16 01	9008221400 SH- S-15 02	9008221915 SH- S-14 03		
Matrix	water	water	water		

	Result	Det. Limit		Result	Det. Limit		Result	Det. Limit
Mercury by SW7470	ND	mg/L 0.0002		ND	mg/L 0.0002		ND	mg/L 0.0002

ND Not detected at specified detection limit.

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Volatile aromatics (1)	BLM 30	BLM 270	BLM 37	AKS 12
List: SW8020				
Sample ID:	8912111150	8912111255	8912111520	8912121000
Factor:	1	1	2000	10
Results in:	ug/L	ug/L	ug/L	ug/L
	01B	02B	03B	04B
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	16000	400	10	2.0
Chlorobenzene	ND	0.20	ND	0.20	ND	400	ND	2.0
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	800	ND	4.0
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	800	ND	4.0
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	600	ND	3.0
Ethylbenzene	ND	0.20	ND	0.20	16000	400	120	2.0
Toluene	ND	0.20	ND	0.20	1800 *	400	2.2 *	2.0
Total xylenes	ND	0.20	ND	0.20	75000	400	37	2.0
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	87		94		117		96	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Halogenated volatiles (1)

List: SW8010

Sample ID:

 89111-30
 891211150

 89111-27
 8912111255

 89111-37
 8912111520

 89111-2
 8912121000

Factor:

1

1

5

1

Results in:

ug/L

ug/L

ug/L

ug/L

Matrix:

 01A
 water

 02A
 water

 03A
 water

 04A
 water

Bromodichloromethane

 Result Det. Limit
 ND 0.10

ND 0.10

 Result Det. Limit
 ND 0.50

 Result Det. Limit
 ND 0.10

Bromoform

ND 0.50

ND 0.50

ND 2.5

ND 0.50

Bromomethane

ND 1.2

ND 1.2

ND 5.9

ND 1.2

Carbon Tetrachloride

ND 0.12

ND 0.12

ND 0.60

ND 0.12

Chlorobenzene

ND 0.25

ND 0.25

ND 1.3

ND 0.25

Chloroethane

ND 0.52

ND 0.52

6.0 *g 2.6

ND 0.52

2-Chloroethylvinylether

ND 0.50

ND 0.50

ND 2.5

ND 0.50

Chloroform

ND 0.10

ND 0.10

ND 0.50

ND 0.10

Chloromethane

ND 0.30

ND 0.30

6.0 *g 1.5

ND 0.30

Dibromochloromethane-(2)

ND 0.20

ND 0.20

ND 1.0

ND 0.20

1,2-Dichlorobenzene

ND 0.50

ND 0.50

ND 2.5

ND 0.50

1,3-Dichlorobenzene

ND 0.32

ND 0.32

ND 1.6

ND 0.32

1,4-Dichlorobenzene

ND 0.24

ND 0.24

ND 1.2

ND 0.24

1,1-Dichloroethane

ND 0.50

0.30 * 0.50

ND 2.5

ND 0.50

1,2-Dichloroethane

ND 0.10

ND 0.10

60 0.50

ND 0.10

1,1-Dichloroethene

ND 0.20

ND 0.20

ND 1.0

ND 0.20

trans-1,2-Dichloroethene

ND 0.20

ND 0.20

8.0 1.0

ND 0.20

1,2-Dichloropropane

ND 0.10

ND 0.10

ND 0.50

ND 0.10

cis-1,3-Dichloropropene-(2)

N/A N/A

N/A N/A

N/A N/A

N/A N/A

trans-1,3-Dichloropropene

ND 0.30

ND 0.30

ND 1.5

ND 0.30

Methylene Chloride

ND 0.40

ND 0.40

ND 2.0

ND 0.40

1,1,2,2-Tetrachloroethane-(3)

ND 0.15

ND 0.15

ND 0.75

ND 0.15

Tetrachloroethene-(3)

ND 0.10

ND 0.10

ND 0.50

1.7 0.10

1,1,2-Trichloroethane-(2)

ND 0.20

ND 0.20

ND 1.0

ND 0.20

1,1,1-Trichloroethane

ND 0.20

0.71 * 0.20

ND 1.0

ND 0.20

Trichloroethene

ND 0.20

ND 0.20

ND 1.0

ND 0.20

Trichlorofluoromethane

ND 0.20

ND 0.20

ND 1.0

ND 0.20

Vinyl Chloride

ND 0.20

ND 0.20

ND 1.0

ND 0.20

SAMPLE ID 8909071100 H2O BLM-27

FRACTION OSC TEST CODE 6028

NAME Purgeable Aromatics - H2O

Date & Time Collected 09/07/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST INSTRKT	MG E	INJECTD 09/20/89	FILE # FACTOR	EB092013 1 UNITS	VERIFIED ug/L	JD
		CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
		71-43-2	Benzene	ND	0.10	1
		108-98-3	Toluene	ND	0.30	1
		100-41-4	Ethylbenzene	ND	0.10	1
		108-90-7	Chlorobenzene	ND	0.10	1
		1330-20-7	Total Xylenes	ND	0.20	1
		106-46-7	1,4-Dichlorobenzene	ND	0.20	1
		541-73-1	1,3-Dichlorobenzene	ND	0.40	1
		95-50-1	1,2-Dichlorobenzene	ND	0.20	1

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 85% recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions

Page 23
Received: 09/08/89

RAS Sacramento
Results by Sample

REPORT

Work Order # 89-09-049

SAMPLE ID 8909071100 H2O *BLM-27*

FRACTION *02A* TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/07/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST
INSTRMT

MG
B

INJECTD 09/20/89

FILE # DE072012
FACTOR 1

VERIFIED
UNITS ug/L

JD

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloromethane	ND	0.50	1
74-83-9	Bromomethane	ND	1.0	1
75-01-4	Vinyl Chloride	ND	0.20	1
75-00-3	Chloroethane	ND	0.50	1
75-09-2	Methylene Chloride	ND	0.40	1
75-69-4	Trichlorofluoromethane	1.1 C	0.10	1
75-35-4	1,1-Dichloroethane	ND	0.10	1
75-34-3	1,1-Dichloroethane	2.4 CE	0.10	1
540-59-0	Total 1,2-Dichloroethane (2)	ND	0.10	1
67-66-3	Chloroform	ND	0.10	1
107-06-2	1,2-Dichloroethane	ND	0.10	1
71-55-6	1,1,1-Trichloroethane	1.6 C	0.20	1
56-23-5	Carbon Tetrachloride	ND	0.20	1
75-27-4	Bromodichloromethane	ND	0.10	1
78-87-5	1,2-Dichloropropane	ND	0.10	1
10061-01-5	cis-1,3-Dichloropropene	ND	0.40	1
79-01-6	Trichloroethene	ND	0.20	1
124-48-1	Dibromochloromethane (3)	ND	0.20	1
79-00-5	1,1,2-Trichloroethane (3)	ND	0.20	1
10061-02-6	trans-1,3-Dichloropropene (3)	ND	0.40	1
110-75-8	2-Chloroethylvinyl Ether	ND	2.0	1
75-25-2	Bromoform	ND	2.0	1
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	0.20	1
127-18-4	Tetrachloroethane (4)	1.3 C	0.10	1
108-90-7	Chlorobenzene	ND	0.20	1
541-73-1	1,3-Dichlorobenzene	ND	0.50	1
95-50-1	1,2-Dichlorobenzene	ND	0.20	1
106-46-7	1,4-Dichlorobenzene	ND	0.20	1



CLIENT: Geoscience Consultants

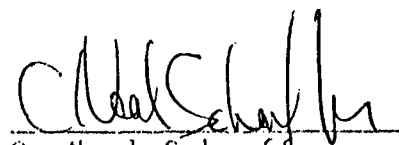
DATE REPORTED: 12/20/89

SITE: BLM-277
LAB NO: F3660

DATE RECEIVED: 12/13/89
DATE COLLECTED: 12/11/89

Lab pH (s.u.).....	7.31
Lab Conductivity, umhos/cm.....	2973
Lab resistivity, ohm-m.....	3.3636
Total Dissolved Solids (TDS), mg/l.....	2434
Total Dissolved Solids (calc), mg/l.....	2415
Total Alkalinity as CaCO ₃ , mg/l.....	271.26
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1178.91
Sodium Absorption Ratio.....	3.88

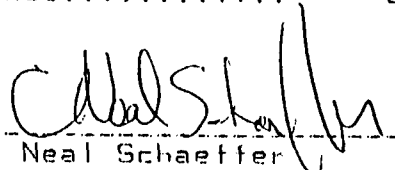
	mg/l	meq/l
Bicarbonate as HCO ₃	330.94	5.43
Carbonate as CO ₃	0.00	0.00
Chloride.....	165.94	4.68
Sulfate.....	1308.57	27.26
Calcium.....	467.42	23.32
Magnesium.....	3.09	0.25
Potassium.....	0.88	0.02
Sodium.....	306.40	13.33
Major Cations.....		36.93
Major Anions.....		37.37
Cation/Anion Difference.....		0.59 %


C. Neal Schaeffer
Senior Chemist

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/21/89
SAMPLE: 8909071100
SITE: BLM-27 DATE RECEIVED: 09/07/89
LAB NO: F3128 DATE COLLECTED: 09/07/89

Lab pH..... 7.57
Lab Conductivity, umhos/cm..... 3191
Lab resistivity, ohm-m..... 3.1338
~~Total Dissolved Solids (100), mg/l..... 2408~~
Total Dissolved Solids (calc), mg/l..... 2251
Total Alkalinity as CaCO₃, mg/l..... 305.48
Total Acidity as CaCO₃, mg/l..... 0.00
Total Hardness as CaCO₃, mg/l..... 1195.75
Sodium Absorption Ratio..... 3.65
Nitrate, mg/l..... 3.49

	mg/l	meq/l
Bicarbonate as HCO ₃	372.69	6.11
Carbonate as CO ₃	0.00	0.00
Chloride.....	188.32	5.31
Sulfate.....	1231.21	25.65
Calcium.....	167.73	8.37
Magnesium.....	189.03	15.55
Potassium.....	1.28	0.03
Sodium.....	290.00	12.61
Major Cations.....		36.56
Major Anions.....		37.07
Cation/Anion Difference.....		0.69 %


C. Neal Schaeffer
Senior Chemist

7



Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method/Analyte	Sample Identifications					
	BLM 30 8912111150		BLM 27 8912111255 -		BLM 31 8912111520	
Matrix	01 water		02 water		03 water	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Silver by ICPEs						
Silver	ND	mg/L 0.010	ND	mg/L 0.010	ND	mg/L 0.010
Arsenic by GF - SWB46						
Arsenic	0.048	mg/L 0.0020	0.061	mg/L 0.0040	0.030	mg/L 0.0020
Barium by ICPEs						
Barium	0.75	mg/L 0.010	1.2	mg/L 0.010	0.22	mg/L 0.010
Cadmium by ICPEs						
Cadmium	ND	mg/L 0.0050	ND	mg/L 0.0050	ND	mg/L 0.0050
Chromium by ICPEs						
Chromium	0.11	mg/L 0.010	0.074	mg/L 0.010	0.037 *	mg/L 0.010
Mercury by cold vapor						
Mercury	ND	mg/L 0.0002	ND	mg/L 0.0002	ND	mg/L 0.0002
Lead by GF - SWB46						
Lead	0.046	mg/L 0.0020	0.082	mg/L 0.0020	3.10	mg/L 0.0020
Selenium by GF - SWB46						
Selenium	0.020	mg/L 0.0020	0.0024 *	mg/L 0.0020	ND	mg/L 0.0020

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) for a detailed description of flags and technical terms in this report refer to the glossary.

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 RAS Sacramento
 Results by Sample
 REPORT
 Work Order # 89-09-051

SAMPLE ID 8909070800 H2O BLM-30 SAMPLE # 04 FRACTIONS: A
 Date & Time Collected 09/07/89 Category
 3015WS 09/12/89 AG_EM <0.007 mg/L BA_EM 0.57 mg/L CD_EM <0.004 mg/L CR_EM 0.043 mg/L
 DATE COMPLETED
 HQ_CV <0.0002 mg/L SE_EM <0.075 mg/L

SAMPLE ID 8909070750 H2O Field Blank SAMPLE # 05 FRACTIONS: A
 Date & Time Collected 09/07/89 Category
 3015WS 09/12/89 AG_EM <0.007 mg/L BA_EM <0.002 mg/L CD_EM <0.004 mg/L CR_EM <0.007 mg/L
 DATE COMPLETED
 HQ_CV <0.0002 mg/L SE_EM <0.075 mg/L

SAMPLE ID 8909071100 H2O BLM-27 SAMPLE # 05 FRACTIONS: A
 Date & Time Collected 09/07/89 Category
 3015WS 09/12/89 AG_EM <0.007 mg/L BA_EM 1.4 mg/L CD_EM <0.004 mg/L CR_EM 0.074 mg/L
 DATE COMPLETED
 HQ_CV <0.0002 mg/L SE_EM <0.075 mg/L

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RAS Sacramento

REPORT

Results By Test

Work Order # S7-09-051
Continued From Above

SAMPLE	Test: CR EM	Test: HG CV	Test: PB EM	Test: SE EM
Sample Id	mg/L	mg/L	mg/L	mg/Kg
BLM 2-706	0.074	<0.0002	0.13 %	<0.075
8907071100 H2O				mg/L
07	<0.007	<0.0002	<0.042	<0.075
REAGENT BLANK H				mg/L



Received: 09/08/89

Results By Test

SAMPLE	Test: 3015MS	Test: AG EN	Test: AS EN	Test: BA EN	Test: CD EN
Sample Id	Date Completed	mg/L	mg/Kg	mg/L	mg/L
SHS-1 01	09/12/89	<0.007	<0.053	0.27	<0.004
8909061455 H2O	DATE COMPLETED		mg/L		
SHS-2 02	09/12/89	<0.007	<0.053	1.5	<0.004
8909061535 H2O	DATE COMPLETED		mg/L		
BLM-37 03	09/12/89	<0.007	<0.053	0.36	<0.004
8909061600 H2O	DATE COMPLETED		mg/L		
BLM-30 04	09/12/89	<0.007	<0.053	0.57	<0.004
8909070830 H2O	DATE COMPLETED		mg/L		
Blank 05	09/12/89	<0.007	<0.053	<0.002	<0.004
8909070750 H2O	DATE COMPLETED		mg/L		
BLM-27 06	09/12/89	<0.007	<0.053	1.4	<0.004
8909071100 H2O	DATE COMPLETED		mg/L		
07	09/12/89	<0.007	<0.053	<0.002	<0.004
REAGENT BLANK H	DATE COMPLETED		mg/L		

SAMPLE	Test: CR EN	Test: HG CV	Test: PB EN	Test: SE EN
Sample Id	mg/L	mg/L	mg/L	mg/Kg
SHS-1 01	0.011 *	<0.0002	<0.042	<0.075
8909061455 H2O				mg/L
SHS-2 02	0.029 *	<0.0002	0.062 *	<0.075
8909061535 H2O				mg/L
BLM-37 03	0.043	<0.0002	8.7	<0.075
8909061600 H2O				mg/L
BLM-30 04	0.043	<0.0002	0.055 *	<0.075
8909070830 H2O				mg/L
Blank 05	<0.007	<0.0002	<0.042	<0.075
8909070750 H2O				mg/L



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RAS Sacramento

REPORT

Results By Test

Work Order # S9-09-051
Continued From Above

08/11-27

Blank

TEST CODE	Sample 06 (entered units)	Sample 07 (entered units)
BA EM mg/L	1.4	<0.002
CD EM mg/L	<0.004	<0.004
CR EM mg/L	0.074	<0.007
HG CV mg/L	<0.0002	<0.0002
PB EM mg/L	0.13 *	<0.042
SE EM mg/Kg	<0.075	<0.075 mg/L

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Volatile aromatics (1)				
List: SW8020				
Sample ID:	8912111150	8912111255	8912111520	8912121000
Factor:	1	1	2000	10
Results in:	ug/L	ug/L	ug/L	ug/L
	01B	02B	03B	04B
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	16000	400	10	2.0
Chlorobenzene	ND	0.20	ND	0.20	ND	400	ND	2.0
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	800	ND	4.0
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	800	ND	4.0
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	600	ND	3.0
Ethylbenzene	ND	0.20	ND	0.20	16000	400	120	2.0
Toluene	ND	0.20	ND	0.20	1800 *	400	2.2 *	2.0
Total xylenes	ND	0.20	ND	0.20	75000	400	37	2.0
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	87		94		117		96	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Halogenated volatiles (1)

List: SW8010

Sample ID:

891211150

891211255

891211520

8912121000

Factor:

1

1

5

1

Results in:

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.50	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	2.5	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	5.9	ND	1.2
Carbon Tetrachloride	ND	0.12	ND	0.12	ND	0.60	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	1.3	ND	0.25
Chloroethane	ND	0.52	ND	0.52	6.0 *Q	2.6	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	2.5	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.50	ND	0.10
Chloromethane	ND	0.30	ND	0.30	6.0 *Q	1.5	ND	0.30
Dibromochloromethane-(2)	ND	0.20	ND	0.20	ND	1.0	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	2.5	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	1.6	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	1.2	ND	0.24
1,1-Dichloroethane	ND	0.50	0.30 *	0.50	ND	2.5	ND	0.50
1,2-Dichloroethane	ND	0.10	ND	0.10	60	0.50	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	1.0	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	8.0	1.0	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.50	ND	0.10
cis-1,3-Dichloropropene-(2)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
trans-1,3-Dichloropropene	ND	0.30	ND	0.30	ND	1.5	ND	0.30
Methylene Chloride	ND	0.40	ND	0.40	ND	2.0	ND	0.40
1,1,2,2-Tetrachloroethane-(3)	ND	0.15	ND	0.15	ND	0.75	ND	0.15
Tetrachloroethene-(3)	ND	0.10	ND	0.10	ND	0.50	1.7	0.10
1,1,2-Trichloroethane-(2)	ND	0.20	ND	0.20	ND	1.0	ND	0.20
1,1,1-Trichloroethane	ND	0.20	0.71 *	0.20	ND	1.0	ND	0.20
Trichloroethene	ND	0.20	ND	0.20	ND	1.0	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	1.0	ND	0.20
Vinyl Chloride	ND	0.20	ND	0.20	ND	1.0	ND	0.20

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RAS Sacramento
Results by Sample

REPORT

Work Order # 89-09-049

SAMPLE ID 8909070830 H20 BLM-30 FRACTION 04D TEST CODE 602B NAME Purgeable Aromatics - H2O
Date & Time Collected 09/07/89 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST INSTRMT	MG B	INJECTD 09/20/89	FILE # FACTOR	ES09207 1 UNITS	VERIFIED ug/L	JD
		CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
		71-43-2	Benzene	ND	0.10	1
		108-88-3	Toluene	ND	0.30	1
		100-41-4	Ethylbenzene	ND	0.10	1
		108-90-7	Chlorobenzene	ND	0.10	1
		1330-20-7	Total Xylenes	ND	0.20	1
		106-46-7	1,4-Dichlorobenzene	ND	0.20	1
		541-73-1	1,3-Dichlorobenzene	ND	0.40	1
		95-50-1	1,2-Dichlorobenzene	ND	0.20	1

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 90% recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions

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RAS Sacramento

REPORT
Results by Sample

Work Order # 89-09-049

SAMPLE ID 8909070830 NS H2O BLA-30 FRACTION 04E TEST CODE 602B NAME Purgeable Aromatics - H2O
Date & Time Collected 09/07/89 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST	MG	FILE #	EB07202	VERIFIED	JD
INSTRMT	B	INJECTD	09/20/89	1 UNITS % RECOV.	
CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR	
71-43-2	Benzene	69	0.10	1	
108-88-3	Toluene	69	0.30	1	
100-41-4	Ethylbenzene	NS	0.10	1	
108-90-7	Chlorobenzene	70	0.10	1	
1330-20-7	Total Xylenes	NS	0.20	1	
106-46-7	1,4-Dichlorobenzene	NS	0.20	1	
541-73-1	1,3-Dichlorobenzene	NS	0.40	1	
95-50-1	1,2-Dichlorobenzene	NS	0.20	1	

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 85% recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions

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RAS Sacramento

REPORT

Work Order # S9-09-049

Results by Sample

BLM-30

SAMPLE ID 8909070830 MSD H2O (SPLIT)

FRACTION 04F TEST CODE 602B

NAME Purgeable Aromatics - H2O

Date & Time Collected 09/07/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST INSTRMT	MG B	FILE #	EB09209	VERIFIED	JD
		INJECTED 09/20/89	FACTOR	1 UNITS % RECOV.	
CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR	
71-43-2	Benzenes	65	0.10	1	
108-88-3	Toluene	64	0.30	1	
100-41-4	Ethylbenzene	NS	0.10	1	
108-90-7	Chlorobenzene	63	0.10	1	
1330-20-7	Total Xylenes	NS	0.20	1	
106-46-7	1,4-Dichlorobenzene	NS	0.20	1	
541-73-1	1,3-Dichlorobenzene	NS	0.40	1	
95-50-1	1,2-Dichlorobenzene	NS	0.20	1	

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 83% recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions

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RAS Sacramento
Results by Sample

Work Order # 59-09-049

SAMPLE ID 8909070830 H20 BLM-30 FRACTION 04A TEST CODE 601 NAME Purgeable Halocarbons H20
Date & Time Collected 09/07/89 Category _____

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST	MC	FILE #	DB091917	VERIFIED	JD
INSTRMT	B	FACTOR	1	UNITS	ug/L
CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR	
74-87-3	Chloromethane	ND	0.50	1	
74-83-9	Bromomethane	ND	1.0	1	
75-01-4	Vinyl Chloride	ND	0.20	1	
75-00-3	Chloroethane	ND	0.50	1	
75-09-2	Methylene Chloride	ND	0.40	1	
75-69-4	Trichlorofluoromethane	ND	0.10	1	
75-35-4	1,1-Dichloroethene	ND	0.10	1	
75-34-3	1,1-Dichloroethane	ND	0.10	1	
540-59-0	Total 1,2-Dichloroethene (2)	ND	0.10	1	
67-66-3	Chloroform	ND	0.10	1	
107-06-2	1,2-Dichloroethane	ND	0.10	1	
71-55-6	1,1,1-Trichloroethane	0.22 C	0.20	1	
56-23-5	Carbon Tetrachloride	ND	0.20	1	
75-27-4	Bromodichloromethane	ND	0.10	1	
78-87-5	1,2-Dichloropropane	ND	0.10	1	
10061-01-5	cis-1,3-Dichloropropene	ND	0.40	1	
79-01-6	Trichloroethene	ND	0.20	1	
124-48-1	Dibromochloromethane (3)	ND	0.20	1	
79-00-5	1,1,2-Trichloroethane (3)	ND	0.20	1	
10061-02-6	trans-1,3-Dichloropropene (3)	ND	0.40	1	
110-75-8	2-Chloroethylvinyl Ether	ND	2.0	1	
75-25-2	Bromoform	ND	2.0	1	
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	0.20	1	
127-18-4	Tetrachloroethane (4)	ND	0.10	1	
108-90-7	Chlorobenzene	ND	0.20	1	
541-73-1	1,3-Dichlorobenzene	ND	0.50	1	
95-50-1	1,2-Dichlorobenzene	ND	0.20	1	
106-46-7	1,4-Dichlorobenzene	ND	0.20	1	

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RAS Sacramento
Results by Sample

REPORT

Work Order # 59-09-049

SAMPLE ID 8909070830 MS H2O *BLM-30* FRACTION 04B TEST CODE 601 NAME Purgeable Halocarbons H2O
Date & Time Collected 09/07/89 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST _____
INSTRMT _____

FILE # DE091918
INJECTD 09/19/89
FACTORS 1

VERIFIED _____
UNITS % RECDV. _____

CASE#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloromethane	NS	0.50	1
74-83-9	Bromomethane	NS	1.0	1
75-01-4	Vinyl Chloride	NS	0.20	1
75-00-3	Chloroethane	NS	0.50	1
75-09-2	Methylene Chloride	NS	0.40	1
75-69-4	Trichlorofluoromethane	NS	0.10	1
75-35-4	1,1-Dichloroethene	NS	0.10	1
75-34-3	1,1-Dichloroethene	NS	0.10	1
540-59-0	Total 1,2-Dichloroethene (2)	NS	0.10	1
67-66-3	Chloroform	NS	0.10	1
107-06-2	1,2-Dichloroethane	NS	0.10	1
71-55-6	1,1,1-Trichloroethane	NS	0.20	1
56-23-5	Carbon Tetrachloride	NS	0.20	1
75-27-4	Bromodichloromethane	NS	0.10	1
78-87-5	1,2-Dichloropropene	NS	0.10	1
10061-01-5	cis-1,3-Dichloropropene	NS	0.40	1
79-01-6	Trichloroethene	NS	0.20	1
124-48-1	Dibromochloromethane (3)	NS	0.20	1
79-00-5	1,1,2-Trichloroethane (3)	NS	0.20	1
10061-02-6	trans-1,3-Dichloropropene (3)	NS	0.40	1
110-75-8	2-Chloroethylvinyl Ether	NS	2.0	1
75-25-2	Bromoform	NS	2.0	1
79-34-5	1,1,2,2-Tetrachloroethane (4)	NS	0.20	1
127-18-4	Tetrachloroethane (4)	NS	0.10	1
108-90-7	Chlorobenzene	NS	0.20	1
541-73-1	1,3-Dichlorobenzene	NS	0.50	1
95-50-1	1,2-Dichlorobenzene	NS	0.20	1
106-46-7	1,4-Dichlorobenzene	NS	0.20	1

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RAS Sacramento

Results by Sample

REPORT

Work Order # S9-09-049

β4M-30

SAMPLE ID 8909070830 MSD H20 (SPLIT)

FRACTION 040

TEST CODE 601

NAME Purgeable Halocarbons H20

Date & Time Collected 09/07/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST _____
INSTRMT _____

INJECTD 09/19/89

FILE # DB091919
FACTOR 1

VERIFIED _____
UNITS % RECOV. _____

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloromethane	NS	0.50	1
74-83-9	Bromomethane	NS	1.0	1
75-01-4	Vinyl Chloride	NS	0.20	1
75-00-3	Chloroethane	NS	0.50	1
75-09-2	Methylene Chloride	NS	0.40	1
75-69-4	Trichlorofluoromethane	NS	0.10	1
75-35-4	1,1-Dichloroethene	NS	0.10	1
75-34-3	1,1-Dichloroethane	NS	0.10	1
540-59-0	Total 1,2-Dichloroethene (2)	NS	0.10	1
67-66-3	Chloroform	NS	0.10	1
107-06-2	1,2-Dichloroethane	NS	0.10	1
71-55-6	1,1,1-Trichloroethane	NS	0.20	1
56-23-5	Carbon Tetrachloride	NS	0.20	1
75-27-4	Bromodichloromethane	NS	0.10	1
78-87-5	1,2-Dichloropropane	NS	0.10	1
10061-01-5	cis-1,3-Dichloropropene	NS	0.40	1
79-01-6	Trichloroethene	NS	0.20	1
124-48-1	Dibromochloromethane (3)	NS	0.20	1
79-00-5	1,1,2-Trichloroethane (3)	NS	0.20	1
10061-02-6	trans-1,3-Dichloropropene (3)	NS	0.40	1
110-75-8	2-Chloroethylvinyl Ether	NS	2.0	1
75-25-2	Bromoform	NS	2.0	1
79-34-5	1,1,2,2-Tetrachloroethane (4)	NS	0.20	1
127-18-4	Tetrachloroethene (4)	NS	0.10	1
108-90-7	Chlorobenzene	79	0.20	1
541-73-1	1,3-Dichlorobenzene	NS	0.50	1
95-50-1	1,2-Dichlorobenzene	NS	0.20	1
106-46-7	1,4-Dichlorobenzene	NS	0.20	1





Inter-Mountain
Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Geoscience Consultants

DATE REPORTED: 12/20/89

SITE: BLM-30

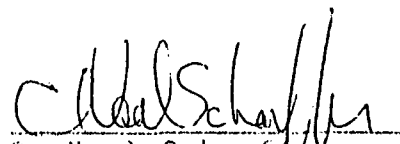
DATE RECEIVED: 12/13/89

LAB NO: F3659

DATE COLLECTED: 12/11/89

Lab pH (s.u.).....	7.38
Lab Conductivity, umhos/cm.....	3735
Lab resistivity, ohm-m.....	2.6774
Total Dissolved Solids (TDS), mg/l.....	3220
Total Dissolved Solids (calc), mg/l.....	3094
Total Alkalinity as CaCO ₃ , mg/l.....	140.58
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1621.00
Sodium Absorption Ratio.....	3.69

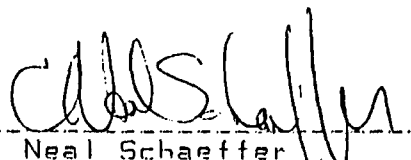
	mg/l	meq/l
Bicarbonate as HCO ₃	171.51	2.61
Carbonate as CO ₃	0.00	0.00
Chloride.....	256.94	7.25
Sulfate.....	1797.43	37.45
Calcium.....	553.75	27.63
Magnesium.....	58.22	4.79
Potassium.....	2.13	0.05
Sodium.....	341.40	14.85
Major Cations.....		47.32
Major Anions.....		47.51
Cation/Anion Difference.....		0.19 %


C. Neal Schaeffer
Senior Chemist

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/21/89
SAMPLE: 8909070830
SITE: BLM-30 DATE RECEIVED: 09/07/89
LAB NO: F3127 DATE COLLECTED: 09/07/89

Lab pH.....	7.47
Lab Conductivity, umhos/cm.....	3995
Lab resistivity, ohm-m.....	2.5031
Total Dissolved Solids (100), mg/l.....	3222
Total Dissolved Solids (calc), mg/l.....	3074
Total Alkalinity as CaCO ₃ , mg/l.....	152.74
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1580.54
Sodium Absorption Ratio.....	3.72
Nitrate, mg/l.....	8.09

	mg/l	meq/l
Bicarbonate as HCO ₃	186.34	3.05
Carbonate as CO ₃	0.00	0.00
Chloride.....	757.62	7.55
Sulfate.....	1771.10	36.90
Calcium.....	545.13	27.20
Magnesium.....	53.61	4.41
Potassium.....	5.76	0.15
Sodium.....	339.60	14.77
Major Cations.....		46.53
Major Anions.....		47.50
Cation/Anion Difference.....		1.03 %


C. Neal Schaeffer
Senior Chemist



Method/Analyte	Sample Identifications	
Matrix	01 water	02 water
Silver by ICPEs	Result	Det. Limit
Silver	ND	mg/L 0.010
Arsenic by GF - SW846	Result	Det. Limit
Arsenic	0.048	mg/L 0.0020
Barium by ICPEs	Result	Det. Limit
Barium	0.75	mg/L 0.010
Cadmium by ICPEs	Result	Det. Limit
Cadmium	ND	mg/L 0.0050
Chromium by ICPEs	Result	Det. Limit
Chromium	0.11	mg/L 0.010
Mercury by cold vapor	Result	Det. Limit
Mercury	ND	mg/L 0.0002
Lead by GF - SW846	Result	Det. Limit
Lead	0.046	mg/L 0.0020
Selenium by GF - SW846	Result	Det. Limit
Selenium	0.020	mg/L 0.0020

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

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Received: 09/08/89
RAS Sacramento
REPORT
Results by Sample
Work Order # 89-09-051

SAMPLE ID 8909070800 H2O BLN-20 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 09/07/89 Category
3018WS 09/12/89 AG_EM <0.007 mg/L BA_EM 0.57 mg/L CD_EM <0.004 mg/L CR_EM 0.043 mg/L
DATE COMPLETED
HG_OV <0.0002 mg/L SE_EM <0.075 mg/L

SAMPLE ID 8909070750 H2O Field BLN SAMPLE # 05 FRACTIONS: A
Date & Time Collected 09/07/89 Category
3018WS 09/12/89 AG_EM <0.007 mg/L BA_EM <0.003 mg/L CD_EM <0.004 mg/L CR_EM <0.007 mg/L
DATE COMPLETED
HG_OV <0.0002 mg/L SE_EM <0.075 mg/L

SAMPLE ID 8909071100 H2O BLN-27 SAMPLE # 06 FRACTIONS: A
Date & Time Collected 09/07/89 Category
3018WS 09/12/89 AG_EM <0.007 mg/L BA_EM 1.4 mg/L CD_EM <0.004 mg/L CR_EM 0.074 mg/L
DATE COMPLETED
HG_OV <0.0002 mg/L SE_EM <0.075 mg/L

Received: 09/08/89

RAS Sacramento

REPORT

Work Order # 89-09-051

Results By Test

SAMPLE	Test: 3015HS	Test: AG EN	Test: AS EN	Test: BA EN	Test: CD EN
Sample Id	Date Completed	mg/L	mg/Kg	mg/L	mg/L
SHS-1 01	09/12/89	<0.007	<0.053	0.27	<0.004
8909061455 H2O	DATE COMPLETED		mg/L		
SHS-2 02	09/12/89	<0.007	<0.053	1.5	<0.004
8909061535 H2O	DATE COMPLETED		mg/L		
BLM-37 03	09/12/89	<0.007	<0.053	0.36	<0.004
8909061600 H2O	DATE COMPLETED		mg/L		
BLM-38 04	09/12/89	<0.007	<0.053	0.57	<0.004
8909070830 H2O	DATE COMPLETED		mg/L		
Blank 05	09/12/89	<0.007	<0.053	<0.002	<0.004
8909070750 H2O	DATE COMPLETED		mg/L		
BLM-27 06	09/12/89	<0.007	<0.053	1.4	<0.004
8909071100 H2O	DATE COMPLETED		mg/L		
REAGENT BLANK H 07	09/12/89	<0.007	<0.053	<0.002	<0.004
	DATE COMPLETED		mg/L		

SAMPLE	Test: CR EN	Test: HG CV	Test: PB EN	Test: SE EN
Sample Id	mg/L	mg/L	mg/L	mg/Kg
SHS-1 01	0.011 *	<0.0002	<0.042	<0.075
8909061455 H2O				mg/L
SHS-2 02	0.029 *	<0.0002	0.062 *	<0.075
8909061535 H2O				mg/L
BLM-37 03	0.043	<0.0002	8.7	<0.075
8909061600 H2O				mg/L
BLM-38 04	0.043	<0.0002	0.055 *	<0.075
8909070830 H2O				mg/L
Blank 05	<0.007	<0.0002	<0.042	<0.075
8909070750 H2O				mg/L



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Received: 09/08/89

RAS Sacramento

REPORT

Work Order # 87-09-051

Results By Test

S#15-1 SALS-2 BLM37

Blank

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)

301SW5	09/12/89	09/12/89	09/12/89	09/12/89	09/12/89
Date Completed	DATE COMPLETED	DATE COMPLETED	DATE COMPLETED	DATE COMPLETED	DATE COMPLETED
AG EM .05	<0.007	<0.007	<0.007	<0.007	<0.007
AS EM .1	<0.053 mg/L	<0.053 mg/L	<0.053 mg/L	<0.053 mg/L	<0.053 mg/L
BA EM 1.0	0.27	1.5	0.35	0.57	<0.002
CD EM .01	<0.004	<0.004	<0.004	<0.004	<0.004
CR EM .05	0.011 *	0.029 *	0.043	0.043	<0.007
HG CV .062	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
FB EM .05	<0.042	0.062 *	8.7	0.056 *	<0.042
SE EM .05	<0.075	<0.075	<0.075	<0.075	<0.075
mg/Kg	mg/L	mg/L	mg/L	mg/L	mg/L

BLM27 Blank

TEST CODE	Sample 06	Sample 07
default units	(entered units)	(entered units)

301SW5	09/12/89	09/12/89
Date Completed	DATE COMPLETED	DATE COMPLETED
AG EM .05	<0.007	<0.007
AS EM .1	<0.053	<0.053
mg/Kg	mg/L	mg/L

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method: Volatile aromatics (1)	BLM 30	BLM 27	BLM 37	BLM 12
List: SW8020				
Sample ID:	8912111150	8912111255	8912111520	8912121000
Factor:	1	1	2000	10
Results in:	ug/L	ug/L	ug/L	ug/L
	01B	02B	03B	04B
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	16000	400	10	2.0
Chlorobenzene	ND	0.20	ND	0.20	ND	400	ND	2.0
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	800	ND	4.0
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	800	ND	4.0
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	600	ND	3.0
Ethylbenzene	ND	0.20	ND	0.20	16000	400	120	2.0
Toluene	ND	0.20	ND	0.20	1800 *	400	2.2 *	2.0
Total xylenes	ND	0.20	ND	0.20	75000	400	37	2.0
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	87		94		117		96	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
Radian Work Order: 89-12-112

Method: Halogenated volatiles (1)

List: SW8010

Sample ID:

891211150

8912111255

8912111520

8912121000

Factor:

1

1

5

1

Results in:

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.50	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	2.5	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	5.9	ND	1.2
Carbon Tetrachloride	ND	0.12	ND	0.12	ND	0.60	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	1.3	ND	0.25
Chloroethane	ND	0.52	ND	0.52	6.0 *q	2.6	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	2.5	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.50	ND	0.10
Chloromethane	ND	0.30	ND	0.30	6.0 *q	1.5	ND	0.30
Dibromochloromethane-(2)	ND	0.20	ND	0.20	ND	1.0	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	2.5	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	1.6	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	1.2	ND	0.24
1,1-Dichloroethane	ND	0.50	0.30 *	0.50	ND	2.5	ND	0.50
1,2-Dichloroethane	ND	0.10	ND	0.10	60	0.50	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	1.0	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	8.0	1.0	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.50	ND	0.10
cis-1,3-Dichloropropene-(2)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
trans-1,3-Dichloropropene	ND	0.30	ND	0.30	ND	1.5	ND	0.30
Methylene Chloride	ND	0.40	ND	0.40	ND	2.0	ND	0.40
1,1,2,2-Tetrachloroethane-(3)	ND	0.15	ND	0.15	ND	0.75	ND	0.15
Tetrachloroethene-(3)	ND	0.10	ND	0.10	ND	0.50	1.7	0.10
1,1,2-Trichloroethane-(2)	ND	0.20	ND	0.20	ND	1.0	ND	0.20
1,1,1-Trichloroethane	ND	0.20	0.71 *	0.20	ND	1.0	ND	0.20
Trichloroethene	ND	0.20	ND	0.20	ND	1.0	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	1.0	ND	0.20
Vinyl Chloride	ND	0.20	ND	0.20	ND	1.0	ND	0.20

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RAS Sacramento

REPORT
Results by Sample

Work Order # S9-09-049

SAMPLE ID 8909061600 H2O BLM-37 FRACTION 03C TEST CODE 602B NAME Purgeable Aromatics - H2O
Date & Time Collected 09/06/89 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST INSTRMT	MG B	INJECTD 09/20/89	FILE # FACTOR	EB09201B 500 UNITS	VERIFIED ug/L	JD	COMPOUND	RESULT	DET LIMIT	FACTOR
		CAS#								
		71-43-2					Sample	7400 C	50	500
		108-88-3					Toluene	ND	150	500
		100-41-4					Ethylbenzene	ND	50	500
		108-90-7					Chlorobenzene	ND	50	500
		1330-20-7					Total Xylenes	7400 C	100	500
		106-46-7					1,4-Dichlorobenzene	ND	100	500
		541-73-1					1,3-Dichlorobenzene	ND	200	500
		95-50-1					1,2-Dichlorobenzene	ND	100	500

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 83% recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions

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Received: 09/08/89

RAS Sacramento

REPORT
Results by Sample

Work Order # S9-09-049

SAMPLE ID 8909061600 H2O B/LM-37 FRACTION 03A TEST CODE 601 NAME Purgeable Halocarbons H2O
Date & Time Collected 09/06/89 Category _____

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST	MG	INSTRMT	B	INJECTD	FILE #	DB09205	VERIFIED	UNITS	DEI LIMIT	RESULT	FACTOR
				09/20/89		202		ug/L			
CAS#	COMPOUND	RESULT	DEI LIMIT	FACTOR							
74-87-3	Chloromethane	ND	100								200
74-83-9	Bromomethane	ND	200								200
75-01-4	Vinyl Chloride	ND	40								200
75-00-3	Chloroethane	ND	100								200
75-09-2	Methylene Chloride	ND	80								200
75-69-4	Trichlorofluoromethane	ND	20								200
75-35-4	1,1-Dichloroethene	ND	20								200
75-34-3	1,1-Dichloroethane	ND	20								200
540-59-0	Total 1,2-Dichloroethene (2)	ND	20								200
67-66-3	Chloroform	ND	20								200
107-06-2	1,2-Dichloroethane	78 C	20								200
71-55-6	1,1,1-Trichloroethane	ND	40								200
56-23-5	Carbon Tetrachloride	ND	40								200
75-27-4	Bromodichloromethane	ND	20								200
78-87-5	1,2-Dichloropropane	ND	20								200
10061-01-5	cis-1,3-Dichloropropene	ND	80								200
79-01-6	Trichloroethene	ND	40								200
124-48-1	Dibromochloromethane (3)	ND	40								200
79-00-5	1,1,2-Trichloroethane (3)	ND	40								200
10061-02-6	trans-1,3-Dichloropropene (3)	ND	80								200
110-75-8	2-Chloroethylvinyl Ether	ND	400								200
75-25-2	Bromoform	ND	400								200
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	40								200
127-18-4	Tetrachloroethene (4)	ND	20								200
108-90-7	Chlorobenzene	ND	40								200
541-73-1	1,3-Dichlorobenzene	ND	100								200
95-50-1	1,2-Dichlorobenzene	ND	40								200
106-46-7	1,4-Dichlorobenzene	ND	40								200

8210 Mosley Rd
Houston, Texas
77075-1110
713 943-9776

October 17, 1989

Geoscience Consultants, Ltd.
500 Copper Avenue N.W., Suite 200
Albuquerque, NM 87102
ATTN: Orlando Gomez

Laboratory Number: 8991029
Date Received: 09/13/89 11:28:30
Sample Identification: Sample #2909061300 Petroleum BLM-37
9-6-89 1300

ANALYTICAL RESULTS

Simulated Distillation by GC

---% OFF	DEG F.
---IBP/5	133/190
---10/15	213/243
---20/25	274/293
---30/35	321/341
---40/45	366/392
---50/55	418/441
---60/65	458/483
---70/75	505/527
---80/85	553/580
---90/95	612/657

Final Boiling Point 795

Arsenic by ICP, ppm wt.	<17
Copper by ICP, ppm wt.	0.07
Iron by ICP, ppm wt.	2.2
Potassium by ICP, ppm wt.	8.6
Nickel by ICP, ppm wt.	<0.18

Continued on Page 2

8210 Mosley Rd
Houston, Texas
77075-1110
713 943-9776

Geoscience Consultants, Ltd.
ATTN: Orlando Gomez

Page 2

Laboratory No: 8991029

Lead by ICP, ppm wt.	324
Selenium by ICP, ppm wt.	<2.4
Vanadium by ICP, ppm wt.	<0.06
Arsenic, EP TOX Extraction, mg/l	<0.01
Barium, EP TOX Extraction, mg/l	0.21
Cadmium, EP TOX Extraction, mg/l	<0.01
Lead, EP TOX Extraction, mg/l	1.05
Mercury, EP TOX Extraction, mg/l	<0.01
Selenium, EP TOX Extraction, mg/l	<0.04
Silver, EP TOX Extraction, mg/l	<0.01

Lisa Robinson

Lisa Robinson
Chemist



CLIENT: Geoscience Consultants

DATE REPORTED: 12/20/89

SITE: BLM-37

DATE RECEIVED: 12/13/89

LAB #0: F3661

DATE COLLECTED: 12/11/89

Lab pH (s.u.).....	7.95
Lab Conductivity, umhos/cm.....	5443
Lab resistivity, ohm-m.....	1.8372
Total Dissolved Solids (TDS), mg/l.....	4606
Total Dissolved Solids (calc), mg/l.....	4131
Total Alkalinity as CaCO ₃ , mg/l.....	396.44
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1705.21
Sodium Absorption Ratio.....	7.36

	mg/l	meq/l
Bicarbonate as HCO ₃	483.66	7.93
Carbonate as CO ₃	0.00	0.00
Chloride.....	457.68	12.91
Sulfate.....	2071.49	43.16
Calcium.....	623.23	31.10
Magnesium.....	36.54	3.01
Potassium.....	5.56	0.14
Sodium.....	698.40	30.38
Major Cations.....		64.62
Major Anions.....		64.00
Cation/Anion Difference.....		0.49 %

C. Neal Schaeffer
C. Neal Schaeffer
Senior Chemist

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/21/89
SAMPLE: 8909061600
SITE: BLM-37 DATE RECEIVED: 09/07/89
LAB NO: F3125 DATE COLLECTED: 09/07/89

Lab pH..... 7.28
Lab Conductivity, umhos/cm..... 5847
Lab resistivity, ohm-m..... 1.7103
Total Dissolved Solids (180°), mg/l..... 4598
Total Dissolved Solids (calc), mg/l..... 4127
Total Alkalinity as CaCO₃, mg/l..... 567.32
Total Acidity as CaCO₃, mg/l..... 0.00
Total Hardness as CaCO₃, mg/l..... 2073.62
Sodium Absorption Ratio..... 6.22
Nitrate, mg/l..... 124.4

	mg/l	meq/l
Bicarbonate as HCO ₃	692.13	11.35
Carbonate as CO ₃	0.00	0.00
Chloride.....	535.24	15.10
Sulfate.....	2064.91	43.02
Calcium.....	66.12	3.30
Magnesium.....	464.10	38.17
Potassium.....	5.40	0.14
Sodium.....	651.00	28.32
Major Cations.....		69.93
Major Anions.....		69.46
Cation/Anion Difference.....		0.33 %

C. Neal Schaeffer
C. Neal Schaeffer
Senior Chemist



Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-112

Method/Analyte	Sample Identifications					
	BLM 30 8912111150		BLM 27 8912111255		BLM 31 8912111520	
Matrix	01 water		02 water		03 water	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Silver by ICPEs						
Silver	ND	mg/L 0.010	ND	mg/L 0.010	ND	mg/L 0.010
Arsenic by GF - SW846						
Arsenic	0.048	mg/L 0.0020	0.061	mg/L 0.0040	0.030	mg/L 0.0020
Barium by ICPEs						
Barium	0.75	mg/L 0.010	1.2	mg/L 0.010	0.22	mg/L 0.010
Cadmium by ICPEs						
Cadmium	ND	mg/L 0.0050	ND	mg/L 0.0050	ND	mg/L 0.0050
Chromium by ICPEs						
Chromium	0.11	mg/L 0.010	0.074	mg/L 0.010	0.037 *	mg/L 0.010
Mercury by cold vapor						
Mercury	ND	mg/L 0.0002	ND	mg/L 0.0002	ND	mg/L 0.0002
Lead by GF - SW846						
Lead	0.046	mg/L 0.0020	0.082	mg/L 0.0020	3.10	mg/L 0.0020
Selenium by GF - SW846						
Selenium	0.020	mg/L 0.0020	0.0024 *	mg/L 0.0020	ND	mg/L 0.0020

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

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RAG Sacramento

REPORT

Work Order # 89-07-051

Received: 09/06/89

Results by Sample

SAMPLE ID 8909061455 H2O SHS-1 SAMPLE # 01 FRACTIONS: A
DATE COMPLETED 09/12/89 AG_EM <0.007 mg/L AS_EM <0.053 mg/L BA_EM 0.27 mg/L CD_EM <0.004 mg/L CR_EM 0.011 mg/L
HG_OV <0.0002 mg/L SE_EM <0.075 mg/L

SAMPLE ID 8909061535 H2O SHS-2 SAMPLE # 02 FRACTIONS: A
DATE COMPLETED 09/12/89 AG_EM <0.007 mg/L AS_EM <0.053 mg/L BA_EM 1.5 mg/L CD_EM <0.004 mg/L CR_EM 0.029 mg/L
HG_OV <0.0002 mg/L SE_EM <0.075 mg/L

SAMPLE ID 8909061500 H2O SHS-37 SAMPLE # 03 FRACTIONS: A
DATE COMPLETED 09/12/89 AG_EM <0.007 mg/L AS_EM <0.053 mg/L BA_EM 0.36 mg/L CD_EM <0.004 mg/L CR_EM 0.043 mg/L
HG_OV <0.0002 mg/L SE_EM <0.075 mg/L



Received: 09/08/89

RAS Sacramento
Results By Test

Work Order # 89-09-051

SAMPLE	Test: 3015HS	Test: AG EN	Test: AS EN	Test: BA EN	Test: CD EN
Sample Id	Date Completed	mg/L	mg/Kg	mg/L	mg/L
SHS-1 01	09/12/89	<0.007	<0.053	0.27	<0.004
8909061455 H2O	DATE COMPLETED				
SHS-2 02	09/12/89	<0.007	<0.053	1.5	<0.004
8909061535 H2O	DATE COMPLETED				
BLM-37 03	09/12/89	<0.007	<0.053	0.36	<0.004
8909061600 H2O	DATE COMPLETED				
BLM-30 04	09/12/89	<0.007	<0.053	0.57	<0.004
8909070830 H2O	DATE COMPLETED				
Blank 05	09/12/89	<0.007	<0.053	<0.002	<0.004
8909070750 H2O	DATE COMPLETED				
BLM-27 06	09/12/89	<0.007	<0.053	1.4	<0.004
8909071100 H2O	DATE COMPLETED				
07	09/12/89	<0.007	<0.053	<0.002	<0.004
REAGENT BLANK H	DATE COMPLETED				

SAMPLE	Test: CR EN	Test: HG CV	Test: PB EN	Test: SE EN
Sample Id	mg/L	mg/L	mg/L	mg/Kg
SHS-1 01	0.011 *	<0.0002	<0.042	<0.075
8909061455 H2O				mg/L
SHS-2 02	0.029 *	<0.0002	0.062 *	<0.075
8909061535 H2O				mg/L
BLM-37 03	0.043	<0.0002	8.7	<0.075
8909061600 H2O				mg/L
BLM-30 04	0.043	<0.0002	0.056 *	<0.075
8909070830 H2O				mg/L
Blank 05	<0.007	<0.0002	<0.042	<0.075
8909070750 H2O				mg/L



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Received: 09/08/89

RAS Sacramento

REPORT

Work Order # 57-09-051

Results By Test

S+15-1 S+15-2 S+15-3 BLM30 BLM31 BLM32 BLM33 BLM34 BLM35 BLM36 BLM37 BLM38 BLM39 BLM40 BLM41 BLM42 BLM43 BLM44 BLM45 BLM46 BLM47 BLM48 BLM49 BLM50 BLM51 BLM52 BLM53 BLM54 BLM55 BLM56 BLM57 BLM58 BLM59 BLM60 BLM61 BLM62 BLM63 BLM64 BLM65 BLM66 BLM67 BLM68 BLM69 BLM70 BLM71 BLM72 BLM73 BLM74 BLM75 BLM76 BLM77 BLM78 BLM79 BLM80 BLM81 BLM82 BLM83 BLM84 BLM85 BLM86 BLM87 BLM88 BLM89 BLM90 BLM91 BLM92 BLM93 BLM94 BLM95 BLM96 BLM97 BLM98 BLM99 BLM100

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)

301SNS	09/12/89	09/12/89	09/12/89	09/12/89	09/12/89
Date Completed	DATE COMPLETED	DATE COMPLETED	DATE COMPLETED	DATE COMPLETED	DATE COMPLETED
AG EM .05	<0.007	<0.007	<0.007	<0.007	<0.007
AS EM .1	<0.053	<0.053	<0.053	<0.053	<0.053
BA EM 1.0	0.27	1.5	0.35	0.57	<0.002
CD EM .01	<0.004	<0.004	<0.004	<0.004	<0.004
CR EM .05	0.011 *	0.029 *	0.043	0.043	<0.007
HG CV .062	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
FB EM .05	<0.042	0.062 *	8.7	0.056 *	<0.042
SE EM .05	<0.075	<0.075	<0.075	<0.075	<0.075
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L

BLM27 BLM28 BLM29 BLM30 BLM31 BLM32 BLM33 BLM34 BLM35 BLM36 BLM37 BLM38 BLM39 BLM40 BLM41 BLM42 BLM43 BLM44 BLM45 BLM46 BLM47 BLM48 BLM49 BLM50 BLM51 BLM52 BLM53 BLM54 BLM55 BLM56 BLM57 BLM58 BLM59 BLM60 BLM61 BLM62 BLM63 BLM64 BLM65 BLM66 BLM67 BLM68 BLM69 BLM70 BLM71 BLM72 BLM73 BLM74 BLM75 BLM76 BLM77 BLM78 BLM79 BLM80 BLM81 BLM82 BLM83 BLM84 BLM85 BLM86 BLM87 BLM88 BLM89 BLM90 BLM91 BLM92 BLM93 BLM94 BLM95 BLM96 BLM97 BLM98 BLM99 BLM100

TEST CODE	Sample 06	Sample 07
default units	(entered units)	(entered units)
301SNS	09/12/89	09/12/89
Date Completed	DATE COMPLETED	DATE COMPLETED
AG EM .05	<0.007	<0.007
AS EM .1	<0.053	<0.053
BA EM 1.0	<0.053	<0.053
CD EM .01	<0.004	<0.004
CR EM .05	<0.007	<0.007
HG CV .062	<0.0002	<0.0002
FB EM .05	<0.042	<0.042
SE EM .05	<0.075	<0.075
mg/L	mg/L	mg/L

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-151

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006201100	9006200945	DECON BLANK	TRIP BLANK
Factor:	10	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	05A	06A	07A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	5.0	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	12	ND	1.2	ND	1.2	ND	1.2
Carbon tetrachloride	ND	1.2	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	2.5	ND	0.25	0.59 Xa	0.25	ND	0.25
Chloroethane	ND	5.2	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinyl ether	ND	5.0	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	1.0	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	3.0	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane	ND	2.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	5.0	ND	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	ND	1.0	ND	0.10	ND	0.10	ND	0.10
1,1-Dichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	0.34	ND	0.34	ND	0.34
Methylene chloride	ND	4.0	ND	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	1.5	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene	2.1 C1a	1.0	ND	0.10	ND	0.10	ND	0.10
1,1,1-Trichloroethane	ND	2.0	ND	0.20	0.44 Xa	0.20	0.33 Xa	0.20
1,1,2-Trichloroethane	ND	2.0	ND	0.20	ND	0.20	ND	0.20
Trichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
Trichlorofluoromethane	ND	2.0	ND	0.20	ND	0.20	ND	0.20
Vinyl chloride	ND	2.0	ND	0.20	ND	0.20	ND	0.20

ND Not detected at specified detection limit

I Result differs from last report - see report narrative

X See definition in report narrative

C Confirmed on second column or by GC/MS

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: SO-06-151

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:	9006201100	9006200945	DECON BLANK	TRIP BLANK
Factor:	10	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	05C	06C	07C	08C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	5.4 C ^a	2.0	ND	0.20	ND	0.20	ND	0.20
Chlorobenzene	230 C	2.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	4.0	ND	0.40	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	4.0	ND	0.40	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	3.0	ND	0.30	ND	0.30	ND	0.30
Ethylbenzene	78 G	2.0	ND	0.20	ND	0.20	ND	0.20
Toluene	19 C	2.0	ND	0.20	ND	0.20	ND	0.20
Xylenes (total)	730 C	2.0	ND	0.20	ND	0.20	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	51		66		84		115	
Control Limits: 40 to 140								

C Confirmed on second column or by GC/MS

ND Not detected at specified detection limit

^a Est. result less than 5 times detection limit

G Indicates an estimated GC value due to interferences.

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-151

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006201100	9006200945	DECON BLANK	TRIP BLANK
Factor:	10	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	05A	06A	07A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	5.0	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	12	ND	1.2	ND	1.2	ND	1.2
Carbon tetrachloride	ND	1.2	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	2.5	ND	0.25	0.59 Xa	0.25	ND	0.25
Chloroethane	ND	5.2	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinyl ether	ND	5.0	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	1.0	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	3.0	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane	ND	2.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	5.0	ND	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	ND	1.0	ND	0.10	ND	0.10	ND	0.10
1,1-Dichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	0.34	ND	0.34	ND	0.34
Methylene chloride	ND	4.0	ND	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	1.5	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene	2.1 C1a	1.0	ND	0.10	ND	0.10	ND	0.10
1,1,1-Trichloroethane	ND	2.0	ND	0.20	0.44 Xa	0.20	0.33 Xa	0.20
1,1,2-Trichloroethane	ND	2.0	ND	0.20	ND	0.20	ND	0.20
Trichloroethene	ND	2.0	ND	0.20	ND	0.20	ND	0.20
Trichlorofluoromethane	ND	2.0	ND	0.20	ND	0.20	ND	0.20
Vinyl chloride	ND	2.0	ND	0.20	ND	0.20	ND	0.20

ND Not detected at specified detection limit

I Result differs from last report - see report narrative

X See definition in report narrative

C Confirmed on second column or by GC/MS

a Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

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Received: 09/08/89

RAS Sacramento
Results by Sample

REPORT

Work Order # S9-09-049

SAMPLE ID 8909070750 H2O *Field Blank* FRACTION 05A TEST CODE 601 NAME Purgeable Halocarbons H2O
Date & Time Collected 09/07/89 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST	MG	INSTRMT	B	INJECTD	09/20/89	FILE #	DEQ#2010	VERIFIED	JD
						FACTOR	1	UNITS	ug/L
	CAS#			COMPOUND		RESULT	DET LIMIT	FACTOR	
	74-87-3			Chloromethane		ND	0.50	1	
	74-83-9			Bromomethane		ND	1.0	1	
	75-01-4			Vinyl Chloride		ND	0.20	1	
	75-00-3			Chloroethane		ND	0.50	1	
	75-09-2			Methylene Chloride		ND	0.40	1	
	75-69-4			Trichlorofluoromethane		ND	0.10	1	
	75-35-4			1,1-Dichloroethane		ND	0.10	1	
	75-34-3			1,1-Dichloroethane		ND	0.10	1	
	540-59-0			Total 1,2-Dichloroethene (2)		ND	0.10	1	
	67-66-3			Chloroform		ND	0.10	1	
	107-06-2			1,2-Dichloroethane		ND	0.10	1	
	71-55-6			1,1,1-Trichloroethane		ND	0.20	1	
	56-23-5			Carbon Tetrachloride		ND	0.20	1	
	75-27-4			Bromodichloromethane		ND	0.10	1	
	78-87-5			1,2-Dichloropropene		ND	0.10	1	
	10061-01-5			cis-1,3-Dichloropropene		ND	0.40	1	
	79-01-6			Trichloroethene		ND	0.20	1	
	124-48-1			Dibromochloromethane (3)		ND	0.20	1	
	79-00-5			1,1,2-Trichloroethane (3)		ND	0.20	1	
	10061-02-6			trans-1,3-Dichloropropene (3)		ND	0.40	1	
	110-75-8			2-Chloroethylvinyl Ether		ND	2.0	1	
	75-25-2			Bromoform		ND	2.0	1	
	79-34-5			1,1,2,2-Tetrachloroethane (4)		ND	0.20	1	
	127-18-4			Tetrachloroethene (4)		ND	0.10	1	
	108-90-7			Chlorobenzene		ND	0.20	1	
	541-73-1			1,3-Dichlorobenzene		ND	0.50	1	
	95-50-1			1,2-Dichlorobenzene		ND	0.20	1	
	106-46-7			1,4-Dichlorobenzene		ND	0.20	1	

Received: 09/08/89

RAS Sacramento

REPORT

Results by Sample

Work Order # 89-09-049

Continued From Above

SAMPLE ID 8909070750 H2O

Field Blank

FRACTION 05A

TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/07/89

Category

SURROGATES

540-36-3	1-4-Difluorobenzene	NA % Recovery
450-00-4	1-Bromo-4-Fluorobenzene	97 % Recovery

- (1) See Appendix A for Glossary of Report and Data Flag Definitions
- (2) Quantitated as the Trans-isomer
- (3) Dibromochloromethane, 1,1,2-Trichloroethane and Trans-1,3-dichloropropene co-elute.
- (4) 1,1,2,2-Tetrachloroethane and tetrachloroethene co-elute.

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RAS Sacramento
Results by Sample

REPORT

Work Order # S9-09-019

SAMPLE ID 8909070750 H2O *Field Blank* FRACTION OSC TEST CODE 602B NAME Purgeable Aromatics - H2O
Date & Time Collected 09/07/89 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST INSTRMT	MG B	INJECTD 09/20/89	FILE # E3052011	VERIFIED JD	1 UNITS ug/L	COMPOUND	RESULT	DET LIMIT	FACTOR
						Benzene	ND	0.10	1
						Toluene	ND	0.30	1
						Ethylbenzene	0.27 C	0.10	1
						Chlorobenzene	ND	0.10	1
						Total Xylenes	ND	0.20	1
						1,4-Dichlorobenzene	ND	0.20	1
						1,3-Dichlorobenzene	ND	0.40	1
						1,2-Dichlorobenzene	ND	0.20	1

SURROGATE

450-00-4 1-Bromo-4-Fluorobenzene 76% recovery

(1) See Appendix A for Glossary of Report and Data Flag Definitions

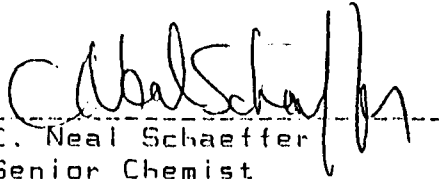


CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/21/89
SAMPLE: 8909070750
SITE: Field Blank DATE RECEIVED: 09/07/89
LAB NO: F3126 DATE COLLECTED: 09/07/89

Lab pH.....	6.79
Lab Conductivity, umhos/cm.....	6.21
Lab resistivity, ohm-m.....	N/A
Total Dissolved Solids (180), mg/l..	2
Total Dissolved Solids (calc), mg/l.	3
Total Alkalinity as CaCO ₃ , mg/l.....	0.95
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	2.02
Sodium Absorption Ratio.....	0.03
Nitrate, mg/l.....	0.08

	mg/l	meq/l
Bicarbonate as HCO ₃	1.16	0.02
Carbonate as CO ₃	0.00	0.00
Chloride.....	0.00	0.00
Sulfate.....	1.65	0.03
Calcium.....	0.42	0.02
Magnesium.....	0.23	0.02
Potassium.....	0.10	0.00
Sodium.....	0.10	0.00
Major Cations.....		0.05
Major Anions.....		0.05
Cation/Anion Difference.....		6.03 %*

* All analytes have been rerun with no significant change. It is virtually impossible to balance as the EC is extremely low. Essentially there is nothing in the sample to analyze.


C. Neal Schaeffer
Senior Chemist



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 Received: 09/08/89
 RAS Sacramento
 Results by Sample
 REPORT
 Work Order # 89-09-051

SAMPLE ID 8909070830 H2O B/LM-30 SAMPLE # 04 FRACTIONS: A
 Date & Time: Collected 09/07/89 Category
 3018WS 09/12/89 AG_EM <0.007 mg/L
 DATE COMPLETED
 HQ_CV <0.0002 PB_EM 0.056 % SE_EM <0.075 mg/L
 mg/L
 AS_EM <0.053 mg/L
 BA_EM 0.57 mg/L
 CD_EM <0.004 mg/L
 CR_EM 0.043 mg/L

SAMPLE ID 8909070750 H2O Field-B/LM-30 SAMPLE # 05 FRACTIONS: A
 Date & Time: Collected 09/07/89 Category
 3018WS 09/12/89 AG_EM <0.007 mg/L
 DATE COMPLETED
 HQ_CV <0.0002 PB_EM <0.043 mg/L
 mg/L
 AS_EM <0.053 mg/L
 BA_EM <0.002 mg/L
 CD_EM <0.004 mg/L
 CR_EM <0.007 mg/L

SAMPLE ID 8909071100 H2O B/LM-27 SAMPLE # 05 FRACTIONS: A
 Date & Time: Collected 09/07/89 Category
 3018WS 09/12/89 AG_EM <0.007 mg/L
 DATE COMPLETED
 HQ_CV <0.0002 PB_EM 0.13 % SE_EM <0.075 mg/L
 mg/L
 AS_EM <0.053 mg/L
 BA_EM 1.4 mg/L
 CD_EM <0.004 mg/L
 CR_EM 0.074 mg/L