

GW - 40

INSPECTIONS & DATA

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

MONITOR WELL GBR-27/GRW-11

<u>SAMPLER</u>	<u>GIANT</u>	<u>OCD</u>	<u>OCD*</u>	<u>OCD</u>	<u>GIANT</u>
<u>DATE</u>	<u>5/18/86</u>	<u>6/5/86</u>	<u>6/5/86</u>	<u>11/21/86</u>	<u>10/7/87</u>
<u>PARAMETER</u>					
DETECTION LIMIT	1.0	50.0	5.0	5.0	<1.0
BENZENE	ND	410.0	50.0	ND	70.5
BROMODICHLOROMETHANE	NA	ND	ND	ND	ND
BROMOFORM	NA	ND	ND	ND	ND
BROMOMETHANE	NA	ND	ND	ND	ND
CARBON TETRACHLORIDE	NA	ND	ND	ND	ND
CHLOROBENZENE	NA	ND	ND	ND	ND
CHLOROETHANE	NA	ND	ND	ND	ND
CHLOROFORM	NA	ND	ND	ND	ND
CHLOROMETHANE	NA	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	NA	ND	ND	ND	ND
1,2-DICHLOROBENZENE	NA	ND	ND	ND	ND
1,3-DICHLOROBENZENE	NA	ND	ND	ND	ND
1,4-DICHLOROBENZENE	NA	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	NA	ND	ND	ND	ND
1,1-DICHLOROETHANE	NA	ND	ND	ND	ND
1,2-DICHLOROETHANE	NA	TR	6.0	5.0	68.7
1,1-DICHLOROETHENE	NA	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	NA	ND	ND	ND	NA
TRANS-1,2-DICHLOROETHENE	NA	ND	ND	ND	ND
1,2-DICHLOROPROPANE	NA	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	12.0	ND	1.9
METHYLENE CHLORIDE	NA	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	NA	ND	ND	ND	ND
TETRACHLOROETHENE	NA	ND	ND	ND	ND
TOLUENE	ND	120.0	74.0	ND	1.5
1,1,1-TRICHLOROETHANE	NA	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	NA	ND	ND	ND	ND
TRICHLOROETHENE	NA	ND	ND	ND	ND
TRICHLOROFLUOROMETHANE	NA	ND	ND	ND	ND
VINYL CHLORIDE	NA	ND	ND	ND	ND
TOTAL XYLENES	ND	506.0	457.0	ND	7.9

TR - TRACE
 ND - NOT DETECTED
 NA - NOT ANALYZED
 * - DUPLICATE ANALYSIS



EPA METHOD 601/602
PROJECT: GBR

SAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
ANALYSIS DATE/TIME: 10/12/87, 18:20
MATRIX: WATER
ANALYST: MGB

SAMPLE ID: 8710070955
LOCATION: GBR-27
LAB SAMPLE #: 3439-7
UNITS: ug/l
DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.02	ND
BROMOMETHANE	0.06	ND
DICHLORODIFLUOROMETHANE	0.04	ND
VINYL CHLORIDE	0.05	ND
CHLOROETHANE	0.1	ND
METHYLENE CHLORIDE	0.02	ND
TRICHLOROFLUOROMETHANE	0.07	ND
1,1-DICHLOROETHENE	0.07	ND
1,1-DICHLOROETHANE	0.05	ND
TRANS-1,2-DICHLOROETHENE	0.09	ND
CHLOROFORM	0.05	ND
1,2-DICHLOROETHANE	0.07	68.7
1,1,1-TRICHLOROETHANE	0.03	ND
CARBON TETRACHLORIDE	0.08	ND
BROMODICHLOROMETHANE	0.04	ND
1,2-DICHLOROPROPANE	0.03	ND
TRANS-1,3-DICHLOROPROPENE	0.11	ND
TRICHLOROETHENE	0.06	ND
DIBROMOCHLOROMETHANE	0.07	ND
1,1,2-TRICHLOROETHANE	0.03	ND
CIS-1,3-DICHLOROPROPENE	0.07	ND
2-CHLOROETHYL VINYL ETHER	0.03	ND
BROMOFORM	0.09	ND
1,1,2,2-TETRACHLOROETHANE	0.03	ND
TETRACHLOROETHENE	0.03	ND
BENZENE	0.2	70.5
TOLUENE	0.4	1.5
CHLOROBENZENE	0.16	ND
ETHYLBENZENE	0.1	1.9
1,3-DICHLOROBENZENE	0.4	ND
1,2-DICHLOROBENZENE	0.4	ND
1,4-DICHLOROBENZENE	0.6	ND
M-XYLENE	0.18	2.5
O,P-XYLENE	0.15	5.4

123 % SURROGATE RECOVERY

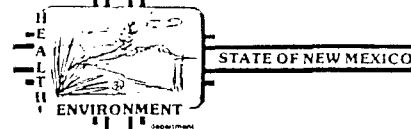
COMMENTS: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: *JMH*

DATE: 10/28/87

86- 1360-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088S.L.D. No. OR- 1360 H, B
DATE REC. 11-26-86

PHONE(S): 327-5812 USER CODE: 3 2 2 3 5

SUBMITTER: David Boyer CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 861121122201010

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: CODE: ☐ ☐ ☐COUNTY: San Juan; CITY: Leo Acres CODE: ☐ ☐ ☐

LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+27+1111 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.**PURGEABLE SCREENS**

- ☐
- (753) Aliphatic Purgeables (1-3 Carbons)
-
- ☒
- (754) Aromatic & Halogenated Purgeables
-
- ☐
- (765) Mass Spectrometer Purgeables
-
- ☐
- (766) Trihalomethanes
-
- Other Specific Compounds or Classes

☐
☐
☐
☐
☐
☐**EXTRACTABLE SCREENS**

- ☐
- (751) Aliphatic Hydrocarbons
-
- ☐
- (760) Organochlorine Pesticides
-
- ☐
- (755) Base/Neutral Extractables
-
- ☐
- (758) Herbicides, Chlorophenoxy acid
-
- ☐
- (759) Herbicides, Triazines
-
- ☐
- (760) Organochlorine Pesticides
-
- ☐
- (761) Organophosphate Pesticides
-
- ☐
- (767) Polychlorinated Biphenyls (PCB's)
-
- ☐
- (764) Polynuclear Aromatic Hydrocarbons
-
- ☐
- (762) SDWA Pesticides & Herbicides

Remarks:

FIELD DATA:

pH= ; Conductivity= 2300 umho/cm at 19° C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Grant, GBR-27, Recovery well

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): Will Olson Method of Shipment to the Lab: Hand carried

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐
- NP: No Preservation; Sample stored at room temperature.
-
- ☒
- P-Ice Sample stored in an ice bath (Not Frozen).
-
- ☐
- P-Na
- ₂
- S
- ₂
- O
- ₃
- Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODYI certify that this sample was transferred from Will Olson to Mary C. Edenat (location) HED/SLD on 11/26/86 - 4:10 and thatthe statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐Signatures Will Olson Mary C. Eden

For OCD Use: Date Owner Notified Phone or Letter? Initials

ANALYSES PERFORMED

LAB. NO. OR- 1360

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
aromatic purgeables	ND*		
1,2-dichloroethane	5		
* DETECTION LIMIT *	* 5 ppb	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Five other compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

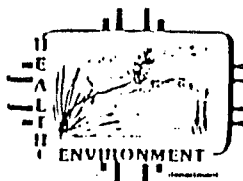
Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: JSFdate: 12-4/12-9-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4+9 Dec 86 Analyst's signature: JSF

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R Meyerheim



STATE OF NEW MEXICO

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

754

Purgeable

86-0682-C

REPORT TO:
PLEASE PRINT

DAVID G. BOYER

NEW MEXICO OIL CONSERVATION DIV.

P.O. BOX 2088

SANTA FE, NM 87504-2088

S.L.D. No.: OR-682-H.B.

DATE REC.: 06/09/86

SLD PRIORITY #:

PHONE(S):

827-5812

USER CODE: 8 2 2 3 5

SUBMITTER:

DAVID BOYER

SUBMITTER CODE: | | | | |

SAMPLE TYPE: WATER ☒, SOIL ☐, OTHER

SAMPLE TYPE CODE: | | |

COLLECTED: 86/06/05 - 20:00 BY DGB

DATE

TIME

INITIALS

CODE: | | | | | | | | | | | | | | | |

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SOURCE: GBR-27

CODE: | | | | | | | | | | | | | | | |

AQUIFER

DEPTH

NEAREST CITY: Bloomfield

CODE: | | | | | | |

LOCATION: Giant Bloomfield Refinery

CODE: 2 9 W 1 2 4 2 7 1 1 1 1

TOWNSHIP

RANGE

SECTION

TRACTS

pH= 7; Conductivity= 2200 umho/cm at 21 °C; Chlorine Residual=

Dissolved Oxygen= mg/l; Alkalinity=; Flow Rate=

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Diesel recovery well sample is water from
beneath product. Sheen and hydrocarbonologyI certify that the statements in this block accurately reflect the results
of my field analyses, observations and activities. David G. Boyer

Method of shipment to the Laboratory Hand Carried

This form accompanies 2 Septum Vials, Glass Jugs,
Containers are marked as follows to indicate preservation:

- ☐ NP: No preservation; sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (not frozen).
☐ P-Na₂S₂O₃; Sample preserved with Na₂S₂O₃ to remove chlorine residual.

I (we) certify that this sample was transferred from DGB
to R Meyerlein at (location) SLD on

4/9/86-16:19 and that the statements in this block are correct.

DATE AND TIME

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures R Meyerlein DGB

(we) certify that this sample was transferred from

at (location) on

- : and that the statements in this block are correct.

DATE AND TIME

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures

ANALYSES REQUESTED

LAB. No.: ORG-

682

PLEASE CHECK THE APPROPRIATE BOXES BELOW TO INDICATE THE TYPE OF ANALYTICAL SCREENS REQUIRED. WHENEVER POSSIBLE LIST SPECIFIC COMPOUNDS SUSPECTED OR REQUIRED.

QUALITATIVE	QUANTITATIVE	PURGEABLE SCREENS	QUALITATIVE	QUANTITATIVE	EXTRACTABLE SCREENS
		ALIPHATIC HYDROCARBON SCREEN			ALIPHATIC HYDROCARBONS
X	X	AROMATIC HYDROCARBON SCREEN			CHLORINATED HYDROCARBON PESTICIDES
X	X	HALOGENATED HYDROCARBON SCREEN			CHLOROPHENOXY ACID HERBICIDES
		GAS CHROMATOGRAPH/MASS SPECTROMETER			HYDROCARBON FUEL SCREEN
					ORGANOPHOSPHATE PESTICIDES
					POLYCHLORINATED BIPHENYLS (PCB's)
					POLYNUCLEAR AROMATIC HYDROCARBONS
					TRIAZINE HERBICIDES
		SPECIFIC COMPOUNDS			SPECIFIC COMPOUNDS

REMARKS:

ANALYTICAL RESULTS

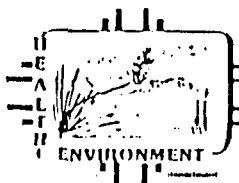
COMPOUND 682-A	[PPB]	COMPOUND 682-B	[PPB]
Benzene	410	Benzene	50
Toluene	120	Toluene	74
Ethylbenzene	none detected*	Ethylbenzene	12
p-Xylene	96	p-Xylene	77
m-Xylene	240	m-Xylene	240
o-Xylene	170	o-Xylene	140
1,2-dichloroethane	trace < 50 ppb	1,2-dichloroethane	6
* DETECTION LIMIT (682-A)	50 ug/ml	* DETECTION LIMIT (682-B)	5 ug/ml

REMARKS: The results between the duplicate samples were different so they are reported here for comparison. Fifteen other compounds were detected by the aromatic screen in sample 682-B that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ NO ☐ . Seal(s) broken by: TAF date: 12/13 June 86
 I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements in this block and the analytical data on this page accurately reflect the analytical results for this sample.
 Date(s) of analysis: 12/13 June 86. Analyst's signature: R. D. Murray
 I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block. Reviewers signature: R. Meyer

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____



STATE OF NEW MEXICO

PATN

86-0690-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO: DAVID G. BOYER
PLEASE PRINT
NEW MEXICO OIL CONSERVATION DIV.
P.O. BOX 2088
SANTA FE, NM 87504-2088

S.L.D. No.: OR-690-14B
DATE REC.: 6/09/80
SLD PRIORITY #:

PHONE(S): 827-5812

USER CODE: 8 2 2 3 5

SUBMITTER: DAVID BOYER

SUBMITTER CODE: | | | | |

SAMPLE TYPE: WATER ☒, SOIL ☐, OTHER ☐

SAMPLE TYPE CODE: | | |

COLLECTED: 86/06/08 - 20:00 BY ASB
DATE TIME INITIALSCODE: | | | | | | | | | | | | | | | |
Y Y M M D D H H M M I I I

SOURCE: GBR-27

CODE: | | | | | | | | | | | | | | | |
AQUIFER DEPTH

NEAREST CITY: Bloomfield

CODE: | | | | |

LOCATION: Giant Bloomfield Refinery

CODE: 29 N 12 W 27 1 1 1
TOWNSHIP RANGE SECTION TRACTS

pH= 7; Conductivity= 7200 umho/cm at 21°C; Chlorine Residual=

Dissolved Oxygen= mg/l; Alkalinity=; Flow Rate=

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Diesel recovery well, sample is water from
beneath product Sheen & Hydrocarbon odor

I certify that the statements in this block accurately reflect the results
of my field analyses, observations and activities. David G Boyer

Method of shipment to the Laboratory Hand Carried

This form accompanies Septum Vials, 2 Glass Jugs,
Containers are marked as follows to indicate preservation:

- ☐ NP: No preservation; sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (not frozen).
☐ P-Na₂S₂O₃; Sample preserved with Na₂S₂O₃ to remove chlorine residual.

I (we) certify that this sample was transferred from David G Boyer
to R Meyerheim at (location) 5112 on

6/9/84 - 16:24 and that the statements in this block are correct.

DATE AND TIME

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures R Meyerheim David G Boyer

(we) certify that this sample was transferred from
at (location) on

and that the statements in this block are correct.

DATE AND TIME

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures

LAB. No.: ORG- 690

LAB. No.: ORG- 690

THE TYPE OF ANALYTICAL SCREENS
SUSPECTED OR REQUIRED.

QUALITATIVE	QUANTITATIVE	PURGEABLE SCREENS	QUALITATIVE	QUANTITATIVE	EXTRACTABLE SCREENS
		ALIPHATIC HYDROCARBON SCREEN			ALIPHATIC HYDROCARBONS
		AROMATIC HYDROCARBON SCREEN			CHLORINATED HYDROCARBON PESTICIDES
		HALOGENATED HYDROCARBON SCREEN			CHLOROPHENOXY ACID HERBICIDES
		GAS CHROMATOGRAPH/MASS SPECTROMETER			HYDROCARBON FUEL SCREEN
					ORGANOPHOSPHATE PESTICIDES
					POLYCHLORINATED BIPHENYLS (PCB's)
			X	X	POLYNUCLEAR AROMATIC HYDROCARBONS
					TRIAZINE HERBICIDES
		SPECIFIC COMPOUNDS			SPECIFIC COMPOUNDS
				X	Total Naphthalene plus
					Mono-methyl naphth
				X	Benz-a-pyrene

REMARKS :

ANALYTICAL RESULTS

COMPOUND	[PPB]	COMPOUND	[PPB]
Poly nuclear Aromatic Hydrocarbons			
Naphthalene	400		
1-Methylnaphthalene	1100		
2-Methylnaphthalene	2400		
Benzo(a)pyrene	< 10 PPB		
		* DETECTION LIMIT	

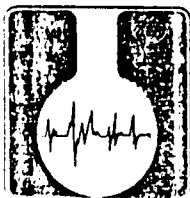
REMARKS:

Diesel - 131 ppm chromatographic fingerprint consistent with that of diesel fuel of extract

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes NO. Seal(s) broken by: _____ date: _____
I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements in this block and the analytical data on this page accurately reflect the analytical results for this sample.
Date(s) of analysis: 7/1/86; 7/3/86. Analyst's signature: R Meyerhen; A S Baerney
I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block. Reviewers signature: R Meyerhen

FOR OCD USE --	Date	Owner Notified	Phone or letter?	Initials



ASSAIGAI ANALYTICAL LABORATORIES

TO: Geoscience Consultants Ltd.
Attn: Randy Hicks
500 Copper NW Suite 325
Albuquerque, NM 87102

DATE: 21 July 1986
0933

SAMPLE ID: 8606052000 GBR-27

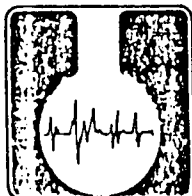
ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMITS
Fe	<0.3 mg/l	0.3 mg/l
Pb	<0.050 mg/l	0.050 mg/l
Cr	<0.050 mg/l	0.050 mg/l
Napthalene	183.2 ug/l	0.1 ug/l
Acenaphthene	43.2 ug/l	0.1 ug/l
Acenaphthylene	139.7 ug/l	0.1 ug/l
Anthracene	46.1 ug/l	0.1 ug/l
Phenanthrene	46.1 ug/l	0.1 ug/l
Fluoranthene	8.6 ug/l	0.1 ug/l
Pyrene	24.5 ug/l	0.1 ug/l
Benzo(a) anthracene	ND	
Benzo(a) pyrene	ND	
Benzo(b) fluoranthene	ND	
Benzo(ghi)perylene	ND	
Benzo(k)fluoranthene	ND	
Benzo(k)fluoranthene	ND	
Chrysene	ND	
Dibenz(a,h)anthracene	ND	
Dibenz(a,h)acridine	ND	
Dibenz(a,j)acridine	ND	
Fluorene	ND	
7H-Dibenzo(c,g)pyrene	ND	
Dibenzo(a,e)pyrene	ND	
Dibenzo(a,h)pyrene	ND	
Dibenzo(a,i)pyrene	ND	
Indeno(1,2,3-cd)pyrene	ND	
3-Methylcholanthrene	ND	

REFERENCE: "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", USEPA, SW 846, EMSL-Cincinnati, 1982

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

Jennifer V. Smith, Ph.D.
Laboratory Director

ASSAIGAI
ANALYTICAL
LABORATORIES

TO: Geoscience Consultants Ltd.
Attn: Virginia
500 Copper NW Suite 325
Albuquerque, NM 87102

DATE: 29 May 1986
0812

EL-367-200

SAMPLE ID: 8605181400 GBR-27

ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Benzene	<1.0 ug/l	1.0 ug/l
Toluene	<1.0 ug/l	1.0 ug/l
Xylenes	<1.0 ug/l	1.0 ug/l
Ethyl benzene	<1.0 ug/l	1.0 ug/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Method", USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

Jennifer V. Smith
Jennifer V. Smith, Ph.D.
Laboratory Director





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 wnt
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED	11/26/86	LAB NO.	WC 5444	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	8/6/11/21	SITE INFORMATION	Sample location	Giant, Bloom Field Refinery	
Collection TIME	1330		Collection site description	GBR-27	
Collected by — Person/Agency	BOYER / OLSON / OCD				

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) 2300 μ mho	Water Temp. (00010) 19 °C	Conductivity at 25°C (00094) μ mho	
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	/	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	4872 μ mho	12/16	☒ Calcium (00915)	640 mg/l	12-1
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925)	24.4 mg/l	12-1
☒ Other: pH	7.71	12/8	☒ Sodium (00930)	784 mg/l	12-4
☐ Other:			☒ Potassium (00935)	4.29 mg/l	12-4
☐ Other:			☒ Bicarbonate (00440)	291 mg/l	12/8
			☒ Chloride (00940)	722 mg/l	12/5
			☒ Sulfate (00945)	1997 mg/l	12/8 12/16
			☒ Total filterable residue (dissolved) (70300)	4646 mg/l	12/4
			☒ Other: CO ₃ BR	1.4	12/8
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
				12-16-86	CE

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
2

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 6/10/86	LAB NO WC-2517	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE 86/06/05	SITE INFORMATION ►	Sample location GBR-27
Collection TIME 2000		Collection site description GIANT BLOOMFIELD REFINERY
Collected by — Person/Agency Boyer		

SEND
FINAL
REPORT
TO
►

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5312

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type GRAB
pH (00400) 7	Conductivity (Uncorrected) 7200 μ mho	Water Temp. (00010) 21 °C	Conductivity at 25°C (00094) μ mho	
Field comments DIESEL RECOVERY WELL, SAMPLE IS WATER BENEATH PRODUCT				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted 1	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☒ Calcium (00915)	1100 mg/l	6-11
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	141.1 mg/l	"
☐ Other:			☒ Sodium (00930)	526.7 mg/l	"
☐ Other:			☒ Potassium (00935)	1.17 mg/l	"
☐ Other:			☒ Bicarbonate (00440)	350 mg/l	6/13
			☒ Chloride (00940)	2816 mg/l	6/17
			☒ Sulfate (00945)	1530 mg/l	6/19
			☒ Total filterable residue (dissolved) (70300)	9023 mg/l	6/18
			☒ Other: CO ₃	0	6/13
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					

Laboratory remarks

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

850
2

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED	6/10/86	LAB NO.	10-2518	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	06/06/05	SITE INFORMATION	Sample location		
Collection TIME	2000		G.B.R.-27		
Collected by — Person/Agency		Collection site description			
Boyer /OCD		GIANT BLOOMFIELD REFINERY			

AUG - 6 1986

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
				GRAB
pH (00400)	7	Conductivity (Uncorrected)	Water Temp. (00010)	Conductivity at 25°C (00094)
		7200 µmho	21 °C	µmho
Field comments				
DIESEL RECOVERY WELL, SAMPLE IS WATER BENEATH PRODUCT				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	1	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µm membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify: ☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added				

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	µmho		☒ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	mg/l	
☐ Other:			☒ Sodium (00930)	mg/l	
☐ Other:			☒ Potassium (00935)	mg/l	
☐ Other:			☒ Bicarbonate (00440)	mg/l	
			☒ Chloride (00940)	mg/l	
			☒ Sulfate (00945)	mg/l	
			☒ Total filterable residue (dissolved) (70300)	mg/l	
			☒ Other: CO ₂		
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N + Nitrate-N total (00630)	mg/l		☐ Nitrate-N + Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					

laboratory remarks	Analyst	Date Reported	Reviewed by

SLD 726 (12/84)

FOR OCD USE --- Date Owner Notified _____ Phone or letter? _____ Initials _____





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED <u>11/26/86</u>	LAB NO. <u>HM 2423</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: <u>82235</u>
Collection DATE <u>11/21</u>	SITE INFORMATION	Sample location <u>Giant, Bloomfield Refinery</u>
Collection TIME <u>1220</u>		Collection site description <u>GBR-27</u>
Collected by — Person/Agency <u>BOYER/OLSON/OCD</u>		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

Station/
well code

Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)		Conductivity (Uncorrected) <u>2300</u> μ mho	Water Temp. (00010) <u>19</u> °C	Conductivity at 25 °C (00094) μ mho
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted <u>1</u>	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added ☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added	☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25 °C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: <u>ICAP</u>			☐ Sodium (00930)	mg/l	
☒ Other: <u>AS</u>			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks <u>Sample digested</u>			Analyst	Date Reported <u>1/13/87</u>	Reviewed by <u>J. Ashley</u>

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

ICAP SCAN

SLD Lab No. HM 2423

Reviewed by:

Analyst Q/B

Date Reported:

Date Analyzed 10/12/86

<u>ELEMENT</u>	<u>ICAP VALUE (mg/l)</u>	<u>AA VALUE (mg/l)</u>
Aluminum	<0.1	
Barium	<0.1	
Beryllium	<0.1	
Boron	0.5	
Cadmium	<0.1	
Calcium	650.	
Chromium	<0.1	
Cobalt	<0.1	
Copper	<0.1	
Iron	<0.1	
Lead	<0.1	
Magnesium	55.	
Manganese	4.3	
Molybdenum	<0.1	
Nickel	<0.1	
Silicon	6.6	
Silver	<0.1	
Strontium	12.	
Tin	<0.1	
Vanadium	<0.1	
Zinc	<0.1	
Arsenic		<0.005
Selenium		
Mercury		

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

MONITOR WELL GBR-28/GRW-12

<u>SAMPLER</u>	GIANT	GIANT	OCD	GIANT
<u>DATE</u>	<u>5/29/86</u>	<u>7/15/86</u>	<u>6/8/88</u>	<u>9/4/90</u>
<u>PARAMETER</u>				
DETECTION LIMIT	1.0	1.0	100.0	(BELOW)
BENZENE	2,419	319.0	1,060	1400.0
BROMODICHLOROMETHANE	NA	NA	ND	NA
BROMOFORM	NA	NA	ND	NA
BROMOMETHANE	NA	NA	ND	NA
CARBON TETRACHLORIDE	NA	ND	ND	NA
CHLOROBENZENE	NA	NA	ND	ND(1.0)
CHLOROETHANE	NA	NA	ND	NA
CHLOROFORM	NA	ND	ND	NA
CHLOROMETHANE	NA	NA	ND	NA
DIBROMOCHLOROMETHANE	NA	NA	ND	NA
1,2-DICHLOROBENZENE	NA	NA	ND	ND(2.0)
1,3-DICHLOROBENZENE	NA	NA	ND	ND(2.0)
1,4-DICHLOROBENZENE	NA	NA	ND	ND(1.5)
1,1-DICHLOROETHANE	NA	ND	ND	NA
1,2-DICHLOROETHANE	NA	ND	ND	NA
1,1-DICHLOROETHENE	NA	ND	ND	NA
CIS-1,2-DICHLOROETHENE	NA	NA	ND	NA
TRANS-1,2-DICHLOROETHENE	NA	ND	ND	NA
1,2-DICHLOROPROPANE	NA	NA	ND	NA
ETHYLBENZENE	NA	NA	TR	52.0
METHYLENE CHLORIDE	NA	NA	ND	NA
1,1,2,2-TETRACHLOROETHANE	NA	ND	ND	NA
1,1,1,2-TETRACHLOROETHANE	NA	ND	ND	NA
TETRACHLOROETHENE	NA	ND	ND	NA
TOLUENE	819.0	143.0	TR	2.2
1,1,1-TRICHLOROETHANE	NA	ND	ND	NA
1,1,2-TRICHLOROETHANE	NA	ND	ND	NA
TRICHLOROETHENE	NA	ND	ND	NA
TRICHLOROFLUOROMETHANE	NA	NA	ND	NA
VINYL CHLORIDE	NA	NA	ND	NA
TOTAL XYLENES	4,019	224.0	270.0	66.0

TR - TRACE
 ND - NOT DETECTED
 NA - NOT ANALYZED
 * - DUPLICATE ANALYSIS

Giant Refining Co.
 Radian Work Order: 90-09-163

Method: Vol. aromatics by SW8020 (1)

List: SW8020

Sample ID:	9009041235	9009041243	9009041300	9009041343
Factor:	RW-5	RW-6	RW-10	RW-12
Results in:	10	10	1	5
Matrix:	ug/L	ug/L	ug/L	ug/L
	05A	06A	07A	08A
	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	140 C	2.0	220 C	2.0	2.2 C	0.20	1400 DC	5.0
Chlorobenzene	ND	2.0	ND	2.0	ND	0.20	ND	1.0
1,2-Dichlorobenzene	ND	4.0	ND	4.0	ND	0.40	ND	2.0
1,3-Dichlorobenzene	ND	4.0	ND	4.0	ND	0.40	ND	2.0
1,4-Dichlorobenzene	ND	3.0	ND	3.0	ND	0.30	ND	1.5
Ethylbenzene	120 C	2.0	67 C	2.0	5.3 C	0.20	52 C	1.0
Toluene	ND	2.0	ND	2.0	0.33 Xa	0.20	2.2 Ca	1.0
Total xylenes	14 C	2.0	46 C	2.0	19 C	0.20	66 C	1.0
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	91		90		95		93	
Control Limits: 76 to 140								

C Confirmed on second column or by GC/MS

X See definition in report narrative

D Sample dilution necessary for this analyte

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.



SCIENTIFIC LABORATORY DIVISION

ORGANIC ANALYSIS REQUEST FORM

Organic Section - Phone: 841-2570

88-0847-C

REPORT TO: DAVID BOYER

S.L.D. No. OR-

N.M. OIL CONSERVATION DIVISION

DATE REC.

P.O. Box 2088

PRIORITY

Santa Fe, NM 87504-2088

PHONE(S): 827-5812

COLLECTION CITY:

COUNTY:

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute)

LOCATION CODE: (Township-Range-Section-Tracts)

USER CODE: 8 2 2 3 5 SUBMITTER:

David Boyer

CODE: 2 6 1 0

SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER:

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-AA Sample Preserved with Ascorbic Acid to remove chlorine residual.
☒ P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks:

FIELD DATA:

pH= 7; Conductivity= 4100 umho/cm at 21 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Recovery well
Giant Bloomfield GBR-28 Clear, no product
Sample from lift pump outlet

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities.(signature collector):

Method of Shipment to the Lab: State Car

CHAIN OF CUSTODY

I certify that this sample was transferred from

David Boyer

to

Harry C. Eden

at (location)

SLD - ALB

on

6/9/88

and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☒ No ☐

Signatures

David Boyer

Harry C. Eden

For OCD use: Date owner notified: 8/19/88 Phone or Letter? Initials

ANALYSES PERFORMED

LAB. No.: OR- 847

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
☐ Other Specific Compounds or Classes
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
aromatic purgeables			
benzene	106.0		
toluene	T.R.		
ethylbenzene	T.R.		
p-m-xylene	170		
o-xylene	180		
halogenated purgeables	N.D.		
* DETECTION LIMIT *	100 PPB	+ DETECTION LIMIT +	

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: George C. Ellis date: 6/14/88

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 6/14/88 Analyst's signature: George C. Ellis

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R. Meyerheim



TO: Geoscience Consultants Ltd.
 Attn: Mike Selke
 500 Copper NW Suite 325
 Albuquerque, NM 87102

DATE: 26 August 1986
 1190

SAMPLE ID: 8607151900 GBR-28

ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Carbon Tetrachloride	<1 ug/l	1 ug/l
Chloroform	<1 ug/l	1 ug/l
1,1-Dichloroethane	<1 ug/l	1 ug/l
1,2-Dichloroethylene	<1 ug/l	1 ug/l
1,1-Dichloroethylene	<1 ug/l	1 ug/l
trans-1,2-Dichloroethylene	<1 ug/l	1 ug/l
1,1,2,2-Tetrachloroethane	<1 ug/l	1 ug/l
1,1,1,2-Tetrachloroethane	<1 ug/l	1 ug/l
Tetrachloroethylene	<1 ug/l	1 ug/l
1,1,1-Trichloroethane	<1 ug/l	1 ug/l
1,1,2-Trichloroethane	<1 ug/l	1 ug/l
Trichloroethylene	<1 ug/l	1 ug/l
Benzene	319 ug/l	1 ug/l
Toluene	143 ug/l	1 ug/l
Xylenes	224 ug/l	1 ug/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846, EMSL-Cincinnati, 1982

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

Jennifer V. Smith
 Jennifer V. Smith, Ph.D.
 Laboratory Director



TO: Geoscience Consultants Ltd.
Attn: Randy Hicks
500 Copper NW Suite 325
Albuquerque, NM 87102

DATE: 18 June 1986
0879

SAMPLE ID: 8605291600

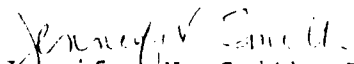
GR-28

ANALYTE	ANALYTICAL RESULTS	DETECTION LIMITS
Benzene	2419 ug/l	1 ug/l
Toluene	819 ug/l	1 ug/l
Xylenes	4019 ug/l	1 ug/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,


Jennifer V. Smith, Ph.D.
Laboratory Director





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

W.N.F.
859

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED <u>6/10/88</u>	LAB NO. <u>WC-2096</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: <u>82235</u>
Collection DATE <u>6/10/88</u>	SITE INFORMATION	Sample location <u>Client Bloomfield GBR-28</u>
Collection TIME <u>1540</u>		Collection site description
Collected by — Person/Agency <u>Boyer/Anderson /OCD</u>		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

RECEIVED
AUG - 8 1988
OIL CONSERVATION DIVISION SANTA FE
Station/ well code
Owner

SAMPLING CONDITIONS

☐ Bailed ☐ Dipped	☒ Pump ☐ Tap	Water level <u>—</u>	Discharge <u>—</u>	Sample type <u>GRAB</u>
pH (00400) <u>7</u>	Conductivity (Uncorrected) <u>4100</u> μ mho	Water Temp. (00010) <u>21</u> °C	Conductivity at 25°C (00094) <u>—</u> μ mho	
Field comments <u>clean, no product</u>				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted <u>1</u>	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added	☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NA	Units	Date analyzed	From <u>F</u> , NA Sample:	Date Analyzed
☒ Conductivity (Corrected) 25°C (00095)	<u>4652</u> μ mho	<u>7/11</u>	☒ Calcium <u>324</u> mg/l	<u>7/19</u>
☐ Total non-filterable residue (suspended) (00530)	<u>—</u> mg/l	<u>—</u>	☒ Potassium <u>2</u> mg/l	<u>7/25</u>
☒ Other: <u>Lab pH</u>	<u>7.79</u>	<u>7/21</u>	☒ Magnesium <u>64.5</u> mg/l	<u>7/19</u>
☐ Other:	<u>—</u>	<u>—</u>	☒ Sodium <u>755</u> mg/l	<u>7/25</u>
☐ Other:	<u>—</u>	<u>—</u>	☒ Bicarbonate <u>278</u> mg/l	<u>7/21</u>
A-H₂SO₄			☒ Chloride <u>1060</u> mg/l	<u>7/21</u>
☐ Nitrate-N +, Nitrate-N total (00630)	<u>—</u> mg/l	<u>—</u>	☒ Sulfate <u>620</u> mg/l	<u>7/21</u>
☐ Ammonia-N total (00610)	<u>—</u> mg/l	<u>—</u>	☒ Total Solids <u>3364</u> mg/l	<u>7/7</u>
☐ Total Kjeldahl-N ()	<u>—</u> mg/l	<u>—</u>	☒ Bromide <u>1.10</u>	<u>6/22</u>
☐ Chemical oxygen demand (00340)	<u>—</u> mg/l	<u>—</u>	☐ <u>—</u>	<u>—</u>
☐ Total organic carbon ()	<u>—</u> mg/l	<u>—</u>	☒ Cation/Anion Balance	<u>—</u>
☐ Other:	<u>—</u>	<u>—</u>	Analyst <u>—</u>	Date Reported <u>7/29/88</u>
☐ Other:	<u>—</u>	<u>—</u>	Reviewed by <u>—</u>	
Laboratory remarks <u>Received by <u>—</u> 6/9/88 516-1218-<u>—</u></u>				

FOR OCD USE -- Date Owner Notified 8/19/88 Phone or Letter? —

Initials —

CATIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	16.17	324.00	<3.0
Mg	5.30	64.50	<0.3
Na	32.84	755.00	<10.0
K	0.05	2.00	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	
SUMS	54.36	1145.50	
Total Dissolved Solids=			3364
Ion Balance =			114.74%

ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
HC03	4.56	278.00	<1.0
SO4	12.92	620.00	<10.0
CL	29.90	1060.00	<5.0
NO3	0.00	0.00	< 0.
C03	0.00	0.00	< 1.
NH3	0.00	0.00	< 0.
PO4	0.00	0.00	< 0.
	47.37	1958.00	

WC No. = 8802096
Date out/By B. 7/29/58



HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2553

Date Received	6/10/88	Lab No.	ICP-268	User Code	☒ 82235	☐ Other:
COLLECTION DATE & TIME:				yy	mm	dd
				hh	mm	
COLLECTED BY:				COLLECTION SITE DESCRIPTION		
				GBR-28		

TO:

OWNER: Wesley K. Brown

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., PO Box 2088
SANTA FE, NM 87504-2088

SITE LOCATION:

County: San Juan

Township, Range, Section, Tract: (10N06E24342)

12 | 9 | N+1 | 2 | 4+2 | 7+1 | 1 | 3 |

ATTN: D. Boyer
TELEPHONE: 827-5812

STATION/ WELL CODE: | | | | | | | | | |

LATITUDE, LONGITUDE: | | | | | | | | | | - | | |

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped	☒ Pump ☐ Tap	Water Level: —	Discharge: —	Sample Type: GFAA
pH(00400) 7	Conductivity(Uncorr.) 4100 µmho	Water Temp.(00010) 24 °C	Conductivity at 25°C (00094) µmho	

FIELD COMMENTS: Clear, No product

SAMPLE FIELD TREATMENT

Check proper boxes:

☐ WPN: Water Preserved w/HNO ₃ Non-Filtered	☒ WPF: Water Preserved w/HNO ₃ Filtered
---	--

LAB ANALYSIS REQUESTED:

☒ ICAP Scan
Mark box next to metal if AA
is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	<0.1		Silicon	10.	
Barium	0.2		Silver	<0.1	☐
Beryllium	<0.1		Strontium	9.2	
Boron	0.2		Tin	<0.1	
Cadmium	<0.1	☐	Vanadium	<0.1	
Calcium	440.		Zinc	<0.1	
Chromium	<0.1	☒ <0.005	Arsenic		☐
Cobalt	<0.05		Selenium		☐
Copper	<0.1		Mercury		☐
Iron	1.9				☐
Lead	<0.1	☒ <0.01			☐
Magnesium	49.				☐
Manganese	2.2				☐
Molybdenum	<0.1				☐
Nickel	<0.1				☐

LAB COMMENTS: *See intext. Broken by VHA 6/14/88.*

For OCD Use:

Date Owner Notified: 8/17/98

ICAP Analyst 03

Reviewer W. Ashby

Phone or Letter?

Initials:

Date Analyzed 7/15/88

Date Received 7/25/88

Received by *myf* 6/9/88 SLD-ALE

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

MONITOR WELL GBR-29/GRW-3

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>4/2/90</u>	<u>7/17/90</u>	<u>9/4/90</u>	<u>10/4/90</u>
<u>PARAMETER</u>				
DETECTION LIMIT	(BELOW)	(BELOW)	(BELOW)	(BELOW)
BENZENE	280.0	380.0	460.0	490.0
BROMODICHLOROMETHANE	ND(1.0)	ND(5.0)	NA	ND(2.0)
BROMOFORM	ND(5.0)	ND(25.0)	NA	ND(10.0)
BROMOMETHANE	ND(12.0)	ND(59.0)	NA	ND(24.0)
CARBON TETRACHLORIDE	ND(1.2)	ND(6.0)	NA	ND(2.4)
CHLOROBENZENE	ND(2.5)	ND(10.0)	ND(2.0)	5.8 X
CHLOROETHANE	ND(5.2)	ND(12.0)	NA	ND(10.0)
CHLOROFORM	ND(1.0)	ND(5.0)	NA	ND(2.0)
CHLOROMETHANE	ND(3.0)	ND(15.0)	NA	ND(6.0)
DIBROMOCHLOROMETHANE	ND(2.0)	ND(10.0)	NA	ND(4.0)
1,2-DICHLOROBENZENE	ND(4.0)	ND(20.0)	ND(4.0)	ND(8.0)
1,3-DICHLOROBENZENE	ND(4.0)	ND(20.0)	ND(4.0)	ND(8.0)
1,4-DICHLOROBENZENE	ND(3.0)	ND(15.0)	ND(3.0)	290.0
1,1-DICHLOROETHANE	ND(5.0)	ND(25.0)	NA	ND(10.0)
1,2-DICHLOROETHANE	ND(1.0)	ND(5.0)	NA	4.3 X
1,1-DICHLOROETHENE	ND(2.0)	ND(10.0)	NA	ND(4.0)
CIS-1,2-DICHLOROETHENE	14.0	22.0	NA	17.0
TRANS-1,2-DICHLOROETHENE	ND(2.0)	ND(10.0)	NA	ND(4.0)
1,2-DICHLOROPROPANE	ND(1.0)	ND(5.0)	NA	ND(2.0)
ETHYLBENZENE	98.0	160.0	450.0	420.0
METHYLENE CHLORIDE	ND(4.0)	ND(20.0)	NA	ND(8.0)
1,1,2,2-TETRACHLOROETHANE	ND(1.5)	ND(7.5)	NA	ND(3.0)
TETRACHLOROETHENE	ND(1.0)	ND(5.0)	NA	ND(2.0)
TOLUENE	ND(2.0)	ND(10.0)	5.2	ND(4.0)
1,1,1-TRICHLOROETHANE	ND(2.0)	ND(10.0)	NA	ND(4.0)
1,1,2-TRICHLOROETHANE	ND(2.0)	ND(10.0)	NA	ND(4.0)
TRICHLOROETHENE	ND(2.0)	ND(10.0)	NA	ND(4.0)
TRICHLOROFLUOROMETHANE	ND(2.0)	ND(10.0)	NA	ND(4.0)
VINYL CHLORIDE	ND(2.0)	ND(10.0)	NA	ND(4.0)
TOTAL XYLENES	33.0	57.0	970.0	710.0

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS
X - PRESENCE NOT CONFIRMED

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

MONITOR WELL GBR-29

<u>SAMPLER</u>	GIANT	GIANT	OCD**	OCD	OCD
<u>DATE</u>	<u>5/30/86</u>	<u>6/5/86</u>	<u>6/5/86</u>	<u>11/20/86</u>	<u>6/8/88</u>
<u>PARAMETER</u>					
DETECTION LIMIT	1.0	1.0	10.0	10.0	100.0
BENZENE	388.0	3,818	2,600	240.0	3,500
BROMODICHLOROMETHANE	NA	NA	ND	ND	ND
BROMOFORM	NA	NA	ND	ND	ND
BROMOMETHANE	NA	NA	ND	ND	ND
CARBON TETRACHLORIDE	NA	NA	ND	ND	ND
CHLOROBENZENE	NA	NA	ND	ND	ND
CHLOROETHANE	NA	NA	ND	ND	ND
CHLOROFORM	NA	NA	ND	ND	ND
CHLOROMETHANE	NA	NA	ND	ND	ND
DIBROMOCHLOROMETHANE	NA	NA	ND	ND	ND
1,2-DICHLOROBENZENE	NA	NA	ND	ND	ND
1,3-DICHLOROBENZENE	NA	NA	ND	ND	ND
1,4-DICHLOROBENZENE	NA	NA	ND	ND	ND
DICHLORODIFLUOROMETHANE	NA	NA	ND	ND	ND
1,1-DICHLOROETHANE	NA	NA	30.0	34.0	ND
1,2-DICHLOROETHANE	NA	NA	36.0	28.0	ND
1,1-DICHLOROETHENE	NA	NA	ND	ND	ND
CIS-1,2-DICHLOROETHENE	NA	NA	NA	14.0	ND
TRANS-1,2-DICHLOROETHENE	NA	NA	NA	ND	ND
TOTAL 1,2 DICHLOROETHENE	NA	NA	30.0	NA	NA
DICHLOROMETHANE	NA	NA	ND	TR	ND
1,2-DICHLOROPROPANE	NA	NA	ND	ND	ND
ETHYLBENZENE	NA	NA	600.0	98.0	800.0
METHYLENE CHLORIDE	NA	NA	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	NA	NA	ND	ND	ND
TETRACHLOROETHENE	NA	NA	ND	ND	ND
TOLUENE	643.0	3,338	3,000	72.0	320.0
1,1,1-TRICHLOROETHANE	NA	NA	TR	8.0	ND
1,1,2-TRICHLOROETHANE	NA	NA	ND	ND	ND
TRICHLOROETHENE	NA	NA	TR	12.0	ND
TRICHLOROFLUOROMETHANE	NA	NA	ND	ND	ND
VINYL CHLORIDE	NA	NA	ND	ND	ND
TOTAL XYLENES	2,000	5,210	2,870	1,400	1,880

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

Giant Refining Company
 Radian Work Order: SO-10-043

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	901004945	9010041010	9010041028	9010041100
	RW-4	RW-6	RW-3	RW-13
Factor:	50	10	20	1
Results in:	ug/L	ug/L	ug/L	ug/L
	10A	11A	12A	13A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	770 C	10	300 C	2.0	490 C	4.0	ND	0.20
Chlorobenzene	ND	10	ND	2.0	5.8 X ^a	4.0	ND	0.20
1,2-Dichlorobenzene	ND	20	ND	4.0	ND	8.0	ND	0.40
1,3-Dichlorobenzene	ND	20	ND	4.0	ND	8.0	ND	0.40
1,4-Dichlorobenzene	ND	15	20 G	3.0	290 G	6.0	ND	0.30
Ethylbenzene	160 C	10	47 C	2.0	420 C	4.0	ND	0.20
Toluene	ND	10	ND	2.0	ND	4.0	2.0 X	0.20
Xylenes (total)	ND	10	6.8 G ^a	2.0	710 C	4.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	117		122		97		112	
Control Limits: 40 to 140								

C Confirmed on second column or by GC/MS

G Indicates an estimated GC value due to interferences.

X See definition in report narrative

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.

Giant Refining Company
 Radian Work Order: S0-10-043

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	901004945	9010041010	9010041028	9010041100
	RW-4	RW-6	RW-3	RW-13
Factor:	50	10	20	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	5.0	ND	1.0	ND	2.0	ND	0.10
Bromoform	ND	25	ND	5.0	ND	10	ND	0.50
Bromomethane	ND	59	ND	12	ND	24	ND	1.2
Carbon tetrachloride	ND	6.0	ND	1.2	ND	2.4	ND	0.12
Chlorobenzene	ND	12	ND	2.5	ND	5.0	ND	0.25
Chloroethane	ND	26	ND	5.2	ND	10	ND	0.52
2-Chloroethylvinylether	ND	25	ND	5.0	ND	10	ND	0.50
Chloroform	ND	5.0	ND	1.0	ND	2.0	ND	0.10
Chloromethane	ND	15	ND	3.0	ND	6.0	ND	0.30
Dibromochloromethane	ND	10	ND	2.0	ND	4.0	ND	0.20
1,2-Dichlorobenzene	ND	25	ND	5.0	ND	10	ND	0.50
1,3-Dichlorobenzene	ND	16	ND	3.2	ND	6.4	ND	0.32
1,4-Dichlorobenzene	ND	12	ND	2.4	ND	4.8	ND	0.24
1,1-Dichloroethane	ND	25	ND	5.0	ND	10	ND	0.50
1,2-Dichloroethane	6.1 Xa	5.0	6.1 C	1.0	4.3 Xa	2.0	4.1 C	0.10
1,1-Dichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
cis-1,2-Dichloroethene	25 Xa	10	4.5 Ca	2.0	17 Ca	4.0	ND	0.20
trans-1,2-Dichloroethene	ND	25	ND	5.0	ND	10	ND	0.50
1,2-Dichloroethane	6.1 Xa	5.0	6.1 C	1.0	4.3 Xa	2.0	4.1 C	0.10
1,1-Dichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
cis-1,2-Dichloroethene	25 Xa	10	4.5 Ca	2.0	17 Ca	4.0	ND	0.20
trans-1,2-Dichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
1,2-Dichloropropane	ND	5.0	ND	1.0	ND	2.0	ND	0.10
cis-1,3-Dichloropropene	ND	10	ND	2.0	ND	4.0	ND	0.20
trans-1,3-Dichloropropene	ND	17	ND	3.4	ND	6.8	ND	0.34
Methylene chloride	22 Xa	20	8.1 Xa	4.0	ND	8.0	0.52 Xa	0.40
1,1,2,2-Tetrachloroethane	ND	7.5	ND	1.5	ND	3.0	ND	0.15
Tetrachloroethene	ND	5.0	1.6 Xa	1.0	ND	2.0	ND	0.10
1,1,1-Trichloroethane	ND	10	ND	2.0	ND	4.0	0.62 Xa	0.20
1,1,2-Trichloroethane	ND	10	ND	2.0	ND	4.0	ND	0.20
Trichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
Trichlorofluoromethane	11 Xa	10	ND	2.0	ND	4.0	0.20 Xa	0.20
Vinyl chloride	ND	10	ND	2.0	ND	4.0	ND	0.20

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.

Giant Refining Co.
 Radian Work Order: 90-10-120

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	901004945 RW-4	9010041010 RW-	9010041028 RW-	Reagent Blank
Factor:	4.8	-6 4.9	-3 4.8	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	8.6	ND	8.8	ND	8.6	ND	1.8
Acenaphthylene	ND	11	ND	11	ND	11	ND	2.3
Anthracene	ND	3.2	ND	3.2	ND	3.2	ND	0.66
Benzo(a)anthracene	ND	0.062	ND	0.064	0.15 @	0.062	ND	0.013
Benzo(a)pyrene	ND	0.11	ND	0.11	ND	0.11	ND	0.023
Benzo(b)fluoranthene	ND	0.086	ND	0.088	ND	0.086	ND	0.018
Benzo(g,h,i)perylene	ND	0.36	ND	0.37	ND	0.36	ND	0.076
Benzo(k)fluoranthene	ND	0.082	ND	0.083	ND	0.082	ND	0.017
Chrysene	ND	0.72	ND	0.74	ND	0.72	ND	0.15
Dibenzo(a,h)anthracene	ND	0.14	ND	0.15	ND	0.14	ND	0.030
Fluoranthene	ND	1.0	ND	1.0	5.4	1.0	ND	0.21
Fluorene	3.2 @	1.0	ND	1.0	6.8	1.0	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.21	ND	0.21	ND	0.21	ND	0.043
Naphthalene	ND	8.6	ND	8.8	57	8.6	ND	1.8
Phenanthrene	5.5 @	3.1	ND	3.1	45	3.1	ND	0.64
Pyrene	ND	1.3	ND	1.3	1.4 @	1.3	ND	0.27
Surrogate Recovery(%)								
Terphenyl-d14	168 Q		177 Q		193 Q		107	
Control Limits: 24 to 146								

 ND Not detected at specified detection limit
 Q Outside control limits

@ 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.

Giant Refining Co.
 Radian Work Order: 90-09-163

Method: Vol. aromatics by SW8020 (1)

List: SW8020

Sample ID:	9009041152	9009041202	9009041215	9009041229
	RW-1	RW-2	RW-3	RW-4
Factor:	1	1	10	10
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
Benzene	ND	0.20	ND	0.20	460 C	2.0	450 C	2.0
Chlorobenzene	ND	0.20	ND	0.20	ND	2.0	ND	2.0
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	4.0
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	4.0
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	3.0	ND	3.0
Ethylbenzene	ND	0.20	ND	0.20	450 C	2.0	150 C	2.0
Toluene	ND	0.20	ND	0.20	5.2 G@	2.0	ND	2.0
Total xylenes	ND	0.20	ND	0.20	970 C	2.0	40 C	2.0
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	94		94		92		93	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

G Indicates an estimated GC value due to interferences.

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.

Giant Refining Company
 Radian Work Order: S0-07-122

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	900717930	900717945	9007171004	9007171022
	RW-3	RW-4	RW-6	STRIPPER INF
Factor:	50	25	10	10
Results in:	ug/L	ug/L	ug/L	ug/L
	02A	04A	06A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	380 G	10	290 C	5.0	120 C	2.0	52 C	2.0
Chlorobenzene	ND	10	ND	5.0	ND	2.0	ND	2.0
1,2-Dichlorobenzene	ND	20	ND	10	ND	4.0	ND	4.0
1,3-Dichlorobenzene	ND	20	ND	10	ND	4.0	ND	4.0
1,4-Dichlorobenzene	ND	15	ND	7.5	ND	3.0	ND	3.0
Ethylbenzene	160 G	10	58 C	5.0	24 C	2.0	6.7 G@	2.0
Toluene	ND	10	ND	5.0	ND	2.0	2.2 C@	2.0
Xylenes (total)	57 G	10	9.3 C@	5.0	8.5 C@	2.0	36 C	2.0
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	104		104		101		103	
Control Limits: 40 to 140								

G Indicates an estimated GC value due to interferences.

ND Not detected at specified detection limit

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.

Giant Refining Company
 Radian Work Order: S0-07-122

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	900717930	900717945	9007171004	9007171022
	RW-3	RW-4	RW-6	STRIPPER INF
Factor:	50	25	1	10
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	03A	05A	07A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	5.0	ND	2.5	ND	0.10	ND	1.0
Bromoform	ND	25	ND	12	ND	0.50	ND	5.0
Bromomethane	ND	59	ND	30	ND	1.2	ND	12
Carbon tetrachloride	ND	6.0	ND	3.0	ND	0.12	ND	1.2
Chlorobenzene	ND	12	ND	6.2	ND	0.25	ND	2.5
Chloroethane	ND	26	ND	13	ND	0.52	ND	5.2
2-Chloroethylvinylether	ND	25	ND	12	ND	0.50	ND	5.0
Chloroform	ND	5.0	ND	2.5	ND	0.10	ND	1.0
Chloromethane	ND	15	ND	7.5	ND	0.30	ND	3.0
Dibromochloromethane	ND	10	ND	5.0	ND	0.20	ND	2.0
1,2-Dichlorobenzene	ND	25	ND	12	ND	0.50	ND	5.0
1,3-Dichlorobenzene	ND	16	ND	8.0	ND	0.32	ND	3.2
1,4-Dichlorobenzene	ND	12	ND	6.0	ND	0.24	ND	2.4
1,1-Dichloroethane	ND	25	13 CA	12	1.9 CA	0.50	ND	5.0
1,2-Dichloroethane	ND	5.0	5.2 CA	2.5	5.1 C	0.10	ND	1.0
1,1-Dichloroethene	ND	10	ND	5.0	ND	0.20	ND	2.0
cis-1,2-Dichloroethene	22 CA	10	46 C	5.0	7.8 C	0.20	16 C	2.0
trans-1,2-Dichloroethene	ND	10	ND	5.0	ND	0.20	ND	2.0
1,2-Dichloropropane	ND	5.0	ND	2.5	ND	0.10	ND	1.0
cis-1,3-Dichloropropene	ND	10	ND	5.0	ND	0.20	ND	2.0
trans-1,3-Dichloropropene	ND	17	ND	8.5	ND	0.34	ND	3.4
Methylene chloride	ND	20	ND	10	ND	0.40	6.2 XA	4.0
1,1,2,2-Tetrachloroethane	ND	7.5	ND	3.8	ND	0.15	ND	1.5
Tetrachloroethene	ND	5.0	ND	2.5	1.7 C	0.10	4.2 CA	1.0
1,1,1-Trichloroethane	ND	10	ND	5.0	0.41 CA	0.20	16 X	2.0
1,1,2-Trichloroethane	ND	10	ND	5.0	ND	0.20	ND	2.0
Trichloroethene	ND	10	10 CA	5.0	1.5 C	0.20	36 C	2.0
Trichlorofluoromethane	ND	10	ND	5.0	0.34 CA	0.20	ND	2.0
Vinyl chloride	ND	10	ND	5.0	ND	0.20	ND	2.0

 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
 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.

Giant Refining Co.
 Radian Work Order: 90-07-185

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	900717930	9007171004	900717945	REAGENT BLANK
	RW-3	RW-6	RW-4	
Factor:	9.5	4.8	4.8	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	17	ND	8.6	ND	8.6	ND	1.8
Acenaphthylene	ND	22	26 *	11	24 *	11	ND	2.3
Anthracene	ND	6.3	ND	3.2	ND	3.2	ND	0.66
Benzo(a)anthracene	ND	0.12	ND	0.062	ND	0.062	ND	0.013
Benzo(a)pyrene	ND	0.22	ND	0.11	ND	0.11	ND	0.023
Benzo(b)fluoranthene	ND	0.17	ND	0.086	ND	0.086	ND	0.018
Benzo(g,h,i)perylene	ND	0.72	ND	0.36	ND	0.36	ND	0.076
Benzo(k)fluoranthene	ND	0.16	ND	0.082	ND	0.082	ND	0.017
Chrysene	ND	1.4	ND	0.72	ND	0.72	ND	0.15
Dibenzo(a,h)anthracene	ND	0.28	ND	0.14	ND	0.14	ND	0.030
Fluoranthene	ND	2.0	ND	1.0	ND	1.0	ND	0.21
Fluorene	5.7 *	2.0	1.6 *	1.0	3.9 *	1.0	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.41	ND	0.21	ND	0.21	ND	0.043
Naphthalene	ND	17	ND	8.6	11 *	8.6	ND	1.8
Phenanthrene	15 *	6.1	ND	3.1	ND	3.1	ND	0.64
Pyrene	ND	2.6	ND	1.3	ND	1.3	ND	0.27
Surrogate Recovery(%)								
Terphenyl-d14	100		102		99		97	
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.

Giant Refining Company
 Radian Work Order: SO-04-013

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:

9004021055

9004021130

9004021145

9004021245

Factor:

10

20

1

1

Results in:

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

GBR-29

Benzene

Result Det. Limit

280 C 2.0

Result Det. Limit

440 C 4.0

Result Det. Limit

16 C 0.20

Result Det. Limit

23 C 0.20

Chlorobenzene

ND 2.0

ND 4.0

ND 0.20

ND 0.20

1,2-Dichlorobenzene

ND 4.0

ND 8.0

ND 0.40

ND 0.40

1,3-Dichlorobenzene

ND 4.0

ND 8.0

ND 0.40

ND 0.40

1,4-Dichlorobenzene

ND 3.0

ND 6.0

ND 0.30

ND 0.30

Ethylbenzene

98 C 2.0

65 C 4.0

ND 0.20

0.90 Ca 0.20

Toluene

ND 2.0

ND 4.0

0.65 Ca 0.20

ND 0.20

Xylenes (total)

33 C 2.0

ND 4.0

3.4 C 0.20

7.1 C 0.20

Surrogate Recovery(%)

1-Bromo-4-fluorobenzene

91

104

69

84

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

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

Giant Refining Company
 Radian Work Order: 50-04-013

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9004021055	9004021130	9004021145	9004021245
	/GRW-5	/GRW-4	/GRW-6	/STRIPPER INFL
Factor:	10	20	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
Bromodichloromethane	ND	1.0	ND	2.0	ND	0.10	ND	0.10
Bromoform	ND	5.0	ND	10	ND	0.50	ND	0.50
Bromomethane	ND	12	ND	24	ND	1.2	ND	1.2
Carbon tetrachloride	ND	1.2	ND	2.4	ND	0.12	ND	0.12
Chlorobenzene	ND	2.5	ND	5.0	ND	0.25	ND	0.25
Chloroethane	ND	5.2	ND	10	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	5.0	ND	10	ND	0.50	ND	0.50
Chloroform	ND	1.0	ND	2.0	ND	0.10	ND	0.10
Chloromethane	ND	3.0	ND	6.0	ND	0.30	ND	0.30
Dibromochloromethane	ND	2.0	ND	4.0	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	10	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	6.4	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	4.8	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	5.0	ND	10	2.1 C	0.50	3.1 C	0.50
1,2-Dichloroethane	ND	1.0	ND	2.0	7.9 C	0.10	4.5 C	0.10
1,1-Dichloroethene	ND	2.0	ND	4.0	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	14 C	2.0	21 C	4.0	ND	0.20	25 C	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	4.0	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	2.0	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	4.0	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	6.8	ND	0.34	ND	0.34
Methylene chloride	ND	4.0	ND	8.0	1.1 C	0.40	0.65 C	0.40
1,1,2,2-Tetrachloroethane	ND	1.5	ND	3.0	ND	0.15	ND	0.15
Tetrachloroethene	ND	1.0	ND	2.0	2.7 C	0.10	2.8 C	0.10
1,1,1-Trichloroethane	ND	2.0	ND	4.0	1.6 C	0.20	0.96 C	0.20
1,1,2-Trichloroethane	ND	2.0	ND	4.0	ND	0.20	ND	0.20
Trichloroethene	ND	2.0	8.6 C	4.0	2.3 C	0.20	2.4 C	0.20
Trichlorofluoromethane	ND	2.0	ND	4.0	ND	0.20	ND	0.20
Vinyl chloride	ND	2.0	ND	4.0	ND	0.20	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

(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: 90-04-031

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:

9004021055

9004021130

9004021145

9004021245

Factor:

9.4

0.94

4.7

4.8

Results in:

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

Acenaphthalene

Result Det. Limit

ND 22

Acenaphthene

ND 17

Anthracene

ND 6.2

Benzo(a)anthracene

ND 0.12

Benzo(a)pyrene

ND 0.22

Benzo(b)fluoranthene

ND 0.17

Benzo(g,h,i)perylene

ND 0.71

Benzo(k)fluoranthene

ND 0.16

Chrysene

ND 0.12

Dibenzo(a,h)anthracene

ND 0.28

Fluoranthene

ND 2.0

Fluorene

6.7 * 2.0

Indeno(1,2,3-cd)pyrene

ND 0.40

Naphthalene

ND 17

Phenanthrene

7.3 * 6.0

Pyrene

ND 2.5

Result Det. Limit

ND 2.5

ND 1.8

ND 0.66

ND 0.013

ND 0.023

ND 0.018

ND 0.076

ND 0.017

ND 0.013

ND 0.030

ND 0.21

ND 0.21

ND 0.043

ND 1.8

ND 0.64

ND 0.27

Result Det. Limit

ND 11

ND 8.5

ND 3.1

ND 0.061

ND 0.11

ND 0.085

ND 0.36

ND 0.080

ND 0.061

ND 0.14

ND 0.99

2.8 * 0.99

ND 0.20

ND 8.5

ND 3.0

ND 1.3

Result Det. Limit

ND 11

ND 8.6

ND 3.2

ND 0.062

ND 0.11

ND 0.086

ND 0.36

ND 0.082

ND 0.062

ND 1.0

2.2 * 1.0

ND 0.21

ND 8.6

3.3 * 3.1

ND 1.3

Surrogate Recovery(%)

Terphenyl-d14

221 Q

4 Q

89

87

Control Limits: 24 to 146

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

Q Outside control limits

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



SCIENTIFIC LABORATORY DIVISION

ORGANIC ANALYSIS REQUEST FORM

Organic Section - Phone: 841-2570

88-0851-C

REPORT TO: DAVID BOYER

S.L.D. No. OR

N.M. OIL CONSERVATION DIVISION

DATE REC. 6/10/88

P.O. Box 2088

PRIORITY 3

Santa Fe, NM 87504-2088

PHONE(S): 827-5812

COLLECTION CITY: Bloomfield

COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute)

8806081450

LOCATION CODE: (Township-Range-Section-Tracts)

29N+12W+27+1113 (10N06E24342)

USER CODE: 82235 SUBMITTER: David Boyer

CODE: 2610

SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: ☐

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice: Sample stored in an ice bath (Not Frozen).
☐ P-AA: Sample Preserved with Ascorbic Acid to remove chlorine residual.
☒ P-HCl: Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks:

FIELD DATA:

pH= 7; Conductivity= 440 umho/cm at 20.5°C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Bloomfield GBR-25 Recovery well
Sample from pump, oil on water

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): D. A. Boyer Method of Shipment to the Lab: State Car

CHAIN OF CUSTODY

I certify that this sample was transferred from David Boyer to Mary C. Eden
at (location) SLD-ALB on 6/9/88 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☒ No ☐

Signatures

David Boyer

Mary C. Eden

For OCD use: Date owner notified: 8/19/88 Phone or Letter? Initials: DAB

ANALYSES PERFORMED

LAB. No.: OR- 857

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
☐ Other Specific Compounds or Classes
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>			
<i>benzene</i>	3500		
<i>toluene</i>	320		
<i>ethylbenzene</i>	800		
<i>p + m - xylene</i>	1520		
<i>o - xylene</i>	360		
<i>halogenated purgeables</i>	N.D.		
* DETECTION LIMIT *	100 ug/l	+ DETECTION LIMIT +	†

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: Mary C. Eden date: 6/14/08

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 6/14/08 Analyst's signature: Mary C. Eden

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R Meyerhen

86-1377-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

STATE OF NEW MEXICO

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1377
DATE REC. 11-26-86

PHONE(S): 327-5812
SUBMITTER: David Boyer

PRIORITY
USER CODE: 8 2 2 3 5
CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8611201440D&B
SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: CODE: ☐
COUNTY: San Juan; CITY: Lee Acres CODE: ☐
LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+27+113 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

☐
☐
☐
☐
☐**EXTRACTABLE SCREENS**

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks:

FIELD DATA:

pH= ; Conductivity= 3550 umho/cm at 17 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

GBR-29 Giant Somp product in well, bailed
for organicI certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): *David Boyer* Method of Shipment to the Lab: *hand carried*

This form accompanies 2 Septum Vials, 1 Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODYI certify that this sample was transferred from *Willie Olson* to *Mary Eden*at (location) *HEO/SLD* on *11/26/86* at *4:01 PM* and thatthe statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐Signatures *Willie Olson* *Mary C. Eden*

For OCD Use: Date Owner Notified Phone or Letter? Initials

ANALYSES PERFORMED

LAB. NO. OR- 1377

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
benzene	240	1,1-dichloroethane	34
toluene	72	cis-1,2-dichloroethane	14
ethylbenzene	98	1,1,1-trichloroethane	8
p-xylene	340	trichloroethane	12
m-xylene	710	dichloromethane	TR
o-xylene	350		
1,2-dichloroethane	28		
* DETECTION LIMIT *	10ppb	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Twenty other compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

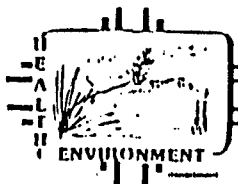
Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: JA date: 12-4/12-10-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4+10 Dec 86 Analyst's signature: JA Finney

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R Meyerheim



STATE OF NEW MEXICO

86-0685-D

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570REPORT TO:
PLEASE PRINT

DAVID G. BOYER

S.L.D. No.: OR-685-ABC

NEW MEXICO OIL CONSERVATION DIVISION

DATE REC.: 06/09/86

P.O. BOX 2088

SLD PRIORITY #:

SANTA FE, NM 87504-2088

PHONE(S):

827-5812

USER CODE: 8 2 2 3 5

SUBMITTER:

DAVID G. BOYER

SUBMITTER CODE: | | | |

SAMPLE TYPE: WATER ☒, SOIL ☐, OTHER ☐

SAMPLE TYPE CODE: | |

COLLECTED: 86/06/05-15:25 BY DGB

CODE: | | | | | | | | | | | | | | | |

SOURCE: GBR-25

CODE: | | | | | | | | | | | | | | | |

NEAREST CITY: Bloomfield

CODE: | | | | |

LOCATION: Giant Bloomfield Refinery

CODE: 12 19 11 12 14 12 17 11 11 12

pH= ; Conductivity= umho/cm at °C; Chlorine Residual=

Dissolved Oxygen= mg/l; Alkalinity= ; Flow Rate=

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Monitor well, 1-1.5" crude oil (black) in bailer, strong odor

I certify that the statements in this block accurately reflect the results of my field analyses, observations and activities. DGB

Method of shipment to the Laboratory Hand carried

This form accompanies 3 Septum Vials, Glass Jugs, Containers are marked as follows to indicate preservation:

- ☐ NP: No preservation; sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (not frozen).
☐ P-Na₂S₂O₃; Sample preserved with Na₂S₂O₃ to remove chlorine residual.

I (we) certify that this sample was transferred from DGB to R Meyerheim at (location) SLD on

6/9/86-16:17 and that the statements in this block are correct.

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures R Meyerheim DGB

(we) certify that this sample was transferred from

o at (location) on

- : and that the statements in this block are correct.

Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures

ANALYSES REQUESTED

LAB. No.: ORG- 685

PLEASE CHECK THE APPROPRIATE BOXES BELOW TO INDICATE THE TYPE OF ANALYTICAL SCREENS REQUIRED. WHENEVER POSSIBLE LIST SPECIFIC COMPOUNDS SUSPECTED OR REQUIRED.

QUALITATIVE	QUANTITATIVE	PURGEABLE SCREENS	QUALITATIVE	QUANTITATIVE	EXTRACTABLE SCREENS
		ALIPHATIC HYDROCARBON SCREEN			ALIPHATIC HYDROCARBONS
X	X	AROMATIC HYDROCARBON SCREEN			CHLORINATED HYDROCARBON PESTICIDES
X	X	HALOGENATED HYDROCARBON SCREEN			CHLOROPHENOXY ACID HERBICIDES
		GAS CHROMATOGRAPH/MASS SPECTROMETER			HYDROCARBON FUEL SCREEN
					ORGANOPHOSPHATE PESTICIDES
					POLYCHLORINATED BIPHENYLS (PCB's)
					POLYNUCLEAR AROMATIC HYDROCARBONS
					TRIAZINE HERBICIDES
		SPECIFIC COMPOUNDS			SPECIFIC COMPOUNDS

REMARKS:

ANALYTICAL RESULTS

COMPOUND	[PPB]	COMPOUND	[PPB]
<i>benzene</i>	2600	<i>1,1-dichloroethane</i>	approx. 30 ppb
<i>toluene</i>	3000	<i>1,2-dichloroethane</i>	approx. 30 ppb
<i>ethylbenzene</i>	600	<i>1,1,1-trichloroethane</i>	trace < 10 ppb
<i>p-xylene</i>	700	<i>trichloroethene</i>	trace < 10 ppb
<i>m-xylene</i>	1500		
<i>o-xylene</i>	670		
<i>1,2-dichloroethane</i>	36		
		* DETECTION LIMIT	10 µg/mL

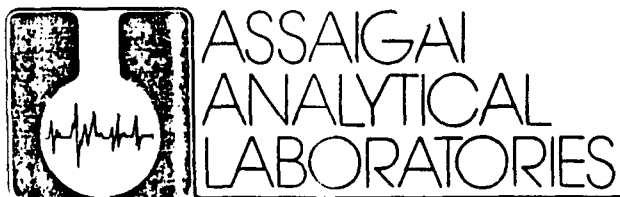
REMARKS:

Twelve compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes X NO . Seal(s) broken by: JAF date: 6-13-86
 I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements in this block and the analytical data on this page accurately reflect the analytical results for this sample.
 Date(s) of analysis: 6-13-86, 6-24-86. Analyst's signature: J. Turner
 I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block. Reviewers signature: R. Meyer

FOR OCD USE -- Date Owner Notified Phone or letter? Initials



TO: Geoscience Consultants Ltd.
Attn: Randy Hicks
500 Copper NW Suite 325
Albuquerque, NM 87102

DATE: 21 July 1986
0933

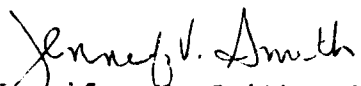
SAMPLE ID: 8606051525 GBR-29

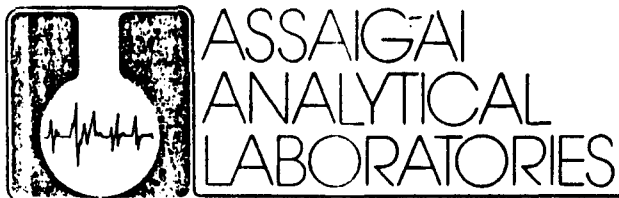
ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMITS
Benzene	3818 ug/l	1 ug/l
Toluene	3338 ug/l	1 ug/l
Xylenes	5210 ug/l	1 ug/l
Fe	<0.3 mg/l	0.3 mg/l
Pb	<0.050 mg/l	0.050 mg/l
Cr	<0.050 mg/l	0.050 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", USEPA, SW 846, EMSL-Cincinnati, 1982

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,


Jennifer V. Smith, Ph.D.
Laboratory Director



TO: Geoscience Consultants Ltd.
Attn: Randy Hicks
500 Copper NW Suite 325
Albuquerque, NM 87102

DATE: 18 June 1986
0879

SAMPLE ID: 8605300945

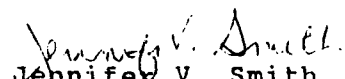
6 BF-29

ANALYTE	ANALYTICAL RESULTS	DETECTION LIMITS
Pb	0.14 mg/l	0.001 mg/l
Benzene	388 ug/l	1 ug/l
Toluene	643 ug/l	1 ug/l
Xylenes	2000 ug/l	1 ug/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,


Jennifer V. Smith, Ph.D.
Laboratory Director





Inter-Mountain
Laboratories, Inc.

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

CLIENT: Giant Refinery
ID: 9010041028
SITE: RW-3
LAB NO: F5140

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/04/90
DATE COLLECTED: 10/04/90

Lab pH (s.u.).....	7.91
Lab conductivity, umhos/cm.....	3970
Lab resistivity, ohm-m.....	2.52
Total dissolved solids (180), mg/l..	2950
Total dissolved solids (calc), mg/l.	2940
Total alkalinity as CaCO ₃ , mg/l.....	829
Total acidity as CaCO ₃ , mg/l.....	0
Total hardness as CaCO ₃ , mg/l.....	944
Sodium absorption ratio.....	9.8

	mg/l	meq/l
Bicarbonate as HCO ₃	1010	16.6
Carbonate as CO ₃	0	0
Chloride.....	435	12.3
Sulfate.....	944	19.7
Calcium.....	349	17.4
Magnesium.....	17.5	1.44
Potassium.....	2.28	0.06
Sodium.....	692	30.1
Major cations.....		49.1
Major anions.....		48.5
Cation/anion difference.....		0.54 %

C. Neal Schaeffer
Lab Director



Inter-Mountain
Laboratories, Inc.

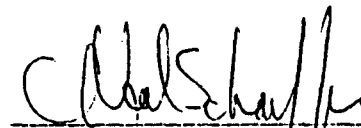
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GBR
ID: 9007100955
SITE: GRW-3
LAB NO: F4585

DATE REPORTED: 07/16/90
DATE RECEIVED: 07/10/90
DATE COLLECTED: 07/10/90

Lab pH (s.u.).....	7.94
Lab conductivity, umhos/cm.....	4465
Lab resistivity, ohm-m.....	2.2396
Total dissolved solids (180), mg/l..	3042
Total dissolved solids (calc), mg/l.	3014
Total alkalinity as CaCO ₃ , mg/l.....	821.30
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	953.80
Sodium absorption ratio.....	9.63

	mg/l	meq/l
Bicarbonate as HCO ₃	1002.0	16.43
Carbonate as CO ₃	0.0	0.00
Chloride.....	461.7	13.02
Sulfate.....	1010.6	21.06
Calcium.....	333.3	16.63
Magnesium.....	29.7	2.44
Potassium.....	2.6	0.07
Sodium.....	683.5	29.73
Major cations.....		48.87
Major anions.....		50.51
Cation/anion difference.....		1.64 %

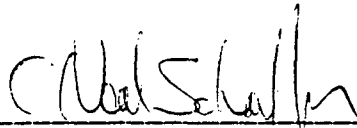

C. Neal Schaeffer
Lab Director

CLIENT: Giant Refinery
ID: GRW-3 8 GBR-29
SITE: GBR
LAB NO: F4078

DATE REPORTED: 04/13/90
DATE RECEIVED: 04/02/90
DATE COLLECTED: 04/02/90

Lab pH (s.u.).....	7.30
Lab Conductivity, umhos/cm.....	4548
Lab resistivity, ohm-m.....	2.1988
Total Dissolved Solids (180), mg/l..	3186
Total Dissolved Solids (calc), mg/l.	3115
Total Alkalinity as CaCO ₃ , mg/l.....	721.98
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	957.87
Sodium Absorption Ratio.....	9.70

	mg/l	meq/l
Bicarbonate as HCO ₃	880.8	14.44
Carbonate as CO ₃	0.0	0.00
Chloride.....	416.3	11.74
Sulfate.....	1218.0	25.38
Calcium.....	307.4	15.34
Magnesium.....	46.4	3.82
Potassium.....	3.6	0.09
Sodium.....	690.0	30.01
Major Cations.....		49.26
Major Anions.....		51.56
Cation/Anion Difference.....		2.28 %


C. Neal Schaeffer
Lab Director



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
WNF

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

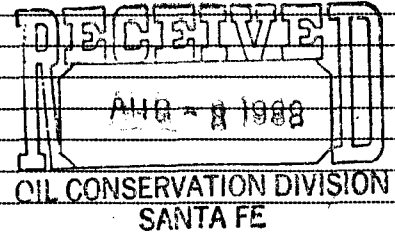
DATE RECEIVED: 6/10/88	LAB NO. W-2092	USER CODE: ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE: 6/10/88	SITE INFORMATION	Sample location: Grant Bloomfield GBR-59
Collection TIME: 1430		Collection site description:
Collected by: Person/Agency: Boyer, Anderson 10CD		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



Station/
well code
Owner

SAMPLING CONDITIONS

☐ Bailed ☐ Dipped	☒ Pump ☐ Tap	Water level: —	Discharge: —	Sample type: GRAB
pH (00400): 7	Conductivity (Uncorrected): 4980 µmho	Water Temp. (00010): 20.5 °C	Conductivity at 25 °C (00094): µmho	
Field comments: oil on water, sample from pump.				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted: 1	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µmembrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NA	Units	Date analyzed	From F, NA Sample:	Date Analyzed
☒ Conductivity (Corrected) 25 °C (00095)	µmho	7/11	☒ Calcium 280 mg/l	7/19
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Potassium 5 mg/l	7/25
☒ Other: Lab pH 7.98		7/20	☒ Magnesium 78.1 mg/l	7/19
☐ Other:			☒ Sodium 867 mg/l	7/25
☐ Other:			☒ Bicarbonate 241 mg/l	7/20
A-H₂SO₄			☒ Chloride 810 mg/l	7/21
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☒ Sulfate 1210 mg/l	7/21
☐ Ammonia-N total (00610)	mg/l		☒ Total Solids 3630 mg/l	7/7
☐ Total Kjeldahl-N ()	mg/l		☒ Bromide 3.51	6/22
☐ Chemical oxygen demand (00340)	mg/l		☐	
☐ Total organic carbon ()	mg/l		☒ Cation/Anion Balance	7/7
☐ Other:			Analyst	Date Reported: 7/29/88
☐ Other:			Reviewed by: CS	
Laboratory remarks: Received by AW 6/9/88 SLB-AUB submitted				

FOR OCD USE -- Date Owner Notified: 8/19/88 Phone or Letter: Initials: AUB

899

CATIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	13.97	280.00	<3.0
Mg	6.41	78.10	<0.3
Na	37.71	867.00	<10.0
K	0.13	5.00	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	
SUMS	58.23	1230.10	
Total Dissolved Solids=			3630
Ion Balance =			111.96%

ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
HC03	3.95	241.00	<1.0
SO4	25.21	1210.00	<10.0
CL	22.85	810.00	<5.0
NO3	0.00	0.00	< 0.
CO3	0.00	0.00	< 1.
NH3	0.00	0.00	< 0.
PO4	0.00	0.00	< 0.
	52.01	2261.00	

WC No. = 8802092
Date out/By CS 7/29/88



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 wmf
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED	11/26/86	LAB NO.	WC 5435	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	11/20/86	SITE INFORMATION	Sample location		
Collection TIME	1440		Giant, Bloom Field Refinery		
Collected by — Person/Agency		Collection site description			
BOYER / OLSON / OCD		6 BR - 29			

SEND
FINAL
REPORT
TO
▶

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 12088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected)	Water Temp. (00010)	Conductivity at 25 °C (00094)	
	3550 µmho	17 °C	µmho	
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	/	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µm membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed	
☒ Conductivity (Corrected) 25 °C (00095)	8157	µmho	12/16	☒ Calcium (00915)	1300 mg/l 12-1	
☐ Total non-filterable residue (suspended) (00530)		mg/l		☒ Magnesium (00925)	90.3 mg/l 12-1	
☒ Other: pH	6.91		12/8	☒ Sodium (00930)	979 mg/l 12/14	
☐ Other:				☒ Potassium (00935)	3.51 mg/l 12/14	
☐ Other:				☒ Bicarbonate (00440)	693 mg/l 12/8	
NF, A-H ₂ SO ₄			☒ Chloride (00940)			2819 mg/l 12/16
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l		☒ Sulfate (00945)	1481 mg/l 12/16	
☐ Ammonia-N total (00610)		mg/l		☒ Total filterable residue (dissolved) (70300)	8288 mg/l 12/14	
☐ Total Kjeldahl-N ()		mg/l		☒ Other: CO ₃ BR	0 12/8	
☐ Chemical oxygen demand (00340)		mg/l		F, A-H ₂ SO ₄		
☐ Total organic carbon ()		mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Other:				☐ Ammonia-N dissolved (00608)	mg/l	
☐ Other:				☐ Total Kjeldahl-N ()	mg/l	
Laboratory remarks			Analyst			
			Date Reported			
			12/16/86			
			Reviewed by			
			CJ			

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

94



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
2

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

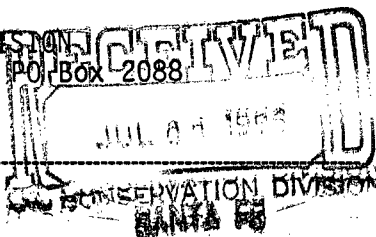
DATE RECEIVED	6/10/86	LAB NO	WC 2521	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	3/6/06/05	CO ₃ - 2522	SITE INFORMATION	Sample location	GIANT BLOOM FIELD REF GBR-29
Collection TIME	1525			Collection site description	
Collected by — Person/Agency	Boyer	/OCD			

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected)	μmho	Water Temp. (00010)	°C
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	1	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μmembrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added	☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☒ 4ml fuming HNO ₃ added	

ANALYTICAL RESULTS from SAMPLES

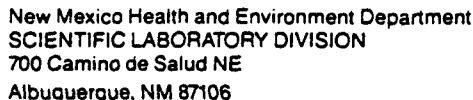
NF, NA	Units	Date analyzed	NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μmho		☒ Calcium (00915)	800 mg/l	6/28
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	63 mg/l	"
☐ Other:			☒ Sodium (00930)	349 mg/l	"
☐ Other:			☒ Potassium (00935)	0 mg/l	"
☐ Other:			☒ Bicarbonate (00440)	106 mg/l	6/13
			☒ Chloride (00940)	1513 mg/l	6/17
			☒ Sulfate (00945)	1113 mg/l	6/19
			☒ Total filterable residue (dissolved) (70300)	7536 mg/l	6/19
			☒ Other: CO ₃	0	6/13
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					

Laboratory remarks

SLD 726 (12/84)

FOR OCD USE -- Date Owner Notified _____ Phone or letter? _____ Initials _____





Telephone: (505)841-2553

TO:

OWNER: Wm A Bloomfield

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., PO Box 2088
SANTA FE, NM 87504-2088

SITE LOCATION:
County: San Juan

Township. Range. Section. Tract: (10N06E24342)

ATTN: D. Boyer
TELEPHONE: 827-5812

STATION/ WELL CODE: | | | | | | | | | |

LATITUDE, LONGITUDE: | | | | | | | | | | - | | |

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped	☒ Pump ☐ Tap	Water Level:	Discharge:	Sample Type: <i>GRAB</i>
pH(00400) <i>7</i>	Conductivity(Uncorr.) <i>4480</i> µmho	Water Temp. (00010) <i>20.5</i> °C	Conductivity at 25 °C (00094) µmho	

FIELD COMMENTS: oil on water

SAMPLE FIELD TREATMENT

Check proper boxes:

☐ WPN: Water Preserved w/HNO ₃ Non-Filtered	☒ WPF: Water Preserved w/HNO ₃ Filtered	☒ ICAP Scan Mark box next to metal if AA is required.
---	--	--

LAB ANALYSIS REQUESTED:

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	40.1		Silicon	11.	
Barium	40.1		Silver	40.1	☐
Beryllium	40.1		Strontium	11.	
Boron	0.5		Tin	40.1	
Cadmium	40.1	☐	Vanadium	40.1	
Calcium	550.		Zinc	40.1	
Chromium	40.1	☒ 40.001	Arsenic		☐
Cobalt	40.05		Selenium		☐
Copper	40.1		Mercury		☐
Iron	8.7				☐
Lead	40.1	☒ 40.01			☐
Magnesium	57.				☐
Manganese	3.2				☐
Molybdenum	40.1				☐
Nickel	0.3				☐

LAB COMMENTS: Lead intact. Broken by JAA 6/14/88

For OCD Use:

Date Owner Notified: 8/14/88

Phone or Letter?

Initials:

ICAP Analyst *JB*

Reviewer *Jim Bailey*

Date Analyzed 7/15/88

Date Received 7/25/88

Received by *[Signature]* 6/9/88 SLD-ALB



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED <u>11/26/86</u>	LAB NO. <u>HM 2431</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>86/11/20</u>	SITE INFORMATION	Sample location <u>Giant, Bloomfield Refinery</u>
Collection TIME <u>1440</u>		Collection site description <u>GBR-29</u>
Collected by — Person/Agency <u>BOYER/OLSON/OCD</u>		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) <u>3550</u> μ mho	Water Temp. (00010) <u>17</u> °C	Conductivity at 25°C (00094) μ mho	
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted <u>1</u>	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added ☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added	☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: <u>ICAP</u>			☐ Sodium (00930)	mg/l	
☒ Other: <u>AS</u>			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H₂SO₄			F, A-H₂SO₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported <u>1/26/87</u>	Reviewed by <u>Jim Ashby</u>

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

ICAP SCAN

SLD Lab No. HM 2431

Reviewed by:

Analyst QB

Date Reported:

Date Analyzed 12/5/86

ELEMENT	ICAP VALUE (mg/l)	AA VALUE (mg/l)
Aluminum	<0.1	
Barium	0.2	
Beryllium	<0.1	
Boron	0.4	
Cadmium	<0.1	
Calcium	1340.	
Chromium	<0.1	
Cobalt	<0.1	
Copper	<0.1	
Iron	2.4	
Lead	<0.1	
Magnesium	130.	
Manganese	6.4	
Molybdenum	<0.1	
Nickel	0.5	
Silicon	10.	
Silver	<0.1	
Strontium	25.	
Tin	0.1	
Vanadium	<0.1	
Zinc	<0.1	
Arsenic		<0.005
Selenium		
Mercury		



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

HEAVY METALS
GENERAL WATER CHEMISTRY
AND NITROGEN ANALYSIS

DATE RECEIVED	6/10/86	LAB NO.	HM-107	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	6/10/86	SITE INFORMATION	Sample location		
Collection TIME	1525		GIANT BLOOM FIELD REF GBR-29		
Collected by — Person/Agency		Boyer /OCD			
Collection site description					

SEND FINAL REPORT TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
				GRAB
pH (00400)	Conductivity (Uncorrected)	μmho	Water Temp. (00010)	°C
				Conductivity at 25°C (00094)
				μmho
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	1	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μm membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added		☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added
				☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μmho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: ICAP			☐ Sodium (00930)	mg/l	
☒ Other: As	0.008		☐ Potassium (00935)	mg/l	
☒ Other: 36 Hg	<0.0005		☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					

Laboratory remarks

SLD 726 (12/84)

FOR OCD USE — Date Owner Notified _____ Phone or letter? _____ Initials _____

Lab Number: HM1078

Sample Code: Liant Blomfield GBR-29

Date Submitted: 6/10/86

Date Analyzed: 6/19/86

By: Boyer

Reviewed By: Jim Ashby

Date Reported: 7/8/86

Element	ICAP VALUE (MG/L)	AA VALUE (MG/L)
Aluminum	<u>20.1</u>	<u> </u>
Barium	<u>20.1</u>	<u> </u>
Beryllium	<u>20.1</u>	<u> </u>
Boron	<u>0.4</u>	<u> </u>
Cadmium	<u>20.1</u>	<u> </u>
Calcium	<u>814.</u>	<u> </u>
Chromium	<u>20.1</u>	<u> </u>
Cobalt	<u>20.1</u>	<u> </u>
Copper	<u>20.1</u>	<u> </u>
Iron	<u>20.1</u>	<u> </u>
Lead	<u>20.1</u>	<u> </u>
Magnesium	<u>83.</u>	<u> </u>
Manganese	<u>5.8</u>	<u> </u>
Molybdenum	<u>20.1</u>	<u> </u>
Nickel	<u>20.1</u>	<u> </u>
Silicon	<u>9.0</u>	<u> </u>
Silver	<u>20.1</u>	<u> </u>
Strontium	<u>15.</u>	<u> </u>
Tin	<u>20.1</u>	<u> </u>
Vanadium	<u>20.1</u>	<u> </u>
Zinc	<u>20.1</u>	<u> </u>
Arsenic		<u>0.008</u>
Selenium		<u> </u>
Mercury		<u><0.0005</u>

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

MONITOR WELL GBR-30

<u>SAMPLER</u>	GIANT
<u>DATE</u>	<u>10/8/90</u>
<u>PARAMETER</u>	
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	0.86 X
1,3-DICHLOROBENZENE	ND
1,4-DICHLOROBENZENE	2.6
1,1-DICHLOROETHANE	ND
1,2-DICHLOROETHANE	0.18
1,1-DICHLOROETHENE	ND
CIS-1,2-DICHLOROETHENE	ND
TRANS-1,2-DICHLOROETHENE	ND
1,2-DICHLOROPROPANE	ND
ETHYLBENZENE	1.6
METHYLENE CHLORIDE	ND
1,1,2,2-TETRACHLOROETHANE	ND
TETRACHLOROETHENE	ND
TOLUENE	1.2
1,1,1-TRICHLOROETHANE	ND
1,1,2-TRICHLOROETHANE	ND
TRICHLOROETHENE	ND
TRICHLOROFLUOROMETHANE	ND
VINYL CHLORIDE	ND
TOTAL XYLENES	3.5

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE
X	-	PRESENCE NOT CONFIRMED

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

MONITOR WELL GBR-30

<u>SAMPLER</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>6/13/89</u>	<u>9/13/89</u>	<u>12/13/89</u>	<u>4/3/90</u>	<u>7/18/90</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	(BELOW)	<1.0	<1.0	<1.0
BENZENE	ND(<1.0)	0.96	1.1	ND	ND
BROMODICHLOROMETHANE	ND(1.0)	ND(<1.0)	ND	ND	ND
BROMOFORM	ND(1.0)	ND(4.0)	ND	ND	ND
BROMOMETHANE	ND(1.0)	ND(2.0)	ND	ND	ND
CARBON TETRACHLORIDE	ND(1.0)	ND(<1.0)	ND	ND	ND
CHLOROBENZENE	ND(<1.0)	2.7	ND	ND	1.8
CHLOROETHANE	ND(1.0)	ND(1.0)	ND	ND	ND
CHLOROFORM	ND(1.0)	ND(<1.0)	ND	ND	ND
CHLOROMETHANE	ND(1.0)	ND(1.0)	ND	ND	ND
DIBROMOCHLOROMETHANE	ND(1.0)	ND(<1.0)	ND	ND	ND
1,2-DICHLOROBENZENE	ND(<1.0)	35.0	ND	ND	ND
1,3-DICHLOROBENZENE	ND(<1.0)	17.0	ND	ND	ND
1,4-DICHLOROBENZENE	ND(<1.0)	40.0	ND	ND	ND
DICHLORODIFLUOROMETHANE	ND(1.0)	ND(<1.0)	ND	ND	ND
1,1-DICHLOROETHANE	ND(1.0)	0.88	ND	ND	0.67
1,2-DICHLOROETHANE	ND(1.0)	9.6	0.94	ND	0.75
1,1-DICHLOROETHENE	ND(1.0)	ND(<1.0)	ND	ND	ND
CIS-1,2-DICHLOROETHENE	NA	NA	NA	ND	5.6
TRANS-1,2-DICHLOROETHENE	ND(1.0)	NA	ND	ND	ND
TOTAL 1,2-DICHLOROETHENE	NA	ND(<1.0)	NA	NA	NA
1,2-DICHLOROPROPANE	ND(1.0)	ND(<1.0)	ND	ND	ND
ETHYLBENZENE	ND(<1.0)	11.0	ND	2.0	0.55
METHYLENE CHLORIDE	ND(1.0)	ND(<1.0)	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND(1.0)	ND(<1.0)	ND	ND	ND
TETRACHLOROETHENE	ND(1.0)	ND(<1.0)	ND	ND	0.44
TOLUENE	ND(<1.0)	4.3	0.28	3.1	ND
1,1,1-TRICHLOROETHANE	ND(1.0)	ND(<1.0)	ND	ND	ND
1,1,2-TRICHLOROETHANE	ND(1.0)	ND(<1.0)	ND	ND	ND
TRICHLOROETHENE	ND(1.0)	ND(<1.0)	ND	ND	0.44
TRICHLOROFLUOROMETHANE	ND(1.0)	0.91	ND	ND	ND
VINYL CHLORIDE	ND(1.0)	ND(<1.0)	ND	ND	ND
TOTAL XYLENES	4.3	44.0	1.3	ND	2.4

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

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

MONITOR WELL GBR-30

<u>SAMPLER</u>	GIANT	OCD	GIANT	GIANT	GIANT
<u>DATE</u>	<u>10/17/86</u>	<u>11/21/86</u>	<u>6/1/88</u>	<u>12/7/88</u>	<u>3/14/89</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	5.0	<1.0	<1.0	(BELOW)
BENZENE	ND(1.0)	ND	ND	ND	1.9
BROMODICHLOROMETHANE	ND(5.0)	ND	ND	ND	ND(<1.0)
BROMOFORM	ND(5.0)	ND	ND	ND	ND(<1.0)
BROMOMETHANE	NA	ND	ND	ND	ND(1.0)
CARBON TETRACHLORIDE	ND(5.0)	ND	ND	ND	ND(<1.0)
CHLOROBENZENE	NA	ND	ND	ND	ND(<1.0)
CHLOROETHANE	ND(5.0)	ND	ND	ND	ND(1.0)
CHLOROFORM	ND(5.0)	ND	ND	ND	ND(<1.0)
CHLOROMETHANE	NA	ND	ND	ND	ND(1.0)
DIBROMOCHLOROMETHANE	ND(5.0)	ND	ND	ND	ND(<1.0)
1,2-DICHLOROBENZENE	NA	ND	ND	ND	ND(<1.0)
1,3-DICHLOROBENZENE	NA	ND	ND	ND	ND(<1.0)
1,4-DICHLOROBENZENE	NA	ND	ND	ND	ND(<1.0)
DICHLORODIFLUOROMETHANE	NA	ND	ND	ND	ND(1.0)
1,1-DICHLOROETHANE	ND(5.0)	ND	0.98	0.5	0.08
1,2-DICHLOROETHANE	ND(5.0)	ND	ND	1.1	0.1
1,1-DICHLOROETHENE	ND(5.0)	ND	ND	ND	ND(<1.0)
CIS-1,2-DICHLOROETHENE	NA	ND	ND	ND	NA
TRANS-1,2-DICHLOROETHENE	ND(5.0)	ND	1.0	ND	ND(<1.0)
1,2-DICHLOROPROPANE	ND(5.0)	ND	ND	ND	ND(<1.0)
ETHYLBENZENE	ND(1.0)	ND	ND	2.4	3.5
METHYLENE CHLORIDE	ND(5.0)	ND	ND	ND	1.0
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	ND	ND	ND	ND(<1.0)
TETRACHLOROETHENE	ND(5.0)	TR	0.61	ND	ND(<1.0)
TOLUENE	ND(1.0)	ND	ND	ND	5.3
1,1,1-TRICHLOROETHANE	ND(5.0)	ND	ND	ND	ND(<1.0)
1,1,2-TRICHLOROETHANE	ND(5.0)	ND	ND	ND	ND(<1.0)
TRICHLOROETHENE	ND(5.0)	TR	0.52	ND	ND(<1.0)
TRICHLOROFLUOROMETHANE	NA	ND	ND	0.6	ND(<1.0)
VINYL CHLORIDE	ND(5.0)	ND	ND	ND	ND(1.0)
TOTAL XYLENES	ND(1.0)	89.0	20.0	13.6	11.6

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

Giant Refining Company
 Radian Work Order: S0-10-082

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	901008950	9010081035	9010081135	9010081240
	STRIPPER EFF.	GBR-31	GBR-33	GBR-30
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	07A	08A	09A	10A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	4.6 G _a	2.0	ND	0.20
Chlorobenzene	ND	0.20	0.34 X _a	0.20	11 G	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.40	1.2 X _a	0.40	ND	4.0	0.86 X _a	0.40
1,3-Dichlorobenzene	ND	0.40	1.8 X _a	0.40	61 X	4.0	ND	0.40
1,4-Dichlorobenzene	0.56 X _a	0.30	1.5 X	0.30	68 G	3.0	2.6 C	0.30
Ethylbenzene	ND	0.20	ND	0.20	220 G	2.0	1.6 C	0.20
Toluene	0.45 G _a	0.20	0.98 G _a	0.20	8.3 C _a	2.0	1.2 C	0.20
Xylenes (total)	0.91 X _a	0.20	0.45 X _a	0.20	310 C	2.0	3.5 X	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	120		75		118		133	
Control Limits: 40 to 140								

ND Not detected at specified detection limit
 G Est. result less than 5 times detection limit
 C Confirmed on second column or by GC/MS

X See definition in report narrative
 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.

Giant Refining Company
 Radian Work Order: S0-10-082

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	901008950	9010081035	9010081135	9010081240
	STRIPPER EFF.	GBR-31	GBR-33	GBR-30
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
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	ND	0.10	ND	0.10	ND	1.0	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	3.0	ND	0.30
Dibromochloromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
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	ND	0.50
1,2-Dichloroethane	ND	0.10	ND	0.10	ND	1.0	0.18 CA	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	2.0	ND	0.20
cis-1,2-Dichloroethene	ND	0.20	13 C	0.20	38 C	2.0	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	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
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	1.5	ND	0.15
Tetrachloroethene	ND	0.10	2.8 C	0.10	ND	1.0	ND	0.10
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	0.47 CA	0.20	ND	2.0	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Vinyl chloride	ND	0.20	ND	0.20	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

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

Giant Refining Company
 Radian Work Order: S0-07-146

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	900718937	9007181100	9007181305	9007181345
	GBR-31	GBR-24D	GBR-30	GBR-33
Factor:	10	5	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	02A	04A	06A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	2.0	39 C	1.0	ND	0.20	ND	0.20
Chlorobenzene	ND	2.0	16 X	1.0	1.8 X	0.20	2.5 X	0.20
1,2-Dichlorobenzene	ND	4.0	ND	2.0	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	4.0	ND	2.0	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	3.0	ND	1.5	ND	0.30	12 C	0.30
Ethylbenzene	ND	2.0	28 X	1.0	0.55 Xa	0.20	3.7 C	0.20
Toluene	ND	2.0	4.8 Ca	1.0	ND	0.20	0.35 Ca	0.20
Xylenes (total)	ND	2.0	8.8 C	1.0	2.4 C	0.20	6.6 C	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	102		96		106		45	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

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.

Giant Refining Company
 Radian Work Order: SO-07-146

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	900718937	9007181100	9007181305	9007181345
	GBR-31	GBR-240	GBR-30	GBR-33
Factor:	10	5	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	03A	05A	07A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	ND	0.50	ND	0.10	ND	0.10
Bromoform	ND	5.0	ND	2.5	ND	0.50	ND	0.50
Bromomethane	ND	12	ND	5.9	ND	1.2	ND	1.2
Carbon tetrachloride	ND	1.2	ND	0.60	ND	0.12	ND	0.12
Chlorobenzene	ND	2.5	ND	1.2	ND	0.25	ND	0.25
Chloroethane	ND	5.2	ND	2.6	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	5.0	ND	2.5	ND	0.50	ND	0.50
Chloroform	ND	1.0	ND	0.50	ND	0.10	ND	0.10
Chloromethane	ND	3.0	ND	1.5	ND	0.30	ND	0.30
Dibromochloromethane	ND	2.0	ND	1.0	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	2.5	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	1.6	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	1.2	ND	0.24	ND	0.24
1,1-Dichloroethane	5.5 Xa	5.0	ND	2.5	0.67 Ca	0.50	ND	0.50
1,2-Dichloroethane	ND	1.0	57 C	0.50	0.75 C	0.10	0.28 Ca	0.10
1,1-Dichloroethene	ND	2.0	ND	1.0	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	81 C	2.0	ND	1.0	5.6 C	0.20	4.9 C	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	1.0	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	0.50	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	1.0	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	1.7	ND	0.34	ND	0.34
Methylene chloride	ND	4.0	ND	2.0	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	1.5	ND	0.75	ND	0.15	ND	0.15
Tetrachloroethene	12 G	1.0	4.0 C	0.50	0.44 Ca	0.10	0.60 C	0.10
1,1,1-Trichloroethane	15 X	2.0	6.8 X	1.0	ND	0.20	ND	0.20
1,1,2-Trichloroethane	ND	2.0	ND	1.0	ND	0.20	ND	0.20
Trichloroethene	34 G	2.0	56 X	1.0	0.44 Ca	0.20	3.2 G	0.20
Trichlorofluoromethane	ND	2.0	ND	1.0	ND	0.20	0.28 Xa	0.20
Vinyl chloride	ND	2.0	ND	1.0	ND	0.20	ND	0.20

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.

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.

Giant Refining Company
 Radian Work Order: S0-04-020

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9004031005	9004031109	9004031150	9004031359
/GBR-17	/GBR-17	/GBR-30	/GBR-240	/GBR-15
Factor:	1	1	1	20
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	0.20	31 C	0.20	110 C	4.0
Chlorobenzene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	8.0
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	8.0
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	0.30	ND	6.0
Ethylbenzene	ND	0.20	2.0 C	0.20	13 C	0.20	ND	4.0
Toluene	ND	0.20	3.1 CG	0.20	2.3 C	0.20	ND	4.0
Xylenes (total)	ND	0.20	ND	0.20	6.7 C	0.20	ND	4.0
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	99		111		90		86	
Control Limits: 40 to 140								

ND Not detected at specified 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.

Giant Refining Company
 Radian Work Order: S0-04-020

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9004031005	9004031109	9004031150	9004031359
	/GBR-17	/GBR-30	/GBR-240	/GBR-15
Factor:	1	1	1	20
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	0.10	ND	0.10	ND	2.0
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	10
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	24
Carbon tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	2.4
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	5.0
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	10
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	10
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	2.0
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	6.0
Dibromochloromethane	ND	0.20	ND	0.20	ND	0.20	ND	4.0
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	10
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	6.4
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	4.8
1,1-Dichloroethane	ND	0.50	ND	0.50	ND	0.50	84 C	10
1,2-Dichloroethane	ND	0.10	ND	0.10	16 C	0.10	ND	2.0
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
cis-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	2.0
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	0.34	ND	6.8
Methylene chloride	ND	0.40	ND	0.40	ND	0.40	ND	8.0
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	0.15	ND	3.0
Tetrachloroethene	0.37 C	0.10	ND	0.10	0.21 C	0.10	ND	2.0
1,1,1-Trichloroethane	1.7 C	0.20	ND	0.20	ND	0.20	ND	4.0
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	0.20	ND	4.0
Trichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	4.0
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	4.0
Vinyl chloride	ND	0.20	ND	0.20	ND	0.20	ND	4.0

ND: Not detected at specified detection limit

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.

Giant Refining Co.
 Radian Work Order: 90-04-043

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9004031005	9004031109	9004031150	9004031359
	GBR-17	GBR-30	GBR-24D	GBR-15
Factor:	0.94	9.6	4.7	0.94
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
Acenaphthalene	ND	2.2	ND	22	ND	11	ND	2.2
Acenaphthene	ND	1.7	ND	17	ND	8.5	ND	1.7
Anthracene	ND	0.62	ND	6.3	ND	3.1	ND	0.62
Benzo(a)anthracene	ND	0.012	ND	0.12	ND	0.061	ND	0.012
Benzo(a)pyrene	ND	0.022	ND	0.22	ND	0.11	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.17	ND	0.085	ND	0.017
Benzo(g,h,i)perylene	ND	0.071	ND	0.73	ND	0.36	ND	0.071
Benzo(k)fluoranthene	ND	0.016	ND	0.16	ND	0.080	ND	0.016
Chrysene	ND	0.012	ND	0.12	ND	0.061	ND	0.012
Dibenzo(a,h)anthracene	ND	0.028	ND	0.29	ND	0.14	ND	0.028
Fluoranthene	ND	0.20	ND	2.0	ND	0.99	ND	0.20
Fluorene	ND	0.20	2.8 *	2.0	2.0 *	0.99	0.35 *	0.20
Indeno(1,2,3-cd)pyrene	ND	0.040	ND	0.41	ND	0.20	ND	0.040
Naphthalene	ND	1.7	ND	17	ND	8.5	ND	1.7
Phenanthrene	ND	0.60	ND	6.1	ND	3.0	ND	0.60
Pyrene	ND	0.25	ND	2.6	ND	1.3	ND	0.25
Surrogate Recovery(%)								
Terphenyl-d14	54		234 Q		69		72	
Control Limits: 24 to 146								

 ND Not detected at specified detection limit
 Q Outside control limits

* 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

GBR-30

Sample ID:

8912131030

Reagent blank

Factor:

1

1

Results in:

ug/L

ug/L

17B

22A

Matrix:

water

water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	<u>1.1</u>	0.20	ND	0.20				
Chlorobenzene	ND	0.20	ND	0.20				
1,2-Dichlorobenzene	ND	0.40	ND	0.40				
1,3-Dichlorobenzene	ND	0.40	ND	0.40				
1,4-Dichlorobenzene	ND	0.30	ND	0.30				
Ethylbenzene	ND	0.20	ND	0.20				
Toluene	<u>0.28 *</u>	0.20	ND	0.20				
Total xylenes	<u>1.3</u>	0.20	ND	0.20				
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	110		97					
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)	GBR-33	GBR-31	GBR-6	GBR-30
List: SW8010				
Sample ID:	8912131210	8912131300	8912131600	8912131030
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	14A	15A	16A	17A
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	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon Tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	0.50	3.4	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	4.0	0.10	2.0	0.10	1.2	0.10	0.94	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	1.1	0.20	44	0.20	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	0.10	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	0.30	ND	0.30	ND	0.30	ND	0.30
Methylene Chloride	ND	0.40	1.1 *	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane-(3)	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene-(3)	ND	0.10	12	0.10	ND	0.10	ND	0.10
1,1,2-Trichloroethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,1,1-Trichloroethane	ND	0.20	1.4	0.20	ND	0.20	ND	0.20
Trichloroethene	ND	0.20	7.9	0.20	ND	0.20	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Vinyl Chloride	ND	0.20	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.

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

Method: SW8310 PAH's by HPLC (1)	GBR-31	GBR-6	GBR-30	GBR-17
List: 8310 Method analytes				
Sample ID:	8912131300	8912131600	8912131030	8912120950
Factor:	0.94	24	1.9	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	15C	16C	17C	18A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	2.2	ND	55	ND	2.2	ND	2.2
Acenaphthene	ND	1.7	ND	43	14 D	1.7	ND	1.7
Anthracene	ND	0.62	ND	16	ND	1.3	ND	0.62
Benzo(a)anthracene	ND	0.012	0.57 *	0.31	0.026 *	0.025	0.026 *	0.012
Benzo(a)pyrene	ND	0.022	ND	0.55	ND	0.044	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.43	ND	0.034	ND	0.017
Benzo(g,h,i)perylene	ND	0.071	ND	1.8	ND	0.14	ND	0.071
Benzo(k)fluoranthene	ND	0.016	ND	0.41	ND	0.032	ND	0.016
Chrysene	ND	0.012	7.3	0.31	0.27	0.025	0.20	0.012
Dibenzo(a,h)anthracene	ND	0.028	ND	0.72	ND	0.057	ND	0.028
Fluoranthene	ND	0.20	ND	5.0	ND	0.40	0.40 *	0.20
Fluorene	ND	0.20	13 *D	5.0	4.1 D	0.20	2.3 D	0.20
Indeno(1,2,3-cd)pyrene	ND	0.040	ND	1.0	ND	0.040	ND	0.040
Naphthalene	ND	1.7	ND	43	5.8 *D	1.7	5.6 *D	1.7
Phenanthrene	ND	0.60	29 *	15	1.5 *	1.2	2.0 *	0.60
Pyrene	ND	0.25	ND	6.5	ND	0.51	0.25 *	0.25
Surrogate Recovery(%)								
Terphenyl-d14	84		106		76		124	
Control Limits: 37 to 139								

 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.

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

Method: PAHs by GC 8100 (1) List: 8100, special list	GBR-31	GBR-6	GBR-30	GBR-17
Sample ID:	8912131300	8912131600	8912131030	8912120950
Factor:	0.94	94	0.94	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	15C	16C	17C	18A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1-Methylnaphthalene	ND	0.94	ND	94	ND	0.94	ND	0.94
2-Methylnaphthalene	ND	0.94	ND	94	10	0.94	ND	0.94

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.

Received: 09/14/89

RAS Sacramento

REPORT

Work Order # S9-09-081

Results by Sample

SAMPLE ID 8909131015 H2O

GBR-30

FRACTION 07C

TEST CODE 6028

NAME Purgeable Aromatics - H2O

Date & Time Collected 09/13/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST	MG	INJECTD	FILE #	VERIFIED	JD
INSTRMT	5	10/03/89	FACTOR	5 UNITS	Ug/L
CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR	
71-43-2	Benzene	0.96 UE	0.50	5	
108-88-3	Toluene	4.3 UE	1.5	5	
100-41-4	Ethylbenzene	11 UE	0.50	5	
108-90-7	Chlorobenzene	2.7 UE	0.50	5	
1330-20-7	Total Xylenes	44 UE	1.0	5	
106-46-7	1,4-Dichlorobenzene	40 UE	1.0	5	
541-73-1	1,3-Dichlorobenzene	17 UE	2.0	5	
95-50-1	1,2-Dichlorobenzene	35 UE	1.0	5	

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 78% recovery

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

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Received: 09/14/89

RAS Sacramento

REPORT

Results by Sample

Work Order # 59-09-081

SAMPLE ID 8909131015 H2O GBR-30 FRACTION 07A TEST CODE 601 NAME Purgeable Halocarbons H2O

Date & Time Collected 09/13/89 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST MQ
INSTRMT B

FILE # DB100114 VERIFIED JD
FACTOR 2 UNITS ug/L

INJECTD 10/01/89

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloromethane	ND	1.0	2
74-83-9	Bromomethane	ND	2.0	2
75-01-4	Vinyl Chloride	ND	0.40	2
75-00-3	Chloroethane	ND	1.0	2
75-09-2	Methylene Chloride	ND	0.80	2
75-69-4	Trichlorofluoromethane	0.91 C	0.20	2
75-35-4	1,1-Dichloroethene	ND	0.20	2
75-34-3	1,1-Dichloroethane	0.88 C	0.20	2
540-59-0	Total 1,2-Dichloroethene (2)	ND	0.20	2
67-66-3	Chloroform	ND	0.20	2
107-06-2	1,2-Dichloroethane	9.6 C	0.20	2
71-55-6	1,1,1-Trichloroethane	ND	0.40	2
56-23-5	Carbon Tetrachloride	ND	0.40	2
75-27-4	Bromodichloromethane	ND	0.20	2
78-87-5	1,2-Dichloropropane	ND	0.20	2
10061-01-5	cis-1,3-Dichloropropene	ND	0.80	2
79-01-6	Trichloroethene	ND	0.40	2
124-48-1	Dibromochloromethane (3)	ND	0.40	2
79-00-5	1,1,2-Trichloroethane (3)	ND	0.40	2
10061-02-6	trans-1,3-Dichloropropene (3)	ND	0.80	2
110-75-8	2-Chloroethylvinyl Ether	ND	4.0	2
75-25-2	Bromoform	ND	4.0	2
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	0.40	2
127-18-4	Tetrachloroethene (4)	ND	0.20	2
108-90-7	Chlorobenzene	ND	0.40	2
541-73-1	1,3-Dichlorobenzene	ND	1.0	2
95-50-1	1,2-Dichlorobenzene	ND	0.40	2
106-46-7	1,4-Dichlorobenzene	ND	0.40	2

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Received: 09/14/89

RAS Sacramento

REPORT

Results by Sample

Work Order # S9-09-081
Continued From Above

SAMPLE ID 8909131015 H2O GBR-30

FRACTION 07A

TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/13/89

Category

SURROGATES

540-36-3	1-4-Difluorobenzene	NA % Recovery
460-00-4	1-Bromo-4-Fluorobenzene	82 % 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.



2506 West Main Street
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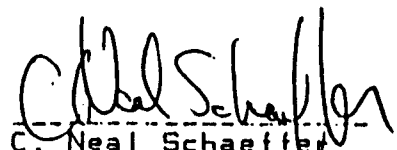
Client: GCL #0906131200
Site: GBR-30
IML #: F1576

Date of report: 06/23/87
Date sampled: 06/13/87
Date received: 06/14/87

Parameter	Concentration	Units
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	4.3 (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8070 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

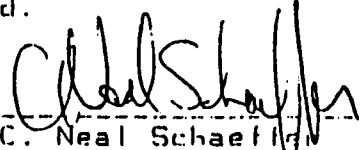
Client: GCL #8906131200
Site: GBR-30
IML #: F1576

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	ND (1.0)	ug/l
1,1,1-TRICHLOROETHANE	ND (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	ND (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	ND (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUNDWATER
POLYNUCLEAR AROMATIC HYDROCARBONS
(ug/ml unless otherwise noted)
(Sampling Event: 06/13/89)

ANALYTE	GBR-17	GBR-24D	GBR-30	GBR-31	GBR-33
Acenaphthene	NA	0.010 (0.005)	2.3 (0.6)	ND (0.003)	0.34 (0.25)
Acenaphthylene	NA	0.008 (0.005)	ND (0.6)	ND (0.003)	0.44 (0.25)
Anthracene	NA	0.006 (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(a)anthracene	NA	ND (0.005)	ND (0.6)	ND (0.003)	0.59 (0.25)
Benzo(a)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(b)fluoranthene	NA	0.007 (0.005)	ND (0.6)	0.014 (0.003)	1.58 (0.25)
Benzo(j)fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(k)fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(g,h,i)perylene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Chrysene	NA	ND (0.005)	ND (0.6)	0.008 (0.003)	0.67 (0.25)
Dibenz(a,h)acridine	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,j)acridine	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenzo(a,h)anthracene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,e)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,h)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Fluorene	NA	0.009 (0.005)	ND (0.6)	0.005 (0.003)	ND (0.25)
Indeno(1,2,3-cd)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Naphthalene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Phenanthrene	NA	0.013 (0.005)	2.0 (0.6)	0.006 (0.003)	0.53 (0.25)
Pyrene	NA	ND (0.005)	ND (0.6)	0.004 (0.003)	ND (0.25)
1-Methylnaphthalene	NA	NA (0.005)	NA (0.6)	NA (0.003)	NA (0.25)
3-Methylnaphthalene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)

() = Detection Limit
ND = Not detected
T = Detected below quantifiable level
NA = Not analyzed



2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-1737

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903141607

Sample Site: GBR-30

IML Lab No: F890890

Analysis Requested: Purgeable Aromatic

Sample Matrix: Water

Date Sampled: 03/14/89

Date Received: 03/14/89

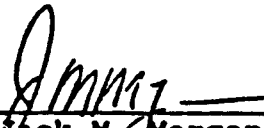
Date Extracted: NA

Date Analyzed: 03/22/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	1.9 (0.2)	ug/l
TOLUENE	5.3 (0.2)	ug/l
ETHYLBENZENE	3.5 (0.2)	ug/l
m,p-XYLENE	8.2 (0.2)	ug/l
o-XYLENE	3.4 (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



Jack M. Morgan
Senior Organic Chemist

Date: April 02, 1989

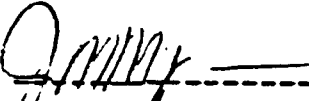
Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141607
Sample Site: GBR-30 Date Sampled: 03/14/89
IML Sample No: F890890 Date Received: 03/14/89
Analysis Requested: Purgeable Halocarbons Date Extracted: N/A
Sample Matrix: Water Date Analyzed: 03/28/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	1.0 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	0.08 (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	0.10 (0.03)	ug/l
1,1,1-TRICHLOROETHANE	ND (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	ND (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	ND (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

Date: April 09, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141607
Sample Site: GBR-30 Date Sampled: 03/14/89
IML Sample No: F890890 Date Received: 03/14/89
Analysis: Polynuclear Aromatic Date Extracted: 03/16/89
Hydrocarbons Date Analyzed: 04/09/89
Sample Matrix: Water

Parameter	Concentration	Units
Acetnaphthene	ND (10.0)	ug/l
Acenaphthylene	ND (10.0)	ug/l
Anthracene	ND (10.0)	ug/l
Benzo(a)Anthracene	ND (10.0)	ug/l
Benzo(a)pyrene	ND (10.0)	ug/l
Benzo(b)fluoranthene	ND (10.0)	ug/l
Benzo(g,h,i)perylene	ND (10.0)	ug/l
Benzo(k)fluoranthene	ND (10.0)	ug/l
Chrysene	ND (10.0)	ug/l
Dibenzo(a,h)anthracene	ND (10.0)	ug/l
Fluoranthene	ND (10.0)	ug/l
Fluorene	ND (10.0)	ug/l
Indeno(1,2,3-cd)pyrene	ND (10.0)	ug/l
Naphthalene	ND (10.0)	ug/l
Phenanthrene	ND (10.0)	ug/l
Pyrene	ND (10.0)	ug/l
1-Methylnaphthalene	ND (10.0)	ug/l

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA (1986)

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.

Comments: Sample required extensive cleanup. Increased detection limits reflect increased baseline perturbation as well as sample loss due to cleanup.



Jack M. Morgan
Senior Organic Chemist

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Received: 12/09/88

RAS - Austin

REPORT

Work Order # 88-12-057

Results by Sample

SAMPLE ID 8812071201

6BL-30

FRACTION 04A

TEST CODE EPA602

NAME EPA method 602

Date & Time Collected 12/07/88

Category

ANALYST BM FILE # VERIFIED CL
INSTRMT D INJECTED 12/12/88 UNITS ug/L

CAS#	COMPOUND	RESULT	DET LIMIT
71-43-2	Benzene	ND	0.40
108-88-3	Toluene	ND	0.40
100-41-4	Ethylbenzene	2.4*	0.60
108-90-7	Chlorobenzene-A	ND	0.60
106-46-7	1,4-Dichlorobenzene	ND	0.60
541-73-1	1,3-Dichlorobenzene	ND	0.80
95-50-1	1,2-Dichlorobenzene	ND	0.80

SURROGATES
98-08-8 a,a,a-Trifluorotoluene 109% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available
Second column confirmation NOT performed unless otherwise noted.

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Received: 12/09/88

RAS - Austin

REPORT
Results by Sample

Work Order # 88-12-057

SAMPLE ID 8812071201 *GBL-30*

FRACTION 04A TEST CODE XYLENE NAME Xylenes, EPA 602
Date & Time Collected 12/07/88 Category

ANALYST BM FILE # VERIFIED CL
INSTRMT D INJECTD 12/12/88 UNITS ug/L

CAS #	COMPOUND	RESULT	DET LIMIT
106-42-3	p-Xylene-A	9.7	0.40
103-38-3	m-Xylene	3.2	0.40
95-47-6	o-Xylene	1.7	0.20

92-09-8 SURROGATES
a,a,a-Trifluorotoluene 107% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NDT performed unless otherwise noted.

Q = daily EPA standard recovery outside 95% confidence interval.

Chlorobenzene and p-xylene co-elute.

Quantitated as chlorobenzene unless otherwise noted.

Page 20
Received: 12/09/88

RAS - Austin

REPORT
Results by Sample

Work Order # 88-12-057

SAMPLE ID 8812071201

6BL-30

FRACTION 04B

TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 12/07/88

Category

ANALYST _____ BM _____
INSTRMT _____ E _____
INJECTED 12/14/88
FILE # _____
VERIFIED _____ CL _____
UNITS _____ ug/L _____

CAS#	COMPOUND	RESULT	DET LIMIT
74-27-3	Chloromethane	ND	0.30
74-83-9	Bromomethane	ND	1.2
75-01-4	Vinyl chloride	ND	0.20
75-00-3	Chloroethane	ND	0.50
75-09-2	Methylene chloride	ND	0.30
75-69-4	Trichlorofluoromethane	0.6	0.10
75-35-4	1,1-Dichloroethene	ND	0.10
75-34-3	1,1-Dichloroethane	0.5	0.090
156-60-5	trans-1,2-Dichloroethene	ND	0.20
67-66-3	Chloroform	ND	0.050
107-06-2	1,2-Dichloroethane	1.1	0.030
71-55-6	1,1,1-Trichloroethane	ND	0.090
56-23-5	Carbon tetrachloride	ND	0.10
75-27-4	Bromodichloromethane	ND	0.10

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RAB - Austin

REPORT

Work Order # 88-12-057
Continued From Above

Received: 12/09/82

Results by Sample

SAMPLE ID 8812071201 602-30 FRACTION 04B TEST CODE EPA601 NAME EPA method 601
Date & Time Collected 12/07/88 Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.10
10061-02-6	trans-1,3-Dichloropropene	ND	0.30
79-01-6	Trichloroethene	ND	0.20
124-48-1	Dibromochloromethane-A	ND	0.20
79-00-5	1,1,2-Trichloroethene-A	ND	0.070
10061-01-5	cis-1,3-Dichloropropene-A	ND	N/A
110-75-3	2-Chloroethylvinyl ether	ND	0.20
75-25-2	Bromoform	ND	0.30
79-34-5	1,1,2,2-Tetrachloroethane-B	ND	0.12
127-18-4	Tetrachloroethene-B	ND	0.030
108-90-7	Chlorobenzene	ND	0.30
541-73-1	1,3-Dichlorobenzene	ND	0.30
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.40
	SURROGATES		
74-97-5	Bromochloromethane	124 % Recovery	
460-00-4	1-Bromo-4-fluorobenzene	112 % Recovery	

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

06/29/88 mh

Page 1 of 3

PROJECT MGR: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming N.E. Suite 104
Albuquerque, NM 87111

PROJECT#: 232-799-5009-10
LOCATION: Farmington, NM

SAMPLED: 06/01/88 **BY:** T. LePage
RECEIVED: 06/03/88 **BY:** J. Floro
ANALYZED: 06/15/88 **BY:** P. Sra
MATRIX: Water
UNITS: ug/L (ppb)

TEST RESULTS

COMPOUND	MDL	LAB # I.I.D.#	GBR-245				GBR-31	
			24489	24490	24491	24492	24493	24494
			010530	010347	TRIPBLANK	021015		
Benzene	0.5		0.5	63	0.5	0.5		
Bromodichloromethane	0.5		0.5	0.5	0.5	0.5		
Bromoform	0.5		0.5	0.5	0.5	0.5		
Bromomethane	0.5		0.5	0.5	0.5	0.5		
Carbon tetrachloride	0.5		0.5	0.5	0.5	0.5		
Chlorobenzene	0.5		0.5	0.5	0.5	0.5		
Chloroethane	0.5		0.5	0.5	0.5	0.5		
2-Chloroethylvinyl ether	1.0		1.0	1.0	1.0	1.0		
Chloroform	0.5		0.5	0.5	0.5	0.5		
Chloromethane	0.5		0.5	0.5	0.5	0.5		
Dibromochloromethane	0.5		0.5	0.5	0.5	0.5		
1,2-Dichlorobenzene	0.5		0.5	0.5	0.5	0.5		
1,3-Dichlorobenzene	0.5		0.5	1.3	0.5	0.5		
1,4-Dichlorobenzene	0.2		0.2	0.2	0.2	0.2		
Dichlorodifluoromethane	0.5		0.5	0.5	0.5	0.5		
1,1-Dichloroethane	0.5		0.98	0.5	0.5	4.6		
1,2-Dichloroethane	0.5		0.5	55	0.5	0.5		
1,1-Dichloroethene	0.2		0.2	0.2	0.2	0.2		
trans-1,2-Dichloroethene	0.5		1.0	0.5	0.5	53		
1,2-Dichloropropane	0.5		0.5	0.5	0.5	0.5		
cis-1,3-Dichloropropene	0.5		0.5	0.5	0.5	0.5		
trans-1,3-Dichloropropene	0.5		0.5	0.5	0.5	0.5		
Ethylbenzene	0.5		0.5	73	0.5	0.5		
Methylene chloride	0.5		0.5	0.5	0.5	0.5		
1,1,2,2-Tetrachloroethane	0.5		0.5	0.5	0.5	0.5		
Tetrachloroethene	0.5		0.61	0.69	0.5	5.0		
1,1,1-Trichloroethane	0.5		0.5	0.5	0.5	1.8		
1,1,2-Trichloroethane	0.5		0.5	0.5	0.5	0.5		
Trichloroethene	0.5		0.52	0.5	0.5	7.6		
Trichlorofluoromethane	0.5		0.5	0.5	0.5	0.5		
Vinyl Chloride	1.0		1.0	1.0	1.0	1.0		
Xylenes	0.5		20	40	0.5	0.5		
Toluene	0.5		0.5	11	0.5	0.5		

MDL = Method Detection Limit.
METHODS: EPA 8010/8020.

6/1/88



A division of Groundwater Technology, Inc.

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

07/14/88 MH

Page 1 of 3

R-7/21/88

CLIENT: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming Northeast #104
Albuquerque, NM 87111

PROJECT#: 232-799-5009-17

LOCATION: Farmington, NM

SAMPLED: 06/1,2/88

BY: T. LePage

RECEIVED: 06/27/88

BY: K. Biava

ANALYZED: 7/6-8,11/88

BY: L. Hinson

MATRIX: Water

UNITS:

ug/L

TEST RESULTS

COMPOUNDS	MDL	LAB # I.D.#	24480C 24481C 24482C 24483C			
			010530	010347	020135	021015
Acenaphthene	10		<10	<10	<10	<10
Acenaphthylene	10		<10	<10	<10	<10
Anthracene	10		<10	<10	<10	<10
Benzo (a) anthracene	10		<10	<10	<10	<10
Benzo (a) pyrene	10		<10	<10	<10	<10
Benzo (b) fluoranthene	10		<10	<10	<10	<10
Benzo (ghi) perylene	10		<10	<10	<10	<10
Benzo (k) fluoranthene	10		<10	<10	<10	<10
Chrysene	10		<10	<10	<10	<10
Dibenzo (a,h) anthracene	10		<10	<10	<10	<10
Fluoranthene	10		<10	<10	<10	<10
Fluorene	10		<10	<10	<10	<10
Indeno (1,2,3-cd) pyrene	10		<10	<10	<10	<10
Naphthalene	10		<10	<10	<10	<10
Phenanthrene	10		<10	<10	<10	<10
Pyrene	10		<10	<10	<10	<10

MDL=Method Detection Limit.
METHOD: EPA Method 610.

6/1/88

GBR-30 GBR-248 TK-22 GBR-31

86-1361-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

STATE OF NEW MEXICO

REPORT TO: David Boyer

N.M. Oil Conservation Division

P. O. Box 2088

Santa Fe, N.M. 87504-2088

S.L.D. No. OR-

1362 A, B

DATE REC.

11-26-86

PRIORITY

PHONE(S):

327-5812

USER CODE:

8 2 2 3 5

SUBMITTER:

David Boyer

CODE:

2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII)

8611210930A+8+8

SAMPLE TYPE: WATER ☐, SOIL ☐, FOOD ☐, OTHER: ☐CODE: ☐

COUNTY: San Juan

CITY: Lee Acres

CODE: ☐

LOCATION CODE: (Township-Range-Section-Tracts)

29N+12W+27+1111 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

☐
☐
☐
☐
☐**EXTRACTABLE SCREENS**

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks:

FIELD DATA:

pH= ; Conductivity= 875 umho/cm at 16 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant, GBR 30, 41" product

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): David Boyer

Method of Shipment to the Lab: Hand CarriedThis form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice: Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃: Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Mary C. Eden
at (location) HED/SLD on 11/26/86 at 4:12 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures

William OlsonMary C. Eden

For OCD Use: Date Owner Notified _____ Phone or Letter? _____ Initials _____

ANALYSES PERFORMED

LAB. NO. OR- 1361

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes

Other Specific Compounds or Classes

☐
☐
☐
☐
☐
EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
p-xylene	52		
m-xylene	28		
o-xylene	9		
trichloroethene	TR		
tetrachloroethene	TR		
* DETECTION LIMIT *	5 ppb	+ DETECTION LIMIT +	+

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Eight other compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: JZ

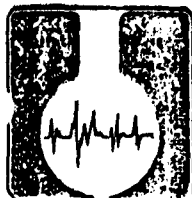
date: 12-4/12-986

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4-9 Dec 86. Analyst's signature: J. Finney

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R. Meyers



ASSAIGAI ANALYTICAL LABORATORIES

TO: Geoscience Consultants Ltd.
Attn: Jan Martin
500 Copper NW Suite 325
Albuquerque, NM 87158

DATE: 17 December 1986
1787

SAMPLE ID: 8610171155 GBR 30

ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Benzene	<0.001 mg/l	0.001 mg/l
Toluene	<0.001 mg/l	0.001 mg/l
Ethylbenzene	<0.001 mg/l	0.001 mg/l
Xylenes	<0.001 mg/l	0.001 mg/l
Acrolein	<25 ug/l	25 ug/l
Acrylonitrile	<25 ug/l	25 ug/l
Bromoform	<5.0 ug/l	5.0 ug/l
Carbon Tetrachloride	<5.0 ug/l	5.0 ug/l
Chlorodibromomethane	<5.0 ug/l	5.0 ug/l
Chloroethane	<5.0 ug/l	5.0 ug/l
2-Chloroethylvinyl Ether	<5.0 ug/l	5.0 ug/l
Chloroform	<5.0 ug/l	5.0 ug/l
Dichlorobromomethane	<5.0 ug/l	5.0 ug/l
1,1-Dichloroethane	<5.0 ug/l	5.0 ug/l
1,2-Dichloroethane	<5.0 ug/l	5.0 ug/l
1,1-Dichloroethene	<5.0 ug/l	5.0 ug/l
1,2-Dichloropropane	<5.0 ug/l	5.0 ug/l
1,3-Dichloropropylene	<5.0 ug/l	5.0 ug/l
Methyl Bromide	<5.0 ug/l	5.0 ug/l
Methyl Chloride	<5.0 ug/l	5.0 ug/l
Methylene Chloride	<5.0 ug/l	5.0 ug/l
1,1,2,2-Tetrachloroethane	<5.0 ug/l	5.0 ug/l
Tetrachloroethene	<5.0 ug/l	5.0 ug/l
Trans-1,2-Dichloroethene	<5.0 ug/l	5.0 ug/l
1,1,1-Trichloroethane	<5.0 ug/l	5.0 ug/l
1,1,2-Trichloroethane	<5.0 ug/l	5.0 ug/l
Trichloroethene	<5.0 ug/l	5.0 ug/l
Vinyl Chloride	<5.0 ug/l	5.0 ug/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

Jennifer V. Smith
Jennifer V. Smith, Ph.D.



6/7/89 GBR Report

LOCATION: GBR-30

TEST: General Chemistry

	11/21/86	6/1/88	12/7/88	3/14/89
	mg/l	mg/l	mg/l	mg/l
CALCIUM	180	586	460	530
MAGNESIUM	36.6	50	36	39
SODIUM	271	578	440	600
POTASSIUM	1.95	3.3	<5	3
AMMONIA-N	NA	NA	NA	NA
BICARBONATE	554	124	NA	533
BROMIDE	0.4	ND	NA	NA
CARBONATE	NA	NA	NA	0
CHLORIDE	133	370	620	583
FLUORIDE	NA	NA	3.6	NA
NITRATE-N+, NITRITE-N	NA	NA	NA	0.05
SULFATE	389	2270	1300	1501
TFS	1308	3996	3500	3604
ACIDITY AS CaCO3	NA	NA	NA	<1
ALKALINITY AS CaCO3	NA	NA	NA	437
HARDNESS AS CaCO3	NA	NA	NA	1484
CHARGE BALANCE (%)	NA	NA	NA	99.47
pH	7.85	NA	NA	NA
CONDUCTIVITY (umho)	1715	NA	NA	NA

TFS = TOTAL FILTERABLE SOLIDS (DISSOLVED)

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMIT

RECEIVED

JUN 23 1989

OIL CONSERVATION DIV.
SANTA FE



Inter-Mountain
Laboratories, Inc.

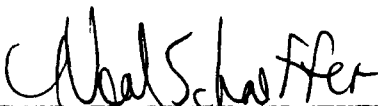
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GBR
ID: 9010081240
SITE: GBR-30
LAB NO: F5232

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/08/90
DATE COLLECTED: 10/08/90

Lab pH (s.u.).....	7.35
Lab conductivity, umhos/cm.....	4600
Lab resistivity, ohm-m.....	2.18
Total dissolved solids (180), mg/l..	3230
Total dissolved solids (calc), mg/l.	3220
Total alkalinity as CaCO ₃ , mg/l.....	250
Total acidity as CaCO ₃ , mg/l.....	0
Total hardness as CaCO ₃ , mg/l.....	1270
Sodium absorption ratio.....	7.7

	mg/l	meq/l
Bicarbonate as HCO ₃	304	4.99
Carbonate as CO ₃	0	0
Chloride.....	584	16.5
Sulfate.....	1400	29.2
Calcium.....	357	17.8
Magnesium.....	90.8	7.47
Potassium.....	2.76	0.07
Sodium.....	630	27.4
Major cations.....		52.8
Major anions.....		50.7
Cation/anion difference.....		1.99 %


C. Neal Schaeffer
Lab Director



Inter-Mountain
Laboratories, Inc.

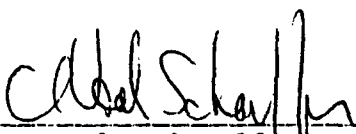
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GBR
ID: 9007101420
SITE: GBR-30
LAB NO: F4590

DATE REPORTED: 07/16/90
DATE RECEIVED: 07/10/90
DATE COLLECTED: 07/10/90

Lab pH (s.u.).....	7.93
Lab conductivity, umhos/cm.....	4710
Lab resistivity, ohm-m.....	2.1231
Total dissolved solids (180), mg/l..	3608
Total dissolved solids (calc), mg/l.	3465
Total alkalinity as CaCO ₃ , mg/l.....	315.15
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1275.08
Sodium absorption ratio.....	7.81

	mg/l	meq/l
Bicarbonate as HCO ₃	384.5	6.30
Carbonate as CO ₃	0.0	0.00
Chloride.....	519.4	14.65
Sulfate.....	1628.3	33.92
Calcium.....	437.7	21.84
Magnesium.....	44.5	3.66
Potassium.....	4.8	0.12
Sodium.....	641.0	27.88
Major cations.....		53.51
Major anions.....		54.88
Cation/anion difference.....		1.27 %

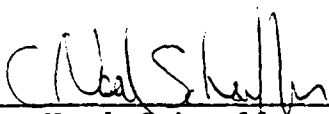

C. Neal Schaeffer
Lab Director

CLIENT: Giant Refinery
ID: GBR-30
SITE: GBR
LAB NO: F4089

DATE REPORTED: 04/17/90
DATE RECEIVED: 04/03/90
DATE COLLECTED: 04/03/90

Lab pH (s.u.).....	7.42
Lab Conductivity, umhos/cm.....	4526
Lab resistivity, ohm-m.....	2.2095
Total Dissolved Solids (180), mg/l..	3238
Total Dissolved Solids (calc), mg/l.	3096
Total Alkalinity as CaCO ₃ , mg/l.....	355.26
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1184.72
Sodium Absorption Ratio.....	7.71

	mg/l	meq/l
Bicarbonate as HCO ₃	433.4	7.11
Carbonate as CO ₃	0.0	0.00
Chloride.....	527.9	14.89
Sulfate.....	1350.5	28.14
Calcium.....	265.3	13.24
Magnesium.....	127.1	10.46
Potassium.....	2.1	0.05
Sodium.....	610.0	26.53
Major Cations.....		50.28
Major Anions.....		50.13
Cation/Anion Difference.....		0.15 %


C. Neal Schaeffer
Lab Director



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

CLIENT: Geoscience Consultants

DATE REPORTED: 12/20/89

SITE: GBR-30

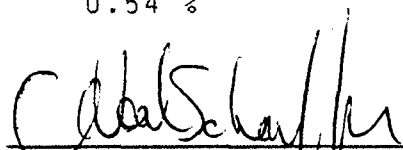
DATE RECEIVED: 12/13/89

LAB NO: F3665

DATE COLLECTED: 12/13/89

Lab pH (s.u.).....	8.07
Lab Conductivity, umhos/cm.....	4362
Lab resistivity, ohm-m.....	2.2925
Total Dissolved Solids (180), mg/l..	3250
Total Dissolved Solids (calc), mg/l.	3108
Total Alkalinity as CaCO ₃ , mg/l.....	306.68
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1178.91
Sodium Absorption Ratio.....	7.35

	mg/l	meq/l
Bicarbonate as HCO ₃	374.15	6.13
Carbonate as CO ₃	0.00	0.00
Chloride.....	567.41	16.01
Sulfate.....	1308.57	27.26
Calcium.....	454.79	22.69
Magnesium.....	10.75	0.88
Potassium.....	2.60	0.07
Sodium.....	580.00	25.23
Major Cations.....		48.87
Major Anions.....		49.40
Cation/Anion Difference.....		0.54 %


C. Neal Schaeffer
Senior Chemist



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

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/27/89
SAMPLE: B9D9131015
SITE: GBR 30 DATE RECEIVED: 09/13/89
LAB NO: F3159 DATE COLLECTED: 09/13/89

Lab pH.....	7.78
Lab Conductivity, umhos/cm.....	3557
Lab resistivity, ohm-m.....	2.8114
Total Dissolved Solids (180), mg/l..	2314
Total Dissolved Solids (calc), mg/l.	2318
Total Alkalinity as CaCO ₃ , mg/l.....	512.77
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	631.60
Sodium Absorption Ratio.....	7.11

	mg/l	meq/l
Bicarbonate as HCO ₃	625.58	10.26
Carbonate as CO ₃	0.00	0.00
Chloride.....	386.56	10.90
Sulfate.....	819.71	17.08
Calcium.....	326.35	16.29
Magnesium.....	4.22	0.35
Potassium.....	1.96	0.05
Sodium.....	471.60	20.51
Major Cations.....		37.20
Major Anions.....		38.24
Cation/Anion Difference.....		1.38 %



C. Neal Schaeffer
Senior Chemist

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUNDWATER
GENERAL WATER CHEMISTRY
(mg/L unless otherwise noted)
(Sampling Event: 06/13/89)

ANALYTE	GBR-06	GBR-08	GBR-13	GRW-13	GBR-15	GBR-17	GBR-240	GBR-30	GBR-31	GBR-33
Total dissolved solids (180)	2780.00	3380.00	4220.00	4318.00	3754.00	2466.00	3722.00	3544.00	4414.00	3576.00
Total alkalinity (as CaCO3)	1124.86	960.15	736.30	246.67	188.70	222.00	246.67	376.17	342.25	354.58
Total hardness (as CaCO3)	1204.43	1204.43	1781.77	1602.59	1294.02	1134.76	1736.97	1353.74	1682.23	1311.74
pH	7.33	7.27	7.30	7.27	7.60	7.40	8.02	7.39	7.66	7.17
Conductivity (umhos/cm @ 25C)	3910	4650	5340	5750	4500	2970	4690	4800	5520	4490
Resistivity (ohm-m)	2.5575	2.1505	1.8727	1.7391	2.2222	3.3670	2.1322	2.0833	1.8116	2.2272
Acidity (as CaCO3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bicarbonate (as HCO3)	1372.33	1171.38	898.29	300.93	230.21	270.84	300.93	458.92	417.55	432.59
Carbonate (as CO3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chloride	315.91	550.82	599.42	899.14	307.81	145.81	591.32	564.23	575.12	364.51
Sulfate	773.21	964.97	1698.26	1686.33	2103.59	1332.85	1644.77	1320.50	2032.40	1768.22
Calcium	500.08	377.11	278.73	577.96	209.05	389.41	545.17	430.40	569.76	434.49
Magnesium	<1.0	64.09	264.19	39.05	187.86	39.69	91.63	68.07	63.39	55.37
Potassium	2.64	2.16	2.32	4.96	5.44	0.72	5.08	1.84	1.96	1.36
Sodium	522.40	751.60	734.40	738.40	689.20	292.00	480.40	606.40	735.20	608.80
Major cations (meq/L)	46.88	56.84	67.64	64.30	56.00	35.41	55.77	53.50	65.67	52.75
Major anions (meq/L)	47.52	54.84	67.02	65.43	56.28	36.32	55.88	53.77	65.41	54.21
Anion/cation % difference (%)	0.68	1.78	0.46	0.87	0.25	1.26	0.10	0.25	0.20	1.37

ND = Not detected
T = Detected below quantifiable limits
NA = Not analyzed

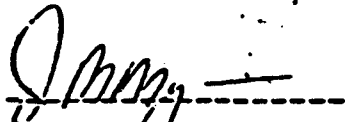
Date: April 01, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141607
Site: GBR-30
IML Lab No: F890890
Date Collected: 3/14/89
Date Received: 3/14/89

Total Dissolved Solids (180), mg/l.....	3604
Total Dissolved Solids (calc), mg/l.....	3518
Total Alkalinity as CaCO ₃ , mg/l.....	437
Total Hardness as CaCO ₃ , mg/l.....	1484

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	533	8.74
Carbonate as CO ₃	0	0.00
Chloride.....	583	16.45
Sulfate.....	1501	31.27
Calcium.....	530	26.46
Magnesium.....	39	3.23
Potassium.....	3	0.07
Sodium.....	600	26.10
Nitrate/Nitrite.....	0.05	.00

Major Cations.....	55.86
Major Anions.....	56.46
Cation/Anion Difference.....	0.53 %


Jack M. Morgan
Senior Organic Chemist

Page 7
Received: 12/04/83
RAS - Austin
Results by Sample
REPORT
Work Order # 88-12-056
Continued From Above

SAMPLE ID 8812071123 602-14
FRACTION Q3A TEST CODE QP04 NAME Orthophosphate
Date & Time Collected not specified Category

N/A = not available

SAMPLE ID 8812071123 602-14
FRACTION Q3A TEST CODE TDS NAME Total dissolved solids
Date & Time Collected not specified Category

VERIFIED LM

ANALYST DLB
INSTRMT
ANALYZED 12/13/83
ANALYTE RESULT DET LIMIT
Units mg/L

Filterable Residue (TDS) 3/00 10

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available

SAMPLE ID 8812071201 602-30
FRACTION Q4A TEST CODE QP04 NAME Orthophosphate
Date & Time Collected not specified Category

VERIFIED LM

ANALYST
INSTRMT
ANALYZED 12/09/83
Units mg/L as P

Page 8

Received: 12/09/88

RAS

AUSTIN

REPORT

Results by Sample

Work Order # 88-12-056
Continued From Above

SAMPLE ID 8812071201

~~602-301~~

FRACTION 04A

TEST CODE OPDA

NAME Orthophosphate

Date & Time Collected not specified

Category

ANALYTE RESULT DET LIMIT

Orthophosphate 0.000 0.000

NOTES AND DEFINITIONS FOR THIS REPORT:

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8812071201

~~602-301~~

FRACTION 04A

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

ANALYST DLB
INSTRMT

ANALYZED 12/13/88

VERIFIED LM

UNITS mg/L

ANALYTE RESULT DET LIMIT

Filterable Residue (TDS) 3500 10

NOTES AND DEFINITIONS FOR THIS REPORT:

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE	Test: CA E	Test: CL IC	Test: EG5010	Test: F IC	Test: K E
Sample Id	ug/ml	mg/L	date complete	mg/L	ug/ml
GBR-17 01 8812070930	370	170	12/30/88	2.4	<5.0
GBR-24 02 8812071016	450	600	12/30/88	3.2	<5.0
GBR-14 03 8812071123	470	690	12/30/88	3.8@	5.2*
GBR-30 04 8812071201	460	620	12/30/88	3.6	<5.0
GBR-15-05 8812071352	450	230	12/30/88	3.7	9.6*
GBR-31 06 8812071431	500	450	12/30/88	3.5	<5.0
GBR-33 07 8812071501	390	540	12/30/88	0.63	<5.0
GBR-13 08 8812071601	470	720	12/30/88	0.56	<5.0
GBR-6 09 8812071647	280	340	12/30/88	0.35	<5.0
GBR-8 10 8812071738	360	630	12/30/88	0.70	6.7*
11 8812071738 oil	<10				30*

SAMPLE	Test: M3 E	Test: M4 E	Test: PREP X	Test: S04 IC
Sample Id	ug/ml	mg/L	date complete	mg/L as S04
GBR-17 01 8812070930	42	290		1300

Received: 12/09/88

RAS - Austin

REPORT

Results by Test

Work Order # 88-12-056
Continued From Above

SAMPLE	Test: ME E	Test: ME E	Test: ME E	Test: PREP X	Test: S04 IC
Sample Id	mg/ml	mg/L	date complete	mg/L as S04	
GBL-24 02 8812071016	81	400			1600
GBL-14 03 8812071123	29	500			1500
GBL-20 04 8812071201	36	440			1300
GBL-15 05 8812071352	30	570			2000
GBL-31 06 8812071431	44	500			1700
GBL-33 07 8812071501	40	410			1400
GBL-13 08 8812071601	48	700			1600
GBL-6 09 8812071647	72	420			660
GBL-8 10 8812071736	59	610			490
8812071738 oil 11	<10	<10	12/30/88		



GTEL Environmental Laboratories

A division of Groundwater Technology, Inc.

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

Page 1 of 3

06/16/88 rw

MANAGER: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming Northeast, Suite 104
Albuquerque, NM 87111

PROJECT#: 232-799-5009-11

LOCATION: Farmington, NM

SAMPLED: 06/01/88 BY: T. LePage
RECEIVED: 06/03/88 BY: J. Floro
ANALYZED: 06/15/88 BY: C. Miller
MATRIX: Water

MAJOR CATIONS TEST RESULTS

TEST RESULTS					GBR-30	GBR-24D	TK 22	GBR-31
PARAMETER	UNITS	MDL	LAB #	I.D. #	24480A	24481A	24482A	24483A
					010530	010347	020135	021015

Sodium	mg/L	0.1			578	491	686	769
Potassium	mg/L	1.0			3.3	5.3	3.4	3.5
Calcium	mg/L	0.1			586	500	558	598
Magnesium	mg/L	0.1			50	75	52	51

6/1/88

MDL = Method Detection Limit; compound below this level would not be detected.

METHOD: EPA 3005/6010

RECEIVED
7/13/88



GTEL
Environmental
Laboratories

A division of Groundwater Technology, Inc.

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 885-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

Page 1 of 2

07/12/88 jp
MANAGER: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming N.E. Suite 104
Albuquerque, NM 87111

PROJECT#: 232-799-5009-9
LOCATION: Farmington, NM

SAMPLED: 06/01/88 BY: T. LePage
RECEIVED: 06/03/88 BY: J. Floro
ANALYZED: 06/07/88 BY: R. Heines
MATRIX: Water
UNITS: mg/L

TEST RESULTS

TEST RESULTS		UNITS		mg/L		GRR-31		GRR-17	
PARAMETER	MDL	LAB #	I.D. #	24480	24481	24482	24483	24484	
6/1/88									
Total Dissolved Solids	10			3996	3487	4094	4374	2382	
Bicarbonate	20			124	130	297	211	140	
Carbonate	20			(20)	(20)	(20)	(20)	(20)	
Chloride	1			370	630	910	850	190	
Sulfate	1			2270	1640	1570	1920	1350	

6/1/88

MDL = Method Detection Limit; compound below this level would not be detected.

METHOD: TDS by Standard Method 209B
Bicarbonate by Standard Method 403
Carbonate by Standard Method 403
Chloride by Standard Method 429
Sulfate by Standard Method 429



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 urf
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

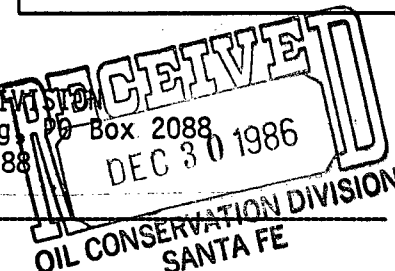
DATE RECEIVED	11/26/86	LAB NO.	WC 5443	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	86/11/21	SITE INFORMATION	Sample location		
Collection TIME	0930		Giant, Bloom Field Refinery		
Collected by — Person/Agency		Collection site description			
BOYER/OLSON /OCD		G&R-30			

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected)	Water Temp. (00010)	Conductivity at 25°C (00094)	
	875 µmho	16 °C	µmho	
Field comments				
L1" product				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µm membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify: ☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added			

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	1715	µmho 12/12	☒ Calcium (00915)	180	mg/l 12-1
☐ Total non-filterable residue (suspended) (00530)		mg/l	☒ Magnesium (00925)	36.6	mg/l 12-1
☒ Other: pH	7.85	12/8	☒ Sodium (00930)	271	mg/l 12-1
☐ Other:			☒ Potassium (00935)	1.95	mg/l
☐ Other:			☒ Bicarbonate (00440)	554	mg/l 12/8
			☒ Chloride (00940)	133	mg/l 12/5
			☒ Sulfate (00945)	389	mg/l 12/8
			☒ Total filterable residue (dissolved) (70300)	1308	mg/l 12/4
			☒ Other: CO ₃ BR	0	12/8
				0.4	12/10
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	☐ Nitrate-N +, Nitrate-N dissolved (00631)		mg/l
☐ Ammonia-N total (00610)		mg/l	☐ Ammonia-N dissolved (00608)		mg/l
☐ Total Kjeldahl-N ()		mg/l	☐ Total Kjeldahl-N ()		mg/l
☐ Chemical oxygen demand (00340)		mg/l	☐ Other:		
☐ Total organic carbon ()		mg/l			
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
				12/12/86	

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____



2

LOCATION: GBR-30

TEST: METALS

11/21/86

mg/l

ALUMINUM	ND
ARSENIC	ND
BARIUM	ND
BERYLLIUM	ND
BORON	0.3
CADMIUM	190
CALCIUM	ND
HEXAVALENT CHROMIUM	ND
TOTAL CHROMIUM	ND
COBALT	ND
COPPER	ND
IRON	ND
LEAD	ND
MAGNESIUM	15
MANGANESE	2.2
MERCURY	NA
MOLYBDENUM	ND
NICKEL	ND
SELENIUM	NA
SILICON	7.8
SILVER	ND
STRONTIUM	3.4
TIN	ND
VANADIUM	ND
ZINC	ND

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMIT

RECEIVED

JUN 23 1989

**OIL CONSERVATION DIV.
SANTA FE**



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED 11/26/86	LAB NO. HM2419	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE 8/11/21	SITE INFORMATION	Sample location Giant, Bloomfield Refinery
Collection TIME 0930		Collection site description GBR-30
Collected by — Person/Agency BOYER/OLSON/OCD		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)		Conductivity (Uncorrected) 875 μ mho	Water Temp. (00010) 16 °C	Conductivity at 25°C (00094) μ mho
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted 1	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added ☐ Other-specify:		☐ A: 5ml conc. HNO ₃ added	☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: ICAP			☐ Sodium (00930)	mg/l	
☒ Other: AS			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H₂SO₄			F, A-H₂SO₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks Sample digested			Analyst	Date Reported 1/13/87	Reviewed by <i>J. Ashby</i>

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

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

MONITOR WELL GBR-31

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>9/13/89</u>	<u>12/13/89</u>	<u>4/4/89</u>	<u>7/18/90</u>	<u>10/8/90</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	<1.0	<1.0	(BELOW)	<1.0
BENZENE	0.38	ND	0.98	ND(2.0)	ND
BROMODICHLOROMETHANE	ND(<1.0)	ND	ND	ND(1.0)	ND
BROMOFORM	ND(2.0)	ND	ND	ND(5.0)	ND
BROMOMETHANE	ND(1.0)	ND	ND	ND(12.0)	ND
CARBON TETRACHLORIDE	ND(<1.0)	ND	ND	ND(1.2)	ND
CHLOROBENZENE	ND(<1.0)	ND	ND	ND(2.0)	0.34 X
CHLOROETHANE	ND(<1.0)	ND	ND	ND(5.2)	ND
CHLOROFORM	ND(<1.0)	ND	ND	ND(1.0)	ND
CHLOROMETHANE	ND(<1.0)	ND	ND	ND(3.0)	ND
DIBROMOCHLOROMETHANE	ND(<1.0)	ND	ND	ND(2.0)	ND
1,2-DICHLOROBENZENE	ND(<1.0)	ND	ND	ND(4.0)	1.2 X
1,3-DICHLOROBENZENE	ND(<1.0)	ND	ND	ND(4.0)	1.8 X
1,4-DICHLOROBENZENE	ND(<1.0)	ND	ND	ND(3.0)	1.5 X
DICHLORODIFLUOROMETHANE	ND(<1.0)	NA	NA	NA	NA
1,1-DICHLOROETHANE	2.8	3.4	ND	5.5	ND
1,2-DICHLOROETHANE	1.8	2.0	1.0	ND(1.0)	ND
1,1-DICHLOROETHENE	ND(<1.0)	ND	ND	ND(2.0)	ND
CIS-1,2-DICHLOROETHENE	NA	NA	6.2	81.0	13.0
TRANS-1,2-DICHLOROETHENE	NA	44.0	ND	ND(2.0)	ND
TOTAL 1,2-DICHLOROETHENE	23.0	NA	NA	NA	NA
1,2-DICHLOROPROPANE	ND(<1.0)	ND	ND	ND(1.0)	ND
ETHYLBENZENE	ND(<1.0)	ND	ND	ND(2.0)	ND
METHYLENE CHLORIDE	0.71	1.1	ND	ND(4.0)	ND
1,1,2,2-TETRACHLOROETHANE	ND(<1.0)	ND	ND	ND(1.5)	ND
TETRACHLOROETHENE	4.7	12.0	0.64	12.0	2.8
TOLUENE	ND(<1.0)	ND	ND	ND(2.0)	0.98
1,1,1-TRICHLOROETHANE	0.65	1.4	ND	15.0	ND
1,1,2-TRICHLOROETHANE	ND(<1.0)	ND	ND	ND(2.0)	ND
TRICHLOROETHENE	ND(<1.0)	7.9	0.86	34.0	0.47
TRICHLOROFLUOROMETHANE	3.6	ND	ND	ND(2.0)	ND
VINYL CHLORIDE	ND(<1.0)	ND	ND	ND(2.0)	ND
TOTAL XYLENES	ND(<1.0)	ND	6.0	ND(2.0)	0.45 X

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS
X - PRESENCE NOT CONFIRMED

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

MONITOR WELL GBR-31

<u>SAMPLER</u>	<u>GIANT</u>	<u>EID**</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>8/25/88</u>	<u>8/25/88</u>	<u>12/07/88</u>	<u>3/15/89</u>	<u>6/13/89</u>
<u>PARAMETER</u>					
DETECTION LIMIT	<1.0	0.5	<1.0	(BELOW)	(BELOW)
BENZENE	ND	ND	ND	12.6	ND(0.2)
BROMODICHLOROMETHANE	ND	ND	ND	ND(<1.0)	ND(1.0)
BROMOFORM	ND	ND	ND	ND(<1.0)	ND(1.0)
BROMOMETHANE	ND	ND	ND	ND(1.0)	ND(1.0)
CARBON TETRACHLORIDE	ND	ND	ND	ND(<1.0)	ND(1.0)
CHLOROBENZENE	ND	ND	ND	ND(<1.0)	ND(0.2)
CHLOROETHANE	ND	ND	ND	ND(1.0)	ND(1.0)
CHLOROFORM	ND	ND	ND	ND(<1.0)	1.9
CHLOROMETHANE	ND	ND	ND	ND(1.0)	ND(1.0)
DIBROMOCHLOROMETHANE	ND	ND	ND	ND(<1.0)	ND(1.0)
1,2-DICHLOROBENZENE	ND	ND	ND	ND(<1.0)	ND(0.2)
1,3-DICHLOROBENZENE	ND	ND	ND	ND(<1.0)	ND(0.2)
1,4-DICHLOROBENZENE	ND	ND	ND	ND(<1.0)	ND(0.2)
DICHLORODIFLUOROMETHANE	ND	ND	ND	ND(1.0)	ND(1.0)
1,1-DICHLOROETHANE	ND	ND	0.9	0.18	5.7
1,2-DICHLOROETHANE	1.8	0.6	0.8	0.84	ND(1.0)
1,1-DICHLOROETHENE	ND	ND	ND	ND(<1.0)	ND(1.0)
CIS-1,2-DICHLOROETHENE	NA	ND	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	ND	4.5	ND(<1.0)	ND(1.0)
TOTAL 1,2-DICHLOROETHENE	ND	NA	NA	NA	NA
1,2-DICHLOROPROPANE	ND	ND	ND	ND(<1.0)	ND(1.0)
ETHYLBENZENE	ND	ND	ND	16.3	ND(0.2)
METHYLENE CHLORIDE	ND	ND	0.3	3.2	ND(1.0)
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND	ND(<1.0)	ND(1.0)
TETRACHLOROETHENE	0.3	TR	3.9	0.17	17.2
TOLUENE	ND	ND	ND	3.3	ND(0.2)
1,1,1-TRICHLOROETHANE	ND	ND	0.7	ND(<1.0)	1.6
1,1,2-TRICHLOROETHANE	ND	ND	1.1	ND(<1.0)	ND(1.0)
TRICHLOROETHENE	ND	ND	ND	ND(<1.0)	10.8
TRICHLOROFLUOROMETHANE	ND	ND	ND	ND(<1.0)	ND(1.0)
VINYL CHLORIDE	ND	ND	ND	ND(1.0)	ND(1.0)
TOTAL XYLENES	ND	ND	ND	18.3	ND(0.2)

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

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

MONITOR WELL GBR-31

<u>SAMPLER</u>	GIANT	OCD	GIANT	EID**	GIANT
<u>DATE</u>	<u>10/17/86</u>	<u>11/21/86</u>	<u>4/20/88</u>	<u>4/20/88</u>	<u>6/2/88</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	1.0	<1.0	0.5	<1.0
BENZENE	4.0	ND	ND	ND	ND
BROMODICHLOROETHANE	ND(5.0)	10.0	ND	ND	ND
BROMOFORM	ND(5.0)	ND	ND	ND	ND
BROMOMETHANE	NA	ND	ND	ND	ND
CARBON TETRACHLORIDE	ND(5.0)	ND	ND	ND	ND
CHLOROBENZENE	NA	ND	ND	ND	ND
CHLOROETHANE	ND(5.0)	ND	ND	ND	ND
CHLOROFORM	ND(5.0)	ND	ND	TR	ND
CHLOROMETHANE	NA	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	ND(5.0)	ND	0.76	ND	ND
1,2-DICHLOROBENZENE	NA	ND	ND	ND	ND
1,3-DICHLOROBENZENE	NA	ND	ND	ND	ND
1,4-DICHLOROBENZENE	NA	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	NA	ND	ND	ND	ND
1,1-DICHLOROETHANE	11.0	22.0	4.8	3.5	4.6
1,2-DICHLOROETHANE	ND(5.0)	TR	ND	ND	ND
1,1-DICHLOROETHENE	ND(5.0)	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE	NA	23.0	ND	29.0	ND
TRANS-1,2-DICHLOROETHENE	21.0	ND	58.0	ND	53.0
DICHLOROMETHANE	NA	ND	NA	ND	
1,2-DICHLOROPROPANE	NA	TR	ND	ND	ND
ETHYLBENZENE	ND(1.0)	ND	ND	ND	ND
METHYLENE CHLORIDE	7.0	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	ND	ND	ND	ND
TETRACHLOROETHENE	11.0	16.0	ND	8.3	5.0
TOLUENE	6.0	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	7.3	12.0	2.9	0.8	1.8
1,1,2-TRICHLOROETHANE	ND(5.0)	ND	ND	ND	ND
TRICHLOROETHENE	ND(5.0)	12.0	7.3	5.4	7.6
TRICHLOROFLUOROMETHANE	NA	ND	ND	0.7	ND
VINYL CHLORIDE	ND(5.0)	ND	ND	ND	ND
TOTAL XYLENES	14.0	ND	ND	ND	ND

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

Giant Refining Company
 Radian Work Order: S0-10-082

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	901008950	9010081035	9010081135	9010081240
	STRIPPER EFF.	GBR-31	GBR-33	GBR-30
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	07A	08A	09A	10A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	4.6 G@	2.0	ND	0.20
Chlorobenzene	ND	0.20	0.34 X@	0.20	11 G	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.40	1.2 X@	0.40	ND	4.0	0.86 X@	0.40
1,3-Dichlorobenzene	ND	0.40	1.8 X@	0.40	61 X	4.0	ND	0.40
1,4-Dichlorobenzene	0.56 X@	0.30	1.5 X	0.30	68 G	3.0	2.6 C	0.30
Ethylbenzene	ND	0.20	ND	0.20	220 G	2.0	1.6 C	0.20
Toluene	0.45 G@	0.20	0.98 G@	0.20	8.3 C@	2.0	1.2 C	0.20
Xylenes (total)	0.91 X@	0.20	0.45 X@	0.20	310 C	2.0	3.5 X	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	120		75		118		133	
Control Limits: 40 to 140								

 ND Not detected at specified detection limit
 @ Est. result less than 5 times detection limit
 C Confirmed on second column or by GC/MS

 X See definition in report narrative
 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.

Giant Refining Company
 Radian Work Order: S0-10-082

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	901008950	9010081035	9010081135	9010081240
	STRIPPER EFF.	GBR-31	GBR-33	GBR-30
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
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	ND	0.10	ND	0.10	ND	1.0	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	3.0	ND	0.30
Dibromochloromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
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	ND	0.50
1,2-Dichloroethane	ND	0.10	ND	0.10	ND	1.0	0.18 ca	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	2.0	ND	0.20
cis-1,2-Dichloroethene	ND	0.20	13 C	0.20	38 C	2.0	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	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
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	1.5	ND	0.15
Tetrachloroethene	ND	0.10	2.8 C	0.10	ND	1.0	ND	0.10
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	0.47 ca	0.20	ND	2.0	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Vinyl chloride	ND	0.20	ND	0.20	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

(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: 90-10-151

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:

9010081035 GB-

9010081135 GB-

Reagent Blank

Factor:

R-31

R-33

1

Results in:

ug/L

ug/L

ug/L

Matrix:

01A

02A

03A

water

water

water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	1.8	ND	180	ND	1.8
Acenaphthylene	ND	2.3	35	2.3	ND	2.3
Anthracene	ND	0.66	72 @	66	ND	0.66
Benzo(a)anthracene	ND	0.013	5.0 @	1.3	ND	0.013
Benzo(a)pyrene	ND	0.023	ND	1.2	ND	0.023
Benzo(b)fluoranthene	ND	0.018	1.5 @	0.90	ND	0.018
Benzo(g,h,i)perylene	ND	0.076	ND	3.8	ND	0.076
Benzo(k)fluoranthene	ND	0.017	ND	0.85	ND	0.017
Chrysene	ND	0.15	ND	7.5	ND	0.15
Dibenzo(a,h)anthracene	ND	0.030	ND	1.5	ND	0.030
Fluoranthene	ND	0.21	240	21	ND	0.21
Fluorene	ND	0.21	280	10	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.043	ND	0.043	ND	0.043
Naphthalene	ND	1.8	8.3 @	1.8	ND	1.8
Phenanthrene	ND	0.64	640	64	ND	0.64
Pyrene	ND	0.27	ND	27	ND	0.27

Surrogate Recovery(%)

Terphenyl-d14

130

NC

107

Control Limits: 24 to 146

ND Not detected at specified detection limit

@ Est. result less than 5 times 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.

Giant Refining Company
 Radian Work Order: S0-07-146

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	900718937	9007181100	9007181305	9007181345
	GBR-31	GBR-24D	GBR-30	GBR-33
Factor:	10	5	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	02A	04A	06A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	2.0	39 C	1.0	ND	0.20	ND	0.20
Chlorobenzene	ND	2.0	16 X	1.0	1.8 X	0.20	2.5 X	0.20
1,2-Dichlorobenzene	ND	4.0	ND	2.0	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	4.0	ND	2.0	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	3.0	ND	1.5	ND	0.30	12 C	0.30
Ethylbenzene	ND	2.0	28 X	1.0	0.55 Xa	0.20	3.7 C	0.20
Toluene	ND	2.0	4.8 Ca	1.0	ND	0.20	0.35 Ca	0.20
Xylenes (total)	ND	2.0	8.8 C	1.0	2.4 C	0.20	6.6 C	0.20
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	102		96		106		45	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

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.

Giant Refining Company
 Radian Work Order: 50-07-146

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	900718937	9007181100	9007181305	9007181345
	GBR-31	GBR-24D	GBR-30	GBR-33
Factor:	10	5	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	03A	05A	07A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	ND	0.50	ND	0.10	ND	0.10
Bromoform	ND	5.0	ND	2.5	ND	0.50	ND	0.50
Bromomethane	ND	12	ND	5.9	ND	1.2	ND	1.2
Carbon tetrachloride	ND	1.2	ND	0.60	ND	0.12	ND	0.12
Chlorobenzene	ND	2.5	ND	1.2	ND	0.25	ND	0.25
Chloroethane	ND	5.2	ND	2.6	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	5.0	ND	2.5	ND	0.50	ND	0.50
Chloroform	ND	1.0	ND	0.50	ND	0.10	ND	0.10
Chloromethane	ND	3.0	ND	1.5	ND	0.30	ND	0.30
Dibromochloromethane	ND	2.0	ND	1.0	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	2.5	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	1.6	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	1.2	ND	0.24	ND	0.24
1,1-Dichloroethane	5.5 Xa	5.0	ND	2.5	0.67 Ca	0.50	ND	0.50
1,2-Dichloroethane	ND	1.0	57 C	0.50	0.75 C	0.10	0.28 Ca	0.10
1,1-Dichloroethene	ND	2.0	ND	1.0	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	81 C	2.0	ND	1.0	5.6 C	0.20	4.9 C	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	1.0	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	0.50	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	1.0	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	1.7	ND	0.34	ND	0.34
Methylene chloride	ND	4.0	ND	2.0	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	1.5	ND	0.75	ND	0.15	ND	0.15
Tetrachloroethene	12 G	1.0	4.0 C	0.50	0.44 Ca	0.10	0.60 C	0.10
1,1,1-Trichloroethane	15 X	2.0	6.8 X	1.0	ND	0.20	ND	0.20
1,1,2-Trichloroethane	ND	2.0	ND	1.0	ND	0.20	ND	0.20
Trichloroethene	34 G	2.0	56 X	1.0	0.44 Ca	0.20	3.2 G	0.20
Trichlorofluoromethane	ND	2.0	ND	1.0	ND	0.20	0.28 Xa	0.20
Vinyl chloride	ND	2.0	ND	1.0	ND	0.20	ND	0.20

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.

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.

Giant Refining Co.
 Radian Work Order: 90-07-230

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	900718937	9007181345
	GBR-31	GBR-33
Factor:	0.95	95
Results in:	ug/L	ug/L
	01A	02A
Matrix:	water	water

	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	1.7	ND	170
Acenaphthylene	ND	2.2	103 Da	22
Anthracene	ND	0.63	67 a	63
Benzo(a)anthracene	ND	0.012	12	1.2
Benzo(a)pyrene	ND	0.022	ND D	0.55
Benzo(b)fluoranthene	ND	0.017	1.9 Da	0.86
Benzo(g,h,i)perylene	ND	0.072	ND D	1.8
Benzo(k)fluoranthene	ND	0.016	ND D	0.82
Chrysene	ND	0.14	63 a	14
Dibenzo(a,h)anthracene	ND	0.028	ND D	0.72
Fluoranthene	ND	0.20	140	20
Fluorene	ND	0.20	87 a	20
Indeno(1,2,3-cd)pyrene	ND	0.041	ND D	0.41
Naphthalene	ND	1.7	55 Da	17
Phenanthrene	ND	0.61	320	61
Pyrene	ND	0.26	110 a	26
 Surrogate Recovery(%)				
Terphenyl-d14	88		NC	
Control Limits: 24 to 146				

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

 D Sample dilution necessary for this analyte
 NC Not calculated

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

Giant Refining Company
 Radian Work Order: S0-05-045

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9004041025	9004041120	TRIP BLANK	REAGENT BLANK
	/GBR-33	/GBR-31		
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	06A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	0.98 C	0.20	ND	0.20	ND	0.20
Chlorobenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Ethylbenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Toluene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Xylenes (total)	ND	0.20	6.0 C	0.20	ND	0.20	ND	0.20
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	98		29 Q		100		101	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

C Confirmed on second column or by GC/MS

Q Est. result less than 5 times detection limit

Q Outside control limits

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

Giant Refining Company
 Radian Work Order: S0-05-045

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9004041025	9004041120	TRIP BLANK	REAGENT BLANK
	/GBR-33	/GBR-33		
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	06A	07A
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	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	1.3 C _a	0.50	ND	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	0.21 C _a	0.10	1.0 C	0.10	ND	0.10	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	12 C	0.20	6.2 C	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	0.34	ND	0.34
Methylene chloride	ND	0.40	ND	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene	2.5 C	0.10	0.64 C	0.10	ND	0.10	ND	0.10
1,1,1-Trichloroethane	0.24 C _a	0.20	ND	0.20	ND	0.20	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Trichloroethene	1.1 C	0.20	0.86 C _a	0.20	ND	0.20	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Vinyl chloride	ND	0.20	ND	0.20	ND	0.20	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

(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)	GBR-15	GBR-33	GBR-31	GBR-6
List: SW8020				
Sample ID:	8912131000	8912131210	8912131300	8912131600
Factor:	1	25	1	50
Results in:	ug/L	ug/L	ug/L	ug/L
	138	148	158	168
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	<u>63 D</u>	1.0	<u>73</u>	5.0	ND	0.20	<u>110</u>	10
Chlorobenzene	ND	0.20	ND	5.0	ND	0.20	ND	10
1,2-Dichlorobenzene	ND	0.40	ND	10	ND	0.40	ND	20
1,3-Dichlorobenzene	ND	0.40	ND	10	ND	0.40	ND	20
1,4-Dichlorobenzene	ND	0.30	ND	7.5	ND	0.30	ND	15
Ethylbenzene	<u>2.8</u>	0.20	<u>120</u>	5.0	ND	0.20	<u>85</u>	10
Toluene	<u>0.45 *</u>	0.20	ND	5.0	ND	0.20	ND	10
Total xylenes	<u>1.5</u>	0.20	<u>170</u>	5.0	ND	0.20	<u>140</u>	10
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	98		116		108		136	
Control Limits: 76 to 140								

D Sample diluted for this analyte

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)	GBR-33	GBR-31	GBR-6	GBR-30
List: SW8010				
Sample ID:	8912131210	8912131300	8912131600	8912131030
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	14A	15A	16A	17A
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	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon Tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	0.50	3.4	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	4.0	0.10	2.0	0.10	1.2	0.10	0.94	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	1.1	0.20	44	0.20	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	0.10	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	0.30	ND	0.30	ND	0.30	ND	0.30
Methylene Chloride	ND	0.40	1.1 *	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane-(3)	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene-(3)	ND	0.10	12	0.10	ND	0.10	ND	0.10
1,1,2-Trichloroethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,1,1-Trichloroethane	ND	0.20	1.4	0.20	ND	0.20	ND	0.20
Trichloroethene	ND	0.20	7.9	0.20	ND	0.20	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Vinyl Chloride	ND	0.20	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.

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

Method: SW8310 PAH's by HPLC (1)	GBR-31	GBR-6	GBR-30	GBR-17
List: 8310 Method analytes				
Sample ID:	8912131300	8912131600	8912131030	8912120950
Factor:	0.94	24	1.9	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	15C	16C	17C	18A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	2.2	ND	55	ND	2.2	ND	2.2
Acenaphthene	ND	1.7	ND	43	14 D	1.7	ND	1.7
Anthracene	ND	0.62	ND	16	ND	1.3	ND	0.62
Benzo(a)anthracene	ND	0.012	0.57 *	0.31	0.026 *	0.025	0.026 *	0.012
Benzo(a)pyrene	ND	0.022	ND	0.55	ND	0.044	ND	0.022
Benzo(b)fluoranthene	ND	0.017	ND	0.43	ND	0.034	ND	0.017
Benzo(g,h,i)perylene	ND	0.071	ND	1.8	ND	0.14	ND	0.071
Benzo(k)fluoranthene	ND	0.016	ND	0.41	ND	0.032	ND	0.016
Chrysene	ND	0.012	7.3	0.31	0.27	0.025	0.20	0.012
Dibenzo(a,h)anthracene	ND	0.028	ND	0.72	ND	0.057	ND	0.028
Fluoranthene	ND	0.20	ND	5.0	ND	0.40	0.40 *	0.20
Fluorene	ND	0.20	13 *D	5.0	4.1 D	0.20	2.3 D	0.20
Indeno(1,2,3-cd)pyrene	ND	0.040	ND	1.0	ND	0.040	ND	0.040
Naphthalene	ND	1.7	ND	43	5.8 *D	1.7	5.6 *D	1.7
Phenanthrene	ND	0.60	29 *	15	1.5 *	1.2	2.0 *	0.60
Pyrene	ND	0.25	ND	6.5	ND	0.51	0.25 *	0.25
Surrogate Recovery(%)								
Terphenyl-d14	84		106		76		124	
Control Limits: 37 to 139								

 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.

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

Method: PAHs by GC 8100 (1)	GBR-31	GBR-6	GBR-30	GBR-17
List: 8100, special list				
Sample ID:	8912131300	8912131600	8912131030	8912120950
Factor:	0.94	94	0.94	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	15C	16C	17C	18A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1-Methylnaphthalene	ND	0.94	ND	94	ND	0.94	ND	0.94
2-Methylnaphthalene	ND	0.94	ND	94	10	0.94	ND	0.94

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.



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RAS Sacramento

REPORT

Work Order # S9-09-082

Received: 09/14/89

Results by Sample

SAMPLE ID B909131145 H2O GBR-31

FRACTION O1C TEST CODE 602B

NAME Purgeable Aromatics - H2O

Date & Time Collected 09/13/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST _____
INSTRMT _____
 MG
 BFILE # EBO92813 VERIFIED _____
 1 UNITS ug/L JD

INJECTD 09/28/89

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
71-43-2	Benzene	0.38 C	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 88% recovery

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

Received: 09/14/89

Results by Sample

SAMPLE ID 8909131145 H2O GBL-31

FRACTION 01A TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/13/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST _____
INSTRMT B

INJECTD 09/28/89

FILE # DB092812
FACTOR 1

VERIFIED JD
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	0.71 C	0.40	1
75-69-4	Trichlorofluoromethane	3.6 C	0.10	1
75-35-4	1,1-Dichloroethane	ND	0.10	1
75-34-3	1,1-Dichloroethane	2.8 C	0.10	1
540-59-0	Total 1,2-Dichloroethene (2)	23 C	0.10	1
67-66-3	Chloroform	ND	0.10	1
107-06-2	1,2-Dichloroethane	1.8 C	0.10	1
71-55-6	1,1,1-Trichloroethane	0.65 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	Tetrachloroethene (4)	4.7 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

Page 3

Received: 09/14/89

RAS Sacramento

REPORT

Results by Sample

Work Order # S9-09-082
Continued From Above

SAMPLE ID 8909131145 H2O GBR-31

FRACTION Q1A

TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/13/89

Category

SURROGATES

540-36-3	1-4-Difluorobenzene	114 % Recovery
460-00-4	1-Bromo-4-Fluorobenzene	105 % 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.

Geoscience Consultants, Ltd.
 Radon Work Order: 89-09-111

Method: PAHs by HPLC (1)

Lists

Sample ID:

GBL-30
8909131015GRW-13
8909131030~~GBL-31~~
8909131145GBL-17
8909131230Influent
8909131300Effluent
8909131330

Factors:

24

1

1

1

24

10

Results in:

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

Matrix:

water

water

water

water

water

water

Acenaphthalene

<55

<2.3

<2.3

<2.3

<55

<23

Acenaphthene

<43

<1.8

<1.8

<1.8

<43

<18

Anthracene

<16

<0.66

<0.66

<0.66

<16

<6.6

Benzo(a)anthracene

<0.31

<0.013

<0.013

<0.013

<0.31

<0.13

Benzo(a)pyrene

<0.55

<0.023

<0.023

<0.023

<0.55

<0.23

Benzo(b)fluoranthene

<0.43

<0.018

<0.018

<0.018

<0.43

<0.18

Benzo(g,h,i)perylene

<1.8

<0.076

<0.076

<0.076

<1.8

<0.76

Benzo(k)fluoranthene

<0.41

<0.017

<0.017

<0.017

<0.41

<0.17

Chrysene

<0.31

<0.013

<0.013

<0.013

<0.31

<0.13

Dibenzo(a,h)anthracene

<0.72

<0.030

<0.030

<0.030

<0.72

<0.30

Fluoranthene

<5.0

<0.21

<0.21

<0.21

<5.0

<2.1

Fluorene

11*

<0.21

<0.21

<0.21

9.6*

9.5*

Indeno(1,2,3-cd)pyrene

<1.0

<0.043

<0.043

<0.043

<1.0

<0.43

Naphthalene

<43

<1.8

<1.8

<1.8

<43

<18

Phenanthrene

<15

<0.64

<0.64

<0.64

<15

<6.4

Pyrene

<6.5

<0.27

<0.27

<0.27

<6.5

<2.7

Surrogate Recovery(%)

Terphenyl-d14

NC

128

129

114

NC

130

Control Limits: 37 to 139

* Est. result less than 5 times 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.



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

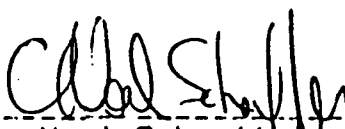
Client: GCL #8906131315
Site: GBR-31
IML #: F1578

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist



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

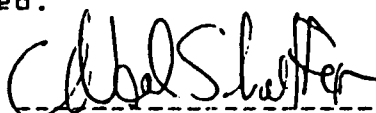
Client: GCL #8906131315
Site: GBR-31
IML #: F1578

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
-----	-----	-----
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	5.7 (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	1.9 (1.0)	ug/l
1,2-DICHLOROETHANE	ND (1.0)	ug/l
1,1,1-TRICHLOROETHANE	1.6 (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	10.8 (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	17.2 (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



C. Neal Schaeffer
Senior Organic Chemist

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUNDWATER
POLYNUCLEAR AROMATIC HYDROCARBONS
(ug/ml unless otherwise noted)
(Sampling Event: 06/13/89)

ANALYTE	GBR-17	GBR-240	GBR-30	GBR-31	GBR-33
Acenaphthene	NA	0.010 (0.005)	2.3 (0.6)	ND (0.003)	0.34 (0.25)
Acenaphthylene	NA	0.008 (0.005)	ND (0.6)	ND (0.003)	0.44 (0.25)
Anthracene	NA	0.006 (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(a)anthracene	NA	ND (0.005)	ND (0.6)	ND (0.003)	0.59 (0.25)
Benzo(a)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(b)fluoranthene	NA	0.007 (0.005)	ND (0.6)	0.014 (0.003)	1.58 (0.25)
Benzo(j)fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(k)fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(g,h,i)perylene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Chrysene	NA	ND (0.005)	ND (0.6)	0.008 (0.003)	0.67 (0.25)
Dibenz(a,h)acridine	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,j)acridine	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenzo(a,h)anthracene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,e)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,h)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Fluorene	NA	0.009 (0.005)	ND (0.6)	0.005 (0.003)	ND (0.25)
Indeno(1,2,3-cd)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Naphthalene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Phenanthrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Pyrene	NA	0.013 (0.005)	2.0 (0.6)	0.006 (0.003)	0.53 (0.25)
1-Methylnaphthalene	NA	ND (0.005)	ND (0.6)	0.004 (0.003)	ND (0.25)
3-Methylnaphthalene	NA	NA (0.005)	NA (0.6)	NA (0.003)	NA (0.25)
		ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)

() = Detection limit
ND = Not detected
T = Detected below quantifiable level
NA = Not analyzed



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

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903151101

Sample Site: GBR-31

IML Lab No: F890950

Analysis Requested: Purgeable Aromatic

Sample Matrix: Water

Date Sampled: 03/15/89

Date Received: 03/15/89

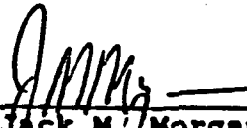
Date Extracted: NA

Date Analyzed: 03/28/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	12.6 (0.2)	ug/l
TOLUENE	3.3 (0.2)	ug/l
ETHYLBENZENE	16.3 (0.2)	ug/l
m,p-XYLENE	13.5 (0.2)	ug/l
o-XYLENE	4.8 (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



Jack M. Morgan
Senior Organic Chemist

original summary sheet was
in error and did not show these
concentrations



*This sheet differs
from the summary sheet
previously submitted*

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

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903151101
Sample Site: GBR-31
IML Sample No: F890950
Analysis Requested: Purgeable Halocarbons
Sample Matrix: Water
Date Sampled: 03/15/89
Date Received: 03/15/89
Date Extracted: N/A
Date Analyzed: 03/30/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	3.2 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	0.18 (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	0.84 (0.03)	ug/l
1,1,1-TRICHLOROETHANE	ND (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	ND (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	0.17 (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.

J.M.M.

Jack M. Morgan
Senior Organic Chemist

Date: April 09, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903151101
Sample Site: GBR-31
IML Sample No: F890950
Analysis: Polynuclear Aromatic Hydrocarbons
Sample Matrix: Water

Date Sampled: 03/15/89
Date Received: 03/15/89
Date Extracted: 03/22/89
Date Analyzed: 04/09/89

Parameter	Concentration	Units
Acetnaphthene	ND (5.0)	ug/l
Acenaphthylene	ND (5.0)	ug/l
Anthracene	ND (5.0)	ug/l
Benzo(a)Anthracene	ND (2.0)	ug/l
Benzo(a)pyrene	ND (2.0)	ug/l
Benzo(b)fluoranthene	ND (2.0)	ug/l
Benzo(g,h,i)perylene	ND (2.0)	ug/l
Benzo(k)fluoranthene	ND (2.0)	ug/l
Chrysene	ND (2.0)	ug/l
Dibenzo(a,h)anthracene	ND (2.0)	ug/l
Fluoranthene	8.3 (5.0)	ug/l
Fluorene	20.0 (5.0)	ug/l
Indeno(1,2,3-cd)pyrene	ND (2.0)	ug/l
Naphthalene	7.4 (5.0)	ug/l
Phenanthrene	15.8 (5.0)	ug/l
Pyrene	2.9 (5.0) *	ug/l
1-Methylnaphthalene	10.0 (5.0)	ug/l

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA(1986)

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.

* Qualitative identification below detection limit.

[Signature]
Jack M. Morgan
Senior Organic Chemist

*see analysis from
summary sheet submitted
previously*

Page 05
Received: 12/09/88

RMS - Austin

REPORT
Results by Sample

Work Order # 88-12-057

SAMPLE ID 8812071431 *682-31*

FRACTION 064 TEST CODE EPA602 NAME EPA method 602
Date & Time Collected 12/07/88 Category

VERIFIED CL

ANALYST BM FILE # UNITS ug/L
INSTRMT D

CAS#	COMPOUND	RESULT	DET LIMIT
71-43-2	Benzene	ND	0.20
108-88-3	Toluene	ND	0.20
100-41-4	Ethylbenzene	ND	0.30
108-90-7	Chlorobenzene-A	ND	0.30
106-46-7	1,4-Dichlorobenzene	ND	0.30
541-73-1	1,3-Dichlorobenzene	ND	0.40
95-50-1	1,2-Dichlorobenzene	ND	0.40

SURROGATES
98-08-8 a,a,a-Trifluorotoluene 103% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available
Second column confirmation NOT performed
unless otherwise noted.

Page 37
Received: 12/09/88
EAS - Austin
Results by Sample
REPORT
Work Order # 88-12-057

SAMPLE ID 8812071431 GBR-31

FRACTION OSA TEST CODE XYLENE NAME Xylenes, EPA 602
Date & Time Collected 12/07/88 Category _____

ANALYST _____
INSTRMT D
INJECTED 12/12/88 FILE # _____
VERIFIED _____ CL
UNITS ug/L

CAS #	COMPOUND	RESULT	DET LIMIT
105-42-3	p-Xylene-A	ND	0.20
106-38-3	m-Xylene	ND	0.20
95-47-5	o-Xylene	ND	0.10

52-08-8 SURROGATES
a,a,a-Trifluorotoluene 103% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.
DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available
Second column confirmation NOT performed
unless otherwise noted.
Q = daily EPA standard recovery outside
95% confidence interval.
Chlorobenzene and p-xylene co-elute.
Quantitated as chlorobenzene unless
otherwise noted.

Page 32
Received: 12/09/88

RAS - Austin

REPORT

Work Order # 88-12-057

Results by Sample

SAMPLE ID 8812071431 *GBL-31*

FRACTION 05B TEST CODE EPA601 NAME EPA method 601

Date & Time Collected 12/07/88

Category

ANALYST INSTRMT	CL R	INJECTD 12/15/88	FILE #	VERIFIED	CL	
					UNITS	ug/L
CAS#		COMPOUND	RESULT	DET LIMIT		
74-87-3		Chloromethane	ND	0.30		
74-83-9		Bromomethane	ND	1.2		
75-01-4		Vinyl chloride	ND	0.20		
75-00-3		Chloroethane	ND	0.50		
75-09-2		Methylene chloride	0.3*	0.30		
75-69-4		Trichlorofluoromethane	ND	0.10		
75-35-4		1,1-Dichloroethene	ND	0.10		
75-34-3		1,1-Dichloroethane	0.9	0.090		
156-60-5		trans-1,2-Dichloroethene	4.5	0.20		
67-66-3		Chloroform	ND	0.050		
107-06-2		1,2-Dichloroethane	0.8	0.030		
71-55-6		1,1,1-Trichloroethane	0.7	0.090		
56-23-5		Carbon tetrachloride	ND	0.10		
75-27-4		Bromodichloromethane	ND	0.10		

394 33
Received: 12/03/88

LAB - ANALYST

REPORT

 Work Order # 88-12-057
Continued From Above

Results by Sample

SAMPLE ID 8812071431 GBL-31

FRACTION GBL TEST CODE EPA601 NAME EPA method 601

Date & Time Collected 12/07/88

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropene	ND	0.10
10061-03-6	trans-1,3-Dichloropropene	ND	0.30
79-01-5	Trichloroethene	ND	0.20
124-48-1	Dibromochloromethane-A	ND	0.20
79-00-5	1,1,2-Trichloroethene-A	1.1	0.070
10061-01-5	cis-1,3-Dichloropropene-A	ND	N/A
110-75-8	2-Chloroethylvinyl ether	ND	0.20
75-25-2	Bromoform	ND	0.30
79-34-5	1,1,2,2-Tetrachloroethane-B	ND	0.12
127-18-4	Tetrachloroethane-B	3.9	0.030
108-90-7	Chlorobenzene	ND	0.30
541-73-1	1,3-Dichlorobenzene	ND	0.30
95-50-1	1,2-Dichlorobenzene	ND	0.50
105-46-7	1,4-Dichlorobenzene	ND	0.40
SURROGATES			
74-97-5	Bromochloromethane	99 % Recovery	
460-00-4	1-Bromo-4-fluorobenzene	96 % Recovery	

SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

754
WPR 88-1429-C

REPORT TO:

William Olson
EID Ground Water Bureau
1199 St. Francis Dr.
Santa Fe, N.M. 87504-0968

S.L.D. No. OR-

1429 ATB

DATE REC.

8-26-88

PRIORITY

3

PHONE(S):

827-2899

COLLECTION CITY:

Lee Acres

COUNTY:

San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute)

8/26/88 2:50:30

LOCATION CODE: (Township-Range-Section-Tracts)

10N06E24S42

USER CODE:

59300

SUBMITTER:

Olson

CODE:

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: ☐

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice: Sample stored in an ice bath (Not Frozen).
☐ P-AA: Sample Preserved with Ascorbic Acid to remove chlorine residual.
☐ P-HCl: Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks:

FIELD DATA:

pH= 7.2; Conductivity= 4000 umho/cm at 17 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water 32.78 ft.; Depth of well 45.67 ft.; Perforation Interval - ft.; Casing

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Minefield GWR-31

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): William Olson Method of Shipment to the Lab: hand

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Gay Eden
at (location) SLD on 8/26/88 at 14:55 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☒ OR Seals Intact: Yes ☐ No ☐

Signatures

William Olson

Gay Eden

ANALYSES PERFORMED

LAB. No.: OR- 1429

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
 Other Specific Compounds or Classes

☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>	<i>N.D.</i>		
<i>halogenated purgeables</i>			
<i>1,2-Dichloroethane</i>	<i>.6</i>		
<i>tetrachloroethene</i>	<i>T.R.</i>		
* DETECTION LIMIT *	<i>.549</i>	+ DETECTION LIMIT +	

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: *Harry C. Egan* date: *9/13/88*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *9/13/88* Analyst's signature: *Harry C. Egan*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *Lm eyerhei*

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80816107

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : GIANT REFINING
PROJECT # : (NONE)
PROJECT NAME : GIANT BLOOMFIELD
CLIENT I.D. : GBR 31
SAMPLE MATRIX : AQUEOUS

DATE SAMPLED : 08/25/88
DATE RECEIVED : 08/26/88
DATE EXTRACTED : N/A
DATE ANALYZED : 09/01/88
UNITS : UG/L
DILUTION FACTOR : 1

COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	1.8
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE (TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1,3-DICHLOROPROPENE	<0.2
TRANS-1,3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	0.3
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<2.0
VINYL CHLORIDE	<0.2
META XYLENE	<0.5
ORTHO & PARA XYLENE	<0.5

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	97
TRIFLUOROTOLUENE (%)	77



GTEL Environmental Laboratories

A division of Groundwater Technology, Inc.

Western Region

4080-C Pike Lane
Concord, CA 94520

(415) 685-7852

(800) 544-3422 from inside California

(800) 423-7143 from outside California

06/29/88 mh

Page 1 of 3

PROJECT MGR: Michael Wood

Groundwater Technology, Inc.

3620 Wyoming N.E. Suite 104

Albuquerque, NM 87111

PROJECT#: 232-799-5009-10

LOCATION: Farmington, NM

SAMPLED: 06/01/88 BY: T. LePage

RECEIVED: 06/03/88 BY: J. Floro

ANALYZED: 06/15/88 BY: P. Sra

MATRIX: Water

UNITS: ug/L (ppb)

GBR-248

6/2/88

GBR-31

TEST RESULTS

COMPOUND	MDL	LAB #	II.D.#	24489	24490	24491	24492
				010530	010347	TRIPBLANK	021015
Benzene	0.5			0.5	63	0.5	0.5
Bromodichloromethane	0.5			0.5	0.5	0.5	0.5
Bromoform	0.5			0.5	0.5	0.5	0.5
Bromomethane	0.5			0.5	0.5	0.5	0.5
Carbon tetrachloride	0.5			0.5	0.5	0.5	0.5
Chlorobenzene	0.5			0.5	0.5	0.5	0.5
Chloroethane	0.5			0.5	0.5	0.5	0.5
2-Chloroethylvinyl ether	1.0			1.0	1.0	1.0	1.0
Chloroform	0.5			0.5	0.5	0.5	0.5
Chloromethane	0.5			0.5	0.5	0.5	0.5
Dibromochloromethane	0.5			0.5	0.5	0.5	0.5
1,2-Dichlorobenzene	0.5			0.5	0.5	0.5	0.5
1,3-Dichlorobenzene	0.5			0.5	1.3	0.5	0.5
1,4-Dichlorobenzene	0.2			0.2	0.2	0.2	0.2
Dichlorodifluoromethane	0.5			0.5	0.5	0.5	0.5
1,1-Dichloroethane	0.5			0.98	0.5	0.5	4.6
1,2-Dichloroethane	0.5			0.5	55	0.5	0.5
1,1-Dichloroethene	0.2			0.2	0.2	0.2	0.2
trans-1,2-Dichloroethene	0.5			1.0	0.5	0.5	53
1,2-Dichloropropane	0.5			0.5	0.5	0.5	0.5
cis-1,3-Dichloropropene	0.5			0.5	0.5	0.5	0.5
trans-1,3-Dichloropropene	0.5			0.5	0.5	0.5	0.5
Ethylbenzene	0.5			0.5	73	0.5	0.5
Methylene chloride	0.5			0.5	0.5	0.5	0.5
1,1,2,2-Tetrachloroethane	0.5			0.5	0.5	0.5	0.5
Tetrachloroethene	0.5			0.61	0.69	0.5	5.0
1,1,1-Trichloroethane	0.5			0.5	0.5	0.5	1.8
1,1,2-Trichloroethane	0.5			0.5	0.5	0.5	0.5
Trichloroethene	0.5			0.52	0.5	0.5	7.6
Trichlorofluoromethane	0.5			0.5	0.5	0.5	0.5
Vinyl Chloride	1.0			1.0	1.0	1.0	1.0
Xylenes	0.5			20	40	0.5	0.5
Toluene	0.5			0.5	11	0.5	0.5

MDL = Method Detection Limit.

METHODS: EPA 8010/8020.



SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

REPORT TO:

McQuillan
EID Ground Water/Haz. Waste
1190 St. Francis Dr.
Santa Fe 87504-0968

S.L.D. No. OR-

522-4+B

DATE REC.

4/22/88

PRIORITY

2

PHONE(S):

827-2912

COLLECTION CITY: Lee Acres

COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute)

8/8/04/20/10/45

LOCATION CODE: (Township-Range-Section-Tracts)

29N+12W+27+1111 (10N06E24S42)

USER CODE:

593010

SUBMITTER:

McQuillan

CODE:

MCQ

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: _____

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

☐ NP:

No Preservation; Sample stored at room temperature.

☒ P-Ice

Sample stored in an ice bath (Not Frozen).

☐ P-Na₂S₂O₃

Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

☐ (733) Aliphatic Headspace (1-5 Carbons)

☒ (734) Aromatic & Halogenated Purgeables

☐ (765) Mass Spectrometer Purgeables

☐ (766) Trihalomethanes

Other Specific Compounds or Classes

☐

☐

☐

☐

☐

EXTRACTABLE SCREENS

☐ (751) Aliphatic Hydrocarbons

☐ (755) Base/Neutral Extractables

☐ (758) Herbicides, Chlorophenoxy acid

☐ (759) Herbicides, Triazines

☐ (760) Organochlorine Pesticides

☐ (761) Organophosphate Pesticides

☐ (767) Polychlorinated Biphenyls (PCB's)

☐ (764) Polynuclear Aromatic Hydrocarbons

☐ (762) SDWA Pesticides & Herbicides

Remarks: _____

FIELD DATA:

pH= _____; Conductivity=4780 umho/cm at 15.0 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Well GBR-31; purged w/ PVC pump; sampled w/ PVC trailer

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): Dennis McQuillan Method of Shipment to the Lab: air/auts

CHAIN OF CUSTODY

I certify that this sample was transferred from _____ to _____

at (location) _____ on _____ / _____ / _____ - _____ and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☐ No ☐

Signatures _____

Western Region
4080-C Pike Lane, Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

05/10/88 rw
PROJECT MGR: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming NE
Albuquerque, NM 87111

PROJECT #: 232-799-5009-8
LOCATION: Farmington, NM

SAMPLED: 04/20/88 BY: T. LePage
RECEIVED: 04/22/88 BY: K. Biava
ANALYZED: 04/29/88 BY: P. Sra
MATRIX: Water
UNITS: ug/L (ppb)

TEST RESULTS

COMPOUNDS	MDL	LAB # I.I.D. #	21156 6BR-17	21157 6BR-19	21158 <u>6BR-31</u>	21159 6BR-32
Benzene	0.5		<0.5	26	<0.5	<0.5
Toluene	0.5		<0.5	3.3	<0.5	<0.5
Ethylbenzene	0.5		<0.5	17	<0.5	<0.5
Xylenes	0.5		<0.5	120	<0.5	<0.5
Chlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5

MDL = Method Detection Limit; compound below this level would not be detected.

METHOD:
EPA Method 8020

Safy Khalifa EM7
SAFY KHALIFA, Ph.D., Director

Western Region

4080-C Pike Lane, Concord, CA 94520

(415) 685-7852

(800) 544-3422 from inside California

(800) 423-7143 from outside California

05/10/88 rw

PROJECT MGR: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming NE
Albuquerque, NM 87111

PROJECT #: 232-799-5009-8

LOCATION: Farmington, NM

SAMPLED: 04/20/88 BY: T. LePage

RECEIVED: 04/22/88 BY: K. Biava

ANALYZED: 04/29/88 BY: P. Sra

MATRIX: Water

UNITS: ug/L (ppb)

TEST RESULTS

COMPOUND	MDL	LAB # I.I.D. #	21156 6BR-17	21157 6BR-19	21158 6BR-31	21159 BR-32
Bromodichloromethane	0.5		<0.5	<0.5	<0.5	<0.5
Bromoform	0.5		<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5		<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	0.5		<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
Chloroethane	0.5		<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinyl ether	1.0		<1.0	<1.0	<1.0	<1.0
Chloroform	0.5		<0.5	<0.5	<0.5	1.1
Chloromethane	0.5		<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	0.5		<0.5	<0.5	0.76	<0.5
1,2-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	0.5		<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5		<0.5	5.9	4.8	5.7
1,2-Dichloroethane	0.5		<0.5	5.0	<0.5	<0.5
1,1-Dichloroethene	0.2		<0.2	<0.2	<0.2	<0.2
trans-1,2-Dichloroethene	0.5		<0.5	35	58	160
1,2-Dichloropropane	0.5		<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.5		<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	0.5		<0.5	<0.5	<0.5	<0.5
Methylene chloride	0.5		<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5		<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5		<0.5	1.0	<0.5	17
1,1,1-Trichloroethane	0.5		4.4	<0.5	2.9	1.9
1,1,2-Trichloroethane	0.5		<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.5		<0.5	7.2	7.3	16
Trichlorofluoromethane	0.5		<0.5	<0.5	<0.5	<0.5
Vinyl Chloride	1.0		<1.0	<1.0	<1.0	<1.0

MDL = Method Detection Limit.

METHOD:

EPA Method 8010



SAFY KHALIFA, Ph.D., Director

86-1356-C

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

STATE OF NEW MEXICO

REPORT TO: David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 1356 A+B
DATE REC. 11-26-86

PHONE(S): 327-5812
SUBMITTER: David Boyer

PRIORITY
USER CODE: 8 2 2 3 5
CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8611211205218

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: CODE: ☐ ☐ ☐

COUNTY: San Juan; CITY: Lee Acres CODE: ☐ ☐ ☐

LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+27+1111 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks:

FIELD DATA:

pH= ; Conductivity= 350 umho/cm at 17 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant GBR-31, No product

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): David Boyer Method of Shipment to the Lab: Hand Carried

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from Will Oser to Mary C. Elen
 at (location) HEP/SLD on 11/26/86 at 4:15 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☒ No ☐

Signatures

Will OserMary C. Elen

For OCD Use: Date Owner Notified Phone or Letter? Initials

ANALYSES PERFORMED

LAB. NO.: OR- 1356

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

☐
☐
☐
☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (760) Organochlorine Pesticides
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
aromatic purgeables	ND	{1-bromo-2-chloroethane}	approx. 10
dichloromethane	TR ⁺	{1,2-dichloropropane}	TR
1,1-dichloroethane	22		
cis-1,2-dichloroethene	23		
1,2-dichloroethane	TR		
1,1,1-trichloroethane	12		
trichloroethene	12		
tetrachloroethene	16		
* DETECTION LIMIT *	1 ppb	(+) DETECTION LIMIT (+)	20 ppb

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Four other compounds were detected by the aromatic screen that were not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☒ No ☐ Seal(s) broken by: JSdate: 12-4/2-10-86

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 4+10 Dec 86 Analyst's signature: JS

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R Meyerhen



TO: Geoscience Consultants Ltd.
 Attn: Jan Martin
 500 Copper NW Suite 325
 Albuquerque, NM 87158

DATE: 17 December 1986
 1787

SAMPLE ID: 8610171350 GBR-31

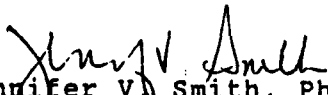
ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Benzene	0.004 mg/l	0.001 mg/l
Toluene	0.006 mg/l	0.001 mg/l
Ethylbenzene	<0.001 mg/l	0.001 mg/l
Xylenes	0.014 mg/l	0.001 mg/l
Acrolein	<25 ug/l	25 ug/l
Acrylonitrile	<25 ug/l	25 ug/l
Bromoform	<5.0 ug/l	5.0 ug/l
Carbon Tetrachloride	<5.0 ug/l	5.0 ug/l
Chlorodibromomethane	<5.0 ug/l	5.0 ug/l
Chloroethane	<5.0 ug/l	5.0 ug/l
2-Chloroethylvinyl Ether	<5.0 ug/l	5.0 ug/l
Chloroform	<5.0 ug/l	5.0 ug/l
Dichlorobromomethane	<5.0 ug/l	5.0 ug/l
1,1-Dichloroethane	11 ug/l	5.0 ug/l
1,2-Dichloroethane	<5.0 ug/l	5.0 ug/l
1,1-Dichloroethene	<5.0 ug/l	5.0 ug/l
1,2-Dichloropropane	<5.0 ug/l	5.0 ug/l
1,3-Dichloropropylene	<5.0 ug/l	5.0 ug/l
Methyl Bromide	<5.0 ug/l	5.0 ug/l
Methyl Chloride	<5.0 ug/l	5.0 ug/l
Methylene Chloride	7.0 ug/l	5.0 ug/l
1,1,2,2-Tetrachloroethane	<5.0 ug/l	5.0 ug/l
Tetrachloroethene	11 ug/l	5.0 ug/l
Trans-1,2-Dichloroethene	21 ug/l	5.0 ug/l
1,1,1-Trichloroethane	7.3 ug/l	5.0 ug/l
1,1,2-Trichloroethane	<5.0 ug/l	5.0 ug/l
Trichloroethene	<5.0 ug/l	5.0 ug/l
Vinyl Chloride	<5.0 ug/l	5.0 ug/l
Napthalene	0.003 mg/l	0.001 mg/l
Acenapthalene	0.019 mg/l	0.001 mg/l
Acenapthene	0.015 mg/l	0.001 mg/l
Fluorene	<0.001 mg/l	0.001 mg/l
Anthracene	0.014 mg/l	0.001 mg/l
Phenanthracene	<0.001 mg/l	0.001 mg/l
Fluoranthene	<0.001 mg/l	0.001 mg/l
Pyrene	<0.001 mg/l	0.001 mg/l
Benzo(a)anthracene	<0.001 mg/l	0.001 mg/l
Chrysene	<0.001 mg/l	0.001 mg/l
Benzo(b)fluoranthene	<0.001 mg/l	0.001 mg/l

Benzo(k)fluoranthene	<0.001 mg/l	0.001 mg/l
Benzo(a)pyrene	<0.001 mg/l	0.001 mg/l
Dibenzo(a,h)anthracene	<0.001 mg/l	0.001 mg/l
Indeno(1,2,3-cd)pyrene	<0.001 mg/l	0.001 mg/l
Benzo(g,h,i)perylene	<0.001 mg/l	0.001 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,


Jennifer V. Smith, Ph.D.
laboratory Director



A division of Groundwater Technology, Inc.

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

07/14/88 MH

Page 1 of 3

R-7/21/88

CLIENT: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming Northeast #104
Albuquerque, NM 87111
PROJECT#: 232-799-5009-17
LOCATION: Farmington, NM
SAMPLED: 06/1,2/88 BY: T. LePage
RECEIVED: 06/27/88 BY: K. Biava
ANALYZED: 7/6-8,11/88 BY: L. Hinson
MATRIX: Water
UNITS: ug/L

6/2/88

TEST RESULTS

COMPOUNDS	MDL	LAB # I.D.#	24480C 24481C 24482C 24483C			
			010530	010347	020135	021015
Acenaphthene	10		<10	<10	<10	<10
Acenaphthylene	10		<10	<10	<10	<10
Anthracene	10		<10	<10	<10	<10
Benzo (a) anthracene	10		<10	<10	<10	<10
Benzo (a) pyrene	10		<10	<10	<10	<10
Benzo (b) fluoranthene	10		<10	<10	<10	<10
Benzo (ghi) perylene	10		<10	<10	<10	<10
Benzo (k) fluoranthene	10		<10	<10	<10	<10
Chrysene	10		<10	<10	<10	<10
Dibenzo (a,h) anthracene	10		<10	<10	<10	<10
Fluoranthene	10		<10	<10	<10	<10
Fluorene	10		<10	<10	<10	<10
Indeno (1,2,3-cd) pyrene	10		<10	<10	<10	<10
Naphthalene	10		<10	<10	<10	<10
Phenanthrene	10		<10	<10	<10	<10
Pyrene	10		<10	<10	<10	<10

MDL=Method Detection Limit.
METHOD: EPA Method 610.

GBR-30 GBR-248 TK-22 GBR-31





InterMountain
Laboratories, Inc.

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

CLIENT: GBR
ID: 9010081035
SITE: GBR-31
LAB NO: F5230

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/08/90
DATE COLLECTED: 10/08/90

Lab pH (s.u.).....	7.58
Lab conductivity, umhos/cm.....	4670
Lab resistivity, ohm-m.....	2.14
Total dissolved solids (180), mg/l..	3300
Total dissolved solids (calc), mg/l.	3170
Total alkalinity as CaCO ₃ , mg/l.....	291
Total acidity as CaCO ₃ , mg/l.....	0
Total hardness as CaCO ₃ , mg/l.....	1120
Sodium absorption ratio.....	8.2

	mg/l	meq/l
Bicarbonate as HCO ₃	354	5.81
Carbonate as CO ₃	0	0
Chloride.....	584	16.5
Sulfate.....	1410	29.3
Calcium.....	261	13
Magnesium.....	115	9.46
Potassium.....	2.01	0.05
Sodium.....	632	27.5
Major cations.....		50
Major anions.....		51.6
Cation/anion difference.....		1.5 %

C. Neal Schaeffer
Lab Director



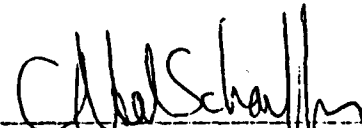
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GBR
ID: 9007111205
SITE: GBR 31
LAB NO: F4595

DATE REPORTED: 07/16/90
DATE RECEIVED: 07/11/90
DATE COLLECTED: 07/11/90

Lab pH (s.u.).....	7.83
Lab conductivity, umhos/cm.....	4746
Lab resistivity, ohm-m.....	2.1070
Total dissolved solids (180), mg/l..	3874
Total dissolved solids (calc), mg/l.	3795
Total alkalinity as CaCO ₃ , mg/l.....	362.90
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1445.76
Sodium absorption ratio.....	7.50

	mg/l	meq/l
Bicarbonate as HCO ₃	442.7	7.26
Carbonate as CO ₃	0.0	0.00
Chloride.....	440.7	12.43
Sulfate.....	1918.0	39.96
Calcium.....	526.1	26.25
Magnesium.....	32.4	2.66
Potassium.....	4.0	0.10
Sodium.....	656.0	28.53
Major cations.....		57.55
Major anions.....		59.65
Cation/anion difference.....		1.79 %


C. Neal Schaeffer
Lab Director

CLIENT: Giant Refinery
ID: GBR-31
SITE: GBR
LAB NO: F4092

DATE REPORTED: 04/13/90
DATE RECEIVED: 04/04/90
DATE COLLECTED: 04/04/90

Lab pH (s.u.).....	7.54
Lab Conductivity, umhos/cm.....	5059
Lab resistivity, ohm-m.....	1.9767
Total Dissolved Solids (180), mg/l..	3310
Total Dissolved Solids (calc), mg/l.	3201
Total Alkalinity as CaCO ₃ , mg/l.....	425.17
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1204.80
Sodium Absorption Ratio.....	7.56

	mg/l	meq/l
Bicarbonate as HCO ₃	491.7	8.06
Carbonate as CO ₃	13.3	0.44
Chloride.....	568.6	16.04
Sulfate.....	1294.6	26.97
Calcium.....	457.8	22.85
Magnesium.....	15.2	1.25
Potassium.....	6.5	0.17
Sodium.....	603.0	26.23
Major Cations.....		50.49
Major Anions.....		51.51
Cation/Anion Difference.....		1.00 %


C. Neal Schaeffer
Lab Director



Inter-Mountain
Laboratories, Inc.

CLIENT: Geoscience Consultants

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

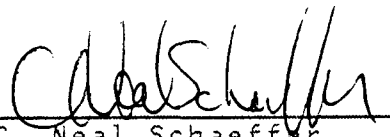
SITE: GBR-31
LAB NO: F3667

DATE REPORTED: 12/20/89

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

Lab pH (s.u.).....	7.18
Lab Conductivity, umhos/cm.....	5210
Lab resistivity, ohm-m.....	1.9194
Total Dissolved Solids (180), mg/l..	4128
Total Dissolved Solids (calc), mg/l.	4045
Total Alkalinity as CaCO ₃ , mg/l.....	354.42
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1668.37
Sodium Absorption Ratio.....	7.16

	mg/l	meq/l
Bicarbonate as HCO ₃	432.39	7.09
Carbonate as CO ₃	0.00	0.00
Chloride.....	618.27	17.44
Sulfate.....	1873.97	39.04
Calcium.....	661.13	32.99
Magnesium.....	4.58	0.38
Potassium.....	2.36	0.06
Sodium.....	672.40	29.25
Major Cations.....		62.68
Major Anions.....		63.57
Cation/Anion Difference.....		0.71 %


C. Neal Schaeffer
Senior Chemist

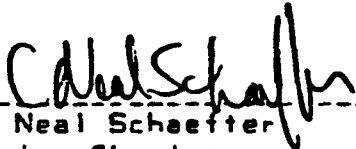


2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/27/89
SAMPLE: B9D9131145
SITE: GER-31 DATE RECEIVED: 09/13/89
LAB NO: F3161 DATE COLLECTED: 09/13/89

Lab pH.....	7.31
Lab Conductivity, umhos/cm.....	4958
Lab resistivity, ohm-m.....	2.0169
Total Dissolved Solids (180), mg/l..	3654
Total Dissolved Solids (calc), mg/l.	3590
Total Alkalinity as CaCO ₃ , mg/l.....	370.94
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1421.28
Sodium Absorption Ratio.....	7.49

	mg/l	meq/l
Bicarbonate as HCO ₃	452.55	7.42
Carbonate as CO ₃	0.00	0.00
Chloride.....	584.80	16.50
Sulfate.....	1578.51	32.89
Calcium.....	526.38	26.27
Magnesium.....	26.26	2.16
Potassium.....	2.20	0.06
Sodium.....	649.60	28.26
Major Cations.....		56.74
Major Anions.....		56.80
Cation/Anion Difference.....		0.06 %


C. Neal Schaeffer
Senior Chemist



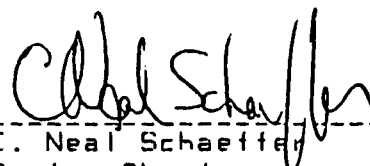
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

Client: GCL #8906131315
Site: GBR-31
IML #: F1578

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Total dissolved solids (180)..... 4414.00 mg/l
Total dissolved solids (calculated). 4180.76 mg/l
Total alkalinity (as CaCO₃)..... 342.25 mg/l
Total hardness (as CaCO₃)..... 1682.23 mg/l
Lab pH..... 7.66
Lab conductivity..... 5520 umhos/cm @ 25C
Lab resistivity..... 1.8116 ohm-cm

	mg/l	meq/l
Acidity (as CaCO ₃).....	<1.0	<0.01
Bicarbonate (as HCO ₃).....	417.55	6.85
Carbonate (as CO ₃).....	0.00	0.00
Chloride.....	575.12	16.22
Sulfate.....	2032.40	42.34
Calcium.....	569.76	28.43
Magnesium.....	63.37	5.21
Potassium.....	1.96	0.05
Sodium.....	735.20	31.78
Major cations.....		65.67
Major anions.....		65.41
Anion/cation % difference.....		0.20 %


C. Neal Schaeffer
Senior Chemist

Page 10

Received: 12/09/88

RAS - Austin

REPORT

Results by Sample

Work Order # 88-12-U56
Continued From Above

SAMPLE ID 8812071352 6BL-15 FRACTION 05A TEST CODE TDS NAME Total dissolved solids
Date & Time Collected not specified Category _____

DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available

SAMPLE ID 8812071431 6BL-31 FRACTION 06A TEST CODE OPDA NAME Orthophosphate
Date & Time Collected not specified Category _____

VERIFIED _____ LM

ANALYST _____ NJS
INSTRMT _____ 31

UNITS _____ mg/L as P

ANALYTE RESULT DET LIMIT

Orthophosphate 0.090 0.020

NOTES AND DEFINITIONS FOR THIS REPORT:

DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available

SAMPLE ID 8812071431 6BL-31 FRACTION 06A TEST CODE TDS NAME Total dissolved solids
Date & Time Collected not specified Category _____

VERIFIED _____ LM

Page 11

Received: 12/09/88

HAS -

Austin

REPORT

Results by Sample

Work Order # 88-12-056
Continued From Above

SAMPLE ID 8812071431

CBL-33

FRACTION 06A

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

ANALYST
INSTRMT

DLB

ANALYZED 12/13/88

UNITS mg/L

ANALYTE

RESULT DET LIMIT

Filterable Residue (TDS) 3800 10

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8812071501

CBL-33

FRACTION 07A

TEST CODE OPDA

NAME Orthophosphate

Date & Time Collected not specified

Category

ANALYST
INSTRMT

HJS

21

ANALYZED 12/09/88

UNITS mg/L as P

ANALYTE

RESULT DET LIMIT

Orthophosphate 0.045 0.020

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

VERIFIED LM

SAMPLE	Test: CA E	Test: CL IC	Test: EG5010	Test: F IC	Test: K E
Sample Id	ug/ml	mg/L	date complete	mg/L	ug/ml
GBR-17 01 8812070930	370	170	12/30/88	2.4	<5.0
GBR-24 02 8812071016	450	600	12/30/88	3.2	<5.0
GBR-14 03 8812071123	470	690	12/30/88	3.8@	5.2*
GBR-30 04 8812071201	460	620	12/30/88	3.6	<5.0
GBR-15-05 8812071352	450	230	12/30/88	3.7	9.6*
GBR-31 06 8812071431	500	450	12/30/88	3.5	<5.0
GBR-33 07 8812071501	390	540	12/30/88	0.63	<5.0
GBR-13 08 8812071601	470	720	12/30/88	0.56	<5.0
GBR-6 09 8812071647	280	340	12/30/88	0.35	<5.0
GBR-8 10 8812071738	360	630	12/30/88	0.70	6.7*
11 8812071738 oil	<10				30*

SAMPLE	Test: NS E	Test: PREP X	Test: S04 IC
Sample Id	ug/ml	date complete	mg/L as S04
GBR-17 01 8812070930	42	290	1300

Received: 12/09/88

RAS - Austin

Work Order # 88-12-056
Continued From Above

REPORT

Results by Test

SAMPLE	Test: ME E	Test: NA E	Test: PREP X	Test: S04 IC
Sample Id	mg/L	mg/L	date complete	mg/L as S04
GBR-24 02 8812071016	81	400		1600
GBR-14 03 8812071123	29	500		1500
GBR-30 04 8812071201	36	440		1300
GBR-15 05 8812071352	30	570		2000
GBR-31 06 8812071431	44	500		1700
GBR-33 07 8812071501	40	480		1400
GBR-13 08 8812071601	48	700		1600
GBR-6 09 8812071547	72	420		660
GBR-8 10 8812071736	59	600		490
8812071738 11	<10	<10	12/30/88	



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
WHS

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED	8/26/88	LAB NO.	WUX-3455	USER CODE	☒ 59300 ☐ 59600 ☐ OTHER:
Collection DATE	8/25/88	SITE INFORMATION	Sample location		
Collection TIME	0730		Collection site description		
Collected by — Person/Agency			Olsen		

RECEIVED

OCT 1 1988

GROUND WATER/HAZARDOUS WASTE
BUREAU

SEND
FINAL
REPORT
TO

GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: William Olsen

Station/
well code GWR-31
Owner Giant Bleumfield

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	<u>32.38</u>	Discharge		Sample type	<u>grab</u>
pH (00400)	<u>7.2</u>	Conductivity (Uncorrected)	<u>4000</u> μmho	Water Temp. (00010)	<u>17</u> °C	Conductivity at 25°C (00094)	μmho
Field comments							

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	<u>1</u>	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify:				

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	<u>4719</u> μmho	<u>8/29</u>	☒ Calcium (00915)	<u>560</u> mg/l	<u>9/29</u>
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	<u>60.4</u> mg/l	<u>9/29</u>
☐ Other:			☒ Sodium (00930)	<u>560</u> mg/l	<u>10/3</u>
☐ Other:			☒ Potassium (00935)	<u>3</u> mg/l	<u>10/3</u>
☐ Other:			☒ Bicarbonate (00440)	<u>402</u> mg/l	<u>9/15</u>
			☒ Chloride (00940)	<u>757</u> mg/l	<u>9/27</u>
			☒ Sulfate (00945)	<u>1560</u> mg/l	<u>9/27</u>
			☒ Total filterable residue (dissolved) (70300)	<u>3746</u> mg/l	<u>9/14</u>
			☒ Other: <u>Cation-Anion balance</u>	<u>95%</u>	
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst	Date Reported	Reviewed by
<u>757</u>				<u>10/4/88</u>	<u>CS</u>



GTEL Environmental Laboratories

division of Groundwater Technology, Inc.

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*

MAJOR CATIONS TEST RESULTS

Page 1 of 3

06/16/88 rw

MANAGER: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming Northeast, Suite 104
Albuquerque, NM 87111

PROJECT#: 232-799-5009-11

LOCATION: Farmington, NM

SAMPLED: 06/01/88 BY: T. LePage
RECEIVED: 06/03/88 BY: J. Floro
ANALYZED: 06/15/88 BY: C. Miller
MATRIX: Water

GBR-30 GBR-24D TK 22 GBR-31

PARAMETER	UNITS	MDL	LAB #	24480A	24481A	24482A	24483A
			I.D.#	010530	010347	020135	021015

Sodium	mg/L	0.1		578	491	686	769
Potassium	mg/L	1.0		3.3	5.3	3.4	3.5
Calcium	mg/L	0.1		586	500	558	598
Magnesium	mg/L	0.1		50	75	52	51

MDL = Method Detection Limit; compound below this level would not be detected.

METHOD: EPA 3005/6010

RECEIVED
7/13/88

GTEL
Environmental
Laboratories

A division of Groundwater Technology, Inc.

Western Region
4080-C Pike Lane
Concord, CA 94520
(415) 885-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

Page 1 of 2

07/12/88 JP
MANAGER: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming N.E. Suite 104
Albuquerque, NM 87111

PROJECT#: 232-799-5009-9
LOCATION: Farmington, NM

SAMPLED: 06/01/88 BY: T. LePage
RECEIVED: 06/03/88 BY: J. Floro
ANALYZED: 06/07/88 BY: R. Heines
MATRIX: Water
UNITS: mg/L

TEST RESULTS

				6/2/88				
				GAR-30	GAR-24D	TK 22	GAR-31	GAR-17
PARAMETER	MDL	LAB #	I.D. #	24480	24481	24482	24483	24484
				010530	010347	020135	021015	021220

Total Dissolved Solids	10			3996	3487	4094	4374	2382
Bicarbonate	20			124	130	297	211	140
Carbonate	20			(20)	(20)	(20)	(20)	(20)
Chloride	1			370	630	910	850	190
Sulfate	1			2270	1640	1570	1920	1350

MDL = Method Detection Limit; compound below this level would not be detected.

METHOD: TDS by Standard Method 209B
Bicarbonate by Standard Method 403
Carbonate by Standard Method 403
Chloride by Standard Method 429
Sulfate by Standard Method 429



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 wnt
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED 11/26/86	LAB NO. WC 5446	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE 86/11/21	SITE INFORMATION	Sample location Giant, Bloomfield Refinery
Collection TIME 1205		Collection site description GBR-31
Collected by — Person/Agency BOYER/OLSON /OCD		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) 3150 μ mho	Water Temp. (00010) 17 °C	Conductivity at 25°C (00094) μ mho	
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted 1	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095) 9341 μ mho		12/16	☒ Calcium (00915) 1400 mg/l		12-1
☐ Total non-filterable residue (suspended) (00530)			☒ Magnesium (00925) 146 mg/l		12-1
☒ Other: pH 7.33	mg/l	12/8	☒ Sodium (00930) 1280 mg/l		12/4
☐ Other:			☒ Potassium (00935) 5.07 mg/l		12/4
☐ Other:			☒ Bicarbonate (00440) 563 mg/l		12-3
			☒ Chloride (00940) 2901 mg/l		12/5
			☒ Sulfate (00945) 2249 mg/l		12/8
			☒ Total filterable residue (dissolved) (70300) 9672 mg/l		12/4
			☒ Other: CO ₃ BR 0.7		12/8
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630) mg/l			☐ Nitrate-N +, Nitrate-N dissolved (00631) mg/l		
☐ Ammonia-N total (00610) mg/l			☐ Ammonia-N dissolved (00608) mg/l		
☐ Total Kjeldahl-N () mg/l			☐ Total Kjeldahl-N () mg/l		
☐ Chemical oxygen demand (00340) mg/l			☐ Other:		
☐ Total organic carbon () mg/l			Analyst	Date Reported 1/5/87	Reviewed by CG
☐ Other:			Laboratory remarks		
☐ Other:					

FOR OCD USE -- Date Owner Notified Phone or Letter? Initials





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

Heavy metal
**GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS**

DATE RECEIVED <u>11/26/86</u>	LAB NO. <u>HM 2424</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: <u>82235</u>
Collection DATE <u>11/21</u>	SITE INFORMATION	Sample location <u>Giant, Bloomfield Refinery</u>
Collection TIME <u>1205</u>		Collection site description <u>GBR-31</u>
Collected by — Person/Agency <u>BOYER/OLSON/OCD</u>		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	Discharge	Sample type
pH (00400)	Conductivity (Uncorrected) <u>3150</u> μ mho	Water Temp. (00010) <u>17</u> °C	Conductivity at 25°C (00094) μ mho	
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted <u>1</u>	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added	☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☒ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium (00915)	mg/l	
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Magnesium (00925)	mg/l	
☒ Other: <u>ICAP</u>			☐ Sodium (00930)	mg/l	
☒ Other: <u>AS</u>			☐ Potassium (00935)	mg/l	
☐ Other:			☐ Bicarbonate (00440)	mg/l	
			☐ Chloride (00940)	mg/l	
			☐ Sulfate (00945)	mg/l	
			☐ Total filterable residue (dissolved) (70300)	mg/l	
			☐ Other:		
NF, A-H₂SO₄			F, A-H₂SO₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks <u>Sample digested</u>			Analyst	Date Reported <u>1/13/87</u>	Reviewed by <u>Jim Ashby</u>

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initials _____

ICAP SCAN

SLD Lab No. HM 2424

Analyst OB

Date Analyzed 12/10/86

Reviewed by: Jim Ashby

Date Reported: 01/13/87

ELEMENT	ICAP VALUE (mg/l)	AA VALUE (mg/l)
Aluminum	<0.1	
Barium	<0.1	
Beryllium	<0.1	
Boron	0.5	
Cadmium	<0.1	
Calcium	1280.	
Chromium	<0.1	
Cobalt	0.3	
Copper	<0.1	
Iron	0.2	
Lead	<0.1	
Magnesium	105.	
Manganese	2.3	
Molybdenum	<0.1	
Nickel	0.6	
Silicon	7.3	
Silver	<0.1	
Strontium	26	
Tin	<0.1	
Vanadium	<0.1	
Zinc	<0.1	
Arsenic		<0.005
Selenium		
Mercury		

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

MONITOR WELL GBR-32

<u>SAMPLER</u>	<u>GIANT</u>	<u>GIANT</u>	<u>OCD</u>	<u>GIANT</u>
<u>DATE</u>	<u>12/11/89</u>	<u>12/18/89</u>	<u>4/9/90</u>	<u>6/18/90</u>
<u>PARAMETER</u>				
DETECTION LIMIT	<1.0	<1.0	1.0	(BELOW)
BENZENE	96.0	ND	ND	ND(5.0)
BROMODICHLOROMETHANE	ND	ND	ND	ND(2.5)
BROMOFORM	ND	ND	ND	ND(13.0)
BROMOMETHANE	ND	ND	ND	ND(30.0)
CARBON TETRACHLORIDE	ND	ND	ND	ND(3.0)
CHLOROBENZENE	ND	ND	ND	ND(5.0)
CHLOROETHANE	ND	ND	ND	ND(13.0)
CHLOROFORM	ND	ND	ND	ND(2.5)
CHLOROMETHANE	ND	ND	ND	ND(7.5)
DIBROMOCHLOROMETHANE	ND	ND	ND	ND(5.0)
1,2-DICHLOROBENZENE	ND	ND	ND	ND(10.0)
1,3-DICHLOROBENZENE	ND	ND	ND	ND(10.0)
1,4-DICHLOROBENZENE	ND	ND	ND	ND(7.5)
1,1-DICHLOROETHANE	3.0	2.8	1.5	ND(13.0)
1,2-DICHLOROETHANE	ND	ND	ND	ND(2.5)
1,1-DICHLOROETHENE	ND	ND	ND	ND(5.0)
CIS-1,2-DICHLOROETHENE	NA	NA	88.3	160.0
TRANS-1,2-DICHLOROETHENE	140.0	160.0	ND	ND(5.0)
1,2-DICHLOROPROPANE	ND	ND	ND	ND(2.5)
ETHYLBENZENE	ND	ND	ND	ND(5.0)
METHYLENE CHLORIDE	1.2	1.1	ND	10.0
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND	ND(3.8)
TETRACHLOROETHENE	17.0	22.0	15.0	23.0
TOLUENE	ND	ND	ND	ND(5.0)
1,1,1-TRICHLOROETHANE	1.3	1.5	ND	ND(5.0)
1,1,2-TRICHLOROETHANE	ND	ND	ND	ND(5.0)
TRICHLOROETHENE	10.0	12.0	10.9	17.0
TRICHLOROFLUOROMETHANE	ND	1.1	ND	ND(5.0)
VINYL CHLORIDE	ND	ND	ND	ND(5.0)
TOTAL XYLENES	ND	ND	ND	ND(5.0)

TR - TRACE
 ND - NOT DETECTED
 NA - NOT ANALYZED
 * - DUPLICATE ANALYSIS

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

MONITOR WELL GBR-32

<u>SAMPLER</u>	<u>GIANT</u>	<u>EID**</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>8/24/88</u>	<u>8/24/88</u>	<u>11/8/88</u>	<u>3/14/89</u>	<u>6/13/89</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	0.5	(BELOW)	(BELOW)	(BELOW)
BENZENE	ND(5.0)	ND	ND(<1.0)	0.81	ND(<1.0)
BROMODICHLOROMETHANE	ND(2.0)	ND	NA	ND	ND(1.0)
BROMOFORM	ND(2.0)	ND	ND(3.0)	ND	ND(1.0)
BROMOMETHANE	ND(2.0)	ND	ND(12.0)	ND(1.0)	ND(1.0)
CARBON TETRACHLORIDE	ND(2.0)	ND	ND(1.0)	ND	ND(1.0)
CHLOROBENZENE	ND(5.0)	ND	ND(<1.0)	ND	ND(<1.0)
CHLOROETHANE	ND(2.0)	ND	ND(5.0)	ND(1.0)	ND(1.0)
CHLOROFORM	ND(2.0)	3.9	8.2	0.4	3.0
CHLOROMETHANE	ND(2.0)	ND	ND(3.0)	ND(1.0)	ND(1.0)
DIBROMOCHLOROMETHANE	ND(2.0)	ND	ND(2.0)	ND(<1.0)	ND(1.0)
1,2-DICHLOROBENZENE	ND(5.0)	ND	ND(<1.0)	ND(<1.0)	ND(<1.0)
1,3-DICHLOROBENZENE	ND(5.0)	ND	ND(<1.0)	ND(<1.0)	ND(<1.0)
1,4-DICHLOROBENZENE	ND(5.0)	ND	ND(<1.0)	ND(<1.0)	ND(<1.0)
DICHLORODIFLUOROMETHANE	ND(2.0)	ND	NA	ND(1.0)	ND(1.0)
1,1-DICHLOROETHANE	6.0	3.6	5.8	3.1	3.9
1,2-DICHLOROETHANE	ND(2.0)	ND	ND(<1.0)	ND(<1.0)	ND(1.0)
1,1-DICHLOROETHENE	ND(2.0)	ND	ND(1.0)	ND(<1.0)	ND(1.0)
CIS-1,2-DICHLOROETHENE	NA	97.0	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	ND	120.0	ND(<1.0)	ND(1.0)
TOTAL 1,2-DICHLOROETHENE	100.0	NA	NA	NA	NA
DICHLOROMETHANE	NA	TR	NA	NA	NA
1,2-DICHLOROPROPANE	ND(2.0)	ND	ND(1.0)	ND(<1.0)	ND(1.0)
ETHYLBENZENE	ND(5.0)	ND	ND(<1.0)	ND(<1.0)	ND(<1.0)
METHYLENE CHLORIDE	ND(20.0)	ND	ND(3.0)	10.8	ND(1.0)
1,1,2,2-TETRACHLOROETHANE	ND(2.0)	ND	ND(1.2)	ND(<1.0)	ND(1.0)
TETRACHLOROETHENE	9.0	24.0	20.0	11.7	17.3
TOLUENE	ND(5.0)	ND	ND(<1.0)	1.1	ND(<1.0)
1,1,1-TRICHLOROETHANE	ND(2.0)	4.5	6.6	0.78	1.5
1,1,2-TRICHLOROETHANE	ND(2.0)	ND	ND(<1.0)	ND(<1.0)	ND(1.0)
TRICHLOROETHENE	8.0	16.0	13.0	8.1	12.2
TRICHLOROFLUOROMETHANE	ND(20.0)	0.8	ND(1.0)	ND(<1.0)	ND(1.0)
VINYL CHLORIDE	ND(2.0)	ND	ND(2.0)	ND(1.0)	ND(1.0)
TOTAL XYLENES	ND(5.0)	ND	ND(<1.0)	ND(<1.0)	ND(<1.0)

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

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

MONITOR WELL GBR-32

<u>SAMPLER</u>	<u>EID</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>	<u>EID**</u>
<u>DATE</u>	<u>8/5/87</u>	<u>10/7/87</u>	<u>11/12/87</u>	<u>4/20/88</u>	<u>4/20/88</u>
<u>PARAMETER</u>					
DETECTION LIMIT	1.0	<1.0	(BELOW)	<1.0	0.5
BENZENE	ND	ND	ND(<1.0)	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND(<1.0)	ND	ND
BROMOFORM	ND	ND	ND(<1.0)	ND	ND
BROMOMETHANE	ND	ND	ND(<1.0)	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND(<1.0)	ND	ND
CHLOROBENZENE	ND	ND	ND(<1.0)	ND	ND
CHLOROETHANE	ND	ND	ND(<1.0)	ND	ND
CHLOROFORM	ND	ND	11.0	1.1	0.9
CHLOROMETHANE	ND	ND	ND(<1.0)	ND	ND
DIBROMOCHLOROMETHANE	ND	ND	ND(<1.0)	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND(<1.0)	ND	ND
1,3-DICHLOROBENZENE	ND	ND	ND(<1.0)	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND(<1.0)	ND	ND
DICHLORODIFLUOROMETHANE	ND	ND	ND(<1.0)	ND	ND
1,1-DICHLOROETHANE	3.0	10.4	10.7	5.7	8.5
1,2-DICHLOROETHANE	ND	ND	ND(<1.0)	ND	ND
1,1-DICHLOROETHENE	ND	ND	106.0	ND	ND
CIS-1,2-DICHLOROETHENE	79.0	NA	NA	NA	88.0
TRANS-1,2-DICHLOROETHENE	ND	35.0	ND(<1.0)	160.0	ND
1,2-DICHLOROPROPANE	ND	0.5	ND(<1.0)	ND	ND
ETHYLBENZENE	ND	ND	ND(<1.0)	ND	ND
METHYLENE CHLORIDE	ND	ND	ND(2.0)	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND(<1.0)	ND	ND
TETRACHLOROETHENE	19.0	16.6	15.3	17.0	18.0
TOLUENE	ND	ND	ND(1.0)	ND	ND
1,1,1-TRICHLOROETHANE	3.0	3.3	2.3	1.9	1.0
1,1,2-TRICHLOROETHANE	ND	ND	ND(<1.0)	ND	ND
TRICHLOROETHENE	17.0	13.4	11.4	16.0	14.0
TRICHLOROFLUOROMETHANE	ND	ND	ND(2.0)	ND	2.0
VINYL CHLORIDE	ND	ND	ND(<1.0)	ND	ND
TOTAL XYLENES	ND	ND	ND(<1.0)	ND	ND

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

Geoscience Consultants, Ltd.
 Radian Work Order: SO-06-152

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:	9006181215 GBR 32	9006181330 GBR 49	9006181600 GBR 48	9006181700 GBR 50
Factor:	25	25	25	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	5.0	ND	5.0	5.7 X ^a	5.0	ND	0.20
Chlorobenzene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
1,2-Dichlorobenzene	ND	10	ND	10	ND	10	ND	0.40
1,3-Dichlorobenzene	ND	10	ND	10	ND	10	ND	0.40
1,4-Dichlorobenzene	ND	7.5	ND	7.5	ND	7.5	ND	0.30
Ethylbenzene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Toluene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Xylenes (total)	ND	5.0	ND	5.0	ND	5.0	ND	0.20

Surrogate Recovery(%)

1-Bromo-4-fluorobenzene	102	104	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

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

ieoscience Consultants, Ltd.
 Radian Work Order: S0-06-152

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006181215	9006181330	9006181600	9006181700
	GBR 32	GBR 49	GBR 48	GBR 50
Factor:	25	25	25	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	2.5	ND	2.5	ND	2.5	ND	0.10
Bromoform	ND	13	ND	12	ND	13	ND	0.50
Bromomethane	ND	30	ND	30	ND	30	ND	1.2
Carbon tetrachloride	ND	3.0	<u>3.5 Xa</u>	3.0	<u>3.3 Xa</u>	3.0	ND	0.12
Chlorobenzene	ND	6.3	ND	6.2	ND	6.3	ND	0.25
Chloroethane	ND	13	ND	13	ND	13	ND	0.52
2-Chloroethylvinyl ether	ND	13	ND	12	ND	13	ND	0.50
Chloroform	ND	2.5	<u>2.5 Xa</u>	2.5	ND	2.5	ND	0.10
Chloromethane	ND	7.5	ND	7.5	ND	7.5	ND	0.30
Dibromochloromethane	ND	5.0	ND	5.0	ND	5.0	ND	0.20
1,2-Dichlorobenzene	ND	13	ND	12	ND	13	ND	0.50
1,3-Dichlorobenzene	ND	8.0	ND	8.0	ND	8.0	ND	0.32
1,4-Dichlorobenzene	ND	6.0	ND	6.0	ND	6.0	ND	0.24
1,1-Dichloroethane	ND	13	ND	12	<u>14. Ca</u>	13	ND	0.50
1,2-Dichloroethane	ND	2.5	ND	2.5	ND	2.5	ND	0.10
1,1-Dichloroethene	ND	5.0	ND	5.0	<u>14 Xa</u>	5.0	ND	0.20
cis-1,2-Dichloroethene	<u>160 C</u>	5.0	<u>120 C</u>	5.0	<u>220 C</u>	5.0	<u>0.37 GIa</u>	0.20
trans-1,2-Dichloroethene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
1,2-Dichloropropane	ND	2.5	ND	2.5	ND	2.5	ND	0.10
cis-1,3-Dichloropropene	ND	5.0	ND I	5.0	ND	5.0	ND	0.20
trans-1,3-Dichloropropene	ND	8.5	ND	8.5	ND	8.5	ND	0.34
Methylene chloride	<u>10 Xa</u>	10	<u>21 Xa</u>	10	ND	10	<u>0.43 Xa</u>	0.40
1,1,2,2-Tetrachloroethane	ND	3.8	ND	3.8	ND	3.8	<u>0.16 XIa</u>	0.15
Tetrachloroethene	<u>23 C</u>	2.5	<u>22 C</u>	2.5	<u>32 C</u>	2.5	<u>0.57 C</u>	0.10
1,1,1-Trichloroethane	ND	5.0	ND	5.0	<u>6.2 Ca</u>	5.0	ND	0.20
1,1,2-Trichloroethane	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Trichloroethene	<u>17 Ca</u>	5.0	<u>14 Ca</u>	5.0	<u>30 C</u>	5.0	<u>0.31 Ca</u>	0.20
Trichlorofluoromethane	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Vinyl chloride	ND	5.0	ND	5.0	ND	5.0	ND	0.20

ND Not detected at specified detection limit

X See definition in report narrative

I Result differs from last report - see report narrative

C Confirmed on second column or by GC/MS

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.

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SLD No.

90-0548-C

SCIENTIFIC LABORATORY DIVISION

700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106

Organic Chemistry Section - Telephone: (505) 841-2570

Date

Received:

4/16/90

Request ID No. 000782-C

2 User Code #: 82235		3 Request ID No.:		4 Priority Code #: 3		8 State: N.M.	
5 Facility Name: Giant Bloomfield Refinery				6 County: San Juan		7 City: Bloomfield	
9 Sample Location:							
10 Collected By: Bill OLSON On: 90/04/09 At: 1:630 hrs. First Last Date: (YY/MM/DD) Time: 24 hr. clock 3:00 pm = 1500 hrs.							
11 Codes: 2601 Submitter WSS # Organization				12 Latitude (DDMMSS) Longitude (DDMMSS) 2 Digit ID (if needed)			
13 Report To: Bill Olson Address: N.M. Oil Conservation Division P.O. Box 2088 City, State Zip: Santa Fe N.M. 87504-2088				14 Phone #: 827-5885			
15 Sampling Information: Sample Purpose: ☒ Grab ☐ Composite (Composite Time Period) ☐ Compliance ☐ Flow Proportioned ☐ Check ☐ Equal Aliquot ☒ Monitoring ☐ Sample Split w/Permittee ☐ Special ☐ Chain of Custody							
16 Field Data: pH: , Conductivity: umhos @ °C, Temperature: °C, Chlorine Residual: mg/l, Flow:							
17 Sample Source: ☐ -Stream ☒ -Well; Depth: ☐ -Lake ☐ -Spring ☐ -Drain ☐ -Distribution ☐ -Pool ☐ -Point-of-Entry ☐ -WWTP ☐ -Other:				18 Field Notes/ Sample #: Well GBR-32			
19 Sample Type: ☒ -Water, ☐ -Soil, ☐ -Food, ☐ -Wastewater, ☐ -Other This form accompanies a <u>single sample</u> consisting of: 2 - septum vial(s) (volume = 40 ml) - glass jugs (volume =) (volume =)				20 Preservation: ☐ -NP No Preservation; Sample stored at room temperature ☒ -P-ice Sample stored in an ice bath (Not Frozen) ☐ -P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual ☐ -P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml) ☐ -Other			
21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required.							
Volatile Screens: ☐ - (753) Aliphatic Headspace (1-5 Carbons) ☒ - (754) Aromatic & Halogenated Purgeables (EPA 601 & 602) ☐ - (765) Mass Spectrometer Purgeables (EPA 624) ☐ - (766) SDWA Total Trihalomethanes (EPA 501.1) ☐ - (774) SDWA VOC's I [8 Regulated +] (EPA 502.2) ☐ - (775) SDWA VOC's II [EDB & DBCP] (EPA 504) Other Specific Compounds or Classes: () () ()				Semivolatile Screens: ☐ - (763) Acid Extractables ☐ - (751) Aliphatic Hydrocarbons ☐ - (755) Base/Neutral Extractables (EPA 625) ☐ - (756) Base/Neutral/Acid Extractables (EPA 8270) ☐ - (758) Herbicides, Chlorophenoxy Acid ☐ - (759) Herbicides, Triazines ☐ - (760) Organochlorine Pesticides ☐ - (761) Organophosphate Pesticides ☐ - (767) Polychlorinated Biphenyls (PCB's) ☐ - (764) Polynuclear Aromatic Hydrocarbons ☐ - (762) SDWA Pesticides & Herbicides			
Remarks:							

DEFINITIONS:

The term **SDWA Pesticides & Herbicides** shall mean that the following parameters will be determined: Endrin, Lindane, Methoxychlor, Toxaphene, 2, 4-D, and 2, 4, 5-TP (Silvex). Special container(s) required. Sample should be refrigerated.

The term **SDWA VOC's I** shall mean that the following parameters shall be determined: Aromatic and Halogenated purgeables to determine the presence of Benzene, Carbon tetrachloride, 1,1-Dichloroethylene, 1,2-Dichloroethane, para-Dichlorobenzene, Trichloroethylene, and Vinyl chloride plus 49 unregulated contaminants. Special container(s) required. Sample should be refrigerated.

The term **SDWA VOC's II** shall mean that the following parameters shall be determined: Ethylene dibromide (EDB) and 1,2-Dibromo-3-chloropropane (DBCP). Special container(s) required. Sample should be refrigerated.

The term **SDWA Total Trihalomethanes** that the following parameters shall be determined: Total Trihalomethanes. Special container(s) required. Sample should be refrigerated.

SAMPLE CONTAINERS:

All Volatile Screens require two 40 ml VOC Septum Vials.

All Semivolatile Screens (except 762) require two 1-liter bottles filled approximately 4/5ths full.

SDWA Pesticides & Herbicides Screen (762) requires three 1-liter bottles filled approximately 4/5ths full.

Refrigerated means keep cool (0-4 °C), but do not freeze.

Please contact the Organic Section with questions on sampling or interpretation of data/results.

//////////////////////////////////// Use Only When Necessary //////////////////////////////////////
CHAIN OF CUSTODY

I certify that this sample was transferred from _____ to _____
at (location) _____ on _____ Date at _____ Time

Evidentiary Seals: ☐ -Not Sealed Seals Intact: ☐ -Yes ☐ -No

Signatures _____

and from (if applicable) _____ to _____

at (location) _____ on _____ Date at _____ Time

Evidentiary Seals: ☐ -Not Sealed Seals Intact: ☐ -Yes ☐ -No

Signatures _____

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud, NE

Albuquerque, NM 87106 [505]-841-2500

ORGANIC CHEMISTRY SECTION [505]-841-2570

April 25, 1990

Request
ID No. 000782**ANALYTICAL REPORT**
SLD Accession No. OR-90-0548Distribution

(■) Submitter

(☒) SLD Files

To: Olson
NM Oil Conserv. Div.
State Land Office Bldg.
P.O. Box 2088
Santa Fe, NM 87504-2088From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: A water, purgeable sample submitted to this laboratory on April 16, 1990

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 9-Apr-90	By: Ols . . .	Refinery Well GBR-32
At: 16:30 hrs.	In/Near: Bloomfield	

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable Screen

Parameter	Value	Note	MDL	Units
1,1-Dichloroethane	1.50		1.00	ppb
Trichloroethene	10.90		1.00	ppb
Tetrachloroethene	15.00		1.00	ppb
cis-1,2-Dichloroethene	88.30		1.00	ppb
Aromatic Purgeables (6)	0.00	N	1.00	ppb

See Laboratory Remarks for Additional Information

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;

T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.

Evidentiary Seals: Not Sealed ☒; Intact: No ☐, Yes ☐ & Broken By: _____ Date: _____Laboratory Remarks:

QUALITY CONTROL SUMMARY FOR VOLATILES SCREEN

METHOD BLANK: A laboratory method blank was analyzed along with this sample to assure the absence of interfering contaminants from lab reagents, instruments, or the general laboratory environment. Unless listed below, no contaminants were detected in this blank above the reported detection limit.

COMPOUND DETECTED
No Compounds Detected

CONCENTRATION (PPB)

SURROGATE RECOVERIES:

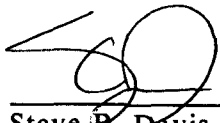
(Continued on page 2.)

ANALYTICAL REPORT
SLD Accession No. OR-90-0548
Continuation, Page 2 of 2

SURROGATE	CONCENTRATION	% RECOVERY
Fluorobenzene	25 ppb	108.5
2-Bromo-1-chloropropane	15 ppb	96.9

SPIKE RECOVERY: The % recoveries for compounds in the batch spike were from 80% to 120% with the exception of the compounds listed below:

COMPOUND	CONCENTRATION	% RECOVERY
Vinyl chloride	50.0 ppb	54.4
Dichloroethene-1,1	50.0 ppb	79.8
Trichloroethane-1,1,1	50.0 ppb	77.4
Dichloroethane-1,2	50.0 ppb	123.6
Dichlorobenzene-1,4	50.0 ppb	126.4

Analyst: 

Steve R. Davis

Analyst, Organic Chemistry

4-20-90

Analysis
Date

Reviewed By: 

Richard F. Meyerhein 04/25/90
Supervisor, Organic Chemistry Section

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-160

Method: Volatile aromatics (1)						
List: SW8020						
Sample ID:	8912181059	8912181124	8912181244	8912181455	8912190901	8912191220
Factor:	1	1	1	1	1	50
Results in:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Matrix:	01C	02C	03C	04C	05C	06C
	water	water	water	water	water	water
Benzene	<0.20	<0.20	<0.20	<0.20	<0.20	<10
Chlorobenzene	<0.20	<0.20	<0.20	<0.20	<0.20	<10
1,2-Dichlorobenzene	<0.40	<0.40	<0.40	<0.40	<0.40	<20
1,3-Dichlorobenzene	<0.40	<0.40	<0.40	<0.40	<0.40	<20
1,4-Dichlorobenzene	<0.30	<0.30	<0.30	<0.30	<0.30	<15
Ethylbenzene	<0.20	<0.20	<0.20	<0.20	<0.20	23 *
Toluene	<0.20	<0.20	<0.20	0.37 *	<0.20	<10
Total xylenes	<0.20	<0.20	<0.20	<0.20	<0.20	130
Surrogate Recovery(%)						
1-Bromo-4-fluorobenzene	110	106	117	115	114	136
Control Limits: 76 to 140						

* 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: 89-12-089

Method: Volatile aromatics (1) List: SW8020 12/11/89						
Sample ID:	GBR-17	GBR-32	GBR-49	GBR-50	Trip Blank	Reagent Blank
Factor:	1	1	5	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C	05A	06A
Matrix:	water	water	water	water	water	water
Benzene	<0.20	96	74	<0.20	<0.20	<0.20
Chlorobenzene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	<0.40	<0.40	<2.0	<0.40	<0.40	<0.40
1,3-Dichlorobenzene	<0.40	<0.40	<2.0	<0.40	<0.40	<0.40
1,4-Dichlorobenzene	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30
Ethylbenzene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Toluene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Total xylenes	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Surrogate Recovery(%)						
1-Bromo-4-fluorobenzene	98	101	111	104	112	N/A
Control Limits: 76 to 140						

N/A Not available

(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: 89-12-089

Method: Halogenated volatiles (1)						
List: SW8010						
Sample ID:	GBR-17	GBR-32	GBR-49	GBR-50	Trip Blank	Reagent Blank
Factor:	1	1	5	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A	05A	06A
Matrix:	water	water	water	water	water	water
Bromodichloromethane	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
Bromoform	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
Bromomethane	<1.2	<1.2	<5.9	<1.2	<1.2	<1.2
Carbon Tetrachloride	<0.12	<0.12	<0.60	<0.12	<0.12	<0.12
Chlorobenzene	<0.25	<0.25	<1.3	<0.25	<0.25	<0.25
Chloroethane	<0.52	<0.52	<2.6	<0.52	<0.52	<0.52
2-Chloroethylvinylether	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
Chloroform	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
Chloromethane	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30
Dibromochloromethane-(2)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	<0.32	<0.32	<1.6	<0.32	<0.32	<0.32
1,4-Dichlorobenzene	<0.24	<0.24	<1.2	<0.24	<0.24	<0.24
1,1-Dichloroethane	<0.50	<u>3.0</u>	<u>2.8 *</u>	<0.50	<0.50	<0.50
1,2-Dichloroethane	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
1,1-Dichloroethene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
trans-1,2-Dichloroethene	<0.20	<u>140 D</u>	<u>150</u>	<u>0.27 *</u>	<0.20	<0.20
1,2-Dichloropropane	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
cis-1,3-Dichloropropene-(2)	N/A	N/A	N/A	N/A	N/A	N/A
trans-1,3-Dichloropropene	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30
Methylene Chloride	<0.40	<u>1.2 *</u>	<2.0	<0.40	<u>7.2</u>	<0.40
1,1,2,2-Tetrachloroethane-(3)	<0.15	<0.15	<0.75	<0.15	<0.15	<0.15
Tetrachloroethene-(3)	<u>0.13 *</u>	<u>17</u>	<u>25</u>	<u>1.2</u>	<0.10	<0.10
1,1,2-Trichloroethane-(2)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	<u>1.0</u>	<u>1.3</u>	<u>1.0 *</u>	<u>0.26 *</u>	<0.20	<0.20
Trichloroethene	<0.20	<u>10</u>	<u>16</u>	<0.20	<0.20	<0.20
Trichlorofluoromethane	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Vinyl Chloride	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20

N/A Not available

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.
- (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.



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

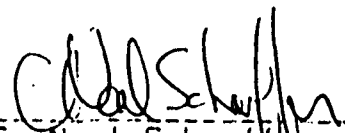
Client: GCL #8906131745
Site: GBR-32
IML #: F1572

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

iml

iml

Inter-Mountain
Laboratories, Inc.

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

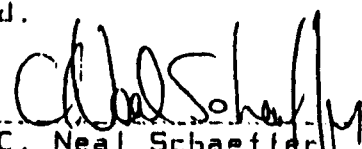
Client: GCL #8906131745
Site: GBR-32
IML #: F1572

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	3.9 (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	3.0 (1.0)	ug/l
1,2-DICHLOROETHANE	ND (1.0)	ug/l
1,1,1-TRICHLOROETHANE	1.5 (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	12.2 (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	17.3 (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist



Inter-Mountain
Laboratories, Inc.

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

Date: April 01, 1989

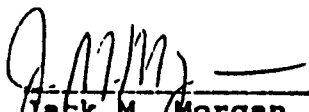
Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141053
Sample Site: GBR-32
IML Lab No: F890830
Analysis Requested: Purgeable Aromatic
Sample Matrix: Water

Date Sampled: 03/14/89
Date Received: 03/14/89
Date Extracted: NA
Date Analyzed: 03/23/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	0.81 (0.2)	ug/l
TOLUENE	1.1 (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



Jack M. Morgan
Senior Organic Chemist



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

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141053
Sample Site: GBR-32
IML Sample No: F890830
Analysis Requested: Purgeable Halocarbons
Sample Matrix: Water

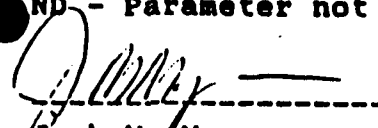
Date Sampled: 03/14/89
Date Received: 03/14/89
Date Extracted: N/A
Date Analyzed: 03/28/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	10.8 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	3.1 (0.1)	ug/l
1,1-DICHLOROETHANE	ND (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	0.4 (0.1)	ug/l
1,2-DICHLOROETHANE	ND (0.03)	ug/l
1,1,1-TRICHLOROETHANE	0.78 (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	8.1 (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	11.7 (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.


Jack M. Morgan
Senior Organic Chemist

LOCATION

GBR-32

11/8/88

TEST CODE

EPA601

COMPOUND	RESULT	UNITS	DETECTION LIMIT
CHLOROMETHANE	ND	ug/L	3.00
BROMOMETHANE	ND	ug/L	12.00
VINYL CHLORIDE	ND	ug/L	2.00
CHLOROETHANE	ND	ug/L	5.00
METHYLENE CHLORIDE	ND	ug/L	3.00
TRICHLOROFLUOROMETHANE	ND	ug/L	1.00
1,1-DICHLOROETHENE	ND	ug/L	1.00
1,1-DICHLOROETHANE	5.8	ug/L	0.90
TRANS-1,2-DICHLOROETHENE	120	ug/L	2.00
CHLOROFORM	8.2	ug/L	0.50
1,2-DICHLOROETHANE	ND	ug/L	0.30
1,1,1-TRICHLOROETHANE	6.6	ug/L	0.90
CARBON TETRACHLORIDE	ND	ug/L	1.00
1,2-DICHLOROPROPANE	ND	ug/L	1.00
TRANS-1,3-DICHLOROPROPENE	ND	ug/L	3.00
TRICHLOROETHENE	13	ug/L	2.00
DIBROMOCHLOROMETHANE	ND	ug/L	2.00
1,1,2-TRICHLOROETHANE-A	ND	ug/L	0.70
CIS-1,3-DICHLOROPROPENE-A	N/A	ug/L	NR
2-CHLOROETHYL VINYL ETHER	ND	ug/L	2.00
BROMOFORM	ND	ug/L	3.00
1,1,2,2-TETRACHLOROETHANE-B	ND	ug/L	1.20
TETRACHLOROETHENE-B	20	ug/L	0.30
CHLOROBENZENE-A	ND	ug/L	3.00
1,3-DICHLOROBENZENE	ND	ug/L	3.00
1,2-DICHLOROBENZENE	ND	ug/L	5.00
1,4-DICHLOROBENZENE	ND	ug/L	4.00

TEST CODE

EPA602

COMPOUND	RESULT	UNITS	DETECTION LIMIT
BENZENE	ND	ug/L	0.20
TOLUENE	ND	ug/L	0.20
CHLOROBENZENE-A	ND	ug/L	0.30
ETHYLBENZENE	ND	ug/L	0.30
1,3-DICHLOROBENZENE	ND	ug/L	0.40
1,2-DICHLOROBENZENE	ND	ug/L	0.40
1,4-DICHLOROBENZENE	ND	ug/L	0.30

LOCATION: GBR-32
TEST CODE: EPA602 (Continued)

M-XYLENE	ND	ug/L	0.20
P-XYLENE-A	ND	ug/L	0.20
O-XYLENE	ND	ug/L	0.10

ND = not detected at detection limit
NA = not analyzed
N/A = not available
NR = not reported

LOCATION

GBR-32

TEST CODE

EPA-601

COMPOUND	10/07/87	11/08/88	03/14/89
1,1,1-TRICHLOROETHANE	3.3	6.6	0.78
1,1,2,2-TETRACHLOROETHANE-B	ND	ND	ND
1,1,2-TRICHLOROETHANE-A	ND	ND	ND
1,1-DICHLOROETHANE	10.4	5.8	ND
1,1-DICHLOROETHENE	ND	ND	3.1
1,2-DICHLOROBENZENE	ND	ND	ND
1,2-DICHLOROETHANE	ND	ND	ND
1,2-DICHLOROPROPANE	0.5	ND	ND
1,3-DICHLOROBENZENE	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND
2-CHLOROETHYL VINYL ETHER	ND	ND	ND
BENZENE	ND	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND
BROMOFORM	ND	ND	ND
BROMOMETHANE	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND
CHLOROBENZENE-A	ND	ND	ND
CHLOROETHANE	ND	ND	ND
CHLOROFORM	ND	8.2	0.4
CHLOROMETHANE	ND	ND	ND
CIS-1,3-DICHLOROPROPENE-A	ND	N/A	ND
DIBROMOCHLOROMETHANE	ND	ND	ND
DICHLORODIFLUOROMETHANE	ND	ND	NA
ETHYLBENZENE	ND	NA	NA
M-XYLENE	ND	NA	NS
METHYLENE CHLORIDE	ND	ND	10.8
O,P-XYLENE	ND	NA	NA
TETRACHLOROETHENE-B	16.6	20	11.7
TOLUENE	ND	NA	NA
TRANS-1,2-DICHLOROETHENE	35	120	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND	ND
TRICHLOROETHENE	13.4	13	8.1
TRICHLOROFLUOROMETHANE	ND	ND	ND
VINYL CHLORIDE	ND	ND	ND



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

754
WPH

88-1427-G

REPORT TO:

William Olson
EID Ground Water Bureau
1190 St. Francis Dr.
Santa Fe, N.M. 87504-0968

S.L.D. No. OR-

1427 A+B

DATE REC.

8-26-88

PRIORITY

3

PHONE(S):

827-2899

COLLECTION CITY:

Blanco Field - La Brea

COUNTY:

San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute)

8/26/88 24:12:40

LOCATION CODE: (Township-Range-Section-Tracts)

29N+ + + + (10N06E24342)

USER CODE:

59300

SUBMITTER:

Olson

CODE:

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: _____

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-AA Sample Preserved with Ascorbic Acid to remove chlorine residual.
☐ P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks: _____

FIELD DATA:

pH= 7.12; Conductivity= 4900 umho/cm at 17 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water 34.25 ft.; Depth of well _____ ft.; Perforation Interval _____ ft.; Casing _____

Sampling Location, ~~Remarks~~ and Remarks (i.e. odors, etc.)

Giant Blanco Field - GBR-32

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): William Olson

Method of Shipment to the Lab: hand

CHAIN OF CUSTODY

I certify that this sample was transferred from William Olson to Gary Eden
at (location) SLD on 8/26/88 at 14:55 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☒ OR Seals Intact: Yes ☐ No ☐

Signatures

William Olson

Gary Eden

RECEIVED
NOV 18 1988

GROUND WATER BUREAU

ANALYSES PERFORMED

LAB. No.: OR-

1427

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
 Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
aromatic purgeables	N.D.		
halogenated purgeables			
chloroform	3.9		
trifluorochloromethane	.8		
dichloromethane	TR		
1,1-Dichloroethane	3.6		
cis 1,2-Dichloroethene	97		
1,1,1-Trichloroethane	4.5		
trichloroethene	16		
tetrachloroethene	24		
* DETECTION LIMIT *	1.5 ug/l	+ DETECTION LIMIT +	†

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: Mary C. Edler date: 9/14/88

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 9/13/88 Analyst's signature: Mary C. Edler

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R. Meyerhen



Analytical Technologies, Inc

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 80816103

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : GIANT REFINING
PROJECT # : (NONE)
PROJECT NAME : GIANT BLOOMFIELD
CLIENT I.D. : GBR 32
SAMPLE MATRIX : AQUEOUS

DATE SAMPLED : 08/24/88
DATE RECEIVED : 08/26/88
DATE EXTRACTED : N/A
DATE ANALYZED : 09/01/88
UNITS : UG/L
DILUTION FACTOR : 10

COMPOUNDS	RESULTS
BENZENE	<5.0
BROMODICHLOROMETHANE	<2.0
BROMOFORM	<2.0
BROMOMETHANE	<2.0
CARBON TETRACHLORIDE	<2.0
CHLOROBENZENE	<5.0
CHLOROETHANE	<2.0
CHLOROFORM	<2.0
CHLOROMETHANE	<2.0
DIBROMOCHLOROMETHANE	<2.0
1,2-DICHLOROBENZENE	<5.0
1,3-DICHLOROBENZENE	<5.0
1,4-DICHLOROBENZENE	<5.0
DICHLORODIFLUOROMETHANE	<2.0
1,1-DICHLOROETHANE	6
1,2-DICHLOROETHANE	<2.0
1,1-DICHLOROETHENE	<2.0
1,2-DICHLOROETHENE (TOTAL)	100
1,2-DICHLOROPROPANE	<2.0
CIS-1,3-DICHLOROPROPENE	<2.0
TRANS-1,3-DICHLOROPROPENE	<2.0
ETHYLBENZENE	<5.0
METHYLENE CHLORIDE	<20.0
1,1,2,2-TETRACHLOROETHANE	<2.0
TETRACHLOROETHENE	9
TOLUENE	<5.0
1,1,1-TRICHLOROETHANE	<2.0
1,1,2-TRICHLOROETHANE	<2.0
TRICHLOROETHENE	8
TRICHLOROFLUOROMETHANE	<20.0
VINYL CHLORIDE	<2.0
META XYLENE	<5.0
ORTHO & PARA XYLENE	<5.0

SURROGATE PERCENT RECOVERIES

BROMOCHLOROMETHANE (%)	88
TRIFLUOROTOLUENE (%)	88



SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

88-0521-C

REPORT TO:

McQuillan

S.L.D. No. OR-

521-4+B

DATE REC.

4/22/88

PRIORITY

PHONE(S):

827-2912

wpu
754

Santa Fe 87504-0968

COLLECTION CITY: Lee Acres

COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute)

8/8/04 20:13:15

LOCATION CODE: (Township-Range-Section-Tracts)

29N+12W+22+3000 (10N08E24342)

USER CODE: 59300

SUBMITTER: McQuillan

CODE: M.C.Q.

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: _____This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-Na₂S₂O₃ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (733) Aliphatic Headspace (1-5 Carbons)
☒ (734) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
Other Specific Compounds or Classes

☐ _____
☐ _____
☐ _____
☐ _____
☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks: _____

FIELD DATA:pH= _____; Conductivity= 4040 umho/cm at 16.3 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Well GBR-32; Sampled w/ PVC bailer after purging w/ PVC pump

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): Dennis McQuillan Method of Shipment to the Lab air/ante

CHAIN OF CUSTODY

I certify that this sample was transferred from _____ to _____

at (location) _____ on _____ / _____ / _____ - _____ and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☐ No ☐

Signatures _____

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-6 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes

Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (761) Aliphatic Hydrocarbons
- ☐ (755) Base/Neutral Extractables
- ☐ (758) Herbicides, Chlorophenoxy acid
- ☐ (759) Herbicides, Triazines
- ☐ (760) Organochlorine Pesticides
- ☐ (761) Organophosphate Pesticides
- ☐ (767) Polychlorinated Biphenyls (PCB's)
- ☐ (764) Polynuclear Aromatic Hydrocarbons
- ☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]
aromatic purgables	N.D.
halogenated purgables	
chloroform	.9
1,1,1-Trichloroethane	1
Trichloroethene	14
tetrachloroethene	18
trichlorofluoromethane	2
1,1-Dichloroethane	8.5
cis-1,2-Dichloroethane	88
* DETECTION LIMIT *	15 ug/L

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT
 - R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)
 [RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☐ No ☒ Seal(s) broken by: not sealed date: _____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 5/1/88 . Analyst's signature: Harry C. Galt

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block

Reviewers signature: K. Mervish

LOCATION

GBR-32

TEST CODE

EPA-601/602

COMPOUND	08/05/87	11/12/87	04/20/88	08/24/88
1,1,1-TRICHLOROETHANE	3	2.3	1	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND	ND
1,1,2-TRICHLOROETHANE	ND	ND	ND	ND
1,1-DICHLOROETHANE	3	10.7	8.5	6
1,2-DICHLOROBENZENE	ND	ND	ND	ND
1,2-DICHLOROETHANE	ND	ND	ND	ND
1,2-DICHLOROETHENE (TOTAL)	ND	ND	ND	100
1,2-DICHLOROPROPANE	ND	ND	ND	ND
1,3-DICHLOROBENZENE	ND	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND	ND
BENZENE	ND	ND	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND	ND
BROMOFORM	ND	ND	ND	ND
BROMOMETHANE	ND	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND	ND
CHLOROBENZENE	ND	ND	ND	ND
CHLOROETHANE	ND	ND	ND	ND
CHLOROFORM	ND	11	0.9	ND
CIS-1,3-DICHLOROPROPENE	79	ND	88	ND
DIBROMOCHLOROMETHANE	ND	ND	ND	ND
DICHLORODIFLUOROMETHANE	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND
META XYLENE	ND	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	ND	ND
ORTHO & PARA XYLENE	ND	ND	ND	ND
TETRACHLOROETHENE	ND	15.3	18	9
TOLUENE	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND	ND	ND
TRICHLOROETHENE	19	11.4	14	8
TRICHLOROFLUOROMETHANE	ND	ND	2	ND
VINYL CHLORIDE	ND	ND	ND	ND

LOCATION

GBR-32

TEST CODE

EPA-8020

COMPOUND

04/20/88

1,2-DICHLOROBENZENE
1,3-DICHLOROBENZENE
1,4-DICHLOROBENZENE
BENZENE
CHLOROBENZENE
ETHYLBENZENE
TOLUENE
XYLENES
ND

ND
ND
ND
ND
ND
ND
ND
ND
ND



A division of Groundwater Technology, Inc.

Western Region

4080-C Pike Lane, Concord, CA 94520

(415) 685-7852

(800) 544-3422 from inside California

(800) 423-7143 from outside California

RECEIVED
5/15/88

Page 1 of 1

05/10/88 rw

PROJECT MGR: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming NE
Albuquerque, NM 87111

PROJECT #: 232-799-5009-8

LOCATION: Farmington, NM

SAMPLED: 04/20/88 BY: T. LePage
RECEIVED: 04/22/88 BY: K. Biava
ANALYZED: 04/29/88 BY: P. Sra
MATRIX: Water
UNITS: ug/L (ppb)

TEST RESULTS

COMPOUNDS	MDL	LAB #	21156	21157	21158	21159
		I.I.D. #	6BR-17	6BR-19	6BR-31	6BR-32
Benzene	0.5		<0.5	26	<0.5	<0.5
Toluene	0.5		<0.5	3.3	<0.5	<0.5
Ethylbenzene	0.5		<0.5	17	<0.5	<0.5
Xylenes	0.5		<0.5	120	<0.5	<0.5
Chlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5

MDL = Method Detection Limit; compound below this level would not be detected.

METHOD:

EPA Method 8020

Safy Khalifa
SAFY KHALIFA, Ph.D., Director

Western Region

4080-C Pike Lane, Concord, CA 94520

(415) 685-7852

(800) 544-3422 from inside California

(800) 423-7143 from outside California

05/10/88 rw

PROJECT MGR: Michael Wood
Groundwater Technology, Inc.
3620 Wyoming NE
Albuquerque, NM 87111

PROJECT #: 232-799-5009-8

LOCATION: Farmington, NM

SAMPLED: 04/20/88 BY: T. LePage

RECEIVED: 04/22/88 BY: K. Biava

ANALYZED: 04/29/88 BY: P. Sra

MATRIX: Water

UNITS: ug/L (ppb)

TEST RESULTS

COMPOUND	MDL	LAB #	21156	21157	21158	21159
		I.I.D. #	6BR-17	6BR-19	6BR-31	BR-32
Bromodichloromethane	0.5		<0.5	<0.5	<0.5	<0.5
Bromoform	0.5		<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5		<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	0.5		<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
Chloroethane	0.5		<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinyl ether	1.0		<1.0	<1.0	<1.0	<1.0
Chloroform	0.5		<0.5	<0.5	<0.5	1.1
Chloromethane	0.5		<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	0.5		<0.5	<0.5	0.76	<0.5
1,2-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5		<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	0.5		<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5		<0.5	5.9	4.8	5.7
1,2-Dichloroethane	0.5		<0.5	5.0	<0.5	<0.5
1,1-Dichloroethene	0.2		<0.2	<0.2	<0.2	<0.2
trans-1,2-Dichloroethene	0.5		<0.5	35	58	160
1,2-Dichloropropane	0.5		<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.5		<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	0.5		<0.5	<0.5	<0.5	<0.5
Methylene chloride	0.5		<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5		<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5		<0.5	1.0	<0.5	17
1,1,1-Trichloroethane	0.5		4.4	<0.5	2.9	1.9
1,1,2-Trichloroethane	0.5		<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.5		<0.5	7.2	7.3	16
Trichlorofluoromethane	0.5		<0.5	<0.5	<0.5	<0.5
Vinyl Chloride	1.0		<1.0	<1.0	<1.0	<1.0

MDL = Method Detection Limit.

METHOD:

EPA Method 8010

Safy Khalifa /emf
SAFY KHALIFA, Ph.D., Director



Analytical Technologies, Inc. EPA METHOD 601/602
PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/12/87
LAB RECEIPT DATE: 11/16/87
ANALYSIS DATE: 11/17/87
MATRIX: WATER
ANALYST: MGB

SAMPLE ID: 8711120815
LOCATION: 6BR-32
LAB SAMPLE #: 3574-7
UNITS: ug/l
DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.2	ND
BROMOMETHANE	0.2	ND
DICHLORODIFLUOROMETHANE	0.2	ND
VINYL CHLORIDE	0.2	ND
CHLOROETHANE	0.2	ND
METHYLENE CHLORIDE	2.0	ND
TRICHLOROFLUOROMETHANE	2.0	ND
1,1-DICHLOROETHENE	0.2	ND
1,1-DICHLOROETHANE	0.2	10.7
TRANS-1,2-DICHLOROETHENE	0.2	106
CHLOROFORM	0.2	11.0
1,2-DICHLOROETHANE	0.2	ND
1,1,1-TRICHLOROETHANE	0.2	2.3
CARBON TETRACHLORIDE	0.2	ND
BROMODICHLOROMETHANE	0.2	ND
1,2-DICHLOROPROPANE	0.2	ND
TRANS-1,3-DICHLOROPROPENE	0.2	ND
TRICHLOROETHENE	0.2	11.4
DIBROMOCHLOROMETHANE	0.2	ND
1,1,2-TRICHLOROETHANE	0.2	ND
CIS-1,3-DICHLOROPROPENE	0.2	ND
2-CHLOROETHYL VINYL ETHER	0.2	ND
BROMOFORM	0.2	ND
1,1,2,2-TETRACHLOROETHANE	0.2	ND
TETRACHLOROETHENE	0.2	15.3
BENZENE	0.5	ND
TOLUENE	1.0	ND
CHLOROBENZENE	0.5	ND
ETHYLBENZENE	0.5	ND
1,3-DICHLOROBENZENE	0.5	ND
1,2-DICHLOROBENZENE	0.5	ND
1,4-DICHLOROBENZENE	0.5	ND
M-XYLENE	0.5	ND
O,P-XYLENE	0.5	ND

95.7 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED

PROJECT MANAGER: *M. Barry*

DATE: 12/10/87



Analytical Technologies, Inc.

EPA METHOD 601/602
PROJECT: GBR

SAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
ANALYSIS DATE/TIME: 10/12/87, 20:57
MATRIX: WATER
ANALYST: MGB

SAMPLE ID: 8710071430
LOCATION: GBR-32
LAB SAMPLE #: 3439-9
UNITS: ug/l
DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.02	ND
BROMOMETHANE	0.06	ND
DICHLORODIFLUOROMETHANE	0.04	ND
VINYL CHLORIDE	0.05	ND
CHLOROETHANE	0.1	ND
METHYLENE CHLORIDE	0.02	ND
TRICHLOROFLUOROMETHANE	0.07	ND
1,1-DICHLOROETHENE	0.07	ND
1,1-DICHLOROETHANE	0.05	10.4
TRANS-1,2-DICHLOROETHENE	0.09	35
CHLOROFORM	0.05	ND
1,2-DICHLOROETHANE	0.07	ND
1,1,1-TRICHLOROETHANE	0.03	3.3
CARBON TETRACHLORIDE	0.08	ND
BROMODICHLOROMETHANE	0.04	ND
1,2-DICHLOROPROPANE	0.03	0.5
TRANS-1,3-DICHLOROPROPENE	0.11	ND
TRICHLOROETHENE	0.06	13.4
DIBROMOCHLOROMETHANE	0.07	ND
1,1,2-TRICHLOROETHANE	0.03	ND
CIS-1,3-DICHLOROPROPENE	0.07	ND
2-CHLOROETHYLVINYL ETHER	0.03	ND
BROMOFORM	0.09	ND
1,1,2,2-TETRACHLOROETHANE	0.03	ND
TETRACHLOROETHENE	0.03	16.6
BENZENE	0.2	ND
TOLUENE	0.4	ND
CHLOROBENZENE	0.16	ND
ETHYLBENZENE	0.1	ND
1,3-DICHLOROBENZENE	0.4	ND
1,2-DICHLOROBENZENE	0.4	ND
1,4-DICHLOROBENZENE	0.6	ND
M-XYLENE	0.18	ND
O,P-XYLENE	0.15	ND

99.4 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
NA = NOT ANALYZED

PROJECT MANAGER: *Qmf*

DATE: 10/28/87



SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

754 WPN

REPORT TO:

McQuillan
EID Ground Water/Haz. Waste
1190 St. Francis Dr.
Santa Fe 87504-0968

S.L.D. No. OR-

1316 A B

DATE REC.

8-7-87

PRIORITY

2

PHONE(S):

827-2912

COLLECTION CITY: Lee Acres

COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute)

871080511110

LOCATION CODE: (Township-Range-Section-Tracts)

29N+12W+22+3000 (10N06E24342)

USER CODE:

593000

SUBMITTER:

McQuillan

CODE:

MCQ

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: _____

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

☐ NP:

No Preservation; Sample stored at room temperature.

☒ P-Ice

Sample stored in an ice bath (Not Frozen).

☐ P-Na₂S₂O₃

Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

☐

(733) Aliphatic Headspace (1-5 Carbons)

☒

(734) Aromatic & Halogenated Purgeables

☐

(765) Mass Spectrometer Purgeables

☐

(766) Trihalomethanes

Other Specific Compounds or Classes

☐

☐

☐

☐

☐

☐

EXTRACTABLE SCREENS

☐

(751) Aliphatic Hydrocarbons

☐

(755) Base/Neutral Extractables

☐

(758) Herbicides, Chlorophenoxy acid

☐

(759) Herbicides, Triazines

☐

(760) Organochlorine Pesticides

☐

(761) Organophosphate Pesticides

☐

(767) Polychlorinated Biphenyls (PCB's)

☐

(764) Polynuclear Aromatic Hydrocarbons

☐

(762) SDWA Pesticides & Herbicides

Remarks: _____

FIELD DATA:

pH= 7.0; Conductivity= 5000 umho/cm at 19.0 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water 34.22 ft.; Depth of well 45.1 ft.; Perforation Interval _____ ft. Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

GBR-32

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): Dennis McQuillan Method of Shipment to the Lab: air/aut

CHAIN OF CUSTODY

I certify that this sample was transferred from Dennis McQuillan to John Gould
at (location) EID Water Lab on 8/6/87 - 15:00 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☒ No ☐

Signatures

Dennis McQuillan

John Gould

5/6/87 (Signature) + (Initials) to:

Alben B. Burrell

Albert Burrell 8/6/87

LAB. No.: OR- 1316

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
 Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
- ☐ (755) Base/Neutral Extractables
- ☐ (758) Herbicides, Chlorophenoxy acid
- ☐ (759) Herbicides, Triazines
- ☐ (760) Organochlorine Pesticides
- ☐ (761) Organophosphate Pesticides
- ☐ (767) Polychlorinated Biphenyls (PCB's)
- ☐ (764) Polynuclear Aromatic Hydrocarbons
- ☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]
aromatic paraffins #	see remarks
* DETECTION LIMIT *	1.78/L

COMPOUND(S) DETECTED	CONC. [PPB]
halogenated paraffins #	
monochloroethane	29
1,1-dichloroethane	3
1,1,1-trichloroethane	# 3
tetrachloroethane	19
trichloroethene	17
- DETECTION LIMIT -	

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

RESULTS IN BRACKETS ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

LABORATORY REMARKS: Six early ~~and~~ eluting unsaturated compounds at 1-5 ~~ppm~~ detected by the photoionization detector but not identified. ~~Trapped late eluting compounds in the C3 substituted benzene region at 2-10 ppm detected by the photoionization detector but not identified.~~ Halogenated compounds confirmed by SP-1000 column

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: Ham C. Eales date: 8/14/82

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 8/14/97. Analyst's signature: Sam L. Eiler

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R Meyerheim



LOCATION: GBR-32

TEST: General Chemistry

ANALYTE	8/5/87 mg/l	4/20/88 mg/l	8/24/88 mg/l	3/14/89 mg/l
CALCIUM	820	460	552	395
MAGNESIUM	98	11.59	50.6	36
SODIUM	669	848	792	780
POTASSIUM	1.95	2	2.7	3
AMMONIA-N	0.21	NA	NA	NA
BICARBONATE	270	221	845	468
BROMIDE	4.28	NA	0.26	NA
CARBONATE	NA	NA	NA	0
CHLORIDE	1260	848	588	541
NITRATE-N+, NITRITE-N	5.77	NA	NA	3.97
SULFATE	1770	148	1830	1588
TKN	0.58	NA	NA	NA
TFS	5056	4770	4400	3660
ACIDITY AS CaCO3	NA	NA	NA	<1
ALKALINITY AS CaCO3	NA	NA	NA	384
HARDNESS AS CaCO3	NA	NA	NA	1133
CHARGE BALANCE (%)	N/A	N/A	98	99.44
pH	N/A	N/A	7.12	NA
CONDUCTIVITY (umho)	5000	4840	4900	NA

TFS = TOTAL FILTERABLE SOLIDS (DISSOLVED)

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMIT

RECEIVED

JUN 23 1989

**OIL CONSERVATION DIV.
SANTA FE**



RECEIVED JUN 29 1990

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

CLIENT: GCL
ID: 9006181215
SITE: GBR-32
LAB NO: F4489

DATE REPORTED: 06/27/90
DATE RECEIVED: 06/20/90
DATE COLLECTED: 06/18/90

Lab pH (s.u.).....	7.77
Lab conductivity, umhos/cm.....	4840
Lab resistivity, ohm-m.....	2.0661
Total dissolved solids (180), mg/l..	3500
Total dissolved solids (calc), mg/l.	3479
Total alkalinity as CaCO ₃ , mg/l.....	267.40
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1004.00
Sodium absorption ratio.....	10.30

	mg/l	meq/l
Bicarbonate as HCO ₃	326.2	5.35
Carbonate as CO ₃	0.0	0.00
Chloride.....	482.3	13.60
Sulfate.....	1698.7	35.39
Calcium.....	353.4	17.64
Magnesium.....	29.7	2.44
Potassium.....	4.6	0.12
Sodium.....	750.0	32.62
Major cations.....		52.82
Major anions.....		54.34
Cation/anion difference.....		1.42 %


C. Neal Schaeffer
Lab Director

CLIENT: Geoscience Consultants

DATE REPORTED: 12/20/89

SITE: GBR-32

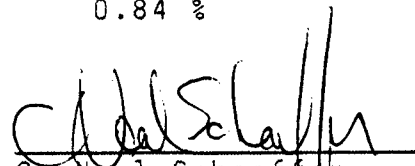
DATE RECEIVED: 12/11/89

LAB NO: F3653

DATE COLLECTED: 12/11/89

Lab pH (s.u.).....	7.44
Lab Conductivity, umhos/cm.....	3721
Lab resistivity, ohm-m.....	2.6874
Total Dissolved Solids (180), mg/l..	2716
Total Dissolved Solids (calc), mg/l.	2770
Total Alkalinity as CaCO ₃ , mg/l.....	334.62
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	757.87
Sodium Absorption Ratio.....	9.91

	mg/l	meq/l
Bicarbonate as HCO ₃	408.24	6.69
Carbonate as CO ₃	0.00	0.00
Chloride.....	331.88	9.36
Sulfate.....	1304.46	27.18
Calcium.....	301.09	15.02
Magnesium.....	1.62	0.13
Potassium.....	2.40	0.06
Sodium.....	627.50	27.29
Major Cations.....		42.51
Major Anions.....		43.23
Cation/Anion Difference.....		0.84 %

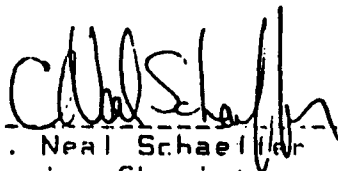

C. Neal Schaeffer
Senior Chemist

Client: GCL #8906131745
Site: GBR-32
IML #: F1572

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Total dissolved solids (100)..... 3778.00 mg/l
Total dissolved solids (calculated). 3682.43 mg/l
Total alkalinity (as CaCO3)..... 375.24 mg/l
Total hardness (as CaCO3)..... 1080.01 mg/l
Lab pH..... 7.26
Lab conductivity..... 5000 umhos/cm @ 25C
Lab resistivity..... 2.0000 ohm-cm

	mg/l	meq/l
Acidity (as CaCO3).....	<1.0	<0.01
Bicarbonate (as HCO3).....	457.79	7.50
Carbonate (as CO3).....	0.00	0.00
Chloride.....	477.92	13.48
Sulfate.....	1750.93	36.48
Calcium.....	418.10	20.86
Magnesium.....	8.96	0.74
Potassium.....	2.44	0.06
Sodium.....	801.60	34.87
Major cations.....		56.53
Major anions.....		57.46
Anion/cation % difference.....		0.82 %


C. Neal Schaeffer
Senior Chemist

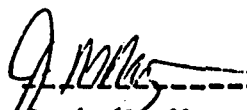
Date: March 31, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141053
Site: GBR-32
IML Lab No: F890830
Date Collected: 3/14/89
Date Received: 3/14/89

Total Dissolved Solids (180), mg/l.....	3660
Total Dissolved Solids (calc), mg/l.....	3573
Total Alkalinity as CaCO ₃ , mg/l.....	384
Total Hardness as CaCO ₃ , mg/l.....	1133

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	468	7.68
Carbonate as CO ₃	0	0.00
Chloride.....	541	15.26
Sulfate.....	1588	33.09
Calcium.....	395	19.72
Magnesium.....	36	2.93
Potassium.....	3	0.08
Sodium.....	780	33.93
Nitrate/Nitrite.....	3.97	0.28

Major Cations.....	56.66
Major Anions.....	56.03
Cation/Anion Difference.....	0.56 %



Jack M. Morgan
Senior Organic Chemist



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
WNT

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED	8/26/88	LAB NO.	WAX-3452	USER CODE	☒ 59300	☐ 59600	☐ OTHER:
Collection DATE	8/24/88	SITE INFORMATION	Sample location				
Collection TIME	1240		Collection site description				
Collected by — Person/Agency			Olson				

RECEIVED

OCT 18 1988

GROUND WATER/HAZARDOUS WASTE
BUREAU

SEND
FINAL
REPORT
TO

GROUND WATER & HAZARDOUS WASTE BUREAU
NM ENVIRONMENT IMPROVEMENT DIVISION/HED
PO Box 968
Santa Fe, NM 87504-0968
Attn: William Olson

Station/
well code

Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	34.21	Discharge	Sample type
pH (00400)		Conductivity (Uncorrected)	4900 μ mho	Water Temp. (00010)	Conductivity at 25°C (00094)
7.12				17 °C	μ mho
Field comments					

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	1	☒ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added ☐ Other-specify:				

ANALYTICAL RESULTS from SAMPLES

NF, NA	Units	Date analyzed	F, NA	Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	5645 μ mho	8/29	☒ Calcium (00915)	552 mg/l	9/28
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Magnesium (00925)	50.6 mg/l	9/28
☐ Other:			☒ Sodium (00930)	792 mg/l	9/27
☐ Other:			☒ Potassium (00935)	3.7 mg/l	9/27
☐ Other:			☒ Bicarbonate (00440)	845 mg/l	9/15
			☒ Chloride (00940)	588 mg/l	9/22
			☒ Sulfate (00945)	1830 mg/l	9/22
			☒ Total filterable residue (dissolved) (70300)	4400 mg/l	9/14
			☒ Other:	Carbon - Arsen balance	9/8/90
NF, A-H ₂ SO ₄			F, A-H ₂ SO ₄		
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☐ Nitrate-N +, Nitrate-N dissolved (00631)	mg/l	
☐ Ammonia-N total (00610)	mg/l		☐ Ammonia-N dissolved (00608)	mg/l	
☐ Total Kjeldahl-N ()	mg/l		☐ Total Kjeldahl-N ()	mg/l	
☐ Chemical oxygen demand (00340)	mg/l		☐ Other:		
☐ Total organic carbon ()	mg/l				
☐ Other:					
☐ Other:					
Laboratory remarks			Analyst		
646			Date Reported		
			10/11/88		
			Reviewed by		

REPORT TO:

McQuillan

Ground Water & Hazardous Waste Bureau
Environmental Improvement Division
Health & Environment Department
P.O. Box 968 - Crown Building
Santa Fe, NM 87504-0968

WNN 859
LAB NUMBER

WC-3613

DATE RECEIVED

8-7-87

DATE REPORTED

10/7/87

Initials

SLD USER CODE NUMBER

59300

Well Location Address GBR-32, Lee Acres, San Juan Co. 29N.12W.22.300Point of Collection well head

RECEIVED

Well Owner/User Giant Refinery

OCT 21 1987

Number of People Drinking Water from Well 0Collected 870805

11:10

Date

Time

By McQuillan/Bayer LIQUID WASTE/G
Name SURVEILLANCE AgencyWell Depth 45.1'

pH

Water Level 34.22'Conductivity
(Uncorrected)

5000

umho/cm

Taste? Odor? Color? Collectors Remarks

Temperature

19.0

°C

Conductivity at
25°C

umho/cm

PROJECT: Lee AcresFrom _____, A-H₂SO₄ Sample:From NF, NA Sample:Date
Analyzed☐ Nitrate-N⁺ _____ mg/l
Nitrite-N☒ Calcium 820 mg/l 9/8☐ Ammonia-N _____ mg/l☒ Potassium 1.95 mg/l 8/31☐ Chemical _____ mg/l
oxygen demand☒ Magnesium 98 mg/l 9/8☐ _____☒ Sodium 669 mg/l 8/31☒ Bicarbonate 270 mg/l 9/2☒ Chloride 1260 mg/l 9/1☒ Sulfate 1770 mg/l 9/1From _____, A-HNO₃ Sample:☒ Total Solids 5056 mg/l 9/2☐ ICAP Scan☒ Bromide 4.28 mg/L 9/25☐ Metals by AA (Specify)This form accompanies one sample(s) marked as follows to indicate field treatment:☒ NF

Whole sample (no filtration)

☐ F

Filtered in field with 0.45u membrane filter

☐ A-H₂SO₄Acidified with 2 ml conc H₂SO₄/l☐ A-HNO₃Acidified with 5ml conc HNO₃/l☒ NA

No acid added

Transferred to J. Gould 8/6/87
15:00 John Gould
15:00 John Gould
Seals intact 8/6/87 16:10
Transferred to: Chris Dean intact 16:10

102

REPORT TO: McQuillan
Ground Water & Hazardous Waste Bureau
Environmental Improvement Division
Health & Environment Department
P.O. Box 968 - Crown Building
Santa Fe, NM 87504-0968

WPN 45
B NUMBER WC 3620
DATE RECEIVED 8-7-87
DATE REPORTED 10/7/87
Initials
SLD USER CODE NUMBER 59300

Well Location Address GBR-32 Lee Acres, San Juan Co. 29N. 12W. 22.300

Point of Collection Well head

Well Owner/User Giant Refinery

Number of People Drinking Water from Well 0

Collected 870805 11:10
Date Time

By McQuillan/Boyer EID/OCW
Name Agency

Well Depth 45.1'

pH _____

Water Level 34.22'

Conductivity (Uncorrected) 5000 umho/cm

Taste? Odor? Color? Collectors Remarks

Temperature 19.0 °C

Conductivity at 25°C _____ umho/cm

RECEIVED

PROJECT: Lee Acres

From NF, A-H₂SO₄ Sample:

From _____, NA Sample: _____ Date Analyzed
LIQUID WASTE/GROUND WATER SURVEILLANCE

☒ Nitrate-N⁺ 5.77 mg/l 2/12
Nitrite-N
☒ Ammonia-N 0.21 mg/l 9/4
☐ Chemical oxygen demand _____ mg/l
☒ TKN 0.58 mg/L 10/5

☐ Calcium _____ mg/l
☐ Potassium _____ mg/l
☐ Magnesium _____ mg/l
☐ Sodium _____ mg/l
☐ Bicarbonate _____ mg/l
☐ Chloride _____ mg/l
☐ Sulfate _____ mg/l
☐ Total Solids _____ mg/l
☐ _____

From _____, A-HNO₃ Sample:

☐ ICAP Scan
☐ Metals by AA (Specify)

This form accompanies one sample(s) marked as follows to indicate field treatment:

☒ NF: Whole sample (no filtration)
☐ F: Filtered in field with 0.45u membrane filter
☒ A-H₂SO₄: Acidified with 2 ml conc H₂SO₄/l
☐ A-HNO₃: Acidified with 5ml conc HNO₃/l
NA: No acid added

Transfer to John Gould 8/6/87
15:00 John Gould
15:00 John Gould
8/6/87 16:10
Transfer to Chris D...



LOCATION: GBR-32

TEST: Metals

ANALYTE	8/7/87 mg/l	10/7/87 mg/l	12/12/87 mg/l
ALUMINUM	7.7	NA	NA
ARSENIC	NA	ND	0.18
BARIUM	0.1	ND	1.15
BERYLLIUM	ND	NA	NA
BORON	0.3	NA	NA
CADMIUM	ND	0.012	0.018
CALCIUM	840	NA	NA
HEXAVALENT CHROMIUM	ND	ND	ND
TOTAL CHROMIUM	ND	0.032	0.591
COBALT	ND	NA	NA
COPPER	0.1	NA	NA
IRON	9.2	NA	NA
LEAD	ND	ND	0.03
MAGNESIUM	64	NA	NA
MANGANESE	1.1	NA	NA
MERCURY	NA	ND	ND
MOLYBDENUM	ND	NA	NA
NICKEL	0.3	NA	NA
SELENIUM	NA	0.165	0.038
SILICON	13	NA	NA
SILVER	ND	0.024	0.021
STRONTIUM	14	NA	NA
TIN	ND	NA	NA
VANADIUM	ND	NA	NA
ZINC	ND	NA	NA

TFS = TOTAL FILTERABLE SOLIDS (DISSOLVED)

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMIT

RECEIVED

JUN 23 1989

**OIL CONSERVATION DIV.
SANTA FE**

Geoscience Consultants, Ltd.
 Radian Work Order: SO-06-152

Method: Metals by SW6010 (1)

List: Ep Toxicity list

Sample ID:	9006181215	9006181330	9006181600	9006181700
	GBR 32	GBR 49	GBR 48	GBR 50
Factor:	1.00	1.00	1.00	1.00
Results in:	mg/L	mg/L	mg/L	mg/L
	07A	08A	09A	10A
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	0.031	0.0020	0.027	0.0020	0.24	0.0020	0.56	0.0020
Cadmium	ND	0.0040	ND	0.0040	ND	0.0040	ND	0.0040
Chromium	0.27	0.0070	0.060	0.0070	0.043	0.0070	0.042	0.0070
Lead	ND	0.042	ND	0.042	ND	0.042	0.099 a	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.

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

Analytical**Technologies, Inc.**

METALS

PROJECT: GIANT MONITOR WELLS

SAMPLE DATE: 11/12/87
 LAB RECEIPT DATE: 11/16/87
 MATRIX: WATER

SAMPLE ID: 8711120815
 LOCATION: 6BR-32
 LAB SAMPLE #: 3574-7
 UNITS: mg/l

<u>ANALYSIS DATE</u>	<u>CONSTITUENT NAME</u>	<u>DILUTION FACTOR</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
12/01/87	ARSENIC (As)	10	0.10	0.18
12/02/87	BARIUM (Ba)	1	0.060	1.15
12/01/87	CADMIUM (Cd)	1	0.003	0.018
11/16/87	HEXAVALENT CHROMIUM (CR+6)	1	0.03	ND
12/01/87	TOTAL CHROMIUM (Cr Tot)	1	0.010	0.591
11/30/87	LEAD (Pb)	1	0.0005	0.030
11/19/87	MERCURY (Hg)	1	0.0005	ND
12/01/87	SELENIUM (Se)	1	0.010	0.038
12/01/87	SILVER (Ag)	1	0.010	0.021

* THE LISTED DETECTION LIMITS REFLECT ANY SAMPLE DILUTION.

NOTE: ND = NOT DETECTED
 NA = NOT ANALYZED

PROJECT MANAGER: *Mr. [Signature]*

DATE: 12/10/87



Analytical Technologies, Inc.

METALS

PROJECT: GBR

SAMPLE DATE: 10/07/87
 LAB RECEIPT DATE: 10/09/87
 MATRIX: WATER

SAMPLE ID: 8710071430
 LOCATION: GBR-32
 LAB SAMPLE #: 3439-9
 UNITS: mg/l

<u>ANALYSIS DATE</u>	<u>CONSTITUENT NAME</u>	<u>DILUTION FACTOR</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
10/14/87	ARSENIC (As)	1	0.010	ND
10/15/87	BARIUM (Ba)	1	0.060	ND
10/13/87	CADMIUM (Cd)	1	0.003	0.012
10/12/87	HEXAVALENT CHROMIUM (CR+6)	1	0.03	ND
10/13/87	TOTAL CHROMIUM (T. Cr)	1	0.010	0.032
10/12/87	LEAD (Pb)	1	0.002	ND
10/18/87	MERCURY (Hg)	1	0.0002	ND
10/14/87	SELENIUM (Se)	4	0.010	0.165
10/14/87	SILVER (Ag)	1	0.010	0.024

NOTE: ND = NOT DETECTED
 NA = NOT ANALYZED

PROJECT MANAGER: *JMH*

DATE: 10/28/87



HEALTH METAL ANALYSIS FORM

Telephone: (505)841-2500

Date Received	8/17/87	Lab No.	ICP-550	User Code	☐ 59400 ☒ 59300	☐ 53400 ☐ 59500	☐ 53300
COLLECTION DATE & TIME:				yy/mm/dd	hh/mm	COLLECTION SITE DESCRIPTION	
				87/08/05	11/10	GBR-32	
COLLECTED BY:				Lee Acres			
McQuillan/Boyer							

TO:

GROUND WATER & HAZARDOUS WASTE BUREAU
NEW MEXICO EID/HED
PO BOX 968 - RUNNELS BUILDING
SANTA FE, NM 87504-0968

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24S42)

2191N+124W+22+3010

ATTN: McQuillan
PHONE: 827-2912

STATION/ WELL CODE: GBR32

LATITUDE, LONGITUDE: -

SAMPLING CONDITIONS:

☐ Bailed	☒ Pump	Water Level:	Discharge:	Sample Type:
☐ Dipped	☐ Tap	34.22'		grab
pH(00400)	Conductivity(Uncorr.)	Water Temp.(00010)	Conductivity at 25°C	
	5000 μ mho	19.0 °C	(00094) μ mho	

FIELD COMMENTS:

SAMPLE FIELD TREATMENT

Check proper boxes:

☒ WPN: Water
Preserved w/HNO₃
Non-Filtered

☐ WPF: Water
Preserved w/HNO₃
Filtered

LAB ANALYSIS REQUESTED:

☒ ICAP Scan
Mark box next to metal if AA
is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	7.7		Silicon	13.	
Barium	0.1		Silver	<0.1	
Beryllium	<0.1		Strontium	14.	
Boron	0.3		Tin	<0.1	
Cadmium	<0.1	☐	Vanadium	<0.1	
Calcium	840.		Zinc	<0.1	
Chromium	<0.1	☐	Arsenic		☐
Cobalt	<0.05		Selenium		☐
Copper	0.1		Mercury		☐
Iron	9.2				☐
Lead	<0.1	☐			☐
Magnesium	64.				☐
Manganese	1.1				☐
Molybdenum	<0.1				☐
Nickel	0.3				☐

LAB COMMENTS:

ICAP Analyst: JB

Analysis Date: 8/19/87

Reviewer: Jim Dalley

Date Reviewed: 8/19/87

transfer to J. Gould
8/16/87 15:00
Dennis McQuillan
15:00 from Gould
1640 8/8/87 Seals intact & transferred to Mary E. Olman
Marci Olman 16:10

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

MONITOR WELL GBR-33

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>9/12/89</u>	<u>12/13/89</u>	<u>4/4/90</u>	<u>7/18/90</u>	<u>10/8/90</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	(BELOW)	<1.0	<1.0	(BELOW)
BENZENE	ND(<1.0)	73.0	ND	ND	4.6
BROMODICHLOROMETHANE	ND(<1.0)	ND(<1.0)	ND	ND	ND(1.0)
BROMOFORM	ND(10.0)	ND(<1.0)	ND	ND	ND(5.0)
BROMOMETHANE	ND(5.0)	ND(1.2)	ND	ND	ND(12.0)
CARBON TETRACHLORIDE	ND(1.0)	ND(<1.0)	ND	ND	ND(1.2)
CHLOROBENZENE	ND(<1.0)	ND(5.0)	ND	2.5	11.0
CHLOROETHANE	ND(2.5)	ND(<1.0)	ND	ND	ND(5.2)
CHLOROFORM	ND(<1.0)	ND(<1.0)	ND	ND	ND(1.0)
CHLOROMETHANE	ND(2.5)	ND(<1.0)	ND	ND	ND(3.0)
DIBROMOCHLOROMETHANE	ND(1.0)	ND(<1.0)	ND	ND	ND(2.0)
1,2-DICHLOROBENZENE	ND(1.0)	ND(10.0)	ND	ND	ND(4.0)
1,3-DICHLOROBENZENE	ND(2.0)	ND(10.0)	ND	ND	61.0 X
1,4-DICHLOROBENZENE	ND(1.0)	ND(7.5)	ND	12.0	68.0
1,1-DICHLOROETHANE	ND(<1.0)	ND(<1.0)	1.3	ND	ND(5.0)
1,2-DICHLOROETHANE	0.97	4.0	0.21	0.28	ND(1.0)
1,1-DICHLOROETHENE	ND(<1.0)	ND(<1.0)	ND	ND	ND(2.0)
CIS-1,2-DICHLOROETHENE	NA	NA	12.0	4.9	38.0
TRANS-1,2-DICHLOROETHENE	NA	1.1	ND	ND	ND(2.0)
TOTAL 1,2-DICHLOROETHENE	2.5	NA	NA	ND	NA
1,2-DICHLOROPROPANE	ND(<1.0)	ND(<1.0)	ND	ND	ND(1.0)
ETHYLBENZENE	7.9	120.0	ND	3.7	220.0
METHYLENE CHLORIDE	ND(2.0)	ND(<1.0)	ND	ND	ND(4.0)
1,1,2,2-TETRACHLOROETHANE	ND(1.0)	ND(<1.0)	ND	ND	ND(1.5)
TETRACHLOROETHENE	ND(<1.0)	ND(<1.0)	2.5	0.6	ND(1.0)
TOLUENE	ND(1.5)	ND(5.0)	ND	0.35	8.3
1,1,1-TRICHLOROETHANE	ND(1.0)	ND(<1.0)	0.24	ND	ND(2.0)
1,1,2-TRICHLOROETHANE	ND(1.0)	ND(<1.0)	ND	ND	ND(2.0)
TRICHLOROETHENE	ND(1.0)	ND(<1.0)	1.1	3.2	ND(2.0)
TRICHLOROFLUOROMETHANE	ND(<1.0)	ND(<1.0)	ND	0.28	ND(2.0)
VINYL CHLORIDE	ND(1.0)	ND(<1.0)	ND	ND	ND(2.0)
TOTAL XYLENES	17.0	170.0	ND	6.6	310.0

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS
X - PRESENCE NOT CONFIRMED

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

MONITOR WELL GBR-33

<u>SAMPLER</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>9/9/87</u>	<u>10/7/87</u>	<u>12/7/89</u>	<u>3/15/89</u>	<u>6/13/89</u>
<u>PARAMETER</u>					
DETECTION LIMIT	<1.0	(BELOW)	(BELOW)	(BELOW)	(BELOW)
BENZENE	764.0	503.0	130.0	0.3	32.6
BROMODICHLOROMETHANE	ND	ND(2.0)	ND(<1.0)	ND(<1.0)	ND(1.0)
BROMOFORM	ND	ND(4.5)	ND(<1.0)	ND(<1.0)	ND(1.0)
BROMOMETHANE	ND	ND(3.0)	ND(1.2)	ND(1.0)	ND(1.0)
CARBON TETRACHLORIDE	ND	ND(4.0)	ND(<1.0)	ND(<1.0)	ND(1.0)
CHLOROBENZENE	ND	ND(8.0)	ND(3.0)	ND(<1.0)	ND(<1.0)
CHLOROETHANE	0.4	ND(50.0)	ND(<1.0)	ND(1.0)	ND(1.0)
CHLOROFORM	ND	ND(2.5)	ND(<1.0)	ND(<1.0)	ND(1.0)
CHLOROMETHANE	ND	ND(1.0)	ND(<1.0)	ND(1.0)	ND(1.0)
DIBROMOCHLOROMETHANE	ND	ND(3.5)	ND(<1.0)	ND(<1.0)	ND(1.0)
1,2-DICHLOROBENZENE	1.1	ND(20.0)	ND(4.0)	ND(<1.0)	ND(<1.0)
1,3-DICHLOROBENZENE	ND	ND(20.0)	ND(4.0)	ND(<1.0)	ND(<1.0)
1,4-DICHLOROBENZENE	ND	ND(30.0)	ND(3.0)	ND(<1.0)	ND(<1.0)
DICHLORODIFLUOROMETHANE	ND	ND(2.0)	ND(<1.0)	ND(1.0)	ND(1.0)
1,1-DICHLOROETHANE	1.0	ND(2.5)	0.5	1.4	ND(1.0)
1,2-DICHLOROETHANE	22.8	ND(3.5)	4.3	0.33	1.8
1,1-DICHLOROETHENE	ND	ND(3.5)	ND(<1.0)	ND(<1.0)	ND(1.0)
CIS-1,2-DICHLOROETHENE	ND	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	3.4	ND(4.5)	1.7	ND(<1.0)	ND(1.0)
1,2-DICHLOROPROPANE	ND	ND(1.5)	ND(<1.0)	ND(<1.0)	ND(1.0)
ETHYLBENZENE	1120.0	370.0	80.0	ND(<1.0)	76.0
METHYLENE CHLORIDE	ND	ND(1.0)	ND(<1.0)	5.8	ND(1.0)
1,1,2,2-TETRACHLOROETHANE	ND	ND(1.5)	ND(<1.0)	ND(<1.0)	ND(1.0)
TETRACHLOROETHENE	0.4	ND(1.5)	0.7	1.4	ND(1.0)
TOLUENE	188.0	136.0	9.9	ND(<1.0)	11.3
1,1,1-TRICHLOROETHANE	ND	ND(1.5)	ND(<1.0)	0.32	ND(1.0)
1,1,2-TRICHLOROETHANE	ND	ND(1.5)	ND(<1.0)	ND(<1.0)	ND(1.0)
TRICHLOROETHENE	0.4	37.0	0.5	1.1	ND(1.0)
TRICHLOROFLUOROMETHANE	ND	ND(3.5)	0.8	ND(<1.0)	ND(1.0)
VINYL CHLORIDE	ND	ND(2.5)	ND(<1.0)	ND(1.0)	ND(1.0)
TOTAL XYLENES	1393.0	1332.0	172.0	ND(<1.0)	74.1

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

Giant Refining Company
 Radian Work Order: S0-10-082

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	901008950	9010081035	9010081135	9010081240
	STRIPPER EFF.	GBR-31	GBR-33	GBR-30
Factor:	1	1	10	1
Results in:	ug/L	ug/L	ug/L	ug/L
	07A	08A	09A	10A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	ND	0.20	4.6 G@	2.0	ND	0.20
Chlorobenzene	ND	0.20	0.34 X@	0.20	11 G	2.0	ND	0.20
1,2-Dichlorobenzene	ND	0.40	1.2 X@	0.40	ND	4.0	0.86 X@	0.40
1,3-Dichlorobenzene	ND	0.40	1.8 X@	0.40	61 X	4.0	ND	0.40
1,4-Dichlorobenzene	0.56 X@	0.30	1.5 X	0.30	68 G	3.0	2.6 C	0.30
Ethylbenzene	ND	0.20	ND	0.20	220 G	2.0	1.6 C	0.20
Toluene	0.45 G@	0.20	0.98 G@	0.20	8.3 C@	2.0	1.2 C	0.20
Xylenes (total)	0.91 X@	0.20	0.45 X@	0.20	310 C	2.0	3.5 X	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	120		75		118		133	
Control Limits: 40 to 140								

ND Not detected at specified detection limit
 @ Est. result less than 5 times detection limit
 C Confirmed on second column or by GC/MS

X See definition in report narrative
 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.

Giant Refining Company
 Radian Work Order: S0-10-082

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	901008950	9010081035	9010081135	9010081240
Factor:	1	1	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	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	ND	0.10	ND	0.10	ND	1.0	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	3.0	ND	0.30
Dibromochloromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
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	ND	0.50
1,2-Dichloroethane	ND	0.10	ND	0.10	ND	1.0	0.18 C	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	2.0	ND	0.20
cis-1,2-Dichloroethene	ND	0.20	13 C	0.20	38 C	2.0	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	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
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	1.5	ND	0.15
Tetrachloroethene	ND	0.10	2.8 C	0.10	ND	1.0	ND	0.10
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	0.47 C	0.20	ND	2.0	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	2.0	ND	0.20
Vinyl chloride	ND	0.20	ND	0.20	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

(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: 90-10-151

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9010081035 GB-	9010081135 GB-	Reagent Blank
	R-31	R-33	
Factor:	1	100	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	1.8	ND	180	ND	1.8
Acenaphthylene	ND	2.3	35	2.3	ND	2.3
Anthracene	ND	0.66	72 @	66	ND	0.66
Benzo(a)anthracene	ND	0.013	5.0 @	1.3	ND	0.013
Benzo(a)pyrene	ND	0.023	ND	1.2	ND	0.023
Benzo(b)fluoranthene	ND	0.018	1.5 @	0.90	ND	0.018
Benzo(g,h,i)perylene	ND	0.076	ND	3.8	ND	0.076
Benzo(k)fluoranthene	ND	0.017	ND	0.85	ND	0.017
Chrysene	ND	0.15	ND	7.5	ND	0.15
Dibenzo(a,h)anthracene	ND	0.030	ND	1.5	ND	0.030
Fluoranthene	ND	0.21	240	21	ND	0.21
Fluorene	ND	0.21	280	10	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.043	ND	0.043	ND	0.043
Naphthalene	ND	1.8	8.3 @	1.8	ND	1.8
Phenanthrene	ND	0.64	640	64	ND	0.64
Pyrene	ND	0.27	ND	27	ND	0.27
<u>Surrogate Recovery(%)</u>						
Terphenyl-d14	130		NC		107	
Control Limits: 24 to 146						

 ND Not detected at specified detection limit
 NC Not calculated

@ 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.

Giant Refining Company
 Radian Work Order: S0-07-146

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	900718937	9007181100	9007181305	9007181345
	GBR-31	GBR-240	GBR-30	GBR-33
Factor:	10	5	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	02A	04A	06A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	2.0	39 C	1.0	ND	0.20	ND	0.20
Chlorobenzene	ND	2.0	16 X	1.0	1.8 X	0.20	2.5 X	0.20
1,2-Dichlorobenzene	ND	4.0	ND	2.0	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	4.0	ND	2.0	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	3.0	ND	1.5	ND	0.30	12 C	0.30
Ethylbenzene	ND	2.0	28 X	1.0	0.55 Xa	0.20	3.7 C	0.20
Toluene	ND	2.0	4.8 Ca	1.0	ND	0.20	0.35 Ca	0.20
Xylenes (total)	ND	2.0	8.8 C	1.0	2.4 C	0.20	6.6 C	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	102		96		106		45	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

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.

Giant Refining Company
 Radian Work Order: S0-07-146

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	900718937	9007181100	9007181305	9007181345
	GBR-31	GBR-24D	GBR-30	GBR-33
Factor:	10	5	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	03A	05A	07A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	ND	0.50	ND	0.10	ND	0.10
Bromoform	ND	5.0	ND	2.5	ND	0.50	ND	0.50
Bromomethane	ND	12	ND	5.9	ND	1.2	ND	1.2
Carbon tetrachloride	ND	1.2	ND	0.60	ND	0.12	ND	0.12
Chlorobenzene	ND	2.5	ND	1.2	ND	0.25	ND	0.25
Chloroethane	ND	5.2	ND	2.6	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	5.0	ND	2.5	ND	0.50	ND	0.50
Chloroform	ND	1.0	ND	0.50	ND	0.10	ND	0.10
Chloromethane	ND	3.0	ND	1.5	ND	0.30	ND	0.30
Dibromochloromethane	ND	2.0	ND	1.0	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	2.5	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	1.6	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	1.2	ND	0.24	ND	0.24
1,1-Dichloroethane	5.5 Xa	5.0	ND	2.5	0.67 Ca	0.50	ND	0.50
1,2-Dichloroethane	ND	1.0	57 C	0.50	0.75 C	0.10	0.28 Ca	0.10
1,1-Dichloroethene	ND	2.0	ND	1.0	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	81 C	2.0	ND	1.0	5.6 C	0.20	4.9 C	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	1.0	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	0.50	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	1.0	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	1.7	ND	0.34	ND	0.34
Methylene chloride	ND	4.0	ND	2.0	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	1.5	ND	0.75	ND	0.15	ND	0.15
Tetrachloroethene	12 G	1.0	4.0 C	0.50	0.44 Ca	0.10	0.60 C	0.10
1,1,1-Trichloroethane	15 X	2.0	6.8 X	1.0	ND	0.20	ND	0.20
1,1,2-Trichloroethane	ND	2.0	ND	1.0	ND	0.20	ND	0.20
Trichloroethene	34 G	2.0	56 X	1.0	0.44 Ca	0.20	3.2 G	0.20
Trichlorofluoromethane	ND	2.0	ND	1.0	ND	0.20	0.28 Xa	0.20
Vinyl chloride	ND	2.0	ND	1.0	ND	0.20	ND	0.20

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.

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.

Giant Refining Co.
 Radian Work Order: 90-07-230

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	900718937	9007181345
	GBR-31	GBR-33
Factor:	0.95	95
Results in:	ug/L	ug/L
	01A	02A
Matrix:	water	water

	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	1.7	ND	170
Acenaphthylene	ND	2.2	103 D@	22
Anthracene	ND	0.63	67 @	63
Benzo(a)anthracene	ND	0.012	12	1.2
Benzo(a)pyrene	ND	0.022	ND D	0.55
Benzo(b)fluoranthene	ND	0.017	1.9 D@	0.86
Benzo(g,h,i)perylene	ND	0.072	ND D	1.8
Benzo(k)fluoranthene	ND	0.016	ND D	0.82
Chrysene	ND	0.14	63 @	14
Dibenzo(a,h)anthracene	ND	0.028	ND D	0.72
Fluoranthene	ND	0.20	140	20
Fluorene	ND	0.20	87 @	20
Indeno(1,2,3-cd)pyrene	ND	0.041	ND D	0.41
Naphthalene	ND	1.7	55 D@	17
Phenanthrene	ND	0.61	320	61
Pyrene	ND	0.26	110 @	26

Surrogate Recovery(%)

Terphenyl-d14

Control Limits: 24 to 146

88

NC

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

D Sample dilution necessary for this analyte

NC Not calculated

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

Giant Refining Company
 Radian Work Order: SO-05-045

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9004041025 /GBR-33	9004041120 /GBR-31	TRIP BLANK	REAGENT BLANK
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	06A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	ND	0.20	0.98 C	0.20	ND	0.20	ND	0.20
Chlorobenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Ethylbenzene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Toluene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Xylenes (total)	ND	0.20	6.0 C	0.20	ND	0.20	ND	0.20
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	98		29 a		100		101	
Control Limits: 40 to 140								

ND Not detected at specified detection limit

C Confirmed on second column or by GC/MS

a Est. result less than 5 times detection limit

a Outside control limits

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

Giant Refining Company
 Radian Work Order: SO-05-045

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9004041025 /GBR-33	9004041120 /GBR-31	TRIP BLANK	REAGENT BLANK
Factor:	1	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	06A	07A
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	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	1.3 Ca	0.50	ND	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	0.21 Ca	0.10	1.0 C	0.10	ND	0.10	ND	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	12 C	0.20	6.2 C	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	0.34	ND	0.34	ND	0.34	ND	0.34
Methylene chloride	ND	0.40	ND	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene	2.5 C	0.10	0.64 C	0.10	ND	0.10	ND	0.10
1,1,1-Trichloroethane	0.24 Ca	0.20	ND	0.20	ND	0.20	ND	0.20
1,1,2-Trichloroethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Trichloroethene	1.1 C	0.20	0.86 Ca	0.20	ND	0.20	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Vinyl chloride	ND	0.20	ND	0.20	ND	0.20	ND	0.20

ND Not detected at specified detection limit

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: 89-12-112

Method: Volatile aromatics (1)	GBR-15	GBR-33	GBR-31	GBR-6
List: SW8020				
Sample ID:	8912131000	8912131210	8912131300	8912131600
Factor:	1	25	1	50
Results in:	ug/L	ug/L	ug/L	ug/L
	138	148	158	168
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	<u>63 D</u>	1.0	<u>73</u>	5.0	ND	0.20	<u>110</u>	10
Chlorobenzene	ND	0.20	ND	5.0	ND	0.20	ND	10
1,2-Dichlorobenzene	ND	0.40	ND	10	ND	0.40	ND	20
1,3-Dichlorobenzene	ND	0.40	ND	10	ND	0.40	ND	20
1,4-Dichlorobenzene	ND	0.30	ND	7.5	ND	0.30	ND	15
Ethylbenzene	<u>2.8</u>	0.20	<u>120</u>	5.0	ND	0.20	<u>85</u>	10
Toluene	<u>0.45 *</u>	0.20	ND	5.0	ND	0.20	ND	10
Total xylenes	<u>1.5</u>	0.20	<u>170</u>	5.0	ND	0.20	<u>140</u>	10
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	98		116		108		136	
Control Limits: 76 to 140								

D Sample diluted for this analyte

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) GBR-33	GBR-31	GBR-6	GBR-30
List: SW8010			
Sample ID:	8912131210	8912131300	8912131600
Factor:	1	1	1
Results in:	ug/L	ug/L	ug/L
	14A	15A	16A
Matrix:	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Bromoform	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Bromomethane	ND	1.2	ND	1.2	ND	1.2	ND	1.2
Carbon Tetrachloride	ND	0.12	ND	0.12	ND	0.12	ND	0.12
Chlorobenzene	ND	0.25	ND	0.25	ND	0.25	ND	0.25
Chloroethane	ND	0.52	ND	0.52	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	0.50	ND	0.50	ND	0.50	ND	0.50
Chloroform	ND	0.10	ND	0.10	ND	0.10	ND	0.10
Chloromethane	ND	0.30	ND	0.30	ND	0.30	ND	0.30
Dibromochloromethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	0.50	ND	0.50	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	0.32	ND	0.32	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	0.24	ND	0.24	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	0.50	3.4	0.50	ND	0.50	ND	0.50
1,2-Dichloroethane	4.0	0.10	2.0	0.10	1.2	0.10	0.94	0.10
1,1-Dichloroethene	ND	0.20	ND	0.20	ND	0.20	ND	0.20
trans-1,2-Dichloroethene	1.1	0.20	44	0.20	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	0.10	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	0.30	ND	0.30	ND	0.30	ND	0.30
Methylene Chloride	ND	0.40	1.1 *	0.40	ND	0.40	ND	0.40
1,1,2,2-Tetrachloroethane-(3)	ND	0.15	ND	0.15	ND	0.15	ND	0.15
Tetrachloroethene-(3)	ND	0.10	12	0.10	ND	0.10	ND	0.10
1,1,2-Trichloroethane-(2)	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,1,1-Trichloroethane	ND	0.20	1.4	0.20	ND	0.20	ND	0.20
Trichloroethene	ND	0.20	7.9	0.20	ND	0.20	ND	0.20
Trichlorofluoromethane	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Vinyl Chloride	ND	0.20	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.

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

Method: SW8310 PAH's by HPLC (1)	GBR-13	GBR-8	GBR-15	GBR-33
List: 8310 Method analytes				
Sample ID:	8912121530	8912121600	8912131000	8912131210
Factor:	380	9.4	0.94	1.9
Results in:	ug/L	ug/L	ug/L	ug/L
	10C	11C	13C	14C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	870	ND	22	<u>4.1 *D</u>	2.2	ND	4.4
Acenaphthene	ND	680	ND	17	ND	1.7	<u>6.0 *D</u>	3.4
Anthracene	ND	250	ND	6.2	ND	0.62	ND	1.3
Benzo(a)anthracene	<u>25</u>	4.9	ND	0.12	<u>0.012 *</u>	0.012	<u>0.20</u>	0.025
Benzo(a)pyrene	ND	8.7	ND	0.22	ND	0.022	ND	0.044
Benzo(b)fluoranthene	ND	6.8	ND	0.17	ND	0.017	<u>0.10 *</u>	0.034
Benzo(g,h,i)perylene	ND	29	ND	0.71	ND	0.071	ND	0.14
Benzo(k)fluoranthene	ND	6.5	ND	0.16	ND	0.016	ND	0.032
Chrysene	<u>86</u>	4.9	ND	0.12	ND	0.012	<u>0.88</u>	0.025
Dibenzo(a,h)anthracene	ND	11	ND	0.28	ND	0.028	ND	0.057
Fluoranthene	ND	80	ND	2.0	ND	0.20	ND	0.40
Fluorene	<u>360 *D</u>	80	<u>8.7 *D</u>	2.0	<u>0.47 *D</u>	0.20	<u>3.5 D</u>	0.40
Indeno(1,2,3-cd)pyrene	ND	16	ND	0.40	ND	0.040	ND	0.082
Naphthalene	ND	680	<u>88</u>	17	ND	1.7	ND	3.4
Phenanthrene	<u>1600</u>	240	<u>20 *</u>	6.0	<u>0.68 *</u>	0.60	<u>6.8</u>	1.2
Pyrene	<u>290 *</u>	100	ND	2.5	ND	0.25	<u>1.6 *</u>	0.51
Surrogate Recovery(%)								
Terphenyl-d14	NC		27 Q		134		120	
Control Limits: 37 to 139								

ND Not detected at specified detection limit

* Est. result less than 5 times detection limit

Q Outside control limits

D Sample diluted for this analyte

NC Not calculated

(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: PAHs by GC 8100 (1) List: 8100, special list	GBR-13	GBR-8	GBR-15	GBR-33
Sample ID:	8912121530	8912121600	8912131000	8912131210
Factor:	94	94	0.94	9.4
Results in:	ug/L	ug/L	ug/L	ug/L
	10C	11C	13C	14C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1-Methylnaphthalene	<u>1600</u>	94	ND	94	ND	0.94	<u>43 *</u>	9.4
2-Methylnaphthalene	<u>2000</u>	94	<u>280 *</u>	94	ND	0.94	ND	9.4

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: 09/14/89

RAS Sacramento

REPORT

Results by Sample

Work Order # S9-09-081

SAMPLE ID 8909121750 H2O GBR-33

FRACTION 04C

TEST CODE 602B

NAME Purgeable Aromatics - H2O

Date & Time Collected 09/12/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST MC
INSTRMT B

FILE # EB100113 VERIFIED JD
FACTOR 5 UNITS ug/L

INJECTD 10/01/89

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
71-43-2	Benzene	<u>ND</u>	<u>0.50</u>	<u>5</u>
108-88-3	Toluene	<u>ND</u>	<u>1.5</u>	<u>5</u>
100-41-4	Ethylbenzene	<u>7.9 CE</u>	<u>0.50</u>	<u>5</u>
108-90-7	Chlorobenzene	<u>ND</u>	<u>0.50</u>	<u>5</u>
1330-20-7	Total Xylenes	<u>17 C</u>	<u>1.0</u>	<u>5</u>
106-46-7	1,4-Dichlorobenzene	<u>ND</u>	<u>1.0</u>	<u>5</u>
541-73-1	1,3-Dichlorobenzene	<u>ND</u>	<u>2.0</u>	<u>5</u>
95-50-1	1,2-Dichlorobenzene	<u>ND</u>	<u>1.0</u>	<u>5</u>

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 64% recovery

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

Received: 09/14/89

RAS Sacramento

Results by Sample

Work Order # 59-09-081

SAMPLE ID 8909121750 H2O G6R-33 FRACTION 04A TEST CODE 601 NAME Purgeable Halocarbons H2O
Date & Time Collected 09/12/89 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST INSTRMT B MG 5 FILE # DB100112 VERIFIED JD UNITS ug/L

INJECTD 10/01/89

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloromethane	ND	2.5	5
74-83-9	Bromomethane	ND	5.0	5
75-01-4	Vinyl Chloride	ND	1.0	5
75-00-3	Chloroethane	ND	2.5	5
75-09-2	Methylene Chloride	ND	2.0	5
75-69-4	Trichlorofluoromethane	ND	0.50	5
75-35-4	1,1-Dichloroethene	ND	0.50	5
75-34-3	1,1-Dichloroethane	ND	0.50	5
540-59-0	Total 1,2-Dichloroethene (2)	2.5 C	0.50	5
67-66-3	Chloroform	ND	0.50	5
107-06-2	1,2-Dichloroethane	0.97 C	0.50	5
71-55-6	1,1,1-Trichloroethane	ND	1.0	5
56-23-5	Carbon Tetrachloride	ND	1.0	5
75-27-4	Bromodichloromethane	ND	0.50	5
78-87-5	1,2-Dichloropropane	ND	0.50	5
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	5
79-01-6	Trichloroethene	ND	1.0	5
124-48-1	Dibromochloromethane (3)	ND	1.0	5
79-00-5	1,1,2-Trichloroethane (3)	ND	1.0	5
10061-02-6	trans-1,3-Dichloropropene (3)	ND	2.0	5
110-75-8	2-Chloroethylvinyl Ether	ND	10	5
75-25-2	Bromoform	ND	10	5
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	1.0	5
127-18-4	Tetrachloroethene (4)	ND	0.50	5
108-90-7	Chlorobenzene	ND	1.0	5
541-73-1	1,3-Dichlorobenzene	ND	2.5	5
95-50-1	1,2-Dichlorobenzene	ND	1.0	5
106-46-7	1,4-Dichlorobenzene	ND	1.0	5

Analytical Data Summary

Page: 2

Geoscience Consultants, Ltd.
 Radian Work Order: 89-09-111

Method: PAHs by MPLC (1)

List:

Sample ID:

Factor:

Results in:

Matrix:

Acenaphthalene

Acenaphthene

Anthracene

Benzo(a)anthracene

Benzo(a)pyrene

Benzo(b)fluoranthene

Benzo(g,h,i)perylene

Benzo(k)fluoranthene

Chrysene

Dibenz(a,h)anthracene

Fluoranthene

Fluorene

Indeno(1,2,3-cd)pyrene

Naphthalene

Phenanthrene

Pyrene

Surrogate Recovery(%)

Terphenyl-d14

Control Limits: 37 to 139

GBR-13

8909121550

94

ug/L

01A

water

<220

<170

<62

<1.2

<2.2

<1.7

<7.1

<1.6

<1.2

<2.8

830

<20

<4.0

330*

<60

<25

NC

GBR-8

8909121615

95

ug/L

02A

water

<220

<170

<63

<1.2

<2.2

<1.7

<7.2

<1.6

<1.2

<2.9

<20

<4.1

420*

320

59*

NC

GBR-6

8909121650

24

ug/L

03A

water

<55

580

<16

<0.31

<0.55

<0.43

<1.8

<0.41

<0.31

<0.72

<5.0

57

<1.0

120*

25*

<6.5

NC

GBR-33

8909121750

9

ug/L

04A

water

<21

<16

<5.9

<0.12

<0.21

<0.16

<0.68

<0.15

<0.12

<0.27

<1.9

6*

<0.39

16*

<5.8

<2.4

NC

GBR-15

8909130830

1

ug/L

05A

water

<2.3

<1.8

<0.66

<0.013

<0.023

<0.018

<0.076

<0.017

<0.013

<0.030

<0.21

<0.21

<0.043

<0.043

<1.8

<0.64

122

GBR-240

8909130915

1

ug/L

06A

water

<2.3

<1.8

<0.66

<0.013

<0.023

<0.018

<0.076

<0.017

<0.013

<0.030

<0.21

4.6

<0.043

<1.8

7.4

<0.27

110

* Est. result less than 5 times 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.



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

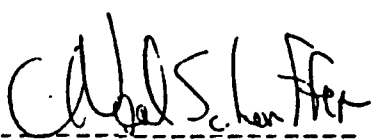
Client: GCL #8906131355
Site: GBR-33
IML #: F1579

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	32.6 (0.2)	ug/l
TOLUENE	11.3 (0.2)	ug/l
ETHYLBENZENE	76.0 (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	55.1 (0.2)	ug/l
o-XYLENE	19.0 (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



C. Neal Schaeffer
Senior Organic Chemist



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

Client: GCL #8906131355
Site: GBR-33
IML #: F1579

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	1.8 (1.0)	ug/l
1,1,1-TRICHLOROETHANE	ND (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	ND (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	ND (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

QUARTERLY SAMPLING
ANALYTICAL RESULTS FOR GROUNDWATER
POLYNUCLEAR AROMATIC HYDROCARBONS
(ug/ml unless otherwise noted)
(Sampling Event: 06/13/89)

ANALYTE	GBR-17	GBR-240	GBR-30	GBR-31	GBR-33
Acenaphthene	NA	0.010 (0.005)	2.3 (0.6)	ND (0.003)	0.34 (0.25)
Acenaphthylene	NA	0.008 (0.005)	ND (0.6)	ND (0.003)	0.44 (0.25)
Anthracene	NA	0.006 (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(a)anthracene	NA	ND (0.005)	ND (0.6)	ND (0.003)	0.59 (0.25)
Benzo(a)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(b)fluoranthene	NA	0.007 (0.005)	ND (0.6)	0.014 (0.003)	1.58 (0.25)
Benzo(j)fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(k)fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Benzo(g,h,i)perylene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Chrysene	NA	ND (0.005)	ND (0.6)	0.008 (0.003)	0.67 (0.25)
Dibenz(a,h)acridine	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,j)acridine	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenzo(a,h)anthracene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,e)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Dibenz(a,h)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Fluoranthene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Fluorene	NA	0.009 (0.005)	ND (0.6)	0.005 (0.003)	ND (0.25)
Indeno(1,2,3-cd)pyrene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Naphthalene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)
Phenanthrene	NA	0.013 (0.005)	2.0 (0.6)	0.006 (0.003)	0.53 (0.25)
Pyrene	NA	ND (0.005)	ND (0.6)	0.004 (0.003)	ND (0.25)
1-Methylnaphthalene	NA	NA (0.005)	NA (0.6)	NA (0.003)	NA (0.25)
3-Methylnaphthalene	NA	ND (0.005)	ND (0.6)	ND (0.003)	ND (0.25)

() = Detection limit
ND = Not detected
T = Detected below quantifiable level
NA = Not analyzed



2500 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326 4737

Date: April 01, 1989

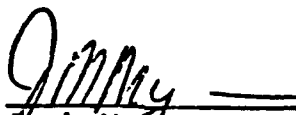
Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903151003
Sample Site: GBR-33
IML Lab No: F890960
Analysis Requested: Purgeable Aromatic
Sample Matrix: Water

Date Sampled: 03/15/89
Date Received: 03/15/89
Date Extracted: NA
Date Analyzed: 03/22/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	0.30 (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



Jack M. Morgan
Senior Organic Chemist



Inter Mountain
Laboratories, Inc.

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

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903151003
Sample Site: GBR-33
IML Sample No: F890960
Analysis Requested: Purgeable Halocarbons
Sample Matrix: Water

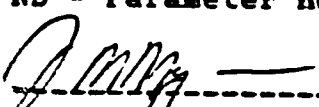
Date Sampled: 03/15/89
Date Received: 03/15/89
Date Extracted: N/A
Date Analyzed: 03/19/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	5.8 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	1.4 (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	0.33 (0.03)	ug/l
1,1,1-TRICHLOROETHANE	0.32 (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	1.1 (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	1.4 (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

**** Quality Assurance Report
Matrix Duplicate Analysis**

Date: April 08, 1989

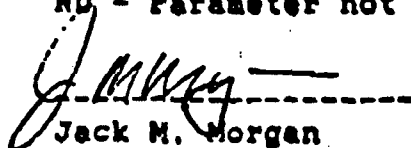
Client:	Geoscience Consultants, Ltd.		
GCL Sample No:	8903151003	Date Sampled:	03/15/89
Sample Site:	GBR-33	Date Received:	03/15/89
IML Sample No:	7890960	Date Extracted:	03/22/89
Analysis:	Polynuclear Aromatic Hydrocarbons	Date Analyzed:	04/07/89
Sample Matrix:	Water		

Parameter	Concentration	Units
Acetnaphthene	ND (1.0)	ug/l
Acenaphthylene	ND (1.0)	ug/l
Anthracene	ND (1.0)	ug/l
Benzo(a)Anthracene	ND (0.5)	ug/l
Benzo(a)pyrene	ND (0.5)	ug/l
Benzo(b)fluoranthene	ND (0.5)	ug/l
Benzo(g,h,i)perylene	ND (0.5)	ug/l
Benzo(k)fluoranthene	ND (0.5)	ug/l
Chrysene	ND (0.5)	ug/l
Dibenzo(a,h)anthracene	ND (0.5)	ug/l
Fluoranthene	ND (1.0)	ug/l
Fluorene	ND (1.0)	ug/l
Indeno(1,2,3-cd)pyrene	ND (0.5)	ug/l
Naphthalene	ND (1.0)	ug/l
Phenanthrene	ND (1.0)	ug/l
Pyrene	ND (1.0)	ug/l
1-Methylnaphthalene	ND (1.0)	ug/l

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA(1986)

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist



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

Date: April 08, 1989

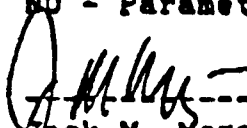
Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903151003
Sample Site: GBR-33
IML Sample No: F890960
Analysis: Polynuclear Aromatic Hydrocarbons
Sample Matrix: Water
Date Sampled: 03/15/89
Date Received: 03/15/89
Date Extracted: 03/22/89
Date Analyzed: 04/07/89

Parameter	Concentration	Units
Acetnaphthene	ND (1.0)	ug/l
Acenaphthylene	ND (1.0)	ug/l
Anthracene	ND (1.0)	ug/l
Benzo(a)Anthracene	ND (0.5)	ug/l
Benzo(a)pyrene	ND (0.5)	ug/l
Benzo(b)fluoranthene	ND (0.5)	ug/l
Benzo(g,h,i)perylene	ND (0.5)	ug/l
Benzo(k)fluoranthene	ND (0.5)	ug/l
Chrysene	ND (0.5)	ug/l
Dibenzo(a,h)anthracene	ND (0.5)	ug/l
Fluoranthene	ND (1.0)	ug/l
Fluorene	ND (1.0)	ug/l
Indeno(1,2,3-cd)pyrene	ND (0.5)	ug/l
Naphthalene	ND (1.0)	ug/l
Phenanthrene	ND (1.0)	ug/l
Pyrene	ND (1.0)	ug/l
1-Methylnaphthalene	ND (1.0)	ug/l

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA(1985)

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

Page 41
Received: 12/09/88

RAS - Austin

REPORT

Work Order # 88-12-057

Results by Sample

SAMPLE ID 8812071501

602-33

FRACTION 07A

TEST CODE EPA602 NAME EPA method 602

Date & Time Collected 12/07/88

Category

VERIFIED CL

ANALYST INSTRMT	CL D	INJECTED 12/13/88	FILE #	UNITS	ug/L
CAS#	COMPOUND	RESULT	DET LIMIT		
71-43-2	Benzene	130	2.0		
108-88-3	Toluene	9.94	2.0		
100-41-4	Ethylbenzene	80	3.0		
108-90-7	Chlorobenzene-A	ND	3.0		
106-46-7	1,4-Dichlorobenzene	ND	3.0		
541-73-1	1,3-Dichlorobenzene	ND	4.0		
95-50-1	1,2-Dichlorobenzene	ND	4.0		

SURROGATES
98-09-8 a,a,a-trifluorotoluene 104% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available
Second column confirmation NOT performed
unless otherwise noted

SAMPLE ID 8812071501

682-33

FRACTION 07A

TEST CODE XYLENE

NAME Xylenes, EPA 602

Date & Time Collected 12/07/08

Category

ANALYST _____ CL _____
 INSTRMT _____ U _____
 INJECTED 12/13/08 FILE # _____ UNITS _____ ug/L
 VERIFIED _____ CL _____

CAS #	COMPOUND	RESULT	DET LIMIT
106-42-3	p-Xylene	48	2.0
108-38-3	m-Xylene	43	2.0
95-47-6	o-Xylene	41	1.0

98-08-8 a,a,a-Trifluorotoluene 104% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT
 NO = not detected at detection limit
 NA = not analyzed
 * = less than 5 times the detection limit
 N/A = not available
 Second column confirmation NOT performed unless otherwise noted.
 Q = daily EPA standard recovery outside 95% confidence interval.
 Chlorobenzene and p-xylene co-elute.
 Quantitated as chlorobenzene unless otherwise noted.

Page 38

Received: 12/09/88

RAS - Austin

REPORT

Work Order # 88-12-057

Results by Sample

SAMPLE ID 8812071501

602-33

FRACTION 07U

TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 12/07/88

Category

ANALYST
INSTRMTCL
B

INJECTD 12/15/80

FILE #

VERIFIED CL

UNITS ug/L

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	Chloromethane	ND	0.30
74-83-7	Bromomethane	ND	1.2
75-01-4	Vinyl chloride	ND	0.20
75-00-3	Chloroethane	ND	0.50
75-09-2	Methylene chloride	ND	0.30
75-69-4	Trichlorofluoromethane	0.8	0.10
75-35-4	1,1-Dichloroethene	ND	0.10
75-34-3	1,1-Dichloroethane	0.5	0.090
156-60-5	trans-1,2-Dichloroethene	1.7	0.20
67-66-3	Chloroform	ND	0.050
107-06-2	1,2-Dichloroethane	4.3	0.030
71-55-5	1,1,1-Trichloroethane	ND	0.090
56-23-5	Carbon tetrachloride	ND	0.10
75-27-4	Bromedichloromethane	ND	0.10

SAMPLE ID 8812071501

682-33

FRACTION 07D

TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 12/07/88

Category

CASH	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.10
10061-02-6	trans-1,3-Dichloropropane	ND	0.30
79-01-6	Trichloroethene	0.5*	0.20
124-48-1	Dibromochloromethane-A	ND	0.50
79-00-5	1,1,2-Trichloroethane-A	ND	0.070
10061-01-5	cis-1,3-Dichloropropene-A	ND	N/A
110-75-8	2-Chloroethyl vinyl ether	ND	0.20
75-25-2	Bromoform	ND	0.30
79-34-5	1,1,2,2-Tetrachloroethane-B	ND	0.12
127-18-4	Tetrachloroethene-B	0.7	0.030
108-90-7	Chlorobenzene	ND	0.30
541-73-1	1,3-Dichlorobenzene	ND	0.30
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.40
SURROGATES			
74-97-5	Bromochloromethane	130 %	Recovery
460-00-4	1-Bromo-4-fluorobenzene	101 %	Recovery



Analytical Technologies, Inc.

EPA METHOD 801/602
PROJECT: GBR

SAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
ANALYSIS DATE/TIME: 10/12/87, 16:35
MATRIX: WATER
ANALYST: MGB

SAMPLE ID: 8710070820
LOCATION: GBR-33
LAB SAMPLE #: 3439-5
UNITS: ug/l
DILUTION FACTOR: 50

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	1.0	ND
BROMOMETHANE	3.0	ND
DICHLORODIFLUOROMETHANE	2.0	ND
VINYL CHLORIDE	2.5	ND
CHLOROETHANE	50	ND
METHYLENE CHLORIDE	1.0	ND
TRICHLOROFLUOROMETHANE	3.5	ND
1,1-DICHLOROETHENE	3.5	ND
1,1-DICHLOROETHANE	2.5	ND
TRANS-1,2-DICHLOROETHENE	4.5	ND
CHLOROFORM	2.5	ND
1,2-DICHLOROETHANE	3.5	ND
1,1,1-TRICHLOROETHANE	1.5	ND
CARBON TETRACHLORIDE	4.0	ND
BROMODICHLOROMETHANE	2.0	ND
1,2-DICHLOROPROPANE	1.5	ND
TRANS-1,3-DICHLOROPROPENE	5.5	ND
TRICHLOROETHENE	3.0	37
DIBROMOCHLOROMETHANE	3.5	ND
1,1,2-TRICHLOROETHANE	1.5	ND
CIS-1,3-DICHLOROPROPENE	3.5	ND
2-CHLOROETHYL VINYL ETHER	1.5	ND
BROMOFORM	4.5	ND
1,1,2,2-TETRACHLOROETHANE	1.5	ND
TETRACHLOROETHENE	1.5	ND
BENZENE	10	503
TOLUENE	20	136
CHLOROBENZENE	8.0	ND
ETHYLBENZENE	5.0	370
1,3'-DICHLOROBENZENE	20	ND
1,2-DICHLOROBENZENE	20	ND
1,4-DICHLOROBENZENE	30	ND
M-XYLENE	9.0	432
O,P-XYLENE	7.5	900

107 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
MDL 50 x NORMAL DUE TO HIGH LEVELS

PROJECT MANAGER: *mmh*

DATE: 10/28/87

EPA METHOD 601/602
PROJECT: GIANT MONITOR WELLSSAMPLE DATE: 9/09/87
LAB RECEIPT DATE: 9/11/87
ANALYSIS DATE: 9/18/87
MATRIX: WATER
ANALYST: MGBSAMPLE ID: 8709091800
LOCATION: 68R-33
LAB SAMPLE #: 3328-1
UNITS: ug/l
DILUTION FACTOR: 1

CONSTITUENT NAME	DETECTION LIMIT	RESULT
CHLOROMETHANE	0.02	ND
BROMOMETHANE	0.06	ND
DICHLORODIFLUOROMETHANE	0.04	ND
VINYL CHLORIDE	0.05	ND
CHLOROETHANE	0.1	0.4
METHYLENE CHLORIDE	0.02	ND
TRICHLOROFLUOROMETHANE	0.07	ND
1,1-DICHLOROETHENE	0.07	ND
1,1-DICHLOROETHANE	0.05	1.0
TRANS-1,2-DICHLOROETHENE	0.09	3.4
CHLOROFORM	0.05	ND
1,2-DICHLOROETHANE	0.07	22.8
1,1,1-TRICHLOROETHANE	0.03	ND
CARBON TETRACHLORIDE	0.08	ND
BROMODICHLOROMETHANE	0.04	ND
1,2-DICHLOROPROPANE	0.03	ND
TRANS-1,3-DICHLOROPROPENE	0.11	ND
TRICHLOROETHENE	0.06	0.4
DIBROMOCHLOROMETHANE	0.07	ND
1,1,2-TRICHLOROETHANE	0.03	ND
CIS-1,3-DICHLOROPROPENE	0.07	ND
2-CHLOROETHYL VINYL ETHER	0.03	ND
BROMOFORM	0.09	ND
1,1,2,2-TETRACHLOROETHANE	0.03	ND
TETRACHLOROETHENE	0.03	0.4
BENZENE	0.2	764
TOLUENE	0.4	188
CHLOROBENZENE	0.16	ND
ETHYLBENZENE	0.1	1120
1,3-DICHLOROBENZENE	0.4	ND
1,2-DICHLOROBENZENE	0.4	1.1
1,4-DICHLOROBENZENE	0.6	ND
M-XYLENE	0.18	452
O,P-XYLENE	0.15	941

98.3 % SURROGATE RECOVERY

COMMENTS: ND = NOT DETECTED
NA = NOT ANALYZEDPROJECT MANAGER: *gml*

DATE: 27 SEPTEMBER 1987





Inter Mountain
Laboratories, Inc.

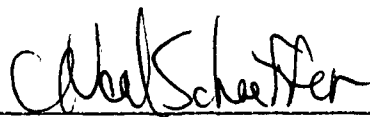
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GBR
ID: 9010081135
SITE: GBR-33
LAB NO: F5231

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/08/90
DATE COLLECTED: 10/08/90

Lab pH (s.u.).....	7.39
Lab conductivity, umhos/cm.....	4740
Lab resistivity, ohm-m.....	2.11
Total dissolved solids (180), mg/l..	3410
Total dissolved solids (calc), mg/l.	3190
Total alkalinity as CaCO ₃ , mg/l.....	321
Total acidity as CaCO ₃ , mg/l.....	0
Total hardness as CaCO ₃ , mg/l.....	1230
Sodium absorption ratio.....	7.32

	mg/l	meq/l
Bicarbonate as HCO ₃	392	6.43
Carbonate as CO ₃	0	0
Chloride.....	533	15
Sulfate.....	1470	30.7
Calcium.....	261	13
Magnesium.....	141	11.6
Potassium.....	2.88	0.07
Sodium.....	590	25.7
Major cations.....		50.4
Major anions.....		52.2
Cation/anion difference.....		1.76 %


C. Neal Schaeffer
Lab Director



Inter-Mountain
Laboratories, Inc.

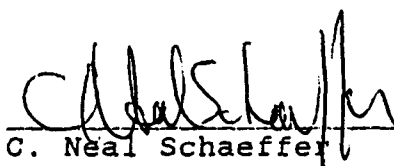
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GBR
ID: 9007111300
SITE: GBR 33
LAB NO: F4596

DATE REPORTED: 07/16/90
DATE RECEIVED: 07/11/90
DATE COLLECTED: 07/11/90

Lab pH (s.u.).....	7.73
Lab conductivity, umhos/cm.....	4287
Lab resistivity, ohm-m.....	2.3326
Total dissolved solids (180), mg/l..	3268
Total dissolved solids (calc), mg/l.	3165
Total alkalinity as CaCO ₃ , mg/l.....	362.90
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1194.76
Sodium absorption ratio.....	7.42

	mg/l	meq/l
Bicarbonate as HCO ₃	442.7	7.26
Carbonate as CO ₃	0.0	0.00
Chloride.....	545.6	15.39
Sulfate.....	1369.1	28.52
Calcium.....	377.5	18.84
Magnesium.....	61.5	5.06
Potassium.....	3.4	0.09
Sodium.....	590.0	25.66
Major cations.....		49.65
Major anions.....		51.17
Cation/anion difference.....		1.51 %

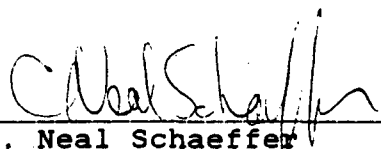

C. Neal Schaeffer
Lab Director

CLIENT: Giant Refinery
ID: GBR-33
SITE: GBR
LAB NO: F4093

DATE REPORTED: 04/13/90
DATE RECEIVED: 04/04/90
DATE COLLECTED: 04/04/90

Lab pH (s.u.).....	7.23
Lab Conductivity, umhos/cm.....	5283
Lab resistivity, ohm-m.....	1.8929
Total Dissolved Solids (180), mg/l..	3488
Total Dissolved Solids (calc), mg/l.	3384
Total Alkalinity as CaCO ₃ , mg/l.....	435.48
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1345.36
Sodium Absorption Ratio.....	7.16

	mg/l	meq/l
Bicarbonate as HCO ₃	461.4	7.56
Carbonate as CO ₃	34.4	1.15
Chloride.....	599.0	16.90
Sulfate.....	1395.8	29.08
Calcium.....	481.9	24.05
Magnesium.....	34.8	2.86
Potassium.....	6.7	0.17
Sodium.....	604.0	26.27
Major Cations.....		53.35
Major Anions.....		54.69
Cation/Anion Difference.....		1.24 %


C. Neal Schaeffer
Lab Director

CLIENT: Geoscience Consultants

DATE REPORTED: 12/20/89

SITE: GBR-33

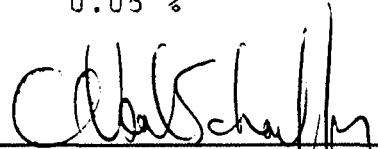
DATE RECEIVED: 12/13/89

LAB NO: F3666

DATE COLLECTED: 12/13/89

Lab pH (s.u.).....	7.21
Lab Conductivity, umhos/cm.....	4045
Lab resistivity, ohm-m.....	2.4722
Total Dissolved Solids (180), mg/l..	2916
Total Dissolved Solids (calc), mg/l.	2890
Total Alkalinity as CaCO ₃ , mg/l.....	457.38
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1105.23
Sodium Absorption Ratio.....	7.33

	mg/l	meq/l
Bicarbonate as HCO ₃	558.00	9.15
Carbonate as CO ₃	0.00	0.00
Chloride.....	519.24	14.65
Sulfate.....	1092.94	22.77
Calcium.....	437.94	21.85
Magnesium.....	3.05	0.25
Potassium.....	1.52	0.04
Sodium.....	560.40	24.38
Major Cations.....		46.52
Major Anions.....		46.56
Cation/Anion Difference.....		0.05 %


C. Neal Schaeffer
Senior Chemist



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

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/27/89
SAMPLE: 0909121750
SITE: 08933 DATE RECEIVED: 09/13/89
LAB NO: F3156 DATE COLLECTED: 09/12/89

Lab pH	7.18
Lab Conductivity, umhos/cm	4105
Lab resistivity, ohm-cm	6061
Total Dissolved Solids (TDS), mg/l	2856
Total Dissolved Solids (calc), mg/l	2891
Total Alkalinity as CaCO ₃ , mg/l	548.05
Total Acidity as CaCO ₃ , mg/l	0.00
Total Hardness as CaCO ₃ , mg/l	1078.56
Sodium Absorption Ratio	7.89

	mg/l	meq/l
Bicarbonate as HCO ₃	655.05	12.83
Carbonate as CO ₃	0.00	0.00
Chloride	505.50	14.26
Sulfate	1048.50	21.64
Calcium	391.42	19.54
Magnesium	24.67	2.03
Potassium	1.40	0.04
Sodium	595.60	25.91
Major Cations		47.51
Major Anions		46.90
Cation/Anion Difference		0.65 %


C. Neal Schaeffer
Senior Chemist



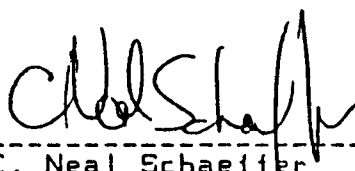
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

Client: GCL #8906131355
Site: GBR-33
IML #: F1579

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Total dissolved solids (180)..... 3576.00 mg/l
Total dissolved solids (calculated). 3442.99 mg/l
Total alkalinity (as CaCO₃)..... 354.58 mg/l
Total hardness (as CaCO₃)..... 1311.74 mg/l
Lab pH..... 7.17
Lab conductivity..... 4490 umhos/cm @ 25C
Lab resistivity..... 2.2272 ohm-m

	mg/l	meq/l
Acidity (as CaCO ₃).....	<1.0	<0.01
Bicarbonate (as HCO ₃).....	432.59	7.09
Carbonate (as CO ₃).....	0.00	0.00
Chloride.....	364.51	10.28
Sulfate.....	1768.22	36.84
Calcium.....	434.49	21.68
Magnesium.....	55.37	4.55
Potassium.....	1.36	0.03
Sodium.....	608.80	26.48
Major cations.....		52.75
Major anions.....		54.21
Anion/cation % difference.....		1.37 %



C. Neal Schaeffer
Senior Chemist

**** Quality Assurance Report
Duplicate Analysis**

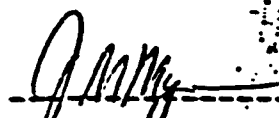
Date: April 01, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903151003
Site: GBR-33
IML Lab No: F890960
Date Collected: 3/15/89
Date Received: 3/15/89

Total Dissolved Solids (180), mg/l.....	3932
Total Dissolved Solids (calc), mg/l.....	3838
Total Alkalinity as CaCO₃, mg/l.....	283
Total Hardness as CaCO₃, mg/l.....	1598

	mg/l	meq/l
Acidity as CaCO₃.....	<1	<0.01
Bicarbonate as HCO₃.....	345	5.66
Carbonate as CO₃.....	0	0.00
Chloride.....	445	12.56
Sulfate.....	1990	41.46
Calcium.....	579	28.89
Magnesium.....	37	3.07
Potassium.....	2	0.06
Sodium.....	615	26.75
Nitrate/Nitrite.....	1.25	0.09

Major Cations.....	58.77
Major Anions.....	59.68
Cation/Anion Difference.....	0.77 %



Jack M. Morgan
Senior Organic Chemist

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903151003
Site: GBR-33
IML Lab No: F890960
Date Collected: 3/15/89
Date Received: 3/15/89

Total Dissolved Solids (180), mg/l.....	3904
Total Dissolved Solids (calc), mg/l.....	3841
Total Alkalinity as CaCO ₃ , mg/l.....	284
Total Hardness as CaCO ₃ , mg/l.....	1604

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	346	5.67
Carbonate as CO ₃	0	0.00
Chloride.....	449	12.67
Sulfate.....	1983	41.32
Calcium.....	589	29.39
Magnesium.....	33	2.69
Potassium.....	2	0.06
Sodium.....	615	26.75
Nitrate/Nitrite.....	1.20	0.09

Major Cations.....	58.89
Major Anions.....	59.66
Cation/Anion Difference.....	0.65 %

Jimmy

Jack M. Morgan
Senior Organic Chemist

Page 11

Received: 12/09/88

RAS -

Austin

REPORT

Results by Sample

Work Order # 88-12-056
Continued From Above

SAMPLE ID 8812071431 6 B2-31

FRACTION 06A

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected not specified

Category

ANALYST DLB
INSTRMT

ANALYZED 12/13/88

UNITS mg/L

ANALYTE RESULT DET LIMIT

Filterable Residue (TDS) 3800 10

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8812071501 6 B2-33

FRACTION 07A

TEST CODE OPDA

NAME Orthophosphate

Date & Time Collected not specified

Category

VERIFIED LM

ANALYST HJS
INSTRMT 21

ANALYZED 12/09/88

UNITS mg/L as P

ANALYTE RESULT DET LIMIT

Orthophosphate 0.048 0.030

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

Page 12
Received: 12/09/88
RAS - Austin
Results by Sample
REPORT
Work Order # 88-12-056
Continued From Above

SAMPLE ID 8812071501 602-13 FRACTION 07A TEST CODE OP04 NAME Orthophosphate
Date & Time Collected not specified Category

N/A = not available

SAMPLE ID 8812071501 602-13 FRACTION 07A TEST CODE TDS NAME Total dissolved solids
Date & Time Collected not specified Category

ANALYST DLB ANALYZED 12/15/88
INSTRMT UNITS mg/L
VERIFIED LM

ANALYTE RESULT DET LIMIT
Filterable Residue (TDS) 3500 10

NOTES AND DEFINITIONS FOR THIS REPORT.
DET LIMIT = DETECTION LIMIT
ND = not detected at detection limit
NA = not analyzed
* = less than 5 times the detection limit
N/A = not available

SAMPLE ID 8812071601 602-13 FRACTION 08A TEST CODE OP04 NAME Orthophosphate
Date & Time Collected not specified Category

ANALYST MJS ANALYZED 12/09/88
INSTRMT 01 UNITS mg/L as P
VERIFIED LM

SAMPLE	Test:CA E	Test:CL IC	Test:EG5010	Test:F IC	Test:K E
Sample Id	ug/ml	mg/L	date complete	mg/L	ug/ml
GBR-17 01 8812070930	370	170	12/30/88	2.4	<5.0
GBR-24 02 8812071016	450	600	12/30/88	3.2	<5.0
GBR-14 03 8812071123	470	690	12/30/88	3.8@	5.2*
GBR-30 04 8812071201	460	620	12/30/88	3.6	<5.0
GBR-15-05 8812071352	450	230	12/30/88	3.7	9.6*
GBR-31 05 8812071431	500	450	12/30/88	3.5	<5.0
GBR-33 07 8812071501	390	540	12/30/88	0.63	<5.0
GBR-13 08 8812071601	470	720	12/30/88	0.56	<5.0
GBR-6 09 8812071647	280	340	12/30/88	0.35	<5.0
GBR-8 10 8812071738	360	630	12/30/88	0.70	6.7*
11 8812071738 oil	<10				30*

SAMPLE	Test:MS E	Test:MS E	Test:PREP X	Test:504 IC
Sample Id	ug/ml	ug/ml	date complete	mg/L as SO4
GBR-17 01 8812070930	42	290		1300

Received: 12/09/88

RAS - Austin

REPORT

Results by Test

Work Order # 88-12-056
Continued From Above

SAMPLE	Test: ME E	Test: ME E	Test: ME E	Test: PREP X	Test: S04 IC
Sample Id	mg/L	mg/L	mg/L	mg/L	mg/L as S04
GBR-24 02 8812071016	81	400			1600
GBR-14 03 8812071123	29	500			1500
GBR-30 04 8812071201	36	440			1300
GBR-15 05 8812071352	30	570			2000
GBR-31 06 8812071431	44	500			1700
GBR-23 07 8812071501	40	480			1400
GBR-13 08 8812071601	48	700			1600
GBR-6 09 8812071547	72	420			660
GBR-8 10 8812071738	59	660			490
8812071738 oil	<10	<10		12/30/88	



8710070820



Analytical Technologies, Inc.

METALS
PROJECT: GBRSAMPLE DATE: 10/07/87
LAB RECEIPT DATE: 10/09/87
MATRIX: WATERSAMPLE ID: 8710070820
LOCATION: GBR 33
LAB SAMPLE #: 3439-5
UNITS: mg/kg

<u>ANALYSIS DATE</u>	<u>CONSTITUENT NAME</u>	<u>DILUTION FACTOR</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
10/21/87	ARSENIC (As)	1000	10.0	38.0
10/23/87	BARIUM (Ba)	100	6.0	ND
10/23/87	CADMIUM (Cd)	100	0.3	16.7
10/12/87	HEXAVALENT CHROMIUM (CR+6)	1	0.03	ND
10/23/87	TOTAL CHROMIUM (T. Cr)	100	1.0	72.8
10/21/87	LEAD (Pb)	200	0.4	8.8
10/18/87	MERCURY (Hg)	10	0.002	ND
10/22/87	SELENIUM (Se)	4000	4.0	179
10/27/87	SILVER (Ag)	100	1.0	2.0

NOTE: ND = NOT DETECTED
NA = NOT ANALYZEDPROJECT MANAGER: *JMA*346
DATE: 10/28/87

METALS
PROJECT: GIANT MONITOR WELLSSAMPLE DATE: 9/09/87
LAB RECEIPT DATE: 9/11/87
MATRIX: WATERSAMPLE ID: 8709091800
LOCATION: GRR-33
LAB SAMPLE #: 3328-1
UNITS: mg/l

<u>ANALYSIS DATE</u>	<u>CONSTITUENT NAME</u>	<u>DILUTION FACTOR</u>	<u>DETECTION LIMIT</u>	<u>RESULT</u>
9/16/87	ARSENIC (As)	1	0.010	ND
9/23/87	BARIUM (Ba)	1	0.060	0.14
9/21/87	CADMIUM (Cd)	1	0.003	0.010
9/16/87	HEXAVALENT CHROMIUM (Cr+6)	1	0.03	ND
9/21/87	TOTAL CHROMIUM (Cr Tot)	1	0.010	0.014
9/17/87	LEAD (Pb)	1	0.002	0.013
9/25/87	MERCURY (Hg)	1	0.0002	ND
9/16/87	SELENIUM (Se)	1	0.010	ND
9/22/87	SILVER (Ag)	1	0.010	0.021

NOTE: ND = NOT DETECTED
NA = NOT ANALYZEDPROJECT MANAGER: *Smith*

DATE: 27 SEPTEMBER 1987

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

MONITOR WELL GBR-36/GRW-10

<u>SAMPLER</u>	OCD	GIANT
<u>DATE</u>	<u>6/8/88</u>	<u>9/4/90</u>
<u>PARAMETER</u>		
DETECTION LIMIT	(BELOW)	<1.0
BENZENE	15.0	2.2
BROMODICHLOROMETHANE	ND(<1.0)	ND
BROMOFORM	ND(<1.0)	ND
BROMOMETHANE	ND(<1.0)	ND
CARBON TETRACHLORIDE	ND(<1.0)	ND
CHLOROBENZENE	ND(<1.0)	ND
CHLOROETHANE	ND(<1.0)	ND
CHLOROFORM	ND(<1.0)	ND
CHLOROMETHANE	ND(<1.0)	ND
DIBROMOCHLOROMETHANE	ND(<1.0)	ND
1,2-DICHLOROBENZENE	ND(<1.0)	ND
1,3-DICHLOROBENZENE	ND(<1.0)	ND
1,4-DICHLOROBENZENE	ND(<1.0)	ND
1,1-DICHLOROETHANE	9.6	ND
1,2-DICHLOROETHANE	3.5	ND
1,1-DICHLOROETHENE	ND(<1.0)	ND
CIS-1,2-DICHLOROETHENE	80.0	ND
TRANS-1,2-DICHLOROETHENE	ND(<1.0)	ND
DICHLOROMETHANE	6.3	ND
1,2-DICHLOROPROPANE	ND(<1.0)	ND
ETHYLBENZENE	TR (12.5)	5.3
METHYLENE CHLORIDE	ND(<1.0)	ND
1,1,2,2-TETRACHLOROETHANE	ND(<1.0)	ND
TETRACHLOROETHENE	17.0	ND
TOLUENE	ND(12.5)	0.33 X
1,1,1-TRICHLOROETHANE	10.0	ND
1,1,2-TRICHLOROETHANE	ND(<1.0)	ND
TRICHLOROETHENE	10.0	ND
TRICHLOROFLUOROMETHANE	ND(<1.0)	ND
VINYL CHLORIDE	ND(<1.0)	ND
TOTAL XYLENES	12.5	19.0

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
*	-	DUPLICATE ANALYSIS
X	-	PRESENCE NOT CONFIRMED

Giant Refining Co.
 Radian Work Order: 90-09-163

Method: Vol. aromatics by SW8020 (1)

List: SW8020

Sample ID:	9009041235	9009041243	9009041300	9009041343
	RW-5	RW-6	RW-10	RW-12
Factor:	10	10	1	5
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
Benzene	140 C	2.0	220 C	2.0	2.2 C	0.20	1400 DC	5.0
Chlorobenzene	ND	2.0	ND	2.0	ND	0.20	ND	1.0
1,2-Dichlorobenzene	ND	4.0	ND	4.0	ND	0.40	ND	2.0
1,3-Dichlorobenzene	ND	4.0	ND	4.0	ND	0.40	ND	2.0
1,4-Dichlorobenzene	ND	3.0	ND	3.0	ND	0.30	ND	1.5
Ethylbenzene	120 C	2.0	67 C	2.0	5.3 C	0.20	52 C	1.0
Toluene	ND	2.0	ND	2.0	0.33 Xa	0.20	2.2 Ca	1.0
Total xylenes	14 C	2.0	46 C	2.0	19 C	0.20	66 C	1.0
 Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	91		90		95		93	
Control Limits: 76 to 140								

C Confirmed on second column or by GC/MS

X See definition in report narrative

D Sample dilution necessary for this analyte

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.



SCIENTIFIC LABORATORY DIVISION

ORGANIC ANALYSIS REQUEST FORM

Organic Section - Phone: 841-2570

88-0859-C

REPORT TO: DAVID BOYER SLD No. OR-
N.M. OIL CONSERVATION DIVISION DATE REC. 6/10/88
P.O. Box 2088 PRIORITY 3
Santa Fe, NM 87504-2088 PHONE(S): 827-5812

COLLECTION CITY: Bloomfield COUNTY: San Juan
COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8806081530
LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+27+11B (10N06E24342)
USER CODE: 82235 SUBMITTER: David Boyer CODE: 2610
SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: _____

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____
Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice: Sample stored in an ice bath (Not Frozen).
☐ P-AA: Sample Preserved with Ascorbic Acid to remove chlorine residual.
☒ P-HCl: Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (755) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks: _____

FIELD DATA:pH= 7; Conductivity= 500 umho/cm at 23 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Recovery well
Giant Bloomfield GBR-36 2 pumps (oil & water) sample
from water line at discharge. Cloudy sample, some oil droplets
on surface.

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): A H Boyer Method of Shipment to the Lab: Safe Can

CHAIN OF CUSTODY

I certify that this sample was transferred from David Boyer to Sheryl L. Allen
at (location) SLD-ALB on 6/9/88 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☒ No ☐

Signatures: A H Boyer Sheryl L. AllenFor OCD use: Date owner notified: 8/4/88 Phone or (Letter)? Initials: PSK

ANALYSES PERFORMED

LAB. No.: OR-

859

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
 Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
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☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>		<i>halogenated purgeables</i>	
<i>benzene</i>	<i>15</i>	<i>1,1,1-Trichloroethane</i>	<i>10</i>
<i>toluene</i>	<i>N.D.</i>	<i>1,2-Dichloroethane</i>	<i>3.5</i>
<i>ethylbenzene</i>	<i>T.R.</i>	<i>Trichloroethene</i>	<i>10</i>
<i>p-tol-xylene</i>	<i>12.5</i>	<i>dichloromethane</i>	<i>6.3</i>
<i>o-xylene</i>	<i>T.R.</i>	<i>1,1-Dichloroethane</i>	<i>9.6</i>
		<i>tetrachloroethene</i>	<i>17</i>
		<i>cis-1,2-Dichloroethane</i>	<i>80</i>
* DETECTION LIMIT *	<i>12.5 ug/L</i>	+ DETECTION LIMIT +	<i>0.5 ug/L</i>

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: *R Meyerhen* date: *6/15/88*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *6/15/88* Analyst's signature: *Harry C. Glen*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *R Meyerhen*





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

859 ~~WNR~~

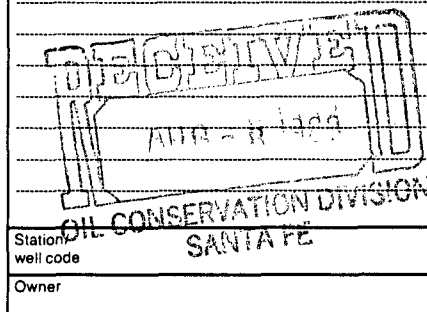
DATE RECEIVED <u>6/10/88</u>	LAB NO. <u>WC-2093</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>6/10/88</u>	SITE INFORMATION	Sample location <u>Giant Hornfield GRR-36</u>
Collection TIME <u>1530</u>		Collection site description
Collected by — Person/Agency <u>Boyer/Anderson 10CD</u>		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



SAMPLING CONDITIONS

☐ Bailed ☐ Dipped	☒ Pump ☐ Tap	Water level <u>—</u>	Discharge <u>—</u>	Sample type <u>GRAB</u>
pH (00400) <u>7</u>	Conductivity (Uncorrected) <u>—</u> μ mho	Water Temp. (00010) <u>—</u> °C	Conductivity at 25°C (00094) <u>—</u> μ mho	
Field comments <u>some oil droplets in unfiltered sample</u>				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted <u>1</u>	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify: <u>—</u>	☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NA	Units	Date analyzed	From <u>P</u> , NA Sample:	Date Analyzed
☒ Conductivity (Corrected) 25°C (00095)	<u>5773</u> μ mho	<u>7/11</u>	☒ Calcium <u>632</u> mg/l	<u>7/19</u>
☐ Total non-filterable residue (suspended) (00530)	<u>—</u> mg/l	<u>—</u>	☒ Potassium <u>5</u> mg/l	<u>7/25</u>
☒ Other: <u>Lab pH</u>	<u>7.98</u>	<u>7/20</u>	☒ Magnesium <u>96.4</u> mg/l	<u>7/19</u>
☐ Other: <u>—</u>	<u>—</u>	<u>—</u>	☒ Sodium <u>864</u> mg/l	<u>7/25</u>
☐ Other: <u>—</u>	<u>—</u>	<u>—</u>	☒ Bicarbonate <u>209</u> mg/l	<u>7/20</u>
A-H₂SO₄			☒ Chloride <u>996</u> mg/l	<u>7/26</u>
☐ Nitrate-N +, Nitrate-N total (00630)	<u>—</u> mg/l	<u>—</u>	☒ Sulfate <u>2010</u> mg/l	<u>7/26</u>
☐ Ammonia-N total (00610)	<u>—</u> mg/l	<u>—</u>	☒ Total Solids <u>4726</u> mg/l	<u>7/7</u>
☐ Total Kjeldahl-N ()	<u>—</u> mg/l	<u>—</u>	☒ Bromide <u>0.539</u>	<u>6/22</u>
☐ Chemical oxygen demand (00340)	<u>—</u> mg/l	<u>—</u>	☐ Cation/Anion Balance <u>—</u>	<u>—</u>
☐ Total organic carbon ()	<u>—</u> mg/l	<u>—</u>	Analyst <u>—</u>	Date Reported <u>7/29/88</u>
☐ Other: <u>—</u>	<u>—</u>	<u>—</u>	Reviewed by <u>—</u>	<u>—</u>
☐ Other: <u>—</u>	<u>—</u>	<u>—</u>	Laboratory remarks <u>Received by RAV 6/9/88 SLD-AIB seal intact</u>	

FOR OCD USE -- Date Owner Notified 8/19/88 Phone or Letter? —

Initials AVB

920

CATIONS			DET.
ANALYTE	MEQ.	PPM	LIMIT
Ca	31.54	632.00	<3.0
Mg	7.92	96.40	<0.3
Na	37.58	864.00	<10.0
K	0.13	5.00	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	
SUMS	77.16	1597.40	
Total Dissolved Solids=			4726
Ion Balance =			105.13%

ANIONS			DET.
ANALYTE	MEQ.	PPM	LIMIT
HC03	3.43	209.00	<1.0
SO4	41.88	2010.00	<10.0
CL	28.10	996.00	<5.0
NO3	0.00	0.00	< 0.
CO3	0.00	0.00	< 1.
NH3	0.00	0.00	< 0.
PO4	0.00	0.00	< 0.
	73.40	3215.00	

WC No. = 8802093
Date out/By CD 7/29/88





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2553

Date Received 6/10/88 Lab No. ICP-263 User Code ☒ 82235 ☐ Other:

COLLECTION DATE & TIME: yy mm dd hh mm 08 06 08 15 31 COLLECTION SITE DESCRIPTION Grant GBR-36

COLLECTED BY: Boyer/Anderson et al

TO:

OWNER: Grant Bloomfield

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., PO Box 2088
SANTA FE, NM 87504-2088

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)

ATTN: D. Boyer
TELEPHONE: 827-5812

STATION/ WELL CODE:

LATITUDE, LONGITUDE:

SAMPLING CONDITIONS:

☐ Bailed ☒ Pump ☐ Water Level: ☐ Discharge: ☐ Sample Type: GRAB
☐ Dipped ☐ Tap
pH(00400) 7 Conductivity(Uncorr.) 5100 μ mho Water Temp.(00010) 23 $^{\circ}$ C Conductivity at 25 $^{\circ}$ C (00094) μ mho

FIELD COMMENTS:

SAMPLE FIELD TREATMENT

Check proper boxes:

☐ WPN: Water Preserved w/HNO₃
☐ Non-Filtered ☒ WPF: Water Preserved w/HNO₃
☐ Filtered

LAB ANALYSIS REQUESTED:

☒ ICAP Scan
Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	<u><0.1</u>	<u> </u>	Silicon	<u>7.5</u>	<u> </u>
Barium	<u><0.1</u>	<u> </u>	Silver	<u><0.1</u>	☐ <u> </u>
Beryllium	<u><0.1</u>	<u> </u>	Strontium	<u>12.</u>	<u> </u>
Boron	<u>0.4</u>	<u> </u>	Tin	<u><0.1</u>	<u> </u>
Cadmium	<u><0.1</u>	☐ <u> </u>	Vanadium	<u><0.1</u>	<u> </u>
Calcium	<u>620.</u>	<u> </u>	Zinc	<u><0.1</u>	<u> </u>
Chromium	<u><0.1</u>	☒ <u><0.005</u>	Arsenic	<u> </u>	☐ <u> </u>
Cobalt	<u>0.30</u>	<u> </u>	Selenium	<u> </u>	☐ <u> </u>
Copper	<u><0.1</u>	<u> </u>	Mercury	<u> </u>	☐ <u> </u>
Iron	<u>0.2</u>	<u> </u>			☐ <u> </u>
Lead	<u><0.1</u>	☒ <u><0.01</u>			☐ <u> </u>
Magnesium	<u>45.</u>	<u> </u>			☐ <u> </u>
Manganese	<u>0.78</u>	<u> </u>			☐ <u> </u>
Molybdenum	<u><0.1</u>	<u> </u>			☐ <u> </u>
Nickel	<u>0.3</u>	<u> </u>			☐ <u> </u>

LAB COMMENTS: Soil intact. Broken by JAA 6/14/88

For OCD Use:

Date Owner Notified: 8/9/88
Phone or Letter?
Initials: AAB

ICAP Analyst

Reviewer Jim Ashley

Date Analyzed

Date Received 7/25/88

Received by NSJ

6/9/88 SLS-ALE

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

MONITOR WELL GBR-37/GRW-5

<u>SAMPLER</u>	<u>OCD</u>	<u>GIANT</u>
<u>DATE</u>	<u>6/8/88</u>	<u>9/4/90</u>
<u>PARAMETER</u>		
DETECTION LIMIT	0.5	(BELOW)
BENZENE	68.0	140.0
BROMODICHLOROMETHANE	ND	NA
BROMOFORM	ND	NA
BROMOMETHANE	ND	NA
CARBON TETRACHLORIDE	ND	NA
CHLOROBENZENE	ND	ND(2.0)
CHLOROETHANE	ND	NA
CHLOROFORM	ND	NA
CHLOROMETHANE	ND	NA
DIBROMOCHLOROMETHANE	ND	NA
1,2-DICHLOROBENZENE	ND	ND(4.0)
1,3-DICHLOROBENZENE	ND	ND(4.0)
1,4-DICHLOROBENZENE	ND	ND(3.0)
DICHLORODIFLUOROMETHANE	ND	NA
1,1-DICHLOROETHANE	2.5	NA
1,2-DICHLOROETHANE	4.0	NA
1,1-DICHLOROETHENE	ND	NA
CIS-1,2-DICHLOROETHENE	7.0	NA
TRANS-1,2-DICHLOROETHENE	ND	NA
DICHLOROMETHANE	1.7	NA
1,2-DICHLOROPROPANE	ND	NA
ETHYLBENZENE	61.0	120.0
METHYLENE CHLORIDE	ND	NA
1,1,2,2-TETRACHLOROETHANE	ND	NA
TETRACHLOROETHENE	2.3	NA
TOLUENE	2.0	ND(2.0)
1,1,1-TRICHLOROETHANE	1.5	NA
1,1,2-TRICHLOROETHANE	ND	NA
TRICHLOROETHENE	2.4	NA
TRICHLOROFLUOROMETHANE	ND	NA
VINYL CHLORIDE	ND	NA
TOTAL XYLENES	43.0	14.0

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
*	-	DUPLICATE ANALYSIS

Giant Refining Co.
 Radian Work Order: 90-09-163

Method: Vol. aromatics by SW8020 (1)

List: SW8020

Sample ID:	9009041235	9009041243	9009041300	9009041343
Factor:	RW-5 10	RW-6 10	RW-10 1	RW-12 5
Results in:	ug/L 05A	ug/L 06A	ug/L 07A	ug/L 08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	140 C	2.0	220 C	2.0	2.2 C	0.20	1400 DC	5.0
Chlorobenzene	ND	2.0	ND	2.0	ND	0.20	ND	1.0
1,2-Dichlorobenzene	ND	4.0	ND	4.0	ND	0.40	ND	2.0
1,3-Dichlorobenzene	ND	4.0	ND	4.0	ND	0.40	ND	2.0
1,4-Dichlorobenzene	ND	3.0	ND	3.0	ND	0.30	ND	1.5
Ethylbenzene	120 C	2.0	67 C	2.0	5.3 C	0.20	52 C	1.0
Toluene	ND	2.0	ND	2.0	0.33 Xa	0.20	2.2 Ca	1.0
Total xylenes	14 C	2.0	46 C	2.0	19 C	0.20	66 C	1.0
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	91		90		95		93	
Control Limits: 76 to 140								

C Confirmed on second column or by GC/MS

X See definition in report narrative

D Sample dilution necessary for this analyte

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.



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

REPORT TO: DAVID BOYER
WPU 754
N.M. OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, NM 87504-2088
COLLECTION CITY: Bloomfield SANTA FE; COUNTY: San Juan
COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8806081500
LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+27+113 (10N06E24342)
USER CODE: 82235 SUBMITTER: David Boyer CODE: 2610
SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: _____

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____
Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice: Sample stored in an ice bath (Not Frozen).
☐ P-AA: Sample Preserved with Ascorbic Acid to remove chlorine residual.
☒ P-HCl: Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
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☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks: _____

FIELD DATA:

pH= 7; Conductivity= 4000 umho/cm at 20.5 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Bloomfield GBR-37, Very slight odor, clear
Sample from pump at discharge at well, Recovery well

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): D.A. Boyer Method of Shipment to the Lab: State Car

CHAIN OF CUSTODY

I certify that this sample was transferred from D.G. Boyer to Harry C. Eden
at (location) SLD-ALB on 6/9/88 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☒ No ☐

Signatures D.A. Boyer Harry C. Eden

For OCD use: Date owner notified: 8/19/88 Phone or (Letter)? Initials 285

857

This sample was tested using the analytical screening method(s) checked below:

EXTRACTABLE SCREENS

- | | |
|--------------------------|---|
| ☐ | (751) Aliphatic Hydrocarbons |
| ☐ | (755) Base/Neutral Extractables |
| ☐ | (758) Herbicides, Chlorophenoxy acid |
| ☐ | (759) Herbicides, Triazines |
| ☐ | (760) Organochlorine Pesticides |
| ☐ | (761) Organophosphate Pesticides |
| ☐ | (767) Polychlorinated Biphenyls (PCB's) |
| ☐ | (764) Polynuclear Aromatic Hydrocarbons |
| ☐ | (762) SDWA Pesticides & Herbicides |

CONC.
[PPB]

	PPB
halogenated paraffins	
1,1,1-Trichloroethane	1.5
1,2-Dichloroethane	4
trichloroethene	2.4
1,1-Dichloroethane	2.5
tetrachloroethene	2.3
cis 1,2-Dichloroethene	7
Dichloromethane	1.7
+ DETECTION LIMIT +	.598/L

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Seventy compounds ranging from the aromatic
screen region thru the C3 substituted benzene region
at 10-30 ppb detected by the photoionization detector
but not identified.

Reviewers signature: K. M. ...





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

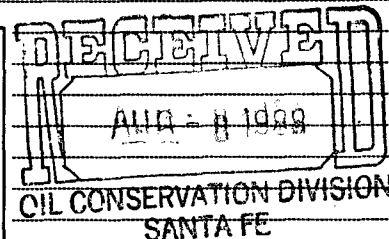
DATE RECEIVED 6/10/88 LAB NO. WC-2091 USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE 6/10/88 Collection TIME 1500 SITE INFORMATION
Sample location Giant Bloomfield GBR-37
Collection site description
Collected by — Person/Agency Boyd/Anderson 10CD

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



Station/
well code
Owner

SAMPLING CONDITIONS

☐ Bailed ☒ Pump ☐ Dipped ☐ Tap Water level — Discharge — Sample type GRAB
pH (00400) 7 Conductivity (Uncorrected) 4000 µmho Water Temp. (00010) 20.5 °C Conductivity at 25 °C (00094) µmho
Field comments Clear, slight odor

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted 1 ☐ NF: Whole sample (Non-filtered) ☒ F: Filtered in field with 0.45 µm membrane filter ☐ A: 2 ml H₂SO₄/L added
☒ NA: No acid added ☐ Other-specify: ☐ A: 5ml conc. HNO₃ added ☐ A: 4ml fuming HNO₃ added

ANALYTICAL RESULTS from SAMPLES

NA	Units	Date analyzed	From F, NA Sample:	Date Analyzed
☒ Conductivity (Corrected) 25 °C (00095)	µmho	7/11	☒ Calcium	404 mg/l 7/19
☐ Total non-filterable residue (suspended) (00530)	mg/l		☒ Potassium	2 mg/l 7/25
☒ Other: Lab pH	7.95	7/20	☒ Magnesium	68.3 mg/l 7/19
☐ Other:			☒ Sodium	676 mg/l 7/25
☐ Other:			☒ Bicarbonate	195 mg/l 7/21
A-H₂SO₄			☒ Chloride	680 mg/l 7/21
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☒ Sulfate	1275 mg/l 7/21
☐ Ammonia-N total (00610)	mg/l		☒ Total Solids	3534 mg/l 7/7
☐ Total Kjeldahl-N ()	mg/l		☒ Bromide	3.05 6/22
☐ Chemical oxygen demand (00340)	mg/l		☐	
☐ Total organic carbon ()	mg/l		☒ Cation/Anion Balance	
☐ Other:			Analyst	Date Reported 7/29/88
☐ Other:			Reviewed by	
Laboratory remarks Received by CR 6/9/88 SLB-ALB [Signature]				

FOR OCD USE -- Date Owner Notified 8/19/88 Phone or Letter?

Initials [Signature]

719

CATIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	20.16	404.00	<3.0
Mg	5.61	68.30	<0.3
Na	29.40	676.00	<10.0
K	0.05	2.00	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	
SUMS	55.22	1150.30	
Total Dissolved Solids=			3534
Ion Balance =			112.84%

ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
HC03	3.20	195.00	<1.0
SO4	26.56	1275.00	<10.0
CL	19.18	680.00	<5.0
NO3	0.00	0.00	< 0.
C03	0.00	0.00	< 1.
NH3	0.00	0.00	< 0.
PO4	0.00	0.00	< 0.
	48.94	2150.00	

WC No. = 8802091
Date out/By CE 7/29/88



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

852 WPN

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED <u>6/10/88</u>	LAB NO. <u>W-2105</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>6/10/88</u>	SITE INFORMATION	Sample location <u>Giant Bloomfield GBR-37</u>
Collection TIME <u>1300</u>		Collection site description
Collected by — Person/Agency <u>Boyer/Anderson /OCD</u>		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

RECEIVED
AUG - 8 1988
OIL CONSERVATION DIVISION
SANTA FE

Station/
well code
Owner

SAMPLING CONDITIONS

☐ Bailed ☐ Dipped	☒ Pump ☐ Tap	Water level <u>-</u>	Discharge <u>-</u>	Sample type <u>GRAB</u>
pH (00400) <u>7</u>	Conductivity (Uncorrected) <u>4800</u> μ mho	Water Temp. (00010) <u>20.5</u> °C	Conductivity at 25°C (00094) <u> </u> μ mho	
Field comments <u>Clear, slight odor</u>				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted <u>1</u>	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☒ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added ☐ Other-specify: <u> </u>		☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NA	Units	Date analyzed	From <u> </u> , NA Sample:	Date Analyzed
☐ Conductivity (Corrected) 25°C (00095)	μ mho		☐ Calcium	mg/l
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Potassium	mg/l
☐ Other:			☐ Magnesium	mg/l
☐ Other:			☐ Sodium	mg/l
☐ Other:			☐ Bicarbonate	mg/l
A-H₂SO₄			☐ Chloride	mg/l
☒ Nitrate-N +, Nitrate-N total (00630)	mg/l	<u>7/25</u>	☐ Sulfate	mg/l
☒ Ammonia-N total (00610)	mg/l	<u>7/17</u>	☐ Total Solids	mg/l
☒ Total Kjeldahl-N ()	mg/l	<u>7/26</u>	☐ <u> </u>	
☐ Chemical oxygen demand (00340)	mg/l		☐ <u> </u>	
☐ Total organic carbon ()	mg/l		☐ Cation/Anion Balance	
☐ Other:			Analyst	Date Reported
☐ Other:				Reviewed by

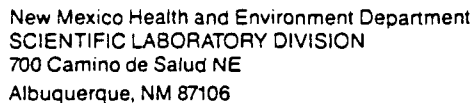
Laboratory remarks

Received by PH 6/9/88 SLA-ALB Sea Surface

FOR OCD USE -- Date Owner Notified 8/19/88 Phone or Letter

Initials





Telephone: (505)841-2553

TO:

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., PO Box 2088
SANTA FE, NM 87504-2088

ATTN: D. Boyer
TELEPHONE: 827-5812

STATION/ WELL CODE: | | | | | | | | | |

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)

12 | 9 | 11 | 2 | 4 | 7 | 7 | 1 | 1 | 3 |

LATITUDE, LONGITUDE: | | | | | | | | | | - | | |

☐ Bailed ☐ Dipped	☒ Pump ☐ Tap	Water Level: —	Discharge: —	Sample Type: GRADE
pH(00400) 7	Conductivity(Uncorr.) 4000 µmho	Water Temp.(00010) 20.5 °C	Conductivity at 25 °C (00094) µmho	

FIELD COMMENTS: Clear, slight odor

SAMPLE FIELD TREATMENT		LAB ANALYSIS REQUESTED:
Check proper boxes:		
☐ WPN: Water Preserved w/HNO ₃ Non-Filtered	☒ WPF: Water Preserved w/HNO ₃ Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	40.1		Silicon	7.9	
Barium	40.1		Silver	40.1	☐
Beryllium	40.1		Strontium	9.4	
Boron	0.3		Tin	40.1	
Cadmium	40.1	☐	Vanadium	40.1	
Calcium	520.		Zinc	40.1	
Chromium	40.1	☒ <0.005	Arsenic		☐
Cobalt	40.05		Selenium		☐
Copper	40.1		Mercury		☐
Iron	2.1				☐
Lead	40.1	☒ <0.01			☐
Magnesium	44.				☐
Manganese	4.2 for 4.3				☐
Molybdenum	40.1				☐
Nickel	40.1				☐

LAB COMMENTS: Sail intact. Broken by JAA 6/14/88.

For OCD Use:

Date Owner Notified: 8/19/98

Phone or Letter?

Initials:

ICAP Analyst VB

Date Analyzed 7/15/88

Reviewer

Date Received 7/25/88

Received by *WJ* 6/9/88 SLB-ALB

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

MONITOR WELL GBR-38/GRW-1

<u>SAMPLER</u>	OCD	GIANT
<u>DATE</u>	<u>6/8/88</u>	<u>9/4/90</u>
<u>PARAMETER</u>		
DETECTION LIMIT	0.5	<1.0
BENZENE	ND	ND
BROMODICHLOROMETHANE	ND	NA
BROMOFORM	ND	NA
BROMOMETHANE	ND	NA
CARBON TETRACHLORIDE	ND	NA
CHLOROBENZENE	ND	ND
CHLOROETHANE	ND	NA
CHLOROFORM	ND	NA
CHLOROMETHANE	ND	NA
DIBROMOCHLOROMETHANE	ND	NA
1,2-DICHLOROBENZENE	ND	ND
1,3-DICHLOROBENZENE	ND	ND
1,4-DICHLOROBENZENE	ND	ND
DICHLORODIFLUOROMETHANE	ND	NA
1,1-DICHLOROETHANE	ND	NA
1,2-DICHLOROETHANE	ND	NA
1,1-DICHLOROETHENE	ND	NA
CIS-1,2-DICHLOROETHENE	ND	NA
TRANS-1,2-DICHLOROETHENE	ND	NA
1,2 DICHLOROPROPANE	ND	NA
ETHYLBENZENE	ND	ND
METHYLENE CHLORIDE	ND	NA
1,1,2,2-TETRACHLOROETHANE	ND	NA
TETRACHLOROETHENE	ND	NA
TOLUENE	ND	ND
1,1,1-TRICHLOROETHANE	ND	NA
1,1,2-TRICHLOROETHANE	ND	NA
TRICHLOROETHENE	ND	NA
TRICHLOROFLUOROMETHANE	ND	NA
VINYL CHLORIDE	ND	NA
TOTAL XYLENES	ND	ND

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

Giant Refining Co.
 Radian Work Order: 90-09-163

Method: Vol. aromatics by SW8020 (1)

List: SW8020

Sample ID:	9009041152	9009041202	9009041215	9009041229
	RW-1 <i>GBR-38</i>	RW-2	RW-3	RW-4
Factor:	1	1	10	10
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
Benzene	ND	0.20	ND	0.20	460 C	2.0	450 C	2.0
Chlorobenzene	ND	0.20	ND	0.20	ND	2.0	ND	2.0
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	4.0
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	4.0
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	3.0	ND	3.0
Ethylbenzene	ND	0.20	ND	0.20	450 C	2.0	150 C	2.0
Toluene	ND	0.20	ND	0.20	5.2 G ^a	2.0	ND	2.0
Total xylenes	ND	0.20	ND	0.20	970 C	2.0	40 C	2.0
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	94		94		92		93	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

C Confirmed on second column or by GC/MS

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.



SCIENTIFIC LABORATORY DIVISION

ORGANIC ANALYSIS REQUEST FORM

Organic Section - Phone: 841-2570

REPORT TO: DAVID BOYER

N.M. OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, NM 87504-2088

S.L.D. No. OR-

DATE REC.

PRIORITY

PHONE(S): 827-5812

88-0850-C

COLLECTION CITY: Bloomfield; COUNTY: Sante Fe

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8/8/88 10:18:14 1315

LOCATION CODE: (Township-Range-Section-Tracts) 29 W + 1 B W + 217 + 1113 (10N08E24342)

USER CODE: 82235 SUBMITTER: David Boyer CODE: 21610

SAMPLE TYPE: WATER ☒ SOIL ☐ FOOD ☐ OTHER: ☐

This form accompanies 2 Septum Vials, Glass Jugs, and/or

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice: Sample stored in an ice bath (Not Frozen).
☐ P-AA: Sample Preserved with Ascorbic Acid to remove chlorine residual.
☒ P-HCl: Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks:

FIELD DATA:

pH= 7; Conductivity= 300 umho/cm at 20.5 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate

Depth to water ft.; Depth of well ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Bloomfield GBR-38 Recovery well
Clear, No odor, Sample from pump discharge at well

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector) David Boyer Method of Shipment to the Lab:

CHAIN OF CUSTODY

I certify that this sample was transferred from David Boyer to Mary C. Eden
at (location) SLD - ALB on 8/9/88 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☒ No ☐

Signatures David Boyer Mary C. Eden

For OCD use: Date owner notified: 8/19/87 Phone or Letter? Initials

ANALYSES PERFORMED

LAB. No.: OR-

850

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (763) Aliphatic Headspace (1-5 Carbons)
☒ (764) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
 Other Specific Compounds or Classes

☐
☐

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>	<i>N.D.</i>		
<i>halogenated purgeables</i>	<i>N.D.</i>		
* DETECTION LIMIT *	<i>.572</i>	+ DETECTION LIMIT +	

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: *Henry C. Allen* date: *6/14/88*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *6/14/88* Analyst's signature: *Henry C. Allen*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *R. Meyerhen*





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
~~WNP~~
WNP

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

DATE RECEIVED <u>6/10/88</u>	LAB NO. <u>W-2088</u>	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE <u>6/10/88</u>	SITE INFORMATION	Sample location <u>Giant Bloomfield GBR-38</u>
Collection TIME <u>1435</u>		Collection site description
Collected by — Person/Agency <u>Boyer/Anderson 10CD</u>		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

RECEIVED
AUG - 8 1988
OIL CONSERVATION DIVISION
SANTA FE
Station/ well code
Owner

SAMPLING CONDITIONS

☐ Bailed ☐ Dipped	☒ Pump ☐ Tap	Water level <u>—</u>	Discharge <u>—</u>	Sample type <u>Grab</u>
pH (00400) <u>7</u>	Conductivity (Uncorrected) <u>3700</u> μ mho	Water Temp. (00010) <u>20.5</u> °C	Conductivity at 25 °C (00094) <u>—</u> μ mho	
Field comments <u>Clear, No odor</u>				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted <u>1</u>	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 μ m membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added ☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NA	Units	Date analyzed	From <u>F</u> , NA Sample:	Date Analyzed
☒ Conductivity (Corrected) 25 °C (00095)	<u>4448</u> μ mho	<u>7/11</u>	☒ Calcium <u>592</u> mg/l	<u>7/19</u>
☐ Total non-filterable residue (suspended) (00530)			☒ Potassium <u>4</u> mg/l	<u>7/25</u>
☒ Other: <u>Lab pH</u>	<u>7.97</u>	<u>7/20</u>	☒ Magnesium <u>112.2</u> mg/l	<u>7/19</u>
☐ Other:			☒ Sodium <u>452</u> mg/l	<u>7/25</u>
☐ Other:			☒ Bicarbonate <u>205</u> mg/l	<u>7/20</u>
A-H₂SO₄			☒ Chloride <u>460</u> mg/l	<u>7/26</u>
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☒ Sulfate <u>2070</u> mg/l	<u>7/26</u>
☐ Ammonia-N total (00610)	mg/l		☒ Total Solids <u>4044</u> mg/l	<u>7/7</u>
☐ Total Kjeldahl-N ()	mg/l		☒ Bromide <u>0.314</u>	<u>6/22</u>
☐ Chemical oxygen demand (00340)	mg/l		☐	
☐ Total organic carbon ()	mg/l		☒ Cation/Anion Balance	
☐ Other:			Analyst	Date Reported <u>7/29/88</u>
☐ Other:				Reviewed by <u>CO</u>

Laboratory remarks Received by W 6/9/88 SLB-ALB - see contact

FOR OCD USE -- Date Owner Notified 8/19/88 Phone or Letter? () Initials 2018

CATIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	29.54	592.00	<3.0
Mg	9.20	112.00	<0.3
Na	19.66	452.00	<10.0
K	0.10	4.00	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	
SUMS	58.50	1160.00	
Total Dissolved Solids=			4044
Ion Balance =			98.39%

ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
HC03	3.36	205.00	<1.0
SO4	43.13	2070.00	<10.0
CL	12.98	460.00	<5.0
NO3	0.00	0.00	< 0.
CO3	0.00	0.00	< 1.
NH3	0.00	0.00	< 0.
PO4	0.00	0.00	< 0.
	59.46	2735.00	

WC No. = 8802088
Date out/By 7/29/88



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

852 WPN

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

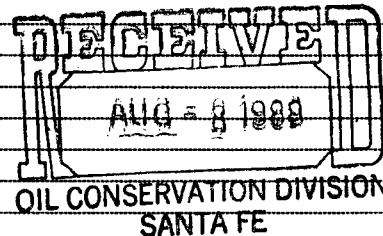
DATE RECEIVED: 6/10/88	LAB NO: WC-2104	USER CODE: ☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE: 6/10/88	SITE INFORMATION	Sample location: Giant Bloomfield GBR-38
Collection TIME: 1435		Collection site description:
Collected by — Person/Agency: Royce / Anderson / OCD		

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



SAMPLING CONDITIONS

☐ Bailed	☒ Pump	Water level	Discharge	Sample type: GRAB
☐ Dipped	☐ Tap			
pH (00400): 7	Conductivity (Uncorrected): 3200 µmho	Water Temp. (00010): 25.5 °C	Conductivity at 25 °C (00094):	µmho
Field comments: Clear, No odor				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted: 1	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µm membrane filter	☒ A: 2 ml H ₂ SO ₄ /L added
☐ NA: No acid added	☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NA	Units	Date analyzed	From _____, NA Sample:	Date Analyzed
☐ Conductivity (Corrected) 25 °C (00095)	µmho		☐ Calcium	mg/l
☐ Total non-filterable residue (suspended) (00530)	mg/l		☐ Potassium	mg/l
☐ Other:			☐ Magnesium	mg/l
☐ Other:			☐ Sodium	mg/l
☐ Other:			☐ Bicarbonate	mg/l
A-H₂SO₄			☐ Chloride	mg/l
☒ Nitrate-N +, Nitrate-N total (00630)	31 mg/l	7/25	☐ Sulfate	mg/l
☒ Ammonia-N total (00610)	0.46 mg/l	7/7	☐ Total Solids	mg/l
☒ Total Kjeldahl-N ()	0.50 mg/l	7/26	☐	
☐ Chemical oxygen demand (00340)	mg/l		☐	
☐ Total organic carbon ()	mg/l		☐ Cation/Anion Balance	
☐ Other:			Analyst	Date Reported
☐ Other:				7/28/88

Laboratory remarks: Received by PH 6/9/88 SLA-ALB. Season 2

FOR OCD USE -- Date Owner Notified: 8/19/88 Phone or Letter? Initials: ARB



HEAVY METAL ANALYSIS FORM

Telephone: (505) 841-2553

Date Received	6/10/88	Lab No.	FCP-261	User Code	☒ 82235	☐ Other:
COLLECTION DATE & TIME:				yy	mm	dd
				hh	mm	
COLLECTED BY:				COLLECTION SITE DESCRIPTION		
				GBR-38		

TO:

OWNER: Grant Bloomfield

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., PO Box 2088
SANTA FE, NM 87504-2088

SITE LOCATION:

County: San Juan

Township, Range, Section, Tract: (10N06E24342)

$$12|94+12|4+27+11|5$$

ATTN: A. Boyer
TELEPHONE: 827-5812

STATION/ WELL CODE: | | | | | | | | | |

LATITUDE, LONGITUDE: | | | | | | | | | | - | | |

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped		☒ Pump ☐ Tap		Water Level: —	Discharge: —	Sample Type: <i>GRAB</i>
pH(00400) 7	Conductivity(Uncorr.) 3700 μmho		Water Temp.(00010) 20.5 $^{\circ}\text{C}$		Conductivity at 25 $^{\circ}\text{C}$ (00094) μmho	

FIELD COMMENTS: Clear, wooded

SAMPLE FIELD TREATMENT

Check proper boxes:

☐ WPN: Water Preserved w/HNO ₃ Non-Filtered	☒ WPF: Water Preserved w/HNO ₃ Filtered	☒ ICAP Scan Mark box next to metal if AA is required.
---	--	--

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	20.1		Silicon	9.0	
Barium	20.1		Silver	20.1	☐
Beryllium	20.1		Strontium	11.	
Boron	1.1		Tin	20.1	
Cadmium	20.1	☐	Vanadium	20.1	
Calcium	620.		Zinc	20.1	
Chromium	20.1	☒ 0.019	Arsenic		☐
Cobalt	20.05		Selenium		☐
Copper	20.1		Mercury		☐
Iron	20.1				☐
Lead	20.1	☒ 20.01			☐
Magnesium	110.				☐
Manganese	20.05				☐
Molybdenum	20.1				☐
Nickel	20.1				☐

LAB COMMENTS: Seal intact. Broken by JFA 6/14/88.

For OCD Use:

Date Owner Notified: 8/19/88 ICAP Analyst JB Reviewer Jim Ashby

Phone or Letter?

Initials:

Date Analyzed

Date Received 7/25/80

Received by *[signature]* 6/9/88 SLD-ALB

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

MONITOR WELL GBR-40

<u>SAMPLER</u>	OCD
<u>DATE</u>	<u>6/8/88</u>
<u>PARAMETER</u>	
DETECTION LIMIT	0.5
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
DICHLORODIFLUOROMETHANE	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	1.8
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



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

88-0852-C

REPORT TO: DAVID BOYER
N.M. OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, NM 87504-2088
COLLECTION CITY: Bloomfield; COUNTY: San Juan
COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8/8/88 06:08 13:40
LOCATION CODE: (Township-Range-Section-Tracts) 29 N + 12 W + 27 + 11 13 (10N06E24342)
USER CODE: 8 2 2 3 5 SUBMITTER: David Boyer CODE: 2 6 0
SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: _____

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice: Sample stored in an ice bath (Not Frozen).
☐ P-AA: Sample Preserved with Ascorbic Acid to remove chlorine residual.
☒ P-HCl: Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks: _____

FIELD DATA:

pH= 7; Conductivity= 3000 umho/cm at 20 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water 31.3 ft.; Depth of well 392 ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Bloomfield GBR-40

H/C odor, No product. Purged & gelled to dry / sampled

I certify that the results in this block accurately reflect the results of my field analyses, observations and recovery activities. (signature collector) David Boyer Method of Shipment to the Lab: State Car

CHAIN OF CUSTODY

I certify that this sample was transferred from David Boyer to Mary C. Eden
at (location) SLD-ALB on 8/9/88 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☒ No ☐

Signatures David Boyer Mary C. Eden

For OCD use: Date owner notified: 8/13/88 Phone or Letter? _____ Initials DBS

852

This sample was tested using the analytical screening method(s) checked below:

EXTRACTABLE SCREENS

- | | |
|--------------------------|---|
| ☐ | (751) Aliphatic Hydrocarbons |
| ☐ | (755) Base/Neutral Extractables |
| ☐ | (758) Herbicides, Chlorophenoxy acid |
| ☐ | (759) Herbicides, Triazines |
| ☐ | (760) Organochlorine Pesticides |
| ☐ | (761) Organophosphate Pesticides |
| ☐ | (767) Polychlorinated Biphenyls (PCB's) |
| ☐ | (764) Polynuclear Aromatic Hydrocarbons |
| ☐ | (762) SDWA Pesticides & Herbicides |

CONC.
[PPB]

	REC. REMARKS
aromatic purgables	
ethylbenzene	1.8
toluene	N.D.
styrene	N.D.
p + m - xylene	N.D.
o-xylene	N.D.
halogenated purgables	N.D.
* DETECTION LIMIT *	.54%

* DETECTION LIMIT *

CONC.
[PPB]

[illegible]

+ DETECTION LIMIT + +

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Eleven late eluting compounds in the C3 substituted benzene & region at approx 5.78/c detected by the photomultiplier detector but not identified.

Reviewers signature: R. Meyers





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
WNN

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

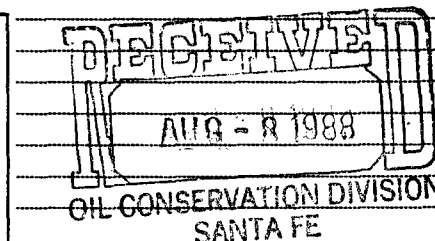
DATE RECEIVED	6/10/88	LAB NO.	WC 2102	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	6/13/88	SITE INFORMATION	Sample location		
Collection TIME	1340		Giant Bloomfield GBR-40		
Collected by		Person/Agency			
Boyer/Anderson		10CD			
Collection site description					

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



Station/
well code
Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	31.3	Discharge	—	Sample type	Grab
pH (00400)	7	Conductivity (Uncorrected)	3800 µmho	Water Temp. (00010)	20 °C	Conductivity at 25°C (00094)	µmho
Field comments							
H/C odor, No product No enough sample to filter							

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	1	☒ NF: Whole sample (Non-filtered)	☐ F: Filtered in field with 0.45 µm membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NA	Units	Date analyzed	From <u>NA</u> , NA Sample:	Date Analyzed
☒ Conductivity (Corrected) 25°C (00095)	4170 µmho	7/11	☒ Calcium	128 mg/l 7/19
☐ Total non-filterable residue (suspended) (00530)			☒ Potassium	15 mg/l 7/25
☒ Other: Lab pH	8.80	7/26	☒ Magnesium	111 mg/l 7/19
☐ Other:			☒ Sodium	931 mg/l 7/25
☐ Other:			☒ Bicarbonate	1048 mg/l 7/26
A-H₂SO₄			☒ Chloride	856 mg/l 7/21
☐ Nitrate-N +, Nitrate-N total (00630)			☒ Sulfate	1300 mg/l 7/21
☐ Ammonia-N total (00610)			☒ Total Solids	3102 mg/l 7/7
☐ Total Kjeldahl-N ()			☒ Bromide	3.25 6/22
☐ Chemical oxygen demand (00340)			☐	
☐ Total organic carbon ()			☒ Cation/Anion Balance	
☐ Other:			Analyst	Date Reported
☐ Other:				7/29/88
Laboratory remarks				
Received by <u>Ph</u> 6/9/88 SLB ALB <u>Substant</u>				

FOR OCD USE -- Date Owner Notified

Phone or Letter?

Initials

371

CATIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	6.39	128.00	<3.0
Mg	9.12	111.00	<0.3
Na	40.50	931.00	<10.0
K	0.38	15.00	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	
SUMS	56.38	1185.00	
Total Dissolved Solids=			3102
Ion Balance =			103.84%

ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
HC03	17.17	1048.00	<1.0
SO4	27.08	1300.00	<10.0
CL	10.04	356.00	<5.0
NO3	0.00	0.00	< 0.
C03	0.00	0.00	< 1.
NH3	0.00	0.00	< 0.
PO4	0.00	0.00	< 0.
	54.30	2704.00	

WC No. = 8802102
Date out/By CO-7/29/88

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

MONITOR WELL GBR-41

<u>SAMPLER</u>	OCD
<u>DATE</u>	<u>6/8/88</u>
<u>PARAMETER</u>	
DETECTION LIMIT	5.0
BENZENE	25.0
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
DICHLORODIFLUOROMETHANE	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	474.0
METHYLENE CHLORIDE	ND
1,1,2,2-TETRACHLOROETHANE	ND
TETRACHLOROETHENE	ND
TOLUENE	16.0
1,1,1-TRICHLOROETHANE	ND
1,1,2-TRICHLOROETHANE	ND
TRICHLOROETHENE	ND
TRICHLOROFLUOROMETHANE	ND
VINYL CHLORIDE	ND
TOTAL XYLENES	224.0

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



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

88-0856-C

REPORT TO: DAVID BOYER

S.L.D. No. OR-

N.M. OIL CONSERVATION DIVISION

DATE REC. 6/19/88

P.O. Box 2088

PRIORITY 3

Santa Fe, NM 87504-2088

PHONE(S): 827-5812

COLLECTION CITY: Bloomfield; COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8/8/88 10:13:20

LOCATION CODE: (Township-Range-Section-Tracts) 29W+12W+27+1113 (10N06E24342)

USER CODE: 82235 SUBMITTER: David Boyer CODE: 2610

SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER:

This form accompanies 2 Septum Vials, Glass Jugs, and/or
Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice Sample stored in an ice bath (Not Frozen).
☐ P-AA Sample Preserved with Ascorbic Acid to remove chlorine residual.
☒ P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks:

FIELD DATA:

pH=7.5; Conductivity=3950 umho/cm at 28 °C; Chlorine Residual= mg/l

Dissolved Oxygen= mg/l; Alkalinity= mg/l; Flow Rate /

Depth to water 28.6 ft.; Depth of well 34.8 ft.; Perforation Interval - ft.; Casing:

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Giant Bloomfield GBR-41 Purged ~ 2 gallons to dry
sampled on recovery block, H.C. odor, strong

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector) David Boyer Method of Shipment to the Lab: State Car

CHAIN OF CUSTODY

I certify that this sample was transferred from David Boyer to Mary C. Eden
at (location) SLD-ALB on 6/9/88 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☒ No ☐

Signatures David H. Boyer Mary C. Eden

For OCD use: Date owner notified: 8/19/88 Phone or Letter? Initials JVG

ANALYSES PERFORMED

LAB. No.: OR-

856

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
 Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>	<i>see remarks</i>		
<i>benzene</i>	<i>25</i>		
<i>toluene</i>	<i>16</i>		
<i>ethylbenzene</i>	<i>474</i>		
<i>p+nt-xylene</i>	<i>203</i>		
<i>o-xylene</i>	<i>21</i>		
<i>halogenated purgeables</i>	<i>N.D.</i>		
* DETECTION LIMIT *	<i>579/2</i>	+ DETECTION LIMIT +	

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

Fully compound remaining from the aromatic screen region than the C3 substituted benzene region at 5-50 ppb detected by the photoionization detector. Not not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: *Greg C. Ellis* date: *6/14/88*

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: *6/14/88* Analyst's signature: *Greg C. Ellis*

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: *R. Meyerhen*





New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
WINN

GENERAL WATER CHEMISTRY
and NITROGEN ANALYSIS

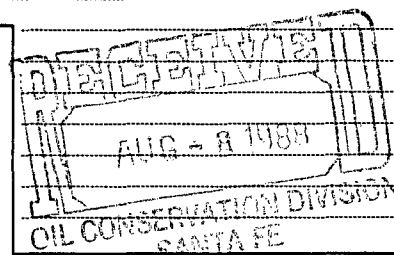
DATE RECEIVED	6/10/88	LAB NO.	WC-2101	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	8/10/88	SITE INFORMATION	Sample location		
Collection TIME	1320		Giant Blenheim field GBR-41		
Collected by -- Person/Agency		Collection site description			
Boyer / Anderson / OCD					

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



Station/
well code
Owner

SAMPLING CONDITIONS

☒ Bailed ☐ Dipped	☐ Pump ☐ Tap	Water level	28.6	Discharge	—	Sample type	Grab
pH (00400)	7.5	Conductivity (Uncorrected)	3950 µmho	Water Temp. (00010)	28 °C	Conductivity at 25 °C (00094)	µmho
Field comments							
Hydrocarbon odor							

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	1	☒ NF: Whole sample (Non-filtered)	☐ F: Filtered in field with 0.45 µm membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NA	Units	Date analyzed	From NF, NA Sample:	Date Analyzed
☒ Conductivity (Corrected) 25 °C (00095)	3411 µmho	7/11	☒ Calcium	128 mg/l 7/19
☐ Total non-filterable residue (suspended) (00530)			☒ Potassium	8 mg/l 7/25
☒ Other: Lab pH	8.20	7/21	☒ Magnesium	111 mg/l 7/19
☐ Other:			☒ Sodium	575 mg/l 7/25
☐ Other:			☒ Bicarbonate	590 mg/l 7/21
A-H₂SO₄			☒ Chloride	361 mg/l 7/21
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☒ Sulfate	874 mg/l 7/21
☐ Ammonia-N total (00610)	mg/l		☒ Total Solids	2510 mg/l 7/7
☐ Total Kjeldahl-N ()	mg/l		☒ Bromide	5.41 6/22
☐ Chemical oxygen demand (00340)	mg/l		☐	
☐ Total organic carbon ()	mg/l		☒ Cation/Anion Balance	
☐ Other:			Analyst	Date Reported
☐ Other:				7/29/88
Laboratory remarks				
Received by PW 6/9/88 SLB-ALB recontact				

FOR OCD USE -- Date Owner Notified 8/19/88 Phone or Letter?

Initials

2/18

CATIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	6.39	128.00	<3.0
Mg	9.12	111.00	<0.3
Na	25.01	575.00	<10.0
K	0.20	8.00	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	
SUMS	40.72	822.00	
Total Dissolved Solids=			2510
Ion Balance =			106.99%

ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
HC03	9.67	590.00	<1.0
SO4	18.21	874.00	<10.0
CL	10.18	361.00	<5.0
NO3	0.00	0.00	< 0.
C03	0.00	0.00	< 1.
NH3	0.00	0.00	< 0.
PO4	0.00	0.00	< 0.
	38.06	1825.00	

WC No. = 8802101
Date out/By Q7/29/86

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

MONITOR WELL GBR-42/GRW-2

<u>SAMPLER</u>	GIANT	GIANT
<u>DATE</u>	<u>9/7/89</u>	<u>9/4/90</u>
<u>PARAMETER</u>		
DETECTION LIMIT	(BELOW)	<1.0
BENZENE	0.26	ND
BROMODICHLOROMETHANE	ND(<1.0)	NA
BROMOFORM	ND(2.0)	NA
BROMOMETHANE	ND(1.0)	NA
CARBON TETRACHLORIDE	ND(<1.0)	NA
CHLOROBENZENE	ND(<1.0)	ND
CHLOROETHANE	ND(<1.0)	NA
CHLOROFORM	ND(<1.0)	NA
CHLOROMETHANE	ND(<1.0)	NA
DIBROMOCHLOROMETHANE	ND(<1.0)	NA
1,2-DICHLOROBENZENE	ND(<1.0)	ND
1,3-DICHLOROBENZENE	ND(<1.0)	ND
1,4-DICHLOROBENZENE	ND(<1.0)	ND
DICHLORODIFLUOROMETHANE	NA	NA
1,1-DICHLOROETHANE	ND(<1.0)	NA
1,2-DICHLOROETHANE	0.36	NA
1,1-DICHLOROETHENE	ND(<1.0)	NA
CIS-1,2-DICHLOROETHENE	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	NA
TOTAL 1,2-DICHLOROETHENE	ND(<1.0)	NA
1,2-DICHLOROPROPANE	ND(<1.0)	NA
ETHYLBENZENE	1.6	ND
METHYLENE CHLORIDE	ND(<1.0)	NA
1,1,2,2-TETRACHLOROETHANE	ND(<1.0)	NA
TETRACHLOROETHENE	ND(<1.0)	NA
TOLUENE	ND(<1.0)	ND
1,1,1-TRICHLOROETHANE	ND(<1.0)	NA
1,1,2-TRICHLOROETHANE	ND(<1.0)	NA
TRICHLOROETHENE	ND(<1.0)	NA
TRICHLOROFLUOROMETHANE	1.4	NA
VINYL CHLORIDE	ND(<1.0)	NA
TOTAL XYLENES	0.23	ND

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

Giant Refining Co.
 Radian Work Order: 90-09-163

Method: Vol. aromatics by SW8020 (1)

List: SW8020

Sample ID:	9009041152	9009041202	9009041215	9009041229
	RW-1	RW-2 <i>GBR-42</i>	RW-3	RW-4
Factor:	1	1	10	10
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
Benzene	ND	0.20	ND	0.20	460 C	2.0	450 C	2.0
Chlorobenzene	ND	0.20	ND	0.20	ND	2.0	ND	2.0
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	4.0
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	4.0
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	3.0	ND	3.0
Ethylbenzene	ND	0.20	ND	0.20	450 C	2.0	150 C	2.0
Toluene	ND	0.20	ND	0.20	5.2 G _a	2.0	ND	2.0
Total xylenes	ND	0.20	ND	0.20	970 C	2.0	40 C	2.0
 Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	94		94		92		93	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

G Indicates an estimated GC value due to interferences.

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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RAS Sacramento

REPORT

Work Order # S9-09-049

Results by Sample

(GBR-42)

SAMPLE ID 8909071330 H2O

GRW-2

FRACTION 07C

TEST CODE 602B

NAME Purgeable Aromatics - H2O

Date & Time Collected 09/07/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST	MG	FILE #	ES07215	VERIFIED	JD
INSTRMT	B	INJECTD 09/21/89	FACTOR	1 UNITS	uq/L
CASE#	COMPOUND	RESULT	DET LIMIT	FACTOR	
71-43-2	Benzene	0.26 C	0.10	1	
108-88-3	Toluene	ND	0.30	1	
100-41-4	Ethylbenzene	1.6 C	0.10	1	
108-90-7	Chlorobenzene	ND	0.10	1	
1330-20-7	Total Xylenes	0.23 C	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 86% recovery

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



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RAS Sacramento

Results by Sample

REPORT

Work Order # S9-09-049

SAMPLE ID 8907071330 H2O

C2W-2

FRACTION 07A

TEST CODE 601

NAME Purgeable Halocarbons

H2O

Date & Time Collected 09/07/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST
INSTRMTMQ
E

INJECTD 09/21/89

FILE # DB07214
FACTOR 1VERIFIED
UNITS ug/L

JD

CAS#

COMPOUND

RESULT

DET LIMIT

FACTOR

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

1.4 C

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

0.36 C

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-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

Received: 09/08/89

RAS Sacramento

REPORT

Results by Sample

Work Order # S9-09-049
Continued From Above

(6BR-42)

SAMPLE ID 8909071330 H2O GLW-2

FRACTION 07A

TEST CODE 601

NAME Purgeable Halocarbons H2O

Date & Time Collected 09/07/89

Category

SURROGATES

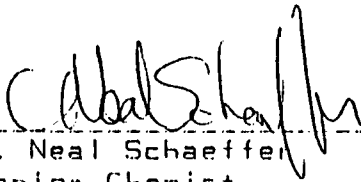
540-36-3	1-4-Difluorobenzene	NA % Recovery
460-00-4	1-Bromo-4-Fluorobenzene	BI % Recovery

- (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.

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/21/89
SAMPLE: 8909071330
SITE: GRW-2 GBL-42 DATE RECEIVED: 09/07/89
LAB NO: F3129 DATE COLLECTED: 09/07/89

Lab pH.....	7.48
Lab Conductivity, umhos/cm.....	4860
Lab resistivity, ohm-m.....	2.0576
Total Dissolved Solids (180°), mg/l.....	3492
Total Dissolved Solids (calc), mg/l.....	3520
Total Alkalinity as CaCO ₃ , mg/l.....	480.04
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1600.70
Sodium Absorption Ratio.....	6.23
Nitrate, mg/l.....	18.3

	mg/l	meq/l
Bicarbonate as HCO ₃	585.65	9.60
Carbonate as CO ₃	0.00	0.00
Chloride.....	346.71	9.79
Sulfate.....	1773.57	36.95
Calcium.....	467.71	23.34
Magnesium.....	105.49	8.60
Potassium.....	5.30	0.14
Sodium.....	573.00	24.92
Major Cations.....		57.07
Major Anions.....		56.34
Cation/Anion Difference.....		0.65 %


C. Neal Schaeffer
Senior Chemist

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

MONITOR WELL GBR-43/GRW-4

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>9/7/89</u>	<u>4/2/90</u>	<u>7/17/90</u>	<u>9/4/90</u>	<u>10/4/90</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	(BELOW)	(BELOW)	(BELOW)	(BELOW)
BENZENE	950.0	440.0	120.0	450.0	770.0
BROMODICHLOROMETHANE	ND(10.0)	ND(2.0)	ND(2.5)	NA	ND(5.0)
BROMOFORM	ND(200.0)	ND(10.0)	ND(12.0)	NA	ND(25.0)
BROMOMETHANE	ND(100.0)	ND(24.0)	ND(30.0)	NA	ND(59.0)
CARBON TETRACHLORIDE	ND(20.0)	ND(2.4)	ND(3.0)	NA	ND(6.0)
CHLOROBENZENE	ND(10.0)	ND(4.0)	ND(2.0)	ND(2.0)	ND(10.0)
CHLOROETHANE	ND(50.0)	ND(10.0)	ND(13.0)	NA	ND(26.0)
CHLOROFORM	ND(10.0)	ND(2.0)	ND(2.5)	NA	ND(5.0)
CHLOROMETHANE	ND(50.0)	ND(6.0)	ND(7.5)	NA	ND(15.0)
DIBROMOCHLOROMETHANE	ND(20.0)	ND(4.0)	ND(5.0)	NA	ND(10.0)
1,2-DICHLOROBENZENE	ND(20.0)	ND(8.0)	ND(4.0)	ND(4.0)	ND(20.0)
1,3-DICHLOROBENZENE	ND(40.0)	ND(8.0)	ND(4.0)	ND(4.0)	ND(20.0)
1,4-DICHLOROBENZENE	ND(20.0)	ND(6.0)	ND(3.0)	ND(3.0)	ND(15.0)
1,1-DICHLOROETHANE	ND(10.0)	ND(10.0)	13.0	NA	ND(25.0)
1,2-DICHLOROETHANE	ND(10.0)	ND(2.0)	5.2	NA	6.1 X
1,1-DICHLOROETHENE	ND(10.0)	ND(4.0)	ND(5.0)	NA	ND(10.0)
CIS-1,2-DICHLOROETHENE	NA	21.0	46.0	NA	25.0 X
TRANS-1,2-DICHLOROETHENE	NA	ND(4.0)	ND(5.0)	NA	ND(10.0)
TOTAL 1,2-DICHLOROETHENE	28.0	NA	NA	NA	NA
1,2-DICHLOROPROPANE	ND(10.0)	ND(2.0)	ND(2.5)	NA	ND(5.0)
ETHYLBENZENE	200.0	65.0	24.0	150.0	160.0
METHYLENE CHLORIDE	ND(40.0)	ND(8.0)	ND(10.0)	NA	22.0 X
1,1,2,2-TETRACHLOROETHANE	ND(20.0)	ND(3.0)	ND(3.8)	NA	ND(7.5)
TETRACHLOROETHENE	ND(10.0)	ND(2.0)	ND(2.5)	NA	ND(5.0)
TOLUENE	ND(30.0)	ND(4.0)	ND(2.0)	5.2	ND(10.0)
1,1,1-TRICHLOROETHANE	71.0	ND(4.0)	ND(5.0)	NA	ND(10.0)
1,1,2-TRICHLOROETHANE	ND(20.0)	ND(4.0)	ND(5.0)	NA	ND(10.0)
TRICHLOROETHENE	ND(20.0)	8.6	10.0	NA	ND(10.0)
TRICHLOROFLUOROMETHANE	ND(10.0)	ND(4.0)	ND(5.0)	NA	11.0 X
VINYL CHLORIDE	ND(20.0)	ND(4.0)	ND(5.0)	NA	ND(10.0)
TOTAL XYLENES	200.0	ND(4.0)	8.5	970.0	ND(10.0)

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
** - SPLIT SAMPLE
X - PRESENCE NOT CONFIRMED

Giant Refining Company
 Radian Work Order: S0-10-043

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	901004945	9010041010	9010041028	9010041100
Factor:	RW-4 50	RW-6 10	RW-3 20	RW-13 1
Results in:	ug/L 10A	ug/L 11A	ug/L 12A	ug/L 13A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	770 C	10	300 C	2.0	490 C	4.0	ND	0.20
Chlorobenzene	ND	10	ND	2.0	5.8 Xa	4.0	ND	0.20
1,2-Dichlorobenzene	ND	20	ND	4.0	ND	8.0	ND	0.40
1,3-Dichlorobenzene	ND	20	ND	4.0	ND	8.0	ND	0.40
1,4-Dichlorobenzene	ND	15	20 G	3.0	290 G	6.0	ND	0.30
Ethylbenzene	160 C	10	47 C	2.0	420 C	4.0	ND	0.20
Toluene	ND	10	ND	2.0	ND	4.0	2.0 X	0.20
Xylenes (total)	ND	10	6.8 Ga	2.0	710 C	4.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	117		122		97		112	
Control Limits: 40 to 140								

C Confirmed on second column or by GC/MS

G Indicates an estimated GC value due to interferences.

X See definition in report narrative

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.

Giant Refining Company
Radian Work Order: S0-10-043

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	901004945	9010041010	9010041028	9010041100
	RW-4	RW-6	RW-3	RW-13
Factor:	50	10	20	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	5.0	ND	1.0	ND	2.0	ND	0.10
Bromoform	ND	25	ND	5.0	ND	10	ND	0.50
Bromomethane	ND	59	ND	12	ND	24	ND	1.2
Carbon tetrachloride	ND	6.0	ND	1.2	ND	2.4	ND	0.12
Chlorobenzene	ND	12	ND	2.5	ND	5.0	ND	0.25
Chloroethane	ND	26	ND	5.2	ND	10	ND	0.52
2-Chloroethylvinylether	ND	25	ND	5.0	ND	10	ND	0.50
Chloroform	ND	5.0	ND	1.0	ND	2.0	ND	0.10
Chloromethane	ND	15	ND	3.0	ND	6.0	ND	0.30
Dibromochloromethane	ND	10	ND	2.0	ND	4.0	ND	0.20
1,2-Dichlorobenzene	ND	25	ND	5.0	ND	10	ND	0.50
1,3-Dichlorobenzene	ND	16	ND	3.2	ND	6.4	ND	0.32
1,4-Dichlorobenzene	ND	12	ND	2.4	ND	4.8	ND	0.24
1,1-Dichloroethane	ND	25	ND	5.0	ND	10	ND	0.50
1,2-Dichloroethane	6.1 Xa	5.0	6.1 C	1.0	4.3 Xa	2.0	4.1 C	0.10
1,1-Dichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
cis-1,2-Dichloroethene	25 Xa	10	4.5 Ca	2.0	17 Ca	4.0	ND	0.20
trans-1,2-Dichloroethene	ND	25	ND	5.0	ND	10	ND	0.50
1,2-Dichloroethane	6.1 Xa	5.0	6.1 C	1.0	4.3 Xa	2.0	4.1 C	0.10
1,1-Dichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
cis-1,2-Dichloroethene	25 Xa	10	4.5 Ca	2.0	17 Ca	4.0	ND	0.20
trans-1,2-Dichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
1,2-Dichloropropane	ND	5.0	ND	1.0	ND	2.0	ND	0.10
cis-1,3-Dichloropropene	ND	10	ND	2.0	ND	4.0	ND	0.20
trans-1,3-Dichloropropene	ND	17	ND	3.4	ND	6.8	ND	0.34
Methylene chloride	22 Xa	20	8.1 Xa	4.0	ND	8.0	0.52 Xa	0.40
1,1,2,2-Tetrachloroethane	ND	7.5	ND	1.5	ND	3.0	ND	0.15
Tetrachloroethene	ND	5.0	1.6 Xa	1.0	ND	2.0	ND	0.10
1,1,1-Trichloroethane	ND	10	ND	2.0	ND	4.0	0.62 Xa	0.20
1,1,2-Trichloroethane	ND	10	ND	2.0	ND	4.0	ND	0.20
Trichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
Trichlorofluoromethane	11 Xa	10	ND	2.0	ND	4.0	0.20 Xa	0.20
Vinyl chloride	ND	10	ND	2.0	ND	4.0	ND	0.20

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.

Giant Refining Co.
 Radian Work Order: 90-10-120

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	901004945 RW-4	9010041010 RW-6	9010041028 RW-3	Reagent Blank
Factor:	4.8	4.9	4.8	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	8.6	ND	8.8	ND	8.6	ND	1.8
Acenaphthylene	ND	11	ND	11	ND	11	ND	2.3
Anthracene	ND	3.2	ND	3.2	ND	3.2	ND	0.66
Benzo(a)anthracene	ND	0.062	ND	0.064	0.15 a	0.062	ND	0.013
Benzo(a)pyrene	ND	0.11	ND	0.11	ND	0.11	ND	0.023
Benzo(b)fluoranthene	ND	0.086	ND	0.088	ND	0.086	ND	0.018
Benzo(g,h,i)perylene	ND	0.36	ND	0.37	ND	0.36	ND	0.076
Benzo(k)fluoranthene	ND	0.082	ND	0.083	ND	0.082	ND	0.017
Chrysene	ND	0.72	ND	0.74	ND	0.72	ND	0.15
Dibenzo(a,h)anthracene	ND	0.14	ND	0.15	ND	0.14	ND	0.030
Fluoranthene	ND	1.0	ND	1.0	5.4	1.0	ND	0.21
Fluorene	3.2 a	1.0	ND	1.0	6.8	1.0	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.21	ND	0.21	ND	0.21	ND	0.043
Naphthalene	ND	8.6	ND	8.8	57	8.6	ND	1.8
Phenanthrene	5.5 a	3.1	ND	3.1	45	3.1	ND	0.64
Pyrene	ND	1.3	ND	1.3	1.4 a	1.3	ND	0.27
Surrogate Recovery(%)								
Terphenyl-d14	168 Q		177 Q		193 Q		107	
Control Limits: 24 to 146								

 ND Not detected at specified detection limit
 Q Outside control limits

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.

Giant Refining Co.
 Radian Work Order: 90-09-163

Method: Vol. aromatics by SW8020 (1)

List: SW8020

Sample ID:	9009041152	9009041202	9009041215	9009041229
	RW-1	RW-2	RW-3	RW-4
Factor:	1	1	10	10
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
Benzene	ND	0.20	ND	0.20	460 C	2.0	450 C	2.0
Chlorobenzene	ND	0.20	ND	0.20	ND	2.0	ND	2.0
1,2-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	4.0
1,3-Dichlorobenzene	ND	0.40	ND	0.40	ND	4.0	ND	4.0
1,4-Dichlorobenzene	ND	0.30	ND	0.30	ND	3.0	ND	3.0
Ethylbenzene	ND	0.20	ND	0.20	450 C	2.0	150 C	2.0
Toluene	ND	0.20	ND	0.20	5.2 G@	2.0	ND	2.0
Total xylenes	ND	0.20	ND	0.20	970 C	2.0	40 C	2.0
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	94		94		92		93	
Control Limits: 76 to 140								

ND Not detected at specified detection limit

G Indicates an estimated GC value due to interferences.

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.

Giant Refining Company
 Radian Work Order: S0-07-122

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	900717930	900717945	9007171004	9007171022
	RW-3	RW-4	RW-6	STRIPPER INF
Factor:	50	25	10	10
Results in:	ug/L	ug/L	ug/L	ug/L
	02A	04A	06A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	380 G	10	290 C	5.0	120 C	2.0	52 C	2.0
Chlorobenzene	ND	10	ND	5.0	ND	2.0	ND	2.0
1,2-Dichlorobenzene	ND	20	ND	10	ND	4.0	ND	4.0
1,3-Dichlorobenzene	ND	20	ND	10	ND	4.0	ND	4.0
1,4-Dichlorobenzene	ND	15	ND	7.5	ND	3.0	ND	3.0
Ethylbenzene	160 G	10	58 C	5.0	24 C	2.0	6.7 G@	2.0
Toluene	ND	10	ND	5.0	ND	2.0	2.2 C@	2.0
Xylenes (total)	57 G	10	9.3 C@	5.0	8.5 C@	2.0	36 C	2.0

Surrogate Recovery(%)

1-Bromo-4-fluorobenzene

Control Limits: 40 to 140

104

104

101

103

G Indicates an estimated GC value due to interferences.

C Confirmed on second column or by GC/MS

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.

Giant Refining Company
 Radian Work Order: S0-07-122

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	900717930	900717945	9007171004	9007171022
	RW-3	RW-4	RW-6	STRIPPER INF
Factor:	50	25	1	10
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	03A	05A	07A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	5.0	ND	2.5	ND	0.10	ND	1.0
Bromoform	ND	25	ND	12	ND	0.50	ND	5.0
Bromomethane	ND	59	ND	30	ND	1.2	ND	12
Carbon tetrachloride	ND	6.0	ND	3.0	ND	0.12	ND	1.2
Chlorobenzene	ND	12	ND	6.2	ND	0.25	ND	2.5
Chloroethane	ND	26	ND	13	ND	0.52	ND	5.2
2-Chloroethylvinylether	ND	25	ND	12	ND	0.50	ND	5.0
Chloroform	ND	5.0	ND	2.5	ND	0.10	ND	1.0
Chloromethane	ND	15	ND	7.5	ND	0.30	ND	3.0
Dibromochloromethane	ND	10	ND	5.0	ND	0.20	ND	2.0
1,2-Dichlorobenzene	ND	25	ND	12	ND	0.50	ND	5.0
1,3-Dichlorobenzene	ND	16	ND	8.0	ND	0.32	ND	3.2
1,4-Dichlorobenzene	ND	12	ND	6.0	ND	0.24	ND	2.4
1,1-Dichloroethane	ND	25	13 ca	12	1.9 ca	0.50	ND	5.0
1,2-Dichloroethane	ND	5.0	5.2 ca	2.5	5.1 C	0.10	ND	1.0
1,1-Dichloroethene	ND	10	ND	5.0	ND	0.20	ND	2.0
cis-1,2-Dichloroethene	22 ca	10	46 C	5.0	7.8 C	0.20	16 C	2.0
trans-1,2-Dichloroethene	ND	10	ND	5.0	ND	0.20	ND	2.0
1,2-Dichloropropane	ND	5.0	ND	2.5	ND	0.10	ND	1.0
cis-1,3-Dichloropropene	ND	10	ND	5.0	ND	0.20	ND	2.0
trans-1,3-Dichloropropene	ND	17	ND	8.5	ND	0.34	ND	3.4
Methylene chloride	ND	20	ND	10	ND	0.40	6.2 Xa	4.0
1,1,2,2-Tetrachloroethane	ND	7.5	ND	3.8	ND	0.15	ND	1.5
Tetrachloroethene	ND	5.0	ND	2.5	1.7 C	0.10	4.2 ca	1.0
1,1,1-Trichloroethane	ND	10	ND	5.0	0.41 ca	0.20	16 X	2.0
1,1,2-Trichloroethane	ND	10	ND	5.0	ND	0.20	ND	2.0
Trichloroethene	ND	10	10 ca	5.0	1.5 C	0.20	36 C	2.0
Trichlorofluoromethane	ND	10	ND	5.0	0.34 ca	0.20	ND	2.0
Vinyl chloride	ND	10	ND	5.0	ND	0.20	ND	2.0

 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
 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.

Giant Refining Co.
 Radian Work Order: 90-07-185

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	900717930	9007171004	900717945	REAGENT BLANK
	RW-3	RW-6	RW-4	
Factor:	9.5	4.8	4.8	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	17	ND	8.6	ND	8.6	ND	1.8
Acenaphthylene	ND	22	26 *	11	24 *	11	ND	2.3
Anthracene	ND	6.3	ND	3.2	ND	3.2	ND	0.66
Benzo(a)anthracene	ND	0.12	ND	0.062	ND	0.062	ND	0.013
Benzo(a)pyrene	ND	0.22	ND	0.11	ND	0.11	ND	0.023
Benzo(b)fluoranthene	ND	0.17	ND	0.086	ND	0.086	ND	0.018
Benzo(g,h,i)perylene	ND	0.72	ND	0.36	ND	0.36	ND	0.076
Benzo(k)fluoranthene	ND	0.16	ND	0.082	ND	0.082	ND	0.017
Chrysene	ND	1.4	ND	0.72	ND	0.72	ND	0.15
Dibenzo(a,h)anthracene	ND	0.28	ND	0.14	ND	0.14	ND	0.030
Fluoranthene	ND	2.0	ND	1.0	ND	1.0	ND	0.21
Fluorene	5.7 *	2.0	1.6 *	1.0	3.9 *	1.0	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.41	ND	0.21	ND	0.21	ND	0.043
Naphthalene	ND	17	ND	8.6	11 *	8.6	ND	1.8
Phenanthrene	15 *	6.1	ND	3.1	ND	3.1	ND	0.64
Pyrene	ND	2.6	ND	1.3	ND	1.3	ND	0.27
Surrogate Recovery(%)								
Terphenyl-d14	100		102		99		97	
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.

Giant Refining Company
 Radian Work Order: SO-04-013

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	9004021055	9004021130	9004021145	9004021245
	/GRW-3	/GRW-6	/GRW-6	/STRIPPER INFL
Factor:	10	20	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01B	02B	03C	04C
Matrix:	water	water	water	water

GDR-43

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	280 C	2.0	440 C	4.0	16 C	0.20	23 C	0.20
Chlorobenzene	ND	2.0	ND	4.0	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	4.0	ND	8.0	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	4.0	ND	8.0	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	3.0	ND	6.0	ND	0.30	ND	0.30
Ethylbenzene	98 C	2.0	65 C	4.0	ND	0.20	0.90 Ca	0.20
Toluene	ND	2.0	ND	4.0	0.65 Ca	0.20	ND	0.20
Xylenes (total)	33 C	2.0	ND	4.0	3.4 C	0.20	7.1 C	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	91		104		69		84	
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

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

Giant Refining Company
 Radian Work Order: SO-04-013

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

6BR-43

Sample ID:	9004021055	9004021130	9004021145	9004021245
	/GRW-3	/GRW-4	/GRW-6	/STRIPPER INFL
Factor:	10	20	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
Bromodichloromethane	ND	1.0	ND	2.0	ND	0.10	ND	0.10
Bromoform	ND	5.0	ND	10	ND	0.50	ND	0.50
Bromomethane	ND	12	ND	24	ND	1.2	ND	1.2
Carbon tetrachloride	ND	1.2	ND	2.4	ND	0.12	ND	0.12
Chlorobenzene	ND	2.5	ND	5.0	ND	0.25	ND	0.25
Chloroethane	ND	5.2	ND	10	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	5.0	ND	10	ND	0.50	ND	0.50
Chloroform	ND	1.0	ND	2.0	ND	0.10	ND	0.10
Chloromethane	ND	3.0	ND	6.0	ND	0.30	ND	0.30
Dibromochloromethane	ND	2.0	ND	4.0	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	10	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	6.4	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	4.8	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	5.0	ND	10	2.1 Ca	0.50	3.1 C	0.50
1,2-Dichloroethane	ND	1.0	ND	2.0	7.9 C	0.10	4.5 C	0.10
1,1-Dichloroethene	ND	2.0	ND	4.0	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	14 C	2.0	21 C	4.0	ND	0.20	25 C	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	4.0	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	2.0	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	4.0	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	6.8	ND	0.34	ND	0.34
Methylene chloride	ND	4.0	ND	8.0	1.1 Ca	0.40	0.65 Ca	0.40
1,1,2,2-Tetrachloroethane	ND	1.5	ND	3.0	ND	0.15	ND	0.15
Tetrachloroethene	ND	1.0	ND	2.0	2.7 C	0.10	2.8 C	0.10
1,1,1-Trichloroethane	ND	2.0	ND	4.0	1.6 C	0.20	0.96 Ca	0.20
1,1,2-Trichloroethane	ND	2.0	ND	4.0	ND	0.20	ND	0.20
Trichloroethene	ND	2.0	8.6 Ca	4.0	2.3 C	0.20	2.4 C	0.20
Trichlorofluoromethane	ND	2.0	ND	4.0	ND	0.20	ND	0.20
Vinyl chloride	ND	2.0	ND	4.0	ND	0.20	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

(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: 90-04-031

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9004021055	9004021130	9004021145	9004021245
	GRW-3	GRW-4	GRW-6	STRIP INFLUE
Factor:	9.4	0.94	4.7	4.8
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

602L-43

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	22	ND	2.3	ND	11	ND	11
Acenaphthene	ND	17	ND	1.8	ND	8.5	ND	8.6
Anthracene	ND	6.2	ND	0.66	ND	3.1	ND	3.2
Benzo(a)anthracene	ND	0.12	ND	0.013	ND	0.061	ND	0.062
Benzo(a)pyrene	ND	0.22	ND	0.023	ND	0.11	ND	0.11
Benzo(b)fluoranthene	ND	0.17	ND	0.018	ND	0.085	ND	0.086
Benzo(g,h,i)perylene	ND	0.71	ND	0.076	ND	0.36	ND	0.36
Benzo(k)fluoranthene	ND	0.16	ND	0.017	ND	0.080	ND	0.082
Chrysene	ND	0.12	ND	0.013	ND	0.061	ND	0.062
Dibenzo(a,h)anthracene	ND	0.28	ND	0.030	ND	0.14	ND	0.14
Fluoranthene	ND	2.0	ND	0.21	ND	0.99	ND	1.0
Fluorene	6.7 *	2.0	ND	0.21	2.8 *	0.99	2.2 *	1.0
Indeno(1,2,3-cd)pyrene	ND	0.40	ND	0.043	ND	0.20	ND	0.21
Naphthalene	ND	17	ND	1.8	ND	8.5	ND	8.6
Phenanthrene	7.3 *	6.0	ND	0.64	ND	3.0	3.3 *	3.1
Pyrene	ND	2.5	ND	0.27	ND	1.3	ND	1.3

Surrogate Recovery(%)

Terphenyl-d14

221 Q

4 Q

89

87

Control Limits: 24 to 146

ND: Not detected at specified detection limit

* Est. result less than 5 times detection limit

Q: Outside control limits

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

Page 7
Received: 09/08/89

NOE 880728:10
Results by Sample

REPORT

Work Order # 35-07-050

SAMPLE ID 8709071345 H2O 6.00 FRACTION 022 TEST CODE 8028 NAME PURGEABLE AROMATICS - H2O
DATE & TIME Collected 08/07/89 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST	MG	INJECTED	COMPOUND	RESULT	DET LIMIT	FACTOR
INSTRMT	B					
			1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100		10	100
			Toluene	ND	30	100
			1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100	200 C.Y	10	100
			Chlorobenzene	ND	10	100
			1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100	200 C.Y	20	100
			1,2-Dichlorobenzene	ND	20	100
			1,3-Dichlorobenzene	ND	40	100
			1,2-Dichlorobenzene	ND	20	100

SURROGATE

460-00-4 1-Bromo-4-Fluorobenzene 111% recovery

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

5936 9
59361940: 09/28/89

5936 937134000

REPORT

Work Order # 59-07-050

680-43

680-43

SAMPLE ID 9909071345 PET 680-43

TEST CODE 601

NAME Susceptible Halocarbons H20

Date: Time collected 09/07/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST _____
INSTRUT _____

INJECTD 05/19/89

FILE # _____
DEGRIFT _____
FACTOR 100

VERIFIED _____
UNITS _____
JD _____
DE/L _____

CASE#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-8	Chloroethane	ND	50	100
74-88-8	Chloroethane	ND	100	100
75-01-4	1,1,1-Trichloroethane	ND	20	100
75-00-8	Chloroethane	ND	50	100
75-09-8	Chloroethane	ND	40	100
75-89-4	Trichloroethane	ND	10	100
75-55-4	1,1,1-Trichloroethane	ND	10	100
75-94-8	1,1,1-Trichloroethane	ND	10	100
570-59-0	1,1,2-Dichloroethane (2)	ND	10	100
67-88-8	Chloroethane	ND	10	100
107-04-8	1,1,2-Dichloroethane	ND	10	100
71-85-8	1,1,2-Dichloroethane	ND	20	100
56-83-8	Carbon Tetrachloride	ND	20	100
75-87-4	1,1,2-Dichloroethane	ND	10	100
75-87-5	1,1,2-Dichloroethane	ND	10	100
10081-01-5	1,1,2-Dichloroethane	ND	40	100
79-01-6	1,1,2-Dichloroethane	ND	20	100
124-48-1	1,1,2-Dichloroethane (2)	ND	20	100
79-00-5	trans-1,2-Dichloroethane (2)	ND	20	100
10081-02-6	trans-1,2-Dichloroethane (2)	ND	20	100
110-75-8	2-Chloroethanol	ND	200	100
75-25-2	2-Chloroethanol	ND	200	100
75-34-5	1,1,2,2-Tetrachloroethane (4)	ND	20	100
127-18-4	1,1,2,2-Tetrachloroethane (4)	ND	10	100
106-90-7	Chloroethane	ND	20	100
541-73-1	1,1,2-Dichloroethane	ND	50	100
66-50-1	1,1,2-Dichloroethane	ND	20	100
108-55-1	1,1,2-Dichloroethane	ND	20	100

Page: 3
Received: 09/08/99

LAB: 001139010
Quantity: 40 Sample

Work Order # 89-07-050
Continued From Above

SAMPLE ID 8909071345 H2O GRV-4 TEST CODE 801 NAME Possible Halocarbons H2O
GBR-43 DATE & TIME Collected 09/07/99 Category

540-32-2	1-1,1,1-Trifluoroethane	44 % Recovery
450-00-4	1-1,1,1,2-Tetrafluoroethane	102 % Recovery

- (1) See Appendix 1 for Glossary of Report and Data Flag Definitions
 (2) Quantities are in grams per liter
 (3) Distillation recoveries are 1,1,1-trichloroethane and
 1,1,2-trichloroethane
 (4) 1,1,2-trichloroethane and 1,1,2,2-tetrachloroethane are absolute.





Inter-Mountain
Laboratories, Inc.

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

CLIENT: Giant Refinery
ID: 9010040945
SITE: RW-4
LAB NO: F5141

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/04/90
DATE COLLECTED: 10/04/90

Lab pH (s.u.).....	7.89
Lab conductivity, umhos/cm.....	4380
Lab resistivity, ohm-m.....	2.29
Total dissolved solids (180), mg/l..	3410
Total dissolved solids (calc), mg/l.	3230
Total alkalinity as CaCO ₃ , mg/l.....	804
Total acidity as CaCO ₃ , mg/l.....	0
Total hardness as CaCO ₃ , mg/l.....	1350
Sodium absorption ratio.....	7.22

	mg/l	meq/l
Bicarbonate as HCO ₃	982	16.1
Carbonate as CO ₃	0	0
Chloride.....	488	13.8
Sulfate.....	1170	24.4
Calcium.....	369	18.4
Magnesium.....	103	8.47
Potassium.....	2.31	0.06
Sodium.....	609	26.5
Major cations.....		53.4
Major anions.....		54.3
Cation/anion difference.....		0.76 %

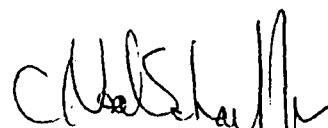
C. Neal Schaeffer
Lab Director

CLIENT: GBR
ID: 9007101030
SITE: GRW-4
LAB NO: F4586

DATE REPORTED: 07/16/90
DATE RECEIVED: 07/10/90
DATE COLLECTED: 07/10/90

Lab pH (s.u.).....	7.91
Lab conductivity, umhos/cm.....	4884
Lab resistivity, ohm-m.....	2.0475
Total dissolved solids (180), mg/l..	3334
Total dissolved solids (calc), mg/l.	3374
Total alkalinity as CaCO ₃ , mg/l.....	974.10
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1255.00
Sodium absorption ratio.....	8.88

	mg/l	meq/l
Bicarbonate as HCO ₃	1188.4	19.48
Carbonate as CO ₃	0.0	0.00
Chloride.....	519.4	14.65
Sulfate.....	1076.5	22.43
Calcium.....	413.6	20.64
Magnesium.....	54.2	4.46
Potassium.....	2.7	0.07
Sodium.....	723.0	31.45
Major cations.....		56.62
Major anions.....		56.56
Cation/anion difference.....		0.05 %


C. Neal Schaeffer
Lab Director



Inter Mountain
Laboratories, Inc.

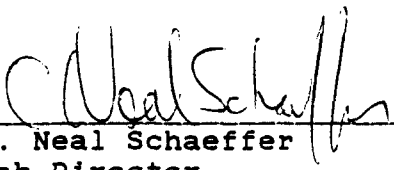
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: Giant Refinery
ID: GRW-4 GBR-43
SITE: GBR
LAB NO: F4079

DATE REPORTED: 04/13/90
DATE RECEIVED: 04/02/90
DATE COLLECTED: 04/02/90

Lab pH (s.u.).....	7.32
Lab Conductivity, umhos/cm.....	5121
Lab resistivity, ohm-m.....	1.9527
Total Dissolved Solids (180), mg/l..	3636
Total Dissolved Solids (calc), mg/l.	3601
Total Alkalinity as CaCO ₃ , mg/l.....	855.68
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1389.43
Sodium Absorption Ratio.....	8.38

	mg/l	meq/l
Bicarbonate as HCO ₃	1043.9	17.11
Carbonate as CO ₃	0.0	0.00
Chloride.....	556.7	15.70
Sulfate.....	1281.4	26.70
Calcium.....	484.3	24.16
Magnesium.....	44.1	3.62
Potassium.....	2.8	0.07
Sodium.....	718.5	31.25
Major Cations.....		59.11
Major Anions.....		59.51
Cation/Anion Difference.....		0.34 %

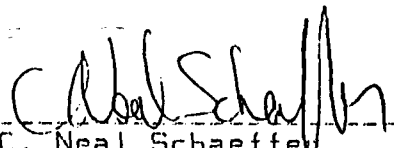

C. Neal Schaeffer
Lab Director

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/21/87
SAMPLE: 8909071345
SITE: GRW-4 GBR-43 DATE RECEIVED: 09/07/89
LAB NO: F3131 DATE COLLECTED: 09/07/89

Lab pH.....	7.49
Lab Conductivity, umhos/cm.....	5287
Lab resistivity, ohm-m.....	1.8914
Total Dissolved Solids (180), mg/l.....	13732
Total Dissolved Solids (calc), mg/l.....	3640
Total Alkalinity as CaCO ₃ , mg/l.....	916.44
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1407.17
Sodium Absorption Ratio.....	8.84
Nitrate, mg/l.....	0.02

	mg/l	meq/l
Bicarbonate as HCO ₃	1118.06	18.33
Carbonate as CO ₃	0.00	0.00
Chloride.....	564.97	15.94
Sulfate.....	1280.59	26.68
Calcium.....	346.75	17.30
Magnesium.....	131.82	10.84
Potassium.....	3.30	0.08
Sodium.....	762.60	33.17
Major Cations.....		61.40
Major Anions.....		60.94
Cation/Anion Difference.....		0.37 %

* TDS (180) could not be accurately determined apparently due to hydro-
carbon interferences.


C. Neal Schaeffer
Senior Chemist

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

MONITOR WELL GBR-44/GRW-6

<u>SAMPLER</u>	<u>GIANT</u>
<u>DATE</u>	<u>10/4/90</u>
<u>PARAMETER</u>	
DETECTION LIMIT	(BELOW)
BENZENE	300.0
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	20.0
1,1-DICHLOROETHANE	ND(5.0)
1,2-DICHLOROETHANE	6.1
1,1-DICHLOROETHENE	ND(2.0)
CIS-1,2-DICHLOROETHENE	4.5
TRANS-1,2-DICHLOROETHENE	ND(2.0)
1,2-DICHLOROPROPANE	ND(1.0)
ETHYLBENZENE	47.0
METHYLENE CHLORIDE	8.1 X
1,1,2,2-TETRACHLOROETHANE	ND(1.5)
TETRACHLOROETHENE	1.6 X
TOLUENE	ND(2.0)
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	6.8

TR	-	TRACE
ND	-	NOT DETECTED
NA	-	NOT ANALYZED
**	-	SPLIT SAMPLE
X	-	PRESENCE NOT CONFIRMED

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

MONITOR WELL GBR-44/GRW-6

<u>SAMPLER</u>	OCD	GIANT	GIANT	GIANT	GIANT
<u>DATE</u>	<u>6/8/88</u>	<u>9/7/89</u>	<u>4/2/90</u>	<u>7/17/90</u>	<u>9/4/90</u>
<u>PARAMETER</u>					
DETECTION LIMIT	0.5	<1.0	<1.0	(BELOW)	(BELOW)
BENZENE	10.0	10.8	16.0	120.0	220.0
BROMODICHLOROMETHANE	ND	ND	ND	ND(<1.0)	NA
BROMOFORM	ND	ND	ND	ND(1.2)	NA
BROMOMETHANE	ND	ND	ND	ND(<1.0)	NA
CARBON TETRACHLORIDE	ND	ND	ND	ND(<1.0)	NA
CHLOROBENZENE	ND	ND	ND	ND(2.0)	ND(2.0)
CHLOROETHANE	ND	ND	ND	ND(<1.0)	NA
CHLOROFORM	ND	ND	ND	ND(<1.0)	NA
CHLOROMETHANE	ND	ND	ND	ND(<1.0)	NA
DIBROMOCHLOROMETHANE	ND	ND	ND	ND(<1.0)	NA
1,2-DICHLOROBENZENE	ND	ND	ND	ND(4.0)	ND(4.0)
1,3-DICHLOROBENZENE	ND	ND	ND	ND(4.0)	ND(4.0)
1,4-DICHLOROBENZENE	ND	ND	ND	ND(3.0)	ND(3.0)
DICHLORODIFLUOROMETHANE	ND	NA	NA	ND(<1.0)	NA
1,1-DICHLOROETHANE	5.5	1.4	2.1	1.9	NA
1,2-DICHLOROETHANE	2.4	3.5	7.9	5.1	NA
1,1-DICHLOROETHENE	ND	ND	ND	ND(<1.0)	NA
CIS-1,2-DICHLOROETHENE	20.0	NA	ND	7.8	NA
TRANS-1,2-DICHLOROETHENE	ND	NA	ND	ND(<1.0)	NA
TOTAL 1,2-DICHLOROETHENE	NA	0.48	NA	NA	NA
DICHLOROMETHANE	4.0	ND	ND	ND(<1.0)	NA
1,2-DICHLOROPROPANE	ND	ND	ND	ND(<1.0)	NA
ETHYLBENZENE	ND	16.0	ND	24.0	67.0
METHYLENE CHLORIDE	ND	1.1	1.1	ND(<1.0)	NA
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND	ND(<1.0)	NA
TETRACHLOROETHENE	6.7	ND	2.7	1.7	NA
TOLUENE	0.7	ND	0.65	ND(2.0)	ND(2.0)
1,1,1-TRICHLOROETHANE	5.5	0.97	1.6	0.41	NA
1,1,2-TRICHLOROETHANE	ND	ND	ND	ND(<1.0)	NA
TRICHLOROETHENE	3.6	0.77	2.3	1.5	NA
TRICHLOROFLUOROMETHANE	ND	ND	ND	0.34	NA
VINYL CHLORIDE	ND	ND	ND	ND(<1.0)	NA
TOTAL XYLENES	ND	15.0	3.4	8.5	46.0

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

Giant Refining Company
 Radian Work Order: S0-10-043

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	901004945	9010041010	9010041028	9010041100
	RW-4	RW-6	RW-3	RW-13
Factor:	50	10	20	1
Results in:	ug/L	ug/L	ug/L	ug/L
	10A	11A	12A	13A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	770 C	10	300 C	2.0	490 C	4.0	ND	0.20
Chlorobenzene	ND	10	ND	2.0	5.8 X ^a	4.0	ND	0.20
1,2-Dichlorobenzene	ND	20	ND	4.0	ND	8.0	ND	0.40
1,3-Dichlorobenzene	ND	20	ND	4.0	ND	8.0	ND	0.40
1,4-Dichlorobenzene	ND	15	20 G	3.0	290 G	6.0	ND	0.30
Ethylbenzene	160 C	10	47 C	2.0	420 C	4.0	ND	0.20
Toluene	ND	10	ND	2.0	ND	4.0	2.0 X	0.20
Xylenes (total)	ND	10	6.8 G ^a	2.0	710 C	4.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	117		122		97		112	
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

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.

Giant Refining Company
 Radian Work Order: S0-10-043

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	901004945	9010041010	9010041028	9010041100
	RW-4	RW-6	RW-3	RW-13
Factor:	50	10	20	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	5.0	ND	1.0	ND	2.0	ND	0.10
Bromoform	ND	25	ND	5.0	ND	10	ND	0.50
Bromomethane	ND	59	ND	12	ND	24	ND	1.2
Carbon tetrachloride	ND	6.0	ND	1.2	ND	2.4	ND	0.12
Chlorobenzene	ND	12	ND	2.5	ND	5.0	ND	0.25
Chloroethane	ND	26	ND	5.2	ND	10	ND	0.52
2-Chloroethylvinylether	ND	25	ND	5.0	ND	10	ND	0.50
Chloroform	ND	5.0	ND	1.0	ND	2.0	ND	0.10
Chloromethane	ND	15	ND	3.0	ND	6.0	ND	0.30
Dibromochloromethane	ND	10	ND	2.0	ND	4.0	ND	0.20
1,2-Dichlorobenzene	ND	25	ND	5.0	ND	10	ND	0.50
1,3-Dichlorobenzene	ND	16	ND	3.2	ND	6.4	ND	0.32
1,4-Dichlorobenzene	ND	12	ND	2.4	ND	4.8	ND	0.24
1,1-Dichloroethane	ND	25	ND	5.0	ND	10	ND	0.50
1,2-Dichloroethane	6.1 Xa	5.0	6.1 C	1.0	4.3 Xa	2.0	4.1 C	0.10
1,1-Dichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
cis-1,2-Dichloroethene	25 Xa	10	4.5 Ca	2.0	17 Ca	4.0	ND	0.20
trans-1,2-Dichloroethene	ND	25	ND	5.0	ND	10	ND	0.50
1,2-Dichloroethane	6.1 Xa	5.0	6.1 C	1.0	4.3 Xa	2.0	4.1 C	0.10
1,1-Dichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
cis-1,2-Dichloroethene	25 Xa	10	4.5 Ca	2.0	17 Ca	4.0	ND	0.20
trans-1,2-Dichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
1,2-Dichloropropane	ND	5.0	ND	1.0	ND	2.0	ND	0.10
cis-1,3-Dichloropropene	ND	10	ND	2.0	ND	4.0	ND	0.20
trans-1,3-Dichloropropene	ND	17	ND	3.4	ND	6.8	ND	0.34
Methylene chloride	22 Xa	20	8.1 Xa	4.0	ND	8.0	0.52 Xa	0.40
1,1,2,2-Tetrachloroethane	ND	7.5	ND	1.5	ND	3.0	ND	0.15
Tetrachloroethene	ND	5.0	1.6 Xa	1.0	ND	2.0	ND	0.10
1,1,1-Trichloroethane	ND	10	ND	2.0	ND	4.0	0.62 Xa	0.20
1,1,2-Trichloroethane	ND	10	ND	2.0	ND	4.0	ND	0.20
Trichloroethene	ND	10	ND	2.0	ND	4.0	ND	0.20
Trichlorofluoromethane	11 Xa	10	ND	2.0	ND	4.0	0.20 Xa	0.20
Vinyl chloride	ND	10	ND	2.0	ND	4.0	ND	0.20

 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.

Giant Refining Co.
 Radian Work Order: 90-10-120

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	901004945 RW-4	9010041010 RW-6	9010041028 RW-3	Reagent Blank
Factor:	4.8	4.9	4.8	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	8.6	ND	8.8	ND	8.6	ND	1.8
Acenaphthylene	ND	11	ND	11	ND	11	ND	2.3
Anthracene	ND	3.2	ND	3.2	ND	3.2	ND	0.66
Benzo(a)anthracene	ND	0.062	ND	0.064	0.15 a	0.062	ND	0.013
Benzo(a)pyrene	ND	0.11	ND	0.11	ND	0.11	ND	0.023
Benzo(b)fluoranthene	ND	0.086	ND	0.088	ND	0.086	ND	0.018
Benzo(g,h,i)perylene	ND	0.36	ND	0.37	ND	0.36	ND	0.076
Benzo(k)fluoranthene	ND	0.082	ND	0.083	ND	0.082	ND	0.017
Chrysene	ND	0.72	ND	0.74	ND	0.72	ND	0.15
Dibenzo(a,h)anthracene	ND	0.14	ND	0.15	ND	0.14	ND	0.030
Fluoranthene	ND	1.0	ND	1.0	5.4	1.0	ND	0.21
Fluorene	3.2 a	1.0	ND	1.0	6.8	1.0	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.21	ND	0.21	ND	0.21	ND	0.043
Naphthalene	ND	8.6	ND	8.8	57	8.6	ND	1.8
Phenanthrene	5.5 a	3.1	ND	3.1	45	3.1	ND	0.64
Pyrene	ND	1.3	ND	1.3	1.4 a	1.3	ND	0.27
Surrogate Recovery(%)								
Terphenyl-d14	168 a		177 a		193 a		107	
Control Limits: 24 to 146								

ND Not detected at specified detection limit

a Est. result less than 5 times detection limit

Q Outside control limits

(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: 90-09-163

Method: Vol. aromatics by SW8020 (1)

List: SW8020

Sample ID:	9009041235	9009041243	9009041300	9009041343
	RW-5	RW-6	RW-10	RW-12
Factor:	10	10	1	5
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
Benzene	140 C	2.0	220 C	2.0	2.2 C	0.20	1400 DC	5.0
Chlorobenzene	ND	2.0	ND	2.0	ND	0.20	ND	1.0
1,2-Dichlorobenzene	ND	4.0	ND	4.0	ND	0.40	ND	2.0
1,3-Dichlorobenzene	ND	4.0	ND	4.0	ND	0.40	ND	2.0
1,4-Dichlorobenzene	ND	3.0	ND	3.0	ND	0.30	ND	1.5
Ethylbenzene	120 C	2.0	67 C	2.0	5.3 C	0.20	52 C	1.0
Toluene	ND	2.0	ND	2.0	0.33 X ^a	0.20	2.2 C ^a	1.0
Total xylenes	14 C	2.0	46 C	2.0	19 C	0.20	66 C	1.0
<u>Surrogate Recovery(%)</u>								
1-Bromo-4-fluorobenzene	91		90		95		93	
Control Limits: 76 to 140								

C Confirmed on second column or by GC/MS

X See definition in report narrative

D Sample dilution necessary for this analyte

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.

Giant Refining Company
 Radian Work Order: 50-07-122

Method: Aromatics by SW8020 (1)

List: Complete analyte list

Sample ID:	900717930	900717945	9007171004	9007171022
	RW-3	RW-4	RW-6	STRIPPER INF
Factor:	50	25	10	10
Results in:	ug/L	ug/L	ug/L	ug/L
	02A	04A	06A	08A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	380 G	10	290 C	5.0	120 C	2.0	52 C	2.0
Chlorobenzene	ND	10	ND	5.0	ND	2.0	ND	2.0
1,2-Dichlorobenzene	ND	20	ND	10	ND	4.0	ND	4.0
1,3-Dichlorobenzene	ND	20	ND	10	ND	4.0	ND	4.0
1,4-Dichlorobenzene	ND	15	ND	7.5	ND	3.0	ND	3.0
Ethylbenzene	160 G	10	58 C	5.0	24 C	2.0	6.7 G@	2.0
Toluene	ND	10	ND	5.0	ND	2.0	2.2 C@	2.0
Xylenes (total)	57 G	10	9.3 C@	5.0	8.5 C@	2.0	36 C	2.0

Surrogate Recovery(%)

1-Bromo-4-fluorobenzene

Control Limits: 40 to 140

104

104

101

103

G Indicates an estimated GC value due to interferences.

C Confirmed on second column or by GC/MS

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.

Giant Refining Company
Radian Work Order: S0-07-122

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	900717930	900717945	9007171004	9007171022
	RW-3	RW-4	RW-6	STRIPPER INF
Factor:	50	25	1	10
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	03A	05A	07A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	5.0	ND	2.5	ND	0.10	ND	1.0
Bromoform	ND	25	ND	12	ND	0.50	ND	5.0
Bromomethane	ND	59	ND	30	ND	1.2	ND	12
Carbon tetrachloride	ND	6.0	ND	3.0	ND	0.12	ND	1.2
Chlorobenzene	ND	12	ND	6.2	ND	0.25	ND	2.5
Chloroethane	ND	26	ND	13	ND	0.52	ND	5.2
2-Chloroethylvinylether	ND	25	ND	12	ND	0.50	ND	5.0
Chloroform	ND	5.0	ND	2.5	ND	0.10	ND	1.0
Chloromethane	ND	15	ND	7.5	ND	0.30	ND	3.0
Dibromochloromethane	ND	10	ND	5.0	ND	0.20	ND	2.0
1,2-Dichlorobenzene	ND	25	ND	12	ND	0.50	ND	5.0
1,3-Dichlorobenzene	ND	16	ND	8.0	ND	0.32	ND	3.2
1,4-Dichlorobenzene	ND	12	ND	6.0	ND	0.24	ND	2.4
1,1-Dichloroethane	ND	25	13 Ca	12	1.9 Ca	0.50	ND	5.0
1,2-Dichloroethane	ND	5.0	5.2 Ca	2.5	5.1 C	0.10	ND	1.0
1,1-Dichloroethene	ND	10	ND	5.0	ND	0.20	ND	2.0
cis-1,2-Dichloroethene	22 Ca	10	46 C	5.0	7.8 C	0.20	16 C	2.0
trans-1,2-Dichloroethene	ND	10	ND	5.0	ND	0.20	ND	2.0
1,2-Dichloropropane	ND	5.0	ND	2.5	ND	0.10	ND	1.0
cis-1,3-Dichloropropene	ND	10	ND	5.0	ND	0.20	ND	2.0
trans-1,3-Dichloropropene	ND	17	ND	8.5	ND	0.34	ND	3.4
Methylene chloride	ND	20	ND	10	ND	0.40	6.2 Xa	4.0
1,1,2,2-Tetrachloroethane	ND	7.5	ND	3.8	ND	0.15	ND	1.5
Tetrachloroethene	ND	5.0	ND	2.5	1.7 C	0.10	4.2 Ca	1.0
1,1,1-Trichloroethane	ND	10	ND	5.0	0.41 Ca	0.20	16 X	2.0
1,1,2-Trichloroethane	ND	10	ND	5.0	ND	0.20	ND	2.0
Trichloroethene	ND	10	10 Ca	5.0	1.5 C	0.20	36 C	2.0
Trichlorofluoromethane	ND	10	ND	5.0	0.34 Ca	0.20	ND	2.0
Vinyl chloride	ND	10	ND	5.0	ND	0.20	ND	2.0

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

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.

Giant Refining Co.
 Radian Work Order: 90-07-185

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	900717930	9007171004	900717945	REAGENT BLANK
	RW-3	RW-6	RW-4	
Factor:	9.5	4.8	4.8	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	17	ND	8.6	ND	8.6	ND	1.8
Acenaphthylene	ND	22	26 *	11	24 *	11	ND	2.3
Anthracene	ND	6.3	ND	3.2	ND	3.2	ND	0.66
Benzo(a)anthracene	ND	0.12	ND	0.062	ND	0.062	ND	0.013
Benzo(a)pyrene	ND	0.22	ND	0.11	ND	0.11	ND	0.023
Benzo(b)fluoranthene	ND	0.17	ND	0.086	ND	0.086	ND	0.018
Benzo(g,h,i)perylene	ND	0.72	ND	0.36	ND	0.36	ND	0.076
Benzo(k)fluoranthene	ND	0.16	ND	0.082	ND	0.082	ND	0.017
Chrysene	ND	1.4	ND	0.72	ND	0.72	ND	0.15
Dibenzo(a,h)anthracene	ND	0.28	ND	0.14	ND	0.14	ND	0.030
Fluoranthene	ND	2.0	ND	1.0	ND	1.0	ND	0.21
Fluorene	5.7 *	2.0	1.6 *	1.0	3.9 *	1.0	ND	0.21
Indeno(1,2,3-cd)pyrene	ND	0.41	ND	0.21	ND	0.21	ND	0.043
Naphthalene	ND	17	ND	8.6	11 *	8.6	ND	1.8
Phenanthrene	15 *	6.1	ND	3.1	ND	3.1	ND	0.64
Pyrene	ND	2.6	ND	1.3	ND	1.3	ND	0.27
Surrogate Recovery(%)								
Terphenyl-d14	100		102		99		97	
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.

Giant Refining Company
 Radian Work Order: S0-04-013

Method: Aromatics by SW8020 (1)

List: Complete analyte list

GBR-44

Sample ID:	9004021055	9004021130	9004021145	9004021245
	/GRW-3	/GRW-4	/GRW-6	/STRIPPER INFL
Factor:	10	20	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01B	02B	03C	04C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Benzene	280 C	2.0	440 C	4.0	16 C	0.20	23 C	0.20
Chlorobenzene	ND	2.0	ND	4.0	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	4.0	ND	8.0	ND	0.40	ND	0.40
1,3-Dichlorobenzene	ND	4.0	ND	8.0	ND	0.40	ND	0.40
1,4-Dichlorobenzene	ND	3.0	ND	6.0	ND	0.30	ND	0.30
Ethylbenzene	98 C	2.0	65 C	4.0	ND	0.20	0.90 Ca	0.20
Toluene	ND	2.0	ND	4.0	0.65 Ca	0.20	ND	0.20
Xylenes (total)	33 C	2.0	ND	4.0	3.4 C	0.20	7.1 C	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	91		104		69		84	
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

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

Giant Refining Company
 Radian Work Order: 50-04-013

Method: Halocarbons by SW8010 (1)

List: Table 3 analyte list

Sample ID:	9004021055	9004021130	9004021145	9004021245
	/GRW-3	/GRW-4	/GRW-6	/STRIPPER INFL
Factor:	10	20	1	1
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

GDR-44

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Bromodichloromethane	ND	1.0	ND	2.0	ND	0.10	ND	0.10
Bromoform	ND	5.0	ND	10	ND	0.50	ND	0.50
Bromomethane	ND	12	ND	24	ND	1.2	ND	1.2
Carbon tetrachloride	ND	1.2	ND	2.4	ND	0.12	ND	0.12
Chlorobenzene	ND	2.5	ND	5.0	ND	0.25	ND	0.25
Chloroethane	ND	5.2	ND	10	ND	0.52	ND	0.52
2-Chloroethylvinylether	ND	5.0	ND	10	ND	0.50	ND	0.50
Chloroform	ND	1.0	ND	2.0	ND	0.10	ND	0.10
Chloromethane	ND	3.0	ND	6.0	ND	0.30	ND	0.30
Dibromochloromethane	ND	2.0	ND	4.0	ND	0.20	ND	0.20
1,2-Dichlorobenzene	ND	5.0	ND	10	ND	0.50	ND	0.50
1,3-Dichlorobenzene	ND	3.2	ND	6.4	ND	0.32	ND	0.32
1,4-Dichlorobenzene	ND	2.4	ND	4.8	ND	0.24	ND	0.24
1,1-Dichloroethane	ND	5.0	ND	10	2.1 Ca	0.50	3.1 C	0.50
1,2-Dichloroethane	ND	1.0	ND	2.0	7.9 C	0.10	4.5 C	0.10
1,1-Dichloroethene	ND	2.0	ND	4.0	ND	0.20	ND	0.20
cis-1,2-Dichloroethene	14 C	2.0	21 C	4.0	ND	0.20	25 C	0.20
trans-1,2-Dichloroethene	ND	2.0	ND	4.0	ND	0.20	ND	0.20
1,2-Dichloropropane	ND	1.0	ND	2.0	ND	0.10	ND	0.10
cis-1,3-Dichloropropene	ND	2.0	ND	4.0	ND	0.20	ND	0.20
trans-1,3-Dichloropropene	ND	3.4	ND	6.8	ND	0.34	ND	0.34
Methylene chloride	ND	4.0	ND	8.0	1.1 Ca	0.40	0.65 Ca	0.40
1,1,2,2-Tetrachloroethane	ND	1.5	ND	3.0	ND	0.15	ND	0.15
Tetrachloroethene	ND	1.0	ND	2.0	2.7 C	0.10	2.8 C	0.10
1,1,1-Trichloroethane	ND	2.0	ND	4.0	1.6 C	0.20	0.96 Ca	0.20
1,1,2-Trichloroethane	ND	2.0	ND	4.0	ND	0.20	ND	0.20
Trichloroethene	ND	2.0	8.6 Ca	4.0	2.3 C	0.20	2.4 C	0.20
Trichlorofluoromethane	ND	2.0	ND	4.0	ND	0.20	ND	0.20
Vinyl chloride	ND	2.0	ND	4.0	ND	0.20	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

(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: 90-04-031

Method: SW8310 PAHs by HPLC (1)

List: 8310 Method analytes

Sample ID:	9004021055	9004021130	9004021145	9004021245
	GRW-3	GRW-4	GRW-6	STRIP INFLUE
Factor:	9.4	0.94	4.7	4.8
Results in:	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A
Matrix:	water	water	water	water

CBL-44

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthalene	ND	22	ND	2.3	ND	11	ND	11
Acenaphthene	ND	17	ND	1.8	ND	8.5	ND	8.6
Anthracene	ND	6.2	ND	0.66	ND	3.1	ND	3.2
Benzo(a)anthracene	ND	0.12	ND	0.013	ND	0.061	ND	0.062
Benzo(a)pyrene	ND	0.22	ND	0.023	ND	0.11	ND	0.11
Benzo(b)fluoranthene	ND	0.17	ND	0.018	ND	0.085	ND	0.086
Benzo(g,h,i)perylene	ND	0.71	ND	0.076	ND	0.36	ND	0.36
Benzo(k)fluoranthene	ND	0.16	ND	0.017	ND	0.080	ND	0.082
Chrysene	ND	0.12	ND	0.013	ND	0.061	ND	0.062
Dibenzo(a,h)anthracene	ND	0.28	ND	0.030	ND	0.14	ND	0.14
Fluoranthene	ND	2.0	ND	0.21	ND	0.99	ND	1.0
Fluorene	6.7 *	2.0	ND	0.21	2.8 *	0.99	2.2 *	1.0
Indeno(1,2,3-cd)pyrene	ND	0.40	ND	0.043	ND	0.20	ND	0.21
Naphthalene	ND	17	ND	1.8	ND	8.5	ND	8.6
Phenanthrene	7.3 *	6.0	ND	0.64	ND	3.0	3.3 *	3.1
Pyrene	ND	2.5	ND	0.27	ND	1.3	ND	1.3
Surrogate Recovery(%)								
Terphenyl-d14	221	Q	4	Q	89		87	
Control Limits: 24 to 146								

ND: Not detected at specified detection limit

* Est. result less than 5 times detection limit

Q Outside control limits

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

3316 4
33161481 09/09/87

RAD SUBMITTANT:

REPORT

Work Order # 87-07-050

33161481 09/09/87

33161481 09/09/87

SAMPLE ID 8909071485 H2O FRACTION 010 TEST CODE 6028 NAME PURGEABLE AROMATICS - H2O

DATE 09/07/87 DATA 09/07/87 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST	MG	FILE #	ENR0152	VERIFIED	JD
INSTRMT	2	FACTOR	1 UNITS	W/L	
CASE#	COMPOUND	RESULT	DET LIMIT	FACTOR	
71-40-2	1,2-Dichlorobenzene	128	0.10	1	
108-88-2	Toluene	ND	0.30	1	
100-41-4	1,2-Dichlorobenzene	16.0	0.10	1	
108-90-7	Chlorobenzene	ND	0.10	1	
1330-20-7	1,2-Dichlorobenzene	15.0	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 123% recovery

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

LAB 2
DATE (Vial) 09/08/89

CASE 32268800

REPORT

Work Order # 59-01050

Results by Sample

SAMPLE ID 890907495 H2O FRACTION Q1A TEST CODE 601 NAME PURGEABLE HALOCARBONS H2O

Date & Time Collected 09/07/89

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST
INSTRUMENTM2
B

INJECT 09/19/89

FILE #
FACTORDE09197
1VERIFIED
UNITSJD
ug/L

CASE#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-13	Chloromethane	ND	0.50	1
75-83-9	Bromomethane	ND	1.0	1
75-81-4	Vinyl Chloride	ND	0.20	1
75-80-2	Chloroethane	ND	0.50	1
75-84-2	1,1-Dichloroethane	ND	0.40	1
75-80-4	Trichloroethene	ND	0.10	1
75-85-4	1,1-Dichloroethane	ND	0.10	1
75-84-2	1,1-Dichloroethane	ND	0.10	1
540-54-10	Total 1,2-Dichloroethane (1)	0.48 C	0.10	1
67-86-2	Chloroform	ND	0.10	1
107-89-2	1,2-Dichloroethane	0.5 C	0.10	1
71-85-6	1,1,2-Trichloroethane	0.97 C	0.20	1
55-83-5	Carbon Tetrachloride	ND	0.20	1
75-87-4	Bromochloromethane	ND	0.10	1
78-87-5	1,2-Dichloropropane	ND	0.10	1
1091-01-5	cis-1,3-Dichloropropene	ND	0.40	1
79-81-6	1,1,2-Trichloroethane	0.77 C	0.20	1
124-48-1	Dibromochloromethane (2)	ND	0.20	1
79-80-5	1,1,2-Trichloroethane (2)	ND	0.20	1
1091-02-6	trans-1,3-Dichloropropene (2)	ND	0.40	1
110-75-2	2-Chloroethyl Vinyl Ether	ND	2.0	1
75-85-2	Stoerom	ND	2.0	1
79-84-5	1,1,2,2-Tetrachloroethane (4)	ND	0.20	1
127-15-4	Tetrachloroethane (4)	ND	0.10	1
103-80-7	Chlorobenzene	ND	0.20	1
541-15-1	1,2-Dichlorobenzene	ND	0.50	1
95-80-1	1,3-Dichlorobenzene	ND	0.20	1
103-46-7	1,4-Dichlorobenzene	ND	0.20	1

2233
Received: 09/03/89

RAS 88738000

REPORT

Work Order # 89-07-050
Continued From Above

SAMPLE ID 9909071455 H2O *Capw-6* FRACTION Q:A TEST CODE 601 NAME Purceable Halocarbons H2O
Date & Time Collected 09/07/89 Category

SUBSTITUTES

540-00-3	1-4-Difluorobenzene	NA	% Recovery
450-00-4	1-Bromobenzene	127	% Recovery

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

(2) Quantitated as the Triisobutyl

(3) Difluorobenzene, 1,1,2-trichloroethane and

Triisobutylbenzene 0-3104

(4) 1,1,2-trichloroethane and tetrafluoroethane co-elute.



SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

88-0858-C

REPORT TO: DAVID BOYER S.L.D. No. OR-
N.M. OIL CONSERVATION DIVISION DATE REC. 6/10/88
P.O. Box 2088 PRIORITY 3
Santa Fe, NM 87504-2088 PHONE(S): 827-5812
COLLECTION CITY: Bloomfield COUNTY: San Juan
COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 8/8/06/08/15/12
LOCATION CODE: (Township-Range-Section-Tracts) 29N+12W+27+11/8 (10N06E24342)
USER CODE: 8/2/2/3/5 SUBMITTER: David Boyer CODE: 2/6/0
SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: _____

This form accompanies 2 Septum Vials, _____ Glass Jugs, and/or _____
Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
☒ P-Ice: Sample stored in an ice bath (Not Frozen).
☐ P-AA: Sample Preserved with Ascorbic Acid to remove chlorine residual.
☒ P-HCl: Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
Other Specific Compounds or Classes

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

Remarks: _____

FIELD DATA:

pH= 7; Conductivity= 340 umho/cm at 17.5 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate _____ / _____

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.) Recovery well
Giant GBR-44, Slightly cloudy, slight odor
sample from pump discharge at well dry at 22.8

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities. (signature collector): D. H. Boyer Method of Shipment to the Lab: Flat Co

CHAIN OF CUSTODY

I certify that this sample was transferred from D. G. Boyer to Shirley C. Eden
at (location) SLD - ALB on 6/9/88 and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☒ No ☐

Signatures D. H. Boyer Shirley C. Eden

For OCD use: Date owner notified: 8/19/88 Phone or (Letter) Initials ASB

ANALYSES PERFORMED

LAB. No.: OR- 858

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
☒ (754) Aromatic & Halogenated Purgeables
☐ (765) Mass Spectrometer Purgeables
☐ (766) Trihalomethanes
☐ (774) SDWA VOC's I (8 Regulated +)
☐ (775) SDWA VOC's II (EDB & DBCP)
 Other Specific Compounds or Classes
☐ _____
☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
☐ (755) Base/Neutral Extractables
☐ (758) Herbicides, Chlorophenoxy acid
☐ (759) Herbicides, Triazines
☐ (760) Organochlorine Pesticides
☐ (761) Organophosphate Pesticides
☐ (767) Polychlorinated Biphenyls (PCB's)
☐ (764) Polynuclear Aromatic Hydrocarbons
☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
<i>aromatic purgeables</i>	<i>see remarks</i>	<i>halogenated purgeables</i>	
<i>benzene</i>	<i>10</i>	<i>1,1-Dichloroethane</i>	<i>5.5</i>
<i>toluene</i>	<i>1.7</i>	<i>dichloromethane</i>	<i>4</i>
<i>ethylbenzene</i>	<i>N.D.</i>	<i>tetrachloroethane</i>	<i>6.7</i>
<i>p-m-xylene</i>	<i>N.D.</i>	<i>cis 1,2-Dichloroethane</i>	<i>2.0</i>
<i>o-xylene</i>	<i>N.D.</i>	<i>1,1,1-Trichloroethane</i>	<i>5.5</i>
		<i>1,2-Dichloroethane</i>	<i>2.4</i>
		<i>trichloroethene</i>	<i>3.6</i>
* DETECTION LIMIT *	<i>1.549/L</i>	+ DETECTION LIMIT +	<i>1.549/L</i>

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS:

forty compounds ranging from the aromatic screen region thru the C3 substituted benzene region at 1.5-12 ppb detected by the photoionization detector but not identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☐ Intact: Yes ☒ No ☐ Seal(s) broken by: Mary C. Egan date: 6/15/88

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 6/15/88 Analyst's signature: Mary C. Egan

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R. Meyerhan





Inter-Mountain
Laboratories, Inc.

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

CLIENT: Giant Refinery
ID: 9010041010
SITE: RW-6
LAB NO: F5142

DATE REPORTED: 10/23/90
DATE RECEIVED: 10/04/90
DATE COLLECTED: 10/04/90

Lab pH (s.u.).....	7.95
Lab conductivity, umhos/cm.....	4530
Lab resistivity, ohm-m.....	2.21
Total dissolved solids (180), mg/l..	3190
Total dissolved solids (calc), mg/l.	2950
Total alkalinity as CaCO ₃ , mg/l.....	599
Total acidity as CaCO ₃ , mg/l.....	0
Total hardness as CaCO ₃ , mg/l.....	1110
Sodium absorption ratio.....	8.45

	mg/l	meq/l
Bicarbonate as HCO ₃	732	12
Carbonate as CO ₃	0	0
Chloride.....	818	23.1
Sulfate.....	702	14.6
Calcium.....	382	19
Magnesium.....	39.5	3.25
Potassium.....	2.16	0.06
Sodium.....	648	28.2
Major cations.....		50.5
Major anions.....		49.7
Cation/anion difference.....		0.85 %

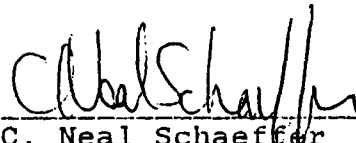
C. Neal Schaeffer
Lab Director

CLIENT: GBR
ID: 9007101050
SITE: GRW-6
LAB NO: F4587

DATE REPORTED: 07/16/90
DATE RECEIVED: 07/10/90
DATE COLLECTED: 07/10/90

Lab pH (s.u.).....	7.74
Lab conductivity, umhos/cm.....	5068
Lab resistivity, ohm-m.....	1.9732
Total dissolved solids (180), mg/l..	3306
Total dissolved solids (calc), mg/l.	3179
Total alkalinity as CaCO ₃ , mg/l.....	668.50
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1164.64
Sodium absorption ratio.....	8.97

	mg/l	meq/l
Bicarbonate as HCO ₃	815.6	13.37
Carbonate as CO ₃	0.0	0.00
Chloride.....	823.7	23.24
Sulfate.....	836.2	17.42
Calcium.....	329.3	16.43
Magnesium.....	83.4	6.86
Potassium.....	2.2	0.06
Sodium.....	703.5	30.60
Major cations.....		53.95
Major anions.....		54.03
Cation/anion difference.....		0.07 %


C. Neal Schaeffer
Lab Director

CLIENT: Giant Refinery
ID: GRW-6
SITE: GBR
LAB NO: F4080

DATE REPORTED: 04/13/90
DATE RECEIVED: 04/02/90
DATE COLLECTED: 04/02/90

Lab pH (s.u.)..... 7.39
Lab Conductivity, umhos/cm..... 4818
Lab resistivity, ohm-m..... 2.0756
Total Dissolved Solids (180), mg/l.. 3100
Total Dissolved Solids (calc), mg/l. 3075
Total Alkalinity as CaCO₃, mg/l..... 691.42
Total Acidity as CaCO₃, mg/l..... 0.00
Total Hardness as CaCO₃, mg/l..... 1221.02
Sodium Absorption Ratio..... 8.04

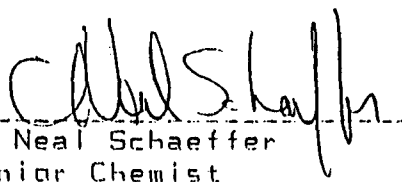
	mg/l	meq/l
Bicarbonate as HCO ₃	843.5	13.83
Carbonate as CO ₃	0.0	0.00
Chloride.....	811.5	22.89
Sulfate.....	737.4	15.36
Calcium.....	421.1	21.01
Magnesium.....	41.4	3.41
Potassium.....	2.3	0.06
Sodium.....	646.0	28.10
Major Cations.....		52.58
Major Anions.....		52.08
Cation/Anion Difference.....		0.47 %


C. Neal Schaeffer
Lab Director

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/21/89
SAMPLE: 8909071425
SITE: GRW-6 ~~60R-44~~
LAB NO: F3130 DATE RECEIVED: 09/07/89
DATE COLLECTED: 09/07/89

Lab pH.....	7.39
Lab Conductivity, umhos/cm.....	4690
Lab resistivity, ohm-m.....	2.1372
Total Dissolved Solids (TDS), mg/l.....	3100
Total Dissolved Solids (calc), mg/l.....	3022
Total Alkalinity as CaCO ₃ , mg/l.....	589.14
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1266.05
Sodium Absorption Ratio.....	7.06
Nitrate, mg/l.....	0.17

	mg/l	meq/l
Bicarbonate as HCO ₃	718.75	11.78
Carbonate as CO ₃	0.00	0.00
Chloride.....	514.53	17.34
Sulfate.....	104.67	21.10
Calcium.....	379.01	18.91
Magnesium.....	77.93	4.41
Potassium.....	3.00	0.08
Sodium.....	577.50	25.12
Major Cations.....		50.52
Major Anions.....		50.29
Cation/Anion Difference.....		0.22 %


C. Neal Schaeffer
Senior Chemist



New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859
WNP

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

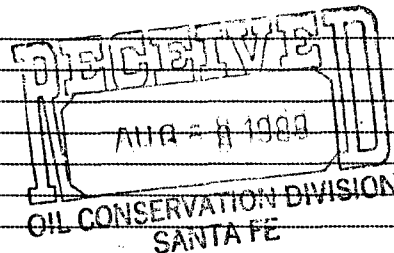
DATE RECEIVED	6/10/88	LAB NO.	WC-2094	USER CODE	☐ 59300 ☐ 59600 ☒ OTHER: 82235
Collection DATE	6/10/88	SITE INFORMATION	Sample location		
Collection TIME	151D		Giant Bloomfield GBR-44		
Collected by — Person/Agency		Collection site description			
Boyer / Anderson / OCD					

SEND
FINAL
REPORT
TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812



SAMPLING CONDITIONS

☐ Bailed ☐ Dipped	☒ Pump ☐ Tap	Water level	Discharge	Sample type
				Grab
pH (00400)	7	Conductivity (Uncorrected)	Water Temp. (00010)	Conductivity at 25°C (00094)
		3450 µmho	17.5 °C	µmho
Field comments				

SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted	1	☐ NF: Whole sample (Non-filtered)	☒ F: Filtered in field with 0.45 µm membrane filter	☐ A: 2 ml H ₂ SO ₄ /L added
☒ NA: No acid added		☐ Other-specify:	☐ A: 5ml conc. HNO ₃ added	☐ A: 4ml fuming HNO ₃ added

ANALYTICAL RESULTS from SAMPLES

NA	Units	Date analyzed	From F, NA Sample:	Date Analyzed
☒ Conductivity (Corrected) 25°C (00095)	4704 µmho	7/11	☒ Calcium	536 mg/l 7/19
☐ Total non-filterable residue (suspended) (00530)			☒ Potassium	3 mg/l 7/25
☒ Other: Lab pH	8.02	7/20	☒ Magnesium	57.3 mg/l 7/19
☐ Other:			☒ Sodium	662 mg/l 7/25
☐ Other:			☒ Bicarbonate	239 mg/l 7/20
A-H₂SO₄			☒ Chloride	633 mg/l 7/26
☐ Nitrate-N +, Nitrate-N total (00630)	mg/l		☒ Sulfate	1880 mg/l 7/26
☐ Ammonia-N total (00610)	mg/l		☒ Total Solids	4012 mg/l 7/7
☐ Total Kjeldahl-N ()	mg/l		☒ Bromide	0.84 6/22
☐ Chemical oxygen demand (00340)	mg/l		☐	
☐ Total organic carbon ()	mg/l		☒ Cation/Anion Balance	
☐ Other:			Analyst	Date Reported
☐ Other:				7/29/88
Laboratory remarks			Reviewed by	
Received by RW			6/9/88 SLB ALB	
			8/1/88	

FOR OCD USE -- Date Owner Notified 8/19/88 Phone or Letter?

Initials

857

CATIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	26.75	536.00	<3.0
Mg	4.71	57.30	<0.3
Na	28.80	662.00	<10.0
K	0.08	3.00	<0.3
Mn	0.00	0.00	
Fe	0.00	0.00	

SUMS 60.32 1258.30

Total Dissolved Solids= 4012

Ion Balance = 98.99%

ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT
HCO3	3.92	239.00	<1.0
SO4	39.17	1880.00	<10.0
CL	17.86	633.00	<5.0
NO3	0.00	0.00	< 0.
CO3	0.00	0.00	< 1.
NH3	0.00	0.00	< 0.
PO4	0.00	0.00	< 0.
	60.94	2752.00	

WC No. = 8802094
Date out/By

Q 7/29/28
WJR 8/3/28



HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2553

Date Received	6 10 88	Lab ICP-262 No.	User Code	☒ 82235	☐ Other:
COLLECTION DATE & TIME:			yy mm dd hh mm	COLLECTION SITE DESCRIPTION	
COLLECTED BY:			88 06 08 15 10	GBR-44	

TO:

OWNER: Grant Bloomfield

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., PO Box 2088
SANTA FE, NM 87504-2088

SITE LOCATION:

County: San Juan

Township, Range, Section, Tract: (10N06E24342)

29W+1 26+27+115

ATTN: D. Boyer
TELEPHONE: 827-5812

STATION/ WELL CODE: | | | | | | | | | |

LATITUDE, LONGITUDE: | | | | | | | | | | - | | |

SAMPLING CONDITIONS:

☐ Bailed ☐ Dipped	☒ Pump ☐ Tap	Water Level: ~	Discharge: ~	Sample Type: GRAB
pH(00400) 7	Conductivity(Uncorr.) 3450 μ mho	Water Temp.(00010) 17.5°C	Conductivity at 25°C (00094) μ mho	

FIELD COMMENTS:

SAMPLE FIELD TREATMENT		LAB ANALYSIS REQUESTED:
Check proper boxes:		
☐ WPN: Water Preserved w/HNO ₃ Non-Filtered	☒ WPF: Water Preserved w/HNO ₃ Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	20.1		Silicon	7.2	
Barium	20.1		Silver	20.1	☐
Beryllium	20.1		Strontium	11.	
Boron	0.4		Tin	20.1	
Cadmium	20.1	☐	Vanadium	20.1	
Calcium	560.		Zinc	20.1	
Chromium	20.1	☒	Arsenic		☐
Cobalt	0.06		Selenium		☐
Copper	20.1		Mercury		☐
Iron	1.7				☐
Lead	20.1	☒			☐
Magnesium	46.				☐
Manganese	2.8				☐
Molybdenum	20.1				☐
Nickel	0.2				☐

LAB COMMENTS:

Sail intact. Broken by JFA 6/14/88.

For OCD Use:

Date Owner Notified: 8/19/88

ICAP Analyst *B***Reviewer**

Phone or Letter?

Initials:

Date Analyzed 7/13/88

Date Received 7/25/88

Received by *WPT*

6/9/88 SLS-ALE

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

MONITOR WELL GBR-47

<u>SAMPLER</u>	GIANT	GIANT	GIANT
<u>DATE</u>	<u>3/14/88</u>	<u>3/15/89</u>	<u>6/13/89</u>
<u>PARAMETER</u>			
DETECTION LIMIT	(BELOW)	(BELOW)	(BELOW)
BENZENE	ND(<1.0)	ND(<1.0)	17.7
BROMODICHLOROMETHANE	ND(<1.0)	ND(<1.0)	ND(1.0)
BROMOFORM	ND(<1.0)	ND(<1.0)	ND(1.0)
BROMOMETHANE	ND(1.0)	ND(1.0)	ND(1.0)
CARBON TETRACHLORIDE	ND(<1.0)	ND(<1.0)	ND(1.0)
CHLOROBENZENE	ND(<1.0)	ND(<1.0)	ND(<1.0)
CHLOROETHANE	ND(1.0)	ND(1.0)	ND(1.0)
CHLOROFORM	ND(<1.0)	ND(<1.0)	1.0
CHLOROMETHANE	ND(1.0)	ND(1.0)	ND(1.0)
DIBROMOCHLOROMETHANE	ND(<1.0)	ND(<1.0)	ND(1.0)
1,2-DICHLOROBENZENE	ND(<1.0)	ND(<1.0)	ND(<1.0)
1,3-DICHLOROBENZENE	ND(<1.0)	ND(<1.0)	ND(<1.0)
1,4-DICHLOROBENZENE	ND(<1.0)	ND(<1.0)	ND(<1.0)
DICHLORODIFLUOROMETHANE	ND(1.0)	ND(1.0)	ND(1.0)
1,1-DICHLOROETHANE	ND(<1.0)	0.81	ND(1.0)
1,2-DICHLOROETHANE	ND(<1.0)	0.45	9.3
1,1-DICHLOROETHENE	ND(<1.0)	ND(<1.0)	ND(1.0)
CIS-1,2-DICHLOROETHENE	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	ND(<1.0)	ND(<1.0)	ND(1.0)
1,2-DICHLOROPROPANE	ND(<1.0)	ND(<1.0)	ND(1.0)
ETHYLBENZENE	ND(<1.0)	ND(<1.0)	15.5
METHYLENE CHLORIDE	3.1	0.5	4.0
1,1,2,2-TETRACHLOROETHANE	ND(<1.0)	ND(<1.0)	ND(1.0)
TETRACHLOROETHENE	ND(<1.0)	2.0	ND(1.0)
TOLUENE	ND(<1.0)	0.26	22.5
1,1,1-TRICHLOROETHANE	ND(<1.0)	0.24	ND(1.0)
1,1,2-TRICHLOROETHANE	ND(<1.0)	ND(<1.0)	ND(1.0)
TRICHLOROETHENE	ND(<1.0)	1.2	ND(1.0)
TRICHLOROFLUOROMETHANE	ND(<1.0)	ND(<1.0)	ND(1.0)
VINYL CHLORIDE	ND(1.0)	ND(1.0)	ND(1.0)
TOTAL XYLENES	ND(<1.0)	ND(<1.0)	56.0

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED



Inter-Mountain
Laboratories, Inc.

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

Client: GCL #8906131459
Site: GBR-47
IML #: F1568

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
BENZENE	17.7 (0.2)	ug/l
TOLUENE	22.5 (0.2)	ug/l
ETHYLBENZENE	15.5 (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	40.4 (0.2)	ug/l
o-XYLENE	15.6 (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1902)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

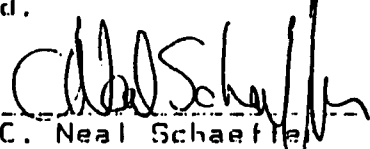
Client: GCL #8906131459
Site: GBR-47
IML #: F1568

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	4.0 (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	1.0 (1.0)	ug/l
1,2-DICHLOROETHANE	9.3 (1.0)	ug/l
1,1,1-TRICHLOROETHANE	ND (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	ND (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	ND (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist



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

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903150823

Sample Site: GBR-47

IML Lab No: F890970

Analysis Requested: Purgeable Aromatic

Sample Matrix: Water

Date Sampled: 03/15/89

Date Received: 03/15/89

Date Extracted: NA

Date Analyzed: 03/28/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	ND (0.2)	ug/l
TOLUENE	0.26 (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.

Comments: Septum inverted on sample vial.



Jack M. Morgan
Senior Organic Chemist

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903150823
Sample Site: GBR-47
IML Sample No: F890970
Analysis Requested: Purgeable Halocarbons
Sample Matrix: Water

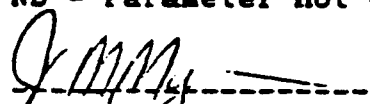
Date Sampled: 03/15/89
Date Received: 03/15/89
Date Extracted: N/A
Date Analyzed: 03/19/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	0.5 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	0.81 (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	0.45 (0.03)	ug/l
1,1,1-TRICHLOROETHANE	0.24 (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	1.2 (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	2.0 (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

Date: April 08, 1989

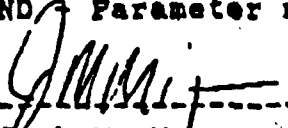
Client:	Geoscience Consultants, Ltd.		
GCL Sample No:	8903150823	Date Sampled:	03/15/89
Sample Site:	GBR-47	Date Received:	03/15/89
IML Sample No:	F890970	Date Extracted:	03/22/89
Analysis:	Polynuclear Aromatic Hydrocarbons	Date Analyzed:	04/04/89
Sample Matrix:	Water		

Parameter	Concentration	Units
-----	-----	-----
Acetnaphthene	ND (0.5)	ug/l
Acenaphthylene	ND (0.5)	ug/l
Anthracene	ND (0.5)	ug/l
Benzo(a)Anthracene	ND (0.5)	ug/l
Benzo(a)pyrene	ND (0.5)	ug/l
Benzo(b)fluoranthene	ND (0.5)	ug/l
Benzo(g,h,i)perylene	ND (0.5)	ug/l
Benzo(k)fluoranthene	3.0 (0.5)	ug/l
Chrysene	7.6 (0.5)	ug/l
Dibenzo(a,h)anthracene	ND (0.5)	ug/l
Fluoranthene	ND (0.5)	ug/l
Fluorene	ND (0.5)	ug/l
Indeno(1,2,3-cd)pyrene	ND (0.5)	ug/l
Naphthalene	ND (0.5)	ug/l
Phenanthrene	ND (0.5)	ug/l
Pyrene	ND (0.5)	ug/l
1-Methylnaphthalene	ND (0.5)	ug/l

Method: 8100 Polynuclear Aromatic Hydrocarbons, SW-846, USEPA(1986)

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist



2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-1737

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903141157

Sample Site: GBR-47

IML Lab No: F890850

Analysis Requested: Purgeable Aromatic

Sample Matrix: Water

Date Sampled: 03/14/89

Date Received: 03/14/89

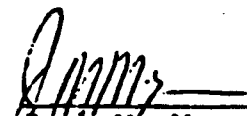
Date Extracted: NA

Date Analyzed: 03/22/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.



Jack M. Morgan
Senior Organic Chemist



Inter-Mountain
Laboratories, Inc.

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

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141157
Sample Site: GBR-47
IML Sample No: F890850
Analysis Requested: Purgeable Halocarbons
Sample Matrix: Water

Date Sampled: 03/14/89
Date Received: 03/14/89
Date Extracted: N/A
Date Analyzed: 03/29/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	3.1 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	ND (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	ND (0.03)	ug/l
1,1,1-TRICHLOROETHANE	ND (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	ND (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	ND (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.

Jack M. Morgan
Senior Organic Chemist





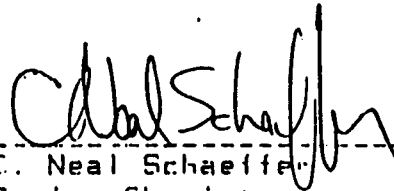
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

Client: GCL #8906131457
Site: GRR-47
IML #: F1568

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Total dissolved solids (180)..... 4274.00 mg/l
Total dissolved solids (calculated). 4044.96 mg/l
Total alkalinity (as CaCO₃)..... 252.83 mg/l
Total hardness (as CaCO₃)..... 1522.96 mg/l
Lab pH..... 7.03
Lab conductivity..... 5700 umhos/cm @ 25C
Lab resistivity..... 1.7544 ohm-m

	mg/l	meq/l
Acidity (as CaCO ₃).....	<1.0	<0.01
Bicarbonate (as HCO ₃).....	308.46	5.06
Carbonate (as CO ₃).....	0.00	0.00
Chloride.....	891.04	25.13
Sulfate.....	1660.81	34.60
Calcium.....	565.66	28.23
Magnesium.....	27.15	2.23
Potassium.....	6.00	0.15
Sodium.....	744.40	32.38
Major cations.....		62.99
Major anions.....		64.79
Anion/cation % difference.....		1.41 %


C. Neal Schaeffer
Senior Chemist

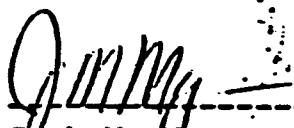
Date: April 01, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903150823
Site: GBR-47
IML Lab No: F890970
Date Collected: 3/15/89
Date Received: 3/15/89

Total Dissolved Solids (180), mg/l.....	3920
Total Dissolved Solids (calc), mg/l.....	3816
Total Alkalinity as CaCO ₃ , mg/l.....	281
Total Hardness as CaCO ₃ , mg/l.....	1588

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	343	5.62
Carbonate as CO ₃	0	0.00
Chloride.....	443	12.49
Sulfate.....	1980	41.25
Calcium.....	573	28.61
Magnesium.....	38	3.15
Potassium.....	3	0.06
Sodium.....	611	26.58
Nitrate/Nitrite.....	1.32	0.09

Major Cations.....	58.40
Major Anions.....	59.36
Cation/Anion Difference.....	0.82 %



Jack M. Morgan
Senior Organic Chemist

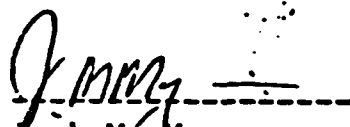
Date: March 31, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141157
Site: GBR-47
IML Lab No: F890850
Date Collected: 3/14/89
Date Received: 3/14/89

Total Dissolved Solids (180), mg/l.....	2512
Total Dissolved Solids (calc), mg/l.....	2412
Total Alkalinity as CaCO ₃ , mg/l.....	230
Total Hardness as CaCO ₃ , mg/l.....	1227

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	281	4.60
Carbonate as CO ₃	0	0.00
Chloride.....	162	4.58
Sulfate.....	1351	28.15
Calcium.....	424	21.14
Magnesium.....	41	3.40
Potassium.....	1	0.03
Sodium.....	295	12.83
Nitrate/Nitrite.....	3.14	0.22

Major Cations.....	37.40
Major Anions.....	37.33
Cation/Anion Difference.....	0.09 %



Jack M. Morgan
Senior Organic Chemist

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

MONITOR WELL GBR-48

SAMPLER

GIANT

DATE

6/18/90

PARAMETER

DETECTION LIMIT

(BELOW)

BENZENE	5.7
BROMODICHLOROMETHANE	ND(2.5)
BROMOFORM	ND(13.0)
BROMOMETHANE	ND(30.0)
CARBON TETRACHLORIDE	3.3
CHLOROBENZENE	ND(5.0)
CHLOROETHANE	ND(13.0)
CHLOROFORM	ND(2.5)
CHLOROMETHANE	ND(7.5)
DIBROMOCHLOROMETHANE	ND(5.0)
1,2-DICHLOROBENZENE	ND(10.0)
1,3-DICHLOROBENZENE	ND(10.0)
1,4-DICHLOROBENZENE	ND(7.5)
DICHLORODIFLUOROMETHANE	NA
1,1-DICHLOROETHANE	14.0
1,2-DICHLOROETHANE	ND(2.5)
1,1-DICHLOROETHENE	14.0
CIS-1,2-DICHLOROETHENE	220.0
TRANS-1,2-DICHLOROETHENE	ND(5.0)
1,2-DICHLOROPROPANE	ND(2.5)
ETHYLBENZENE	ND(5.0)
METHYLENE CHLORIDE	ND(10.0)
1,1,2,2-TETRACHLOROETHANE	ND(3.8)
TETRACHLOROETHENE	32.0
TOLUENE	ND(5.0)
1,1,1-TRICHLOROETHANE	6.2
1,1,2-TRICHLOROETHANE	ND(5.0)
TRICHLOROETHENE	30.0
TRICHLOROFLUOROMETHANE	ND(5.0)
VINYL CHLORIDE	ND(5.0)
TOTAL XYLENES	ND(5.0)

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

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

MONITOR WELL GBR-48

<u>SAMPLER</u>	GIANT	GIANT	GIANT*	GIANT	OCD
<u>DATE</u>	<u>11/8/88</u>	<u>3/14/89</u>	<u>3/14/89</u>	<u>6/13/89</u>	<u>4/9/90</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	(BELOW)	(BELOW)	(BELOW)	2.5
BENZENE	ND(2.0)	0.24	NA	ND(<1.0)	ND
BROMODICHLOROMETHANE	ND(1.0)	ND(<1.0)	ND(<1.0)	ND	ND
BROMOFORM	ND(3.0)	ND(<1.0)	ND(<1.0)	ND	ND
BROMOMETHANE	ND(1.2)	ND(1.0)	ND(1.0)	ND(1.0)	ND
CARBON TETRACHLORIDE	ND(1.0)	ND(<1.0)	ND(<1.0)	ND	ND
CHLOROBENZENE	ND(3.0)	ND(<1.0)	ND(<1.0)	ND(<1.0)	ND
CHLOROETHANE	ND(<1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND
CHLOROFORM	ND(<1.0)	0.5	0.5	ND(1.0)	7.5
CHLOROMETHANE	ND(<1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND
DIBROMOCHLOROMETHANE	ND(2.0)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
1,2-DICHLOROBENZENE	ND(5.0)	ND(<1.0)	ND(<1.0)	ND(<1.0)	ND
1,3-DICHLOROBENZENE	ND(3.0)	ND(<1.0)	ND(<1.0)	ND(<1.0)	ND
1,4-DICHLOROBENZENE	ND(4.0)	ND(<1.0)	ND(<1.0)	ND(<1.0)	ND
DICHLORODIFLUOROMETHANE	NA	ND(1.0)	ND(1.0)	ND(1.0)	ND
1,1-DICHLOROETHANE	180.0	3.0	3.3	5.2	ND
1,2-DICHLOROETHANE	ND(<1.0)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
1,1-DICHLOROETHENE	ND(1.0)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	65.0
TRANS-1,2-DICHLOROETHENE	ND(2.0)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
1,2-DICHLOROPROPANE	ND(1.0)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
ETHYLBENZENE	ND(3.0)	ND(<1.0)	NA	ND(<1.0)	ND
METHYLENE CHLORIDE	0.3	0.6	1.1	ND(1.0)	ND
1,1,2,2-TETRACHLOROETHANE	ND(1.2)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
TETRACHLOROETHENE	31.0	7.4	7.6	26.1	11.3
TOLUENE	ND(2.0)	0.23	NA	ND(<1.0)	ND
1,1,1-TRICHLOROETHANE	ND(<1.0)	0.69	0.73	2.4	ND
1,1,2-TRICHLOROETHANE	ND(<1.0)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
TRICHLOROETHENE	25.0	5.4	6.0	14.7	20.8
TRICHLOROFLUOROMETHANE	ND(1.0)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
VINYL CHLORIDE	ND(<1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND
TOTAL XYLENES	ND(2.0)	ND(<1.0)	NA	ND(<1.0)	ND

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED
* - DUPLICATE ANALYSIS

LOCATION: GBR-48

TEST: Halogenated/Aromatic Volatile Organic Compounds

ANALYTE	11/08/88 ug/l	3/14/89 ug/l
BENZENE	ND	0.24
BROMODICHLOROMETHANE	ND	ND
BROMOFORM	ND	ND
BROMOMETHANE	ND	ND
CARBON TETRACHLORIDE	ND	ND
CHLOROBENZENE	180	ND
CHLOROETHANE	ND	ND
1,2-CHLOROETHYL VINYL ETHER	ND	ND
CHLOROFORM	ND	0.5
CHLOROMETHANE	ND	ND
DIBROMOCHLOROMETHANE	ND	ND
1,2-DICHLOROBENZENE	ND	ND
1,3-DICHLOROBENZENE	ND	ND
1,4-DICHLOROBENZENE	ND	ND
DICHLORODIFLUOROMETHANE	ND	ND
1,1-DICHLOROETHANE	31	3
1,2-DICHLOROETHANE	ND	ND
1,1-DICHLOROETHENE	ND	ND
TRANS-1,2-DICHLOROETHENE	ND	ND
1,2-DICHLOROPROPANE	25	ND
CIS-1,3-DICHLOROPROPENE	ND	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND
ETHYLBENZENE	ND	ND
METHYLENE CHLORIDE	ND	0.6
1,1,2,2,-TETRACHLOROETHANE	ND	ND
TETRACHLOROETHENE	ND	7.4
TOLUENE	ND	0.23
1,1,1-TRICHLOROETHANE	ND	0.69
1,1,2-TRICHLOROETHANE	ND	ND
TRICHLOROETHENE	ND	5.4
TRICHLOROFLUOROMETHANE	ND	ND
VINYL CHLORIDE	ND	ND
META-XYLENE	ND	ND
ORTHO-XYLENE	ND	ND
PARA-XYLENE	ND	ND
M,O-XYLENE	ND	ND
O,P-XYLENE	ND	ND
XYLENES	ND	ND

ND = NOT DETECTED
NA = NOT ANALYZED
N/A = NOT AVAILABLE
TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMITS

RECEIVED

JUN 23 1989

**OIL CONSERVATION DIV.
SANTA FE**

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-152

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:	9006181215 GBR 32	9006181330 GBR 49	9006181600 GBR 48	9006181700 GBR 50
Factor:	25	25	25	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	5.0	ND	5.0	5.7 Xa	5.0	ND	0.20
Chlorobenzene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
1,2-Dichlorobenzene	ND	10	ND	10	ND	10	ND	0.40
1,3-Dichlorobenzene	ND	10	ND	10	ND	10	ND	0.40
1,4-Dichlorobenzene	ND	7.5	ND	7.5	ND	7.5	ND	0.30
Ethylbenzene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Toluene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Xylenes (total)	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	102		104		100		110	
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

(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-06-152

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006181215	9006181330	9006181600	9006181700
	GBR 32	GBR 49	GBR 48	GBR 50
Factor:	25	25	25	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	2.5	ND	2.5	ND	2.5	ND	0.10
Bromoform	ND	13	ND	12	ND	13	ND	0.50
Bromomethane	ND	30	ND	30	ND	30	ND	1.2
Carbon tetrachloride	ND	3.0	3.5 Xa	3.0	3.3 Xa	3.0	ND	0.12
Chlorobenzene	ND	6.3	ND	6.2	ND	6.3	ND	0.25
Chloroethane	ND	13	ND	13	ND	13	ND	0.52
2-Chloroethylvinyl ether	ND	13	ND	12	ND	13	ND	0.50
Chloroform	ND	2.5	2.5 Xa	2.5	ND	2.5	ND	0.10
Chloromethane	ND	7.5	ND	7.5	ND	7.5	ND	0.30
Dibromochloromethane	ND	5.0	ND	5.0	ND	5.0	ND	0.20
1,2-Dichlorobenzene	ND	13	ND	12	ND	13	ND	0.50
1,3-Dichlorobenzene	ND	8.0	ND	8.0	ND	8.0	ND	0.32
1,4-Dichlorobenzene	ND	6.0	ND	6.0	ND	6.0	ND	0.24
1,1-Dichloroethane	ND	13	ND	12	14. Ca	13	ND	0.50
1,2-Dichloroethane	ND	2.5	ND	2.5	ND	2.5	ND	0.10
1,1-Dichloroethene	ND	5.0	ND	5.0	14 Xa	5.0	ND	0.20
cis-1,2-Dichloroethene	160 C	5.0	120 C	5.0	220 C	5.0	0.37 G1a	0.20
trans-1,2-Dichloroethene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
1,2-Dichloropropane	ND	2.5	ND	2.5	ND	2.5	ND	0.10
cis-1,3-Dichloropropene	ND	5.0	ND I	5.0	ND	5.0	ND	0.20
trans-1,3-Dichloropropene	ND	8.5	ND	8.5	ND	8.5	ND	0.34
Methylene chloride	10 Xa	10	21 Xa	10	ND	10	0.43 Xa	0.40
1,1,2,2-Tetrachloroethane	ND	3.8	ND	3.8	ND	3.8	0.16 X1a	0.15
Tetrachloroethene	23 C	2.5	22 C	2.5	32 C	2.5	0.57 C	0.10
1,1,1-Trichloroethane	ND	5.0	ND	5.0	6.2 Ca	5.0	ND	0.20
1,1,2-Trichloroethane	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Trichloroethene	17 Ca	5.0	14 Ca	5.0	30 C	5.0	0.31 Ca	0.20
Trichlorofluoromethane	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Vinyl chloride	ND	5.0	ND	5.0	ND	5.0	ND	0.20

ND: Not detected at specified detection limit

X: See definition in report narrative

I: Result differs from last report - see report narrative

C: Confirmed on second column or by GC/MS

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.

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION

700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106

Organic Chemistry Section - Telephone: (505) 841-2570

SLD No.

90-0546-C

Date

Received:

4/14/90

1 User Code #: 822435		3 Request ID No.:		Request ID No. 000780-C		4 Priority Code #: 3		(If "1" or "2", call EID-SLB Coordinator)	
5 Facility Name: Giant Bloomfield Refinery		6 County: San Juan		7 City: Bloomfield		8 State: NM			
9 Sample Location:									
10 Collected By: Bill OLSON On: 90/04/09 At: 11:17:30 hrs. First Last Date: (YY/MM/DD) Time: 24 hr. clock 3:00 pm = 1500 hrs.									
11 Codes: 2610 Submitter WSS # Organization					12 Latitude (DDMMSS) Longitude (DDMMSS) 2 Digit ID (if needed)				
13 Report To: Bill Olson Address: N.M. Oil Conservation Division P.O. Box 2088 City, State Zip: Santa Fe, N.M. 87504-2088					14 Phone #: 827-5885				
15 Sampling Information: Sample Purpose: ☒ Grab ☐ Composite (Composite Time Period) ☐ Compliance ☐ Flow Proportioned ☐ Check ☐ Equal Aliquot ☒ Monitoring ☐ Sample Split w/Permittee ☐ Special ☐ Chain of Custody									
16 Field Data: pH: , Conductivity: umhos @ °C, Temperature: °C, Chlorine Residual: mg/l, Flow:									
17 Sample Source: ☐ Stream ☒ Well; Depth: ☐ Lake ☐ Spring ☐ Drain ☐ Distribution ☐ Pool ☐ Point-of-Entry ☐ WWTP ☐ Other:					18 Field Notes/ Sample #: Well GBR-48				
19 Sample Type: ☒ Water, ☐ Soil, ☐ Food, ☐ Wastewater, ☐ Other This form accompanies a <u>single sample</u> consisting of: 2 - septum vial(s) (volume = 40 ml) - glass jugs (volume =) (volume =)					20 Preservation: ☐ NP No Preservation; Sample stored at room temperature ☒ P-ice Sample stored in an ice bath (Not Frozen) ☐ P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual ☐ P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml) ☐ Other				
21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required.									
Volatile Screens: ☐ (753) Aliphatic Headspace (1-5 Carbons) ☒ (754) Aromatic & Halogenated Purgeables (EPA 601 & 602) ☐ (765) Mass Spectrometer Purgeables (EPA 624) ☐ (766) SDWA Total Trihalomethanes (EPA 501.1) ☐ (774) SDWA VOC's I [8 Regulated +] (EPA 502.2) ☐ (775) SDWA VOC's II [EDB & DBCP] (EPA 504) Other Specific Compounds or Classes: - () - () - ()					Semivolatile Screens: ☐ (763) Acid Extractables ☐ (751) Aliphatic Hydrocarbons ☐ (755) Base/Neutral Extractables (EPA 625) ☐ (756) Base/Neutral/Acid Extractables (EPA 8270) ☐ (758) Herbicides, Chlorophenoxy Acid ☐ (759) Herbicides, Triazines ☐ (760) Organochlorine Pesticides ☐ (761) Organophosphate Pesticides ☐ (767) Polychlorinated Biphenyls (PCB's) ☐ (764) Polynuclear Aromatic Hydrocarbons ☐ (762) SDWA Pesticides & Herbicides				
Remarks:									

DEFINITIONS:

The term **SDWA Pesticides & Herbicides** shall mean that the following parameters will be determined: Endrin, Lindane, Methoxychlor, Toxaphene, 2, 4-D, and 2, 4, 5-TP (Silvex). Special container(s) required. Sample should be refrigerated.

The term **SDWA VOC's I** shall mean that the following parameters shall be determined: Aromatic and Halogenated purgeables to determine the presence of Benzene, Carbon tetrachloride, 1,1-Dichloroethylene, 1,2-Dichloroethane, para-Dichlorobenzene, Trichloroethylene, and Vinyl chloride plus 49 unregulated contaminants. Special container(s) required. Sample should be refrigerated.

The term **SDWA VOC's II** shall mean that the following parameters shall be determined: Ethylene dibromide (EDB) and 1,2-Dibromo-3-chloropropane (DBCP). Special container(s) required. Sample should be refrigerated.

The term **SDWA Total Trihalomethanes** shall mean that the following parameters shall be determined: Total Trihalomethanes. Special container(s) required. Sample should be refrigerated.

SAMPLE CONTAINERS:

All Volatile Screens require two 40 ml VOC Septum Vials.

All Semivolatile Screens (except 762) require two 1-liter bottles filled approximately 4/5ths full.

SDWA Pesticides & Herbicides Screen (762) requires three 1-liter bottles filled approximately 4/5ths full.

Refrigerated means keep cool (0-4°C), but do not freeze.

Please contact the Organic Section with questions on sampling or interpretation of data/results.

//////////////////////////////////// Use Only When Necessary //////////////////////////////////////
CHAIN OF CUSTODY

I certify that this sample was transferred from _____ to _____
at (location) _____ on _____ Date at _____ Time

Evidentiary Seals: ☐ -Not Sealed Seals Intact: ☐ -Yes ☐ -No

Signatures _____

and from (if applicable) _____ to _____

at (location) _____ on _____ Date at _____ Time

Evidentiary Seals: ☐ -Not Sealed Seals Intact: ☐ -Yes ☐ -No

Signatures _____

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500
ORGANIC CHEMISTRY SECTION [505]-841-2570

April 25, 1990

Request
ID No. 000780

ANALYTICAL REPORT
SLD Accession No. OR-90-0546

Distribution

☐ Submitter
☒ SLD Files

To: Olson
NM Oil Conserv. Div.
State Land Office Bldg.
P.O. Box 2088
Santa Fe, NM 87504-2088

From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: A water, Purgeable sample submitted to this laboratory on April 16, 1990

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 9-Apr-90	By: Ols . . .	Refinery Well GBR-48
At: 17:30 hrs.	In/Near: Bloomfield	

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable Screen

Parameter	Value	Note	MDL	Units
Chloroform	7.50		2.50	ppb
Trichloroethene	20.80		2.50	ppb
cis-1,2-Dichloroethene	65.00		2.50	ppb
Tetrachloroethene	11.30		2.50	ppb
Aromatic Purgeables (6)	0.00	N	2.50	ppb

See Laboratory Remarks for Additional Information

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;
T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.

Evidentiary Seals: Not Sealed ☒ Intact: No ☐ Yes ☐ & Broken By: _____ Date: _____

Laboratory Remarks:

Confirmed by GC/MS

QUALITY CONTROL SUMMARY FOR VOLATILES SCREEN

METHOD BLANK: A laboratory method blank was analyzed along with this sample to assure the absence of interfering contaminants from lab reagents, instruments, or the general laboratory environment. Unless listed below, no contaminants were detected in this blank above the reported detection limit.

COMPOUND DETECTED
No Compounds Detected

CONCENTRATION (PPB)

SURROGATE RECOVERIES:

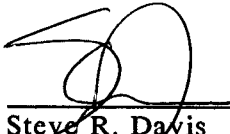
(Continued on page 2.)

ANALYTICAL REPORT
SLD Accession No. OR-90-0546
Continuation, Page 2 of 2

SURROGATE	CONCENTRATION	% RECOVERY
Fluorobenzene	25 ppb	156.4
2-Bromo-1-chloropropane	15 ppb	96.7

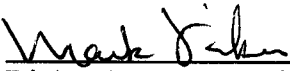
SPIKE RECOVERY: The % recoveries for compounds in the batch spike were from 80% to 120% with the exception of the compounds listed below:

COMPOUND	CONCENTRATION	% RECOVERY
Vinyl chloride	50.0 ppb	54.4
Dichloroethene-1,1	50.0 ppb	79.8
Trichloroethane-1,1,1	50.0 ppb	77.4
Dichloroethane-1,2	50.0 ppb	123.6
Dichlorobenzene-1,4	50.0 ppb	126.4

Analyst: 

Steve R. Davis
Analyst, Organic Chemistry

4-23-90
Analysis
Date

Reviewed By: 

Richard F. Meyerhein 04/25/90
Supervisor, Organic Chemistry Section

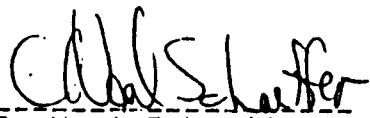
Client: GCL #8906131650
Site: GBR-48
IML #: F1570

Date of report: 06/23/87
Date sampled: 06/13/87
Date received: 06/14/87

Parameter	Concentration	Units
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-046, USEPA (1902)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

Client: GCL #8906131650
Site: GBR-48
IML #: F1570

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	5.2 (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0) **	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	ND (1.0)	ug/l
1,1,1-TRICHLOROETHANE	2.4 (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	14.7 (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	26.1 (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
401 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.

ND means analyte was not detected.

** Chromatographic evidence of about 100-200 ug/l cis-1,2-dichloroethene.

C. Neal Schaeffer
C. Neal Schaeffer
Senior Organic Chemist



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

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903141113

Sample Site: GBR-48

IML Lab No: F890840

Analysis Requested: Purgeable Aromatic

Sample Matrix: Water

Date Sampled: 03/14/89

Date Received: 03/14/89

Date Extracted: NA

Date Analyzed: 03/27/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	0.24 (0.2)	ug/l
TOLUENE	0.23 (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


Jack M. Morgan
Senior Organic Chemist



Inter-Mountain
Laboratories, Inc.

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

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903141113

Sample Site: GBR-48

IML Sample No: F890840

Analysis Requested: Purgeable Halocarbons

Sample Matrix: Water

Date Sampled: 03/14/89

Date Received: 03/14/89

Date Extracted: N/A

Date Analyzed: 03/28/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	0.6 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	3.0 (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	0.5 (0.1)	ug/l
1,2-DICHLOROETHANE	ND (0.03)	ug/l
1,1,1-TRICHLOROETHANE	0.69 (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	5.4 (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	7.4 (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.

Jack M. Morgan
Senior Organic Chemist

**** Quality Assurance Report
Duplicate Analysis**

Date: April 02, 1989

Client:	Geoscience Consultants, Ltd.		
GCL Sample No:	8903141113	Date Sampled:	03/14/89
Sample Site:	GBR-48	Date Received:	03/14/89
IML Sample No:	F890840	Date Extracted:	N/A
Analysis Requested:	Purgeable Halocarbons	Date Analyzed:	03/28/89
Sample Matrix:	Water		

Parameter	Concentration	Units
-----	-----	-----
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	<u>1.1</u> (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	3.3 (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	0.5 (0.1)	ug/l
1,2-DICHLOROETHANE	ND (0.03)	ug/l
1,1,1-TRICHLOROETHANE	0.73 (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	<u>6.0</u> (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	<u>7.6</u> (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

LOCATION

GBR-48

TEST CODE

CATIONS/ANIONS

11/8/88 (Giant Sample & Anal)

COMPOUND	RESULT	UNITS	DETECTION LIMIT
CL	1300	mg/L	NR
NA	960	ug/ml	NR
SO4	1900	mg/L	NR
BR	3.0	mg/L	NR
CA	680	ug/ml	NR
K	5.4	ug/ml	NR
MG	70	ug/ml	NR
F	4.7	mg/L	NR
NO2 NO3	8.0	mg/L	NR

TEST CODE

EPA601

COMPOUND	RESULT	UNITS	DETECTION LIMIT
CHLOROMETHANE	ND	ug/L	0.30
CHLOROMETHANE	ND	ug/L	3.00
BROMOMETHANE	ND	ug/L	1.20
BROMOMETHANE	ND	ug/L	12.00
VINYL CHLORIDE	ND	ug/L	0.20
VINYL CHLORIDE	ND	ug/L	2.00
CHLOROETHANE	ND	ug/L	0.50
CHLOROETHANE	ND	ug/L	5.00
METHYLENE CHLORIDE	ND	ug/L	3.00
METHYLENE CHLORIDE	0.3	ug/L	0.30
TRICHLOROFLUOROMETHANE	ND	ug/L	1.00
1,1-DICHLOROETHENE	ND	ug/L	1.00
1,1-DICHLOROETHANE	180	ug/L	0.90
TRANS-1,2-DICHLOROETHENE	ND	ug/L	2.00
CHLOROFORM	ND	ug/L	0.50
1,2-DICHLOROETHANE	ND	ug/L	0.30
1,1,1-TRICHLOROETHANE	ND	ug/L	0.90
CARBON TETRACHLORIDE	ND	ug/L	1.00
BROMODICHLOROMETHANE	ND	ug/L	1.00
1,2-DICHLOROPROPANE	ND	ug/L	1.00
TRANS-1,3-DICHLOROPROPENE	ND	ug/L	3.00
TRICHLOROETHENE	25	ug/L	2.00
DIBROMOCHLOROMETHANE	ND	ug/L	2.00
1,1,2-TRICHLOROETHANE-A	ND	ug/L	0.70
CIS-1,3-DICHLOROPROPENE-A	N/A	ug/L	NR

LOCATION: GBR-48
 TEST CODE: EPA601 (Continued)

2-CHLOROETHYL VINYL ETHER	ND	ug/L	2.00
BROMOFORM	ND	ug/L	3.00
1,1,2,2-TETRACHLOROETHANE-B	ND	ug/L	1.20
TETRACHLOROETHENE-B	31	ug/L	0.30
CHLOROBENZENE-A	ND	ug/L	3.00
1,3-DICHLOROBENZENE	ND	ug/L	3.00
1,2-DICHLOROBENZENE	ND	ug/L	5.00
1,4-DICHLOROBENZENE	ND	ug/L	4.00

TEST CODE

 EPA602

COMPOUND	RESULT	UNITS	DETECTION LIMIT
-----	-----	-----	-----
BENZENE	ND	ug/L	2.00
TOLUENE	ND	ug/L	2.00
CHLOROBENZENE-A	ND	ug/L	3.00
ETHYLBENZENE	ND	ug/L	3.00
1,3-DICHLOROBENZENE	ND	ug/L	4.00
1,2-DICHLOROBENZENE	ND	ug/L	4.00
1,4-DICHLOROBENZENE	ND	ug/L	3.00
M-XYLENE	ND	ug/L	2.00
P-XYLENE-A	ND	ug/L	2.00
O-XYLENE	ND	ug/L	1.00

TEST CODE

 OP04

COMPOUND	RESULT	UNITS	DETECTION LIMIT
-----	-----	-----	-----
ORTHOPHOSPHATE	ND	mg/L	0.02

TEST CODE

 TDS

COMPOUND	RESULT	UNITS	DETECTION LIMIT
-----	-----	-----	-----
FILTERABLE RESIDUE	5900	mg/L	6.00

ND = not detected at detection limit
 NA = not analyzed
 N/A = not available
 NR = not reported



LOCATION: GBR-48

TEST: General Chemistry

	11/08/88	3/14/89
	mg/l	mg/l
CALCIUM	680	625
MAGNESIUM	70	42
SODIUM	960	770
POTASSIUM	NA	3
AMMONIA-N	NA	NA
BICARBONATE	434	483
BROMIDE	3	NA
CARBONATE	ND	0
CHLORIDE	1300	693
FLUORIDE	4.7	NA
POTASSIUM	5.4	NA
NITRATE-N+, NITRITE-N	8	6.2
SULFATE	1900	1960
ORTHOPHOSPHATE	ND	NA
TFS	5900	4496
ACIDITY AS CaCO3	NA	<1
ALKALINITY AS CaCO3	434	396
HARDNESS AS CaCO3	NA	1732
CHARGE BALANCE (%)	NA	99.92
pH	NA	NA
CONDUCTIVITY (umho)	NA	NA

TFS = TOTAL FILTERABLE SOLIDS (DISSOLVED)

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMITS

RECEIVED

JUN 23 1989

**OIL CONSERVATION DIV.
SANTA FE**



Inter-Mountain
Laboratories, Inc.

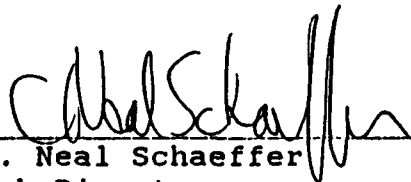
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9006181600
SITE: GBR-48
LAB NO: F4491

DATE REPORTED: 06/27/90
DATE RECEIVED: 06/20/90
DATE COLLECTED: 06/18/90

Lab pH (s.u.).....	7.70
Lab conductivity, umhos/cm.....	7378
Lab resistivity, ohm-m.....	1.3554
Total dissolved solids (180), mg/l..	5332
Total dissolved solids (calc), mg/l.	4891
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.....	1686.72
Sodium absorption ratio.....	11.07

	mg/l	meq/l
Bicarbonate as HCO ₃	535.9	8.79
Carbonate as CO ₃	0.0	0.00
Chloride.....	888.4	25.06
Sulfate.....	2055.9	42.83
Calcium.....	562.2	28.06
Magnesium.....	69.1	5.68
Potassium.....	7.0	0.18
Sodium.....	1045.2	45.46
Major cations.....		79.38
Major anions.....		76.68
Cation/anion difference.....		1.73 %

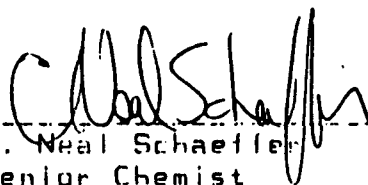

C. Neal Schaeffer
Lab Director

Client: GCL #8906131450
Site: GBR-4B
IML #: F1570

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Total dissolved solids (180)..... 6022.00 mg/l
Total dissolved solids (calculated). 5677.67 mg/l
Total alkalinity (as CaCO3)..... 454.77 mg/l
Total hardness (as CaCO3)..... 2065.46 mg/l
Lab pH..... 6.84
Lab conductivity..... 8010 umhos/cm @ 25C
Lab resistivity..... 1.2484 ohm-cm

	mg/l	meq/l
Acidity (as CaCO3).....	<1.0	<0.01
Bicarbonate (as HCO3).....	554.85	9.10
Carbonate (as CO3).....	0.00	0.00
Chloride.....	1409.46	39.76
Sulfate.....	2055.85	42.83
Calcium.....	659.94	32.93
Magnesium.....	101.88	8.38
Potassium.....	4.90	0.13
Sodium.....	1176.00	51.15
Major cations.....		92.59
Major anions.....		91.69
Anion/cation % difference.....		0.47 %


C. Neal Schaeffer
Senior Chemist



2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326 4217

Date: March 31, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141113
Site: GBR-48
IML Lab No: F890840
Date Collected: 3/14/89
Date Received: 3/14/89

Total Dissolved Solids (180), mg/l.....	4496
Total Dissolved Solids (calc), mg/l.....	4329
Total Alkalinity as CaCO ₃ , mg/l.....	396
Total Hardness as CaCO ₃ , mg/l.....	1732

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	483	7.92
Carbonate as CO ₃	0	0.00
Chloride.....	693	19.54
Sulfate.....	1960	40.84
Calcium.....	625	31.19
Magnesium.....	42	3.44
Potassium.....	3	0.07
Sodium.....	770	33.49
Nitrate/Nitrite.....	6.20	0.44

Major Cations.....	68.19
Major Anions.....	68.30
Cation/Anion Difference.....	0.08 %



Jack M. Morgan
Senior Organic Chemist

LOCATION

GBR-48

TEST CODE

CATIONS/ANIONS

COMPOUND	11/08/88	03/14/88
BROMIDE	3.0	NA
CALCIUM	680	625
CHLORIDE	1300	693
FLUORIDE	4.7	NA
POTASSIUM	5.4	3
MAGNESIUM	70	42
SODIUM	960	770
NITRATE/NITRITE	8.0	6.2
SULFATE	1900	1960

LOCATION

GBR-48

TEST CODE

TOTAL DISSOLVED SOLIDS

COMPOUND

TOTAL DISSOLVED SOLIDS

11/08/88

5900

LOCATION

GBR-48

TEST CODE

ORTHOPHOSPHATE

COMPOUND

ORTHOPHOSPHATE

11/08/88

ND



Geoscience Consultants, Ltd.
 Radian Work Order: SO-06-152

Method: Metals by SW6010 (1)

List: Ep Toxicity list

Sample ID:	9006181215	9006181330	9006181600	9006181700
	GBR 32	GBR 49	GBR 48	GBR 50
Factor:	1.00	1.00	1.00	1.00
Results in:	mg/L	mg/L	mg/L	mg/L
	07A	08A	09A	10A
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	0.031	0.0020	0.027	0.0020	0.24	0.0020	0.56	0.0020
Cadmium	ND	0.0040	ND	0.0040	ND	0.0040	ND	0.0040
Chromium	0.27	0.0070	0.060	0.0070	0.043	0.0070	0.042	0.0070
Lead	ND	0.042	ND	0.042	ND	0.042	0.099 a	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.

(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 GBR-49

<u>SAMPLER</u>	<u>GIANT</u>
<u>DATE</u>	<u>6/18/90</u>
<u>PARAMETER</u>	
DETECTION LIMIT	(BELOW)
BENZENE	ND(5.0)
BROMODICHLOROMETHANE	ND(2.5)
BROMOFORM	ND(12.0)
BROMOMETHANE	ND(30.0)
CARBON TETRACHLORIDE	3.5
CHLOROBENZENE	ND(5.0)
CHLOROETHANE	ND(13.0)
CHLOROFORM	2.5
CHLOROMETHANE	ND(7.5)
DIBROMOCHLOROMETHANE	ND(5.0)
1,2-DICHLOROBENZENE	ND(10.0)
1,3-DICHLOROBENZENE	ND(10.0)
1,4-DICHLOROBENZENE	ND(7.5)
DICHLORODIFLUOROMETHANE	NA
1,1-DICHLOROETHANE	ND(12.0)
1,2-DICHLOROETHANE	ND(2.5)
1,1-DICHLOROETHENE	ND(5.0)
CIS-1,2-DICHLOROETHENE	120.0
TRANS-1,2-DICHLOROETHENE	ND(5.0)
1,2-DICHLOROPROPANE	ND(2.5)
ETHYLBENZENE	ND(5.0)
METHYLENE CHLORIDE	21.0
1,1,2,2-TETRACHLOROETHANE	ND(3.8)
TETRACHLOROETHENE	22.0
TOLUENE	ND(5.0)
1,1,1-TRICHLOROETHANE	ND(5.0)
1,1,2-TRICHLOROETHANE	ND(5.0)
TRICHLOROETHENE	14.0
TRICHLOROFLUOROMETHANE	ND(5.0)
VINYL CHLORIDE	ND(5.0)
TOTAL XYLENES	ND(5.0)

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

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

MONITOR WELL GBR-49

<u>SAMPLER</u>	GIANT	GIANT	GIANT	GIANT	OCD
<u>DATE</u>	<u>11/8/88</u>	<u>3/14/89</u>	<u>6/14/89</u>	<u>12/11/89</u>	<u>4/9/90</u>
<u>PARAMETER</u>					
DETECTION LIMIT	(BELOW)	(BELOW)	(BELOW)	(BELOW)	1.0
BENZENE	ND(<1.0)	0.63	ND(<1.0)	74.0	ND
BROMODICHLOROMETHANE	ND(1.0)	ND(<1.0)	ND(1.0)	ND(<1.0)	ND
BROMOFORM	ND(3.0)	ND(<1.0)	ND(1.0)	ND(2.5)	ND
BROMOMETHANE	ND(12.0)	ND(1.0)	ND(1.0)	ND(5.9)	ND
CARBON TETRACHLORIDE	ND(1.0)	ND(<1.0)	ND(1.0)	ND(<1.0)	ND
CHLOROBENZENE	ND(3.0)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
CHLOROETHANE	ND(5.0)	ND(1.0)	ND(1.0)	ND(2.6)	ND
CHLOROFORM	6.9	1.0	ND(1.0)	ND(<1.0)	ND
CHLOROMETHANE	ND(3.0)	ND(1.0)	ND(1.0)	ND(1.5)	ND
DIBROMOCHLOROMETHANE	ND(2.0)	ND(<1.0)	ND(1.0)	ND(1.0)	ND
1,2-DICHLOROBENZENE	ND(5.0)	ND(<1.0)	ND(<1.0)	ND(2.0)	ND
1,3-DICHLOROBENZENE	ND(3.0)	ND(<1.0)	ND(<1.0)	ND(2.0)	ND
1,4-DICHLOROBENZENE	ND(4.0)	ND(<1.0)	ND(<1.0)	ND(1.5)	ND
DICHLORODIFLUOROMETHANE	NA	ND(1.0)	ND(1.0)	NA	ND
1,1-DICHLOROETHANE	6.8	10.4	ND(1.0)	2.8	1.2
1,2-DICHLOROETHANE	ND(<1.0)	0.07	ND(1.0)	ND(<1.0)	ND
1,1-DICHLOROETHENE	ND(1.0)	ND(<1.0)	ND(1.0)	ND(1.0)	ND
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	86.7
TRANS-1,2-DICHLOROETHENE	88.0	0.3	ND(1.0)	150.0	ND
1,2-DICHLOROPROPANE	ND(1.0)	ND(<1.0)	ND(1.0)	ND(<1.0)	ND
ETHYLBENZENE	ND(<1.0)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
METHYLENE CHLORIDE	ND(3.0)	2.5	ND(1.0)	ND(2.0)	ND
1,1,2,2-TETRACHLOROETHANE	ND(1.2)	ND(<1.0)	ND(1.0)	ND(<1.0)	ND
TETRACHLOROETHENE	15.0	25.3	4.2	25.0	11.9
TOLUENE	ND(<1.0)	ND(<1.0)	ND(<1.0)	ND(1.0)	ND
1,1,1-TRICHLOROETHANE	6.6	3.5	ND(1.0)	1.0	ND
1,1,2-TRICHLOROETHANE	ND(<1.0)	ND(<1.0)	ND(1.0)	ND(1.0)	ND
TRICHLOROETHENE	11.0	24.9	2.7	14.0	7.2
TRICHLOROFLUOROMETHANE	ND(1.0)	ND(<1.0)	ND(1.0)	ND(1.0)	ND
VINYL CHLORIDE	ND(2.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND
TOTAL XYLENES	ND(<1.0)	0.28	ND(<1.0)	ND(1.0)	ND

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED

Geoscience Consultants, Ltd.
 Radian Work Order: S0-06-152

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:	9006181215	9006181330	9006181600	9006181700
	GBR 32	GBR 49	GBR 48	GBR 50
Factor:	25	25	25	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	5.0	ND	5.0	5.7 Xa	5.0	ND	0.20
Chlorobenzene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
1,2-Dichlorobenzene	ND	10	ND	10	ND	10	ND	0.40
1,3-Dichlorobenzene	ND	10	ND	10	ND	10	ND	0.40
1,4-Dichlorobenzene	ND	7.5	ND	7.5	ND	7.5	ND	0.30
Ethylbenzene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Toluene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Xylenes (total)	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	102		104		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

(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-06-152

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006181215	9006181330	9006181600	9006181700
	GBR 32	GBR 49	GBR 48	GBR 50
Factor:	25	25	25	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	2.5	ND	2.5	ND	2.5	ND	0.10
Bromoform	ND	13	ND	12	ND	13	ND	0.50
Bromomethane	ND	30	ND	30	ND	30	ND	1.2
Carbon tetrachloride	ND	3.0	3.5 Xa	3.0	3.3 Xa	3.0	ND	0.12
Chlorobenzene	ND	6.3	ND	6.2	ND	6.3	ND	0.25
Chloroethane	ND	13	ND	13	ND	13	ND	0.52
2-Chloroethylvinyl ether	ND	13	ND	12	ND	13	ND	0.50
Chloroform	ND	2.5	2.5 Xa	2.5	ND	2.5	ND	0.10
Chloromethane	ND	7.5	ND	7.5	ND	7.5	ND	0.30
Dibromochloromethane	ND	5.0	ND	5.0	ND	5.0	ND	0.20
1,2-Dichlorobenzene	ND	13	ND	12	ND	13	ND	0.50
1,3-Dichlorobenzene	ND	8.0	ND	8.0	ND	8.0	ND	0.32
1,4-Dichlorobenzene	ND	6.0	ND	6.0	ND	6.0	ND	0.24
1,1-Dichloroethane	ND	13	ND	12	14. Ca	13	ND	0.50
1,2-Dichloroethane	ND	2.5	ND	2.5	ND	2.5	ND	0.10
1,1-Dichloroethene	ND	5.0	ND	5.0	14 Xa	5.0	ND	0.20
cis-1,2-Dichloroethene	160 C	5.0	120 C	5.0	220 C	5.0	0.37 GIa	0.20
trans-1,2-Dichloroethene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
1,2-Dichloropropane	ND	2.5	ND	2.5	ND	2.5	ND	0.10
cis-1,3-Dichloropropene	ND	5.0	ND I	5.0	ND	5.0	ND	0.20
trans-1,3-Dichloropropene	ND	8.5	ND	8.5	ND	8.5	ND	0.34
Methylene chloride	10 Xa	10	21 Xa	10	ND	10	0.43 Xa	0.40
1,1,2,2-Tetrachloroethane	ND	3.8	ND	3.8	ND	3.8	0.16 XIa	0.15
Tetrachloroethene	23 C	2.5	22 C	2.5	32 C	2.5	0.57 C	0.10
1,1,1-Trichloroethane	ND	5.0	ND	5.0	6.2 Ca	5.0	ND	0.20
1,1,2-Trichloroethane	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Trichloroethene	17 Ca	5.0	14 Ca	5.0	30 C	5.0	0.31 Ca	0.20
Trichlorofluoromethane	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Vinyl chloride	ND	5.0	ND	5.0	ND	5.0	ND	0.20

ND Not detected at specified detection limit

X See definition in report narrative

I Result differs from last report - see report narrative

C Confirmed on second column or by GC/MS

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.

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION

700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106

Organic Chemistry Section - Telephone: (505) 841-2570

SLD No.

90-0547-C

Date

Received: 4/10/90

Request ID No. 000781-C

2 User Code #: 812435	3 Request ID No.:	4 Priority Code #: 3	[If "1" or "2", call EID-SLD Coordinator]
5 Facility Name: Giant Bloomfield Refinery	6 County: San Juan	7 City: Bloomfield	8 State: N.M.

9 Sample Location:

10 Collected By: Olson On: 90104109 At: 11600 hrs.
First Last Date: (YY/MM/DD) Time: 24 hr. clock 3:00 pm = 1500 hrs.

11 Codes: 260 Submitter WSS # Organization

13 Report To: Bill Olson 14 Phone #: 827-5885

Address: N.M. Oil Conservation Division
P.O. Box 2088
City, State Zip: Santa Fe, N.M. 87504-2088

16 Field Data: pH: , Conductivity: umhos @ °C, Temperature: °C, Chlorine Residual: mg/l, Flow:

17 Sample Source: ☐ Stream ☒ Well; Depth: ☐ Lake ☐ Spring ☐ Drain ☐ Distribution ☐ Pool ☐ Point-of-Entry ☐ WWTP ☐ Other:

18 Field Notes/Sample #: Well GBR-49

19 Sample Type: ☒ Water, ☐ Soil, ☐ Food, ☐ Wastewater, ☐ Other

20 Preservation: ☒ NP No Preservation; Sample stored at room temperature
☒ P-Ice Sample stored in an ice bath (Not Frozen)
☐ P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual
☐ P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
☐ Other

This form accompanies a single sample consisting of:
2 septum vial(s) (volume = 40 ml)
glass jugs (volume =)
(volume =)

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required.

Volatile Screens:

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
- ☒ (754) Aromatic & Halogenated Purgeables (EPA 601 & 602)
- ☐ (765) Mass Spectrometer Purgeables (EPA 624)
- ☐ (766) SDWA Total Trihalomethanes (EPA 501.1)
- ☐ (774) SDWA VOC's I [8 Regulated +] (EPA 502.2)
- ☐ (775) SDWA VOC's II [EDB & DBCP] (EPA 504)

Other Specific Compounds or Classes:

- ☐ ()
- ☐ ()
- ☐ ()

Semivolatile Screens:

- ☐ (763) Acid Extractables
- ☐ (751) Aliphatic Hydrocarbons
- ☐ (755) Base/Neutral Extractables (EPA 625)
- ☐ (756) Base/Neutral/Acid Extractables (EPA 8270)
- ☐ (758) Herbicides, Chlorophenoxy Acid
- ☐ (759) Herbicides, Triazines
- ☐ (760) Organochlorine Pesticides
- ☐ (761) Organophosphate Pesticides
- ☐ (767) Polychlorinated Biphenyls (PCB's)
- ☐ (764) Polynuclear Aromatic Hydrocarbons
- ☐ (762) SDWA Pesticides & Herbicides

Remarks:

DEFINITIONS:

The term **SDWA Pesticides & Herbicides** shall mean that the following parameters will be determined: Endrin, Lindane, Methoxychlor, Toxaphene, 2, 4-D, and 2, 4, 5-TP (Silvex). Special container(s) required. Sample should be refrigerated.

The term **SDWA VOC's I** shall mean that the following parameters shall be determined: Aromatic and Halogenated purgeables to determine the presence of Benzene, Carbon tetrachloride, 1,1-Dichloroethylene, 1,2-Dichloroethane, para-Dichlorobenzene, Trichloroethylene, and Vinyl chloride plus 49 unregulated contaminants. Special container(s) required. Sample should be refrigerated.

The term **SDWA VOC's II** shall mean that the following parameters shall be determined: Ethylene dibromide (EDB) and 1,2-Dibromo-3-chloropropane (DBCP). Special container(s) required. Sample should be refrigerated.

The term **SDWA Total Trihalomethanes** that the following parameters shall be determined: Total Trihalomethanes. Special container(s) required. Sample should be refrigerated.

SAMPLE CONTAINERS:

All Volatile Screens require two 40 ml VOC Septum Vials.

All Semivolatile Screens (except 762) require two 1-liter bottles filled approximately 4/5ths full.

SDWA Pesticides & Herbicides Screen (762) requires three 1-liter bottles filled approximately 4/5ths full.

Refrigerated means keep cool (0-4 °C), but do not freeze.

Please contact the Organic Section with questions on sampling or interpretation of data/results.

//////////////////////////////////// Use Only When Necessary //////////////////////////////////////
CHAIN OF CUSTODY

I certify that this sample was transferred from _____ to _____
at (location) _____ on _____ Date at _____ Time

Evidentiary Seals: ☐ -Not Sealed Seals Intact: ☐ -Yes ☐ -No

Signatures _____

and from (if applicable) _____ to _____

at (location) _____ on _____ Date at _____ Time

Evidentiary Seals: ☐ -Not Sealed Seals Intact: ☐ -Yes ☐ -No

Signatures _____

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500
ORGANIC CHEMISTRY SECTION [505]-841-2570

April 25, 1990

Request
ID No. 000781

ANALYTICAL REPORT
SLD Accession No. OR-90-0547

Distribution

(■) Submitter

(☒) SLD Files

To: Olson
NM Oil Conserv. Div.
State Land Office Bldg.
P.O. Box 2088
Santa Fe, NM 87504-2088

From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: A water, Purgeable sample submitted to this laboratory on April 16, 1990

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 9-Apr-90	By: Ols . . .	Refinery Well GBR-49
At: 16:00 hrs.	In/Near: Bloomfield	

ANALYTICAL RESULTS: Aromatic & Halogenated Purgeable Screen

Parameter	Value	Note	MDL	Units
1,1-Dichloroethane	1.20		1.00	ppb
Trichloroethene	7.20		1.00	ppb
Tetrachloroethene	11.90		1.00	ppb
cis-1,2-Dichloroethene	86.70		1.00	ppb
Aromatic Purgeables (6)	0.00	N	1.00	ppb

See Laboratory Remarks for Additional Information

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;

T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.

Evidentiary Seals: Not Sealed ☒ Intact: No ☐ Yes ☐ & Broken By: _____ Date: _____

Laboratory Remarks:

QUALITY CONTROL SUMMARY FOR VOLATILES SCREEN

METHOD BLANK: A laboratory method blank was analyzed along with this sample to assure the absence of interfering contaminants from lab reagents, instruments, or the general laboratory environment. Unless listed below, no contaminants were detected in this blank above the reported detection limit.

COMPOUND DETECTED
No Compounds Detected

CONCENTRATION (PPB)

SURROGATE RECOVERIES:

(Continued on page 2.)

ANALYTICAL REPORT

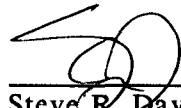
SLD Accession No. OR-90-0547

Continuation, Page 2 of 2

SURROGATE	CONCENTRATION	% RECOVERY
Fluorobenzene	25 ppb	104.9
2-Bromo-1-chloropropane	15 ppb	93.9

SPIKE RECOVERY: The % recoveries for compounds in the batch spike were from 80% to 120% with the exception of the compounds listed below:

COMPOUND	CONCENTRATION	% RECOVERY
Vinyl chloride	50.0 ppb	54.4
Dichloroethene-1,1	50.0 ppb	79.8
Trichloroethane-1,1,1	50.0 ppb	77.4
Dichloroethane-1,2	50.0 ppb	123.6
Dichlorobenzene-1,4	50.0 ppb	126.4

Analyst: 

Steve R. Davis

Analyst, Organic Chemistry

4-20-90

Analysis

Date

Reviewed By: 

Richard F. Meyerhein

04/25/90

Supervisor, Organic Chemistry Section

Geoscience Consultants, Ltd.
 Radian Work Order: 89-12-089

Method: Volatile aromatics (1) List: SW8020 12/11/89						
Sample ID:	GBR-17	GBR-32	GBR-49	GBR-50	Trip Blank	Reagent Blank
Factor:	1	1	5	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C	05A	06A
Matrix:	water	water	water	water	water	water
Benzene	<0.20	96	74	<0.20	<0.20	<0.20
Chlorobenzene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	<0.40	<0.40	<2.0	<0.40	<0.40	<0.40
1,3-Dichlorobenzene	<0.40	<0.40	<2.0	<0.40	<0.40	<0.40
1,4-Dichlorobenzene	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30
Ethylbenzene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Toluene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Total xylenes	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Surrogate Recovery(%)						
1-Bromo-4-fluorobenzene	98	101	111	104	112	N/A
Control Limits: 76 to 140						

N/A Not available

(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: 89-12-089

Method: Halogenated volatiles (1) List: SV8010 12/11/89						
Sample ID:	GBR-17	GBR-32	GBR-49	GBR-50	Trip Blank	Reagent Blank
Factor:	1	1	5	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A	05A	06A
Matrix:	water	water	water	water	water	water
Bromodichloromethane	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
Bromoform	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
Bromomethane	<1.2	<1.2	<5.9	<1.2	<1.2	<1.2
Carbon Tetrachloride	<0.12	<0.12	<0.60	<0.12	<0.12	<0.12
Chlorobenzene	<0.25	<0.25	<1.3	<0.25	<0.25	<0.25
Chloroethane	<0.52	<0.52	<2.6	<0.52	<0.52	<0.52
2-Chloroethylvinylether	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
Chloroform	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
Chloromethane	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30
Dibromochloromethane-(2)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	<0.32	<0.32	<1.6	<0.32	<0.32	<0.32
1,4-Dichlorobenzene	<0.24	<0.24	<1.2	<0.24	<0.24	<0.24
1,1-Dichloroethane	<0.50	<u>3.0</u>	<u>2.8 *</u>	<0.50	<0.50	<0.50
1,2-Dichloroethane	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
1,1-Dichloroethene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
trans-1,2-Dichloroethene	<0.20	<u>140 D</u>	<u>150</u>	<u>0.27 *</u>	<0.20	<0.20
1,2-Dichloropropane	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
cis-1,3-Dichloropropene-(2)	N/A	N/A	N/A	N/A	N/A	N/A
trans-1,3-Dichloropropene	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30
Methylene Chloride	<0.40	<u>1.2 *</u>	<2.0	<0.40	<u>7.2</u>	<0.40
1,1,2,2-Tetrachloroethane-(3)	<0.15	<0.15	<0.75	<0.15	<0.15	<0.15
Tetrachloroethene-(3)	<u>0.13 *</u>	<u>17</u>	<u>25</u>	<u>1.2</u>	<0.10	<0.10
1,1,2-Trichloroethane-(2)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	<u>1.0</u>	<u>1.3</u>	<u>1.0 *</u>	<u>0.26 *</u>	<0.20	<0.20
Trichloroethene	<0.20	<u>10</u>	<u>14</u>	<0.20	<0.20	<0.20
Trichlorofluoromethane	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Vinyl Chloride	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20

N/A Not available

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.
- (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.



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

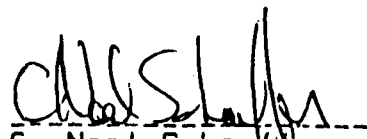
Client: GCL #8906140800
Site: GBR-49
IML #: F1573

Date of report: 06/23/89
Date sampled: 06/14/89
Date received: 06/14/89

Parameter	Concentration	Units
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

Client: GCL #8906140800
Site: GBR-49
IML #: F1573

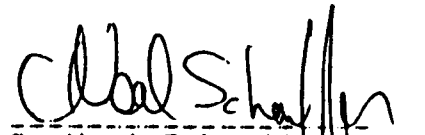
Date of report: 06/23/89
Date sampled: 06/14/89
Date received: 06/14/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	ND (1.0)	ug/l
1,1,1-TRICHLOROETHANE	ND (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	2.7 (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	4.2 (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.

** Chromatographic evidence of about 100-200ug/l cis-1,2-dichloroethene.


C. Neal Schaeffer
Senior Organic Chemist



Inter Mountain
Laboratories, Inc.

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

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903141023

Sample Site: GBR-49

IML Lab No: F890820

Analysis Requested: Purgeable Aromatic

Sample Matrix: Water

Date Sampled: 03/14/89

Date Received: 03/14/89

Date Extracted: NA

Date Analyzed: 03/23/89

Parameter	Concentration	Units
BENZENE	0.63 (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
m,p-XYLENE	0.28 (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


Jack M. Morgan
Senior Organic Chemist



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

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141023
Sample Site: GBR-49
IML Sample No: F890820
Analysis Requested: Purgeable Halocarbons
Sample Matrix: Water

Date Sampled: 03/14/89
Date Received: 03/14/89
Date Extracted: N/A
Date Analyzed: 03/19/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	2.5 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	10.4 (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	0.3 (0.1)	ug/l
CHLOROFORM	1.0 (0.1)	ug/l
1,2-DICHLOROETHANE	0.07 (0.03)	ug/l
1,1,1-TRICHLOROETHANE	3.5 (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	24.9 (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	25.3 (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND - Parameter not detected at the stated detection limit.



Jack M. Morgan
Senior Organic Chemist

LOCATION

GBR-49

11/8/88 (Giant Sampling)

TEST CODE

ALKAL

COMPOUND	RESULT	UNITS	DETECTION LIMIT
HYDROXIDE	ND	mg/L	1.00
BICARBONATE	360	mg/L	1.00
TOTAL ALKALINITY	360	mg/L	1.00
CARBONATE	ND	mg/L	1.00

TEST CODE

CATIONS/ANIONS

COMPOUND	RESULT	UNITS	DETECTION LIMIT
F	3.6	mg/L	NR
NO2 NO3	5.1	mg/L	NR
CA	680	ug/ml	NR
MG	50	ug/ml	NR
CL	790	mg/L	NR
NA	750	ug/ml	NR
BR	2.0	mg/L	NR
K	<3.0	ug/ml	NR
SO4	1800	mg/L	NR

TEST CODE

EPA601

COMPOUND	RESULT	UNITS	DETECTION LIMIT
CHLOROMETHANE	ND	ug/L	3.00
BROMOMETHANE	ND	ug/L	12.00
VINYL CHLORIDE	ND	ug/L	2.00
CHLOROETHANE	ND	ug/L	5.00
METHYLENE CHLORIDE	ND	ug/L	3.00
TRICHLOROFLUOROMETHANE	ND	ug/L	1.00
1,1-DICHLOROETHENE	ND	ug/L	1.00
1,1-DICHLOROETHANE	6.80	ug/L	0.90
TRANS-1,2-DICHLOROETHENE	88	ug/L	2.00
CHLOROFORM	6.9	ug/L	0.50
1,2-DICHLOROETHANE	ND	ug/L	0.30
1,1,1-TRICHLOROETHANE	6.6	ug/L	0.90

LOCATION: GBR-49
 TEST CODE: EPA601 (Continued)

CARBON TETRACHLORIDE	ND	ug/L	1.00
BROMODICHLOROMETHANE	ND	ug/L	1.00
1,2-DICHLOROPROPANE	ND	ug/L	1.00
TRANS-1,3-DICHLOROPROPENE	ND	ug/L	3.00
TRICHLOROETHENE	11	ug/L	2.00
DIBROMOCHLOROMETHANE	ND	ug/L	2.00
1,1,2-TRICHLOROETHANE-A	ND	ug/L	0.70
CIS-1,3-DICHLOROPROPENE-A	N\A	ug/L	NR
2-CHLOROETHYL VINYL ETHER	ND	ug/L	2.00
BROMOFORM	ND	ug/L	3.00
1,1,2,2-TETRACHLOROETHANE-B	ND	ug/L	1.20
TETRACHLOROETHENE-B	15	ug/L	0.30
CHLOROBENZENE-A	ND	ug/L	3.00
1,3-DICHLOROBENZENE	ND	ug/L	3.00
1,2-DICHLOROBENZENE	ND	ug/L	5.00
1,4-DICHLOROBENZENE	ND	ug/L	4.00

TEST CODE

 EPA602

COMPOUND	RESULT	UNITS	DETECTION LIMIT
-----	-----	-----	-----
BENZENE	ND	ug/L	0.20
TOLUENE	ND	ug/L	0.20
CHLOROBENZENE-A	ND	ug/L	0.30
ETHYLBENZENE	ND	ug/L	0.30
1,3-DICHLOROBENZENE	ND	ug/L	0.40
1,2-DICHLOROBENZENE	ND	ug/L	0.40
1,4-DICHLOROBENZENE	ND	ug/L	0.30
M-XYLENE	ND	ug/L	0.20
P-XYLENE-A	ND	ug/L	0.20
O-XYLENE	ND	ug/L	0.10

TEST CODE

 OP04

COMPOUND	RESULT	UNITS	DETECTION LIMIT
-----	-----	-----	-----
ORTHOPHOSPHATE	ND	mg/L	0.02

LOCATION: GBR-49

TEST CODE

TDS

COMPOUND	RESULT	UNITS	DETECTION LIMIT
FILTERABLE RESIDUE	4700	mg/L	6.00

ND = not detected at detection limit

NA = not analyzed

N/A = not available

NR = not reported

LOCATION: GBR-49

TEST: General Chemistry

	11/08/88 mg/l	3/14/89 mg/l
CALCIUM	680	733
MAGNESIUM	50	83
SODIUM	750	1199
POTASSIUM	NA	7
AMMONIA-N	NA	NA
BICARBONATE	360	587
BROMIDE	2	NA
CARBONATE	NA	0
CHLORIDE	790	1524
FLUORIDE	3.6	NA
POTASSIUM	<3	NA
NITRATE-N+, NITRITE-N	5.1	7.12
SULFATE	1800	2077
ORTHOPHOSPHATE	ND	NA
TFS	NA	6068
ACIDITY AS CaCO3	NA	<1
ALKALINITY AS CaCO3	ND	482
HARDNESS AS CaCO3	NA	2171
CHARGE BALANCE (%)	NA	99.93
pH	NA	NA
CONDUCTIVITY (umho)	NA	NA

TFS = TOTAL FILTERABLE SOLIDS (DISSOLVED)

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMITS

RECEIVED

JUN 23 1989

OIL CONSERVATION DIV.
SANTA FE



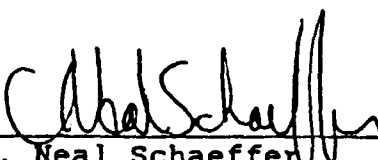
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

CLIENT: GCL
ID: 9006181330
SITE: GBR-49
LAB NO: F4490

DATE REPORTED: 06/27/90
DATE RECEIVED: 06/20/90
DATE COLLECTED: 06/18/90

Lab pH (s.u.).....	7.95
Lab conductivity, umhos/cm.....	4040
Lab resistivity, ohm-m.....	2.4752
Total dissolved solids (180), mg/l..	2896
Total dissolved solids (calc), mg/l.	2860
Total alkalinity as CaCO ₃ , mg/l.....	296.05
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	843.36
Sodium absorption ratio.....	9.48

	mg/l	meq/l
Bicarbonate as HCO ₃	361.2	5.92
Carbonate as CO ₃	0.0	0.00
Chloride.....	482.3	13.60
Sulfate.....	1246.8	25.98
Calcium.....	285.1	14.23
Magnesium.....	32.1	2.64
Potassium.....	3.0	0.08
Sodium.....	633.0	27.53
Major cations.....		44.48
Major anions.....		45.50
Cation/anion difference.....		1.14 %


C. Neal Schaeffer
Lab Director



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

CLIENT: Geoscience Consultants

DATE REPORTED: 12/20/89

SITE: GBR-49

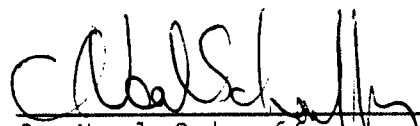
DATE RECEIVED: 12/11/89

LAB NO: F3654

DATE COLLECTED: 12/11/89

Lab pH (s.u.).....	7.33
Lab Conductivity, umhos/cm.....	4227
Lab resistivity, ohm-m.....	2.3657
Total Dissolved Solids (180), mg/l..	3224
Total Dissolved Solids (calc), mg/l.	3266
Total Alkalinity as CaCO ₃ , mg/l.....	356.40
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1098.91
Sodium Absorption Ratio.....	8.44

	mg/l	meq/l
Bicarbonate as HCO ₃	434.81	7.13
Carbonate as CO ₃	0.00	0.00
Chloride.....	385.41	10.87
Sulfate.....	1554.65	32.39
Calcium.....	507.43	25.32
Magnesium.....	-40.64	-3.34
Potassium.....	1.80	0.05
Sodium.....	643.50	27.99
Major Cations.....		50.01
Major Anions.....		50.39
Cation/Anion Difference.....		0.37 %


C. Neal Schaeffer
Senior Chemist

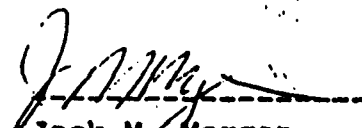
Date: March 22, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141023
Site: GBR-49
IML Lab No: F890820
Date Collected: 3/14/89
Date Received: 3/14/89

Total Dissolved Solids (180), mg/l.....	6068
Total Dissolved Solids (calc), mg/l.....	5911
Total Alkalinity as CaCO ₃ , mg/l.....	482
Total Hardness as CaCO ₃ , mg/l.....	2171

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	587	9.63
Carbonate as CO ₃	0	0.00
Chloride.....	1524	42.98
Sulfate.....	2077	43.28
Calcium.....	733	36.57
Magnesium.....	83	6.85
Potassium.....	7	0.18
Sodium.....	1199	52.15
Nitrate/Nitrite.....	7.12	0.51

Major Cations.....	95.75
Major Anions.....	95.89
Cation/Anion Difference.....	0.07 %


Jack M. Morgan
Senior Organic Chemist

LOCATION

GBR-49

TEST CODE

TOTAL DISSOLVED SOLIDS

COMPOUND

FILTERABLE RESIDUE

11/08/88

4700

LOCATION

GBR-49

TEST CODE

CATIONS/ANIONS

COMPOUND

11/08/88

BROMIDE

2.0

CALCIUM

680

CHLORIDE

790

FLUORIDE

3.6

POTASSIUM

<3.0

MAGNESIUM

50

SODIUM

750

NITRATE/NITRITE

5.1

SULFATE

1800

LOCATION

GBR-49

TEST CODE

ALKALINITY

COMPOUND

11/08/88

BICARBONATE

360

CARBONATE

ND

HYDROXIDE

ND

TOTAL ALKALINITY

360

LOCATION

GBR-49

TEST CODE

ORTHOPHOSPHATE

COMPOUND

ORTHOPHOSPHATE

11/08/88

ND



Geoscience Consultants, Ltd.
 Radian Work Order: SO-06-152

Method: Metals by SW6010 (1)

List: Ep Toxicity list

Sample ID:	9006181215	9006181330	9006181600	9006181700
	GBR 32	GBR 49	GBR 48	GBR 50
Factor:	1.00	1.00	1.00	1.00
Results in:	mg/L	mg/L	mg/L	mg/L
	07A	08A	09A	10A
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	0.031	0.0020	0.027	0.0020	0.24	0.0020	0.56	0.0020
Cadmium	ND	0.0040	ND	0.0040	ND	0.0040	ND	0.0040
Chromium	0.27	0.0070	0.060	0.0070	0.043	0.0070	0.042	0.0070
Lead	ND	0.042	ND	0.042	ND	0.042	0.099 a	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.

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

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

MONITOR WELL GBR-50

<u>SAMPLER</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>11/8/88</u>	<u>3/14/89</u>	<u>6/13/89</u>	<u>12/11/89</u>	<u>6/18/90</u>
<u>PARAMETER</u>					
DETECTION LIMIT	<1.0	(BELOW)	(BELOW)	<1.0	<1.0
BENZENE	0.8	ND(<1.0)	ND(<1.0)	ND	ND
BROMODICHLOROMETHANE	ND	ND(<1.0)	ND(1.0)	ND	ND
BROMOFORM	ND	ND(<1.0)	ND(1.0)	ND	ND
BROMOMETHANE	ND	ND(1.0)	ND(1.0)	ND	ND
CARBON TETRACHLORIDE	ND	ND(<1.0)	ND(1.0)	ND	ND
CHLOROBENZENE	ND	ND(<1.0)	ND(<1.0)	ND	ND
CHLOROETHANE	ND	ND(1.0)	ND(1.0)	ND	ND
CHLOROFORM	0.2	ND(<1.0)	ND(1.0)	ND	ND
CHLOROMETHANE	ND	ND(1.0)	ND(1.0)	ND	ND
DIBROMOCHLOROMETHANE	ND	ND(<1.0)	ND(1.0)	ND	ND
1,2-DICHLOROBENZENE	ND	ND(<1.0)	ND(<1.0)	ND	ND
1,3-DICHLOROBENZENE	ND	ND(<1.0)	ND(<1.0)	ND	ND
1,4-DICHLOROBENZENE	ND	ND(<1.0)	ND(<1.0)	ND	ND
DICHLORODIFLUOROMETHANE	NA	ND(1.0)	ND(1.0)	ND	ND
1,1-DICHLOROETHANE	0.7	0.1	ND(1.0)	ND	ND
1,2-DICHLOROETHANE	ND	ND(<1.0)	ND(1.0)	ND	ND
1,1-DICHLOROETHENE	ND	ND(<1.0)	ND(1.0)	ND	ND
CIS-1,2-DICHLOROETHENE	NA	NA	NA	ND	0.37
TRANS-1,2-DICHLOROETHENE	0.3	ND(<1.0)	ND(1.0)	0.27	ND
1,2-DICHLOROPROPANE	ND	ND(<1.0)	ND(1.0)	ND	ND
ETHYLBENZENE	ND	ND(<1.0)	ND(<1.0)	ND	ND
METHYLENE CHLORIDE	0.3	1.2	ND(1.0)	ND	0.43
1,1,2,2-TETRACHLOROETHANE	ND	ND(<1.0)	ND(1.0)	ND	0.16
TETRACHLOROETHENE	0.7	0.19	ND(1.0)	1.2	0.57
TOLUENE	ND	ND(<1.0)	ND(<1.0)	ND	ND
1,1,1-TRICHLOROETHANE	0.6	ND(<1.0)	ND(1.0)	0.26	ND
1,1,2-TRICHLOROETHANE	ND	ND(<1.0)	ND(1.0)	ND	ND
TRICHLOROETHENE	0.2	ND(<1.0)	ND(1.0)	ND	0.31
TRICHLOROFLUOROMETHANE	ND	ND(<1.0)	ND(1.0)	ND	ND
VINYL CHLORIDE	ND	ND(1.0)	ND(1.0)	ND	ND
TOTAL XYLENES	ND	ND(<1.0)	6.0	ND	ND

TR - TRACE
ND - NOT DETECTED
NA - NOT ANALYZED

LOCATION: GBR-50

TEST: Halogenated/Aromatic Volatile Organic Compounds

ANALYTE	11/8/89 ug/l	3/14/89 ug/l
BENZENE	0.8	ND
BROMODICHLOROMETHANE	ND	ND
BROMOFORM	ND	ND
BROMOMETHANE	ND	ND
CARBON TETRACHLORIDE	ND	ND
CHLOROBENZENE	ND	ND
CHLOROETHANE	ND	ND
2-CHLOROETHYL VINYL ETHER	ND	ND
CHLOROFORM	0.2	ND
CHLOROMETHANE	ND	ND
DIBROMOCHLOROMETHANE	ND	ND
1,2-DICHLOROBENZENE	ND	ND
1,3-DICHLOROBENZENE	ND	ND
1,4-DICHLOROBENZENE	ND	ND
DICHLORODIFLUOROMETHANE	ND	ND
1,1-DICHLOROETHANE	0.7	0.1
1,2-DICHLOROETHANE	ND	ND
1,1-DICHLOROETHENE	ND	ND
TRANS-1,2-DICHLOROETHENE	0.3	ND
1,2-DICHLOROPROPANE	ND	ND
CIS-1,3-DICHLOROPROPENE	ND	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND
ETHYLBENZENE	ND	ND
METHYLENE CHLORIDE	0.3	1.2
1,1,2,2,-TETRACHLOROETHANE	ND	ND
TETRACHLOROETHENE	0.7	0.19
TOLUENE	ND	ND
1,1,1-TRICHLOROETHANE	0.6	ND
1,1,2-TRICHLOROETHANE	ND	ND
TRICHLOROETHENE	0.2	ND
TRICHLOROFLUOROMETHANE	ND	ND
VINYL CHLORIDE	ND	ND
META-XYLENE	ND	ND
ORTHO-XYLENE	ND	ND
PARA-XYLENE	ND	ND
M,O-XYLENE	ND	ND
O,P-XYLENE	ND	ND
XYLENES	ND	ND

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMITS

RECEIVED

JUN 23 1989

**OIL CONSERVATION DIV.
SANTA FE**

Geoscience Consultants, Ltd.
 Radian Work Order: 50-06-152

Method: Aromatics by EPA 602 (1)

List: Complete analyte list

Sample ID:	9006181215 GBR 32	9006181330 GBR 49	9006181600 GBR 48	9006181700 GBR 50
Factor:	25	25	25	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	5.0	ND	5.0	5.7 Xa	5.0	ND	0.20
Chlorobenzene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
1,2-Dichlorobenzene	ND	10	ND	10	ND	10	ND	0.40
1,3-Dichlorobenzene	ND	10	ND	10	ND	10	ND	0.40
1,4-Dichlorobenzene	ND	7.5	ND	7.5	ND	7.5	ND	0.30
Ethylbenzene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Toluene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Xylenes (total)	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Surrogate Recovery(%)								
1-Bromo-4-fluorobenzene	102		104		100		110	
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

(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: S0-06-152

Method: Halocarbons by EPA 601 (1)

List: Complete analyte list

Sample ID:	9006181215	9006181330	9006181600	9006181700
	GBR 32	GBR 49	GBR 48	GBR 50
Factor:	25	25	25	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	2.5	ND	2.5	ND	2.5	ND	0.10
Bromoform	ND	13	ND	12	ND	13	ND	0.50
Bromomethane	ND	30	ND	30	ND	30	ND	1.2
Carbon tetrachloride	ND	3.0	<u>3.5 Xa</u>	3.0	<u>3.3 Xa</u>	3.0	ND	0.12
Chlorobenzene	ND	6.3	ND	6.2	ND	6.3	ND	0.25
Chloroethane	ND	13	ND	13	ND	13	ND	0.52
2-Chloroethylvinyl ether	ND	13	ND	12	ND	13	ND	0.50
Chloroform	ND	2.5	<u>2.5 Xa</u>	2.5	ND	2.5	ND	0.10
Chloromethane	ND	7.5	ND	7.5	ND	7.5	ND	0.30
Dibromochloromethane	ND	5.0	ND	5.0	ND	5.0	ND	0.20
1,2-Dichlorobenzene	ND	13	ND	12	ND	13	ND	0.50
1,3-Dichlorobenzene	ND	8.0	ND	8.0	ND	8.0	ND	0.32
1,4-Dichlorobenzene	ND	6.0	ND	6.0	ND	6.0	ND	0.24
1,1-Dichloroethane	ND	13	ND	12	<u>14. Ca</u>	13	ND	0.50
1,2-Dichloroethane	ND	2.5	ND	2.5	ND	2.5	ND	0.10
1,1-Dichloroethene	ND	5.0	ND	5.0	<u>14 Xa</u>	5.0	ND	0.20
cis-1,2-Dichloroethene	<u>160 C</u>	5.0	<u>120 C</u>	5.0	<u>220 C</u>	5.0	<u>0.37 GIa</u>	0.20
trans-1,2-Dichloroethene	ND	5.0	ND	5.0	ND	5.0	ND	0.20
1,2-Dichloropropane	ND	2.5	ND	2.5	ND	2.5	ND	0.10
cis-1,3-Dichloropropene	ND	5.0	ND I	5.0	ND	5.0	ND	0.20
trans-1,3-Dichloropropene	ND	8.5	ND	8.5	ND	8.5	ND	0.34
Methylene chloride	<u>10 Xa</u>	10	<u>21 Xa</u>	10	ND	10	<u>0.43 Xa</u>	0.40
1,1,2,2-Tetrachloroethane	ND	3.8	ND	3.8	ND	3.8	<u>0.16 XIa</u>	0.15
Tetrachloroethene	<u>23 C</u>	2.5	<u>22 C</u>	2.5	<u>32 C</u>	2.5	<u>0.57 C</u>	0.10
1,1,1-Trichloroethane	ND	5.0	ND	5.0	<u>6.2 Ca</u>	5.0	ND	0.20
1,1,2-Trichloroethane	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Trichloroethene	<u>17 Ca</u>	5.0	<u>14 Ca</u>	5.0	<u>30 C</u>	5.0	<u>0.31 Ca</u>	0.20
Trichlorofluoromethane	ND	5.0	ND	5.0	ND	5.0	ND	0.20
Vinyl chloride	ND	5.0	ND	5.0	ND	5.0	ND	0.20

ND Not detected at specified detection limit

X See definition in report narrative

I Result differs from last report - see report narrative

C Confirmed on second column or by GC/MS

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: 89-12-089

Method: Volatile aromatics (1) List: SW8020						
Sample ID:	GBR-17	GBR-32	GBR-49	12/11/89 GBR-50	Trip Blank	Reagent Blank
Factor:	1	1	5	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C	05A	06A
Matrix:	water	water	water	water	water	water
Benzene	<0.20	<u>96</u>	<u>74</u>	<0.20	<0.20	<0.20
Chlorobenzene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	<0.40	<0.40	<2.0	<0.40	<0.40	<0.40
1,3-Dichlorobenzene	<0.40	<0.40	<2.0	<0.40	<0.40	<0.40
1,4-Dichlorobenzene	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30
Ethylbenzene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Toluene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Total xylenes	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
<u>Surrogate Recovery(%)</u>						
1-Bromo-4-fluorobenzene	98	101	111	104	112	N/A
Control Limits: 76 to 140						

N/A Not available

(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: 89-12-089

Method: Halogenated volatiles (1)

List: SW8010

Sample ID:	GBR-17	GBR-32	GBR-49	GBR-50	Trip Blank	Reagent Blank
Factor:	1	1	5	1	1	1
Results in:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	01A	02A	03A	04A	05A	06A
Matrix:	water	water	water	water	water	water

Bromodichloromethane	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
Bromoform	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
Bromomethane	<1.2	<1.2	<5.9	<1.2	<1.2	<1.2
Carbon Tetrachloride	<0.12	<0.12	<0.60	<0.12	<0.12	<0.12
Chlorobenzene	<0.25	<0.25	<1.3	<0.25	<0.25	<0.25
Chloroethane	<0.52	<0.52	<2.6	<0.52	<0.52	<0.52
2-Chloroethylvinylether	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
Chloroform	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
Chloromethane	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30
Dibromochloromethane-(2)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	<0.32	<0.32	<1.6	<0.32	<0.32	<0.32
1,4-Dichlorobenzene	<0.24	<0.24	<1.2	<0.24	<0.24	<0.24
1,1-Dichloroethane	<0.50	<u>3.0</u>	<u>2.8 *</u>	<0.50	<0.50	<0.50
1,2-Dichloroethane	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
1,1-Dichloroethene	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
trans-1,2-Dichloroethene	<0.20	<u>140 D</u>	<u>150</u>	<u>0.27 *</u>	<0.20	<0.20
1,2-Dichloropropane	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10
cis-1,3-Dichloropropene-(2)	N/A	N/A	N/A	N/A	N/A	N/A
trans-1,3-Dichloropropene	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30
Methylene Chloride	<0.40	<u>1.2 *</u>	<2.0	<0.40	<u>7.2</u>	<0.40
1,1,2,2-Tetrachloroethane-(3)	<0.15	<0.15	<0.75	<0.15	<0.15	<0.15
Tetrachloroethene-(3)	<u>0.13 *</u>	<u>17</u>	<u>25</u>	<u>1.2</u>	<0.10	<0.10
1,1,2-Trichloroethane-(2)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	<u>1.0</u>	<u>1.3</u>	<u>1.0 *</u>	<u>0.26 *</u>	<0.20	<0.20
Trichloroethene	<0.20	<u>10</u>	<u>14</u>	<0.20	<0.20	<0.20
Trichlorofluoromethane	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20
Vinyl Chloride	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20

N/A Not available

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.
- (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.



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

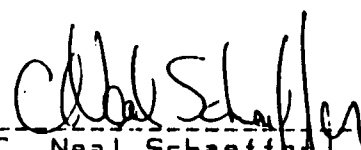
Client: GCL #8906131615
Site: GBR-50
IML #: F1569

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Parameter	Concentration	Units
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	6.0 (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

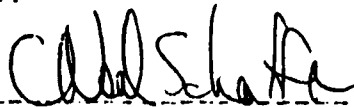
Client: GCL #8906131615
Site: GRR-50
IML #: F1569

Date of report: 06/23/87
Date sampled: 06/13/87
Date received: 06/14/87

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	ND (1.0)	ug/l
1,1,1-TRICHLOROETHANE	ND (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	ND (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	ND (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist



2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326 4137

Date: April 01, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903141001

Sample Site: GBR-50

IML Lab No: F890810

Analysis Requested: Purgeable Aromatic

Sample Matrix: Water

Date Sampled: 03/14/89

Date Received: 03/14/89

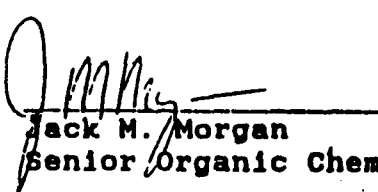
Date Extracted: NA

Date Analyzed: 03/23/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


Jack M. Morgan
Senior Organic Chemist



Inter-Mountain
Laboratories, Inc.

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

Date: April 02, 1989

Client: Geoscience Consultants, Ltd.

GCL Sample No: 8903141001

Sample Site: GBR-50

IML Sample No: F890810

Analysis Requested: Purgeable Halocarbons

Sample Matrix: Water

Date Sampled: 03/14/89

Date Received: 03/14/89

Date Extracted: N/A

Date Analyzed: 03/28/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	1.2 (0.1)	ug/l
TRICHLOROFLUOROMETHANE	ND (0.1)	ug/l
1,1-DICHLOROETHENE	ND (0.1)	ug/l
1,1-DICHLOROETHANE	0.1 (0.05)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (0.1)	ug/l
CHLOROFORM	ND (0.1)	ug/l
1,2-DICHLOROETHANE	ND (0.03)	ug/l
1,1,1-TRICHLOROETHANE	ND (0.03)	ug/l
CARBON TETRACHLORIDE	ND (0.1)	ug/l
BROMODICHLOROMETHANE	ND (0.1)	ug/l
1,2-DICHLOROPROPANE	ND (0.1)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
TRICHLOROETHENE	ND (0.1)	ug/l
DIBROMOCHLOROMETHANE	ND (0.1)	ug/l
1,1,2-TRICHLOROETHANE	ND (0.02)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (0.1)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (0.1)	ug/l
BROMOFORM	ND (0.2)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (0.03)	ug/l
TETRACHLOROETHENE	0.19 (0.03)	ug/l
CHLOROBENZENE	ND (0.1)	ug/l
1,2-DICHLOROBENZENE	ND (0.1)	ug/l
1,3-DICHLOROBENZENE	ND (0.1)	ug/l
1,4-DICHLOROBENZENE	ND (0.1)	ug/l

Method: 601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

(Detection limit in parenthesis.)

ND Parameter not detected at the stated detection limit.

Jack M. Morgan
Senior Organic Chemist

LOCATION

GBR-50

11/8/88 (Giant Sampling)

TEST CODE

ALKAL

COMPOUND	RESULT	UNITS	DETECTION LIMIT
TOTAL ALKALINITY	198	mg/L	1.00
HYDROXIDE	ND	mg/L	1.00
CARBONATE	ND	mg/L	1.00
BICARBONATE	198	mg/L	1.00

TEST CODE

CATIONS/ANIONS

COMPOUND	RESULT	UNITS	DETECTION LIMIT
CA	280	ug/ml	NR
MG	23	ug/ml	NR
NO2 NO3	1.8	mg/L	NR
BR	<1	mg/L	NR
F	2.3	mg/L	NR
K	<3	ug/ml	NR
SO4	1300	mg/L	NR
NA	400	ug/ml	NR
CL	110	mg/L	NR

TEST CODE

EPA601

COMPOUND	RESULT	UNITS	DETECTION LIMIT
CHLOROMETHANE	ND	ug/L	0.30
BROMOMETHANE	ND	ug/L	1.20
VINYL CHLORIDE	ND	ug/L	0.20
CHLOROETHANE	ND	ug/L	0.50
METHYLENE CHLORIDE	0.3	ug/L	0.30
TRICHLOROFLUOROMETHANE	ND	ug/L	0.10
1,1-DICHLOROETHENE	ND	ug/L	0.10
1,1-DICHLOROETHANE	0.7	ug/L	0.09
TRANS-1,2-DICHLOROETHENE	0.3	ug/L	0.20
CHLOROFORM	0.2	ug/L	0.05
1,2-DICHLOROETHANE	ND	ug/L	0.03
1,1,1-TRICHLOROETHANE	0.6	ug/L	0.09

LOCATION: GBR-50
 TEST CODE: EPA601 (Continued)

CARBON TETRACHLORIDE	ND	ug/L	0.10
BROMODICHLOROMETHANE	ND	ug/L	0.10
1,2-DICHLOROPROPANE	ND	ug/L	0.10
TRANS-1,3-DICHLOROPROPENE	ND	ug/L	0.30
TRICHLOROETHENE	0.2	ug/L	0.20
DIBROMOCHLOROMETHANE	ND	ug/L	0.20
1,1,2-TRICHLOROETHANE-A	ND	ug/L	0.07
CIS-1,3-DICHLOROPROPENE-A	ND	ug/L	NR
2-CHLOROETHYL VINYL ETHER	ND	ug/L	0.20
BROMOFORM	ND	ug/L	0.30
1,1,2,2-TETRACHLOROETHANE-B	ND	ug/L	0.12
TETRACHLOROETHENE-B	0.7	ug/L	0.03
CHLOROBENZENE-A	ND	ug/L	0.30
1,3-DICHLOROBENZENE	ND	ug/L	0.30
1,2-DICHLOROBENZENE	ND	ug/L	0.50
1,4-DICHLOROBENZENE	ND	ug/L	0.40

TEST CODE

 EPA602

COMPOUND	RESULT	UNITS	DETECTION LIMIT
-----	-----	-----	-----
BENZENE	0.8	ug/L	0.20
TOLUENE	ND	ug/L	0.20
CHLOROBENZENE-A	ND	ug/L	0.30
ETHYLBENZENE	ND	ug/L	0.30
1,3-DICHLOROBENZENE	ND	ug/L	0.40
1,2-DICHLOROBENZENE	ND	ug/L	0.40
1,4-DICHLOROBENZENE	ND	ug/L	0.30
M-XYLENE	ND	ug/L	0.20
P-XYLENE-A	ND	ug/L	0.20
O-XYLENE	ND	ug/L	0.10

TEST CODE

 OP04

COMPOUND	RESULT	UNITS	DETECTION LIMIT
-----	-----	-----	-----
ORTHOPHOSPHATE	ND	mg/L	0.02

LOCATION: GBR-50

TEST CODE

TDS

COMPOUND	RESULT	UNITS	DETECTION LIMIT
FILTERABLE RESIDUE	2400	mg/L	6.00

ND = not detected at detection limit

NA = not analyzed

N/A = not available

NR = not reported



LOCATION: GBR-50

TEST: General Chemistry

	11/08/88 mg/l	3/14/89 mg/l
CALCIUM	280	338
MAGNESIUM	23	29
SODIUM	400	436
POTASSIUM	NA	3
AMMONIA-N	NA	NA
BICARBONATE	198	262
BROMIDE	<1	NA
CARBONATE	ND	0
CHLORIDE	110	173
FLUORIDE	2.3	NA
POTASSIUM	<3	NA
NITRATE-N+, NITRITE-N	1.8	2.9
ORTHOPHOSPHATE	ND	NA
SULFATE	1300	1396
TKN	NA	NA
TFS	NA	2564
ACIDITY AS CaCO3	NA	<1
ALKALINITY AS CaCO3	NA	215
HARDNESS AS CaCO3	NA	963
CHARGE BALANCE (%)	NA	99.91
pH	NA	NA
CONDUCTIVITY (umho)	NA	NA

ND = NOT DETECTED

NA = NOT ANALYZED

N/A = NOT AVAILABLE

TR = TRACE QUANTITIES DETECTED BELOW DETECTION LIMIT

RECEIVED

JUN 23 1989

**OIL CONSERVATION DIV.
SANTA FE**



InterMountain
Laboratories, Inc.

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

CLIENT: GCL
ID: 9006181700
SITE: GBR-50
LAB NO: F4492

DATE REPORTED: 06/27/90
DATE RECEIVED: 06/20/90
DATE COLLECTED: 06/18/90

Lab pH (s.u.).....	7.99
Lab conductivity, umhos/cm.....	3327
Lab resistivity, ohm-m.....	3.0057
Total dissolved solids (180), mg/l..	2602
Total dissolved solids (calc), mg/l.	2625
Total alkalinity as CaCO ₃ , mg/l.....	210.10
Total acidity as CaCO ₃ , mg/l.....	0.00
Total hardness as CaCO ₃ , mg/l.....	1074.28
Sodium absorption ratio.....	5.45

	mg/l	meq/l
Bicarbonate as HCO ₃	256.3	4.20
Carbonate as CO ₃	0.0	0.00
Chloride.....	126.9	3.58
Sulfate.....	1556.3	32.42
Calcium.....	357.4	17.84
Magnesium.....	44.4	3.65
Potassium.....	3.7	0.09
Sodium.....	410.4	17.85
Major cations.....		39.43
Major anions.....		40.20
Cation/anion difference.....		0.97 %

C. Neal Schaeffer
Lab Director

CLIENT: Geoscience Consultants

DATE REPORTED: 12/20/89

SITE: GBR-50

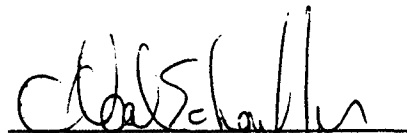
DATE RECEIVED: 12/11/89

LAB NO: F3652

DATE COLLECTED: 12/11/89

Lab pH (s.u.).....	7.30
Lab Conductivity, umhos/cm.....	2791
Lab resistivity, ohm-m.....	3.5829
Total Dissolved Solids (180), mg/l..	2154
Total Dissolved Solids (calc), mg/l.	2125
Total Alkalinity as CaCO ₃ , mg/l.....	209.88
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	814.71
Sodium Absorption Ratio.....	5.51

	mg/l	meq/l
Bicarbonate as HCO ₃	256.05	4.20
Carbonate as CO ₃	0.00	0.00
Chloride.....	141.85	4.00
Sulfate.....	1171.95	24.42
Calcium.....	313.72	15.65
Magnesium.....	7.78	0.64
Potassium.....	2.55	0.07
Sodium.....	361.50	15.72
Major Cations.....		32.08
Major Anions.....		32.61
Cation/Anion Difference.....		0.82 %

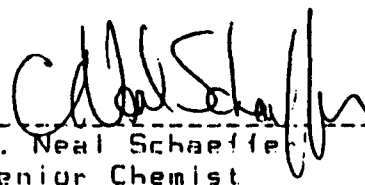

C. Neal Schaeffer
Senior Chemist

Client: GCL #8906131615
Site: GBR-50
IML #: F1569

Date of report: 06/23/89
Date sampled: 06/13/89
Date received: 06/14/89

Total dissolved solids (100)..... 2712.00 mg/l
Total dissolved solids (calculated). 2610.71 mg/l
Total alkalinity (as CaCO₃)..... 197.33 mg/l
Total hardness (as CaCO₃)..... 974.50 mg/l
Lab pH..... 7.35
Lab conductivity..... 3290 umhos/cm @ 25C
Lab resistivity..... 3.0395 ohm-cm

	mg/l	meq/l
Acidity (as CaCO ₃).....	<1.0	<0.01
Bicarbonate (as HCO ₃).....	240.75	3.95
Carbonate (as CO ₃).....	0.00	0.00
Chloride.....	97.20	2.74
Sulfate.....	1591.68	33.16
Calcium.....	327.92	16.36
Magnesium.....	38.02	3.13
Potassium.....	2.40	0.06
Sodium.....	436.40	18.98
Major cations.....		38.54
Major anions.....		39.85
Anion/cation % difference.....		1.68 %


C. Neal Schaeffer
Senior Chemist

Date: March 31, 1989

Client: Geoscience Consultants, Ltd.
GCL Sample No: 8903141001
Site: GBR-50
IML Lab No: F890810
Date Collected: 3/14/89
Date Received: 3/14/89

Total Dissolved Solids (180), mg/l.....	2564
Total Dissolved Solids (calc), mg/l.....	2503
Total Alkalinity as CaCO ₃ , mg/l.....	215
Total Hardness as CaCO ₃ , mg/l.....	963

	mg/l	meq/l
Acidity as CaCO ₃	<1	<0.01
Bicarbonate as HCO ₃	262	4.29
Carbonate as CO ₃	0	0.00
Chloride.....	173	4.87
Sulfate.....	1396	29.08
Calcium.....	338	16.85
Magnesium.....	29	2.41
Potassium.....	3	0.09
Sodium.....	436	18.96
Nitrate/Nitrite.....	2.90	0.21

Major Cations.....	38.31
Major Anions.....	38.24
Cation/Anion Difference.....	0.09 %



Jack M. Morgan
Senior Organic Chemist

LOCATION

GBR-50

TEST CODE

CATIONS/ANIONS

COMPOUND	11/08/88	03/14/89
BROMIDE	<1	NA
CALCIUM	280	338
CHLORIDE	110	173
FLUORIDE	2.3	NA
POTASSIUM	<3	3
MAGNESIUM	23	29
SODIUM	400	436
NITRATE/NITRITE	1.8	2.9
SULFATE	1300	1396

LOCATION

GBR-50

TEST CODE

ALKALINITY

COMPOUND

11/08/88

BICARBONATE
CARBONATE
HYDROXIDE
TOTAL AKALINITY
BICARBONATE AS HCO3
CARBONATE
TOTAL AKALINITY

198
ND
ND
198
262
0
215

LOCATION

GBR-50

TEST CODE

ORTHOPHOSPHATE

COMPOUND

ORTHOPHOSPHATE

11/08/88

ND

LOCATION

GBR-50

TEST CODE

TOTAL DISSOLVED SOLIDS

COMPOUND

TOTAL DISSOLVED SOLIDS

11/08/88

2400

Geoscience Consultants, Ltd.
 Radian Work Order: SO-06-152

Method: Metals by SW6010 (1)

List: Ep Toxicity list

Sample ID:	9006181215	9006181330	9006181600	9006181700
	GBR 32	GBR 49	GBR 48	GBR 50
Factor:	1.00	1.00	1.00	1.00
Results in:	mg/L	mg/L	mg/L	mg/L
	07A	08A	09A	10A
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	0.031	0.0020	0.027	0.0020	0.24	0.0020	0.56	0.0020
Cadmium	ND	0.0040	ND	0.0040	ND	0.0040	ND	0.0040
Chromium	0.27	0.0070	0.060	0.0070	0.043	0.0070	0.042	0.0070
Lead	ND	0.042	ND	0.042	ND	0.042	0.099 a	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: S0-06-152

Method/Analyte		Sample Identifications	
		9006181700 GBR 50	REAGENT BLANK
Matrix		10 water	11 water
Mercury by SW7470		Result	Det. Limit
Mercury		0.0002 @ mg/L	0.0002
		Result	Det. Limit
		ND	mg/L 0.0002
@ 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 the glossary.			

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

MONITOR WELL GBR-51/GRW-7

<u>SAMPLER</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT*</u>
<u>DATE</u>	<u>11/8/88</u>	<u>6/12/89</u>	<u>6/12/89</u>
<u>PARAMETER</u>			
DETECTION LIMIT	<1.0	(BELOW)	(BELOW)
BENZENE	ND	ND(<1.0)	ND(<1.0)
BROMODICHLOROMETHANE	ND	ND(1.0)	ND(1.0)
BROMOFORM	ND	ND(1.0)	ND(1.0)
BROMOMETHANE	ND	ND(1.0)	ND(1.0)
CARBON TETRACHLORIDE	ND	ND(1.0)	ND(1.0)
CHLOROBENZENE	ND	ND(<1.0)	ND(<1.0)
CHLOROETHANE	ND	ND(1.0)	ND(1.0)
CHLOROFORM	0.5	ND(1.0)	ND(1.0)
CHLOROMETHANE	ND	ND(1.0)	ND(1.0)
DIBROMOCHLOROMETHANE	ND	ND(1.0)	ND(1.0)
1,2-DICHLOROBENZENE	ND	ND(<1.0)	ND(<1.0)
1,3-DICHLOROBENZENE	ND	ND(<1.0)	ND(<1.0)
1,4-DICHLOROBENZENE	ND	ND(<1.0)	ND(<1.0)
DICHLORODIFLUOROMETHANE	ND	ND(1.0)	ND(1.0)
1,1-DICHLOROETHANE	0.6	3.3	2.0
1,2-DICHLOROETHANE	ND	ND(1.0)	ND(1.0)
1,1-DICHLOROETHENE	ND	ND(1.0)	ND(1.0)
CIS-1,2-DICHLOROETHENE	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	0.7	ND(1.0)	ND(1.0)
1,2-DICHLOROPROPANE	ND	ND(1.0)	ND(1.0)
ETHYLBENZENE	ND	ND(<1.0)	ND(<1.0)
METHYLENE CHLORIDE	ND	ND(10.0)	ND(10.0)
1,1,2,2-TETRACHLOROETHANE	ND	ND(1.0)	ND(1.0)
TETRACHLOROETHENE	2.1	ND(1.0)	ND(1.0)
TOLUENE	ND	ND(<1.0)	ND(<1.0)
1,1,1-TRICHLOROETHANE	1.0	1.3	1.0
1,1,2-TRICHLOROETHANE	ND	ND(1.0)	ND(1.0)
TRICHLOROETHENE	ND	ND(1.0)	ND(1.0)
TRICHLOROFLUOROMETHANE	ND	ND(1.0)	ND(1.0)
VINYL CHLORIDE	ND	ND(1.0)	ND(1.0)
TOTAL XYLENES	ND	1.4	1.9

TR - TRACE
 ND - NOT DETECTED
 NA - NOT ANALYZED
 * - DUPLICATE ANALYSIS



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

Client: GCL #8906121632
Site: GBR-51
IML #: F1562

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	1.4 (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

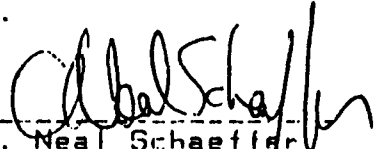
Client: GCL #8906121632
Site: GBR-51
IML #: F1562

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (10.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	3.3 (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	ND (1.0)	ug/l
1,1,1-TRICHLOROETHANE	1.3 (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	ND (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	ND (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
401 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist



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

Quality control data, duplicate analysis.

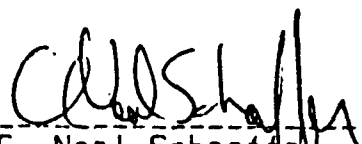
Client: GCL #8906121632
Site: GBR-51
IML #: F1562

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
-----	-----	-----
BENZENE	ND (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	1.9 (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

Quality control data, duplicate analysis.

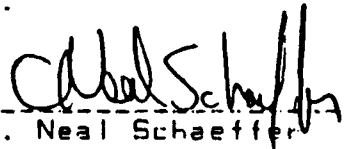
Client: GCL #B9D6121632
Site: GBR-51
IML #: F1562

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	2.0 (1.0)	ug/l
1,1-DICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	ND (1.0)	ug/l
1,1,1-TRICHLOROETHANE	1.0 (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	ND (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	ND (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

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RAS - Austin

REPORT

Results by Sample

Work Order # 88-11-059

SAMPLE ID 8811081604

FRACTION 058

TEST CODE EPA602

NAME EPA method 602

Date & Time Collected 11/08/88

Category

ANALYST	INSTRMT	CL	INJECTED	DATE	UNITS	VERIFIED	CL
CAS#	COMPOUND	RESULT	DET LIMIT				
71-43-2	Benzene	ND	0.20				
108-88-3	Toluene	ND	0.20				
100-41-4	Ethylbenzene	ND	0.30				
108-90-7	Chlorobenzene-A	ND	0.30				
106-46-7	1,4-Dichlorobenzene	ND	0.30				
541-73-1	1,3-Dichlorobenzene	ND	0.40				
95-50-1	1,2-Dichlorobenzene	ND	0.40				

SURROGATES

98-08-8 a,a,a-Trifluorotoluene 21% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NOT performed

unless otherwise noted.

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Received: 11/10/88

RAS - Austin

REPORT

Residue by Sample

Work Order # 88-11-059

Continued From Above

SAMPLE ID 8811081604

FRACTION 078

TEST CODE IDS

NAME Total dissolved solids

Date & Time collected 11/08/88

Category

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8811081604

FRACTION 078

TEST CODE XYLENE

NAME Xylenes, EPA 602

Date & Time collected 11/08/88

Category

ANALYST
INSTRMT

CL
0

INJECTD 11/10/88

DATE

UNITS

ug/L

VERIFIED CL

CAS #	COMPOUND	RESULT	DET LIMIT
106-42-3	p-Xylene-A	ND	0.20
103-38-3	m-Xylene	ND	0.20
95-47-6	o-Xylene	ND	0.10

98-08-8

a,a,a-Trifluorotoluene

91% recovery

NOTES AND DEFINITIONS FOR THIS REPORT

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NOT performed

unless otherwise noted.

Q = daily EPA standard recovery concide

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Received: 11/10/88

RAS - Austin

Results by Sample

Work Order # 88-11-059

SAMPLE ID 8811081604

FRACTION 02A

TEST CODE EPA601 NAME EPA method 601

Date & Time Collected 11/08/88

Category

ANALYST BM
INSTRMT E

INJECTD 11/15/88

FILE # _____
UNITS ug/L
VERIFIED CL

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	Chloromethane	ND	0.30
74-83-9	Bromomethane	ND	1.2
75-01-4	Vinyl chloride	ND	0.20
75-00-3	Chloroethane	ND	0.50
75-09-2	Methylene chloride	ND	0.30
75-69-4	Trichlorofluoromethane	ND	0.10
75-35-4	1,1-Dichloroethene	ND	0.10
75-34-3	1,1-Dichloroethane	0.6	0.090
156-60-5	trans-1,2-Dichloroethene	0.7*	0.20
67-66-3	Chloroform	0.5	0.050
107-06-2	1,2-Dichloroethane	ND	0.030
71-55-5	1,1,1-Trichloroethane	1.2	0.090
56-23-5	Carbon tetrachloride	ND	0.10
75-27-4	Bromodichloromethane	ND	0.10

Received: 11/10/88

RAS - Austin

Results by Sample

REPORT

Work Order # 88-11-059
Continued From Above

SAMPLE ID 8811081604

FRACTION 05A TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 11/08/88

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.10
10061-02-6	trans-1,3-Dichloropropene	ND	0.30
79-01-6	Trichloroethene	ND	0.20
124-48-1	Dibromochloromethane-A	ND	0.20
79-00-5	1,1,2-Trichloroethane-A	ND	0.070
10061-01-5	cis-1,3-Dichloropropene-A	ND	N/A
110-75-8	2-Chloroethyl vinyl ether	ND	0.20
75-25-2	Bromoform	ND	0.30
79-34-5	1,1,2,2-Tetrachloroethene-B	ND	0.12
127-18-4	Tetrachloroethene-B	2.1	0.030
108-90-7	Chlorobenzene	ND	0.30
541-73-1	1,3-Dichlorobenzene	ND	0.30
95-50-1	1,2-Dichlorobenzene	ND	0.50
106-46-7	1,4-Dichlorobenzene	ND	0.40
SURROGATES			
74-97-5	Bromochloromethane	94	% Recovery
460-00-4	1-Bromo-4-fluorobenzene	100	% Recovery



Client: GCL #8906121632
Site: GBR-51
IML #: F1562

Date of report: 06/23/87
Date sampled: 06/12/87
Date received: 06/13/87

Total dissolved solids (180).....	2542.00	mg/l
Total dissolved solids (calculated).....	2340.46	mg/l
Total alkalinity (as CaCO ₃).....	249.75	mg/l
Total hardness (as CaCO ₃).....	1074.94	mg/l
Lab pH.....	7.44	
Lab conductivity.....	3040	umhos/cm @ 25C
Lab resistivity.....	3.2895	ohm-m

	mg/l	meq/l
Acidity (as CaCO ₃).....	<1.0	<0.01
Bicarbonate (as HCO ₃).....	304.69	4.99
Carbonate (as CO ₃).....	0.00	0.00
Chloride.....	137.71	3.88
Sulfate.....	1361.65	28.37
Calcium.....	200.85	10.02
Magnesium.....	144.42	11.88
Potassium.....	0.96	0.02
Sodium.....	346.80	15.08
Major cations.....		37.01
Major anions.....		37.25
Anion/cation % difference.....		0.32 %

C. Neal Schaeffer
C. Neal Schaeffer
Senior Chemist

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Received: 11/10/88

RAS - Austin

Work Order # 88-11-057

Results of Sample

Continued From Above

SAMPLE ID 8811081604

FRACTION 055 TEST CODE XYLENE NAME Xylenes, EPA 602

Date & Time Collected 11/08/88

Category

95% confidence interval.

Chlorobenzene and p-xylene co-elute.

Quantitated as chlorobenzene unless otherwise noted.

SAMPLE ID 8811081621

FRACTION 050 TEST CODE ALKAL NAME Component alkalinities

Date & Time Collected 11/08/88

Category

VERIFIED LM

ANALYST TGM
INSTRMT 636

ANALYZED 11/21/88 UNITS mg/L as CaCO3

ANALYTE RESULT DET LIMIT

Total Alkalinity 196 1

Hydroxide ND 1

Carbonate ND 1

Bicarbonate 196 1

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

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Received: 11/10/88

RAS - Austin

REPORT

Results by Sample

Work Order # 88-11-059

SAMPLE ID 8811081604

FRACTION OSD

TEST CODE ALKAL

NAME Component alkalinities

Date & Time Collected 11/08/88

Category

VERIFIED LM

ANALYST TAM
INSTRMT 636

ANALYZED 11/21/88 1 UNITS mg/L as CaCO3

ANALYTE RESULT DET LIMIT

Total Alkalinity 265 1

Hydroxide ND 1

Carbonate ND 1

Bicarbonate 265 1

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Received: 11/10/88

Results By Test

SAMPLE	Test:BR IC	Test:CA E	Test:CL IC	Test:F IC	Test:K E
Sample Id	ug/ml	ug/ml	mg/L	mg/L	ug/ml
✓ 6DL-49	2*	680	790	3.6	<3
8811081420					
✓ 6DL-48	3*	680	1300	4.7	5.4*
8811081452					
✓ 6DL-50	<1	280	110	2.3	<3
8811081520					
✓ 6DL-7	<1	460	200	2.3	<3
8811081604					
✓ 6DL-8	<1	520	51	2.6	3.3*
8811081621					

SAMPLE	Test:NG E	Test:NA E	Test:NO2NO3	Test:S04 IC
Sample Id	ug/ml	ug/ml	mg/L as N	mg/L as S04
01	50	750	5.1	1800
8811081420				
02	70	960	8.0	1900
8811081452				
03	23	400	1.8	1300
8811081520				
05	42	230	6.0	950
8811081604				
06	39	280	1.9	1400
8811081621				

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Received: 11/10/88

RAS - Austin

REPORT

Work Order # 88-11-037

Results by Sample

SAMPLE ID 8811081604

FRACTION 050

TEST CODE QP04

NAME Orthophosphate

Date & Time Collected 11/08/88

Category

VERIFIED LM

ANALYST HJS
INSTRMT 31

ANALYZED 11/11/88

UNITS mg/L as P

ANALYTE RESULT DET LIMIT

Orthophosphate ND 0.020

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8811081604

FRACTION 050

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected 11/08/88

Category

VERIFIED LM

ANALYST TAM
INSTRMT

ANALYZED 11/11/88

UNITS mg/L

ANALYTE RESULT DET LIMIT

Filterable Residue (TDS) 2400 4

NOTES AND DEFINITIONS FOR THIS REPORT.

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

MONITOR WELL GBR-52

<u>SAMPLER</u>	<u>GIANT</u>	<u>GIANT</u>	<u>GIANT*</u>	<u>GIANT</u>
<u>DATE</u>	<u>11/8/88</u>	<u>6/12/89</u>	<u>6/12/89</u>	<u>9/7/89</u>
<u>PARAMETER</u>				
DETECTION LIMIT	<1.0	(BELOW)	(BELOW)	<1.0
BENZENE	0.8	7.6	5.4	ND
BROMODICHLOROMETHANE	ND	ND(1.0)	ND(1.0)	ND
BROMOFORM	ND	ND(1.0)	ND(1.0)	ND
BROMOMETHANE	ND	ND(1.0)	ND(1.0)	ND
CARBON TETRACHLORIDE	ND	ND(1.0)	ND(1.0)	ND
CHLOROBENZENE	ND	ND(<1.0)	ND(<1.0)	ND
CHLOROETHANE	ND	ND(1.0)	ND(1.0)	ND
CHLOROFORM	0.7	ND(1.0)	ND(1.0)	ND
CHLOROMETHANE	ND	ND(1.0)	ND(1.0)	ND
DIBROMOCHLOROMETHANE	ND	ND(1.0)	ND(1.0)	ND
1,2-DICHLOROBENZENE	ND	ND(<1.0)	ND(<1.0)	ND
1,3-DICHLOROBENZENE	ND	ND(<1.0)	ND(<1.0)	ND
1,4-DICHLOROBENZENE	ND	ND(<1.0)	ND(<1.0)	ND
DICHLORODIFLUOROMETHANE	ND	ND(1.0)	ND(1.0)	ND
1,1-DICHLOROETHANE	ND	ND(1.0)	ND(1.0)	ND
1,2-DICHLOROETHANE	ND	ND(1.0)	ND(1.0)	ND
1,1-DICHLOROETHENE	ND	ND(1.0)	ND(1.0)	ND
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	ND	ND(1.0)	ND(1.0)	NA
TOTAL 1,2-DICHLOROETHENE	NA	NA	NA	NA
1,2-DICHLOROPROPANE	ND	ND(1.0)	ND(1.0)	ND
ETHYLBENZENE	ND	ND(<1.0)	ND(<1.0)	ND
METHYLENE CHLORIDE	ND	ND(1.0)	ND(1.0)	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND(1.0)	ND(1.0)	ND
TETRACHLOROETHENE	ND	1.3	1.3	ND
TOLUENE	ND	ND(<1.0)	ND(<1.0)	ND
1,1,1-TRICHLOROETHANE	ND	ND(1.0)	ND(1.0)	ND
1,1,2-TRICHLOROETHANE	ND	ND(1.0)	ND(1.0)	ND
TRICHLOROETHENE	ND	ND(1.0)	ND(1.0)	ND
TRICHLOROFLUOROMETHANE	ND	ND(1.0)	ND(1.0)	1.1
VINYL CHLORIDE	ND	ND(1.0)	ND(1.0)	ND
TOTAL XYLENES	ND	ND(<1.0)	ND(<1.0)	ND

TR - TRACE

ND - NOT DETECTED

NA - NOT ANALYZED

* - DUPLICATE ANALYSIS

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Received: 09/08/87

RAS Sacramento

REPORT

Work Order # S9-09-350

Results by Sample

SAMPLE ID 8909071601 H2O

FRACTION Q3C

TEST CODE 602B

NAME Purgeable Aromatics - H2O

Date & Time Collected 09/07/87

Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE AROMATICS (1)

ANALYST INSTRMT	MG 4	INJECTD 09/18/87	FILE # E4091B15 FACTOR	1 UNITS	VERIFIED JD	DET LIMIT	FACTOR
71-43-2			Benzene	ND		0.10	1
102-92-3			Toluene	ND		0.20	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 106% recovery

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

Case 2
Received: 09/03/89

Lab Submittals
Results by Sample

REPORT

Work Order # 89-09-030

SAMPLE ID 8909071601 H2O **66X-5-2** TEST CODE 501 NAME Purgeable Halocarbons H2O
Data & Time Collected 09/07/89 Category

ORGANICS ANALYSIS DATA SHEET - PURGEABLE HALOCARBONS (1)

ANALYST INSTRMT MS FILE # D4051812 VERIFIED JD
1 FACTOR 1 UNITS ug/L

CAS#	COMPOUND	RESULT	DET LIMIT	FACTOR
74-87-3	Chloroethane	ND	0.50	1
74-83-9	1,2-Dichloroethane	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
75-68-4	1,1,1-Trichloroethane	ND	0.10	1
75-35-4	1,1-Dichloroethane	ND	0.10	1
75-34-3	1,1-Dichloroethane	ND	0.10	1
940-59-0	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	ND	0.20	1
56-23-5	Carbon Tetrachloride	ND	0.20	1
75-27-4	Bromodichloromethane	ND	0.10	1
78-57-3	1,2-Dichloropropane	ND	0.10	1
10051-01-5	cis-1,3-Dichloropropane	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
110-75-9	2-Chloroethylvinyl Ether	ND	2.0	1
75-25-2	Bromoform	ND	3.0	1
79-34-5	1,1,2,2-Tetrachloroethane (4)	ND	0.20	1
127-19-4	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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Received: 09/08/87

RAS Sacramento

REPORT
Results by Sample

Work Order # 59-09-250
Continued From Above

SAMPLE ID 8909071601 H20

FRACTION 03A TEST CODE 601
Date & Time Collected 09/07/87

NAME Purceable Halocarbons H20

Category

SUBSTITUTES

540-36-3	1-4-Difluorobenzene	NA	% Recovery
460-00-4	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.



Inter-Mountain
Laboratories, Inc.

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

Client: GCL #8906121700
Site: GBR-52
IML #: F1563

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
BENZENE	7.6 (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.

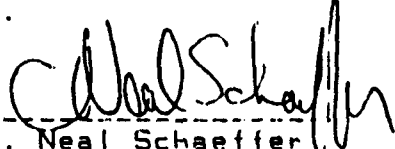
C. Neal Schaeffer
Senior Organic Chemist

Client: GCL #8906121700
Site: GBR-52
IML #: F1563

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	ND (1.0)	ug/l
1,1,1-TRICHLOROETHANE	ND (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	ND (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	1.3 (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).
Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist



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

Quality control data, duplicate analysis.

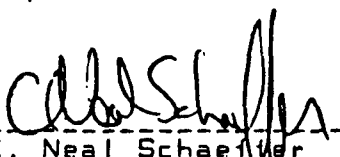
Client: GCL #8906121700
Site: GBR-52
IML #: F1563

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
BENZENE	5.4 (0.2)	ug/l
TOLUENE	ND (0.2)	ug/l
ETHYLBENZENE	ND (0.2)	ug/l
CHLOROBENZENE	ND (0.2)	ug/l
m,p-XYLENE	ND (0.2)	ug/l
o-XYLENE	ND (0.2)	ug/l
1,4-DICHLOROBENZENE	ND (0.2)	ug/l
1,3-DICHLOROBENZENE	ND (0.2)	ug/l
1,2-DICHLOROBENZENE	ND (0.2)	ug/l

Method: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
602 Purgeable Aromatics, 40 CFR, Part 136

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

Quality control data, duplicate analysis.

Client: GCL #8906121700
Site: GBR-52
IML #: F1563

Date of report: 06/23/89
Date sampled: 06/12/89
Date received: 06/13/89

Parameter	Concentration	Units
CHLOROMETHANE	ND (1.0)	ug/l
BROMOMETHANE	ND (1.0)	ug/l
DICHLORODIFLUOROMETHANE	ND (1.0)	ug/l
VINYL CHLORIDE	ND (1.0)	ug/l
CHLOROETHANE	ND (1.0)	ug/l
METHYLENE CHLORIDE	ND (1.0)	ug/l
TRICHLOROFLUOROMETHANE	ND (1.0)	ug/l
1,1-DICHLOROETHENE	ND (1.0)	ug/l
1,1-DICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,2-DICHLOROETHENE	ND (1.0)	ug/l
CHLOROFORM	ND (1.0)	ug/l
1,2-DICHLOROETHANE	ND (1.0)	ug/l
1,1,1-TRICHLOROETHANE	ND (1.0)	ug/l
CARBON TETRACHLORIDE	ND (1.0)	ug/l
BROMODICHLOROMETHANE	ND (1.0)	ug/l
1,2-DICHLOROPROPANE	ND (1.0)	ug/l
CIS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
TRICHLOROETHENE	ND (1.0)	ug/l
DIBROMOCHLOROMETHANE	ND (1.0)	ug/l
1,1,2-TRICHLOROETHANE	ND (1.0)	ug/l
TRANS-1,3-DICHLOROPROPENE	ND (1.0)	ug/l
2-CHLOROETHYL VINYL ETHER	ND (1.0)	ug/l
BROMOFORM	ND (1.0)	ug/l
1,1,2,2-TETRACHLOROETHANE	ND (1.0)	ug/l
TETRACHLOROETHENE	1.3 (1.0)	ug/l
CHLOROBENZENE	ND (1.0)	ug/l
1,3-DICHLOROBENZENE	ND (1.0)	ug/l
1,2-DICHLOROBENZENE	ND (1.0)	ug/l
1,4-DICHLOROBENZENE	ND (1.0)	ug/l

Methods: 8020 Aromatic Volatile Organics, SW-846, USEPA (1982)
601 Purgeable Halocarbons, 40 CFR Part 136, USEPA (1984).

Note: Method Detection Limit (MDL) is given in parenthesis.
ND means analyte was not detected.


C. Neal Schaeffer
Senior Organic Chemist

Received: 11/10/88

RAS - Austin

REPORT

Work Order # 88-11-059

Results by Sample

SAMPLE ID 8811081621

Project: V&E

TEST CODE EPA602

NAME EPA method 602

Date: Vials collected 11/08/88

Category

ANALYST	CLL	INJECTED	DATE	COMPOUND	RESULT	DET LIMIT	UNITS	VERIFIED	CL
INSTRMT	0	11/11/88					ug/L		
		CAS#							
		71-43-2		Benzene	0.82	0.20			
		109-89-3		Chloroform	ND	0.20			
		100-41-4		Ethylbenzene	ND	0.30			
		108-90-7		o-Dichlorobenzene	ND	0.30			
		106-46-7		1,4-Dichlorobenzene	ND	0.30			
		541-73-1		1,3-Dichlorobenzene	ND	0.40			
		95-50-1		1,2-Dichlorobenzene	ND	0.40			

SUBSTITUTES

98-08-8 a,a,a-Trifluorobenzene 97% recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NOT performed unless otherwise noted.

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Received: 11/10/88

RAS - Austin

Results by Sample

REPORT

Work Order # 88-11-059
Continued From Above

SAMPLE ID 8811081621

FRACTION Q&Q

TEST CODE TDS

NAME Total dissolved solids

Date & Time Collected 11/08/88

Category

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

SAMPLE ID 8811081621

FRACTION Q&Q

TEST CODE XYLENE

NAME Xylenes, EPA 602

Date & Time Collected 11/08/88

Category

VERIFIED CL

ANALYST CL
INSTRMT D

INJECTD 11/10/88

FILE #

UNITS ug/L

CAS #	COMPOUND	RESULT	DET LIMIT
105-42-3	p-Xylene-A	ND	0.20
109-38-3	m-Xylene	ND	0.20
95-47-6	o-Xylene	ND	0.10

SURROGATES

93-08-8 a,a,a-Trifluorotoluene 97% recovery

NOTES AND DEFINITIONS FOR THIS REPORT

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NDI performed

unless otherwise noted.

Q = daily EPA standard recovery duration

Received: 11/10/88

RAS - Austin

REPORT

Work Order # 88-11-059

Results by Sample

SAMPLE ID 8811081621

FRACTION 05A

TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 11/08/88

Category

ANALYST BM
INSTRMT B

FILE # VERIFIED CL

INJECTD 11/10/88

UNITS ug/L

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	Chloromethane	ND	0.30
74-83-9	Bromomethane	ND	1.2
75-01-4	Vinyl chloride	ND	0.20
75-00-3	Chloroethane	ND	0.50
75-09-2	Methylene chloride	ND	0.30
75-69-4	Trichlorofluoromethane	ND	0.10
75-35-4	1,1-Dichloroethene	ND	0.10
75-34-3	1,1-Dichloroethane	ND	0.090
156-60-5	trans-1,2-Dichloroethene	ND	0.20
67-66-3	Chloroform	0.7	0.050
107-06-2	1,2-Dichloroethane	ND	0.030
71-55-0	1,1,1-Trichloroethane	ND	0.090
56-23-5	Carbon tetrachloride	ND	0.10
75-27-4	Bromodichloromethane	ND	0.10

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Received: 11/10/88

RAS - Austin

REPORT

Results by Sample

 Work Order # 88-11-059
 Continued From Above

SAMPLE ID 8811081621

FRACTION 06A

TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 11/08/88

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.10
10061-02-6	trans-1,3-Dichloropropene	ND	0.30
79-01-6	Trichloroethene	ND	0.20
124-48-1	Dibromochloromethane-A	ND	0.20
79-00-5	1,1,2-Trichloroethane-A	ND	0.070
10061-01-5	cis-1,3-Dichloropropene-A	ND	N/A
110-75-8	2-Chloroethyl vinyl ether	ND	0.20
75-25-2	Bromoform	ND	0.30
79-34-5	1,1,2,2-Tetrachloroethane-B	ND	0.12
127-18-4	Tetrachloroethene-B	ND	0.030
108-90-7	Chlorobenzene	ND	0.30
541-73-1	1,3-Dichlorobenzene	ND	0.30
95-50-1	1,2-Dichlorobenzene	ND	0.30
106-46-7	1,4-Dichlorobenzene	ND	0.40
SURROGATES			
74-97-5	Bromochloromethane	99 %	Recovery
460-00-4	1-Bromo-4-fluorobenzene	99 %	Recovery

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Received: 11/10/88

RAS - Austin

REPORT

Results by Sample

Work Order # 88-11-059
Continued From Above

SAMPLE ID 8811081621

FRACTION O&A TEST CODE EPA601

NAME EPA method 601

Date & Time Collected 11/08/88

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

* = less than 5 times the detection limit

N/A = not available

Second column confirmation NOT performed unless otherwise noted.

A-Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

Quantitated as dibromochloromethane unless otherwise noted.

B-1,1,2,2-tetrachloroethane and tetrachloroethene co-elute. Quantitated as tetrachloroethene unless otherwise noted



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Received: 11/10/88

RAS - Austin

Results by Sample

Work Order # 88-11-059
Continued From Above

REPORT

SAMPLE ID 8811081621

FRACTION 063 TEST CODE EPA602

NAME EPA method 602

Date & Time Collected 11/08/88

Category

A-Chlorobenzene and p-xylene co-elute
Quantitated as chlorobenzene unless
otherwise noted.

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Received: 11/10/88

RAS - Austin

REPORT

Results by Sample

Work Order # 88-11-059
Continued From Above

SAMPLE ID 8811021521

FRACTION 000 TEST CODE XYLHNE

NAME Xylenes, EPA 602

Date & Time Collected 11/09/88

Category

95% confidence interval.

Chlorobenzene and p-xylene co-elute.

Quantitated as chlorobenzene unless

otherwise noted.

CLIENT: Geoscience Consultants, Ltd DATE REPORTED: 09/21/89
SAMPLE: 8909071601
SITE: GBR-52 DATE RECEIVED: 09/07/89
LAB NO: F3132 DATE COLLECTED: 09/07/89

Lab pH.....	7.66
Lab Conductivity, umhos/cm.....	3082
Lab resistivity, ohm-m.....	3.2446
Total Dissolved Solids (100°), mg/l.....	2572
Total Dissolved Solids (calc), mg/l.....	2515
Total Alkalinity as CaCO ₃ , mg/l.....	207.29
Total Acidity as CaCO ₃ , mg/l.....	0.00
Total Hardness as CaCO ₃ , mg/l.....	1284.19
Sodium Absorption Ratio.....	3.29
Nitrate, mg/l.....	3.91

	mg/l	meq/l
Bicarbonate as HCO ₃	252.89	4.15
Carbonate as CO ₃	0.00	0.00
Chloride.....	39.65	1.12
Sulfate.....	1573.58	32.78
Calcium.....	487.87	24.34
Magnesium.....	16.28	1.34
Potassium.....	1.74	0.04
Sodium.....	271.40	11.81
Major Cations.....		37.53
Major Anions.....		38.05
Cation/Anion Difference.....		0.68 %

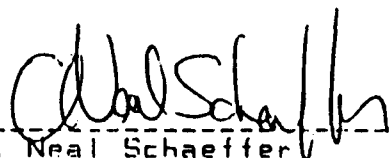
C. Neal Schaeffer
C. Neal Schaeffer
Senior Chemist

Client: GCL #8906121700
Site: GBR-52
IML #: F1563

Date of report: 06/23/89
Date sampled: 06/17/89
Date received: 06/13/89

Total dissolved solids (100)..... 2858.00 mg/l
Total dissolved solids (calculated). 2633.63 mg/l
Total alkalinity (as CaCO₃)..... 183.15 mg/l
Total hardness (as CaCO₃)..... 1393.56 mg/l
Lab pH..... 7.24
Lab conductivity..... 3200 umhos/cm @ 25C
Lab resistivity..... 3.1250 ohm-m

	mg/l	meq/l
Acidity (as CaCO ₃).....	<1.0	<0.01
Bicarbonate (as HCO ₃).....	223.44	3.66
Carbonate (as CO ₃).....	0.00	0.00
Chloride.....	113.40	3.20
Sulfate.....	1662.05	34.63
Calcium.....	233.64	11.66
Magnesium.....	177.14	16.21
Potassium.....	1.60	0.04
Sodium.....	317.20	13.80
Major cations.....		41.71
Major anions.....		41.47
Anion/cation % difference.....		0.27 %


C. Neal Schaeffer
Senior Chemist

Received: 11/10/88

RAS - Austin

REPORT

Work Order # 88-11-059

Results By Test

SAMPLE	Test: BR IC	Test: CA E	Test: CL IC	Test: F IC	Test: K E
Sample Id	mg/L	ug/ml	mg/L	mg/L	ug/ml
✓ 6DL-49	01	680	790	3.6	C3
8811081420	2*				
✓ 6DL-48	02	680	1300	4.7	5.4*
8811081452	3*				
✓ 6DL-50	03	280	110	2.3	C3
8811081520	<1				
✓ 6DL-7	05	460	200	2.3	C3
8811081604	<1				
✓ 6DL-8	06	520	51	2.6	3.3*
8811081621	<1				

SAMPLE	Test: MG E	Test: NA E	Test: NO2NO3	Test: S04 IC
Sample Id	ug/ml	ug/ml	mg/L as N	mg/L as S04
01	50	750	5.1	1800
8811081420				
02	70	960	8.0	1900
8811081452				
03	23	400	1.8	1300
8811081520				
05	42	230	6.0	950
8811081604				
06	39	280	1.9	1400
8811081621				

Page 48
Received: 11/10/88
RAS - ACTION
Results by Sample
REPORT
Work Order # 88-11-059

SAMPLE ID 8811081621
FRACTION 020 TEST CODE UPD4 NAME Orthophosphate
Date & Time Collected 11/08/88 Category _____

VERIFIED _____ LM

ANALYST _____ HVS
INSTRMT _____ 21
ANALYZED 11/11/88 UNITS _____ mg/L as P

ANALYTE RESULT DET LIMIT

Orthophosphate _____ ND _____ 0.020

NOTES AND DEFINITIONS FOR THIS REPORT.

- DET LIMIT = DETECTION LIMIT
- ND = not detected at detection limit
- NA = not analyzed
- * = less than 5 times the detection limit
- N/A = not available

SAMPLE ID 8811081621
FRACTION 020 TEST CODE IDS NAME Total dissolved solids
Date & Time Collected 11/08/88 Category _____

VERIFIED _____ LM

ANALYST _____ TAM
INSTRMT _____
ANALYZED 11/15/88 UNITS _____ mg/L

ANALYTE RESULT DET LIMIT

Filterable Residue (TDS) _____ 2000 _____ 6

NOTES AND DEFINITIONS FOR THIS REPORT.

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

MONITOR WELL - STEEL WELL

<u>SAMPLER</u>	<u>GIANT</u>	<u>GIANT</u>
<u>DATE</u>	<u>5/9/86</u>	<u>10/17/86</u>
<u>PARAMETER</u>		
DETECTION LIMIT	1.0	5.0
BENZENE	ND	144.0
BROMODICHLOROMETHANE	NA	ND
BROMOFORM	NA	ND
BROMOMETHANE	NA	ND
CARBON TETRACHLORIDE	NA	ND
CHLOROBENZENE	NA	NA
CHLOROETHANE	NA	ND
CHLOROFORM	NA	ND
CHLOROMETHANE	NA	ND
DIBROMOCHLOROMETHANE	NA	ND
1,2-DICHLOROBENZENE	NA	NA
1,3-DICHLOROBENZENE	NA	NA
1,4-DICHLOROBENZENE	NA	NA
DICHLORODIFLUOROMETHANE	NA	NA
1,1-DICHLOROETHANE	NA	ND
1,2-DICHLOROETHANE	NA	31.0
1,1-DICHLOROETHENE	NA	ND
CIS-1,2-DICHLOROETHENE	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	ND
1,2-DICHLOROPROPANE	NA	ND
ETHYLBENZENE	ND	179.0
METHYLENE CHLORIDE	NA	ND
1,1,2,2-TETRACHLOROETHANE	NA	ND
TETRACHLOROETHENE	NA	ND
TOLUENE	ND	148.0
1,1,1-TRICHLOROETHANE	NA	ND
1,1,2-TRICHLOROETHANE	NA	ND
TRICHLOROETHENE	NA	ND
TRICHLOROFLUOROMETHANE	NA	ND
VINYL CHLORIDE	NA	ND
TOTAL XYLENES	ND	356.0

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



TO: Geoscience Consultants Ltd.
 Attn: Jan Martin
 500 Copper NW Suite 325
 Albuquerque, NM 87158

DATE: 17 December 1986
 1787

SAMPLE ID: 8610171330 Steelwell

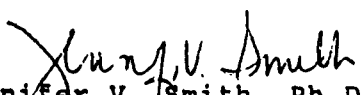
ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMIT
Benzene	0.144 mg/l	0.001 mg/l
Toluene	0.148 mg/l	0.001 mg/l
Ethylbenzene	0.179 mg/l	0.001 mg/l
Xylenes	0.356 mg/l	0.001 mg/l
Acrolein	<25 ug/l	25 ug/l
Acrylonitrile	<25 ug/l	25 ug/l
Bromoform	<5.0 ug/l	5.0 ug/l
Carbon Tetrachloride	<5.0 ug/l	5.0 ug/l
Chlorodibromomethane	<5.0 ug/l	5.0 ug/l
Chloroethane	<5.0 ug/l	5.0 ug/l
2-Chloroethylvinyl Ether	<5.0 ug/l	5.0 ug/l
Chloroform	<5.0 ug/l	5.0 ug/l
Dichlorobromomethane	<5.0 ug/l	5.0 ug/l
1,1-Dichloroethane	<5.0 ug/l	5.0 ug/l
1,2-Dichloroethane	31 ug/l	5.0 ug/l
1,1-Dichloroethene	<5.0 ug/l	5.0 ug/l
1,2-Dichloropropane	<5.0 ug/l	5.0 ug/l
1,3-Dichloropropylene	<5.0 ug/l	5.0 ug/l
Methyl Bromide	<5.0 ug/l	5.0 ug/l
Methyl Chloride	<5.0 ug/l	5.0 ug/l
Methylene Chloride	<5.0 ug/l	5.0 ug/l
1,1,2,2-Tetrachloroethane	<5.0 ug/l	5.0 ug/l
Tetrachloroethene	<5.0 ug/l	5.0 ug/l
Trans-1,2-Dichloroethene	<5.0 ug/l	5.0 ug/l
1,1,1-Trichloroethane	<5.0 ug/l	5.0 ug/l
1,1,2-Trichloroethane	<5.0 ug/l	5.0 ug/l
Trichloroethene	<5.0 ug/l	5.0 ug/l
Vinyl Chloride	<5.0 ug/l	5.0 ug/l
Napthalene	<0.001 mg/l	0.001 mg/l
Acenapthalene	<0.001 mg/l	0.001 mg/l
Acenapthene	0.006 mg/l	0.001 mg/l
Fluroene	<0.001 mg/l	0.001 mg/l
Anthracene	0.003 mg/l	0.001 mg/l
Phenanthracene	<0.001 mg/l	0.001 mg/l
Fluoranthene	<0.001 mg/l	0.001 mg/l
Pyrene	<0.001 mg/l	0.001 mg/l
Benzo(a)anthracene	<0.001 mg/l	0.001 mg/l
Chrysene	<0.001 mg/l	0.001 mg/l
Benzo(b)fluoranthene	<0.001 mg/l	0.001 mg/l

Benzo(k)fluoranthene	<0.001 mg/l	0.001 mg/l
Benzo(a)pyrene	<0.001 mg/l	0.001 mg/l
Dibenzo(a,h)anthracene	<0.001 mg/l	0.001 mg/l
Indeno(1,2,3-cd)pyrene	<0.001 mg/l	0.001 mg/l
Benzo(g,h,i)perylene	<0.001 mg/l	0.001 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA, SW 846, EMSL-Cincinnati, 1982.

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,


Jennifer V. Smith, Ph.D.
laboratory Director

8605091700
8605091700

Assaigai Analytical Laboratories, Inc.
1000 Jefferson N.E.
Albuquerque, NM 87109

TO: Geoscience Consultants Ltd.
Attn: Randy Hicks
500 Copper N.W. Suite 325
Albuquerque, NM 87102

DATE: 19 May 1986
0752 revised

ANALYTE

SAMPLE ID/ ANALYTICAL RESULTS

ANALYTE	8605091040		8605091140		8605091210		8605091250		8605091515	
	A & B GBR 18		Steel Well		A & B GBR 25		A & B GBR 22		A & B GBR 26	
Benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Toluene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Xylenes	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
Ethyl benzene	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l	<1.0 ug/l
EC	3840 umhos/cm				4980 umhos/cm					
TDS					5096 mg/l					
NOMINAL DETECTION LIMITS										
8605091550 8605091625 8605091700										
A & B GBR 13 GBR 24 GBR 21										
Benzene	129 ug/l	1154 ug/l	<1.0 ug/l	<1.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l
Toluene	32 ug/l	803 ug/l	22 ug/l	22 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l
Xylenes	105 ug/l	1020 ug/l	234 ug/l	234 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l
Ethyl benzene	3 ug/l	147 ug/l	2 ug/l	2 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l	2.0 ug/l
EC	6300 umhos/cm	2690 umhos/cm			1 umhos/cm	1 umhos/cm	1 umhos/cm	1 umhos/cm	1 umhos/cm	1 umhos/cm
TDS					1 mg/l	1 mg/l	1 mg/l	1 mg/l	1 mg/l	1 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", USEPA, SW 846 EMSL-Cincinnati, 1982

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

James V. Smith
James V. Smith, Ph.D.
Laboratory Director