GIANT
INDUSTRIES, INC.

Route 3, Box 7
Gallup, New Mexico
87301

July 11, 1996

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

Dear Mr. Garcia:

SUBJECT: BI-MONTHLY LAND TREATMENT SOIL SAMPLING ANALYTICAL RESULTS - JUNE, 1996.

In accordance with the requirements set out in Giant's Land Treatment Unit Characterization Plan and Hazardous Waste Facility Permit (#NMD 000333211-2) attached is a copy of the analytical results for Giant's Bi-monthly LTA soil sampling event. In reviewing these results, it has been determined that no hazardous waste contaminants have migrated downward into the Zone of Influence (ZOI) or Below the Treatment Zone (BTZ).

If there are any questions, please contact Mr. Ed Horst or myself at (505) 722-0227.

Sincerely,

Stephen C. Morris, Environmental Specialist
Giant Refining Company
Ciniza Refinery

cc: w/o attachments:
Dick Platt, Refinery Manager
David Pavlich, Health Safety and Environmental Manager
Edward Horst, Environmental Manager

iml
Inter-Mountain
Laboratories, Inc.

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

JUL 1996
RECEIVED

2 July 1996

Ed Horst
Giant Refining Co.
Rt. 3 Box 7
Gallup, NM 87301

Mr. Horst:

Enclosed please find the report for the samples received by our laboratory for analysis on June 13, 1996.

If you have any questions about the results of these analyses, please don't hesitate to call me at your convenience.

Sincerely,

Anna Schaerer

Anna Schaerer
Organic Analyst/IML-Farmington

Enclosure

xc: File

Inter-Mountain Laboratories, Inc

2506 W. Main Street
Farmington, New Mexico 87401

Client:	**Giant Refining Co.**		
Project:	Ciniza		
Sample ID:	ZOI-3148-6-96	Date Reported:	07/02/96
Laboratory ID:	0396G00973	Date Sampled:	06/11/96
Sample Matrix:	Soil	Time Sampled:	9:50 AM
Condition:	Cool/Intact	Date Received:	06/13/96

Parameter	* Total Analytical Result	Units
Arsenic.....	0.500	mg/Kg
Barium.....	140	mg/Kg
Cadmium.....	<0.10	mg/Kg
Lead.....	6.91	mg/Kg
Mercury.....	<0.10	mg/Kg
Selenium.....	<0.50	mg/Kg
Silver.....	1.67	mg/Kg

References: "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", SW-846, United States Environmental Protection Agency, November, 1986.

"Test Methods for Evaluating Solid Wastes", Method 3050, SW-846, 3rd ed., November 1992.

Comments: * All results are calculated on a dry weight basis using percent solids determination.

Reported by _____

Reviewed by _____

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client:	**Giant Refining Co.**		
Project:	Ciniza		
Sample ID:	ZOI-2120-6-96	Date Reported:	07/02/96
Laboratory ID:	0396G00974	Date Sampled:	06/11/96
Sample Matrix:	Soil	Time Sampled:	10:25 AM
Condition:	Cool/Intact	Date Received:	06/13/96

Parameter	* Total Analytical Result	Units
Arsenic.....	0.490	mg/Kg
Barium.....	305	mg/Kg
Cadmium.....	<0.10	mg/Kg
Lead.....	6.86	mg/Kg
Mercury.....	<0.10	mg/Kg
Selenium.....	<0.50	mg/Kg
Silver.....	<1.00	mg/Kg

References: "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", SW-846, United States Environmental Protection Agency, November, 1986.

"Test Methods for Evaluating Solid Wastes", Method 3050, SW-846, 3rd ed., November 1992

Comments: * All results are calculated on a dry weight basis using percent solids determination.

Reported by _____ Reviewed by _____

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client:	**Giant Refining Co.**		
Project:	Ciniza		
Sample ID:	ZOI-173-6-96	Date Reported:	07/02/96
Laboratory ID:	0396G00975	Date Sampled:	06/11/96
Sample Matrix:	Soil	Time Sampled:	10:55 AM
Condition:	Cool/Intact	Date Received:	06/13/96

Parameter	* Total Analytical Result	Units
Arsenic.....	0.409	mg/Kg
Barium.....	191	mg/Kg
Cadmium.....	<0.10	mg/Kg
Lead.....	6.30	mg/Kg
Mercury.....	<0.10	mg/Kg
Selenium.....	<0.50	mg/Kg
Silver.....	<1.00	mg/Kg

References: "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", SW-846, United States Environmental Protection Agency, November, 1986.

"Test Methods for Evaluating Solid Wastes", Method 3050, SW-846, 3rd ed., November 1992.

Comments: * All results are calculated on a dry weight basis using percent solids determination.

Reported by _____ Reviewed by _____

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client:	**Giant Refining Co.**		
Project:	Ciniza		
Sample ID:	ZOI-275-6-96	Date Reported:	07/02/96
Laboratory ID:	0396G00976	Date Sampled:	06/11/96
Sample Matrix:	Soil	Time Sampled:	11:25 AM
Condition:	Cool/Intact	Date Received:	06/13/96

Parameter	* Total Analytical Result	Units
Arsenic.....	0.587	mg/Kg
Barium.....	227	mg/Kg
Cadmium.....	<0.10	mg/Kg
Lead.....	8.39	mg/Kg
Mercury.....	<0.10	mg/Kg
Selenium.....	<0.50	mg/Kg
Silver.....	0.84	mg/Kg

References: "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", SW-846, United States Environmental Protection Agency, November, 1986.

"Test Methods for Evaluating Solid Wastes", Method 3050, SW-846, 3rd ed., November 1992

Comments: * All results are calculated on a dry weight basis using percent solids determination.

Reported by ____ Reviewed by ____

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Quality Control / Quality Assurance

Trace Metals / Known Analysis
TOTAL METALS

Client: **Giant Refining Co.**
Project: Ciniza
Laboratory ID: 0396G00973-976
Sample Matrix: Soil
Condition: Cool / Intact

Date Reported: 07/02/96
Date Sampled: 06/11/96
Date Received: 06/13/96

Known Analysis

Parameter	Found Value (mg/L)	Known Value (mg/L)	Percent Recovery
Arsenic	0.011	0.010	**110%**
Barium	1.01	1.00	**101%**
Cadmium	0.004	0.004	**100%**
Lead	0.036	0.040	**90%**
Mercury	0.42	0.50	**84%**
Selenium	0.010	0.010	**100%**
Silver	0.92	1.00	**92%**

Reference: "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", SW-846, United States Environmental Protection Agency, November, 1986.

"Test Methods for Evaluating Solid Wastes", Method 3050, SW-846, 3rd ed., November 1992.

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

Reported By: _____

Reviewed By: _____

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Quality Control / Quality Assurance

Trace Metals / Spike Analysis

TOTAL METALS

Client: **Giant Refining Co.**
Project: Ciniza
Laboratory ID: 0396G00973-976
Sample Matrix: Soil
Condition: Cool / Intact

Date Reported: 07/02/96
Date Sampled: 06/11/96
Date Received: 06/13/96

Spike Analysis

Parameter	Spike Result (mg/L)	UnSpiked Sample Result (mg/L)	Spike Amount (mg/L)	Percent Recovery
Arsenic	0.031	<0.005	0.030	**104%**
Barium	3.28	2.33	1.00	**106%**
Cadmium	0.003	<0.001	0.003	**107%**
Lead	0.027	0.006	0.025	**84%**
Mercury	0.51	0.01	0.50	**100%**
Selenium	0.024	<0.005	0.025	**96%**
Silver	0.94	0.01	1.00	**94%**

Reference: "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", SW-846, United States Environmental Protection Agency, November, 1986.

"Test Methods for Evaluating Solid Wastes", Method 3050, SW-846, 3rd ed., November 1992.

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

Reported By: dr

Reviewed By: DB

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Quality Control / Quality Assurance

Trace Metals / Blank Analysis
TOTAL METALS

Client: **Giant Refining Co.**
Project: Ciniza
Laboratory ID: 0396G00973-976
Sample Matrix: Soil
Condition: Cool / Intact

Date Reported: 07/02/96
Date Sampled: 06/11/96
Date Received: 06/13/96

Blank Analysis

Parameter	Found Value	Detection Level	Units
Arsenic	ND	0.005	mg/L
Barium	ND	0.01	mg/L
Cadmium	ND	0.001	mg/L
Lead	ND	0.005	mg/L
Mercury	ND	0.001	mg/L
Selenium	ND	0.005	mg/L
Silver	ND	0.01	mg/L

ND-Analyte not detected at stated detection level.

Reference: "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", SW-846, United States Environmental Protection Agency, November, 1986.

"Test Methods for Evaluating Solid Wastes", Method 3050, SW-846, 3rd ed., November 1992.

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

Reported By: _____

Reviewed By: _____

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

TOTAL OIL AND GREASE
EPA METHOD 413.2

Client: **Giant Refining Co.**
Project: Ciniza
Matrix: Soil
Condition: Intact/Cool

Date Reported: 07/02/96
Date Sampled: 06/11/96
Date Received: 06/13/96
Date Extracted: 06/28/96
Date Analyzed: 07/01/96

Sample ID	Lab ID	Result (mg/kg)	Detection Limit (mg/kg)
ZOI-3148-6-96	0396G00973	ND	19.9
ZOI-2120-6-96	0396G00974	ND	19.7
ZOI-173-6-96	0396G00975	ND	19.8
ZOI-275-6-96	0396G00976	ND	19.7

ND - Analyte not detected at stated detection level.

References:

Method 413.2: Oil And Grease, Total Recoverable, USEPA Chemical Analysis of Water and Waste, 1978.

Method 3550: Ultrasonic Extraction of Non-Volatile and Semi-Volatile Organic Compounds from Solids, USEPA SW-846, Sept. 1986.

Analyst: dt

Reviewed: JB

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

TOTAL OIL AND GREASE
Quality Assurance/Quality Control

Client: **Giant Refining Co.**
Project: Ciniza
Matrix: Soil
Condition: Intact/Cool

Date Reported: 07/02/96
Date Sampled: 06/11/96
Date Received: 06/13/96
Date Extracted: 06/28/96
Date Analyzed: 07/01/96

Method Blank Analysis

Lab ID	Result	Units	Detection Limit
MB	ND	mg/Kg	19.9

Spike Analysis

Lab ID	Found Conc. (mg/Kg)	Sample Conc. (mg/Kg)	Known Conc. (mg/Kg)	Percent Recovery	Acceptance Limits
0396G00976	196	ND	250	78%	70-130%

Known Analysis

Lab ID	Found Conc. (mg/L)	Known Conc. (mg/L)	Percent Recovery	Acceptance Limits
QC	19.4	20.6	94%	70-130%

Duplicate Analysis

Lab ID	Duplicate Conc. (mg/Kg)	Original Conc. (mg/Kg)	Relative Percent Difference	Acceptance Limits
0396G00975	ND	ND	NA	0-20%

References:
Method 413.2: Oil And Grease, Total Recoverable, USEPA Chemical Analysis of Water and Waste, 1978.
Method 3550: Ultrasonic Extraction of Non-Volatile and Semi-Volatile Organic Compounds from Solids, USEPA SW-846, Sept. 1986.

Analyst: dh
Reviewed: JB

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client:	**Giant Refining Co.**		
Project:	Ciniza	Date Reported:	7/2/96
Sample ID:	BTZ-3148-6-96	Date Sampled:	06/11/96
Laboratory ID:	0396G00977	Time Sampled:	10:00
Sample Matrix:	Soil	Date Received:	06/13/96
Condition:	Cool/Intact		

Parameter	Analytical Result	Units
Lab pH	8.1	s.u.
Total Organic Carbon	0.2	%
Percent Moisture	13.8	%

Reference: Methods of Soil Analysis, Number 9, Part 2. Chemical and Microbiological Properties, Second Edition, 1982.

Reported by AT

Reviewed by JB

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client:	**Giant Refining Co.**		
Project:	Ciniza	Date Reported:	7/2/96
Sample ID:	BTZ-2120-6-96	Date Sampled:	06/11/96
Laboratory ID:	0396G00978	Time Sampled:	10:35
Sample Matrix:	Soil	Date Received:	06/13/96
Condition:	Cool/Intact		

Parameter	Analytical Result	Units
Lab pH	7.8	s.u.
Total Organic Carbon	0.2	%
Percent Moisture	15.4	%

Reference: Methods of Soil Analysis, Number 9, Part 2. Chemical and Microbiological Properties, Second Edition, 1982.

Reported by _____

Reviewed by _____

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client:	**Giant Refining Co.**		
Project:	Ciniza	Date Reported:	7/2/96
Sample ID:	BTZ-173-6-96	Date Sampled:	06/11/96
Laboratory ID:	0396G00979	Time Sampled:	11:05
Sample Matrix:	Soil	Date Received:	06/13/96
Condition:	Cool/Intact		

Parameter	Analytical Result	Units
Lab pH	8.1	s.u.
Total Organic Carbon	0.3	%
Percent Moisture	11.5	%

Reference: Methods of Soil Analysis, Number 9, Part 2. Chemical and Microbiological Properties, Second Edition, 1982.

Reported by _____

Reviewed by _____

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Client:	**Giant Refining Co.**		
Project:	Ciniza	Date Reported:	7/2/96
Sample ID:	BTZ-275-6-96	Date Sampled:	06/11/96
Laboratory ID:	0396G00980	Time Sampled:	11:35
Sample Matrix:	Soil	Date Received:	06/13/96
Condition:	Cool/Intact		

Parameter	Analytical Result	Units
Lab pH	8.0	s.u.
Total Organic Carbon	0.2	%
Percent Moisture	13.9	%

Reference: Methods of Soil Analysis, Number 9, Part 2. Chemical and Microbiological Properties, Second Edition, 1982.

Reported by _____

Reviewed by _____

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS

Giant Refining Co.

Project ID:	Ciniza	Report Date:	07/02/96
Sample ID:	BTZ-3148-6-96	Date Sampled:	06/11/96
Lab ID:	0396G00977	Date Received:	06/13/96
Sample Matrix:	Soil	Date Extracted:	06/19/96
Condition:	Cool/Intact	Date Analyzed:	06/24/96

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
Benzene	ND	10.0
Toluene	ND	10.0
Ethylbenzene	ND	10.0
m,p-Xylenes	ND	10.0
o-Xylene	ND	10.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	90.0%	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

VOLATILE AROMATIC HYDROCARBONS

Giant Refining Co.

Project ID:	Ciniza	Report Date:	07/02/96
Sample ID:	BTZ-2120-6-96	Date Sampled:	06/11/96
Lab ID:	0396G00978	Date Received:	06/13/96
Sample Matrix:	Soil	Date Extracted:	06/19/96
Condition:	Cool/Intact	Date Analyzed:	06/24/96

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
Benzene	ND	10.0
Toluene	ND	10.0
Ethylbenzene	ND	10.0
m,p-Xylenes	ND	10.0
o-Xylene	ND	10.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	95.6%	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

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS

Giant Refining Co.

Project ID:	Ciniza	Report Date:	07/02/96
Sample ID:	BTZ-173-6-96	Date Sampled:	06/11/96
Lab ID:	0396G00979	Date Received:	06/13/96
Sample Matrix:	Soil	Date Extracted:	06/19/96
Condition:	Cool/Intact	Date Analyzed:	06/25/96

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
Benzene	ND	10.0
Toluene	ND	10.0
Ethylbenzene	ND	10.0
m,p-Xylenes	ND	10.0
o-Xylene	ND	10.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	76.6%	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

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS

Giant Refining Co.

Project ID:	Ciniza	Report Date:	07/02/96
Sample ID:	BTZ-275-6-96	Date Sampled:	06/11/96
Lab ID:	0396G00980	Date Received:	06/13/96
Sample Matrix:	Soil	Date Extracted:	06/19/96
Condition:	Cool/Intact	Date Analyzed:	06/25/96

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
Benzene	ND	10.0
Toluene	ND	10.0
Ethylbenzene	ND	10.0
m,p-Xylenes	ND	10.0
o-Xylene	ND	10.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	75.7%	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

VOLATILE AROMATIC HYDROCARBONS

Giant Refining Co.

Project ID:	Ciniza	Report Date:	07/02/96
Sample ID:	Equip Blank	Date Sampled:	06/11/96
Lab ID:	0396G00981	Date Received:	06/13/96
Sample Matrix:	Water	Date Extracted:	NA
Condition:	Cool/Intact	Date Analyzed:	06/21/96

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:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	83.1%	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

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORT

Duplicate Analysis

Lab ID: 0396G00979
Sample Matrix: Soil
Condition: Cool/Intact

Report Date: 07/02/96
Date Analyzed: 06/25/96

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:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	100.6%	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

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORT

Matrix Spike Analysis

Lab ID: 0396G00980
Sample Matrix: Soil
Condition: Cool/Intact

Report Date: 07/02/96
Date Analyzed: 06/25/96

Target Analyte	Spiked Sample Result in ng	Sample result in ng	Spike Added (ng)	% Recovery	Acceptance Limits (%)
Benzene	16.2	1.85	20.0	71.9%	70-130
Toluene	22.8	5.10	20.0	88.5%	70-130
Ethylbenzene	22.8	ND	20.0	113.9%	70-130
m,p-Xylenes	43.2	1.55	40.0	104.1%	70-130
o-Xylene	22.8	ND	20.0	114.0%	70-130

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

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	79.4%	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

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORT

Method Blank Analysis

Sample Matrix: Extract
Lab ID: Method Blank

Report Date: 07/02/96
Date Analyzed: 06/24/96

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
Benzene	ND	10.0
Toluene	ND	10.0
Ethylbenzene	ND	10.0
m,p-Xylenes	ND	10.0
o-Xylene	ND	10.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	79.1%	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

Quality Control / Quality Assurance

Known Analysis
BTEX

Client: **Giant Refining Co.**
Project: Ciniza

Date Reported: 07/02/96
Date Analyzed: 06/25/96

Known Analysis

Parameter	Found Concentration (ppb)	Known Concentration (ppb)	Percent Recovery	Acceptance Limits
Benzene	3.6	4.0	**91%**	70-130%
Toluene	4.1	4.0	**101%**	70-130%
Ethylbenzene	4.0	4.0	**99%**	70-130%
m+p-Xylene	7.9	8.0	**99%**	70-130%
o-Xylene	4.2	4.0	**104%**	70-130%

Quality Control:	Surrogate	Percent Recovery	Acceptance Limits
	Bromofluorobenzene	83.8%	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:

Reported by _____

Reviewed by _____

Inter·Mountain Laboratories, Inc.

1160 Research Drive
Bozeman, Montana 59715

EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client:	GIANT REFINING COMPANY			
Sample ID:	BTZ-3148-6-96		Date Reported:	06/24/96
Project ID:	Ciniza		Date Sampled:	06/11/96
Lab ID:	B964353	0396G00977	Date Received:	06/14/96
Matrix:	Soil		Date Extracted:	06/17/96
			Date Analyzed:	06/18/96

Parameter	Result	PQL	Units
1-Methylnaphthalene	ND	1.0	mg/kg
2-Methylphenol	ND	1.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Chrysene	ND	1.0	mg/kg
Phenanthrene	ND	1.0	mg/kg
Pyrene	ND	1.0	mg/kg

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
2,4,6-Tribromophenol	58	19 - 122
2-Fluorobiphenyl	57	30 - 115
2-Fluorophenol	42	25 - 121
Nitrobenzene-d5	61	23 - 120
Phenol-d6	61	24 - 113
Terphenyl-d14	44	18 - 137

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, November 1990.

Analyst _____ Reviewed _____

Inter-Mountain Laboratories, Inc.

1160 Research Drive
Bozeman, Montana 59715

EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client:	**GIANT REFINING COMPANY**			
Sample ID:	BTZ-2120-6-96		Date Reported:	06/24/96
Project ID:	Ciniza		Date Sampled:	06/11/96
Lab ID:	B964354	0396G00978	Date Received:	06/14/96
Matrix:	Soil		Date Extracted:	06/17/96
			Date Analyzed:	06/18/96

Parameter	Result	PQL	Units
1-Methylnaphthalene	ND	1.0	mg/kg
2-Methylphenol	ND	1.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Chrysene	ND	1.0	mg/kg
Phenanthrene	ND	1.0	mg/kg
Pyrene	ND	1.0	mg/kg

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
2,4,6-Tribromophenol	61	19 - 122
2-Fluorobiphenyl	61	30 - 115
2-Fluorophenol	44	25 - 121
Nitrobenzene-d5	61	23 - 120
Phenol-d6	69	24 - 113
Terphenyl-d14	46	18 - 137

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, November 1990.

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EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client:	**GIANT REFINING COMPANY**			
Sample ID:	BTZ-173-6-96		Date Reported:	06/24/96
Project ID:	Ciniza		Date Sampled:	06/11/96
Lab ID:	B964355	0396G00979	Date Received:	06/14/96
Matrix:	Soil		Date Extracted:	06/17/96
			Date Analyzed:	06/18/96

Parameter	Result	PQL	Units
1-Methylnaphthalene	ND	1.0	ug/kg
2-Methylphenol	ND	1.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Chrysene	ND	1.0	mg/kg
Phenanthrene	ND	1.0	mg/kg
Pyrene	ND	1.0	mg/kg

QUALITY CONTROL - Surrogate Recovery	%	**QC Limits**
2,4,6-Tribromophenol	57	19 - 122
2-Fluorobiphenyl	58	30 - 115
2-Fluorophenol	44	25 - 121
Nitrobenzene-d5	60	23 - 120
Phenol-d6	65	24 - 113
Terphenyl-d14	43	18 - 137

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, November 1990.

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EPA METHOD 8270
HSL SEMI-VOLATILE COMPOUNDS
BASE/NEUTRAL/ACID EXTRACTABLES

Client:	**GIANT REFINING COMPANY**			
Sample ID:	BTZ- 275-6-96		Date Reported:	06/24/96
Project ID:	Ciniza		Date Sampled:	06/11/96
Lab ID:	B964356	0396G00980	Date Received:	06/14/96
Matrix:	Soil		Date Extracted:	06/17/96
			Date Analyzed:	06/18/96

Parameter	Result	PQL	Units
1-Methylnaphthalene	ND	1.0	ug/kg
2-Methylphenol	ND	1.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Chrysene	ND	1.0	mg/kg
Phenanthrene	ND	1.0	mg/kg
Pyrene	ND	1.0	mg/kg

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
2,4,6-Tribromophenol	54	19 - 122
2-Fluorobiphenyl	58	30 - 115
2-Fluorophenol	40	25 - 121
Nitrobenzene-d5	58	23 - 120
Phenol-d6	64	24 - 113
Terphenyl-d14	43	18 - 137

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, November 1990.

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QUALITY ASSURANCE / QUALITY CONTROL

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LAB QA/QC
EPA METHOD 8270
METHOD BLANK

Date Analyzed: **06/18/96**
Lab ID: MBS16996
Matrix: Soil
Date Extracted: 06/17/96

Parameter	Result	PQL	Units
1,2,4-Trichlorobenzene	ND	1.0	mg/kg
1,2-Dichlorobenzene	ND	1.0	mg/kg
1,3-Dichlorobenzene	ND	1.0	mg/kg
1,4-Dichlorobenzene	ND	1.0	mg/kg
2,4,5-Trichlorophenol	ND	2.0	mg/kg
2,4,6-Trichlorophenol	ND	2.0	mg/kg
2,4-Dichlorophenol	ND	1.0	mg/kg
2,4-Dimethylphenol	ND	1.0	mg/kg
2,4-Dinitrophenol	ND	5.0	mg/kg
2,4-Dinitrotoluene	ND	1.0	mg/kg
2,6-Dinitrotoluene	ND	1.0	mg/kg
2-Chloronaphthalene	ND	1.0	mg/kg
2-Chlorophenol	ND	1.0	mg/kg
2-Methylnaphthalene	ND	1.0	mg/kg
2-Methylphenol	ND	1.0	mg/kg
2-Nitroaniline	ND	5.0	mg/kg
2-Nitrophenol	ND	1.0	mg/kg
3,3'-Dichlorobenzidine	ND	2.0	mg/kg
3-Methylphenol/4-Methylphenol	ND	1.0	mg/kg
3-Nitroaniline	ND	5.0	mg/kg
4,6-Dinitro-2-methylphenol	ND	5.0	mg/kg
4-Bromophenyl-phenylether	ND	1.0	mg/kg
4-Chloro-3-methylphenol	ND	2.0	mg/kg
4-Chloroaniline	ND	2.0	mg/kg
4-Chlorophenyl-phenylether	ND	1.0	mg/kg
4-Nitroaniline	ND	2.0	mg/kg
4-Nitrophenol	ND	5.0	mg/kg
Acenaphthene	ND	1.0	mg/kg
Acenaphthylene	ND	1.0	mg/kg
Anthracene	ND	1.0	mg/kg
Benzo(a)anthracene	ND	1.0	mg/kg
Benzo(a)pyrene	ND	1.0	mg/kg
Benzo(b)fluoranthene	ND	1.0	mg/kg

Continued

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LAB QA/QC
EPA METHOD 8270
METHOD BLANK

Date Analyzed: **06/18/96**
Lab ID: MBS16996
Matrix: Soil
Date Extracted: 06/17/96

Parameter	Result	PQL	Units
Continued			
Benzo(g,h,i)perylene	ND	1.0	mg/kg
Benzo(k)fluoranthene	ND	1.0	mg/kg
Benzoic Acid	ND	5.0	mg/kg
Benzyl Alcohol	ND	2.0	mg/kg
bis(2-Chloroethoxy)methane	ND	1.0	mg/kg
bis(2-Chloroethyl)ether	ND	1.0	mg/kg
bis(2-Chloroisopropyl)ether	ND	1.0	mg/kg
bis(2-Ethylhexyl)phthalate	ND	5.0	mg/kg
Butylbenzylphthalate	ND	1.0	mg/kg
Chrysene	ND	1.0	mg/kg
Di-n-Butylphthalate	ND	5.0	mg/kg
Di-n-Octylphthalate	ND	5.0	mg/kg
Dibenz(a,h)anthracene	ND	1.0	mg/kg
Dibenzofuran	ND	1.0	mg/kg
Diethylphthalate	ND	1.0	mg/kg
Dimethylphthalate	ND	1.0	mg/kg
Fluoranthene	ND	1.0	mg/kg
Fluorene	ND	1.0	mg/kg
Hexachlorobenzene	ND	2.0	mg/kg
Hexachlorobutadiene	ND	2.0	mg/kg
Hexachlorocyclopentadiene	ND	1.0	mg/kg
Hexachloroethane	ND	1.0	mg/kg
Indeno(1,2,3-cd)pyrene	ND	1.0	mg/kg
Isophorone	ND	1.0	mg/kg
N-Nitrosodi-n-propylamine	ND	1.0	mg/kg
N-Nitrosodiphenylamine	ND	1.0	mg/kg
Naphthalene	ND	1.0	mg/kg
Nitrobenzene	ND	1.0	mg/kg
Pentachlorophenol	ND	5.0	mg/kg
Phenanthrene	ND	1.0	mg/kg
Phenol	ND	1.0	mg/kg
Pyrene	ND	1.0	mg/kg

Continued

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LAB QA/QC
EPA METHOD 8270
METHOD BLANK

Date Analyzed: **06/18/96**
Lab ID: MBS16996
Matrix: Soil
Date Extracted: 06/17/96

Parameter	Result	PQL	Units

Continued

QUALITY CONTROL - Surrogate Recovery	%	QC Limits
2,4,6-Tribromophenol	36	19 - 122
2-Fluorobiphenyl	43	30 - 115
2-Fluorophenol	42	25 - 121
Nitrobenzene-d5	43	23 - 120
Phenol-d6	46	24 - 113
Terphenyl-d14	41	18 - 137

ND - Not Detected at Practical Quantitation Level (PQL)

Analyst _____ Reviewed _____

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LAB QA/QC
EPA METHOD 8270
BLANK SPIKE / BLANK SPIKE DUPLICATE SUMMARY

Date Analyzed: **06/18/96**
Lab ID: BSS16996
Matrix: Soil
Date Extracted: 06/17/96

Original Sample Parameters

Parameter	Spike Added (mg/kg)	Sample Result (mg/kg)	Spike Result (mg/kg)	BS Recovery %	QC Limits Rec.
1,2,4-Trichlorobenzene	10	0	3.9	39	38 - 107
1,4-Dichlorobenzene	10	0	3.6	36	28 - 104
2,4-Dinitrotoluene	10	0	4.0	40	28 - 89
2-Chlorophenol	20	0	7.1	36	25 - 102
4-Chloro-3-methylphenol	20	0	8.0	40	26 - 103
4-Nitrophenol	20	0	4.7	24	11 - 114
Acenaphthene	10	0	3.9	39	31 - 137
N-Nitrosodi-n-propylamine	10	0	5.1	51	41 - 126
Pentachlorophenol	20	0	7.1	36	17 - 109
Phenol	20	0	6.5	33	26 - 90
Pyrene	10	0	4.0	40	35 - 142

Duplicate Sample Parameters

Parameter	Spike Added (mg/kg)	BSD Result (mg/kg)	BSD Recovery %	RPD %		QC Limits RPD	QC Limits Rec.
4-Nitrophenol	20	6.3	32	29		50	11 - 114
Phenol	20	8.3	42	24		35	26 - 90
Pyrene	10	4.7	47	16		36	35 - 142
2,4-Dinitrotoluene	10	5.1	51	24		47	28 - 89
2-Chlorophenol	20	10.3	52	37		50	25 - 102
4-Chloro-3-methylphenol	20	10.5	53	27		33	26 - 103
Acenaphthene	10	5.0	50	25	*	19	31 - 137
N-Nitrosodi-n-propylamine	10	6.5	65	24		38	41 - 126
Pentachlorophenol	20	9.0	45	24		47	17 - 109
1,4-Dichlorobenzene	10	5.3	53	38	*	27	28 - 104
1,2,4-Trichlorobenzene	10	5.5	55	34	*	23	38 - 107

Note: Spike Recoveries are calculated using zero for Sample result if Sample result was less than PQL (Practical Quantitation Level).

Spike Recovery: 0 out of 22 outside QC limits.
RPD: 3 out of 11 outside QC limits.

Analyst _____ Reviewed _____

PARAMETER LIST

LTA Soil Sampling

EPA 8020	Ethylbenzene
	M–Xylene
	O & P Xylene

EPA 8270	O–Cresol
	M & P–Cresol
	Pyrene
	Phenanthrene
	1–Methylnaphthalene
	Benzo (a) Pyrene
	Chrysene

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CHAIN OF CUSTODY RECORD

TOTAL RCRA METAL

Client/Project Name	Project Location
Giant Refining LTA	CINIZA

Sampler: (Signature)	Chain of Custody Tape No.
Steve Morris	

ANALYSES / PARAMETERS

Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers	CNP-Oil + GREASE	TOTAL RCRA METALS	8020, pH, + Moisture	8270 TOC	Remarks
ZOI-3148-6-96	6-11-96	0950		Soil	3	X	X			~~5 JARS~~
BTZ-3148-6-96	6-11-96	1000		Soil	2			X	X	~~2 JARS~~
ZOI-2120-6-96	6-11-96	1025		Soil	3	X	X			
BTZ-2120-6-96	6-11-96	1035		Soil	2			X	X	FOR 8020+
ZOI-173-6-96	6-11-96	1055		Soil	3	X	X			8270
BTZ-173-6-96	6-11-96	1105		Soil	2			X	X	PARAMETERS
ZOI-275-6-96	6-11-96	1125		Soil	3	X	X			SEE
BTZ-275-6-96	6-11-96	1135		Soil	2			X	X	ATTACHED
										LIST
EQUIP BLANK	6-11-96	1150		WATER	2			X		
										Cool+intact

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Steve Morris	6/12/96	0900	Chris Rayner	6-13-96	1035
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by laboratory: (Signature)	Date	Time

Inter-Mountain Laboratories, Inc.

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