

GW - 32

REPORTS

YEAR(S):

1996- GW REPORT



May 13, 1996

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

Mr. Benito J. Garcia
Bureau Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 Galisteo
P. O. Box 26110
Santa Fe, New Mexico 87502

RECEIVED
MAY 24 1996
Environmental Bureau
Oil Conservation Division

Dear Mr. Garcia:

SUBJECT: SEMI-ANNUAL GROUNDWATER REPORT - 1996
GIANT REFINING COMPANY - CINIZA
PERMIT NO. NMD000333211-2

Pursuant to the requirements of the captioned permit, the Semi-Annual Groundwater Report for sampling performed in 1996 is enclosed.

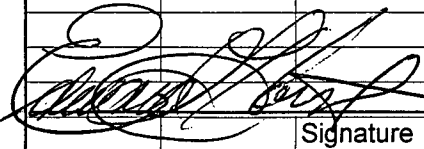
If you require additional information or have any questions on this matter, please contact me at (505) 722-0227.

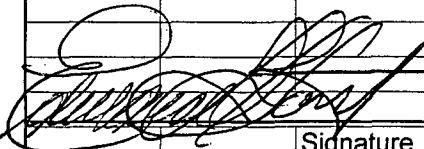
Sincerely,

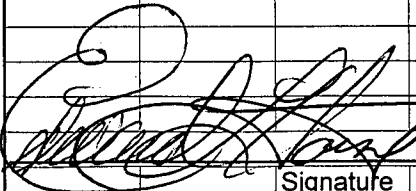
Edward L. Horst
Environmental Manager
Giant Refining Company
CINIZA Refinery

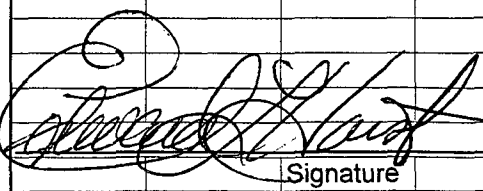
cc: w/enclosures
Pat Sanchez, Petroleum Engineer, NMOCD
David Pavlich, Health, Safety and Environmental Manager, Giant Refining Co.
Kim Bullerdick, Corporate Counsel, Giant Industries Arizona, Inc.

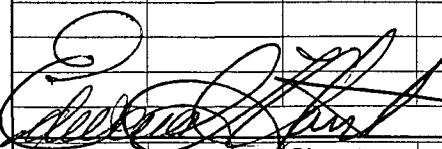
w/o enclosures
Barbara Hoditscheck, Program Manager-Permitting, NMED
Ron Kern, Program Manager-Technical, NMED
Coby Muckelroy, Program Manager-Enforcement, NMED

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters			
Prepared by:	Edward L. Horst		Telephone: (505)722-0227
Facility Name:	GIANT CINIZA		EPA ID #: NMD000333211-2
Date:	SPRING, 96		Parameter pH
Well Number:	MW-1		Up or Down Gradient: Down
Please list the values calculated for the background parameters on the Background Indicator parameter Calculation Sheet:			
X(b)=	8.627312	S(b) ² =	0.564782
W(b)=	0.015688	n(b)=	36
Please list the current values for this monitoring well:			
	Value	(Value-X(m)) ²	
1	9.52	0.034225	
2	9.33	2.5E-05	
3	9.23	0.011025	
4	9.26	0.005625	
Total 1	37.34	Total 2	0.012725
Mean Value X(m)	9.335	t(m)=	5.814
Variance S(m) ²	0.013283	W(m)=	0.003321
t(*)=	4.157722	If t(*) absolute is less than t(c) there has not been an increase in the value.	
t(c)=	2.700956		
 Signature			

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters			
Prepared by:	Edward L. Horst		Telephone: (505)722-0227
Facility Name:	GIANT CINIZA		EPA ID #: NMD000333211-2
Date:	spring, 96		Parameter pH
Well Number:	MW-2		Up or Down Gradient: Down
Please list the values calculated for the background parameters on the Background Indicator parameter Calculation Sheet:			
X(b)=	8.627312	S(b)2=	0.564782
W(b)=	0.015688	n(b)=	36
Please list the current values for this monitoring well:			
	Value	(Value-X(m))2	
1	9.4	0.007225	
2	9.32	2.5E-05	
3	9.29	0.000625	
4	9.25	0.004225	
Total 1	37.26	Total 2	0.003025
Mean Value X(m)	9.315	t(m)=	5.814
Variance S(m)2	0.003817	W(m)=	0.000954
t(*)=	4.924048	If t(*) absolute is less than t(c) there has not been an increase in the value.	
t(c)=	2.258265		
			
Signature			

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters			
Prepared by:	Edward L. Horst		Telephone: (505)722-0227
Facility Name:	GIANT CINIZA		EPA ID #: NMD000333211-2
Date:	SPRING, 96		Parameter pH
Well Number:	MW-4		Up or Down Gradient: Down
Please list the values calculated for the background parameters on the Background Indicator parameter Calculation Sheet:			
X(b)=	8.627312	S(b)2=	0.564782
W(b)=	0.015688	n(b)=	36
Please list the current values for this monitoring well:			
	Value	(Value-X(m))2	
1	9.12	0.0169	
2	8.99	3.16E-30	
3	8.94	0.0025	
4	8.91	0.0064	
Total 1	35.96	Total 2	0.00645
Mean Value X(m)	8.99	t(m)=	5.814
Variance S(m)2	0.007767	W(m)=	0.001942
t(*)=	2.368202	If t(*) absolute is less than t(c) there has not been an increase in the value.	
t(c)=	2.457434		
 Signature			

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters			
Prepared by:	Edward L. Horst		Telephone: (505)722-0227
Facility Name:	GIANT CINIZA		EPA ID #: NMD000333211-2
Date:	SPRING, 96		Parameter pH
Well Number:	MW-5		Up or Down Gradient: Down
Please list the values calculated for the background parameters on the Background Indicator parameter Calculation Sheet:			
X(b)=	8.627312	S(b)2=	0.564782
W(b)=	0.015688	n(b)=	36
Please list the current values for this monitoring well:			
	Value	(Value-X(m))2	
1	9.65	0.054056	
2	9.42	6.25E-06	
3	9.32	0.009506	
4	9.28	0.018906	
Total 1	37.67	Total 2	0.020619
Mean Value X(m)	9.4175	t(m)=	5.814
Variance S(m)2	0.024321	W(m)=	0.00608
t(*)=	3.950504	If t(*) absolute is less than t(c) there has not been an increase in the value.	
t(c)=	3.09558		
 Signature			

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters			
Prepared by:	Edward L. Horst		Telephone: (505)722-0227
Facility Name:	GIANT CINIZA		EPA ID #: NMD000333211-2
Date:	SPRING, 96		Parameter: SPEC. COND.
Well Number:	MW-1		Up or Down Gradient: Down
Please list the values calculated for the background parameters on the Background Indicator parameter Calculation Sheet:			
X(b)=	2012.829	S(b)2=	291.6405
W(b)=	7.113183	n(b)=	41
Please list the current values for this monitoring well:			
	Value	(Value-X(m))2	
1	2610	18906.25	
2	2460	156.25	
3	2420	2756.25	
4	2400	5256.25	
Total 1	9890	Total 2	6768.75
Mean Value X(m)	2472.5	t(m)=	4.541
Variance S(m)2	8054.167	W(m)=	2013.542
t(*)=	5.119707	If t(*) absolute is less than t(c) there has not been an increase in the value.	
t(c)=	4.530943		
			
Signature			

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters

Prepared by:	Edward L. Horst	Telephone: (505)722-0227
Facility Name:	GIANT CINIZA	EPA ID #: NMD000333211-2
Date:	SPRING, 96	Parameter: SPEC. COND.
Well Number:	MW-2	Up or Down Gradient: Down

Please list the values calculated for the background parameters on the Background Indicator parameter Calculation Sheet:

X(b)=	2012.829	S(b)=	291.6405	t(b)=	1.684
W(b)=	7.113183	n(b)=	41		

Please list the current values for this monitoring well:

	Value	(Value-X(m)) ²
1	1110	85.5625
2	1097	14.0625
3	1102	1.5625
4	1094	45.5625
Total 1	4403	Total 2 36.6875

Mean Value X(m)	1100.75	t(m)=	4.541
Variance S(m) ²	43.70833	W(m)=	10.92708

t(*)=	-127.941	If t(*) absolute is less than t(c) there has not been an increase in the value.
t(c)=	3.4145	

Signature

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters

Prepared by:	Edward L. Horst	Telephone: (505)722-0227
Facility Name:	GIANT CINIZA	EPA ID #: NMD000333211-2
Date:	SPRING, 96	Parameter SPEC. COND.
Well Number:	MW-4	Up or Down Gradient: Down

Please list the values calculated for the background parameters on the Background Indicator parameter Calculation Sheet:

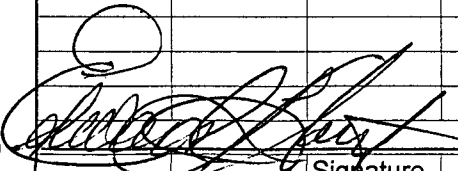
X(b)=	2012.829	S(b) ² =	291.6405	t(b)=	1.684
W(b)=	7.113183	n(b)=	41		

Please list the current values for this monitoring well:

	Value	(Value-X(m)) ²
1	1144	115.5625
2	1125	68.0625
3	1129	18.0625
4	1135	3.0625
Total 1		Total 2
	4533	51.1875

Mean Value X(m)	1133.25	t(m)=	5.814
Variance S(m) ²	39.54167	W(m)=	9.885417

t(*)=	-128.773	If t(*) absolute is less than t(c) there has not been an increase in the value.
t(c)=	4.085773	


 Signature

Calculation Sheet for Semi-Annual Evaluation of Indicator Parameters

Prepared by:	Edward L. Horst	Telephone: (505)722-0227
Facility Name:	GIANT CINIZA	EPA ID #: NMD000333211-2
Date:	SPRING, 96	Parameter: SPEC. COND.
Well Number:	MW-5	Up or Down Gradient: Down

Please list the values calculated for the background parameters on the Background Indicator parameter Calculation Sheet:

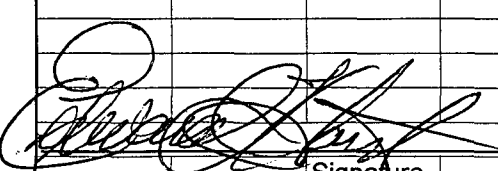
X(b)=	2012.829	S(b)2=	291.6405	t(b)=	1.684
W(b)=	7.113183	n(b)=	41		

Please list the current values for this monitoring well:

	Value	(Value-X(m)) ²
1	1111	10.5625
2	1110	18.0625
3	1118	14.0625
4	1118	14.0625
Total 1		Total 2
	4457	14.1875

Mean Value X(m)	1114.25	t(m)=	5.814
Variance S(m)2	8.208333	W(m)=	2.052083

t(*)=	-229.565	If t(*) absolute is less than t(c) there has not been an increase in the value.
t(c)=	2.608698	


 Signature

TOLERANCE INTERVAL**1996****LEAD****SMW-3**

3-96 MEAN- 0.0224 SD 0.0803

DATE	RESULT	TOL LIMIT	UNITS
35125	0.0025 *	0.183	ppm

Does not exceed the tolerance limit.

SMW-4

3-96 MEAN- 0.002 SD 0.0012

DATE	RESULT	TOL LIMIT	UNITS
3-96	0.0025 *	0.004	ppm

Does not exceed the tolerance limit.

SMW-5

3-96 MEAN- 0.0022 SD 0.0017

DATE	RESULT	TOL LIMIT	UNITS
3-96	0.0025 *	0.006	ppm

Does not exceed the tolerance limit.

SMW-6

3-96 MEAN- NO SAMP SD NO SAMPLE

DATE	RESULT	TOL LIMIT	UNITS
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* 1/2 of Reporting Limit.
ELH/96

TOLERANCE INTERVAL**1996****CHROME****SMW-3**

3-96 MEAN- 0.0436 SD 0.1556

DATE	RESULT	TOL LIMIT	UNITS	
3-96	0.005 *	0.355	ppm	Does not exceed the tolerance limit.

SMW-4

3-96 MEAN- 0.0062 SD 0.0058

DATE	RESULT	TOL LIMIT	UNITS	
3-96	0.005 *	0.018	ppm	Does not exceed the tolerance limit.

SMW-5

3-96 MEAN- 0.0113 SD 0.0223

DATE	RESULT	TOL LIMIT	UNITS	
3-96	0.005	0.056	ppm	Does not exceed the tolerance limit.

SMW-6

3-96 MEAN- NO SAMP SD

DATE	RESULT	TOL LIMIT	UNITS	
3-96	NO SAMPLE WAS TAKEN DURING THIS SAMPLING EVENT DUE TO THE LACK O			

* 1/2 of reporting limit.
ELH/96

TOLERANCE INTERVAL

1996

pH

SMW-3

3-96 MEAN- 7.8446 SD 0.1551

DATE	RESULT	TOL LIMIT	UNITS	
3-96	7.86	8.155	---	Does not exceed the tolerance limit.

SMW-4

3-96 MEAN- 8.335 SD 0.1924

DATE	RESULT	TOL LIMIT	UNITS	
3-96	8.77	8.720	---	Does exceed the tolerance limit 0.57% NOTE: LABORATORY TESTS SHOW RESUL

SMW-5

3-96 MEAN- 8.20 SD 1.696

DATE	RESULT	TOL LIMIT	UNITS	
3-96	8.85	11.596	---	Does not exceed the tolerance limit.

SMW-6

3-96 MEAN- SD
No Sample

DATE	RESULT	TOL LIMIT	UNITS	
3-96	NO SAMPLE WAS TAKEN DURING THIS SAMPLING EVENT DUE TO THE LACK O			

ELH/96

TOLERANCE INTERVAL

1996

EC

SMW-3

3-96	MEAN-	3225.28	SD	313.86
------	-------	---------	----	--------

DATE	RESULT	TOL LIMIT	UNITS	
3-96	2905	3853.000	---	Does not exceed the tolerance limit.

SMW-4

3-96	MEAN-	1301.59	SD	175.13
------	-------	---------	----	--------

DATE	RESULT	TOL LIMIT	UNITS	
3-96	1269.75	1651.850	---	Does not exceed the tolerance limit.

SMW-5

3-96	MEAN-	1135.15	SD	68.09
------	-------	---------	----	-------

DATE	RESULT	TOL LIMIT	UNITS	
3-96	1130.25	1271.330	---	Does not exceed the tolerance limit.

SMW-6

3-96	MEAN-	NO SAMP	SD	
------	-------	---------	----	--

DATE	RESULT	TOL LIMIT	UNITS	
3-96	NO SAMPLE WAS TAKEN DURING THIS SAMPLING EVENT DUE TO THE LACK O			

ELH/96

TOLERANCE INTERVAL**1996****TEMPERATURE****SMW-3**

3-96 MEAN- 55.17 SD 2.48

DATE	RESULT	TOL LIMIT	UNITS	
3-96	54	60.13	degrees	Does not exceed the tolerance limit.

SMW-4

3-96 MEAN- 55.62 SD 2.6

DATE	RESULT	TOL LIMIT	UNITS	
3-96	53.5	60.82	degrees	Does not exceed the tolerance limit.

SMW-5

3-96 MEAN- 54.77 SD 2.8

DATE	RESULT	TOL LIMIT	UNITS	
3-96	53	60.37	degrees	Does not exceed the tolerance limit.

SMW-6

3-96 MEAN- NO SAMP SD

DATE	RESULT	TOL LIMIT	UNITS	
3-96	NO SAMPLE WAS TAKEN DURING THIS SAMPLING EVENT DUE TO THE LACK O			

ELH/96

TOLERANCE INTERVAL

1996

WATER LEVEL

SMW-3

3-96 MEAN- 6852.09 SD 2.16

DATE	RESULT	TOL LIMIT	UNITS	
3-96	6854.56	6856.41	feet	Does not exceed the tolerance limit.

SMW-4

3-96 MEAN- 6849.03 SD 1.27

DATE	RESULT	TOL LIMIT	UNITS	
3-96	6849.98	6851.57	feet	Does not exceed the tolerance limit.

SMW-5

3-96 MEAN- 6847.49 SD 1.02

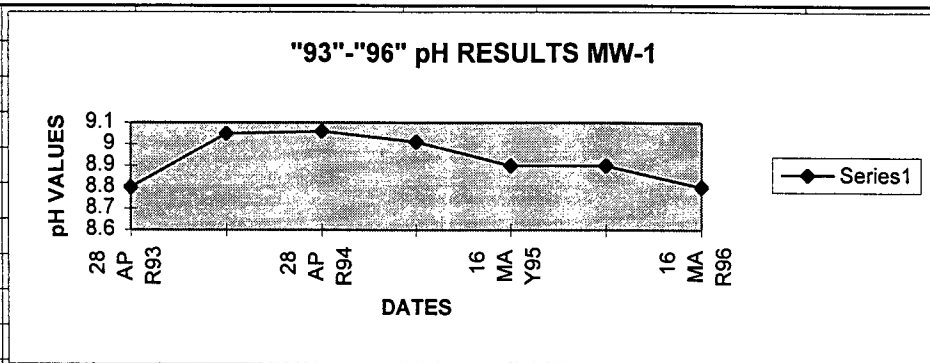
DATE	RESULT	TOL LIMIT	UNITS	
3-96	6847.82	6849.53	feet	Does not exceed the tolerance limit.

SMW-6

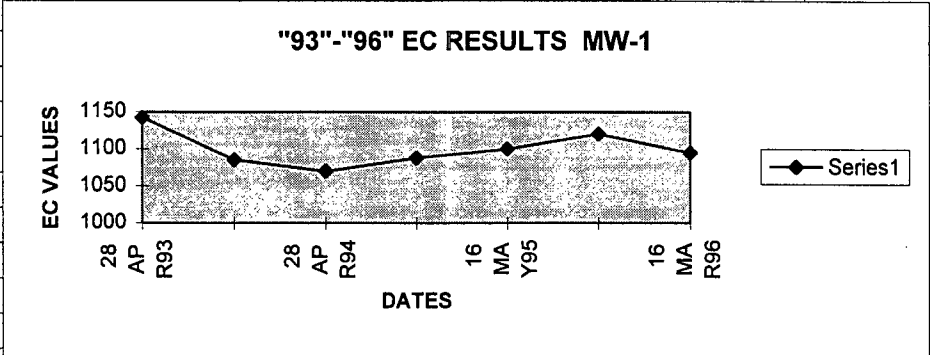
3-96 MEAN- NO SAMP SD

DATE	RESULT	TOL LIMIT	UNITS	
3-96	ELEVATION WAS NOT TAKEN DUE TO THE LACK OF WATER IN THE WELL			

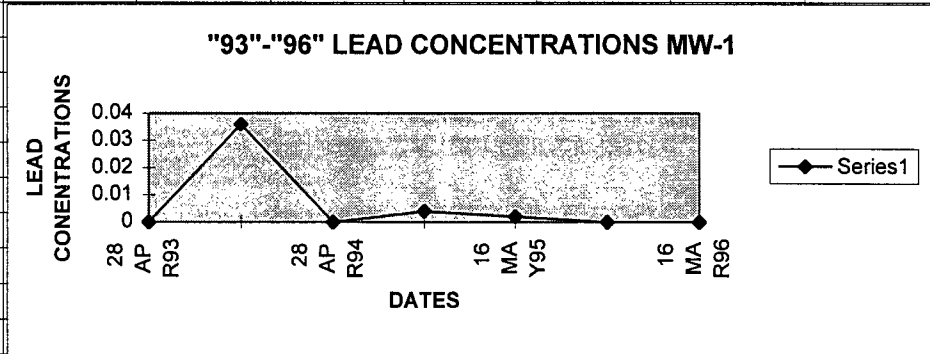
28APR93	8.8
29OCT93	9.05
28APR94	9.06
19OCT94	9.01
16MAY95	8.9
28OCT95	8.9
16MAR96	8.8



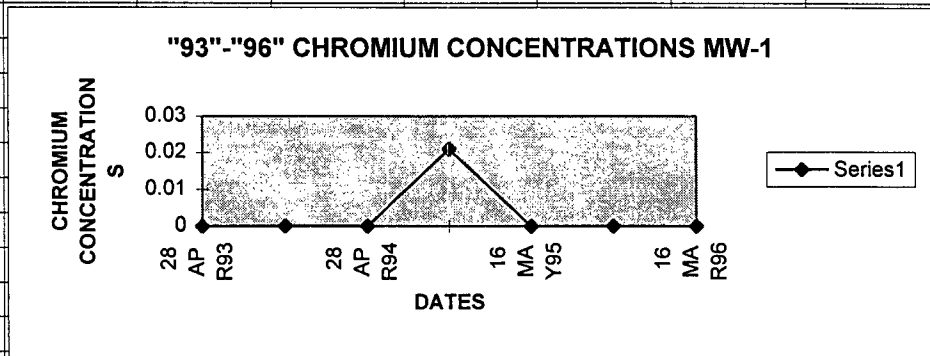
28APR93	1142.5
29OCT93	1085
28APR94	1070
19OCT94	1087.5
16MAY95	1100
28OCT95	1120
16MAR96	1094.75



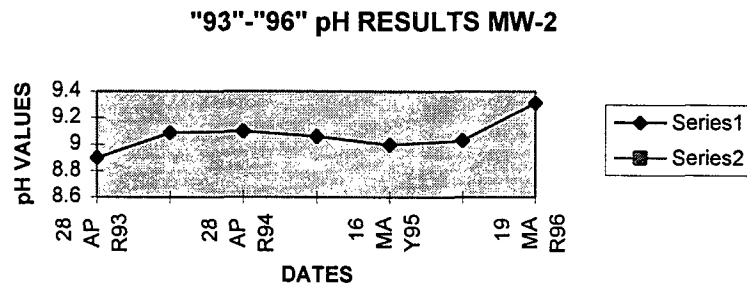
28APR93	0
29OCT93	0.036
28APR94	0
19OCT94	0.004
16MAY95	0.002
28OCT95	0
16MAR96	0



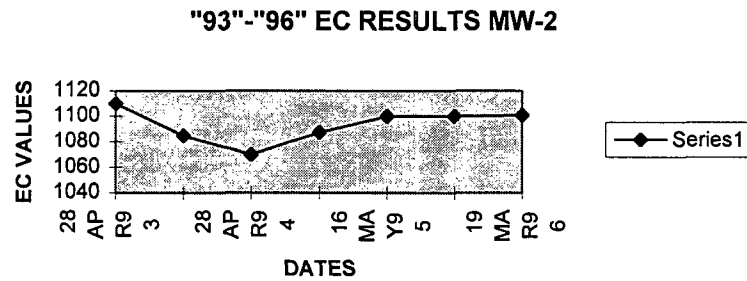
28APR93	0
29OCT93	0
28APR94	0
19OCT94	0.021
16MAY95	0
28OCT95	0
16MAR96	0



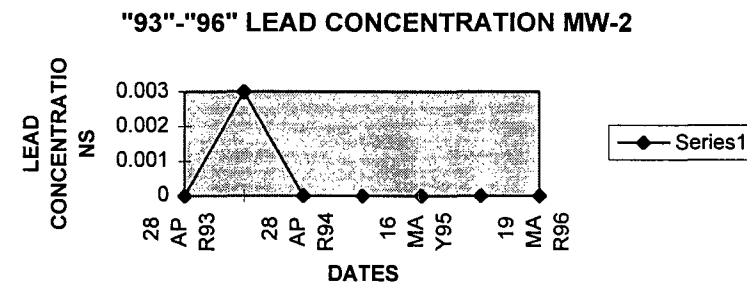
28APR93	8.9
29OCT93	9.09
28APR94	9.1
19OCT94	9.06
16MAY95	9
28OCT95	9.03
19MAR96	9.315



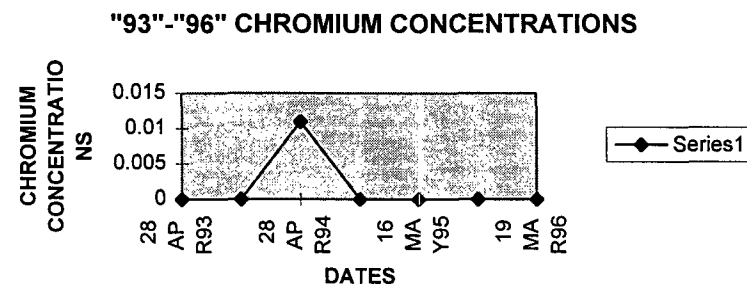
28APR93	1110
29OCT93	1085
28APR94	1070
19OCT94	1087.5
16MAY95	1100
28OCT95	1100
19MAR96	1100.75



28APR93	0
29OCT93	0.003
28APR94	0
19OCT94	0
16MAY95	0
28OCT95	0
19MAR96	0



28APR93	0
29OCT93	0
28APR94	0.011
19OCT94	0
16MAY95	0
28OCT95	0
19MAR96	0



SMW-3

GIANT REFINING - CINIZA

Volatile Organics (8240)

Parameter	30 NOV 93 Result	29 APR 94 Result	18 OCT 94 Result	15 MAY 95 Result	26 OCT 95 Result	15 MAR 96 Result	Units	Reporting Limit
Chloromethane	ND	ND	ND	ND	ND	ND	ug/L	10
Bromomethane	ND	ND	ND	ND	ND	ND	ug/L	10
Vinyl chloride	ND	ND	ND	ND	ND	ND	ug/L	10
Chloroethane	ND	ND	ND	ND	ND	ND	ug/L	10
Methylene chloride	ND	ND	ND	ND	ND	ND	ug/L	5.0
Acetone	ND	ND	ND	ND	ND	ND	ug/L	10
Carbon disulfide	ND	ND	ND	ND	ND	ND	ug/L	5.0
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ug/L	5.0
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ug/L	5.0
1,2-Dichloroethene (cis/trans)	ND	ND	ND	ND	ND	ND	ug/L	5.0
Chloroform	ND	ND	ND	ND	ND	ND	ug/L	5.0
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ug/L	5.0
2-Butanone	---	---	---	---	---	---	ug/L	5.0
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ug/L	10
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ug/L	5.0
Vinyl acetate	ND	ND	ND	ND	ND	ND	ug/L	5.0
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ug/L	10
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ug/L	5.0
Trichloroethene	ND	ND	ND	ND	ND	ND	ug/L	5.0
Chlorodibromomethane	---	---	---	---	---	---	ug/L	5.0
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ug/L	5.0
Benzene	ND	ND	ND	ND	ND	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ug/L	5.0
2-Chloroethyl vinyl ether	ND	ND	ND	ND	ND	ND	ug/L	10
Bromoform	ND	ND	ND	ND	ND	ND	ug/L	5.0
4-Methyl-2-pentanone	ND	ND	ND	ND	ND	ND	ug/L	10
2-Hexanone	ND	ND	ND	ND	ND	ND	ug/L	10
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ug/L	5.0
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ug/L	5.0
Toluene	ND	ND	ND	ND	ND	ND	ug/L	5.0
Chlorobenzene	ND	ND	ND	ND	ND	ND	ug/L	5.0
Ethylbenzene	ND	ND	ND	ND	ND	ND	ug/L	5.0
Styrene	ND	ND	ND	ND	ND	ND	ug/L	5.0
Xylenes (total)	ND	ND	6.0	ND	ND	ND	ug/L	5.0
Acetonitrile	---	---	ND	---	---	---	ug/L	10.0
Acrolein	---	---	ND	ND	ND	ND	ug/L	20.0
Acrylonitrile	---	---	ND	ND	ND	ND	ug/L	10.0

SMW-3

GIANT REFINING - CINIZA

Volatile Organics (8240)

Parameter	30 NOV 93 Result	29 APR 94 Result	18 OCT 94 Result	15 MAY 95 Result	26 OCT 95 Result	15 MAR 96 Result	Units	Reporting Limit
1,2-Dibromoethane	---	---	ND	ND	ND		ug/L	5.0
Dibromomethane	---	---	ND	ND	ND	ND	ug/L	5.0
Dichlorodifluoromethane	---	---	ND	ND	ND	ND	ug/L	5.0
Methyl Iodide	---	---	ND	ND	ND	ND	ug/L	5.0
Trans-1,4-Dichloro-2-Butene	---	---	ND	ND	ND	ND	ug/L	5.0
Trichloromonofluoromethane	---	---	ND	ND	ND	ND	ug/L	5.0
1,2,3-Trichloropropane	---	---	ND	ND	ND	ND	ug/L	5.0
Ethyl Methacrylate	---	---	ND	ND	ND	ND	ug/L	5.0

SMW-3

GIANT REFINING - CINIZA

Dissolved Metals

Parameter	29 APR 93 Result	29 APR 94 Result	15 MAY 95 Result	26 OCT 95 Result	15 MAR 96 Result	Units	Reporting Limit
Calcium	43.5	45	37.7	---	47	mg/L	0.40
Magnesium	15.6	13.9	12.1	---	14	mg/L	0.40
Potassium	ND	ND	ND	---	0.78	mg/L	10.0
Sodium	820	744	564	---	669	mg/L	10.0

SMW-3

GIANT REFINING - CINIZA

Total Metals

Parameter	30 NOV 93 Result	29 APR 94 Result	18 OCT 94 Result	15 MAY 95 Result	26 OCT 95 Result	15 MAR 96 Result	Units	Reporting Limit
Chromium	ND	0.062	.718	0.01	0.08	<0.01	mg/L	0.010
Lead	ND	ND	.043	ND	ND	<0.005	mg/L	0.05

SMW-3

GIANT REFINING - CINIZA

General Inorganics

Parameter	30 NOV 93 Result	29 APR 94 Result	18 OCT 94 Result	15 MAY 95 Result	26 OCT 95 Result	15 MAR 96 Result	Units	Reporting Limit
Alkalinity, Bicarb. as CaCO3 at pH 4.5	---	660	---	590	---	644	mg/L	5.0
Alkalinity, Carb. as CaCO3 at pH 8.3	---	ND	---	3	---		mg/L	5.0
Chloride	---	83	---	69	---	91	mg/L	3.0
pH	7.66	7.81	7.63	7.80	7.77	8.00	units	---
pH	7.68	---	7.68	---	7.74	7.87	units	---
pH	7.71	---	7.7	---	7.73	7.8	units	---
pH	7.72	---	7.79	---	7.74	7.77	units	---
Average pH	7.6925	---	7.7	7.80	7.75	7.86	units	---
Sulfate	---	1000	---	680	---	844	mg/L	5.0
Specific Conductance at 25 deg.C	3220	3160	3360	2700	2890	2830	umhos/cm	1.0
Specific Conductance at 25 deg.C	3250	---	3340	---	2880	2830	umhos/cm	1.0
Specific Conductance at 25 deg.C	3190	---	3500	---	2900	2870	umhos/cm	1.0
Specific Conductance at 25 deg.C	3230	---	3520	---	2890	3090	umhos/cm	1.0
Average Specific Conductance at 25 deg.C	3222.5		3430	2700	2890	2905	umhos/cm	1.0
Total Organic Carbon	2	2	5	5	14.9	3.2	mg/L	0.50
Total Organic Carbon	2	2	5	5	---	---	mg/L	0.50
Total Organic Carbon	---	---	---	---	---	---	mg/L	0.50
Total Organic Carbon	---	---	---	---	---	---	mg/L	0.50
Total Organic Halogen as Cl	30	30	20	80	60		ug/L	30
Total Organic Halogen as Cl	30	30	20	70	---	---	ug/L	30
Total Organic Halogen as Cl	---	---	---	---	---	---	ug/L	30
Total Organic Halogen as Cl	---	---	---	---	---	---	ug/L	30
Total Dissolved Solids	---	2300	---	1900	---	2040	mg/L	10
Water Elevation	6852.43	6855.35	6852.76	6853.16	6853	6854.56	ft	

SMW-4

GIANT REFINING - CINIZA

Volatile Organics (8240)

Parameter	29 APR 94 Result	18 OCT 94 Result	15 MAY 95 Result	26 OCT 95 Result	15 MAR 96 Result	Units	Reporting Limit
Chloromethane	ND	ND	ND	ND	ND	ug/L	10
Bromomethane	ND	ND	ND	ND	ND	ug/L	10
Vinyl chloride	ND	ND	ND	ND	ND	ug/L	10
Chloroethane	ND	ND	ND	ND	ND	ug/L	10
Methylene chloride	ND	ND	ND	3	ND	ug/L	3
Acetone	ND	ND	ND	54	ND	ug/L	10
Carbon disulfide	ND	ND	ND	ND	ND	ug/L	5.0
1,1-Dichloroethene	ND	ND	ND	ND	ND	ug/L	5.0
1,1-Dichloroethane	ND	ND	ND	ND	ND	ug/L	5.0
1,2-Dichloroethene (cis/trans)	ND	ND	ND	ND	ND	ug/L	5.0
Chloroform	ND	ND	ND	ND	ND	ug/L	5.0
1,2-Dichloroethane	ND	ND	ND	ND	ND	ug/L	5.0
2-Butanone	---	---	---	---	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ug/L	10
Carbon tetrachloride	ND	ND	ND	ND	ND	ug/L	5.0
Vinyl acetate	ND	ND	ND	ND	ND	ug/L	5.0
Bromodichloromethane	ND	ND	ND	ND	ND	ug/L	10
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ug/L	5.0
Trichloroethene	ND	ND	ND	ND	ND	ug/L	5.0
Chlorodibromomethane	---	---	---	---	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ug/L	5.0
Benzene	ND	ND	ND	ND	ND	ug/L	5.0
Bromoform	ND	ND	ND	ND	ND	ug/L	5.0
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ug/L	10
2-Hexanone	ND	ND	ND	ND	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ug/L	10
Tetrachloroethene	ND	ND	ND	ND	ND	ug/L	10
Toluene	ND	ND	ND	ND	ND	ug/L	5.0
Chlorobenzene	ND	ND	ND	ND	ND	ug/L	5.0
Ethylbenzene	ND	ND	ND	ND	ND	ug/L	5.0
Styrene	ND	ND	ND	ND	ND	ug/L	5.0
Xylenes (Total)	ND	ND	ND	ND	ND	ug/L	5.0
Acetonitrile	ND	ND	---	---	---	ug/L	10.0
Acrolein	ND	ND	ND	ND	ND	ug/L	20.0
Acrylonitrile	---	ND	ND	ND	ND	ug/L	10.0
1,2-Dibromoethane	---	ND	ND	ND	---	ug/L	5.0

SMW-4

GIANT REFINING - CINIZA

Volatile Organics (8240)

Parameter	29 APR 94 Result	18 OCT 94 Result	15 MAY 95 Result	26 OCT 95 Result	15 MAR 96 Result	Units	Reporting Limit
Dichlorodifluoromethane	---	ND	ND	ND	ND	ug/L	5.0
Methyl Iodide	---	ND	ND	ND	ND	ug/L	5.0
Trans-1,4-Dichloro-2-Butene	---	ND	ND	ND	ND	ug/L	5.0
Trichloromonofluoromethane	---	ND	ND	2	ND	ug/L	1
1,2,3-Trichloropropane	---	ND	ND	ND	ND	ug/L	5.0
Ethyl Methacrylate	---	ND	ND	ND	ND	ug/L	5.0

SMW-4

GIANT REFINING - CINIZA

Dissolved Metals

Parameter	29 APR 93 DUP	29 APR 94 Result	15 MAY 95 Result	26 OCT 95 Result	15 MAR 96 Result	Units	Reporting Limit
Calcium	4.6	2.6	3.3	---	3.01	mg/L	0.40
Magnesium	1.5	0.7	0.7	---	0.97	mg/L	0.40
Potassium	ND	ND	ND	---	0.78	mg/L	10.0
Sodium	321	286	266	---	292	mg/L	10.0

SMW-4

GIANT REFINING - CINIZA

Total Metals

Parameter	29 APR 94 Result	18 OCT 94 Result	15 MAY 95 Result	26 Oct 95 Result	15 MAR 96 Result	Units	Reporting Limit
Chromium	ND	0.03	ND	0.01	<0.01	mg/L	0.010
Lead	ND	ND	ND	ND	<0.005	mg/L	0.0050

SMW-4

GIANT REFINING - CINIZA

General Inorganics

Parameter	29 APR 94 Result	18 OCT 94 Result	15 MAY 95 Result	26 OCT 95 Result	15 MAR 96 Result	Units
Alkalinity, Bicar. as CaCO3 at pH 4.5	393	---	380	---	398	mg/L
Alkalinity, Carb. as CaCO3 at pH 8.3	18	---	11	---		mg/L
Chloride	56	---	53	---	61	mg/L
pH	8.49	8.53	8.50	8.47	8.88	units
pH	---	8.48		8.40	8.69	units
pH	---	8.51		8.35	8.55	units
pH	---	8.48		8.34	8.95	units
Average pH		8.5	8.50	8.39	8.77	units
Sulfate	160	---	220	---	170	mg/L
Specific Conductance at 25 deg.C	1190	1270	1300	1280	1255	umhos/cm
Specific Conductance at 25 deg.C	---	1280	---	1280	1278	umhos/cm
Specific Conductance at 25 deg.C	---	1250	---	1280	1273	umhos/cm
Specific Conductance at 25 deg.C	---	1230	---	1280	1273	umhos/cm
Average Specific Conductance at 25 deg.C		1257.5	1300	1280	1269.75	umhos/cm
Total Organic Carbon	3	ND	ND	1	1	mg/L
Total Organic Carbon	3	ND	ND	---		mg/L
Total Organic Carbon	---	---	---	---		mg/L
Total Organic Carbon	---	---	---	---		mg/L
Total Organic Halogen as Cl	80	ND	30	110		ug/L
Total Organic Halogen as Cl	50	ND	20	---		ug/L
Total Organic Halogen as Cl	---	---	---	---		ug/L
Total Organic Halogen as Cl	---	---	---	---		ug/L
Total Dissolved Solids	760	---	790	---	740	mg/L
Water Elevation	6850.29	6849.88	6849.30	6848.52	6849.98	ft

SMW-5

GIANT REFINING - CINIZA

Volatile Organics (8240)

Parameter	29 APR 94 Result	18 OCT 94 Result	15 MAY 95 Result	26 OCT 95 Result	14 MAR 96 Result	Units	Reporting Limit
Chloromethane	ND	ND	ND	ND	ND	ug/L	10
Bromomethane	ND	ND	ND	ND	ND	ug/L	10
Vinyl chloride	ND	ND	ND	ND	ND	ug/L	10
Chloroethane	ND	ND	ND	ND	ND	ug/L	10
Methylene chloride	ND	ND	ND	ND	ND	ug/L	5.0
Acetone	ND	ND	ND	ND	ND	ug/L	10
Carbon disulfide	ND	ND	ND	ND	ND	ug/L	5.0
1,1-Dichloroethene	ND	ND	ND	ND	ND	ug/L	5.0
1,1-Dichloroethane	ND	ND	ND	ND	ND	ug/L	5.0
1,2-Dichloroethene (cis/trans)	ND	ND	ND	ND	ND	ug/L	5.0
Chloroform	ND	ND	ND	ND	ND	ug/L	5.0
1,2-Dichloroethane	ND	ND	ND	ND	ND	ug/L	5.0
2-Butanone	---	---	---	---	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ug/L	10
Carbon tetrachloride	ND	ND	ND	ND	ND	ug/L	5.0
Vinyl acetate	ND	ND	ND	ND	ND	ug/L	5.0
Bromodichloromethane	ND	ND	ND	ND	ND	ug/L	10
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ug/L	5.0
Trichloroethene	ND	ND	ND	ND	ND	ug/L	5.0
Chlorodibromomethane	---	---	---	---	ND	ug/L	5.0
1,1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ug/L	5.0
Benzene	ND	ND	ND	ND	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ug/L	5.0
2-Chloroethyl vinyl ether	ND	ND	ND	ND	ND	ug/L	10
Bromoform	ND	ND	ND	ND	ND	ug/L	5.0
4-Methyl-2-pentanone	ND	ND	ND	ND	ND	ug/L	10
2-Hexanone	ND	ND	ND	ND	ND	ug/L	10
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ug/L	5.0
Tetrachloroethane	ND	ND	ND	ND	ND	ug/L	5.0
Toluene	ND	ND	ND	ND	ND	ug/L	5.0
Chlorobenzene	ND	ND	ND	ND	ND	ug/L	5.0
Ethylbenzene	ND	ND	ND	ND	ND	ug/L	5.0
Stryene	ND	ND	ND	ND	ND	ug/L	5.0
Xylenes (total)	ND	ND	ND	ND	ND	ug/L	5.0
Acetonitrile	---	---	---	---	---	ug/L	10.0
Acrolein	---	---	---	---	ND	ug/L	20.0
Acrylonitrile	---	---	---	---	ND	ug/L	10.0

SMW-5

GIANT REFINING - CINIZA

Volatile Organics (8240)

Parameter	29 APR 94 Result	18 OCT 94 Result	15 MAY 95 Result	26 OCT 95 Result	14 MAR 96 Result	Units	Reporting Limit
1,2-Dibromoethane	---	---	---	---	ND	ug/L	5.0
Dibromomethane	---	---	---	---	ND	ug/L	5.0
Dichlorodifluoromethane	---	---	---	---	ND	ug/L	5.0
Methyl Iodide	---	---	---	---	ND	ug/L	5.0
Trans-1,4-Dichloro-2-Butene	---	---	---	---	ND	ug/L	5.0
Trichloromonofluoromethane	---	---	---	---	ND	ug/L	5.0
1,2,3-Trichloropropane	---	---	---	---	ND	ug/L	5.0
Ethyl Methacrylate	---	---	---	---	ND	ug/L	5.0

SMW-5

GIANT REFINING - CINIZA

Dissolved Metals

Parameter	29 APR 94 Result	15 MAY 95 Result	Result	26 OCT 95 Result	14 MAR 96 Result	Reporting Units	Limit
Calcium	3.4	1.6	2.2	---	2.2	mg/L	0.40
Magnesium	1.5	0.7	0.5	---	1.82	mg/L	0.40
Potassium	1.3	ND	ND	---	1.96	mg/L	10.0
Sodium	256	267	250	---	276	mg/L	10.0

SMW-5

GIANT REFINING - CINIZA

Total Metals

Parameter	29 APR 94 Result	19 OCT 94 Result	15 MAY 95 Result	26 OCT 95 Result	14 MAR 96 Result	Units	Reporting Limit
Chromium	0.094	.076	0.01	0.02	<0.01	mg/L	0.010
Lead	ND	.008	ND	ND	<0.005	mg/L	0.0050

SMW-5

GIANT REFINING - CINIZA

General Organics

Parameter	29 APR 94 Result	18 OCT 94 Result	15 MAY 95 Result	26 OCT 95 Result	14 MAR 96 Result	Units	Reporting Limit
-----------	---------------------	---------------------	---------------------	---------------------	---------------------	-------	--------------------

Alkalinity, Bicarb. as CaCO3 at pH 4.5	349	---	350	---	366	mg/L	5.0
Alkalinity, Carb. as CaCO3 at pH 8.3	24	---	21	---		mg/L	5.0
Chloride	67	---	54	---	66.6	mg/L	3.0
pH	8.85	8.58	8.80	8.69	8.60	units	---
pH	---	8.6		8.69	9.01	units	---
pH	---	8.6		8.69	8.90	units	---
pH	---	8.64		8.70	8.89	units	---
Average pH		8.605	8.80	8.69	8.85	units	---
Sulfate	150	---	1800	---	160	mg/L	5.0
Specific Conductance at 25 deg.C	1130	1120	1100	1170	1126	umhos/cm	1.0
Specific Conductance at 25 deg.C	---	1130	---	1160	1123	umhos/cm	1.0
Specific Conductance at 25 deg.C	---	1120	---	1170	1146	umhos/cm	1.0
Specific Conductance at 25 deg.C	---	1150	---	1170	1126	umhos/cm	1.0
Average Specific Conductance at 25 deg.C		1130	1100	1167.5	1130.25	umhos/cm	1.0
Total Organic Carbon	2	8	ND	1.2	1	mg/L	0.50
Total Organic Carbon	2	8	ND	---		mg/L	0.50
Total Organic Carbon	---	---	---	---		mg/L	0.50
Total Organic Carbon	---	---	---	---		mg/L	0.50
Total Organic Halogen as Cl	30	ND	16	15		ug/L	30
Total Organic Halogen as Cl	ND	ND	30	---		ug/L	30
Total Organic Halogen as Cl	---	---	---	---		ug/L	30
Total Organic Halogen as Cl	---	---	---	---		ug/L	30
Total Dissolved Solids	720	---	790	---	704	mg/L	10
Water Elevation	6848.13	6848.02	6848.38	6847.47	6847.82	ft	

Parameter

Alkalinity, Bicarb. as CaCO3 at pH 4.5
Alkalinity, Carb. as CaCO3 at pH 8.3
Chloride
pH
pH
pH
Average pH
Sulfate
Specific Conductance at 25 deg.C
Specific Conductance at 25 deg.C
Specific Conductance at 25 deg.C
Specific Conductance at 25 deg.C
Average Specific Conductance at 25 deg.C
Total Organic Carbon
Total Organic Carbon
Total Organic Carbon
Total Organic Carbon
Total Organic Halogen as Cl
Total Organic Halogen as Cl
Total Organic Halogen as Cl
Total Organic Halogen as Cl
Total Dissolved Solids
Water Elevation

MW-1 GIANT REFINING - CINIZA

Volatile Organics (8240)

Parameter	29-Oct-93 Result	28-Apr-94 Result	19-Oct-94 Result	16-May-95 Result	26-Oct-95 Result	16-Apr-96 Result	Units
Chloromethane	ND	ND	ND	ND	ND	ND	ug/l
Bromomethane	ND	ND	ND	ND	ND	ND	ug/l
Vinyl chloride	ND	ND	ND	ND	ND	ND	ug/l
Chloroethane	ND	ND	ND	ND	ND	ND	ug/l
Methylene chloride	ND	ND	ND	ND	ND	ND	ug/l
Acetone	ND	ND	ND	ND	ND	ND	ug/l
Carbon disulfide	ND	ND	ND	ND	ND	ND	ug/l
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ug/l
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ug/l
1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ug/l
(cis/trans)	ND	ND	ND	ND	ND	ND	ug/l
Chloroform	ND	ND	ND	ND	ND	ND	ug/l
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ug/l
2-Butanone	ND	ND	ND	ND	ND	ND	ug/l
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ug/l
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ug/l
Vinyl acetate	ND	ND	ND	ND	ND	ND	ug/l
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ug/l
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ug/l
Trichloroethene	ND	ND	ND	ND	ND	ND	ug/l
Chlorodibromomethane	ND	ND	ND	ND	ND	ND	ug/l
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ug/l
Benzene	ND	ND	ND	ND	ND	ND	ug/l
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ug/l
2-Chloroethyl vinyl ether	ND	ND	ND	ND	ND	ND	ug/l
Bromoform	ND	ND	ND	ND	ND	ND	ug/l
4-Methyl-2-pentanone	ND	ND	ND	ND	ND	ND	ug/l

2-Hexanone
1,1,2,2-Tetrachloroethane
Tetrachloroethene
Toluene
Chlorobenzene
Ethylbenzene
Styrene
Xylenes (total)

ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l

MW-1 GIANT REFINING - CINIZA

Dissolved Metals

Parameter

Arsenic
Barium
Cadmium
Calcium
Magnesium
Manganese
Potassium
Selenium
Silver
Sodium

23-Apr-92	28-Apr-93	28-Apr-94	16-May-95	16-Mar-96	Result
Result	Result	Result	Result	Result	mg/l
ND	ND	ND	ND	<0.005	mg/l
0.09	ND	0.016	0.01	<0.01	mg/l
0.0012	ND	ND	ND	<0.001	mg/l
1.8	1.1	1.2	1.8	1	mg/l
0.26	0.2	0.3	0.2	0.12	mg/l
0.1	ND	0.016	ND	<0.02	mg/l
ND	ND	ND	ND	0.39	mg/l
ND	ND	ND	ND	0.005	mg/l
ND	ND	ND	ND	0.01	mg/l
72		254	242	264	mg/l

MW-1 GIANT REFINING - CINIZA

Total Metals

Parameter
Chromium
Lead
Mercury

29-Oct-93	28-Apr-94	19-Oct-94	16-May-95	26-Oct-95	16-Mar-96	Unit
Result	Result	Result	Result	Result	Result	
ND	ND	0.021	ND	---	<0.01	mg/l
0.36	ND	0.004	0.002	---	<0.005	mg/l
ND	ND	---	---	---	<0.001	mg/l

MW-1 GIANT REFINING COMPANY - CINIZA

General Inorganics

Parameter

Alkalinity, Bicarb. as

CaCO₃ at pH 4.5

Alkalinity, Carb. as

CaCO₃ at pH 8.3

Chloride

pH

pH

pH

pH

pH Average

Phenolics

Sulfate

Specific Conductance

at 25 deg. C

Specific Conductance

at 25 deg. C

Specific Conductance

at 25 deg. C

Specific Conductance

at 25 deg. C

Specific Conductance

at 25 deg. C Average

Total Organic Carbon

Total Organic Carbon

Total Organic Carbon

Total Organic Carbon

Total Organic

Halogen as Cl

29-Oct-93 Result	28-Apr-94 Result	19-Oct-94 Result	16-May-95 Result	26-Oct-95 Result	16-Apr-96 Result	Units
---	301	---	320	---	342	mg/l
---	48	---	23	---	---	mg/l
---	52	---	47	---	55.4	mg/l
9.05	9.06	8.97	8.9	8.91	9.52	units
9		9		8.88	9.33	units
9.08		9.03		8.88	9.23	units
9.08		9.05		8.9	9.26	units
9.0525	9.06	9.0125	8.9	8.8925	9.335	units
NLD						mg/l
---						mg/l
1090	1070	1090	1100	1110	1099	umhos/cm
1080		1080		1130	1094	umhos/cm
1080		1080		1120	1095	umhos/cm
1090		1100		1120	1091	umhos/cm
1085	1070	1087.5	1100	1120	1094.75	umhos/cm
ND	ND	1	36	1	<1.0	mg/l
ND	ND	1	36	1	<1.0	mg/l
---	---	---	---	---	---	mg/l
---	---	---	---	---	---	mg/l
ND	ND	ND	30			ug/l

Total Organic
Halogen as Cl
Total Organic
Halogen as Cl
Total Organic
Halogen as Cl
Total Dissolved
Solids
Water Elevation

ND		20	ND		30	69		ug/l
---	---		---	---	---			ug/l
---	---		---	---	---			ug/l
---	---	720	---	---	---			mg/l
6864.61	6873.34	6872.97	6870.66	6872.4	6872.52			feet

MW-2 GIANT REFINING - CINIZA

Volatile Organics (8240)

Parameter	29-Oct-93 Result	28-Apr-94 Result	19-Oct-94 Result	16-May-95 Result	28-Oct-95 Result	16-Apr-96 Result	Units
Chloromethane	ND	ND	ND	ND	ND	ND	ug/l
Bromomethane	ND	ND	ND	ND	ND	ND	ug/l
Vinyl chloride	ND	ND	ND	ND	ND	ND	ug/l
Chloroethane	ND	ND	ND	ND	ND	ND	ug/l
Methylene chloride	ND	ND	ND	ND	7	ND	ug/l
Acetone	ND	ND	ND	ND	ND	ND	ug/l
Carbon disulfide	ND	ND	ND	ND	ND	ND	ug/l
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ug/l
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ug/l
1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ug/l
(cis/trans)	ND	ND	ND	ND	ND	ND	ug/l
Chloroform	ND	ND	ND	ND	ND	ND	ug/l
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ug/l
2-Butanone	ND	ND	ND	ND	ND	ND	ug/l
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ug/l
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ug/l
Vinyl acetate	ND	ND	ND	ND	ND	ND	ug/l
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ug/l
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ug/l
Trichloroethene	ND	ND	ND	ND	ND	ND	ug/l
Chlorodibromomethane	ND	ND	ND	ND	ND	ND	ug/l
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ug/l
Benzene	ND	ND	ND	ND	ND	ND	ug/l
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ug/l
2-Chloroethyl vinyl ether	ND	ND	ND	ND	ND	ND	ug/l
Bromoform	ND	ND	ND	ND	ND	ND	ug/l
4-Methyl-2-pentanone	ND	ND	ND	ND	ND	ND	ug/l

2-Hexanone
1,1,2,2-Tetrachloroethane
Tetrachloroethene
Toluene
Chlorobenzene
Ethylbenzene
Styrene
Xylenes (total)

ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l

MW-2 GIANT REFINING - CINIZA

Dissolved Metals

Parameter

Arsenic
Barium
Cadmium
Calcium
Magnesium
Manganese
Potassium
Selenium
Silver
Sodium

29-Oct-93	28-Apr-94	19-Oct-94	16-May-95	28-Oct-95	16-Mar-96	Units
Result	Result	Result	Result	Result	Result	
ND	ND	ND	ND	NR	<0.005	mg/l
ND	0.015	0.021	0.02	NR	<0.01	mg/l
ND	ND	ND	ND	NR	<0.001	mg/l
1.6	0.9	0.6	1.4	NR	1	mg/l
0.18	0.1	ND	0.1	NR	0.12	mg/l
ND	ND	ND	ND	NR	<0.02	mg/l
ND	ND	ND	ND	NR	0.39	mg/l
ND	ND	ND	ND	NR	0.005	mg/l
ND	ND	ND	ND	NR	0.01	mg/l
78		257	246	NR	264	mg/l

MW-2 GIANT REFINING - CINIZA

Total Metals

Parameter

Chromium
Lead
Mercury

29-Oct-93	28-Apr-94	19-Oct-94	16-May-95	26-Oct-95	16-Apr-96	Units
Result	Result	Result	Result	Result	Result	
ND	0.011	ND	ND	NR	<0.01	mg/l
0.003	ND	ND	ND	NR	<0.005	mg/l
	ND		ND	NR	<0.001	mg/l

MW-2 GIANT REFINING COMPANY - CINIZA

General Inorganics

Parameter	29-Oct-93 Result	28-Apr-94 Result	19-Oct-94 Result	16-May-95 Result	28-Oct-95 Result	16-Apr-96 Result	Units
Alkalinity, Bicarb. as CaCO ₃ at pH 4.5	---	294	---	320	---	331	mg/l
Alkalinity, Carb. as CaCO ₃ at pH 8.3	---	42	---	ND	---	---	mg/l
Chloride	---	61	---	58	---	62.9	mg/l
pH	9.09	9.1	9.06	9	9.01	9.4	s.u
pH	9.08	---	9.07	---	9.04	9.32	s.u
pH	9.1	---	9.06	---	9.03	9.29	s.u
pH	9.07	---	9.08	---	9.05	9.25	s.u
pH Average	9.085	9.1	9.0675	9	9.0325	9.315	s.u
Phenolics	---	ND	---	ND	---	<0.01	mg/l
Sulfate	---	160	---	170	---	175	mg/l
Specific Conductance at 25 deg. C	1100	1120	1130	1100	1080	1110	umhos/cm
Specific Conductance at 25 deg. C	1110	---	1100	---	1100	1092	umhos/cm
Specific Conductance at 25 deg. C	1090	---	1110	---	1100	1102	umhos/cm
Specific Conductance at 25 deg. C	1090	---	1110	---	1100	1094	umhos/cm
Specific Conductance at 25 deg. C Average	1097.5	1120	1112.5	1100	1095	1099.5	umhos/cm
Total Organic Carbon	ND	ND	ND	ND	1.3	<1.0	mg/l
Total Organic Carbon	ND	ND	ND	ND	---	---	---
Total Organic Carbon	---	---	---	---	---	---	---
Total Organic Carbon	---	---	---	---	---	---	---
Total Organic Halogen as Cl	ND	20	ND	40	22	ND	mg/l

Total Organic Halogen as Cl
Total Organic Halogen as Cl
Total Organic Halogen as Cl
Total Dissolved Solids
Water Elevation

ND	20	ND	20	---	ND	mg/l
---	---	---	---	---	---	
---	---	---	---	---	---	
---	700	---	---	---	676	mg/l
6872.656	6873.62	6870.01	6873.13	6872.34	6867.54	feet

MW-4 GIANT REFINING - CINIZA

Volatile Organics (8240)

Parameter	29-Oct-93 Result	28-Apr-94 Result	19-Oct-94 Result	16-May-95 Result	28-Oct-95 Result	16-Apr-96 Result	Units
Chloromethane	ND	ND	ND	ND	ND	ND	ug/l
Bromomethane	ND	ND	ND	ND	ND	ND	ug/l
Vinyl chloride	ND	ND	ND	ND	ND	ND	ug/l
Chloroethane	ND	ND	ND	ND	ND	ND	ug/l
Methylene chloride	ND	ND	ND	ND	5 ND	ND	ug/l
Acetone	ND	ND	ND	ND	14 ND	ND	ug/l
Carbon disulfide	ND	ND	ND	ND	ND	ND	ug/l
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ug/l
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ug/l
1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ug/l
(cis/trans)	ND	ND	ND	ND	ND	ND	ug/l
Chloroform	ND	ND	ND	ND	ND	ND	ug/l
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ug/l
2-Butanone	ND	ND	ND	ND	ND	ND	ug/l
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ug/l
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ug/l
Vinyl acetate	ND	ND	ND	ND	ND	ND	ug/l
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ug/l
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ug/l
Trichloroethene	ND	ND	ND	ND	ND	ND	ug/l
Chlorodibromomethane	ND	ND	ND	ND	ND	ND	ug/l
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ug/l
Benzene	ND	ND	ND	ND	ND	ND	ug/l
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ug/l
2-Chloroethyl vinyl ether	ND	ND	ND	ND	ND	ND	ug/l
Bromoform	ND	ND	ND	ND	ND	ND	ug/l
4-Methyl-2-pentanone	ND	ND	ND	ND	ND	ND	ug/l

2-Hexanone
1,1,2,2-Tetrachloroethane
Tetrachloroethene
Toluene
Chlorobenzene
Ethylbenzene
Styrene
Xylenes (total)

ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ug/l

MW-4 GIANT REFINING - CINIZA

Dissolved Metals

Parameter

Arsenic
Barium
Cadmium
Calcium
Magnesium
Manganese
Potassium
Selenium
Silver
Sodium

23-Apr-92	28-Apr-93	28-Apr-94	16-May-95	16-Mar-96	Unit
Result	Result	Result	Result	Result	
ND	ND	ND	ND	<0.005	mg/l
0.06	0.015	0.019	0.02	0.02	mg/l
ND	ND	ND	ND	<0.002	mg/l
1.5	1.5	0.8	1.7	2	mg/l
0.24	0.3	0.8	0.2	0.24	mg/l
0.08	ND	0.01	ND	<0.02	mg/l
ND	ND	ND	ND	0.78	mg/l
ND	ND	ND	ND	<0.005	mg/l
ND	ND	ND	ND	<0.01	mg/l
78	295	283	257	290	mg/l

MW-4 GIANT REFINING - CINIZA

Total Metals

Parameter
Chromium
Lead
Mercury

29-Oct-93	28-Apr-94	19-Oct-94	16-May-95	19-Oct-95	16-Mar-96	Unit
Result	Result	Result	Result	Result	Result	
ND	ND	0.013	ND	---	<0.01	mg/l
ND	ND	ND	ND	---	<0.005	mg/l
---	ND	---	---	---	<0.001	mg/l

MW-4 GIANT REFINING COMPANY - CINIZA

General Inorganics

Parameter

Alkalinity, Bicarb. as

CaCO₃ at pH 4.5

Alkalinity, Carb. as

CaCO₃ at pH 8.3

Chloride

pH

pH

pH

pH

pH Average

Phenolics

Sulfate

Specific Conductance

at 25 deg. C

Specific Conductance

at 25 deg. C

Specific Conductance

at 25 deg. C

Specific Conductance

at 25 deg. C

Specific Conductance

at 25 deg. C Average

Total Organic Carbon

Total Organic Carbon

Total Organic Carbon

Total Organic Carbon

Total Organic

Halogen as Cl

29-Oct-93 Result	28-Apr-94 Result	19-Oct-94 Result	16-May-94 Result	26-Oct-95 Result	16-Apr-96 Result	Units
---	431	---	440	---	446	mg/l
---	33	---	21	---	---	mg/l
---	17	---	180	---	20.6	mg/l
8.82	8.76	8.77	8.7	9.02	9.12	units
8.83		8.77		9.01	8.99	units
8.8		8.78		9.02	8.94	units
8.8		8.77		9	8.91	units
8.8125	8.76	8.7725	8.7	9.0125	8.99	units
ND	ND	---	ND	---	<0.01	mg/l
---	150	---	180	---	160	mg/l
1140	1140	1140	1200	1100	1144	umhos/cm
1130		1150		1110	1125	umhos/cm
1130		1150		1100	1129	umhos/cm
1150		1160		1090	1135	umhos/cm
1137.5	1140	1150	1200	1100	1133.25	umhos/cm
ND	ND	ND	ND	1.8	1.1	mg/l
ND	ND	ND	ND	---	---	mg/l
---	---	---	---	---	---	mg/l
---	---	---	---	---	---	mg/l
ND	20	ND	20	<8.0	20.6	ug/l

Total Organic
Halogen as Cl
Total Organic
Halogen as Cl
Total Organic
Halogen as Cl
Total Dissolved
Solids
Water Elevation

ND	40	ND	20	---	---	ug/l
---	---	---	---	---	---	ug/l
---	---	---	---	---	---	ug/l
---	740	---	---	---	741	mg/l
6877.1	6876.76	6876.06	6872.71	6875.93	6876.04	feet

MW-5 GIANT REFINING - CINIZA

Volatile Organics (8240)

Parameter	29-Oct-93 Result	28-Apr-94 Result	19-Oct-94 Result	16-May-95 Result	28-Oct-95 Result	16-Apr-96 Result	Units
Chloromethane	ND	ND	ND	ND	ND	ND	ug/l
Bromomethane	ND	ND	ND	ND	ND	ND	ug/l
Vinyl chloride	ND	ND	ND	ND	ND	ND	ug/l
Chloroethane	ND	ND	ND	ND	ND	ND	ug/l
Methylene chloride	ND	ND	ND	ND	5	ND	ug/l
Acetone	ND	ND	ND	ND	14	ND	ug/l
Carbon disulfide	ND	ND	ND	ND	ND	ND	ug/l
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ug/l
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ug/l
1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ug/l
(cis/trans)	ND	ND	ND	ND	ND	ND	ug/l
Chloroform	ND	ND	ND	ND	ND	ND	ug/l
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ug/l
2-Butanone	ND	ND	ND	ND	ND	ND	ug/l
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ug/l
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ug/l
Vinyl acetate	ND	ND	ND	ND	ND	ND	ug/l
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ug/l
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ug/l
Trichloroethene	ND	ND	ND	ND	ND	ND	ug/l
Chlorodibromomethane	ND	ND	ND	ND	ND	ND	ug/l
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ug/l
Benzene	ND	ND	ND	ND	ND	ND	ug/l
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ug/l
2-Chloroethyl vinyl ether	ND	ND	ND	ND	ND	ND	ug/l
Bromoform	ND	ND	ND	ND	ND	ND	ug/l
4-Methyl-2-pentanone	ND	ND	ND	ND	ND	ND	ug/l

2-Hexanone
1,1,2,2-Tetrachloroethane
Tetrachloroethene
Toluene
Chlorobenzene
Ethylbenzene
Styrene
Xylenes (total)

ND	ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ND	ug/l
ND	ND	ND	ND	ND	ND	ND	ug/l

MW-5 GIANT REFINING - CINIZA

Dissolved Metals

Parameter

Arsenic
Barium
Cadmium
Calcium
Magnesium
Manganese
Potassium
Selenium
Silver
Sodium

23-Apr-92	28-Apr-93	28-Apr-94	16-May-95	16-Mar-96	Unit
Result	Result	Result	Result	Result	
ND	ND	ND	ND	<0.005	mg/l
ND	0.015	0.018	0.02	0.02	mg/l
ND	ND	ND	ND	<0.002	mg/l
1.1	1.4	1.4	1.5	1.6	mg/l
0.24	0.2	0.1	0.1	0.24	mg/l
0.15	ND	ND	ND	<0.02	mg/l
ND	1.5	ND	ND	0.78	mg/l
ND	ND	ND	ND	<0.005	mg/l
ND	ND	0.01	ND	<0.01	mg/l
64	269	263	246	275	mg/l

MW-5 GIANT REFINING - CINIZA

Total Metals

Parameter

Chromium
Lead
Mercury

28-Apr-93	29-Oct-93	27-Apr-94	19-Oct-94	16-May-95	19-Oct-95	13-Mar-96	Unit
Result	Result	Result	Result	Result	Result	Result	
ND	ND	ND	ND	ND	---	<0.01	mg/l
ND	0.002	ND	ND	ND	---	<0.005	mg/l
ND	---	ND	---	ND	---	<0.001	mg/l

MW-5 GIANT REFINING COMPANY - CINIZA

General Inorganics

Parameter

Alkalinity, Bicarb. as

CaCO₃ at pH 4.5

Alkalinity, Carb. as

CaCO₃ at pH 8.3

Chloride

pH

pH

pH

pH

pH Average

Phenolics

Sulfate

Specific Conductance
at 25 deg. CSpecific Conductance
at 25 deg. CSpecific Conductance
at 25 deg. CSpecific Conductance
at 25 deg. CSpecific Conductance
at 25 deg. C Average

Total Organic Carbon

Total Organic Carbon

Total Organic Carbon

Total Organic Carbon

Total Organic
Halogen as Cl

29-Oct-93 Result	28-Apr-94 Result	19-Oct-94 Result	16-May-94 Result	26-Oct-95 Result	16-Apr-96 Result	Units
---	289	---	330	---	322	mg/l
---	42	---	ND	---	---	mg/l
---	66	---	63	---	65.7	mg/l
8.96	9.1	9.09	9	9.01	9.65	units
8.96		9.09		9.03	9.42	units
9		9.09		9.06	9.32	units
8.97		9.11		9.06	9.28	units
8.9725	9.1	9.095	9	9.04	9.4175	units
---	ND	ND	ND	---	<0.01	mg/l
---	170	ND	190	---	175	mg/l
1110	1260	1120	1100	1120	1111	umhos/cm
1130		1130		1100	1110	umhos/cm
1120		1130		1110	1118	umhos/cm
1130		1120		1120	1118	umhos/cm
1122.5	1260	1125	1100	1112.5	1114.25	umhos/cm
ND	---	ND	ND	1.7	<1.0	mg/l
ND	---	ND	ND	---	---	mg/l
---	---	---	---	---	---	mg/l
---	---	---	---	---	---	mg/l
ND	---	ND	20	14	ND	ug/l

Total Organic
 Halogen as Cl
 Total Organic
 Halogen as Cl
 Total Organic
 Halogen as Cl
 Total Dissolved
 Solids
 Water Elevation

ND	---	ND	20	---	---	ug/l
---	---	---	---	---	---	ug/l
---	---	---	---	---	---	ug/l
---	700	---	---	---	714	mg/l
6873.53	6873.83	6869.39	6877.32	6874	6870.82	feet

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client: **Giant Refinery**
Project: Not given
Sample ID: OW1-032596
Laboratory ID: 0396W00503
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/17/96
Date Sampled: 03/25/96
Time Sampled: 13:00
Date Received: 04/01/96

Parameter	Analytical			
	Result	Units	Units	
Lab pH.....	8.6	s.u.		
Lab Conductivity @ 25° C.....	1,380	umhos/cm		
Total Dissolved Solids @ 180°C.....	832	mg/L		
Total Dissolved Solids (Calc).....	813	mg/L		
Total Alkalinity as CaCO3.....	407	mg/L		
Total Hardness as CaCO3.....	8	mg/L		
Bicarbonate as HCO3.....	467	mg/L	7.66	meq/L
Carbonate as CO3.....	14	mg/L	0.48	meq/L
Hydroxide.....	<1	mg/L	<0.01	meq/L
Chloride.....	49	mg/L	1.38	meq/L
Sulfate.....	216	mg/L	4.51	meq/L
Calcium.....	2.6	mg/L	0.13	meq/L
Magnesium.....	0.2	mg/L	0.02	meq/L
Potassium.....	0.8	mg/L	0.02	meq/L
Sodium.....	299	mg/L	13.02	meq/L
Cations.....			13.19	meq/L
Anions.....			14.03	meq/L
Cation/Anion Difference.....			3.09	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Reported by LM

Reviewed by CSA

VOLATILE AROMATIC HYDROCARBONS

Giant Refining Co.

Project ID: Not Given
Sample ID: OW1-032596
Lab ID: 0396W00503
Sample Matrix: Water
Condition: Cool/Intact

Report Date: 04/11/96
Date Sampled: 03/25/96
Date Received: 04/01/96
Date Extracted: NA
Date Analyzed: 04/04/96

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
Benzene	ND	0.2
Toluene	ND	0.2
Ethylbenzene	ND	0.2
m,p-Xylenes	ND	0.2
o-Xylene	ND	0.2

ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Bromofluorobenzene	103.0	75 -125%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:


Analyst


Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client: **Giant Refinery**
Project: Not given
Sample ID: OW1-032596
Laboratory ID: 0396W00503
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/17/96
Date Sampled: 03/25/96
Time Sampled: 13:00
Date Received: 04/01/96

Parameter	Analytical			
	Result	Units	Units	
Lab pH.....	8.6	s.u.		
Lab Conductivity @ 25° C.....	1,380	umhos/cm		
Total Dissolved Solids @ 180°C.....	832	mg/L		
Total Dissolved Solids (Calc).....	813	mg/L		
Total Alkalinity as CaCO3.....	407	mg/L		
Total Hardness as CaCO3.....	8	mg/L		
Bicarbonate as HCO3.....	467	mg/L	7.66	meq/L
Carbonate as CO3.....	14	mg/L	0.48	meq/L
Hydroxide.....	<1	mg/L	<0.01	meq/L
Chloride.....	49	mg/L	1.38	meq/L
Sulfate.....	216	mg/L	4.51	meq/L
Calcium.....	2.6	mg/L	0.13	meq/L
Magnesium.....	0.2	mg/L	0.02	meq/L
Potassium.....	0.8	mg/L	0.02	meq/L
Sodium.....	299	mg/L	13.02	meq/L
Cations.....			13.19	meq/L
Anions.....			14.03	meq/L
Cation/Anion Difference.....			3.09	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Reported by LM

Reviewed by CH

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client: **Giant Refinery**
Project: NMED-LTA
Sample ID: OW3-031896
Laboratory ID: 0396W00422
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/10/96
Date Sampled: 03/18/96
Time Sampled: 13:15
Date Received: 03/20/96

Parameter	Analytical			
	Result	Units	Units	
Lab pH.....	8.0	s.u.		
Lab Conductivity @ 25° C.....	1,340	umhos/cm		
Total Dissolved Solids @ 180°C.....	844	mg/L		
Total Dissolved Solids (Calc).....	798	mg/L		
Total Alkalinity as CaCO3.....	665	mg/L		
Total Hardness as CaCO3.....	36.0	mg/L		
Bicarbonate as HCO3.....	811	mg/L	13.3	meq/L
Carbonate as CO3.....	<1	mg/L	<0.01	meq/L
Hydroxide.....	<1	mg/L	<0.01	meq/L
Chloride.....	42.2	mg/L	1.19	meq/L
Sulfate.....	26.3	mg/L	0.55	meq/L
Calcium.....	9.42	mg/L	0.47	meq/L
Magnesium.....	3.04	mg/L	0.25	meq/L
Potassium.....	0.78	mg/L	0.02	meq/L
Sodium.....	317	mg/L	13.8	meq/L
Cations.....			14.6	meq/L
Anions.....			15.0	meq/L
Cation/Anion Difference.....			1.65	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Reported by OB

Reviewed by WM

VOLATILE AROMATIC HYDROCARBONS

Giant Refining Co.

Project ID: NMED-LTA
Sample ID: OW3 031896
Lab ID: 0396W00422
Sample Matrix: Water
Condition: Cool/Intact

Report Date: 04/02/96
Date Sampled: 03/18/96
Date Received: 03/20/96
Date Extracted: NA
Date Analyzed: 03/27/96

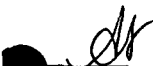
Target Analyte	Concentration (ppb)	Detection Limit (ppb)
Benzene	ND	0.2
Toluene	ND	0.2
Ethylbenzene	ND	0.2
m,p-Xylenes	ND	0.2
o-Xylene	ND	0.2

ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Bromofluorobenzene	100.8	75 -125%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:



Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client: **Giant Refinery**
Project: NMED-LTA
Sample ID: OW2-031896
Laboratory ID: 0396W00421
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/10/96
Date Sampled: 03/18/96
Time Sampled: 15:00
Date Received: 03/20/96

Parameter	Analytical			
	Result	Units	Units	
Lab pH.....	7.9	s.u.		
Lab Conductivity @ 25° C.....	1,340	umhos/cm		
Total Dissolved Solids @ 180°C.....	840	mg/L		
Total Dissolved Solids (Calc).....	786	mg/L		
Total Alkalinity as CaCO3.....	664	mg/L		
Total Hardness as CaCO3.....	35.5	mg/L		
Bicarbonate as HCO3.....	810	mg/L	13.3	meq/L
Carbonate as CO3.....	<1	mg/L	<0.01	meq/L
Hydroxide.....	<1	mg/L	<0.01	meq/L
Chloride.....	42.4	mg/L	1.20	meq/L
Sulfate.....	12.3	mg/L	0.26	meq/L
Calcium.....	9.02	mg/L	0.45	meq/L
Magnesium.....	3.16	mg/L	0.26	meq/L
Potassium.....	0.39	mg/L	0.01	meq/L
Sodium.....	320	mg/L	13.9	meq/L
Cations.....			14.6	meq/L
Anions.....			14.7	meq/L
Cation/Anion Difference.....			0.32	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Reported by GB

Reviewed by WM

VOLATILE AROMATIC HYDROCARBONS

Giant Refining Co.

Project ID: NMED-LTA
Sample ID: OW2 031896
Lab ID: 0396W00421
Sample Matrix: Water
Condition: Cool/Intact

Report Date: 04/02/96
Date Sampled: 03/18/96
Date Received: 03/20/96
Date Extracted: NA
Date Analyzed: 03/27/96

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
Benzene	ND	0.2
Toluene	ND	0.2
Ethylbenzene	ND	0.2
m,p-Xylenes	ND	0.2
o-Xylene	ND	0.2

ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Bromofluorobenzene	120.8	75 -125%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
(409) 776-8945 FAX (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

TOX TOTAL ORGANIC HALIDES

Client: GIANT REFINING COMPANY
Project Location: Unknown
Sample ID: SMW3-031596
Sample Number: 0396W00439/0696G00549
Sample Matrix: Water
Condition: Intact, Cool, pH=7

Report Date: 04/09/96
Date Sampled: 03/15/96
Date Received: 03/26/96
Date Analyzed: 04/08/96

Parameter	Concentration (ug/L)	Detection Limit (ug/L)
Total Organic Halides	ND	30
Concentration is the average of the replicates reported below		
Replicate #1	ND	30
Replicate #2	ND	30

ND - Analyte not detected at stated detection limit.

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States
Environmental Protection Agency, Third Edition, Final Update II,
September 1994.

Comments:

DG/RPD
Analyst

Not 7 mpm
Review

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: SMW3-031596
Laboratory ID: 0396W00439
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/22/96
Date Sampled: 03/15/96
Time Sampled: 1:05 PM
Date Received: 03/21/96

Parameter	Analytical			
	Result	Units	Units	
Lab pH.....	7.7	s.u.		
Lab Conductivity @ 25° C.....	3,090	umhos/cm		
Total Dissolved Solids @ 180°C.....	2,040	mg/L		
Phenols.....	<0.01	mg/L		
Total Alkalinity as CaCO ₃	644	mg/L		
Total Hardness as CaCO ₃	176	mg/L		
Total Organic Carbon.....	3.2	mg/L		
Bicarbonate as HCO ₃	786	mg/L	12.9	meq/L
Carbonate as CO ₃	<1	mg/L	<0.01	meq/L
Hydroxide as OH.....	<1	mg/L	<0.01	meq/L
Chloride.....	91.0	mg/L	2.57	meq/L
Sulfate.....	844	mg/L	17.57	meq/L
Calcium.....	47	mg/L	2.36	meq/L
Magnesium.....	14	mg/L	1.19	meq/L
Potassium.....	0.78	mg/L	0.02	meq/L
Sodium.....	669	mg/L	29.1	meq/L
Cations.....			32.7	meq/L
Anions.....			33.0	meq/L
Cation/Anion Difference.....			0.54	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by WM

Reviewed by CHelland

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: SMW3-031596
Laboratory ID: 0396W00439
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/22/96
Date Sampled: 03/15/96
Time Sampled: 1:05 PM
Date Received: 03/21/96

Parameter	Total Analytical	
	Result	Units

Trace Metals

Chromium.....	<0.01	mg/L
Lead.....	<0.005	mg/L

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by WM

Reviewed by C. Hall



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Project: NA
Sample ID: SMW3-031596
Laboratory ID: 0396G00439 / 0696G00538
Sample Matrix: Water
Preservative: HCl
Condition: Intact, pH < 2

Report Date: 03/25/96
Date Sampled: 03/15/96
Date Received: 03/22/96
Date Extracted: 03/22/96
Date Analyzed: 03/23/96
Time Analyzed: 1:21 AM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



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Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: **SMW3-031596**
Laboratory ID: **0396G00439 / 0696G00538**
Matrix: **Water**

Report Date: **03/25/96**
Date Sampled: **03/15/96**
Date Analyzed: **03/23/96**
Time Analyzed: **1:21 AM**

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	100%	86 - 118%
Toluene-d8	99%	88 - 110%
Bromofluorobenzene	99%	86 - 117%



Inter-Mountain Laboratories, Inc.

Inorganic Laboratories
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS ADDITIONAL DETECTED COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: **SMW3-031596**
Laboratory ID: **0396G00439 / 0696G00538**
Matrix: **Water**

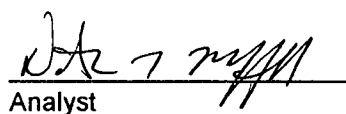
Report Date: **03/25/96**
Date Sampled: **03/15/96**
Date Analyzed: **03/23/96**
Time Analyzed: **1:21 AM**

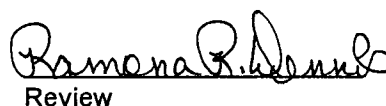
Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry:
Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846,
United States Environmental Protection Agency, Final Update II, September 1994.

Comments:


Analyst


Review



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Project: **NMED-LTA**
Sample ID: **OW-11 031396**
Laboratory ID: **0396W00420 / 0696G00478**
Sample Matrix **Water**
Preservative: **HCl**
Condition: **Intact, pH < 2**

Report Date: **04/01/96**
Date Sampled: **03/13/96**
Date Received: **03/21/96**
Date Extracted: **03/27/96**
Date Analyzed: **03/27/96**
Time Analyzed: **1:20 AM**

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: **OW-11 031396**
Laboratory ID: **0396W00420 / 0696G00478**
Matrix: **Water**

Report Date: **04/01/96**
Date Sampled: **03/13/96**
Date Analyzed: **03/27/96**
Time Analyzed: **1:20 AM**

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	101%	86 - 118%
Toluene-d8	98%	88 - 110%
Bromofluorobenzene	98%	86 - 117%

Client: **Giant Refining**
Project: **NMED-LTA**
Sample ID: **OW11-031396**
Laboratory ID: **0396W00420**
Sample Matrix: **Water**
Condition: **Cool/Intact**

Date Reported: **04/26/96**
Date Sampled: **03/13/96**
Time Sampled: **2:05 PM**
Date Received: **03/20/96**

Parameter	Analytical			
	Result	Units	Units	
Lab pH.....	8.3	s.u.		
Lab Conductivity @ 25° C.....	2,510	umhos/cm		
Total Dissolved Solids @ 180°C.....	1,630	mg/L		
Total Dissolved Solids (Calc).....	1,610	mg/L		
Phenols.....	<0.01	mg/L		
Total Alkalinity as CaCO ₃	348	mg/L		
Total Hardness as CaCO ₃	28.0	mg/L		
Total Organic Carbon.....	2.8	mg/L		
Bicarbonate as HCO ₃	420	mg/L	6.88	meq/L
Carbonate as CO ₃	2.4	mg/L	0.08	meq/L
Hydroxide as OH.....	<1	mg/L	<0.01	meq/L
Chloride.....	108	mg/L	3.05	meq/L
Sulfate.....	708	mg/L	14.7	meq/L
Calcium.....	9.42	mg/L	0.47	meq/L
Magnesium.....	1.09	mg/L	0.09	meq/L
Potassium.....	1.56	mg/L	0.04	meq/L
Sodium.....	575	mg/L	25.0	meq/L
Cations.....			25.6	meq/L
Anions.....			24.8	meq/L
Cation/Anion Difference.....			1.74	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by JB

Reviewed by AS

Client: Giant Refining
Project: NMED-LTA
Sample ID: OW11-031396
Laboratory ID: 0396W00420
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/26/96
Date Sampled: 03/13/96
Time Sampled: 2:05 PM
Date Received: 03/20/96

Parameter	Dissolved	Units	Total	Units
	Analytical Result		Analytical Result	

Trace Metals

Arsenic.....	<0.005	mg/L		
Barium.....	0.01	mg/L		
Cadmium.....	<0.002	mg/L		
Chromium.....	NA	mg/L	<0.01	mg/L
Lead.....	NA	mg/L	<0.005	mg/L
Manganese.....	<0.02	mg/L		
Mercury.....	NA	mg/L	<0.001	mg/L
Selenium.....	<0.005	mg/L		
Silver.....	<0.01	mg/L		

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:Reported by SBReviewed by MT



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 FAX (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

TOX TOTAL ORGANIC HALIDES

Client: **GIANT REFINING COMPANY**
Project Location: Unknown
Sample ID: DW11-031396
Sample Number: 0396W00420/0696G00548
Sample Matrix: Water
Condition: Intact, Cool, pH=7

Report Date: 04/09/96
Date Sampled: 03/13/96
Date Received: 03/26/96
Date Analyzed: 04/08/96

Parameter	Concentration (ug/L)	Detection Limit (ug/L)
Total Organic Halides	ND	30
Concentration is the average of the replicates reported below		
Replicate #1	ND	30
Replicate #2	ND	30

ND - Analyte not detected at stated detection limit.

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States
Environmental Protection Agency, Third Edition, Final Update II,
September 1994.

Comments:

DG/RPS
Analyst

AK 7/2/96
Review



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS ADDITIONAL DETECTED COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: OW-11 031396
Laboratory ID: 0396W00420 / 0696G00478
Matrix: Water

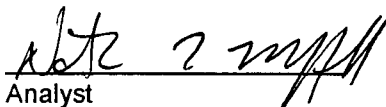
Report Date: 04/01/96
Date Sampled: 03/13/96
Date Analyzed: 03/27/96
Time Analyzed: 1:20 AM

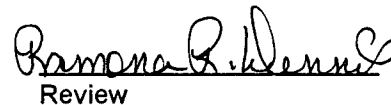
Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry:
Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846,
United States Environmental Protection Agency, Final Update II, September 1994.

Comments:


Analyst


Review



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Project: NA
Sample ID: SMW4-031596
Laboratory ID: 0396G00440 / 0696G00539
Sample Matrix: Water
Preservative: HCl
Condition: Intact, pH < 2

Report Date: 03/25/96
Date Sampled: 03/15/96
Date Received: 03/22/96
Date Extracted: 03/22/96
Date Analyzed: 03/23/96
Time Analyzed: 2:04 AM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



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Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: SMW4-031596
Laboratory ID: 0396G00440 / 0696G00539
Matrix: Water

Report Date: 03/25/96
Date Sampled: 03/15/96
Date Analyzed: 03/23/96
Time Analyzed: 2:04 AM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	100%	86 - 118%
Toluene-d8	99%	88 - 110%
Bromofluorobenzene	99%	86 - 117%



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Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS ADDITIONAL DETECTED COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: **SMW4-031596**
Laboratory ID: **0396G00440 / 0696G00539**
Matrix: **Water**

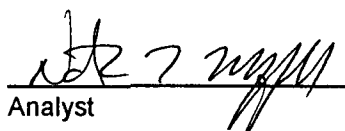
Report Date: **03/25/96**
Date Sampled: **03/15/96**
Date Analyzed: **03/23/96**
Time Analyzed: **2:04 AM**

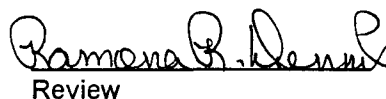
Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry: Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846, United States Environmental Protection Agency, Final Update II, September 1994.

Comments:


Analyst


Review

Client: Giant Refining Company
Project: Ciniza
Sample ID: SMW4-031596
Laboratory ID: 0396W00440
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/22/96
Date Sampled: 03/15/96
Time Sampled: 10:38 AM
Date Received: 03/21/96

Parameter	Analytical			
	Result	Units		Units
Lab pH.....	8.4	s.u.		
Lab Conductivity @ 25° C.....	1,300	umhos/cm		
Total Dissolved Solids @ 180°C.....	740	mg/L		
Phenols.....	<0.01	mg/L		
Total Alkalinity as CaCO ₃	398	mg/L		
Total Hardness as CaCO ₃	11	mg/L		
Total Organic Carbon.....	1.0	mg/L		
Bicarbonate as HCO ₃	461	mg/L	7.56	meq/L
Carbonate as CO ₃	12	mg/L	0.40	meq/L
Hydroxide as OH.....	<1	mg/L	<0.01	meq/L
Chloride.....	61.0	mg/L	1.72	meq/L
Sulfate.....	170	mg/L	3.53	meq/L
Calcium.....	3.01	mg/L	0.15	meq/L
Magnesium.....	0.97	mg/L	0.08	meq/L
Potassium.....	0.78	mg/L	0.02	meq/L
Sodium.....	292	mg/L	12.7	meq/L
Cations.....			13.0	meq/L
Anions.....			13.2	meq/L
Cation/Anion Difference.....			1.01	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by WM

Reviewed by CHelland

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: SMW4-031596
Laboratory ID: 0396W00440
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/22/96
Date Sampled: 03/15/96
Time Sampled: 10:38 AM
Date Received: 03/21/96

Total Analytical		
Parameter	Result	Units

Trace Metals

Chromium.....	<0.01	mg/L
Lead.....	<0.005	mg/L

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by WM

Reviewed by CSH



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
(409) 776-8945 FAX (409) 774-4705

Inter-Mountain Laboratories, Inc.

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

TOX TOTAL ORGANIC HALIDES

Client: **GIANT REFINING COMPANY**
Project Location: Unknown
Sample ID: SMW4-031596
Sample Number: 0396W00440/0696G00550
Sample Matrix: Water
Condition: Intact, Cool, pH=7

Report Date: 04/09/96
Date Sampled: 03/15/96
Date Received: 03/26/96
Date Analyzed: 04/08/96

Parameter	Concentration (ug/L)	Detection Limit (ug/L)
Total Organic Halides	ND	30
Concentration is the average of the replicates reported below		
Replicate #1	ND	30
Replicate #2	ND	30

ND - Analyte not detected at stated detection limit.

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States
Environmental Protection Agency, Third Edition, Final Update II,
September 1994.

Comments:

DG/RRD
Analyst

Not 7 mpph
Review



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Inter-Mountain Laboratories, Inc.

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Project: **NA**
Sample ID: **SMW5-031496**
Laboratory ID: **0396G00441 / 0696G00540**
Sample Matrix **Water**
Preservative: **HCl**
Condition: **Intact, pH < 2**

Report Date: **03/25/96**
Date Sampled: **03/15/96**
Date Received: **03/22/96**
Date Extracted: **03/22/96**
Date Analyzed: **03/23/96**
Time Analyzed: **2:45 AM**

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

**EPA Method 8260
VOLATILE ORGANIC COMPOUNDS**

Client: **GIANT REFINING COMPANY**
Sample ID: **SMW5-031496**
Laboratory ID: **0396G00441 / 0696G00540**
Matrix: **Water**

Report Date: **03/25/96**
Date Sampled: **03/15/96**
Date Analyzed: **03/23/96**
Time Analyzed: **2:45 AM**

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	101%	86 - 118%
Toluene-d8	98%	88 - 110%
Bromofluorobenzene	100%	86 - 117%

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: SMW5-031496
Laboratory ID: 0396W00441
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/22/96
Date Sampled: 03/14/96
Time Sampled: 1:08 PM
Date Received: 03/21/96

Parameter	Total Analytical	
	Result	Units

Trace Metals

Chromium.....	<0.01	mg/L
Lead.....	<0.005	mg/L

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by WM

Reviewed by asbell

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: SMW5-031496
Laboratory ID: 0396W00441
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/22/96
Date Sampled: 03/14/96
Time Sampled: 1:08 PM
Date Received: 03/21/96

Parameter	Analytical			
	Result	Units		Units
Lab pH.....	8.6	s.u.		
Lab Conductivity @ 25° C.....	1,230	umhos/cm		
Total Dissolved Solids @ 180°C.....	704	mg/L		
Phenols.....	<0.01	mg/L		
Total Alkalinity as CaCO3.....	366	mg/L		
Total Hardness as CaCO3.....	9.0	mg/L		
Total Organic Carbon.....	1.0	mg/L		
Bicarbonate as HCO3.....	427	mg/L	7.00	meq/L
Carbonate as CO3.....	9.6	mg/L	0.32	meq/L
Hydroxide as OH.....	<1	mg/L	<0.01	meq/L
Chloride.....	66.6	mg/L	1.88	meq/L
Sulfate.....	160	mg/L	3.34	meq/L
Calcium.....	2.20	mg/L	0.11	meq/L
Magnesium.....	1.82	mg/L	0.15	meq/L
Potassium.....	1.96	mg/L	0.05	meq/L
Sodium.....	276	mg/L	12.0	meq/L
Cations.....			12.3	meq/L
Anions.....			12.5	meq/L
Cation/Anion Difference.....			0.93	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by WM

Reviewed by C. Hall



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Inorganics Laboratory

11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 FAX (409) 774-4705

Organics Laboratory

3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

TOX TOTAL ORGANIC HALIDES

Client: **GIANT REFINING COMPANY**
Project Location: Unknown
Sample ID: SMW5-031496
Sample Number: 0396W00441/0696G00551
Sample Matrix: Water
Condition: Intact, Cool, pH=7

Report Date: 04/09/96
Date Sampled: 03/14/96
Date Received: 03/26/96
Date Analyzed: 04/09/96

Parameter	Concentration (ug/L)	Detection Limit (ug/L)
Total Organic Halides	ND	30
Concentration is the average of the replicates reported below		
Replicate #1	ND	30
Replicate #2	ND	30

ND - Analyte not detected at stated detection limit.

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States
Environmental Protection Agency, Third Edition, Final Update II,
September 1994.

Comments:

DG/RED
Analyst

Nat 7 mff
Review



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Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS ADDITIONAL DETECTED COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: **SMW5-031496**
Laboratory ID: **0396G00441 / 0696G00540**
Matrix: **Water**

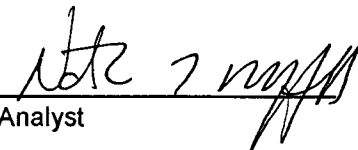
Report Date: **03/25/96**
Date Sampled: **03/15/96**
Date Analyzed: **03/23/96**
Time Analyzed: **2:45 AM**

Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry:
Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846,
United States Environmental Protection Agency, Final Update II, September 1994.

Comments:


Analyst


Review



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Project: NA
Sample ID: MW-1 - 031696
Laboratory ID: 0396G00443 / 0696G00542
Sample Matrix: Water
Preservative: HCl
Condition: Intact, pH < 2

Report Date: 04/01/96
Date Sampled: 03/16/96
Date Received: 03/22/96
Date Extracted: 03/26/96
Date Analyzed: 03/26/96
Time Analyzed: 11:19 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



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Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: **MW-1 - 031696**
Laboratory ID: **0396G00443 / 0696G00542**
Matrix: **Water**

Report Date: **04/01/96**
Date Sampled: **03/16/96**
Date Analyzed: **03/26/96**
Time Analyzed: **11:19 PM**

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	100%	86 - 118%
Toluene-d8	99%	88 - 110%
Bromofluorobenzene	98%	86 - 117%

Client: **Giant Refining Company**

Project: Ciniza

Sample ID: MW1-031696

Date Reported: 04/22/96

Laboratory ID: 0396W00443

Date Sampled: 03/16/96

Sample Matrix: Water

Time Sampled: 1:00 PM

Condition: Cool/Intact

Date Received: 03/21/96

Parameter	Analytical			
	Result	Units	Units	
Lab pH.....	8.8	s.u.		
Lab Conductivity @ 25° C.....	1,200	umhos/cm		
Total Dissolved Solids @ 180°C.....	670	mg/L		
Total Dissolved Solids (Calc).....	702			
Phenols.....	<0.01	mg/L		
Total Alkalinity as CaCO ₃	342	mg/L		
Total Hardness as CaCO ₃	3.00	mg/L		
Total Organic Carbon.....	<1	mg/L		
Bicarbonate as HCO ₃	373	mg/L	6.12	meq/L
Carbonate as CO ₃	22	mg/L	0.72	meq/L
Hydroxide as OH.....	<1	mg/L	<0.01	meq/L
Chloride.....	55.4	mg/L	1.56	meq/L
Sulfate.....	175	mg/L	3.65	meq/L
Calcium.....	1.00	mg/L	0.05	meq/L
Magnesium.....	0.12	mg/L	0.01	meq/L
Potassium.....	0.39	mg/L	0.01	meq/L
Sodium.....	264	mg/L	11.5	meq/L
Cations.....			11.6	meq/L
Anions.....			12.1	meq/L
Cation/Anion Difference.....			2.05	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.

"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by WMReviewed by Challand

Client: **Giant Refining Company**
Project: **Ciniza**
Sample ID: **MW1-031696**
Laboratory ID: **0396W00443**
Sample Matrix: **Water**
Condition: **Cool/Intact**

Date Reported: **04/22/96**
Date Sampled: **03/16/96**
Time Sampled: **1:00 PM**
Date Received: **03/21/96**

Parameter	Dissolved	Units	Total	Units
	Analytical Result		Analytical Result	

Trace Metals

Arsenic.....	<0.005	mg/L		
Barium.....	<0.01	mg/L		
Cadmium.....	<0.001	mg/L		
Chromium.....	NA	mg/L	<0.01	mg/L
Lead.....	NA	mg/L	<0.005	mg/L
Manganese.....	<0.02	mg/L		
Mercury.....	NA	mg/L	<0.001	mg/L
Selenium.....	<0.005	mg/L		
Silver.....	<0.01	mg/L		

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by WM

Reviewed by Chellaw



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory

11168 SH 30 College Station, Texas 77845

Phone (409) 776-8945 FAX (409) 774-4705

Organics Laboratory

3304 Longmire Drive College Station, Texas 77845

Phone (409) 774-4999 Fax (409) 696-0962

TOX TOTAL ORGANIC HALIDES

Client: **GIANT REFINING COMPANY**
Project Location: Unknown
Sample ID: MW1-031696
Sample Number: 0396W00443/0696G00553
Sample Matrix: Water
Condition: Intact, Cool, pH=7

Report Date: 04/09/96
Date Sampled: 03/16/96
Date Received: 03/26/96
Date Analyzed: 04/09/96

Parameter	Concentration (ug/L)	Detection Limit (ug/L)
Total Organic Halides	ND	30
Concentration is the average of the replicates reported below		
Replicate #1	ND	30
Replicate #2	ND	30

ND - Analyte not detected at stated detection limit.

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States
Environmental Protection Agency, Third Edition, Final Update II,
September 1994.

Comments:

DG / PPS
Analyst

Nat 7 MPP
Review



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Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS ADDITIONAL DETECTED COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: **MW-1 - 031696**
Laboratory ID: **0396G00443 / 0696G00542**
Matrix: **Water**

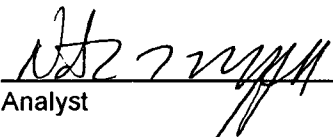
Report Date: **04/01/96**
Date Sampled: **03/16/96**
Date Analyzed: **03/26/96**
Time Analyzed: **11:19 PM**

Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry: Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846, United States Environmental Protection Agency, Final Update II, September 1994.

Comments:


Analyst


Review



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260
VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Project: **NA**
Sample ID: **MW-2 - 031696**
Laboratory ID: **0396G00442 / 0696G00541**
Sample Matrix **Water**
Preservative: **HCl**
Condition: **Intact, pH < 2**

Report Date: **04/01/96**
Date Sampled: **03/16/96**
Date Received: **03/22/96**
Date Extracted: **03/26/96**
Date Analyzed: **03/26/96**
Time Analyzed: **10:38 PM**

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: MW-2 - 031696
Laboratory ID: 0396G00442 / 0696G00541
Matrix: Water

Report Date: 04/01/96
Date Sampled: 03/16/96
Date Analyzed: 03/26/96
Time Analyzed: 10:38 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	100%	86 - 118%
Toluene-d8	99%	88 - 110%
Bromofluorobenzene	99%	86 - 117%

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: MW2-031696
Laboratory ID: 0396W00442
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/22/96
Date Sampled: 03/16/96
Time Sampled: 9:00 AM
Date Received: 03/21/96

Parameter	Analytical			
	Result	Units	Units	
Lab pH.....	8.8	s.u.		
Lab Conductivity @ 25° C.....	1,210	umhos/cm		
Total Dissolved Solids @ 180°C.....	676	mg/L		
Phenols.....	<0.01	mg/L		
Total Alkalinity as CaCO3.....	331	mg/L		
Total Hardness as CaCO3.....	3.00	mg/L		
Total Organic Carbon.....	<1	mg/L		
Bicarbonate as HCO3.....	365	mg/L	5.98	meq/L
Carbonate as CO3.....	19	mg/L	0.64	meq/L
Hydroxide as OH.....	<1	mg/L	<0.01	meq/L
Chloride.....	62.9	mg/L	1.77	meq/L
Sulfate.....	175	mg/L	3.65	meq/L
Calcium.....	1.00	mg/L	0.05	meq/L
Magnesium.....	0.12	mg/L	0.01	meq/L
Potassium.....	0.78	mg/L	0.01	meq/L
Sodium.....	269	mg/L	11.7	meq/L
Cations.....			11.8	meq/L
Anions.....			12.0	meq/L
Cation/Anion Difference.....			1.24	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by WM

Reviewed by Chellie

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client: **Giant Refining Company**
Project: Ciniza
Sample ID: MW2-031696
Laboratory ID: 0396W00442
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/22/96
Date Sampled: 03/16/96
Time Sampled: 9:00 AM
Date Received: 03/21/96

Parameter	Dissolved Analytical Result	Units	Total Analytical Result	Units
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Trace Metals

Arsenic.....	<0.005	mg/L		
Barium.....	0.02	mg/L		
Cadmium.....	<0.001	mg/L		
Chromium.....	NA	mg/L	<0.01	mg/L
Lead.....	NA	mg/L	<0.005	mg/L
Manganese.....	<0.02	mg/L		
Mercury.....	NA	mg/L	<0.001	mg/L
Selenium.....	<0.005	mg/L		
Silver.....	<0.01	mg/L		

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by WM

Reviewed by CEH



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 FAX (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

TOX TOTAL ORGANIC HALIDES

Client: **GIANT REFINING COMPANY**
Project Location: Unknown
Sample ID: MW2-031696
Sample Number: 0396W00442/0696G00552
Sample Matrix: Water
Condition: Intact, Cool, pH=7

Report Date: 04/09/96
Date Sampled: 03/16/96
Date Received: 03/26/96
Date Analyzed: 04/09/96

Parameter	Concentration (ug/L)	Detection Limit (ug/L)
Total Organic Halides	ND	30
Concentration is the average of the replicates reported below		
Replicate #1	ND	30
Replicate #2	ND	30

ND - Analyte not detected at stated detection limit.

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States
Environmental Protection Agency, Third Edition, Final Update II,
September 1994.

Comments:

DG/RRS
Analyst

NK 7/11/96
Review



Inorganic Laboratories
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Inter-Mountain Laboratories, Inc.

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260
VOLATILE ORGANIC COMPOUNDS
ADDITIONAL DETECTED COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: **MW-2 - 031696**
Laboratory ID: **0396G00442 / 0696G00541**
Matrix: **Water**

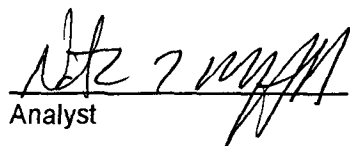
Report Date: **04/01/96**
Date Sampled: **03/16/96**
Date Analyzed: **03/26/96**
Time Analyzed: **10:38 PM**

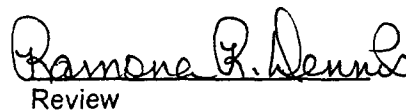
Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry: Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846, United States Environmental Protection Agency, Final Update II, September 1994.

Comments:


Analyst


Review



Inorganic Laboratories
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Inter-Mountain Laboratories, Inc.

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Project: **NMED-LTA**
Sample ID: **MW4-031396**
Laboratory ID: **0396W00418 / 0696G00476**
Sample Matrix: **Water**
Preservative: **HCl**
Condition: **Intact, pH < 2**

Report Date: **04/01/96**
Date Sampled: **03/13/96**
Date Received: **03/21/96**
Date Extracted: **03/22/96**
Date Analyzed: **03/22/96**
Time Analyzed: **10:33 PM**

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

**EPA Method 8260
VOLATILE ORGANIC COMPOUNDS**

Client: **GIANT REFINING COMPANY**
Sample ID: MW4-031396
Laboratory ID: 0396W00418 / 0696G00476
Matrix: Water

Report Date: 04/01/96
Date Sampled: 03/13/96
Date Analyzed: 03/22/96
Time Analyzed: 10:33 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	100%	86 - 118%
Toluene-d8	100%	88 - 110%
Bromofluorobenzene	98%	86 - 117%

Client: Giant Refining
Project: NMED-LTA
Sample ID: MW4-031396
Laboratory ID: 0396W00418
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/10/96
Date Sampled: 03/13/96
Time Sampled: 1:00 PM
Date Received: 03/20/96

Parameter	Analytical			
	Result	Units	Units	
Lab pH.....	8.7	s.u.		
Lab Conductivity @ 25° C.....	1,220	umhos/cm		
Total Dissolved Solids @ 180°C.....	766	mg/L		
Total Dissolved Solids (Calc).....	741	mg/L		
Phenols.....	<0.01	mg/L		
Total Alkalinity as CaCO ₃	446	mg/L		
Total Hardness as CaCO ₃	6.00	mg/L		
Total Organic Carbon.....	1.1	mg/L		
Bicarbonate as HCO ₃	528	mg/L	8.65	meq/L
Carbonate as CO ₃	8.4	mg/L	0.28	meq/L
Hydroxide as OH.....	<1	mg/L	<0.01	meq/L
Chloride.....	20.6	mg/L	0.58	meq/L
Sulfate.....	160	mg/L	3.33	meq/L
Calcium.....	2.00	mg/L	0.10	meq/L
Magnesium.....	0.24	mg/L	0.02	meq/L
Potassium.....	0.78	mg/L	0.02	meq/L
Sodium.....	290	mg/L	12.6	meq/L
Cations.....			12.7	meq/L
Anions.....			12.8	meq/L
Cation/Anion Difference.....			0.37	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by LB

Reviewed by WM

Client: **Giant Refining**
Project: NMED-LTA
Sample ID: MW4-031396
Laboratory ID: 0396W00418
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/10/96
Date Sampled: 03/13/96
Time Sampled: 1:00 PM
Date Received: 03/20/96

Parameter	Dissolved	Units	Total	Units
	Analytical		Analytical	
	Result		Result	

Trace Metals

Arsenic.....	<0.005	mg/L		
Barium.....	0.02	mg/L		
Cadmium.....	<0.002	mg/L		
Chromium.....	NA	mg/L	<0.01	mg/L
Lead.....	NA	mg/L	<0.005	mg/L
Manganese.....	<0.02	mg/L		
Mercury.....	NA	mg/L	<0.001	mg/L
Selenium.....	<0.005	mg/L		
Silver.....	<0.01	mg/L		

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by JB

Reviewed by WM



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
1111 SH 30 College Station, Texas 77845
PH (409) 776-8945 FAX (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

TOX TOTAL ORGANIC HALIDES

Client: GIANT REFINING COMPANY
Project Location: Unknown
Sample ID: MW4-031396
Sample Number: 0396W00418/0696G00546
Sample Matrix: Water
Condition: Intact, Cool, pH=7

Report Date: 04/09/96
Date Sampled: 03/13/96
Date Received: 03/26/96
Date Analyzed: 04/08/96

Parameter	Concentration (ug/L)	Detection Limit (ug/L)
Total Organic Halides	ND	30
Concentration is the average of the replicates reported below		
Replicate #1	ND	30
Replicate #2	ND	30

ND - Analyte not detected at stated detection limit.

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States
Environmental Protection Agency, Third Edition, Final Update II,
September 1994.

Comments:

DG/RRD
Analyst

NH2 7/2/96
Review



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS ADDITIONAL DETECTED COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: **MW4-031396**
Laboratory ID: **0396W00418 / 0696G00476**
Matrix: **Water**

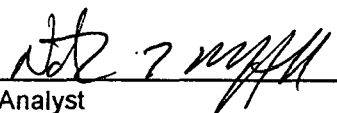
Report Date: **04/01/96**
Date Sampled: **03/13/96**
Date Analyzed: **03/22/96**
Time Analyzed: **10:33 PM**

Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry: Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846, United States Environmental Protection Agency, Final Update II, September 1994.

Comments:


Analyst


Review



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260
VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Project: **NMED-LTA**
Sample ID: **MW5-031396**
Laboratory ID: **0396W00419 / 0696G00477**
Sample Matrix **Water**
Preservative: **HCl**
Condition: **Intact, pH < 2**

Report Date: **04/01/96**
Date Sampled: **03/13/96**
Date Received: **03/21/96**
Date Extracted: **03/22/96**
Date Analyzed: **03/22/96**
Time Analyzed: **11:15 PM**

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260
VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: **MW5-031396**
Laboratory ID: **0396W00419 / 0696G00477**
Matrix: **Water**

Report Date: **04/01/96**
Date Sampled: **03/13/96**
Date Analyzed: **03/22/96**
Time Analyzed: **11:15 PM**

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	100%	86 - 118%
Toluene-d8	99%	88 - 110%
Bromofluorobenzene	99%	86 - 117%

Client: **Giant Refining**
Project: **NMED-LTA**
Sample ID: **MW5-031396**
Laboratory ID: **0396W00419**
Sample Matrix: **Water**
Condition: **Cool/Intact**

Date Reported: **04/10/96**
Date Sampled: **03/13/96**
Time Sampled: **9:00 AM**
Date Received: **03/20/96**

Parameter	Analytical			
	Result	Units	Units	
Lab pH.....	8.9	s.u.		
Lab Conductivity @ 25° C.....	1,200	umhos/cm		
Total Dissolved Solids @ 180°C.....	714	mg/L		
Total Dissolved Solids (Calc).....	712	mg/L		
Phenols.....	<0.01	mg/L		
Total Alkalinity as CaCO ₃	322	mg/L		
Total Hardness as CaCO ₃	5.00	mg/L		
Total Organic Carbon.....	<1	mg/L		
Bicarbonate as HCO ₃	339	mg/L	5.56	meq/L
Carbonate as CO ₃	26	mg/L	0.88	meq/L
Hydroxide as OH.....	<1	mg/L	<0.01	meq/L
Chloride.....	65.7	mg/L	1.85	meq/L
Sulfate.....	175	mg/L	3.65	meq/L
Calcium.....	1.60	mg/L	0.08	meq/L
Magnesium.....	0.24	mg/L	0.02	meq/L
Potassium.....	0.78	mg/L	0.02	meq/L
Sodium.....	275	mg/L	12.0	meq/L
Cations.....			12.1	meq/L
Anions.....			11.9	meq/L
Cation/Anion Difference.....			0.52	%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by JB

Reviewed by WM

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client: **Giant Refining**
Project: NMED-LTA
Sample ID: MW5-031396
Laboratory ID: 0396W00419
Sample Matrix: Water
Condition: Cool/Intact

Date Reported: 04/10/96
Date Sampled: 03/13/96
Time Sampled: 9:00 AM
Date Received: 03/20/96

Parameter	Dissolved	Units	Total	Units
	Analytical Result		Analytical Result	

Trace Metals

Arsenic.....	<0.005	mg/L		
Barium.....	0.02	mg/L		
Cadmium.....	<0.002	mg/L		
Chromium.....	NA	mg/L	<0.01	mg/L
Lead.....	NA	mg/L	<0.005	mg/L
Manganese.....	<0.02	mg/L		
Mercury.....	NA	mg/L	<0.001	mg/L
Selenium.....	<0.005	mg/L		
Silver.....	<0.01	mg/L		

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments:

Reported by

JB

Reviewed by

WM



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 FAX (409) 774-4705

Inter-Mountain Laboratories, Inc.

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

TOX TOTAL ORGANIC HALIDES

Client: **GIANT REFINING COMPANY**
Project Location: Unknown
Sample ID: MW5-031396
Sample Number: 0396W00419/0696G00547
Sample Matrix: Water
Condition: Intact, Cool, pH=7

Report Date: 04/09/96
Date Sampled: 03/13/96
Date Received: 03/26/96
Date Analyzed: 04/08/96

Parameter	Concentration (ug/L)	Detection Limit (ug/L)
Total Organic Halides	ND	30
Concentration is the average of the replicates reported below		
Replicate #1	ND	30
Replicate #2	ND	30

ND - Analyte not detected at stated detection limit.

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States
Environmental Protection Agency, Third Edition, Final Update II,
September 1994.

Comments:

DG / RRD
Analyst

Note 7 mg/L
Review



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS ADDITIONAL DETECTED COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: **MW5-031396**
Laboratory ID: **0396W00419 / 0696G00477**
Matrix: **Water**

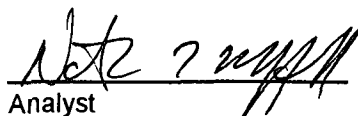
Report Date: **04/01/96**
Date Sampled: **03/13/96**
Date Analyzed: **03/22/96**
Time Analyzed: **11:15 PM**

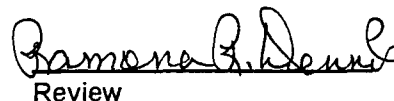
Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry: Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846, United States Environmental Protection Agency, Final Update II, September 1994.

Comments:


Analyst


Review

Quality Control / Quality Assurance**Known Analysis/Spike Analysis*****Dissolved Metals***

Client: Giant Refinery
Project: NMED-LTA
Lab ID: 0396W00418-420
Matrix: Water

Date Reported: 04/10/96
Date Sampled: 03/13/96
Date Received: 03/20/96

Known Analysis

Parameter	Found Result	Known Result	Units	Percent Recovery
Arsenic	0.009	0.010	mg/L	90%
Barium	0.97	1.00	mg/L	97%
Cadmium	0.004	0.004	mg/L	109%
Manganese	0.99	1.00	mg/L	99%
Selenium	0.011	0.010	mg/L	110%
Silver	1.00	1.00	mg/L	100%

Spike Analysis

Parameter	Spiked Sample Result	Sample Result	Spike Added	Percent Recovery
Arsenic	0.018	<0.005	0.020	90%
Barium	3.09	2.83	0.50	109%
Cadmium	0.002	<0.001	0.003	97%
Manganese	0.64	0.18	0.50	97%
Selenium	0.021	0.001	0.020	100%
Silver	0.47	<0.01	0.50	95%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments: Quality control run concurrently with the above sample lab numbers.

Reported by: JBReviewed by: WM

Quality Control / Quality Assurance**Spike Analysis / Known Analysis / Blank
Total Metals**

Client: Giant Refinery
Project: NMED-LTA
Lab ID: 0396W00418-420
Matrix: Water
Condition: Cool / Intact

Date Reported: 04/10/96
Date Sampled: 03/13/96
Date Received: 03/20/96

Spike Analysis

Parameter	Spike Result (mg/L)	Unspiked Sample Result (mg/L)	Spike Amount (mg/L)	Percent Recovery
Chromium	0.45	<0.01	0.50	90%
Lead	0.030	<0.005	0.025	119%
Mercury	0.009	<0.001	0.010	91%

Known Analysis

Parameter	Found Result (mg/L)	Known Result (mg/L)	Percent Recovery
Chromium	1.04	1.00	104%
Lead	0.041	0.040	101%
Mercury	0.010	0.010	102%

Blank Analysis

Parameter	Result	Detection Level (mg/L)
Chromium	ND	0.01
Lead	ND	0.005
Mercury	ND	0.001

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments: Quality control run concurrently with the above sample lab numbers.


Reported By:


Reviewed By:

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORTDuplicate AnalysisLab ID: 0396G00506
Sample Matrix: Water
Condition: Cool/IntactReport Date: 04/11/96
Date Analyzed: 04/04/96

Target Analyte	Duplicate Concentration (ppb)	Original Concentration (ppb)	% Difference
Benzene	102,100	129,200	23.4
Toluene	113,100	152,300	29.5
Ethylbenzene	4,720	6,350	29.4
m,p-Xylenes	16,700	21,500	25.1
o-Xylene	7,470	9,290	21.7

ND - Analyte not detected at the stated detection limit.

NA - Not applicable or not calculated.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Bromofluorobenzene	99.6%	75 -115%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:


Analyst
Review

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORTMatrix Spike AnalysisLab ID: 0396W00503
Sample Matrix: Water
Condition: Cool/IntactReport Date: 04/11/96
Date Analyzed: 04/04/96

Target Analyte	Spiked Sample Result in ng	Sample result in ng	Spike Added (ng)	% Recovery	Acceptance Limits (%)
Benzene	40.28	0.61	45	88.2%	70-130
Toluene	37.75	0.32	45	83.2%	70-130
Ethylbenzene	39.08	0.00	45	86.8%	70-130
m,p-Xylenes	81.66	0.37	90	90.3%	70-130
o-Xylene	38.98	0.00	45	86.6%	70-130

ND - Analyte not detected at the stated detection limit.

NA - Not applicable or not calculated.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Bromofluorobenzene	105.4%	75 -125%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Quality Control / Quality Assurance**Known Analysis****BTEX**Client: **Giant Refining Co.**
Project: **Not Given**Date Reported: **04/09/96**
Date Analyzed: **04/04/96****Known Analysis**

Parameter	Found Concentration (ppb)	Known Concentration (ppb)	Percent Recovery	Acceptance Limits
Benzene	8.89	9.0	99%	70-130%
Toluene	8.62	9.0	96%	70-130%
Ethylbenzene	8.11	9.0	90%	70-130%
m+p-Xylene	17.1	18.0	95%	70-130%
o-Xylene	8.23	9.0	91%	70-130%

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Bromofluorobenzene	103.9	75-125%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Reported by AKReviewed by JB



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260
VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Project: NA
Sample ID: Trip Blank
Laboratory ID: 0696G00543
Sample Matrix: Water
Preservative: HCl
Condition: Intact, pH < 2

Report Date: 04/01/96
Date Sampled: NA
Date Received: 03/22/96
Date Extracted: 03/26/96
Date Analyzed: 03/26/96
Time Analyzed: 11:59 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



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Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: Trip Blank
Laboratory ID: 0696G00543
Matrix: Water

Report Date: 04/01/96
Date Sampled: NA
Date Analyzed: 03/26/96
Time Analyzed: 11:59 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	101%	86 - 118%
Toluene-d8	99%	88 - 110%
Bromofluorobenzene	97%	86 - 117%



Inorganic Laboratories
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260
VOLATILE ORGANIC COMPOUNDS
ADDITIONAL DETECTED COMPOUNDS

Client: GIANT REFINING COMPANY
Sample ID: Trip Blank
Laboratory ID: 0696G00543
Matrix: Water

Report Date: 04/01/96
Date Sampled: NA
Date Analyzed: 03/26/96
Time Analyzed: 11:59 PM

Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry: Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846, United States Environmental Protection Agency, Final Update II, September 1994.

Comments:

Not 2 2/2/96
Analyst

Ramona R. Dennis
Review



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260
VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Project: **NMED-LTA**
Sample ID: **Trip Blank**
Laboratory ID: **0696G00479**
Sample Matrix **Water**
Preservative: **HCl**
Condition: **Intact, pH < 2**

Report Date: **04/01/96**
Date Sampled: **NA**
Date Received: **03/21/96**
Date Extracted: **03/22/96**
Date Analyzed: **03/22/96**
Time Analyzed: **11:59 PM**

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



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Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: Trip Blank
Laboratory ID: 0696G00479
Matrix: Water

Report Date: 04/01/96
Date Sampled: NA
Date Analyzed: 03/22/96
Time Analyzed: 11:59 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	99%	86 - 118%
Toluene-d8	99%	88 - 110%
Bromofluorobenzene	98%	86 - 117%



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Inorganic Laboratories
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

EPA Method 8260 VOLATILE ORGANIC COMPOUNDS ADDITIONAL DETECTED COMPOUNDS

Client: **GIANT REFINING COMPANY**
Sample ID: Trip Blank
Laboratory ID: 0696G00479
Matrix: Water

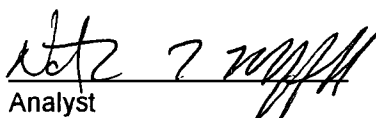
Report Date: 04/01/96
Date Sampled: NA
Date Analyzed: 03/22/96
Time Analyzed: 11:59 PM

Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry: Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846, United States Environmental Protection Agency, Final Update II, September 1994.

Comments:


Analyst


Review

Quality Control / Quality Assurance**Spike Analysis / Known Analysis / Blank
Total Metals**

Client: Giant Refining Company
Project: Ciniza
Lab ID: 0396W00439-441
Matrix: Water
Condition: Cool / Intact

Date Reported: 04/22/96
Date Sampled: 3/14-15/96
Date Received: 03/21/96

Spike Analysis

Parameter	Spike Result (mg/L)	Unspiked Sample Result (mg/L)	Spike Amount (mg/L)	Percent Recovery
Chromium	0.53	<0.01	0.50	105%
Lead	0.029	<0.005	0.025	117%

Known Analysis

Parameter	Found Result (mg/L)	Known Result (mg/L)	Percent Recovery
Chromium	1.07	1.00	107%
Lead	0.041	0.040	101%

Blank Analysis

Parameter	Result	Detection Level (mg/L)
Chromium	ND	0.01
Lead	ND	0.005

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments: Quality control run concurrently with the above sample lab numbers.

WM
Reported By:

Charles
Reviewed By:

Quality Control / Quality Assurance**Known Analysis/Spike Analysis*****Dissolved Metals***

Client: Giant Refining Company
Project: Ciniza
Lab ID: 0396W00442-443
Matrix: Water

Date Reported: 04/22/96
Date Sampled: 03/16/96
Date Received: 03/21/96

Known Analysis

Parameter	Found Result	Known Result	Units	Percent Recovery
Arsenic	0.009	0.010	mg/L	90%
Barium	0.97	1.00	mg/L	97%
Cadmium	0.004	0.004	mg/L	101%
Manganese	0.99	1.00	mg/L	99%
Selenium	0.011	0.010	mg/L	110%
Silver	0.98	1.00	mg/L	98%

Spike Analysis

Parameter	Spiked Sample Result	Sample Result	Spike Added	Percent Recovery
Arsenic	0.019	0.001	0.020	85%
Barium	3.09	2.83	0.50	109%
Cadmium	0.002	<0.001	0.003	91%
Manganese	0.64	0.18	0.50	97%
Selenium	0.019	<0.005	0.020	95%
Silver	0.47	<0.01	0.50	95%

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments: Quality control run concurrently with the above sample lab numbers.

Reported by: WMReviewed by: ABH

Quality Control / Quality Assurance**Spike Analysis / Known Analysis / Blank
Total Metals**

Client: Giant Refining Company
Project: Ciniza
Lab ID: 0396W00442-443
Matrix: Water
Condition: Cool / Intact

Date Reported: 04/22/96
Date Sampled: 03/16/96
Date Received: 03/21/96

Spike Analysis

Parameter	Spike Result (mg/L)	Unspiked Sample Result (mg/L)	Spike Amount (mg/L)	Percent Recovery
Chromium	0.45	<0.01	0.50	90%
Lead	0.030	<0.005	0.025	117%
Mercury	NS	NS	NS	NA

Known Analysis

Parameter	Found Result (mg/L)	Known Result (mg/L)	Percent Recovery
Chromium	1.04	1.00	104%
Lead	0.041	0.040	101%
Mercury	0.010	0.010	102%

Blank Analysis

Parameter	Result	Detection Level (mg/L)
Chromium	ND	0.01
Lead	ND	0.005
Mercury	ND	0.001

Reference: U.S.E.P.A. 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
"Standard Methods For The Examination Of Water And Waste Water", 19th ed., 1995.

Comments: Quality control run concurrently with the above sample lab numbers.

WM
Reported By:

[Signature]
Reviewed By:



Inorganic Laboratories
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 FAX (409) 774-4705

Inter-Mountain Laboratories, Inc.

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - MATRIX SPIKE

TOX TOTAL ORGANIC HALIDES

Sample ID: Matrix Spike / Spike Duplicate
Sample Number: 0696G00546 MS/MSD
Sample Matrix: Water
Condition: Intact, Cool, pH=7

Report Date: 04/09/96
Date Sampled: 03/13/96
Date Received: 03/26/96
Date Analyzed: 04/08/96

Total Organic Halides	Spiked Sample Concentration	Sample Concentration	Spike Amount	Percent Recovery	Acceptance Limits
Matrix Spike	54	ND	50	109%	75-125
Matrix Spike Dup	55	ND	50	109%	75-125
%RPD				0%	

ND - Analyte not detected at stated detection limit

%RPD - Relative percent deviation

All unlabeled values are in units of micrograms per liter (ug/L)

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States
Environmental Protection Agency, Third Edition, Final Update II,
September 1994.

Comments:

DG / RPD
Analyst

WZ 7/27/96
Review



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Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
F (409) 776-8945 FAX (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK

TOX TOTAL ORGANIC HALIDES

Sample ID: Method Blank
Sample Number: MB040896
Sample Matrix: Water
Condition: NA

Report Date: 04/09/96
Date Sampled: NA
Date Received: NA
Date Analyzed: 04/08/96

Parameter	Concentration (ug/L)	Detection Limit (ug/L)
Total Organic Halides	ND	30
Concentration is the average of the replicates reported below		
Replicate #1	ND	30
Replicate #2	ND	30

ND - Analyte not detected at stated detection limit.

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States Environmental
Protection Agency, Third Edition, Final Update II, September 1994.

Comments:

SG/RPS
Analyst

John Z. Maffey
Review



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
P (409) 776-8945 FAX (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK

TOX TOTAL ORGANIC HALIDES

Sample ID: Method Blank
Sample Number: MB040996
Sample Matrix: Water
Condition: NA

Report Date: 04/09/96
Date Sampled: NA
Date Received: NA
Date Analyzed: 04/09/96

Parameter	Concentration (ug/L)	Detection Limit (ug/L)
Total Organic Halides	ND	30
Concentration is the average of the replicates reported below		
Replicate #1	ND	30
Replicate #2	ND	30

ND - Analyte not detected at stated detection limit.

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States Environmental
Protection Agency, Third Edition, Final Update II, September 1994.

Comments:

DG / RRD
Analyst

Walt 7 mpm
Review



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
P (409) 776-8945 FAX (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - MATRIX SPIKE

TOX TOTAL ORGANIC HALIDES

Sample ID: Matrix Spike / Spike Duplicate
Sample Number: 0696G00551 MS/MSD
Sample Matrix: Water
Condition: Intact, Cool, pH=7

Report Date: 04/09/96
Date Sampled: 03/14/96
Date Received: 03/26/96
Date Analyzed: 04/09/96

Total Organic Halides	Spiked Sample Concentration	Sample Concentration	Spike Amount	Percent Recovery	Acceptance Limits
Matrix Spike	58	ND	50	116%	75-125
Matrix Spike Dup	55	ND	50	109%	75-125
%RPD				6%	

ND - Analyte not detected at stated detection limit

%RPD - Relative percent deviation

All unlabeled values are in units of micrograms per liter (ug/L)

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States
Environmental Protection Agency, Third Edition, Final Update II,
September 1994.

Comments:

DG/RED
Analyst

Nitz 7 m/m
Review

CHAIN OF CUSTODY RECORD

...

Project Name		Project Location		Chain of Custody Tape No.		ANALYSES / PARAMETERS	
Sample No./ Identification		Date	Time	Lab Number	Matrix	No. of Containers	Remarks
43-031596	3-15-96	1305			H ₂ O	8	SEE ATTACHED
44-031596	3-15-96	10:38			"	8	W-51
45-031496	3-14-96	1308			"	8	
42-031696	3-16-96	0900		0386W00442	4	8	
41-031696	3-16-96	1300		0386W00443	"	8	
							cool + intact
Received by: (Signature)		Date	Time	Received by: (Signature)		Date	Time
<i>[Signature]</i>		3-20-96	11:04	Chris Raymond		3-12-96	0900
Received by: (Signature)		Date	Time	Received by: (Signature)		Date	Time
Received by: (Signature)		Date	Time	Received by laboratory: (Signature)		Date	Time

Inter-Mountain Laboratories, Inc.

33 Terra Avenue
 Sheridan, Wyoming 82801
 Telephone (307) 852-8945

1701 Phillips Circle
 Gillette, Wyoming 82718
 Telephone (307) 852-8945

4506 West Main Street
 Farmington, NM 87401
 Telephone (505) 326-4737

1160 Research Dr.
 Bozeman, Montana 59715
 Telephone (406) 586-8450

11183 SH 30
 College Station, TX 77845
 Telephone (409) 776-8945

3304 Longmire Drive
 College Station, TX 77845
 Telephone (409) 774-4999

34119



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK
EPA METHOD 8260 - VOLATILE ORGANIC COMPOUNDS

Sample ID: Method Blank
Laboratory ID: MB0322
Sample Matrix Water

Report Date: 03/25/96
Date Extracted: 03/22/96
Date Analyzed: 03/22/96
Time Analyzed: 7:04 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK
EPA METHOD 8260 - VOLATILE ORGANIC COMPOUNDS

Page 2

Sample ID: Method Blank
Laboratory ID: MB0322

Report Date: 03/25/96
Date Sampled: 03/22/96
Date Analyzed: 03/22/96
Time Analyzed: 7:04 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	99%	86 - 118%
Toluene-d8	101%	88 - 110%
Bromofluorobenzene	99%	86 - 117%



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Inter-Mountain Laboratories, Inc.

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK
EPA METHOD 8260 - VOLATILE ORGANIC COMPOUNDS
ADDITIONAL DETECTED COMPOUNDS

Page 3

Sample ID: Method Blank
Laboratory ID: MB0322

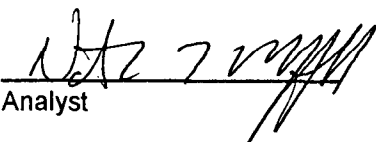
Report Date: 03/25/96
Date Sampled: 03/22/96
Date Analyzed: 03/22/96
Time Analyzed: 7:04 PM

Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry:
Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846,
United States Environmental Protection Agency, Final Update II, September 1994.

Comments:


Analyst


Review



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK
EPA METHOD 8260 - VOLATILE ORGANIC COMPOUNDS

Sample ID: Method Blank
Laboratory ID: MB0326
Sample Matrix Water

Report Date: 03/29/96
Date Extracted: 03/26/96
Date Analyzed: 03/26/96
Time Analyzed: 8:35 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK
EPA METHOD 8260 - VOLATILE ORGANIC COMPOUNDS

Page 2

Sample ID: Method Blank
Laboratory ID: MB0326

Report Date: 03/29/96
Date Sampled: 03/26/96
Date Analyzed: 03/26/96
Time Analyzed: 8:35 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	98%	86 - 118%
Toluene-d8	100%	88 - 110%
Bromofluorobenzene	98%	86 - 117%



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK
EPA METHOD 8260 - VOLATILE ORGANIC COMPOUNDS
ADDITIONAL DETECTED COMPOUNDS

Page 3

Sample ID: Method Blank
Laboratory ID: MB0326

Report Date: 03/29/96
Date Sampled: 03/26/96
Date Analyzed: 03/26/96
Time Analyzed: 8:35 PM

Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry:
Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846,
United States Environmental Protection Agency, Final Update II, September 1994.

Comments:

Nate M. M. M.
Analyst

Ramona R. Deen
Review



Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - BLANK SPIKE / SPIKE DUPLICATE ANALYSIS EPA METHOD 8260 - VOLATILE ORGANICS

Laboratory ID: Blank Spike and Blank Spike Duplicate
Sample Matrix: Water
Preservative: NA
Condition: NA

Report Date: 03/25/96
Date Sampled: NA
Date Received: NA
Date Analyzed: 03/22/96
Time Analyzed: 7:46 PM / 8:28 PM

BLANK SPIKE ANALYSIS

Analyte	Spiked Sample Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery	QC Limits Recovery
1,1 - Dichloroethene	0.055	ND	0.050	110%	61 - 145
Trichloroethene	0.051	ND	0.050	102%	71 - 120
Benzene	0.050	ND	0.050	100%	76 - 127
Toluene	0.049	ND	0.050	98%	76 - 125
Chlorobenzene	0.049	ND	0.050	98%	75 - 130

BLANK SPIKE DUPLICATE ANALYSIS

Analyte	Duplicate Result (mg/L)	Percent Recovery	Original Spike Result (%)	RPD	QC Limits RPD	Rec.
1,1 - Dichloroethene	0.057	114%	110%	4%	14%	61 - 145
Trichloroethene	0.052	104%	102%	2%	14%	71 - 120
Benzene	0.051	102%	100%	2%	11%	76 - 127
Toluene	0.051	102%	98%	4%	13%	76 - 125
Chlorobenzene	0.050	100%	98%	2%	13%	75 - 130

ND - Analyte not detected at stated limit of detection

Spike Recovery: 0 out of 10 outside QC Limits
RPD: 0 out of 5 outside QC Limits

Quality Control:	Surrogate	Spike Recovery	Duplicate Recovery	Recovery Limits
	Dibromofluoromethane	99%	100%	86 - 118%
	Toluene-d8	100%	100%	88 - 110%
	Bromofluorobenzene	98%	97%	86 - 115%

Reference: Method 8260A: Gas Chromatography / Mass Spectrometry for Volatile Organics
Test Methods for Evaluating Solid Waste, SW - 846, Final Update II, United States
Environmental Protection Agency, September 1994.

Comments:

Analyst

Review



Inter-Mountain Laboratories, Inc.

Inorganic Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - BLANK SPIKE / SPIKE DUPLICATE ANALYSIS

EPA METHOD 8260 - VOLATILE ORGANICS

Laboratory ID: Blank Spike and Blank Spike Duplicate
Sample Matrix: Water
Preservative: NA
Condition: NA

Report Date: 03/27/96
Date Sampled: NA
Date Received: NA
Date Analyzed: 03/26/96
Time Analyzed: 9:16 PM / 9:57 PM

BLANK SPIKE ANALYSIS

Analyte	Spiked Sample Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery	QC Limits Recovery
1,1 - Dichloroethene	0.056	ND	0.050	112%	61 - 145
Trichloroethene	0.049	ND	0.050	98%	71 - 120
Benzene	0.048	ND	0.050	96%	76 - 127
Toluene	0.047	ND	0.050	94%	76 - 125
Chlorobenzene	0.046	ND	0.050	92%	75 - 130

BLANK SPIKE DUPLICATE ANALYSIS

Analyte	Duplicate Result (mg/L)	Percent Recovery	Original Spike Result (%)	RPD	QC Limits RPD	Rec.
1 - Dichloroethene	0.055	110%	112%	2%	14%	61 - 145
Trichloroethene	0.047	94%	98%	4%	14%	71 - 120
Benzene	0.047	94%	96%	2%	11%	76 - 127
Toluene	0.042	84%	94%	11%	13%	76 - 125
Chlorobenzene	0.045	90%	92%	2%	13%	75 - 130

ND - Analyte not detected at stated limit of detection

Spike Recovery: 0 out of 10 outside QC Limits
RPD: 0 out of 5 outside QC Limits

Quality Control:	Surrogate	Spike Recovery	Duplicate Recovery	Recovery Limits
	Dibromofluoromethane	99%	99%	86 - 118%
	Toluene-d8	100%	100%	88 - 110%
	Bromofluorobenzene	97%	97%	86 - 115%

Reference: Method 8260A: Gas Chromatography / Mass Spectrometry for Volatile Organics
Test Methods for Evaluating Solid Waste, SW - 846, Final Update II, United States
Environmental Protection Agency, September 1994.

Comments:

Analyst

Review

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORTDuplicate AnalysisLab ID: 0396W00421
Sample Matrix: Water
Condition: Cool/IntactReport Date: 04/02/96
Date Analyzed: 03/27/96

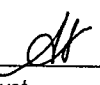
Target Analyte	Duplicate Concentration (ppb)	Original Concentration (ppb)	% Difference
Benzene	ND	ND	NA
Toluene	ND	ND	NA
Ethylbenzene	ND	ND	NA
m,p-Xylenes	ND	ND	NA
o-Xylene	ND	ND	NA

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Bromofluorobenzene	120.5%	75 -115%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:



Analyst

Review

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORTMatrix Spike AnalysisLab ID: 0396W00422
Sample Matrix: Water
Condition: Cool/IntactReport Date: 04/02/96
Date Analyzed: 03/27/96

Target Analyte	Spiked Sample Result in ng	Sample result in ng	Spike Added (ng)	% Recovery	Acceptance Limits (%)
Benzene	57.66	0.86	60	94.7%	70-130
Toluene	53.22	0.00	60	88.7%	70-130
Ethylbenzene	55.14	0.00	60	91.9%	70-130
m,p-Xylenes	114.38	0.00	120	95.3%	70-130
o-Xylene	55.79	0.00	60	93.0%	70-130

ND - Analyte not detected at the stated detection limit.

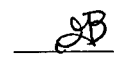
NA - Not applicable or not calculated.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Bromofluorobenzene	107.6%	75 -125%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:



Analyst

Review

Quality Control / Quality Assurance**Known Analysis****BTEX**Client: Giant Refining Co.
Project: NMED-LTADate Reported: 03/28/96
Date Analyzed: 03/27/96**Known Analysis**

Parameter	Found Concentration (ppb)	Known Concentration (ppb)	Percent Recovery	Acceptance Limits
Benzene	8.95	9.0	99%	70-130%
Toluene	8.43	9.0	94%	70-130%
Ethylbenzene	8.20	9.0	91%	70-130%
m+p-Xylene	17.3	18.0	96%	70-130%
o-Xylene	8.31	9.0	92%	70-130%

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Bromofluorobenzene	104.9	75-125%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Reported by drReviewed by JB

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORTMethod Blank AnalysisSample Matrix:
Lab ID:Water
Method BlankReport Date:
Date Analyzed:04/02/96
03/27/96

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
Benzene	ND	0.2
Toluene	ND	0.2
Ethylbenzene	ND	0.2
m,p-Xylenes	ND	0.2
o-Xylene	ND	0.2

ND - Analyte not detected at the stated detection limit.

Quality Control:

SurrogatePercent RecoveryAcceptance Limits

Bromofluorobenzene

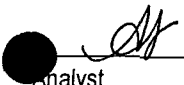
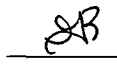
100.4

75-125%

Reference:

Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test
Methods for Evaluating Solid Wastes, SW-846, United States Environmental
Protection Agency, September 1986.

Comments:


Analyst
Review



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK
EPA METHOD 8260 - VOLATILE ORGANIC COMPOUNDS

Sample ID: Method Blank
Laboratory ID: MB0322
Sample Matrix Water

Report Date: 03/25/96
Date Extracted: 03/22/96
Date Analyzed: 03/22/96
Time Analyzed: 7:04 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK
EPA METHOD 8260 - VOLATILE ORGANIC COMPOUNDS

Page 2

Sample ID: Method Blank
Laboratory ID: MB0322

Report Date: 03/25/96
Date Sampled: 03/22/96
Date Analyzed: 03/22/96
Time Analyzed: 7:04 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	99%	86 - 118%
Toluene-d8	101%	88 - 110%
Bromofluorobenzene	99%	86 - 117%



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK
EPA METHOD 8260 - VOLATILE ORGANIC COMPOUNDS
ADDITIONAL DETECTED COMPOUNDS

Page 3

Sample ID: Method Blank
Laboratory ID: MB0322

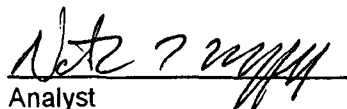
Report Date: 03/25/96
Date Sampled: 03/22/96
Date Analyzed: 03/22/96
Time Analyzed: 7:04 PM

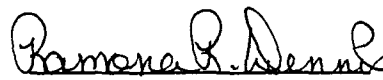
Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry:
Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846,
United States Environmental Protection Agency, Final Update II, September 1994.

Comments:


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Inorganic Laboratories
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Inter-Mountain Laboratories, Inc.

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK EPA METHOD 8260 - VOLATILE ORGANIC COMPOUNDS

Sample ID: Method Blank
Laboratory ID: MB0326
Sample Matrix Water

Report Date: 03/29/96
Date Extracted: 03/26/96
Date Analyzed: 03/26/96
Time Analyzed: 8:35 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
Acetone	ND	0.03
Acrolein	ND	0.02
Acrylonitrile	ND	0.01
Benzene	ND	0.005
Bromodichloromethane	ND	0.005
Bromoform	ND	0.005
Bromomethane	ND	0.005
Carbon Disulfide	ND	0.01
Carbon Tetrachloride	ND	0.005
Chlorobenzene	ND	0.005
Chlorodibromoethane	ND	0.005
Chloroethane	ND	0.005
2-Chloroethylvinyl ether	ND	0.005
Chloroform	ND	0.005
Chloromethane	ND	0.005
Dibromomethane	ND	0.005
t-1,4-Dichloro-2-butene	ND	0.05
Dichlorodifluoromethane	ND	0.005
1,1-Dichloroethane	ND	0.005
1,2-Dichloroethane	ND	0.005
1,1-Dichloroethene	ND	0.005
trans-1,2-Dichloroethene	ND	0.005
1,2-Dichloropropane	ND	0.005
cis-1,3-Dichloropropene	ND	0.005
trans-1,3-Dichloropropene	ND	0.005
Ethyl Benzene	ND	0.005
Ethyl Methacrylate	ND	0.005
2-Hexanone	ND	0.01
Iodomethane	ND	0.01
Methylene Chloride	ND	0.02
Methyl Ethyl Ketone	ND	0.01
4-Methyl-2-Pentanone	ND	0.01
Styrene	ND	0.005

ND - Analyte not detected at stated limit of detection



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK
EPA METHOD 8260 - VOLATILE ORGANIC COMPOUNDS

Page 2

Sample ID: Method Blank
Laboratory ID: MB0326

Report Date: 03/29/96
Date Sampled: 03/26/96
Date Analyzed: 03/26/96
Time Analyzed: 8:35 PM

Analyte	Concentration (mg/L)	Detection Limit (mg/L)
1,1,2,2-Tetrachloroethane	ND	0.005
Tetrachloroethene	ND	0.005
Toluene	ND	0.005
1,1,1-Trichloroethane	ND	0.005
1,1,2-Trichloroethane	ND	0.005
Trichloroethene	ND	0.005
Trichlorofluoromethane	ND	0.005
1,2,3-Trichloropropane	ND	0.02
Vinyl Acetate	ND	0.01
Vinyl Chloride	ND	0.005
Xylenes	ND	0.005

ND - Analyte not detected at stated limit of detection

Quality Control:

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
Dibromofluoromethane	98%	86 - 118%
Toluene-d8	100%	88 - 110%
Bromofluorobenzene	98%	86 - 117%



Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Inter-Mountain Laboratories, Inc.

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK
EPA METHOD 8260 - VOLATILE ORGANIC COMPOUNDS
ADDITIONAL DETECTED COMPOUNDS

Page 3

Sample ID: Method Blank
Laboratory ID: MB0326

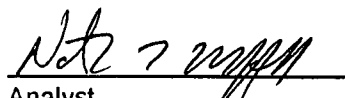
Report Date: 03/29/96
Date Sampled: 03/26/96
Date Analyzed: 03/26/96
Time Analyzed: 8:35 PM

Tentative Identification	Retention Time (Minutes)	Concentration * (mg/L)
None detected at reportable levels		

* - Concentration calculated using assumed Relative Response Factor = 1

Reference: Method 8260: Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry:
Capillary Column Technique. Test Methods for Evaluating Solid Waste, SW - 846,
United States Environmental Protection Agency, Final Update II, September 1994.

Comments:


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Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - BLANK SPIKE / SPIKE DUPLICATE ANALYSIS EPA METHOD 8260 - VOLATILE ORGANICS

Laboratory ID: Blank Spike and Blank Spike Duplicate
Sample Matrix: Water
Preservative: NA
Condition: NA

Report Date: 03/25/96
Date Sampled: NA
Date Received: NA
Date Analyzed: 03/22/96
Time Analyzed: 7:46 PM / 8:28 PM

BLANK SPIKE ANALYSIS

Analyte	Spiked Sample Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery	QC Limits Recovery
1,1 - Dichloroethene	0.055	ND	0.050	110%	61 - 145
Trichloroethene	0.051	ND	0.050	102%	71 - 120
Benzene	0.050	ND	0.050	100%	76 - 127
Toluene	0.049	ND	0.050	98%	76 - 125
Chlorobenzene	0.049	ND	0.050	98%	75 - 130

BLANK SPIKE DUPLICATE ANALYSIS

Analyte	Duplicate Result (mg/L)	Percent Recovery	Original Spike Result (%)	RPD	QC Limits RPD	Rec.
1,1 - Dichloroethene	0.057	114%	110%	4%	14%	61 - 145
Trichloroethene	0.052	104%	102%	2%	14%	71 - 120
Benzene	0.051	102%	100%	2%	11%	76 - 127
Toluene	0.051	102%	98%	4%	13%	76 - 125
Chlorobenzene	0.050	100%	98%	2%	13%	75 - 130

ND - Analyte not detected at stated limit of detection

Spike Recovery: 0 out of 10 outside QC Limits
RPD: 0 out of 5 outside QC Limits

Quality Control:	<u>Surrogate</u>	<u>Spike Recovery</u>	<u>Duplicate Recovery</u>	<u>Recovery Limits</u>
	Dibromofluoromethane	99%	100%	86 - 118%
	Toluene-d8	100%	100%	88 - 110%
	Bromofluorobenzene	98%	97%	86 - 115%

Reference: Method 8260A: Gas Chromatography / Mass Spectrometry for Volatile Organics
Test Methods for Evaluating Solid Waste, SW - 846, Final Update II, United States
Environmental Protection Agency, September 1994.

Comments:

Not 7/22/94
Analyst

Ramona R. Daniels
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Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 Fax (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - BLANK SPIKE / SPIKE DUPLICATE ANALYSIS EPA METHOD 8260 - VOLATILE ORGANICS

Laboratory ID: Blank Spike and Blank Spike Duplicate
Sample Matrix: Water
Preservative: NA
Condition: NA

Report Date: 03/27/96
Date Sampled: NA
Date Received: NA
Date Analyzed: 03/26/96
Time Analyzed: 9:16 PM / 9:57 PM

BLANK SPIKE ANALYSIS

Analyte	Spiked Sample Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery	QC Limits Recovery
1,1 - Dichloroethene	0.056	ND	0.050	112%	61 - 145
Trichloroethene	0.049	ND	0.050	98%	71 - 120
Benzene	0.048	ND	0.050	96%	76 - 127
Toluene	0.047	ND	0.050	94%	76 - 125
Chlorobenzene	0.046	ND	0.050	92%	75 - 130

BLANK SPIKE DUPLICATE ANALYSIS

Analyte	Duplicate Result (mg/L)	Percent Recovery	Original Spike Result (%)	RPD	QC Limits RPD	Rec.
1,1 - Dichloroethene	0.055	110%	112%	2%	14%	61 - 145
Trichloroethene	0.047	94%	98%	4%	14%	71 - 120
Benzene	0.047	94%	96%	2%	11%	76 - 127
Toluene	0.042	84%	94%	11%	13%	76 - 125
Chlorobenzene	0.045	90%	92%	2%	13%	75 - 130

ND - Analyte not detected at stated limit of detection

Spike Recovery: 0 out of 10 outside QC Limits
RPD: 0 out of 5 outside QC Limits

Quality Control:	<u>Surrogate</u>	<u>Spike Recovery</u>	<u>Duplicate Recovery</u>	<u>Recovery Limits</u>
	Dibromofluoromethane	99%	99%	86 - 118%
	Toluene-d8	100%	100%	88 - 110%
	Bromofluorobenzene	97%	97%	86 - 115%

Reference: Method 8260A: Gas Chromatography / Mass Spectrometry for Volatile Organics
Test Methods for Evaluating Solid Waste, SW - 846, Final Update II, United States
Environmental Protection Agency, September 1994.

Comments:

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Inorganic Laboratories
11183 SH 30 College Station, Texas 77845
(409) 776-8945 FAX (409) 774-4705

Inter-Mountain Laboratories, Inc.

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK

TOX TOTAL ORGANIC HALIDES

Sample ID: Method Blank
Sample Number: MB040896
Sample Matrix: Water
Condition: NA

Report Date: 04/09/96
Date Sampled: NA
Date Received: NA
Date Analyzed: 04/08/96

Parameter	Concentration (ug/L)	Detection Limit (ug/L)
Total Organic Halides	ND	10
Concentration is the average of the replicates reported below		
Replicate #1	ND	10
Replicate #2	ND	10

ND - Analyte not detected at stated detection limit.

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States Environmental
Protection Agency, Third Edition, Final Update II, September 1994.

Comments:

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Inter-Mountain Laboratories, Inc.

Inorganics Laboratory
11183 SH 30 College Station, Texas 77845
(409) 776-8945 FAX (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - METHOD BLANK

TOX TOTAL ORGANIC HALIDES

Sample ID: Method Blank
Sample Number: MB040996
Sample Matrix: Water
Condition: NA

Report Date: 04/09/96
Date Sampled: NA
Date Received: NA
Date Analyzed: 04/09/96

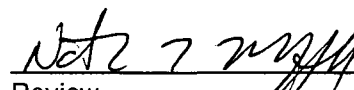
Parameter	Concentration (ug/L)	Detection Limit (ug/L)
Total Organic Halides	ND	10
Concentration is the average of the replicates reported below		
Replicate #1	ND	10
Replicate #2	ND	10

ND - Analyte not detected at stated detection limit.

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States Environmental
Protection Agency, Third Edition, Final Update II, September 1994.

Comments:


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Inter-Mountain Laboratories, Inc.

Inorganic Laboratory
11183 SH 30 College Station, Texas 77845
Phone (409) 776-8945 FAX (409) 774-4705

Organics Laboratory
3304 Longmire Drive College Station, Texas 77845
Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - MATRIX SPIKE

TOX TOTAL ORGANIC HALIDES

Sample ID: Matrix Spike / Spike Duplicate
Sample Number: 0696G00546 MS/MSD
Sample Matrix: Water
Condition: Intact, Cool, pH=7

Report Date: 04/09/96
Date Sampled: 03/13/96
Date Received: 03/26/96
Date Analyzed: 04/08/96

Total Organic Halides	Spiked Sample Concentration	Sample Concentration	Spike Amount	Percent Recovery	Acceptance Limits
Matrix Spike	54	ND	50	109%	75-125
Matrix Spike Dup	55	ND	50	109%	75-125
%RPD				0%	

ND - Analyte not detected at stated detection limit

%RPD - Relative percent deviation

All unlabeled values are in units of micrograms per liter (ug/L)

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States
Environmental Protection Agency, Third Edition, Final Update II,
September 1994.

Comments:

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Inter-Mountain Laboratories, Inc.

Inorganic Laboratories

11183 SH 30 College Station, Texas 77845

Phone (409) 776-8945 FAX (409) 774-4705

Organics Laboratory

3304 Longmire Drive College Station, Texas 77845

Phone (409) 774-4999 Fax (409) 696-0962

QUALITY CONTROL REPORT - MATRIX SPIKE

TOX

TOTAL ORGANIC HALIDES

Sample ID: Matrix Spike / Spike Duplicate
Sample Number: 0696G00551 MS/MSD
Sample Matrix: Water
Condition: Intact, Cool, pH=7

Report Date: 04/09/96
Date Sampled: Unknown
Date Received: 03/26/96
Date Analyzed: 04/09/96

Total Organic Halides	Spiked Sample Concentration	Sample Concentration	Spike Amount	Percent Recovery	Acceptance Limits
Matrix Spike	58	ND	50	116%	75-125
Matrix Spike Dup	55	ND	50	109%	75-125
%RPD				6%	

ND - Analyte not detected at stated detection limit

%RPD - Relative percent deviation

All unlabeled values are in units of micrograms per liter (ug/L)

Reference: Method 9020B: TOTAL ORGANIC HALIDES (TOX)
Test Methods for Evaluating Solid Waste, SW-846, United States
Environmental Protection Agency, Third Edition, Final Update II,
September 1994.

Comments:

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