

GW - 28

MONITORING REPORTS

DATE:

1991

TELEPHONE
(505) 748-3311

EASYLINK
62905278

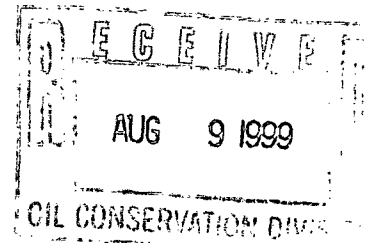


REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

August 4, 1999



Mr. Roger Anderson
Environmental Bureau
Oil Conservation Division
2040 S. Pacheco St.
Santa Fe, NM 87505-5472

RE: 2nd Quarter 1999 Report on RO Reject Water, Navajo Refining Co., Eddy County, NM

Dear Roger:

This letter is sent in regard to Navajo Refining's permit modification of our discharge plan GW-28 which allows us to put our Reverse Osmosis (RO) reject water on our farm or into Eagle Draw. This permit is administered by OCD and the parameters we sample for were set up by OCD. We are sending these results for your files. We are required by OCD to sample this stream every quarter and once annually.

For this quarter we discharged a total of 24,166,000 gallons with all of that total being sent to the farm for irrigation. We no longer discharge to Eagle Draw. Since we started discharging the RO reject water, we have discharged a total of 749,651,426 gallons. This is broken down as follows: 196,713,498 gallons have been put into Eagle Draw and 552,937,928 gallons have been put on our farms.

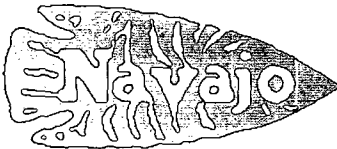
The RO unit was in full operation for the entire quarter. If you have any questions concerning this matter, please call me at 505-748-3311. Thank you for your time.

Regards,
NAVAJO REFINING COMPANY

Darrell Moore
Environmental Mgr. for Water and Waste
encl.
cc:USEPA, New Mexico Environment Dept.- Water Quality

TELEPHONE
(505) 748-3311

EASYLINK
62905278



REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

June 4, 1999

FAX
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(505) 746-4438 P / L

Mr. Roger Anderson
Environmental Bureau
Oil Conservation Division
2040 S. Pacheco St.
Santa Fe, NM 87505-5472

RE: Semi-Annual Sampling at Navajo Refining's Evaporation Ponds

Dear Roger,

Per our telephone conversation of June 3, 1999, Navajo Refining is advising the Oil Conservation Division (OCD) that the semi annual sampling of monitor wells around our evaporation ponds will be delayed for the Spring 99 sampling event due to rainwater flooding the area around the ponds. We have had several significant rainfall events that make it impossible to access the wells. This sampling is on a staggered schedule per your letter of October 21, 1991.

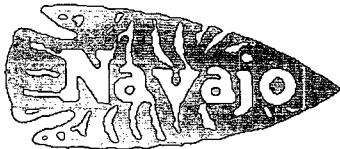
Hopefully, with some dry weather, the sampling can take place in two weeks or so and the results forwarded to your office. Thank you for your time in this matter.

Sincerely,
NAVAJO REFINING COMPANY

Darrell Moore
Environmental Mgr. for Water and Waste

TELEPHONE
(505) 748-3311

EASYLINK
62905278

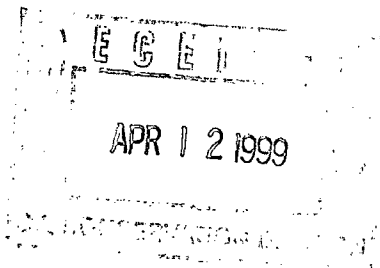


REFINING COMPANY

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(505) 746-4438 P / L

April 9, 1999



Wayne Price
Environmental Bureau
Oil Conservation Division
2040 S. Pacheco St.
Santa Fe, NM 87505-5472

RE: HYDROTEST WATER FROM TK 107, NAVAJO REFINING CO., ARTESIA, NM

Dear Wayne:

The floor on Tk 107, a gasoline storage tank, at our Artesia plant was recently replaced. After completion, the tank was filled with approximately 22,000 barrels of water in order to perform a hydrotest. Enclosed you will find an analysis of this water. As you can see, we are below ground water standards for every parameter measured except fluoride, iron, and manganese. We feel the high levels are the result of the tank being made of iron, and high fluoride concentrations in water around this area. Furthermore, the level of manganese was only slightly over ground water standards.

This water will be discharged to our farm with precautions taken to ensure the water does not pond up. If there are any questions concerning this matter, please call me at (505) 748-3311. Thank you for your time in this matter.

Sincerely,

NAVAJO REFINING COMPANY

Bryan Madrid
Environmental Specialist

Encl.

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

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El Paso, Texas 79922 888•588•3443
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ANALYTICAL RESULTS FOR NAVAJO REFINING CO.

PAGE 1 of 2

Attention: Bryan Madrid
501 E. Main Street
Artesia, New Mexico 88210

April 2, 1999
Receiving Date: 03/24/99
Sample Type: Water
Project No: N/A
Project Loc: N/A

Sampling Date: 03/23/99
Sample Condition: I & C
Sample Received by: VW
Project Name: N/A
Extraction Date: 03/27/99
Analysis Date: 03/27/99

FIELD CODE: TK 107

TA #: T121501

	Reporting Limit (ug/L)	Concentration (ug/L)	QC	RPD	EA	IA
8260 Compounds						
Dichlorodifluoromethane	1	ND				
Chloromethane	1	ND				
Vinyl chloride	2	ND	88			88
Bromomethane	5	ND				
Chloroethane	1	ND				
Trichlorofluoromethane	1	ND				
1,1-Dichloroethene	1	ND	95	3	96	95
Methylene chloride	5	ND				
trans-1,2-Dichloroethene	1	ND				
1,1-Dichloroethane	1	ND				
cis-1,2-Dichloroethene	1	ND				
Chloroform	1	ND	94			94
2,2-Dichloropropane	1	ND				
Bromochloromethane	1	ND				
1,2-Dichloroethane	1	ND				
1,1,1-Trichloroethane	1	ND				
Carbon Tetrachloride	1	ND				
1,1-Dichloropropene	1	ND				
Benzene	1	ND		2	103	
1,2-Dichloropropane	1	ND	96			96
Trichloroethene	1	ND		2	93	
Dibromomethane	1	ND				
Bromodichloromethane	1	ND				
cis-1,3-Dichloropropene	1	ND				
trans-1,3-Dichloropropene	1	ND				
Toluene	1	1.5	103	2	101	103
1,1,2-Trichloroethane	1	ND				
1,3-Dichloropropane	1	ND				

FIELD CODE: TK 107

TA #: T121501

	Reporting Limit (ug/L)	Concentration (ug/L)	QC	RPD	EA	IA
8260 Compounds						
Dibromochloromethane	1	ND				
1,2-Dibromoethane	1	ND				
Tetrachloroethene	1	ND				
Chlorobenzene	1	ND	97	1	96	97
1,1,1,2-Tetrachloroethane	1	ND				
Ethylbenzene	1	ND	100			100
m & p-Xylene	1	ND				
Bromoform	1	ND				
Styrene	1	ND				
o-Xylene	1	ND				
1,1,2,2-Tetrachloroethane	1	ND				
1,2,3-Trichloropropane	1	ND				
Isopropylbenzene	1	ND				
Bromobenzene	1	ND				
2-Chlorotoluene	1	ND				
n-Propylbenzene	1	ND				
4-Chlorotoluene	1	ND				
1,3,5-Trimethylbenzene	1	ND				
tert-Butylbenzene	1	ND				
1,2,4-Trimethylbenzene	1	ND				
1,4-Dichlorobenzene	2	ND				
sec-Butylbenzene	1	ND				
1,3-Dichlorobenzene	2	ND				
4-Isopropyltoluene	1	ND				
1,2-Dichlorobenzene	2	ND				
n-Butylbenzene	1	ND				
1,2-Dibromo-3-chloropropane	5	ND				
1,2,3-Trichlorobenzene	5	ND				
Naphthalene	1	1.2				
1,2,4-Trichlorobenzene	5	ND				
Hexachlorobutadiene	5	ND				

% Recovery

Dibromofluoromethane	98
Toluene-d8	97
4-Bromofluorobenzene	102

ND = Not Detected

Methods: EPA SW 846-5035, 8260B

CHEMIST: JG



Director, Dr. Blair Leftwich

4-2-99

Date

TRACE ANALYSIS, INC.

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ANALYTICAL RESULTS FOR
NAVAJO REFINING CO.
Attention: Bryan Madrid
501 E. Main Street
Artesia, New Mexico 88210

April 2, 1999
Receiving Date: 03/24/99
Sample Type: Water
Project No: N/A
Project Loc: N/A
Project Name: N/A
Sampling Date: 03/23/99
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 03/25/99
Analysis Date: 03/26/99

PAH	Reporting	T121501				
8270 Compounds (mg/L)	Limit	TK 107	CV	RPD	%EA	%IA
Naphthalene	0.001	0.001	79	1	76	99
Acenaphthylene	0.001	ND	80	1	85	100
Acenaphthene	0.001	ND	80	1	85	100
Fluorene	0.001	ND	81	2	88	101
Phenanthrene	0.001	ND	79	2	85	99
Anthracene	0.001	ND	79	0	84	99
Fluoranthene	0.001	ND	78	1	90	98
Pyrene	0.001	ND	78	3	87	98
Benzo[a]anthracene	0.001	ND	80	1	89	100
Chrysene	0.001	ND	82	2	101	103
Benzo[b]fluoranthene	0.001	ND	74	9	89	93
Benzo[k]fluoranthene	0.001	ND	79	3	88	99
Benzo[a]pyrene	0.001	ND	82	1	94	103
Indeno[1,2,3-cd]pyrene	0.001	ND	81	1	91	101
Dibenz[a,h]anthracene	0.001	ND	82	1	113	103
Benzo[g,h,i]perylene	0.001	ND	79	0	87	99

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR

81

2-Fluorobiphenyl SURR

78

Terphenyl-d14 SURR

87

METHODS: EPA SW 846-8270, 3510C

CHEMIST: MA



Director, Dr. Blair Leftwich

4-2-99

Date

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 ANALYTICAL RESOLUTION CORPORATION analysis.com

April 2, 1999

Receiving Date: 03/24/99

Sample Type: Water

Project No:

Project Location:

NAVAJO REFINING CO.

Attention: Bryan Madrid

501 E. Main Street

Artesia, New Mexico 88210

Sampling Date: 03/23/99

Sample Condition: Intact & Cool

Sample Received by: VW

Project Name:

TA#	FIELD CODE	TOTAL V (mg/L)	TOTAL Zn (mg/L)	TOTAL As (mg/L)	TOTAL Pb (mg/L)	TOTAL Se (mg/L)	TOTAL U (mg/L)	TOTAL Cr (mg/L)
T121501	TK 107	<0.20	<10	<0.10	<0.005	<0.01	<5.0	<0.05
ICV		1.0	1.0	1.0	1.0	1.0	1.0	1.0
CCV		0.98	0.99	0.97	1.0	0.98	1.0	1.0
REPORTING LIMIT		0.20	10	0.10	0.005	0.01	5.0	0.05
RPD		4	5*	9	10	4	6	10
% Extraction Accuracy		100	105*	115	105	110	80	105
% Instrument Accuracy		99	99	98	100	99	100	100
PREP DATE	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99
ANALYSIS DATE	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99

*Used LCS & LCSD due to required dilutions.

METHODS: EPA SW-846 6010B, 3015

CHEMIST: V, Zn, As, Pb, Se, U, Cr: RR

TOTAL METAL SPIKE: V, Zn, As, Pb, Se, Cr: 0.20 mg/L U: 2.0 mg/L

TOTAL METAL CV: V, Zn, As, Pb, Se, Cr, U: 1.0 mg/L

Director, Dr. Blair Leftwich

4-2-99

Date

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ANALYTICAL RESULTS FOR NAVAJO REFINING CO.

Attention: Bryan Madrid
501 E. Main Street
Artesia, New Mexico 88210

Sampling Date: 03/23/99
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name:

April 2, 1999
Receiving Date: 03/24/99
Sample Type: Water
Project No:
Project Location:

TA#	FIELD CODE	Al (mg/L)	Ba (mg/L)	Be (mg/L)	B (mg/L)	Cd (mg/L)	Co (mg/L)	Cu (mg/L)	Fe (mg/L)	Mn (mg/L)	Mo (mg/L)	Ni (mg/L)	Ag (mg/L)	Hg (mg/L)
T121501	TK 107	<0.05	<1.0	<0.01	<0.50	<0.01	<0.05	<1.0	2.5	0.25	<1.0	<0.20	<0.001	<0.0002
ICV		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.20	0.0010
CCV		1.0	1.0	0.99	0.98	1.0	1.0	0.97	1.0	1.0	0.99	0.99	0.19	0.0010
REPORTING LIMIT		0.05	1.0	0.01	0.50	0.01	0.05	1.0	0.10	0.002	1.0	0.20	0.001	0.0002
RPD		0*	7	10	0	5	10	8	5*	5	7	3	8	8
% Extraction Accuracy		110*	105	105	100	95	100	110	95*	105	105	110	87	120
% Instrument Accuracy		100	100	99	99	100	100	98	100	100	99	99	95	100
PREP DATE		3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/30/99
ANALYSIS DATE		3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/30/99

*Used LCS/LCSD for EA/RPD due to required dilutions.

METHODS: EPA SW 840-6010B, 3015, 7470A

CHEMIST: Al, Ba, Be, B, Cd, Co, Cu, Fe, Mn, Mo, Ni, Ag: RR Hg: BP

TOTAL METAL SPIKE: Al, Ba, Be, B, Cd, Co, Cu, Fe, Mn, Mo, Ni: 0.20 mg/L Ag: 0.15 mg/L Hg SPIKE: 0.0010

TOTAL METAL CV: Al, Ba, Be, B, Cd, Co, Cu, Fe, Mn, Mo, Ni: 1.0 mg/L Ag: 0.20 mg/L Hg SPIKE: 0.0010

RR

Director, Dr. Blair Leftwich

4-2-99

Date

TRACE ANALYSIS, INC.

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ANALYTICAL RESULTS FOR
NAVAJO REFINING CO.
Attention: Bryan Madrid
501 E. Main Street
Artesia, New Mexico 88210

April 2, 1999
Receiving Date: 03/24/99
Sample Type: Water
Project No:
Project Location:

Sampling Date: 03/23/99
Sample Condition: Intact & C
Sample Received by: VW
Project Name:

SAMPLE #	FIELD CODE	Date of Receiving	BOD5 (mg/L)	TSS (mg/L)	pH* (s.u.)
T121501	TK 107	03/24/99	<30	8.0	7.4

PREP DATE	03/24/99	03/25/99	03/24/99
ANALYSIS DATE	03/29/99	03/25/99	03/24/99

QUALITY CONTROL SUMMARY

BOD5 RPD = 4
BOD Accuracy = 97%
TSS RPD = 13
pH RPD = 0
pH Instrument Accuracy = 100%

*Out of holding time.

CHEMIST: RS
METHODS: EPA 405.1, 150.1, 160.2.



Director, Dr. Blair Leftwich

4-2-99

Date

TRACE ANALYSIS, INC.

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 E-Mail: lab@traceanalysis.com

Sampling Date: 03/23/99
 Sample Condition: Intact & Cool
 Sample Received by: VW
 Project Name:

ANALYTICAL RESULTS FOR

NAVAJO REFINING CO.

Attention: Bryan Madrid

501 E. Main Street

Artesia, New Mexico 88210

April 1, 1999

Receiving Date: 03/24/99

Sample Type: Water

Project No: NA

Project Location: NA

TA#	FIELD CODE	COD* (mg/L)	CYANIDE* (mg/L)	SPECIFIC CONDUCTANCE (uMHOs/cm)	ALKALINITY (mg/L as CaCO3)			TDS (mg/L)
					OH	CO3	HC03	
T121501	TK 107	<20	<0.01	1060	0	0	184	184
ICV		248	0.122	1,336			2,400	1,012
CCV		243	0.125	1,330			2,400	1,001
REPORTING LIMIT		20	0.01	5.3			0.1	23
PREP DATE		03/26/99	03/26/99	03/25/99			03/25/99	03/25/99
ANALYSIS DATE		03/26/99	03/26/99	03/25/99			03/25/99	03/25/99
RPD		1	3	0			3	13
% Extraction Accuracy		101	100	-----			94	101
% Instrument Accuracy		99	102	96			95	101

*Came in non-preserved.

METHODS: EPA 410.4, SM 4500 CN-C,E, 120.1, 160.1, 310.1

COD SPIKE: 250 mg/L COD

CYANIDE SPIKE: 0.12 mg/L CYANIDE

COD CV: 250 mg/L COD

CYANIDE CV: 0.12 mg/L CYANIDE



Director Dr. Blair I. Leitch

4-1-99

Date

TRACE ANALYSIS, INC.

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ANALYTICAL RESULTS FOR NAVAJO REFINING CO.

Attention: Bryan Madrid
501 E. Main Street
Artesia, New Mexico 88210

Sampling Date: 03/23/99
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name:

April 1, 1999
Receiving Date: 03/24/99
Sample Type: Water
Project No:
Project Location:

TA#	Field Code	FLUORIDE (mg/L)	CHLORIDE (mg/L)	NO3-N (mg/L)	SULFATE (mg/L)
T121501	TK 107	2.6	58	3.5	450
ICV		2.48	12.08	4.85	11.45
CCV		2.49	12.06	4.82	11.37
Reporting Limit		0.1	0.5	0.2	0.5
RPD		10	0	0	1
% Extraction Accuracy		93	97	96	89
% Instrument Accuracy		99	97	97	91
PREP DATE		03/24/99	03/24/99	03/24/99	03/25/99
ANALYSIS DATE		03/24/99	03/24/99	03/24/99	03/25/99

METHODS: EPA 300.0

CHEMIST: JS

FLUORIDE SPIKE: 12.5 mg/L FLUORIDE

NO3-N SPIKE: 25 mg/L NO3-N

CHLORIDE SPIKE: 62.5 mg/L CHLORIDE

SULFATE SPIKE: 125 mg/L SULFATE

FLUORIDE CV: 2.5 mg/L FLUORIDE

NO3-N CV: 5.0 mg/L NO3-N

CHLORIDE SPIKE: 12.5 mg/L CHLORIDE

SULFATE SPIKE: 12.5 mg/L SULFATE



Director, Dr. Blair Leftwich

4-1-99

Date



NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

April 10, 1999

CERTIFIED MAIL

RETURN RECEIPT NO. P 288 259-112

106 11

Mr. Bryan Madrid
Navajo Refining Company
P.O. Box 159
Artesia, New Mexico 88211-0159

Re: HydroTest Water From Tk 107, Navajo Refining Co., Artesia , NM

Dear Mr. Madrid:

The New Mexico Oil Conservation Division (NMOCD) is in receipt of Navajo Refining Company's (NRC) letter dated April 10, 1999 requesting permission to discharge hydrotest water for the above mentioned tank, into the permitted Navajo farming area as irrigation water. **The NMOCD hereby approves of your request.**

Please be advised that NMOCD approval of this request does not relieve NRC of liability should their operations pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve NRC of responsibility for compliance with any other federal, state, or local laws and/or regulations.

If you require any further information or assistance please do not hesitate to write or call me at (505-827-7155).

Sincerely Yours,

Wayne Price-Environmental Bureau

cc: OCD Artesia Office-email



NAVAJO REFINING COMPANY
P.O. BOX 159
501 E. MAIN STREET

ARTESIA, NEW MEXICO 88210
PHONE: (505) 748-3311
FAX: (505) 748-9077

FAX COVER SHEET

SENDING TO:

NAME: MARK ASHLEY

ORGANIZATION/FIRM: OIL CONSERVATION DIVISION

FAX #: (505) 827 - 8177

SENDING FROM:

NAME: Bryan Madrid

DATE: April 5, 1999

NO. OF PAGES (INCLUDING COVER PAGE): 11

IF YOU DO NOT RECEIVE ALL PAGES, PLEASE CALL EXT. 362.

Mark,

The following are a cover letter and results from an analysis ran on hydrotest water from Tk 107 at our Artesia plant. Could you please review this material, and, if possible, call and give a verbal approval to release this water. The original letter along with the results will also be mailed to you.

Thanks,

Bryan

NOTE: Unless otherwise indicated or obvious from the nature of the transmittal, the information contained in this facsimile message is privileged and confidential information intended for the use of the individual or entity named above. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error or are not sure whether it is privileged, please immediately notify us by telephone and return the original message to us at the above address via the U.S. Postal Service. Thank you.

TELEPHONE
(505) 748-3311

EASYLINK
62905278



REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
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(505) 746-4438 P / L

April 5, 1999

Mark Ashley
Geologist
Environmental Bureau
Oil Conservation Division
2040 S. Pacheco St.
Santa Fe, NM 87505-5472

RE: HYDROTEST WATER FROM TK 107, NAVAJO REFINING CO., ARTESIA, NM

Dear Mark:

The floor on Tk 107, a gasoline storage tank, at our Artesia plant was recently replaced. After completion, the tank was filled with approximately 22,000 barrels of water in order to perform a hydro test. Enclosed you will find an analysis of this water. As you can see, we are below ground water standards for every parameter measured except fluoride, iron, and manganese. We feel the high levels are the result of the tank being made of iron, and high fluoride concentrations in water around this area. Furthermore, the level of manganese was only slightly over ground water standards.

This water will be discharged to our farm with precautions taken to ensure the water does not pond up. If there are any questions concerning this matter, please call me at (505) 748-3311. Thank you for your time in this matter.

Sincerely,

NAVAJO REFINING COMPANY

Bryan Madrid

Bryan Madrid
Environmental Specialist

Encl.



TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

Lubbock, Texas 79424 800-378-1296
El Paso, Texas 79922 888-588-3443
E-Mail: lab@traceanalysis.com

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915-585-3443 FAX 915-585-4944

ANALYTICAL RESULTS FOR
NAVAJO REFINING CO.
Attention: Bryan Madrid
501 E. Main Street
Artesia, New Mexico 88210

PAGE 1 of 2

April 2, 1999
Receiving Date: 03/24/99
Sample Type: Water
Project No: N/A
Project Loc: N/A

Sampling Date: 03/23/99
Sample Condition: I & C
Sample Received by: VW
Project Name: N/A
Extraction Date: 03/27/99
Analysis Date: 03/27/99

FIELD CODE: TK 107
TA #: T121501

	Reporting Limit (ug/L)	Concentration (ug/L)	QC	RPD	EA	IA
8260 Compounds						
Dichlorodifluoromethane	1	ND				
Chloromethane	1	ND				
Vinyl chloride	2	ND	88			88
Bromomethane	5	ND				
Chloroethane	1	ND				
Trichlorofluoromethane	1	ND				
1,1-Dichloroethene	1	ND	95	3	95	95
Methylene chloride	5	ND				
trans-1,2-Dichloroethene	1	ND				
1,1-Dichloroethane	1	ND				
cis-1,2-Dichloroethene	1	ND				
Chloroform	1	ND	94			94
2,2-Dichloropropane	1	ND				
Bromochloromethane	1	ND				
1,2-Dichloroethane	1	ND				
1,1,1-Trichloroethane	1	ND				
Carbon Tetrachloride	1	ND				
1,1-Dichloropropene	1	ND				
Benzene	1	ND		2	103	
1,2-Dichloropropane	1	ND	96			96
Trichloroethene	1	ND		2	93	
Dibromomethane	1	ND				
Bromodichloromethane	1	ND				
cis-1,3-Dichloropropene	1	ND				
trans-1,3-Dichloropropene	1	ND				
Toluene	1	1.5	103	2	101	103
1,1,2-Trichloroethane	1	ND				
1,3-Dichloropropane	1	ND				

NAVAJO REFINING CO.

Attention: Bryan Madrid

FIELD CODE: TK 107

TA #: T121501

PAGE 2 of 2

B260 Compounds	Reporting Limit (ug/L)	Concentration (ug/L)	QC	RPD	EA	IA
Dibromochloromethane	1	ND				
1,2-Dibromoethane	1	ND				
Tetrachloroethene	1	ND				
Chlorobenzene	1	ND	97	1	95	97
1,1,1,2-Tetrachloroethane	1	ND				
Ethylbenzene	1	ND	100			100
m & p-Xylene	1	ND				
Bromoform	1	ND				
Styrene	1	ND				
o-Xylene	1	ND				
1,1,2,2-Tetrachloroethane	1	ND				
1,2,3-Trichloropropane	1	ND				
Isopropylbenzene	1	ND				
Bromobenzene	1	ND				
2-Chlorotoluene	1	ND				
n-Propylbenzene	1	ND				
4-Chlorotoluene	1	ND				
1,3,5-Trimethylbenzene	1	ND				
tert-Butylbenzene	1	ND				
1,2,4-Trimethylbenzene	1	ND				
1,4-Dichlorobenzene	2	ND				
sec-Butylbenzene	1	ND				
1,3-Dichlorobenzene	2	ND				
4-Isopropyltoluene	1	ND				
1,2-Dichlorobenzene	2	ND				
n-Butylbenzene	1	ND				
1,2-Dibromo-3-chloropropane	5	ND				
1,2,3-Trichlorobenzene	5	ND				
Naphthalene	1	1.2				
1,2,4-Trichlorobenzene	5	ND				
Hexachlorobutadiene	5	ND				

% Recovery

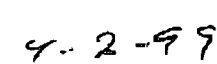
Dibromofluoromethane	98
Toluene-d8	97
4-Bromofluorobenzene	102

ND = Not Detected

Methods: EPA SW 846-5035, 8260B

CHEMIST: JG



Director, Dr. Blair Leftwich

Date



TRACEANALYSIS, INC.

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El Paso, Texas 79922

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888-588-3443
E-Mail: lab@traceanalysis.com

HDS-7/J4-1206
915-586-3443

FAX 806-794-1298
FAX 915-585-4944

ANALYTICAL RESULTS FOR
NAVAJO REFINING CO.
Attention: Bryan Madrid
501 E. Main Street
Artesia, New Mexico 88210

April 2, 1999
Receiving Date: 03/24/99
Sample Type: Water
Project No: N/A
Project Loc: N/A
Project Name: N/A
Sampling Date: 03/23/99
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 03/25/99
Analysis Date: 03/26/99

PAH	Reporting	T121501				
8270 Compounds (mg/L)	Limit	TK 107	CV	RPD	%EA	%IA
Naphthalene	0.001	0.001	79	1	76	99
Acenaphthylene	0.001	ND	80	1	85	100
Acenaphthene	0.001	ND	80	1	85	100
Fluorene	0.001	ND	81	2	88	101
Phenanthrene	0.001	ND	79	2	85	99
Anthracene	0.001	ND	79	0	84	99
Fluoranthene	0.001	ND	78	1	90	98
Pyrene	0.001	ND	78	3	87	98
Benzo[a]anthracene	0.001	ND	80	1	89	100
Chrysene	0.001	ND	82	2	101	103
Benzo[b]fluoranthene	0.001	ND	74	9	89	93
Benzo[k]fluoranthene	0.001	ND	79	3	88	99
Benzo[a]pyrene	0.001	ND	82	1	94	103
Indeno[1,2,3-cd]pyrene	0.001	ND	81	1	91	101
Dibenz[a,h]anthracene	0.001	ND	82	1	113	103
Benzo[g,h,i]perylene	0.001	ND	79	0	87	99

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR

81

2-Fluorobiphenyl SURR

78

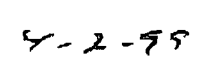
Terphenyl-d14 SURR

87

METHODS: EPA SW 846-8270, 3510C

CHEMIST: MA


Director, Dr. Blair Leftwich


Date

TRACEANALYSIS, INC.

5701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 806-318-1296 806-794-1296
4725 Hilday Avenue, Suite A El Paso, Texas 79922 806-583-3453 315-585-3453
E-Mail: aa@traceanalysis.com

ANALYTICAL RESULTS FOR NAVAJO REFINING CO.

Attention: Bryan Madrid
501 E. Main Street
Artesia, New Mexico 88210

Sampling Date: 03/23/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name:

April 2, 1999
Receiving Date: 03/24/99
Sample Type: Water
Project No:
Project Location:

TA#	FIELD CODE	Al (mg/L)	Ba (mg/L)	Be (mg/L)	B (mg/L)	Cd (mg/L)	Co (mg/L)	Cu (mg/L)	Fe (mg/L)	Mn (mg/L)	Mo (mg/L)	Ni (mg/L)	Ag (mg/L)	Hg (mg/L)
T121501	TK 107	<0.05	<1.0	<0.01	<0.50	<0.01	<0.05	<1.0	2.5	0.25	<1.0	<0.20	<0.001	<0.0002
ICV		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.20	0.0010
CCV		1.0	1.0	0.99	0.98	1.0	1.0	0.97	1.0	1.0	0.99	0.99	0.19	0.0010
REPORTING LIMIT		0.05	1.0	0.01	0.50	0.01	0.05	1.0	0.10	0.002	1.0	0.20	0.001	0.0002
RPD		0*	7	10	0	5	10	8	5*	5	7	3	8	8
% Extraction Accuracy		110*	105	105	100	95	100	110	95*	105	105	110	87	120
% Instrument Accuracy		100	100	99	99	100	100	98	100	100	99	99	95	100
PREP DATE		3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/30/99
ANALYSIS DATE		3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/25/99	3/30/99

*Used LCS/LCSD for EA/RPD due to required dilutions.

METHODS: EPA SW 840-6010B, 3015, 7470A

CHEMIST: Al, Ba, Be, B, Cd, Co, Cu, Fe, Mn, Mo, Ni, Ag: RR Hg: BP

TOTAL METAL SPIKE: Al, Ba, Be, B, Cd, Co, Cu, Fe, Mn, Mo, Ni: 0.20 mg/L Ag: 0.15 mg/L Hg SPIKE: 0.0010

TOTAL METAL CV: Al, Ba, Be, B, Cd, Co, Cu, Fe, Mn, Mo, Ni: 1.0 mg/L Ag: 0.20 mg/L Hg SPIKE: 0.0010

RR

4-2-99

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6731 Altacree Avenue, Suite 5 Lubbock, Texas 79424 803-794-1296 FAX 803-794-1296
4725 Ripley Avenue, Suite A El Paso, Texas 79922 938-388-3443 915-585-3443 FAX 915-585-4344
ANALYTICAL RESOLUTION FOR ANALYSIS.COM

April 2, 1999

Receiving Date: 03/24/99

Sample Type: Water

Project No:

Project Location:

NAVAJO REFINING CO.

Attention: Bryan Madrid

501 E. Main Street

Artesia, New Mexico 88210

Sampling Date: 03/23/99

Sample Condition: Intact & Cool

Sample Received by: VW

Project Name:

TA#	FIELD CODE	TOTAL V (mg/L)	TOTAL Zn (mg/L)	TOTAL As (mg/L)	TOTAL Pb (mg/L)	TOTAL Se (mg/L)	TOTAL U (mg/L)	TOTAL Cr (mg/L)
T121501	TK 107	<0.20	<10	<0.10	<0.005	<0.01	<5.0	<0.05
ICV		1.0	1.0	1.0	1.0	1.0	1.0	1.0
CCV		0.98	0.99	0.97	1.0	0.98	1.0	1.0
REPORTING LIMIT		0.20	10	0.10	0.005	0.01	5.0	0.05
RPD		4	5*	9	10	4	6	10
% Extraction Accuracy		100	105*	115	105	110	80	105
% Instrument Accuracy		99	99	98	100	99	100	100
PREP DATE	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99
ANALYSIS DATE	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99	03/25/99

*Used LCS & LCSD due to required dilutions.

METHODS: EPA SW-846 8010B, 3015

CHEMIST: V, Zn, As, Pb, Se, U, Cr: RR

TOTAL METAL SPIKE: V, Zn, As, Pb, Se, Cr: 0.20 mg/L U: 2.0 mg/L

TOTAL METAL CV: V, Zn, As, Pb, Se, Cr, U: 1.0 mg/L

Director, Dr. Blair Leftwich

4-2-99

Date

TRACEANALYSIS, INC

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El Paso, Texas 79922

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FAX 915•565•4944

ANALYTICAL RESULTS FOR
NAVAJO REFINING CO.
Attention: Bryan Madrid
501 E. Main Street
Artesia, New Mexico 88210

April 2, 1999
Receiving Date: 03/24/99
Sample Type: Water
Project No:
Project Location:

Sampling Date: 03/23/99
Sample Condition: Intact & C
Sample Received by: VW
Project Name:

SAMPLE #	FIELD CODE	Date of Receiving	BOD5 (mg/L)	TSS (mg/L)	pH* (s.u.)
T121501	TK 107	03/24/99	<30	8.0	7.4

PREP DATE	03/24/99	03/25/99	03/24/99
ANALYSIS DATE	03/29/99	03/25/99	03/24/99

QUALITY CONTROL SUMMARY

BOD5 RPD = 4

BOD Accuracy = 97%

TSS RPD = 13

pH RPD = 0

pH Instrument Accuracy = 100%

TRACEANALYSIS, INC.

6701 Aachen Avenue, Suite 9 Lubbock, Texas 79424 803-313-1296 806-794-1256 FAX 806-794-1293
4725 Riley Avenue, Suite 4 El Paso, Texas 75322 869-863-2443 915-585-3443 FAX 915-585-4944
E-Mail: lab@traceanalysis.com

April 1, 1999

Receiving Date: 03/24/99

Sample Type: Water

Project No: NA

Project Location: NA

ANALYTICAL RESULTS FOR

NAVAJO REFINING CO.

Attention: Bryan Madrid

501 E. Main Street

Artesia, New Mexico 88210

Sampling Date: 03/23/99

Sample Condition: Intact & Cool

Sample Received by: VW

Project Name:

TA#	FIELD CODE	COD* (mg/L)	CYANIDE* (mg/L)	SPECIFIC CONDUCTANCE (uMHOS/cm)	ALKALINITY (mg/L as CaCO3)			TDS (mg/L)
					OH	CO3	HCO3	
T121501	TK 107	<20	<0.01	1060	0	0	184	1,000
ICV		248	0.122	1,336			2,400	1,012
CCV		243	0.125	1,330			2,400	1,001
REPORTING LIMIT		20	0.01	5.3			0.1	23
PREP DATE		03/26/99	03/26/99	03/25/99			03/25/99	03/25/99
ANALYSIS DATE		03/26/99	03/26/99	03/25/99			03/25/99	03/25/99
RPD		1	3	0			3	13
% Extraction Accuracy		101	100	---			94	101
% Instrument Accuracy		99	102	96			95	101

*Came in non-preserved.

METHODS: EPA 410.4, SM 4500 CN-C.E, 120.1, 160.1, 310.1

COD SPIKE: 250 mg/L COD

CYANIDE SPIKE: 0.12 mg/L CYANIDE

COD CV: 250 mg/L COD

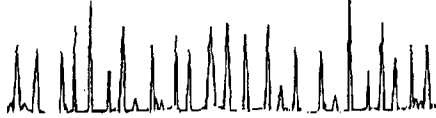
CYANIDE CV: 0.12 mg/L CYANIDE

BL

Director, Dr. Blair Leftwich

4-1-99

Date



TRACEANALYSIS, INC



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El Paso, Texas 79922 1800-588-3443
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915-585-3443 FAX 915-585-4044

ANALYTICAL RESULTS FOR NAVAJO REFINING CO.

Attention: Bryan Madrid
501 E. Main Street
Artesia, New Mexico 88210

April 1, 1999
Receiving Date: 03/24/99
Sample Type: Water
Project No:
Project Location:

Sampling Date: 03/23/99
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name:

TA#	Field Code	FLUORIDE (mg/L)	CHLORIDE (mg/L)	NO3-N (mg/L)	SULFATE (mg/L)
T121501	TK 107	2.6	58	3.5	450
ICV		2.48	12.08	4.85	11.45
CCV		2.49	12.06	4.82	11.37
Reporting Limit		0.1	0.5	0.2	0.5
RPD		10	0	0	1
% Extraction Accuracy		93	97	96	89
% Instrument Accuracy		99	97	97	91
PREP DATE		03/24/99	03/24/99	03/24/99	03/25/99
ANALYSIS DATE		03/24/99	03/24/99	03/24/99	03/25/99

METHODS: EPA 300.0

CHEMIST: JS

FLUORIDE SPIKE: 12.5 mg/L FLUORIDE

NO3-N SPIKE: 25 mg/L NO3-N

CHLORIDE SPIKE: 62.5 mg/L CHLORIDE

SULFATE SPIKE: 125 mg/L SULFATE

FLUORIDE CV: 2.5 mg/L FLUORIDE

NO3-N CV: 5.0 mg/L NO3-N

CHLORIDE SPIKE: 12.5 mg/L CHLORIDE

SULFATE SPIKE: 12.5 mg/L SULFATE


Director, Dr. Blair Leftwich

4-1-99
Date

TraceAnalysis, Inc. 6701 Abernethy Avenue, Ste. 9 Lubbock, Texas 79424 Tel (800) 794-1296 Fax (800) 794-1293 1 (800) 376-1256		4725 Riley Dr., Ste. A El Paso, Texas 79922-1828 Tel (915) 585-3443 Fax (915) 585-4944 1 (888) 588-3443	
Company Name: NAVATO REFINING Co. Address: 501 E. MAIN STREET Contact Person: BRYAN MADRID Invoice to: (if different from above) Project #:		Phone #: (505) 748-3311 Fax #: (505) 748-9077	
Project Location:		Project Name:	
Sampler Signature: <i>Bryan Madrid</i>		Date:	
LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	VOLUME/AMOUNT
MATRIX		PRESERVATIVE METHOD	
WATER AIR SLUDGE		NONE HNO3 HCL	
DATE TIME		SAMPLING	
12/501 TK107		3/23/99 13:00	
Date: 3/23/99 16:15 Time:		Date: 3/23/99 16:15 Time:	
Date: 3/23/99 16:15 Time:		Date: 3/23/99 16:15 Time:	
Date: 3/23/99 16:15 Time:		Date: 3/23/99 16:15 Time:	

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST AB Order ID # 99032415	ANALYSIS REQUEST (Circle or Specify Method No.)
---	---

MTBE 8021B/802	BTX 8011B/802	TPH 418.1/1X1005	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260/624	GC/MS Semi. Vol. 8270C/825	PCBs 8082/608	Pesticides 8081A/608	BOD, TSS, PH	PAH	GEN. CHEMISTRY	ANIONS	CYANIDES	Turn Around Time if different from standard
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LAB USE ONLY	REMARKS: METALS AS P.O. REJECT. GEN. CHEMISTRY - TSS, TDS, BOD, PH, EC, NITRATES, COD
---------------------	--

Intact ☒ Y ☐ N	Headspace ☐ Y ☐ N	Temp 4 °C	Log-in Review <i>MS</i>	Carrier # 2444192012
---	---	-----------	-------------------------	-----------------------------

TELEPHONE
(505) 748-3311

EASYLINK
62905278



REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

April 7, 1999

FAX

(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

APR - 9 1999
OIL CONSERVATION DIVISION

Mr. Roger Anderson
Environmental Bureau
Oil Conservation Division
2040 S. Pacheco St.
Santa Fe, NM 87505-5472

RE: 1st Quarter 1999 Report on RO Reject Water, Navajo Refining Co., Eddy County, NM

Dear Mr. Anderson:

This letter is sent in regard to Navajo Refining's permit modification of our discharge plan GW-28 which allows us to put our Reverse Osmosis (RO) reject water on our farm or into Eagle Draw. This permit is administered by OCD and the parameters we sample for were set up by OCD. We are sending these results for your files. We are required by OCD to sample this stream every quarter and once annually.

For this quarter we discharged a total of 23,851,000 gallons with the entire 23,851,000 gallons being sent to the farm for irrigation. We have discontinued discharging to Eagle Draw. Since we started discharging the RO reject water, we have discharged a total of 725,485,426 gallons. This is broken down as follows: 196,713,498 gallons have been put into Eagle Draw and 528,771,928 gallons have been put on the farm.

The RO unit was in full operation for the entire quarter. If you have any questions concerning this matter, please call me at (505) 748-3311. Thank you for your time.

Regards,
NAVAJO REFINING COMPANY

Darrell Moore
Environmental Mgr. for Water and Waste

Enclosure

cc: USEPA, Region VI
NMED, Water Quality Bureau



TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
NAVAJO REFINING CO.
501 E. Main
Artesia, NM 88210
Attn: Darrell Moore

March 12, 1999
Receiving Date: 03/6/99
Sample Type: Water
Project No: N/A
Project Location: Artesia, NM

Sampling Date: 3/5/99
Sample Condition: Intact & Cool
Sample Received by: MD
Project Name: R.O. Reject/Offsite
Qtly Sample

TA#	FIELD CODE	SO4 (mg/L)
T120421	R.O. Reject-Qtly	1,900
ICV		11.58
CCV		11.56
REPORTING LIMIT		0.5
RPD		1
% Extraction Accuracy		88
% Instrument Accuracy		93
PREP DATE		03/11/99
ANALYSIS DATE		03/11/99

CHEMIST: JS
METHODS: EPA 300.0
SPIKE CONC.: 125 mg/L
CV CONC.: 12.50 mg/L



Director, Dr. Blair Leftwich

3-12-99

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

March 12, 1999

Receiving Date: 3/6/99

Sample Type: Water

Project No: N/A

Project Location: Artesia, NM

ANALYTICAL RESULTS FOR

NAVAJO REFINING CO.

Attention: Darrell Moore

501 E. Main

Artesia, NM 88210

Project Name: R.O. Reject/Offsite Qlty

Sample

Sampling Date: 3/5/99

Sample Condition: Intact & Cool

Sample Received By: MD

Field Code: R.O. Reject-Qlty

TA#	Al (mg/L)	As (mg/L)	Be (mg/L)	Ba (mg/L)	B (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	Cu (mg/L)	Fe (mg/L)	Mn (mg/L)	Pb (mg/L)	Ni (mg/L)	Se (mg/L)	Ag (mg/L)	V (mg/L)	Zn (mg/L)	U (mg/L)	Mo (mg/L)	Hg (mg/L)
T120006	<0.05	<0.10	<0.01	<0.10	<0.50	<0.01	<0.05	<0.05	<0.10	<1.0	<0.20	<0.005	<0.20	<0.01	<0.001	<0.10	<0.10	<5.0	<0.10	<0.0002
ICV	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.20	1.0	1.0	1.0	1.0	0.0011
CCV	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.20	1.0	1.0	1.0	1.0	0.0011
RL	0.05	0.10	0.01	0.10	0.50	0.01	0.05	0.05	0.10	1.0	0.20	0.0005	0.20	0.01	0.001	0.10	0.10	5.0	0.10	0.0002
RPD	5	5	6	5	5	6	5	6	10	5	5	6	5	5	7	6	5	0	5	4
% EA	90	95	85	90	95	85	90	85	90	100	95	85	90	95	75	85	90	90	90	91
% IA	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	116

Prep 3/8/99
Analysis 3/11/99

CHEMIST: Al, As, Be, Ba, B, Cd, Cr, Co, Cu, Fe, Mn, Pb, Ni, Se, Ag, V, Zn, U, Mo Hg: BP

METHODS: EPA 200.7

METALS SPIKE: 0.20 mg/L Ag 2.0 mg/L Al, As, Be, B, Cd, Cr, Co, Cu, Fe, Mn, Pb, Ni, Se V, Zn, U, Mo

METALS CV: 0.20 mg/L Ag 1.0 mg/L Al, As, Be, B, Cd, Cr, Co, Cu, Fe, Mn, Pb, Ni, Se V, Zn, U, Mo 0.0010 mg/L Hg

Director, Dr. Blair Leftwich

Date

3-12-99

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving #: 9903000118
Date Rec: 3/6/99
Sampling Date: 3/5/99
Sample Condition: Intact and Cool
Sample Received By: BW

Date: Mar 10, 1999
Project: N/A
Proj Name: RO Reject
Proj Loc: Artesia, NM 88210

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
120422	KWB-2A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Method Blank		<0.001	<0.001	<0.001	<0.001	<0.001	
	Reporting Limit		0.001	0.001	0.001	0.001	0.001	
QC			0.090	0.089	0.088	0.088	0.266	

RPD
% Extraction Accuracy
% Instrument Accuracy

9 3 4 4
94 88 89 89
90 89 88 89

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	3/8/99	EPA 602	3/9/99	RC	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

3-10-99

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

Lubbock, Texas 79424 800•378•1296
El Paso, Texas 79922 888•588•3443
E-Mail: lab@traceanalysis.com

806•794•1296 FAX 806•794•1298
915•585•3443 FAX 915•585•4944

ANALYTICAL RESULTS FOR NAVAJO REFINING CO.

Attention: Darrell Moore

501 E. Maint
Artesia, NM 88210

March 12, 1999
Receiving Date: 3/6/99
Sample Type: Water
Project No: N/A

Project Location: Artesia, NM
Sample Received by: MD
Client Name: N/A
Project Name: R.O. Reject/Offsite
Qty Sample

TA#	FIELD CODE	FLUORIDE (mg/L)	CHLORIDE (mg/L)	ALKALINITY		TOTAL ALKALINITY (CaCO ₃)
				HC03 (mg/L as CaCO ₃)	C03	
T120421	R.O. REJECT-QLTY	4.2	280	609	0	609
ICV		2.35	11.61	80	2160	2,240
CCV		2.39	11.63	150	2160	2,310
RPD		0	0	0	0	0
% Extraction Accuracy		92	93	---	---	---
% Instrument Accuracy		95	93	93	93	93
REPORTING LIMIT		0.1	0.5	0	0	0
PREP DATE		3/6/99	3/6/99	3/9/99	3/9/99	3/9/99
ANALYSIS DATE		3/6/99	3/6/99	3/9/99	3/9/99	3/9/99

METHODS: EPA 300.0, 310.1.

CHEMIST: FLUORIDE/CHLORIDE: JS ALKALINITY: SA

FLUORIDE SPIKE: 12.5 mg/L FLUORIDE. FLUORIDE CV: 2.5 mg/L FLUORIDE.

CHLORIDE SPIKE: 62.5 mg/L CHLORIDE. CHLORIDE CV: 12.5 mg/L CHLORIDE.

BS

3-12-99

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

Lubbock, Texas 79424 800•378•1296
El Paso, Texas 79922 888•588•3443
E-Mail: lab@traceanalysis.com

806•794•1296 FAX 806•794•1298
915•585•3443 FAX 915•585•4944

ANALYTICAL RESULTS FOR NAVAJO REFINING CO.

Attention: Darrell Moore

501 E. Main
Artesia, NM 88210

March 12, 1999

Receiving Date: 3/6/99

Sample Type: Water

Project No: N/A

Project Location: Artesia, NM

Project Name: R.O. Reject/Offsite Qlty
Sample

Sampling Date: 3/5/99

Sample Condition: Intact & Cool

Sample Received by: BW

TA#	Field Code	Mg (mg/L)	K (mg/L)	Ca (mg/L)	Na (mg/L)
T120421	R.O. Reject-Qlty	222	10	776	158
ICV		20	19	21	19
CCV		20	18	20	19
Reporting Limit		0.50	1.0	0.50	0.50
RPD		1	1	2	0
% Extraction Accuracy		89	96	98	88
% Instrument Accuracy		100	93	103	95
Prep Date:		3/8/99	3/8/99	3/8/99	3/8/99
Analysis Date:		3/11/99	3/11/99	3/11/99	3/11/99

CHEMIST: Mg, K, Ca, Na: RR

METHODS: EPA 200.7

METALS SPIKE: 100 mg/L Cd, Zn, Cu, Ni

METALS CV: 20 mg/L Cd, Zn, Cu, Ni



Director, Dr. Blair Leftwich

3-12-99

Date

120421-22

6701 Aberdeen Avenue, Ste. 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

TraceAnalysis, Inc.

4725 Ripley Dr., Ste A
El Paso, Texas 79922-1028
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

Company Name:
NAVAD REENING Co.

Address:
SOL E. MAID
(Street, City, Zip)

Contact Person:
DARRELL MOORE

Invoice to:
(If different from above)

Project #:

Project Location:
ARTESIA, NM

Project Name:
R.O. REJECT / QTY Samp

Sampler Signature:
Buyer Madrid

LAB #
(LAB USE ONLY)

FIELD CODE

LAB USE ONLY

CONTAINERS

VOLUME/Amount

MATRIX

PRESERVATIVE METHOD

SAMPLING

WATER

SOIL

AIR

SLUDGE

HCL

HNO3

ICE

NONE

DATE

TIME

120421

R.O. REJECT-QTY

1

50ml X

X

X

X

X

X

13:00

13:00

R.O. REJECT-QTY

1

1L X

X

X

X

X

X

13:00

13:00

22

KWB-2A

2

40ml X

X

X

X

X

X

15:15

15:15

ANALYSIS REQUEST
(Circle or Specify Method No.)

TCLP Metals Ag As Ba Cd Cr Pb Se Hg

TCLP Volatiles

TCLP Semi Volatiles

TCLP Pesticides

RCI

GC-MS Vol. 8260B/624

GC/MS Semi. Vol. 8270C/625

PCBs 8082/608

Pesticides 8081A/608

BOD, TSS, pH

Turn Around Time if different from standard

MTBE 8021B/602

BTEX 8021B/602

TPH 418.1/TX1005

PAH 8270C

Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7

TCLP Metals Ag As Ba Cd Cr Pb Se Hg

TCLP Volatiles

TCLP Semi Volatiles

TCLP Pesticides

RCI

GC-MS Vol. 8260B/624

GC/MS Semi. Vol. 8270C/625

PCBs 8082/608

Pesticides 8081A/608

BOD, TSS, pH

Turn Around Time if different from standard

Relinquished by:
Buyer Madrid

Relinquished by:

Relinquished by:

Date: 3/5/99

Date:

Date:

Time: 16:15

Time:

Time:

Received by:
FEO EX.

Received by:

Received by:

Date: 3/5/99

Date:

Date:

Time: 16:15

Time:

Time:

Received at Laboratory by:
Melissa Duran

Received at Laboratory by:

Received at Laboratory by:

Date: 3-6-99

Date:

Date:

Time: 10:00

Time:

Time:

LAB USE ONLY

Intact Y / N

Headspace Y / N

Temp °

Log-In Review

REMARKS:

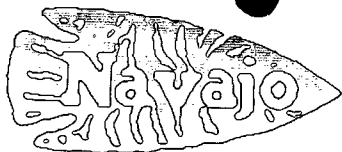
Carrier # 70124132912

432

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

TELEPHONE
(505) 748-3311

EASYLINK
62905278



REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

February 26, 1999

RECEIVED

MAR 02 1999

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Mr. Bill Olson
Hydrogeologist
Environmental Bureau
Oil Conservation Division
2040 S. Pacheco St.
Santa Fe, NM 87505-5472

RE: 1998 Annual Ground Water and Treatment System Monitoring Report, Navajo Refining

Dear Bill,

The referenced report is enclosed. It consists of the following:

- four ground water potentiometric maps,
- four product thickness maps,
- eleven graphs depicting elevation and thickness vs. time,
- four Quarterly Oil Recovery Reports for calendar year 1998,
- one table showing hits on wells,
- one diagram showing the new recovery trench design, and
- the analysis from monitor, residential, and irrigation wells relating to the Ground Water and Treatment System Monitoring that is taking place at Navajo Refining.

Per your agency's letter of June 14, 1996, the reporting frequency of this report was changed from quarterly to yearly.

For 1998, Navajo pumped 12,352,521 gallons of water out of our recovery wells and 573,653 gallons of product. The amount that came from each well is detailed in each quarterly report. All water that is pumped out of these wells is sent to our waste water plant to be treated and then to the Evaporation Ponds to be disposed. Product is taken to the various API oil/water separators and is eventually introduced back into the refinery for reprocessing. In 1998, we were able to increase the amount of product that was recovered by approximately 28% while reducing the amount of water that we pumped by about 20%. There are several items in the quarterly reports, sampling results and maps that we would like to take this opportunity to explain.

First of all, you will notice that during the second quarter, oil production was down significantly while water production during this quarter was relatively stable. Most of this drop in oil production can be attributed to well #4 on Bolton Road. During the second quarter, this well produced zero product while making 388,000 gallons of water. At the end of the 1st quarter and through the 2nd quarter and into the 3rd quarter, we were having mechanical problems with this well. In addition, once the problem was identified, parts could not be found for the oil pump that was in this well. The pump was replaced with an upgraded model and the problem was alleviated. Well #1 on Bolton Road is dry with no water or product in it. This has been the case for the better part of its operational life.

Secondly, in the water analysis spreadsheet which shows hits in the offsite wells, you will notice that RA-1227 has a consistent 2 to 3 ppb detection of MTBE. This well has had this concentration of MTBE since we started sampling in 1992-93 with no increase. Also, in the March 19-20, 1998 sampling, RA-307 and RA-313, which are irrigation wells, showed a hit of hydrocarbons. Subsequent sampling of these wells showed no detection of any hydrocarbon constituents. This leads us to believe that the March 1998 sampling was contaminated from an outside source (lab or during the sampling) and is not a true indication of any contamination in the water supply.

We also continue to see the leading edge of the plume reaching KWB-7 and KWB-11. These monitor wells are both east of Bolton Road. If you remember, we sited the recovery wells on Bolton Road knowing that part of the plume was past this point. We believe what we are seeing in KWB-7 and KWB-11 is that part of the plume that was already east of Bolton Road.

Finally, you will notice on the maps the locations of the four new trenches (with clouds around them). I have enclosed a drawing showing how these trenches were constructed which is different than other trenches in the refinery. Our goal was to reduce the amount of water that we produce from these trenches while at the same time recovering the product. Recovery Well #12, which we call the Toolpushers Trench because it is on Toolpushers Supply land, is the only one of the four new trenches that is currently piped and pumping. The reason is that it's the only one of the new trenches that has product in it at the present time. We have a system set up using a portable pump that we can move between the other three trenches as any product migrates to them. If any or all of the other trenches begins accumulating enough product to justify hard piping, then that will be done at that time.

To further enhance our recovery efforts, Navajo is looking into adding additional recovery systems around the refinery. Specifically, we have done preliminary investigations in the areas Navajo has designated as possible areas of future recovery (see map). Navajo will evaluate these areas and tentatively, we could expect to see some recovery in these areas by December, 1999.

We feel that the program is working well at both recovering lost product and insuring the safety of drinking and irrigation water in the area. Navajo is working with Mr. Dave Boyer of Covenant Technical Associates on selecting sites for additional recovery wells to further enhance the success of this program. I thank you for your time in this matter. As always, if there are any questions, please feel free to call me at 505-748-3311.

Sincerely,
Navajo Refining Co.



Darrell Moore
Environmental Mgr. for Water and Waste

Encl.
cc: PLY, VRL, MPC (without enclosures)

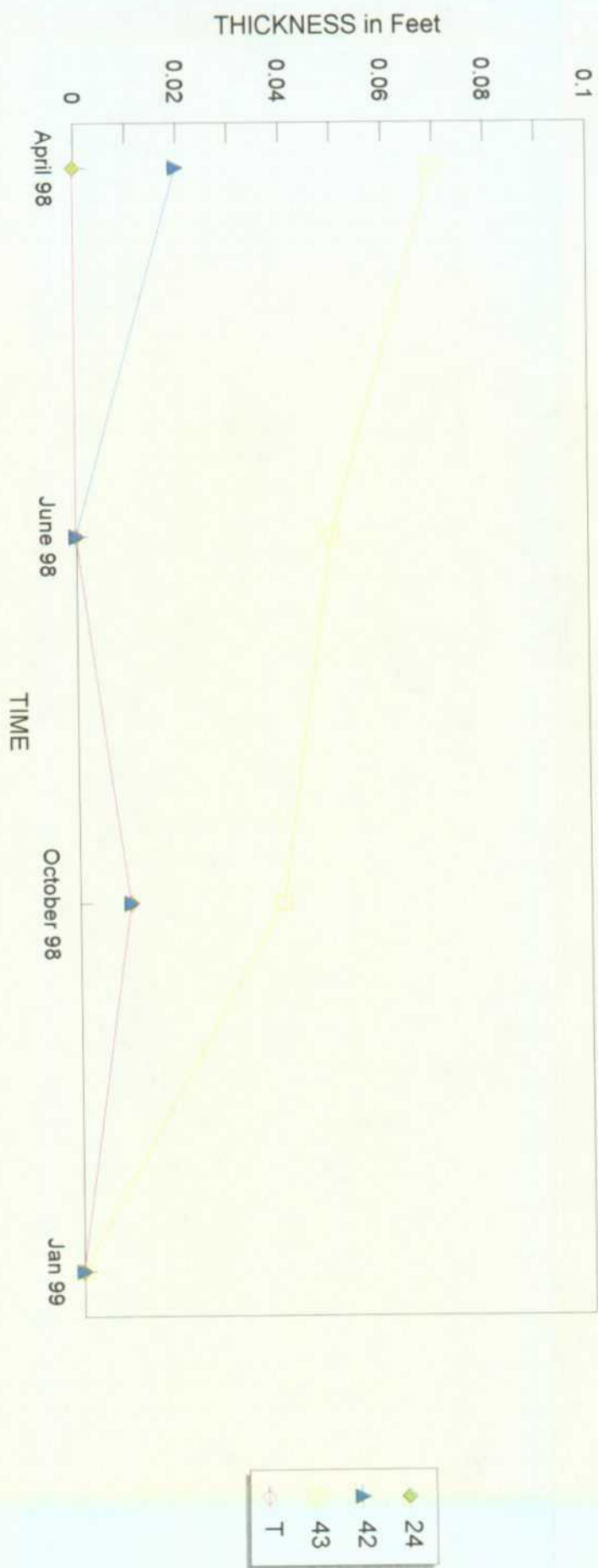
PRODUCT THICKNESS VS. TIME

South-east Part of Refinery



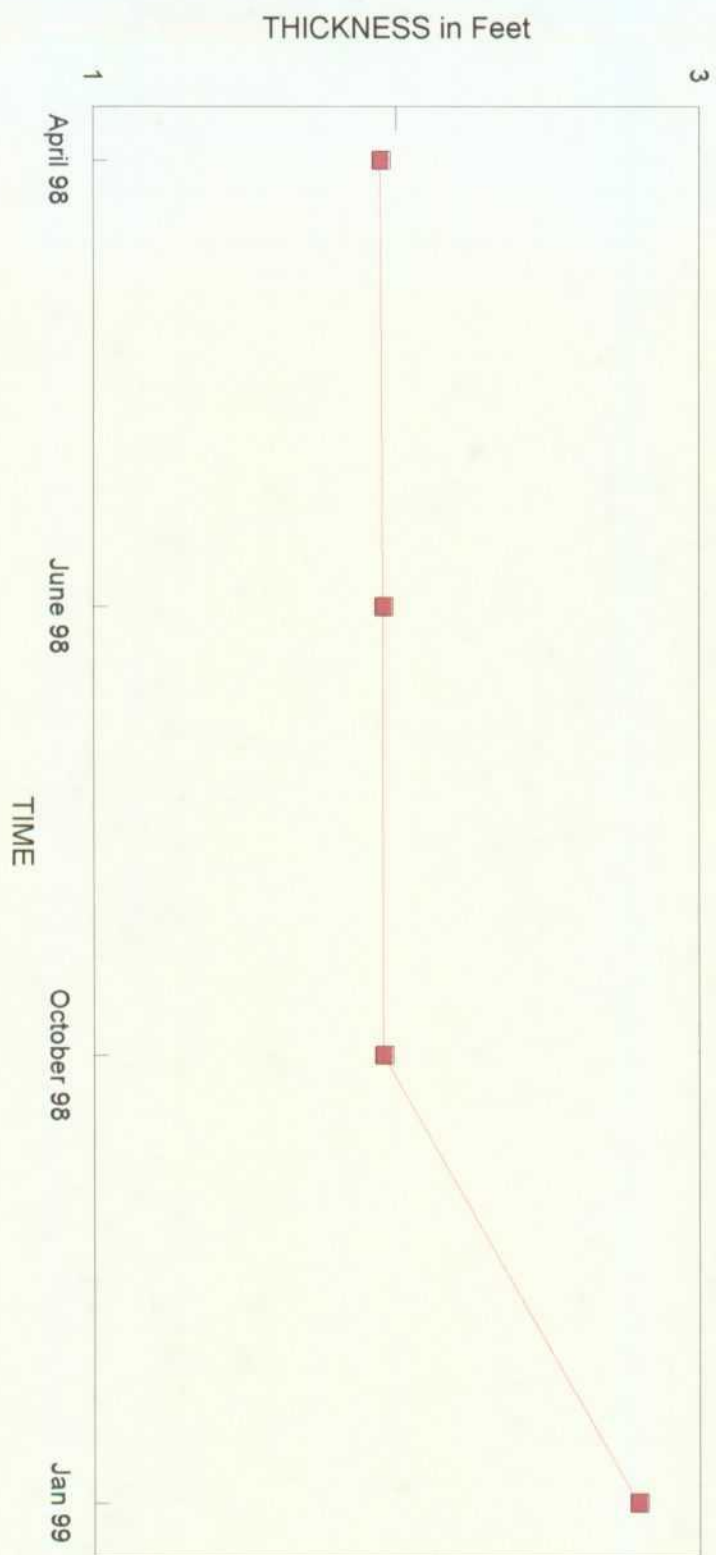
PRODUCT THICKNESS VS. TIME

Truck By Pass Landfarm Area



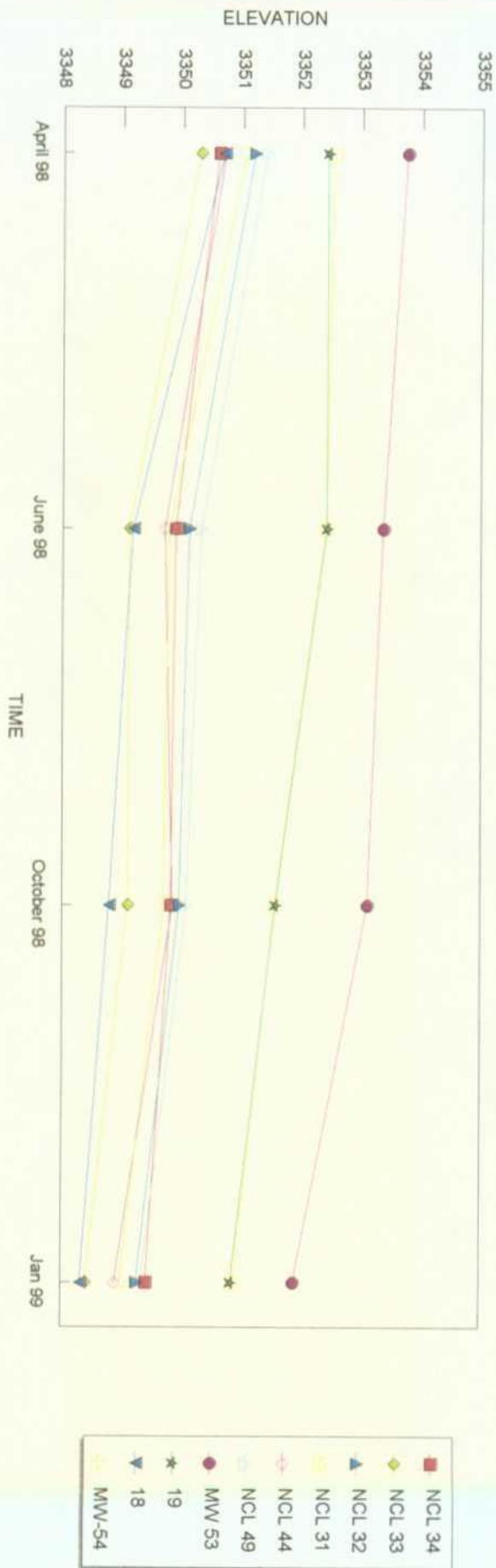
PRODUCT THICKNESS VS. TIME

Truck By Pass Landfarm Area

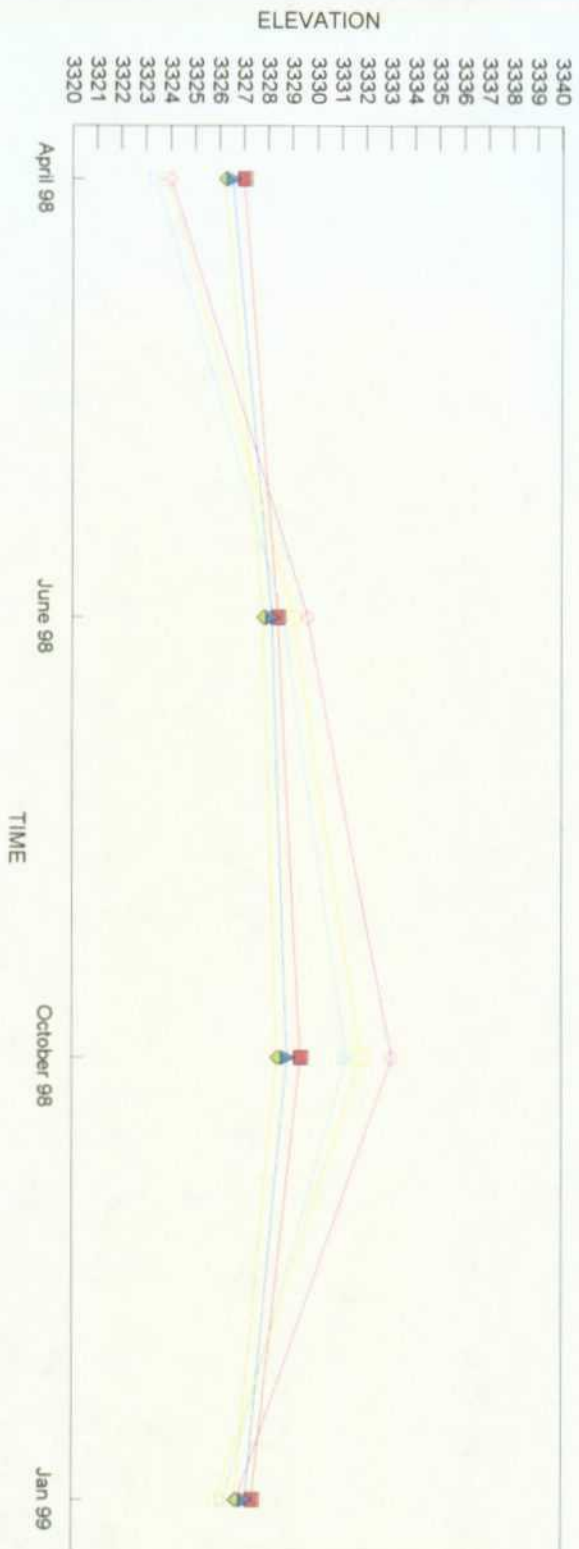


24

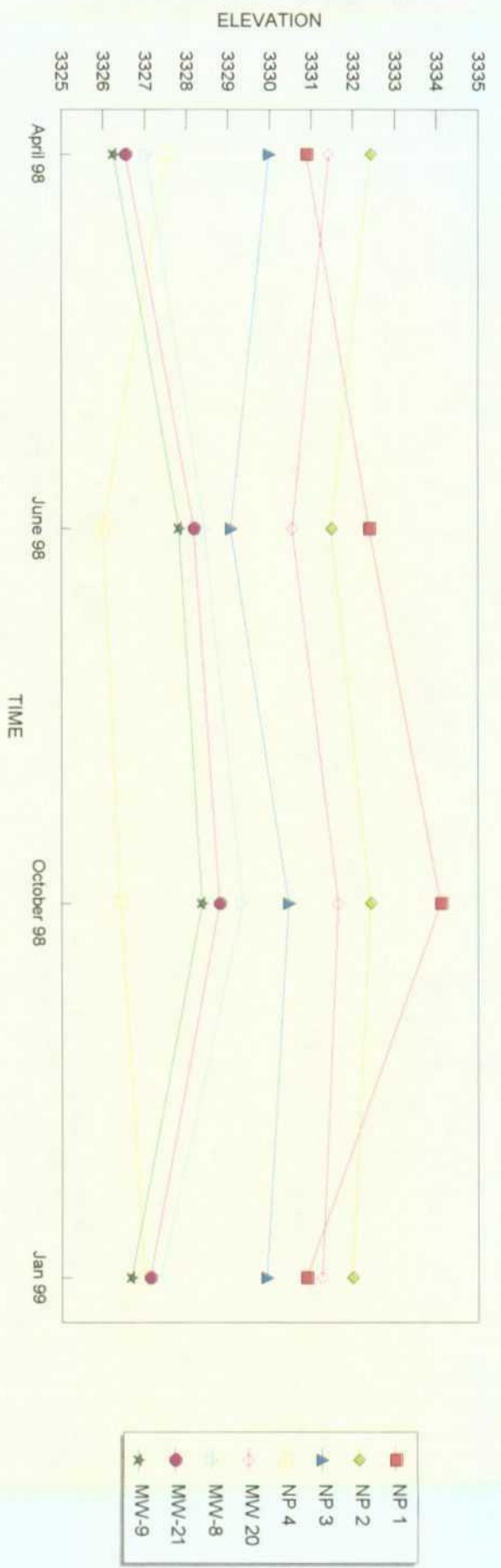
ELEVATION VS. TIME



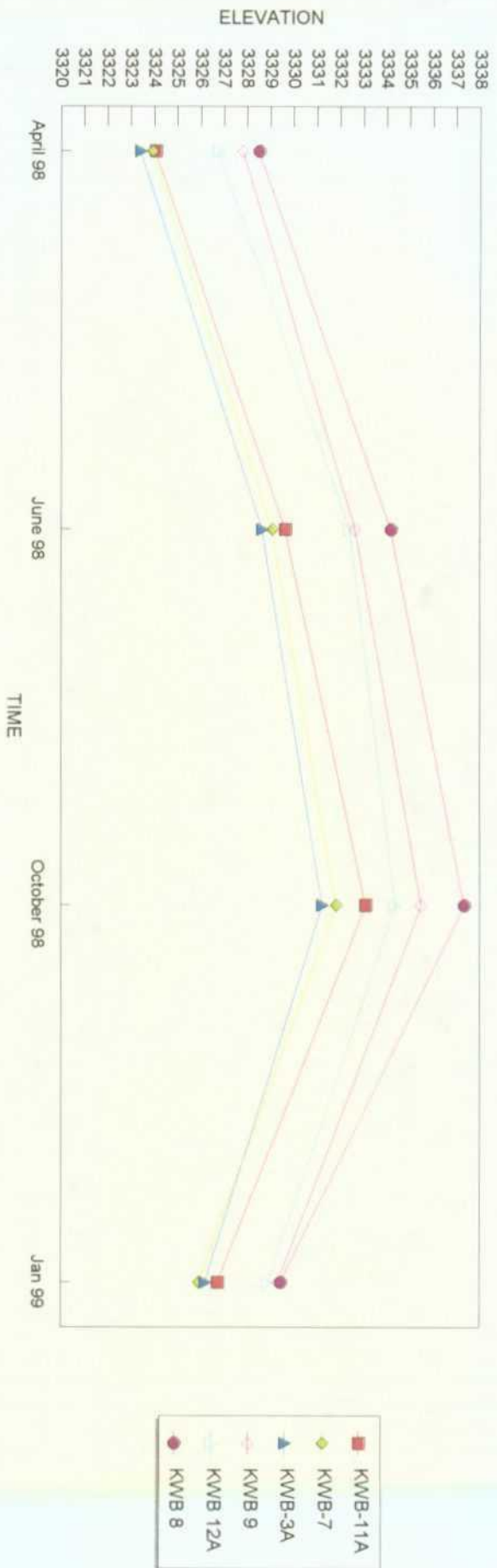
ELEVATION VS. TIME



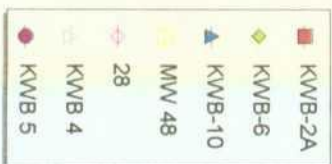
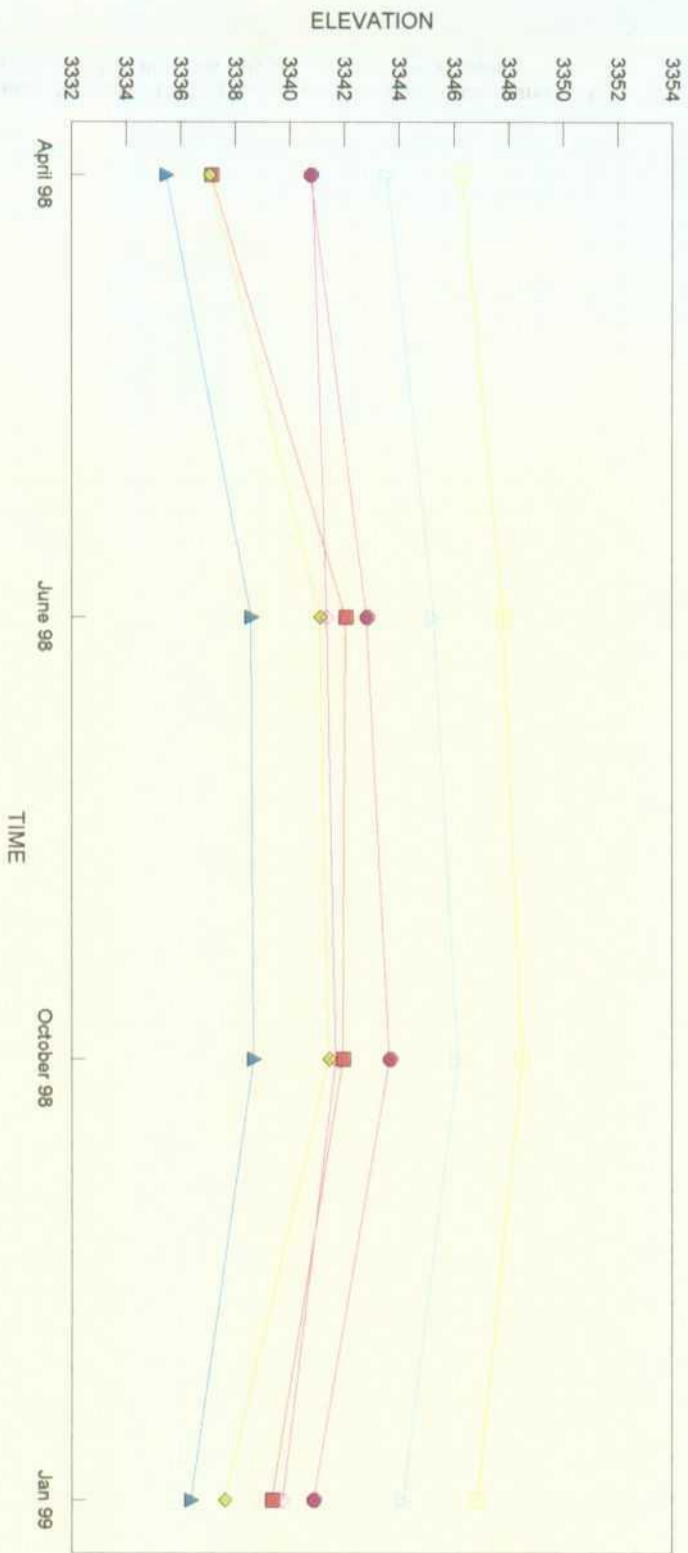
ELEVATION VS. TIME



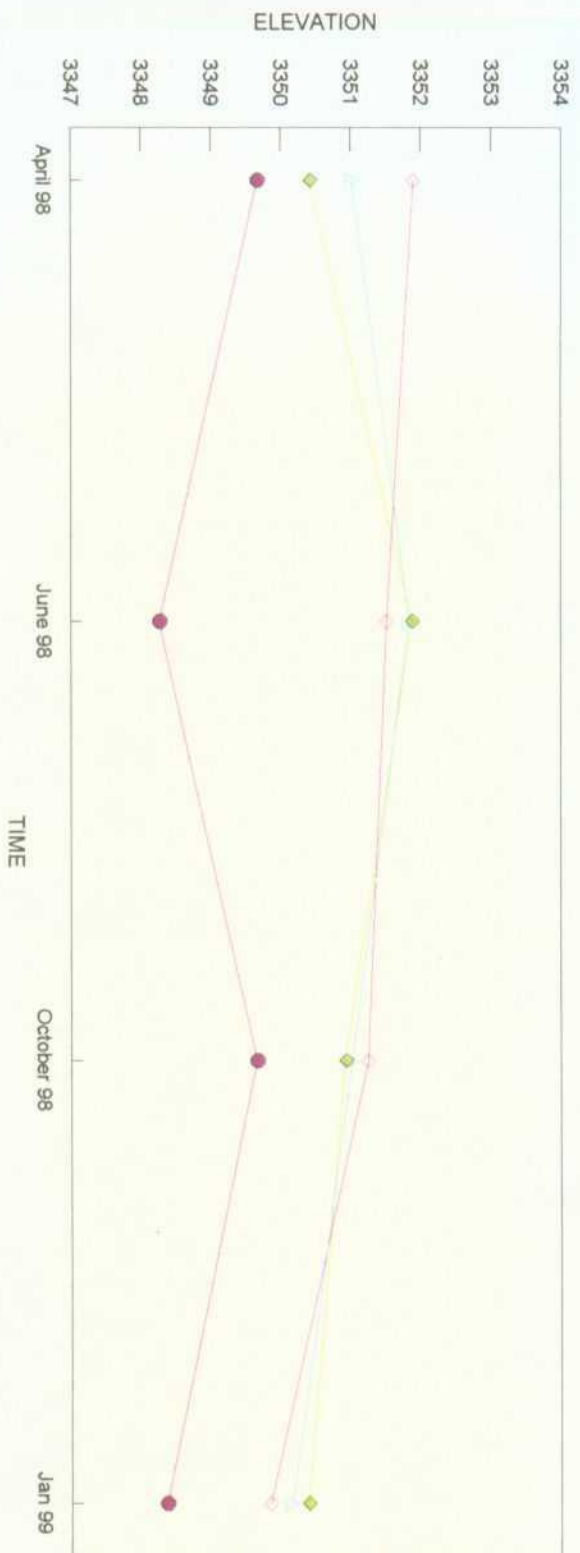
ELEVATION VS. TIME



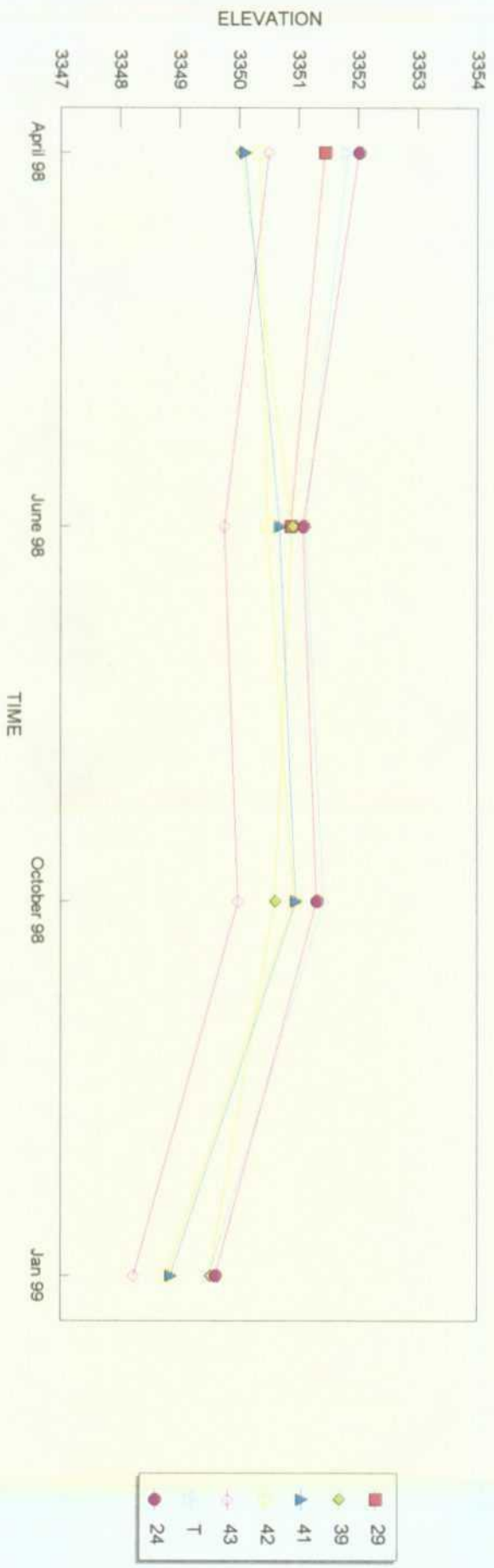
ELEVATION VS. TIME



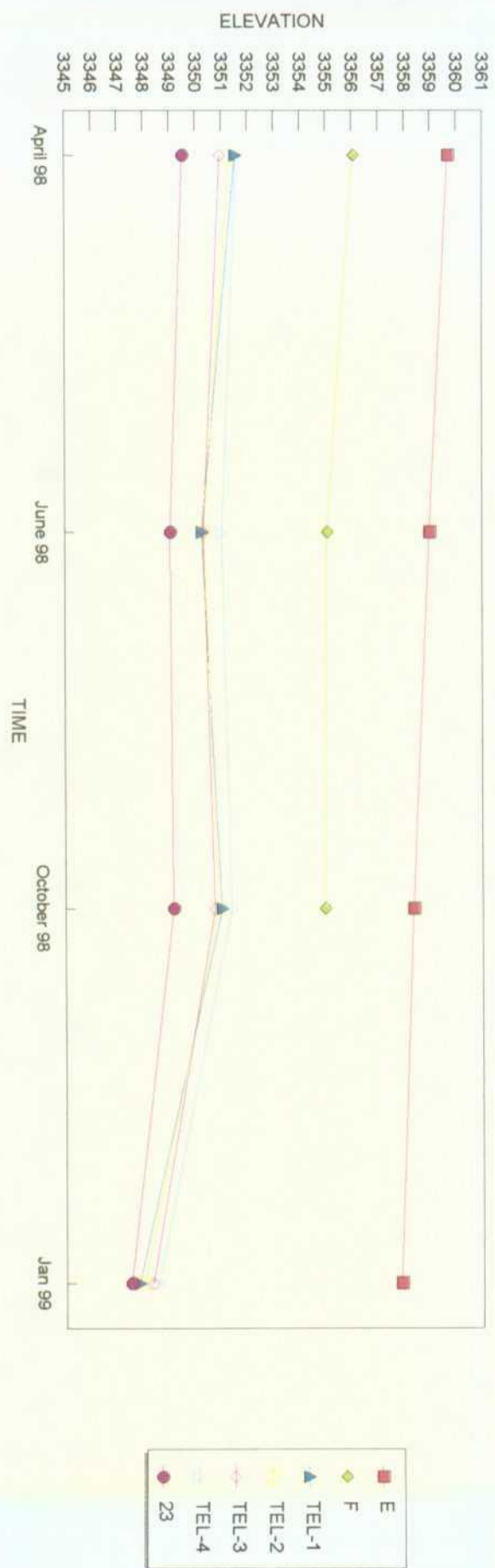
ELEVATION VS. TIME



ELEVATION VS. TIME



ELEVATION VS. TIME



pg.1

1st. Quarter Oil Recovery Well Report

01 Jan 98 To 31 March 98

24 March 98

Totals

Total Production

	Gallons	Barrels
Total H2O Production 1st. Quarter	2178530	51870
Total Oil Production 1st. Quarter	174091	4145

H2O GPM Flow	16.6	Gallons
H2O BPD	570.0	Barrels
Oil GPM Flow	1.2	Gallons
Oil BPD	42.0	Barrels

pg. 2

1st. Quarter Oil Recovery Well Report

01 Jan 98 To 31 March 98

H2O Data

	Total H2O	Highest	Lowest	Avg H2O
Well #	Produced	Produced	Produced	Produced
1	163922	84740	0	12609
2	0	0	0	0
4	156328	19800	0	12025
5	0	0	0	0
7	525392	92088	0	40415
8	1052656	130248	0	80974

Total in plant H2O 1898298 Gallons 45197.6 Barrels

Bolton Rd. Wells

1	0	0	0	0
2	7416	7416	0	570
3	0	0	0	0
4	272816	76856	2608	20986

Total Bolton Rd. H2O 280232 Gallons 6672.2 Barrels

Total H2O Production in gallons 2178530 Gallons 51869.7 Barrels

pg. 3

1ST Quarter 98 Recover Well Report

01 Jan 98 To 31 March 98

H2O Data

* All Data In Gallons

wk	Well# 1	Well#2	Well#4	Well# 5	Well# 7	Well# 8	Weekly Totals	GPM
1	10080.0	0.0	16992.0	0.0	80568.0	121032.0	228672.0	22.7
2	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
3	9864.0	0.0	19800.0	0.0	92088.0	130248.0	252000.0	25.0
4	6048.0	0.0	16704.0	0.0	61200.0	33552.0	117504.0	11.7
5	7474.0	0.0	13824.0	0.0	17288.0	63504.0	102090.0	10.1
6	84740.0	0.0	1744.0	0.0	37152.0	109656.0	233292.0	23.1
7	5832.0	0.0	11592.0	0.0	26856.0	76968.0	121248.0	12.0
8	6408.0	0.0	12168.0	0.0	28800.0	84672.0	132048.0	13.1
9	7920.0	0.0	16776.0	0.0	42048.0	100440.0	167184.0	16.6
10	6048.0	0.0	15408.0	0.0	30024.0	79992.0	131472.0	13.0
11	5976.0	0.0	11880.0	0.0	35496.0	121320.0	174672.0	17.3
12	6552.0	0.0	11520.0	0.0	43344.0	10528.0	71944.0	7.1
13	6980.0	0.0	7920.0	0.0	30528.0	120744.0	166172.0	16.5

Bolton Rd Wells

WK	Well# 11	Well# 12	Well#13	Well#14	Weekly Totals	GPM
1	0.0	0.0	0.0	23112.0	23112.0	2.3
2	0.0	0.0	0.0	2608.0	2608.0	0.3
3	0.0	0.0	0.0	14400.0	14400.0	1.4
4	0.0	0.0	0.0	14400.0	14400.0	1.4
5	0.0	0.0	0.0	4048.0	4048.0	0.4
6	0.0	0.0	0.0	29520.0	29520.0	2.9
7	0.0	0.0	0.0	21096.0	21096.0	2.1
8	0.0	0.0	0.0	3400.0	3400.0	0.3
9	0.0	0.0	0.0	76856.0	76856.0	7.6
10	0.0	0.0	0.0	35280.0	35280.0	3.5
11	0.0	0.0	0.0	15696.0	15696.0	1.6
12	0.0	0.0	0.0	14544.0	14544.0	1.4
13	0.0	7416.0	0.0	17856.0	25272.0	2.5

pg. 4

1st. Quarter Oil Recovery Well Report

01 Jan 98 To 31 March 98

Oil Data

All Data in Gallons

	Total Oil	Peak Oil	Low Oil	Average
Well #	Produced	Production	Production	Production
1	1058.3	174.4	6.7	81.4
2	2001.7	397.5	39.0	154.0
4	355.6	179.4	0.0	27.4
5	12790.0	1519.0	441.0	983.8
7	8286.7	1072.4	268.2	637.4
8	28733.5	6707.5	1.4	2210.3
10	0.0	0.0	0.0	0.0

Total Oil Produced Inplant

53225.8 Gallons

1267.3 Barrels

Bolton Rd. Wells

1	0.0	0.0	0.0	0.0
2	1349.2	565.7	3.2	103.8
3	25136.8	9440.9	23.8	1933.6
4	94378.8	13564.7	1.0	7259.9

Total Oil Produced Bolton Rd.

120865 Gallons

2877.7 Barrels

1st. Quarter Oil Recovery Well Report

01 Jan 98 To 31 March 98

Oil Data

Well #		All Data In Gallons							
Week #	1	2	4	5	7	8	wk total	GPM	
1	6.7	60.5	0.0	1519.0	913.0	10.7	2509.9	0.2	
2	6.7	60.5	0.0	1519.0	913.0	10.7	2509.9	0.2	
3	96.5	39.0	25.4	1324.0	879.0	1.4	2365.3	0.2	
4	96.8	80.6	97.8	1176.0	511.8	4442.9	6405.9	0.6	
5	85.3	75.0	18.2	1225.0	1072.4	6707.5	9183.4	0.9	
6	89.5	92.0	179.4	931.0	566.7	5833.0	7691.6	0.8	
7	70.3	54.7	3.2	833.0	509.2	902.7	2373.1	0.2	
8	114.2	276	13.8	833	639.9	876	2752.9	0.3	
9	174.4	197.1	3.1	1519	694.1	1682.6	4270.3	0.4	
10	82.6	122.6	2.4	441.0	312.9	1046.5	2008.0	0.2	
11	85.7	220.6	3.1	490.0	559.3	2428.3	3787.0	0.4	
12	90.4	325.6	3.5	490.0	268.2	2311.1	3488.8	0.3	
13	59.2	397.5	5.7	490.0	447.2	2480.1	3879.7	0.4	

Bolton Rd. Wells

Week #	1	2	3	4	Wk Totals	GPM
1	0.0	112.7	23.8	12.0	148.5	0.0
2	0.0	112.7	23.8	1.0	137.5	0.0
3	0.0	3.2	308.3	74.1	879.0	0.1
4	0.0	18.9	9440.9	8464.6	17924.4	1.8
5	0.0	140.3	2144.2	9440.9	11725.4	1.2
6	0.0	118.1	313.0	13564.7	13995.8	0.0
7	0.0	89.1	190.6	9830.0	10109.7	1.0
8	0.0	15.4	2042.5	11673.1	13731.0	1.4
9	0.0	51.4	778.3	1387.4	2217.1	0.2
10	0.0	17.9	1738.9	7645.3	9402.1	0.9
11	0.0	565.7	2944.5	9432.1	12942.3	1.3
12	0.0	18.9	3038.5	9910.1	12967.5	1.3
13	0.0	84.9	2149.5	12943.5	15177.9	1.5

01 Jan 98 To 31 March 98

H2O Flow Rate Data

Well #	Quarterly H2O Flow Rate Per Well	gpm	gph
1		1.3	75.1
2		0.0	0.0
4		1.2	71.6
5		0.0	0.0
7		4.0	240.6
8		8.0	482.0
	In Plant Flow Rate	2.4	144.9
Bolton Rd Wells		gpm	gph
1		0.0	0.0
2		0.1	3.4
3		0.0	0.0
4		2.1	124.9
	Bolton Rd Flow rate	0.5	32.1
Average H2O Flow Rate For 1st. Quarter		2.7	160.9

	gpm	gph
Total in Plant H2O Flow	14.5	869.2
Total Bolton Rd H2O Flow Rate	2.1	128.3
1st. Quarter H2O Flow Rate	16.6	997.5

**1st. Quarter Oil Recovery Wells Report
01 Jan 98 To 31 March 98**

Oil Flow Rate Data

Well #	Quarterly Oil Flow Rate Per Well	gpm	gph
1		0.0	0.5
2		0.0	0.9
4		0.0	0.2
5		0.1	5.9
7		0.1	3.8
8		0.2	13.2
In Plant Flow Rate		0.1	4.1
Bolton Rd Wells		gpm	gph
1		0.0	0.0
2		0.0	0.6
3		0.2	11.5
4		0.7	43.2
Bolton Rd Flow Rate		0.2	13.8
Average Oil Flow Rate For 1st. Quarter		0.2	15.9
		gpm	gph
Total In Plant Oil Flow Rate		0.4	24.4
Total Bolton Rd Oil Flow Rate		0.8	49.2
Total 1st. Quarter Oil Flow Rate		1.2	73.5

pg.1

2nd Quarter Oil Recovery Well Report

April 06 To June 29,1998

Totals

Total Production

	Gallons	Barrels
Total H2O Production 2nd Quarter	2253015	53643

Total Oil Production 2nd Quarter	59608	1419
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H2O GPM Flow	17.2	Gallons
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H2O BPD	589.5	Barrels
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Oil GPM Flow	0.7	Gallons
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Oil BPD	23.8	Barrels
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pg. 2

**2nd Quarter Oil Recovery Well Report
April 06 To June 29,1998**

H2O Data

	Total H2O	Highest	Lowest	Avg H2O
Well #	Produced	Produced	Produced	Produced
1	40464	7200	0	3113
2	0	0	0	0
4	25711	17712	0	1978
5	0	0	0	0
7	289152	40536	144	22242
8	1060560	120024	3888	81582

Total in plant H2O 1415887 Gallons 33711.6 Barrels

Bolton Rd. Wells

1	0	0	0	0
2	449120	174224	0	34548
3	0	0	0	0
4	388008	112176	0	29847

Total Bolton Rd. H2O 837128 Gallons 19931.6 Barrels

Total H2O Production in gallons 2253015 Gallons 53643.2 Barrels

pg. 3

2nd Quarter Oil Recovery Well Report

April 06 To June 29,1998

H2O Data

* All Data In Gallons

wk	Well# 1	Well#2	Well#4	Well# 5	Well# 7	Well# 8	Weekly Totals	GPM
1	6192.0	0.0	4968.0	0.0	40536.0	120024.0	171720.0	17.0
2	3456.0	0.0	2736.0	0.0	32400.0	103824.0	142416	14.1
3	6984.0	0.0	17712.0	0.0	33696.0	4032.0	62424.0	6.2
4	6480.0	0.0	223.0	0.0	40104.0	5832.0	52639.0	5.2
5	7200.0	0.0	72.0	0.0	39168.0	3888.0	50328.0	5.0
6	6768.0	0.0	0.0	0.0	8064.0	23112.0	37944.0	3.8
7	3096.0	0.0	0.0	0.0	144.0	119592.0	122832.0	12.2
8	0.0	0.0	0.0	0.0	31680.0	118152.0	149832.0	14.9
9	0.0	0.0	0.0	0.0	21888.0	99432.0	121320.0	12.0
10	0.0	0.0	0.0	0.0	17496.0	116424.0	133920.0	13.3
11	144.0	0.0	0.0	0.0	2664.0	114624.0	117432.0	11.7
12	144.0	0.0	0.0	0.0	7776.0	116064.0	123984.0	12.3
13	0.0	0.0	0.0	0.0	13536.0	115560.0	129096.0	12.8

Bolton RD Wells

WK	Well# 11	Well# 12	Well#13	Well#14	Weekly Totals	GPM
1	0.0	74664.0	0.0	21240.0	95904.0	9.5
2	0.0	19008.0	0.0	31968.0	50976.0	5.1
3	0.0	20880.0	0.0	40104.0	60984.0	6.0
4	0.0	174224.0	0.0	110664.0	284888.0	28.3
5	0.0	13176.0	0.0	112176.0	125352.0	12.4
6	0.0	13176.0	0.0	41472.0	54648.0	5.4
7	0.0	33624.0	0.0	30024.0	63648.0	6.3
8	0.0	13392.0	0.0	144.0	13536.0	1.3
9	0.0	17280.0	0.0	0.0	17280.0	1.7
10	0.0	0.0	0.0	72.0	72.0	0.0
11	0.0	53136.0	0.0	72.0	53208.0	5.3
12	0.0	648.0	0.0	0.0	648.0	0.1
13	0.0	15912.0	0.0	72.0	15984.0	1.6

pg. 4

2nd Quarter Oil Recovery Well Report

April 06 To June 29, 1998

Oil Data

All Data in Gallons

	Total Oil	Peak Oil	Low Oil	Average
Well #	Produced	Production	Production	Production
1	3401.2	469.3	31.1	261.6
2	6346.4	734.2	33.9	488.2
4	1749.2	1352.6	0.0	134.6
5	6960.0	882.0	343.0	535.4
7	4837.8	631.2	128.7	372.1
8	4249.1	2080.3	43.8	326.9
10	0.0	0.0	0.0	0.0

Total Oil Produced Inplant 27543.7 Gallons 655.8 Barrels

Bolton Rd. Wells

1	0.0	0.0	0.0	0.0
2	24604.6	3798.3	7.6	1892.7
3	7460.0	742.0	85.0	573.8
4	0.0	0.0	11.0	2559.1

Total Oil Produced Bolton Rd. 32064.6 Gallons 763.4 Barrels

Total Oil 2nd Quarter 59608.3 Gallons 1419.2 Barrels

2nd Quarter Oil Recovery Well Report

April 06 To June 29, 1998

Oil Data

Well #		All Data In Gallons							
Week #	1	2	4	5	7	8	wk total	GPM	
1	31.1	33.9	3.7	539.0	450.6	2080.3	3138.6	0.3	
2	236.2	436.8	3.0	392.0	435.6	885.9	2389.5	0.2	
3	85.6	439.8	1.4	392.0	128.7	196.3	1243.8	0.1	
4	144.3	393.6	1352.6	343.0	361.5	98.4	2693.4	0.3	
5	105.7	279.4	385.5	392.0	403.9	260.9	1827.4	0.2	
6	77.8	479.4	1.4	490.0	302.5	199.9	1551.0	0.2	
7	265.3	576.1	0.0	490.0	252.1	141.6	1725.1	0.2	
8	469.3	664.5	0	490	324.8	91.1	2039.7	0.2	
9	402.5	456.2	1.2	588	435.1	43.8	1926.8	0.2	
10	450.5	536.5	0.2	588.0	631.2	59.4	2265.8	0.2	
11	423.4	709.0	0.0	639.0	515.1	54.5	2341.0	0.2	
12	381.4	734.2	0.1	882.0	450.4	68.3	2516.4	0.2	
13	328.1	607.0	0.1	735.0	146.3	68.7	1885.2	0.2	

Bolton Rd. Wells

Week #	1	2	3	4	Wk Totals	GPM
1	0.0	7.6	200.0	9167.0	9374.6	0.9
2	0.0	1528.7	435.0	4148.0	6111.7	0.6
3	0.0	518.0	412.0	8678.0	9608.0	1.0
4	0.0	1268.9	691.0	8845.0	10804.9	1.1
5	0.0	1350.9	716.0	1304.0	3370.9	0.3
6	0.0	1114.5	713.0	11.0	1838.5	0.0
7	0.0	410.8	718.0	141.0	1269.8	0.1
8	0.0	986.3	639.0	195.0	1820.3	0.2
9	0.0	3025.8	85.0	165.0	3275.8	0.3
10	0.0	3415.7	742.0	207.0	4364.7	0.4
11	0.0	3576.7	695.0	175.0	4446.7	0.4
12	0.0	3798.3	723.0	132.0	4653.3	0.5
13	0.0	3602.4	691.0	100.0	4393.4	0.4

2nd Quarter Oil Recovery Well Report

06 April To June 29, 1998

Flow Rates

H2O Flow Rate Data

Well #	Quarterly H2O Flow Rate Per Well	gpm	gph
1		0.3	18.5
2		0.0	0.0
4		0.2	11.8
5		0.0	0.0
7		2.2	132.4
8		8.1	485.6
	In Plant Flow Rate	1.8	108.0
Bolton Rd Wells		gpm	gph
1		0.0	0.0
2		3.4	205.6
3		0.0	0.0
4		3.0	177.7
	Bolton Rd Flow rate	1.6	95.8
Average H2O Flow Rate For 2nd Quarter		2.6	156.0

	gpm	gph
Total in Plant H2O Flow	10.8	648.3
Total Bolton Rd H2O Flow Rate	6.4	383.3
2nd Quarter H2O Flow Rate	17.2	1031.6

4th Quarter Oil Recovery Wells Report

April 06 To June 29, 1998

Flow Rates

Oil Flow Rate Data

Well #	Quarterly Oil Flow Rate Per Well	gpm	gph
1		0.0	1.6
2		0.0	2.9
4		0.0	0.8
5		0.1	3.2
7		0.0	2.2
8		0.0	1.9

In Plant Flow Rate	0.0	2.1
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Bolton Rd Wells	gpm	gph
1	0.0	0.0
2	0.2	11.3
3	0.1	3.4
4	0.0	0.0

Bolton Rd Flow Rate	0.1	3.7
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Average Oil Flow Rate For 2nd Quarter	0.1	4.7
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	gpm	gph
Total In Plant Oil Flow Rate	0.2	12.6
Total Bolton Rd Oil Flow Rate	0.5	29.1
Total 2nd Quarter Oil Flow Rate	0.7	41.7

pg.1

3rd Quarter 98 Recovery Well Report

July 1st 1998 To Sep. 28 ,1998

Totals

Total Production

	Gallons	Barrels
Total H2O Production	1946896	46355

Total Oil Production	173505	4131
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H2O GPM Flow	14.9	Gallons
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H2O BPD	509.4	Barrels
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Oil GPM Flow	1.2	Gallons
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Oil BPD	41.1	Barrels
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pg. 2

3 RD Quarter 98 Recovery Well Report

July 1st 1998 To Sep. 28,1998

H2O Data

	Total H2O Produced	Highest Produced	Lowest Produced	Avg H2O Produced
Well #				
1	0	0	0	0
2	0	0	0	0
4	0	0	0	0
5	0	0	0	0
7	253440	118152	2880	19495
8	1214584	138240	1528	93430

Total in plant H2O 1468024 Gallons 34953.0 Barrels

Bolton Rd. Wells

1	0	0	0	0
2	241662	49680	30	18589
3	0	0	0	0
4	237210	83016	50	18247

Total Bolton Rd. H2O 478872 Gallons 11401.7 Barrels

Total H2O Production in gallons 1946896 Gallons 46354.6 Barrels

pg. 1.0

3.RD Quarter 98 Recovery Well Report

July 1st. 1998 To Sep.28,1998

H2O Data

* All Data In Gallons

wk	Well# 1	Well#2	Well#4	Well# 5	Well# 7	Well# 8	Weekly Totals	GPM
1	0.0	0.0	0.0	0.0	17496.0	115128.0	132624.0	13.2
2	0.0	0.0	0.0	0.0	11664.0	119808.0	131472	13.0
3	0.0	0.0	0.0	0.0	14904.0	1528.0	16432.0	1.6
4	0.0	0.0	0.0	0.0	11088.0	120816.0	131904.0	13.1
5	0.0	0.0	0.0	0.0	9072.0	67320.0	76392.0	7.6
6	0.0	0.0	0.0	0.0	8424.0	105048.0	113472.0	11.3
7	0.0	0.0	0.0	0.0	118152.0	31680.0	149832	14.9
8	0.0	0.0	0.0	0.0	14400.0	119736.0	134136.0	13.3
9	0.0	0.0	0.0	0.0	15120.0	121680.0	136800.0	13.6
10	0.0	0.0	0.0	0.0	14400.0	138240.0	152640.0	15.1
11	0.0	0.0	0.0	0.0	8640.0	103680.0	112320.0	11.1
12	0.0	0.0	0.0	0.0	7200.0	84960.0	92160.0	9.1
13	0.0	0.0	0.0	0.0	2880.0	84960.0	87840.0	8.7

Bolton Rd Wells

WK	Well# 11	Well# 12	Well#13	Well#14	Weekly Totals	GPM
1	0.0	17496.0	0.0	83016.0	100512.0	10.0
2	0.0	18504.0	0.0	5916.0	24420.0	2.4
3	0.0	15840.0	0.0	18000.0	33840.0	3.4
4	0.0	9360.0	0.0	18000.0	27360.0	2.7
5	0.0	11664.0	0.0	18000.0	29664.0	2.9
6	0.0	13392.0		144.0	13536.0	1.3
7	0.0	33696.0	0.0	31824.0	65520	6.5
8	0.0	17280.0	0.0	10800.0	28080.0	2.8
9	0.0	18720.0	0.0	10800.0	29520.0	2.9
10	0.0	18000.0	0.0	1780.0	19780.0	2.0
11	0.0	18000.0	0.0	18720.0	36720.0	3.6
12	0.0	30.0	0.0	50.0	80.0	0.0
13	0.0	49680.0	0.0	20160.0	69840.0	6.9

pg. 4

3rd Quarter 98 Recovery Well Report

July 1st 1998 To Sep. 28, 1998

Oil Data

All Data in Gallons

	Total Oil	Peak Oil	Low Oil	Average
Well #	Produced	Production	Production	Production
1	3307.7	469.3	10.1	254.4
2	8169.0	706.4	527.3	628.4
4	61.2	25.1	0.0	4.7
5	13426.0	1519.0	490.0	1032.8
7	593.5	324.8	0.7	45.7
8	804.3	97.9	35.9	61.9
10	0.0	0.0	0.0	0.0

Total Oil Produced Inplant 26361.7 Gallons 627.7 Barrels

Bolton Rd. Wells

1	0.0	0.0	0.0	0.0
2	78131.7	18363.4	986.3	6010.1
3	10842.6	2120.0	262.0	834.0
4	58169.2	16159.0	45.0	4474.6

Total Oil Produced Bolton Rd. *** Gallons 3503.4 Barrels**

Total Oil 3rd Quater 173505 Gallons 4131.1 Barrels

pg. 5

3rd Quarter 98 Recovery Well Report

July 1st 1998 To Sep.28,1998

Oil Data

Well #			All Data In Gallons					
Week #	1	2	4	5	7	8	wk total	GPM
1	281.0	669.7	0.2	1029.0	50.6	75.0	2105.5	0.2
2	276.2	575.3	0.3	1225.0	34.6	97.9	2209.3	0.2
3	281.0	635.0	0.2	833.0	35.2	81.3	1865.7	0.2
4	282.8	585.2	0.8	931.0	12.9	42.6	1855.3	0.2
5	288.6	619.6	0.2	980.0	0.7	56.3	1945.4	0.2
6	262.3	652.0	0.7	980.0	13.7	35.9	1944.6	0.2
7	469.3	664.5	0.0	490.0	324.8	91.1	2039.7	0.2
8	10.1	671.4	0.1	784	10.4	48.5	1524.5	0.2
9	84.7	706.4	0.9	1470	22.8	36.6	2321.4	0.2
10	292.1	699.5	25.1	1470.0	36.8	65.9	2589.4	0.3
11	237.3	527.3	20.0	833.0	18.2	54.1	1689.9	0.2
12	274.8	544.9	9.8	882.0	10.2	60.7	1782.4	0.2
13	267.5	618.2	2.9	1519.0	22.6	58.4	2488.6	0.2

Bolton Rd. Wells

Week #	1	2	3	4	Wk Totals	GPM
1	0.0	3453.1	742.0	7106.0	11301.1	1.1
2	0.0	7789.0	762.0	3292.2	11843.2	1.2
3	0.0	3547.7	723.0	1299.0	5569.7	0.6
4	0.0	3682.0	725.0	14016.0	18423.0	1.8
5	0.0	3863.0	842.0	16159.0	20864.0	2.1
6	0.0	4067.9	327.0	12025.0	16419.9	0.0
7	0.0	986.3	639.0	195.0	1820.3	0.2
8	0.0	6057.9	2120.0	2543.0	10720.9	1.1
9	0.0	6251.8	1284.0	720.0	8255.8	0.8
10	0.0	7369.0	1513.0	536.0	9418.0	0.9
11	0.0	6092.6	262.0	100.0	6454.6	0.6
12	0.0	18363.4	633.9	133.0	19130.3	1.9
13	0.0	6608.0	269.7	45.0	6922.7	0.7

3 RD Quarter 98 Recovery Well Report

July 1st ,1998 To Sep.28,1998

H2O Flow Rate Data

Well #	Quarterly H2O Flow Rate Per Well	gpm	gph
1		0.0	0.0
2		0.0	0.0
4		0.0	0.0
5		0.0	0.0
7		1.9	116.0
8		9.3	556.1

In Plant Flow Rate 1.9 112.0

Bolton Rd Wells	gpm	gph
1	0.0	0.0
2	1.8	110.7
3	0.0	0.0
4	1.8	108.6

Bolton Rd Flow rate 0.9 54.8

Average H2O Flow Rate For 3rd Quarter 2.3 139.4

	gpm	gph
Total in Plant H2O Flow	11.2	672.2
Total Bolton Rd H2O Flow Rate	3.7	219.3
1st. Quarter H2O Flow Rate	14.9	891.4

3 RD Quarter 98 Recovery Well Report
July 1st,1998 To Sep.28,1998

Oil Flow Rate Data

Well #	Quarterly Oil Flow Rate Per Well	gpm	gph
1		0.0	1.5
2		0.1	3.7
4		0.0	0.0
5		0.1	6.1
7		0.0	0.3
8		0.0	0.4
In Plant Flow Rate		0.0	2.0
Bolton Rd Wells			
		gpm	gph
1		0.0	0.0
2		0.6	35.8
3		0.1	5.0
4		0.4	26.6
Bolton Rd Flow Rate		0.3	16.8
Average Oil Flow Rate For 3rd Quarter		0.2	17.8
		gpm	gph
Total In Plant Oil Flow Rate		0.2	12.1
Total Bolton Rd Oil Flow Rate		1.0	59.9
Total 1st. Quarter Oil Flow Rate		1.2	71.9

pg.1

4th Quarter Oil Recovery Well Report

Sept.26,1998 To Dec.29,1998

Totals

Total Production

	Gallons	Barrels
Total H2O Production 4th Quarter	5974080	142240

Total Oil Production 4th Quarter	166449	3963
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H2O GPM Flow	45.6	Gallons
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H2O BPD	1563.1	Barrels
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Oil GPM Flow	1.1	Gallons
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Oil BPD	37.9	Barrels
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pg. 2

4th Quarter Oil Recovery Well

Sept.26,1998 To Dec.29,1998

H2O Data

	Total H2O	Highest	Lowest	Avg H2O
Well #	Produced	Produced	Produced	Produced
1	21456	12240	0	1650
2	0	0	0	0
4	8496	3456	0	654
5	0	0	0	0
7	397402	228584	0	30569
8	1049472	155016	0	80729

Total in plant H2O 1476826 Gallons 35162.5 Barrels

Bolton Rd. Wells

1	0	0	0	0
2	905040	148824	0	69618
3	2407310	958322	0	185178
4	1184904	292824	0	91146

Total Bolton Rd. H2O 4497254 Gallons *** Barrels**
35162.5

Total H2O Production in gallons 5974080 Gallons 142240 Barrels

pg. 3rd

4th Quarter Oil Recovery Well Report

Sept.26,1998 To Dec.29,1998

H2O Data

* All Data In Gallons

wk	Well# 1	Well#2	Well#4	Well# 5	Well# 7	Well# 8	Weekly Totals	GPM
1	0.0	0.0	0.0	0.0	720.0	95040.0	95760.0	9.5
2	0.0	0.0	0.0	0.0	0.0	82800.0	82800	8.2
3	0.0	0.0	0.0	0.0	288.0	48960.0	49248.0	4.9
4	0.0	0.0	0.0	0.0	16272.0	155016.0	171288.0	17.0
5	0.0	0.0	0.0	0.0	16560.0	30240.0	46800.0	4.6
6	0.0	0.0	0.0	0.0	11064.0	51840.0	62904.0	6.2
7	0.0	0.0	0.0	0.0	3312.0	63432.0	66744	6.6
8	0.0	0.0	0.0	0.0	4322.0	64008.0	68330.0	6.8
9	0.0	0.0	0.0	0.0	17064.0	136800.0	153864.0	15.3
10	0.0	0.0	0.0	0.0	228584.0	89280.0	317864.0	31.5
11	1296.0	0.0	2160.0	0.0	37368.0	0.0	40824.0	4.0
12	7920.0	0.0	2880.0	0.0	32616.0	111816.0	155232.0	15.4
13	12240.0	0.0	3456.0	0.0	29232.0	120240.0	165168.0	16.4

Bolton Rd Wells

WK	Well# 11	Well# 12	Well#13	Well#14	Weekly Totals	GPM
1	0.0	33120.0	0.0	36000.0	69120.0	6.9
2	0.0	39600.0	0.0	30240.0	69840.0	6.9
3	0.0	66240.0	27360.0	56160.0	149760.0	14.9
4	0.0	38160.0	92448.0	75600.0	206208.0	20.5
5	0.0	36000.0	78912.0	76536.0	191448.0	19.0
6	0.0	140904.0	779676.0	129600.0	***** 1050180	104.2
7	0.0	105408.0	958322.0	112392.0	1176122	116.7
8	0.0	105768.0	87552.0	113040.0	306360.0	30.4
9	0.0	81576.0	118944.0	0.0	200520.0	19.9
10	0.0	148824.0	154656.0	292824.0	596304.0	59.2
11	0.0	0.0	0.0	114336.0	114336.0	11.3
12	0.0	102240.0	99360.0	114336.0	315936.0	31.3
13	0.0	7200.0	10080.0	33840.0	51120.0	5.1

pg. 4

4th Quarter Oil Well Report
Sept.26.1998 To Dec.29,1998
Oil Data

All Data in Gallons

	Total Oil	Peak Oil	Low Oil	Average
Well #	Produced	Production	Production	Production
1	10969.7	3456.0	0.1	843.8
2	6475.4	742.2	286.9	498.1
4	445.7	353.9	0.2	34.3
5	16575.0	8822.0	92.1	1275.0
7	5602.1	2282.4	11.5	430.9
8	11569.0	4998.1	8.5	889.9
10	0.0	0.0	0.0	0.0

Total Oil Produced Inplant **51636.9 Gallons** **1229.5 Barrels**

Bolton Rd. Wells

1	673.0	673.0	0.0	56.1
2	69830.0	10803.0	91.0	5371.5
3	40131.6	22485.0	7.4	3087.0
4	4177.2	1675.0	0.0	321.3

Total Oil Produced Bolton Rd. ******* Gallons** **2733.6 Barrels**
114811.5

Total Oil 4th Quarter **166449 Gallons** **3963.1 Barrels**

pg. 5

4th Quarter Oil Recoery Well Report

Sep.26,1998 To Dec.29,1998

Oil Data

Well #		All Data In Gallons							
Week #	1	2	4	5	7	8	wk total	GPM	
1	259.1	742.2	2.8	1176.0	50.6	41.3	2272.0	0.2	
2	261.2	642.3	1.4	588.0	50.8	40.8	1584.5	0.2	
3	250.3	592.3	0.9	588.0	48.1	19.1	1498.7	0.1	
4	245.1	615.8	2.1	637.0	55.1	27.4	1582.5	0.2	
5	203.7	380.0	2.0	882.0	29.9	18.0	1515.6	0.2	
6	20.3	376.9	1.1	8822.0	11.5	16.5	9248.3	0.9	
7	704.1	481.1	0.7	882.0	2282.4	18.0	4368.3	0.4	
8	168.8	529.7	0.2	833	244.9	8.5	1785.1	0.2	
9	0.1	459.2	1.4	882	875.1	4998.1	7215.9	0.7	
10	1.0	601.7	0.9	588.0	1303.8	1944.6	4440.0	0.4	
11	3456.0	286.9	71.1	244.0	57.9	2749.8	6865.7	0.7	
12	2520.0	329.5	7.2	360.9	376.1	1231.0	4824.7	0.5	
13	2880.0	437.8	353.9	92.1	215.9	455.9	4435.6	0.4	

Bolton Rd. Wells

Week #	15	2	3	4	Wk Totals	GPM
1	0.0	8615.0	7.4	108.0	8730.4	0.9
2	0.0	7600.0	2952.2	376.0	10928.1	1.1
3	0.0	7592.0	22485.0	1675.0	31752.0	3.1
4	0.0	8651.0	1078.7	97.0	9826.7	1.0
5	0.0	7903.0	1131.2	372.0	9406.2	0.9
6	0.0	7959.0	1118.5	64.0	9141.5	0.0
7	0.0	9051.0	1079.6	102.0	0.0	0.0
8	0.0	10803.0	1202.7	278.0	12283.7	1.2
9	0.0	91.0	1795.9	0.0	1886.9	0.2
10	673.0	588.1	2116.9	713.0	4091.0	0.4
11	0.0	445.9	854.3	128.2		0.0
12		437.0	81.4	136.0		0.0
13	0.0	94.0	4227.9	128.0	4449.9	0.4

**4th Quarter Oil Recovery Well Report
Sept.26,1998 To Dec.29,1998**

H2O Flow Rate Data

Well #	Quarterly H2O Flow Rate Per Well	gpm	gph
1		0.2	9.8
2		0.0	0.0
4		0.1	3.9
5		0.0	0.0
7		3.0	182.0
8		8.0	480.5
In Plant Flow Rate		1.9	112.7
Bolton Rd Wells		gpm	gph
1		0.0	0.0
2		6.9	414.4
3		18.4	1102.2
4		9.0	542.5
Bolton Rd Flow rate		8.6	514.8
Average H2O Flow Rate Flow 4th Quarter		6.2	370.1
		gpm	gph
Total in Plant H2O Flow		11.3	676.2
Total Bolton Rd H2O Flow Rate		34.3	2059.2
4th Quarter H2O Flow Rate		45.6	2735.4

**4th Quarter Recovery Well Report
Sept.26,1998 To Dec.29,1998**

Oil Flow Rate Data

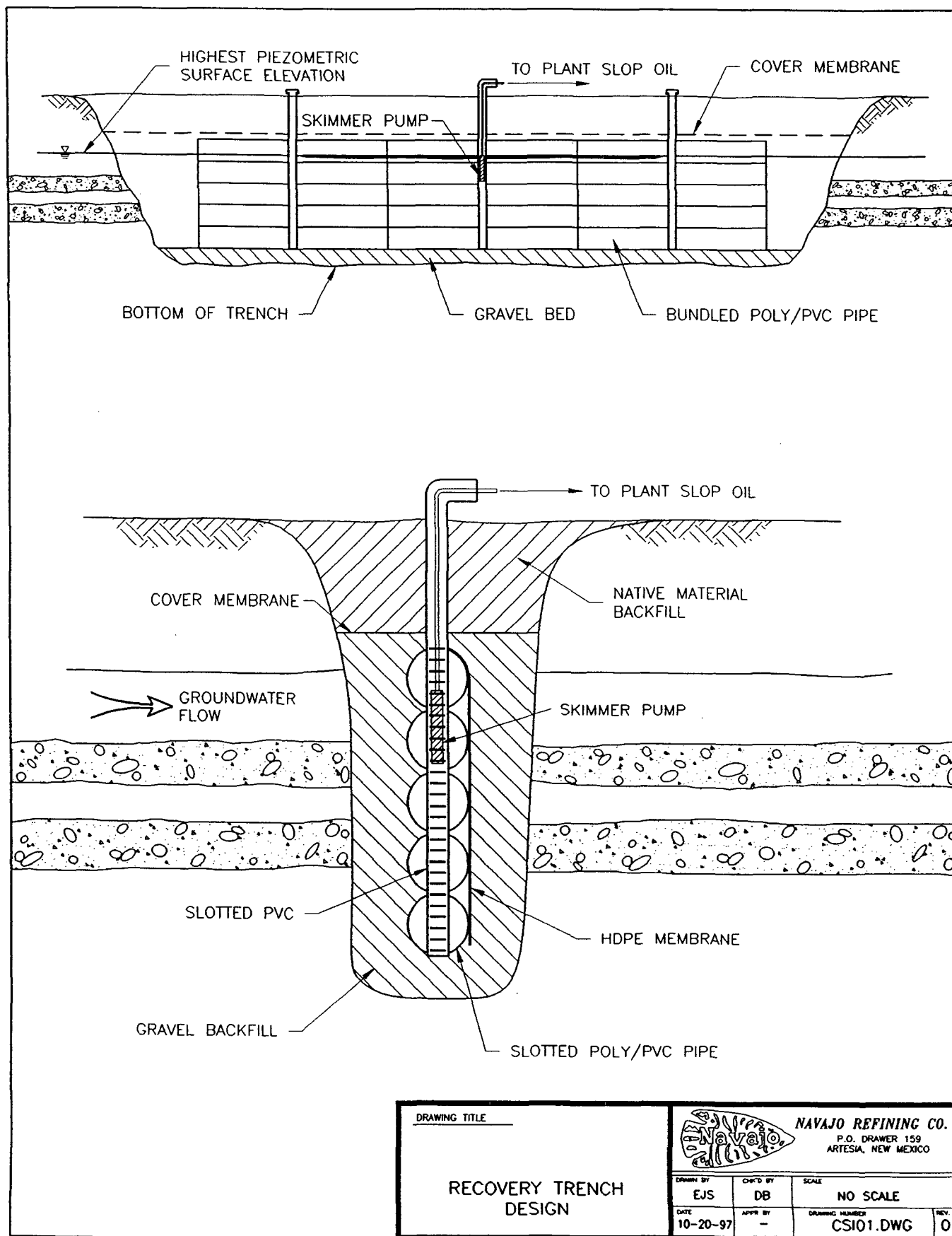
Well #	Quarterly Oil Flow Rate Per Well	gpm	gph
1		0.1	5.0
2		0.0	3.0
4		0.0	0.2
5		0.1	7.6
7		0.0	2.6
8		0.1	5.3
In Plant Flow Rate		0.1	3.9
Bolton Rd Wells		gpm	gph
1		0.0	0.3
2		0.5	32.0
3		0.3	18.4
4		0.0	1.9
Bolton Rd Flow Rate		0.2	13.1
Average Oil Flow Rate For 4th Quarter		0.2	15.1
		gpm	gph
Total In Plant Oil Flow Rate		0.4	23.6
Total Bolton Rd Oil Flow Rate		0.7	42.7
Total 4th Quarter Oil Flow Rate		1.1	66.4

HITS IN OFFSITE WELLS

	01/30/98	02/18/98	3/19-20/98	3/23-24/98	04/03/98	04/27/98	05/06/98	05/26/98	06/12/98	06/18/98	06/26/98	07/06-07/98	07/27-29/98	08/10/98	8/25-28/98	09/01/98	09/16/98	09/25-30/98	10/09/98	10/26/98	11/16/98	11/23/98	12/03/98	12/10-16/98
RA 307			.003 toluene .002 ethylbenz. .009 m,p,o xylene	*				*	*		*		*			*	*							
RA 313			.007 MTBE	*								*			*									
RA 314						*		*		*		*			*									
RA 1227				*		*		*			*	.002 MTBE			.002 MTBE			.003 MTBE	*					
RA 1331				*			*	*		*	*	*	*		*		*							
RA 2723									*		*	*	*	*	*		*		*	*	*			*
RA 3156					*					*														*
RA 3353											*						*							*
RA 4198		*.002 MTBE		*			*	*		*	*	*	*		*		*			*			*	*
RA 4798		*	*	*		*			*	*		*	*		*		*			*		*	*	*
KWB 1A				.038 MTBE	*							.037 MTBE	*				.067 MTBE, .002 Benzene	*						.117 MTBE
KWB 1C				.053 MTBE	*							.095 MTBE	*				.089 MTBE, .002 Benzene	*						.120 MTBE, .002 Benzene
KWB 2A				*								*						*						*
KWB 3A				*								*					*							*
KWB 7			.011 MTBE	*								.005 MTBE	*			.005 MTBE	*							.044 MTBE, .004 Benzene
KWB 9					*						*		*					*						*
KWB 11A			.002 MTBE	*								*					*							*
KWB 12A					*							*						*						*
MW 18					*							*						*						*
MW 45					*						.006 MTBE	*						*						*
NP-1					*							*						*						*
NP-2					*							.002 MTBE	*					*						.002 MTBE

Values in mg/l

* denotes well was sampled



DRAWING TITLE

RECOVERY TRENCH
DESIGN



NAVAJO REFINING CO.
P.O. DRAWER 159
ARTESIA, NEW MEXICO

DESIGNED BY	CHECKED BY	SCALE
EJS	DB	NO SCALE
DATE	APPROVED BY	DRAWING NUMBER
10-20-97	-	CSI01.DWG
		REV. 0

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424
806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9802000006
Date Rec: 1/31/98
Sampling Date: 1/30/98
Sample Condition: Intact and Cool
Sample Received By: AG

Date: Feb 08, 1998

Project: N/A

Proj Name: Mo Off -Site

Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
T 90190	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 90191	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	
Reporting Limit			0.001	0.001	0.001	0.001	0.001	
QC			0.101	0.102	0.103	0.104	0.305	

RPD
% Extraction Accuracy
% Instrument Accuracy

8 2 2 4
85 104 102 102
101 102 103 104

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	2/4/98	EPA 8021B	2/4/98	JG	0.100 ea	0.1 ea

BE

2-8-98

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

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ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9802000348
Date Rec: 2/19/98
Sampling Date: 2/18/98
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Feb 23, 1998
Project: N/A
Proj Name: Mo Off -Site
Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTEX (mg/L)
T 91440	RA-4196	Water	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
T 91441	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Reporting Limit			0.001	0.001	0.001	0.001	0.001	0.001
QC			0.113	0.109	0.109	0.110	0.327	0.327

RPD
% Extraction Accuracy
% Instrument Accuracy

3 1 2
108 108 107
113 109 110

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	2/21/98	EPA 602	2/21/98	JG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

2-23-98

Page 1 of 1

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Carrier # Fdcev 349 0822 221

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9803000401
Date Rec: 3/21/98
Sampling Date: 3/19/98 - 3/20/98
Sample Condition: Intact and Cool
Sample Received By: JT

Date: Mar 26, 1998
Project: Qtrly Offsite
Proj Name: N/A
Proj Loc: 501 E Main, Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M,P,O XYLENE (mg/L)	TOTAL BTX (mg/L)
T 94118	RA-313	Water	0.007	<0.001	<0.001	<0.001	<0.001	<0.001
T 94119	RA-1331	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 94120	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 94121	RA-307	Water	<0.001	<0.001	0.003	0.002	0.009	0.014
T 94122	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 94123	KWB-11A	Water	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
T 94124	KWB-7	Water	0.011	<0.001	<0.001	<0.001	<0.001	<0.001
T 94125	KWB-3A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 94126	KWB-2A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Reporting Limit			0.001	0.001	0.001	0.001	0.001	0.001
QC			0.102	0.100	0.093	0.095	0.284	0.284

RPD
% Extraction Accuracy
% Instrument Accuracy

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	3/23/98	EPA 602	3/23/98	JG	0.100 ea	0.1 ea

3-26-98

Director, Dr. Blair Leftwich

Date

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Company Name: Navejo Phone #: (905) 748-3311
Address: 2200 Fax #:

Contact Person: Darrell Moore

Invoice to:
(If different from above)

Project # 24-11-0101-00 Project Name: 24-11-0101-00

Project Location:	City of Escondido	Sampler Signature:	James McDaniel
	Artesia, NM		PRESERVATIVE

[illegible]

Relinquished by: <i>Carrie McDonald</i>	Date: <i>3/20/98</i>	Time: <i>16:15</i>	Received by: <i>DeDe Ex</i>	Date: <i>3/20/98</i>	Time: <i>16:15</i>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at Laboratory by: <i>[Signature]</i>	Date: <i>after 2/11/98</i>	Time:

~~Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.~~

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID # 401

ANALYSIS REQUEST

(Circle or Specify Method No.)

[illegible]

LAB USE ONLY

Intact Y / N
 Headspace Y / N
 Temp 2 °
 Log-in Review

REMARKS:

3-27-5

Carrier # Fed Ex 359 8726 397

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
 Attention Darrell Moore
 501 E. Main
 Artesia NM 88210

Lab Receiving # : 9803000421
 Date Rec: 3/24/98
 Sampling Date: 3/23/98
 Sample Condition: Intact and Cool
 Sample Received By: VW

Date: Mar 25, 1998
 Project: Qtrly Offsite
 Proj Name: N/A
 Proj Loc: 501 E Main, Artesia, NM

TA# Field Code

ETHYL- M, P, O TOTAL
 BENZENE XYLENE BTEX
 (mg/L) (mg/L) (mg/L)

T 94276 KWB-12A	Water	<0.001	<0.001	<0.001	<0.001	<0.001
T 94277 RA-3156	Water	<0.001	<0.001	<0.001	<0.001	<0.001
T 94278 KWB-9	Water	<0.001	<0.001	<0.001	<0.001	<0.001

Reporting Limit
 QC

0.001	0.001	0.001	0.001
0.102	0.098	0.098	0.285

RPD	2	1	1	2
% Extraction Accuracy	120	110	111	109
% Instrument Accuracy	102	98	98	95

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	3/23/98	EPA 602	3/23/98	JG	0.100 ea	0.1 ea

BS

3-25-98

Director, Dr. Blair Leftwich

Date

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Phone #: (505) 748.3311

Fax #.

Contact Person: Darrell Moore

Invoice to:
(If different from above)

Project Name: Mo/Carter Offsite Pump
 Sampler Signature: _____

Sampler Signature: James M. James

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING		
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME	
94276	KWB-12A	2	40ml	X				X		X			3/23/98	14:25
77	PA-3156	2	"	X				X		X			"	14:35
78	KWB-9	2	"	X				X		X			"	14:50

Relinquished by: Marcus Vinson Date: 3/23/98 Time: 16:15

Relinquished by: _____ Date: _____ Time: _____

Relinquished by: _____ Date: _____ Time: _____

Date: _____ Time: _____

Received at Laboratory by: Cliff W. Anderson Date: 3-26-98 Time: 0:35 AM

Carrier # FedEx 3579746 091

LAB Order ID # 921

(Circle or Specify Method No.)

MTBE 8020(602)
BTX 8020(602)
TPH
PAH 8270
Total Metals Ag As Ba Cd Cr Pb Hg Se
TCLP Metals Ag As Ba Cd Cr Pb Hg Se
TCLP Volatiles
TCLP Semi Volatiles
RCI
GC/MS Vol. 8240/8260/624
GC/MS Semi. Vol. 8270/625
PCBs 8080/608
Pest. 8080/608
BOD, TSS, PH
Turn Around Time if different from standard

LAB USE ONLY

5/26/20

Carrier # FedEx 3579746 091

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

Lubbock, Texas 79424
El Paso, Texas 79922
E-Mail: lab@traceanalysis.com

800•794•1296
915•585•3443

FAX 806•794•1298
FAX 915•585•4944

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Date: Apr 01, 1998
Project: Qtrly Offsite
Proj Name: N/A
Proj Loc: 501 E Main, Artesia, NM

Lab Receiving #: 9803000448
Date Rec: 3/25/98
Sampling Date: 3/23/98 - 3/24/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
T 94424	MW-18	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 94425	KWB-1C	Water	0.053	<0.001	<0.001	<0.001	<0.001	<0.001
T 94426	KWB-1A	Water	0.038	<0.001	<0.001	<0.001	<0.001	<0.001
T 94427	RA-1227	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 94428	MW-45	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
T 94429	NP-2	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Reporting Limit			0.001	0.001	0.001	0.001	0.001	
QC			0.110	0.101	0.094	0.094	0.279	

RPD
% Extraction Accuracy
% Instrument Accuracy

3 3 3
109 102 95
110 101 94

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTX	N/A	3/25/98	EPA 602	3/27/98	JG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

4-1-98

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Company Name: Navajo Phone # (505) 748.3311
Address: _____ Fax # _____

Address: _____

Contact Person: Darrell Moore

Invoice to:
(If different from above)

Project #:	Project Name:
Project Location:	Sampler Signature:

Project Location:

Project Location: Ortola NM 88210

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX	PRESERVATIVE METHOD				SAMPLING					
					WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME
94424	MW-18	2	40 ml	X				X		X			3/23/98	16:40
25	KWB-1C	1	"	X				X		X			"	17:20
26	KWB-1A	1	"	X				X		X			"	17:40
27	RA-1227	1	"	X				X		X			3/24/98	11:15
28	MW-45	1	"	X				X		X			"	11:50
29	NP-2	1	"	X				X		X			"	14:40

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Corey McDaniel	3/24/98	16:15	Red Ex	3/24/98	16:15
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

Relinquished by:	Date:	Time:	Received at Laboratory by:	Date:	Time:
			<i>[Signature]</i>	3-25-98	10:30 AM

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID # 448

ANALYSIS REQUEST

(Circle or Specify Method No.)

[illegible]

LAB USE ONLY

Intact Y N
 Headspace Y N
 Temp -2 °
 Log-in Review B

REMARKS:

Carrier #	Ford 9.8 357 4974 085-
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TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
 Attention Darrell Moore
 501 E. Main
 Artesia NM 88210

Lab Receiving # : 9804000084
 Date Rec: 4/4/98
 Sampling Date: 4/3/98
 Sample Condition: Intact and Cool
 Sample Received By: SH

Date: Apr 13, 1998
 Project: Qtrly Offsite
 Proj Name: N/A
 Proj Loc: 501 E Main, Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
T 95340	NP-1	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	
Reporting Limit			0.001	0.001	0.001	0.001	0.001	
QC			0.102	0.101	0.096	0.092	0.268	

RPD
 % Extraction Accuracy
 % Instrument Accuracy

4 4 4 5
 104 100 95 89
 102 101 96 89

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	4/11/98	EPA 602	4/11/98	JG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

4-13-98

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
 Attention Darrell Moore
 501 E. Main
 Artesia NM 88210

Lab Receiving # : 9804000459
 Date Rec: 4/28/98
 Sampling Date: 4/27/98
 Sample Condition: Intact and Cool
 Sample Received By: VW

Date: Apr 30, 1998
 Project: N/A
 Proj Name: Monthly Off-Site Plume
 Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
T 97064	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 97065	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 97066	RA-1227	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 97067	RA-314	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC								
			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
			0.001	0.001	0.001	0.001	0.001	0.001
			0.100	0.100	0.098	0.098	0.286	0.286

RPD
 % Extraction Accuracy
 % Instrument Accuracy

1 1 1 1
 98 100 99 98
 100 100 98 95

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	4/29/98	EPA 602	4/29/98	JG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

4-30-98

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID # 459

Company Name: Arway
Address: PO Box 159
Contact Person: Darrell Moore
Phone #: 505 748 3311
Fax #: 505 748 9017
Invoice to: (If different from above)
Project #:

Project Name: Mo Off-site Plume
Project Location: Atoria NM
Sampler Signature: James M. Ganiel

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				DATE	TIME
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE		
97004	RA-4798	2	40L	X	X	X	X	X	X	X	X	12/18/13	13:55
605	RA-4196	2	"	X	X	X	X	X	X	X	X	"	14:05
606	RA-1227	2	"	X	X	X	X	X	X	X	X	"	14:15
607	RA-314	2	"	X	X	X	X	X	X	X	X	"	14:20

ANALYSIS REQUEST

(Circle or Specify Method No.)

PAH 8270	
Total Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Volatiles	
TCLP Semi Volatiles	
RCI	
GC/MS Vol. 8240/8260/624	
GC/MS Semi. Vol. 8270/625	
PCB's 8080/608	
Pest. 8080/608	
BOD, TSS, PH	
Turn Around Time (If different from standard)	

Relinquished by: James M. Ganiel Date: 12/18/13 Time: 16:15
Received by: John Ex Date: 12/18/13 Time: 16:15
Relinquished by: James M. Ganiel Date: 12/18/13 Time: 16:15
Received by: John Ex Date: 12/18/13 Time: 16:15
Relinquished by: James M. Ganiel Date: 12/18/13 Time: 16:15
Received by: John Ex Date: 12/18/13 Time: 16:15

LAB USE ONLY
Intact Y
Headspace Y
Temp -2
Log-in Review B

REMARKS: OK

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

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El Paso, Texas 79922 888•588•3443
E-Mail: lab@traceanalysis.com

806•794•1296 FAX 806•794•1298
915•585•3443 FAX 915•585•4944

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Date: May 16, 1998
Project: N/A
Proj Name: Evaporation Ponds
Proj Loc: Artesia

Lab Receiving #: 9805000171
Date Rec: 5/8/98
Sampling Date: 5/6/98
Sample Condition: Intact and Cool
Sample Received By: ML

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
T 98092	RA-1331	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 98093	RA-307	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	
Reporting Limit			0.001	0.001	0.001	0.001	0.001	
QC			0.097	0.091	0.092	0.093	0.274	

RPD

% Extraction Accuracy

% Instrument Accuracy

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	5/13/98	EPA 602	5/13/98	JG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

5-16-98

TRACE ANALYSIS, INC.

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 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
 Attention Darrell Moore

501 E. Main

Artesia NM 88210

Date: May 29, 1998

Project: Semi Ann Effluent/Mo Offs

Proj Name: Semi Ann Effluent/Mo Offsite Plume

Proj Loc: Artesia, NM 88210

Lab Receiving #: 9805000470

Date Rec: 5/27/98

Sampling Date: 5/26/98

Sample Condition: Intact and Cool

Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
T 99261	RA-1227	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 99262	RA-1331	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 99263	RA-307	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 99264	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 99265	RA-314	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Method Blank

Reporting Limit

QC

RPD	2	1	1	0	1
% Extraction Accuracy	106	109	108	108	108
% Instrument Accuracy	99	103	101	101	100

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	5/27/98	EPA 602	5/27/98	JG	0.100 ea	0.1 ea

BL

5-29-98

Director, Dr. Blair Leftwich

Date

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

LAB Order ID # 470

Company Name: Always Refining Co. Phone #: (505) 748-3311
Address: Fax #: (505) 718-9037

Contact Person: Darrell Moore

Invoice to:
(If different from above)

Project #: Project Name: Envi-Aqua FChlorant / M Offset to P111m8.

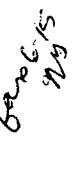
Project Location: Artesia NM 88270 Sampler Signatory: James H. Gaudin

[illegible]

ANALYSIS REQUEST
(Circle or Specify Method No.)

	MIIRB 8020/602	
	BTEX 8020/602	
	TPH	
	PAH 8270	
	Total Metals Ag As Ba Cd Cr Pb Hg Se	
	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	
	TCLP Volatiles	
	TCLP Semi Volatiles	
	RCl	
	GC/MS Vol. 8240/8260/624	
	GC/MS Semi. Vol. 8270/625	
	PCBs 8080/608	
	Pest. 8080/608	
	BOD, TSS, PH	
	Turn Around Time if different from standard	
	Hold	

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
<i>Quarantine</i>	<i>12/24/98</i>	<i>16:15</i>	<i>Fed Ex</i>		
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at Laboratory by:	Date:	Time:
			<i>11/11/98</i>	<i>10:30 AM</i>	

LAB USE ONLY	Contact ☒ Y ☐ N	Headspace ☐ Y ☒ N	Temp <u>-2</u> °	Log-in Review <u>B</u>
	REMARKS:			
				
	Date <u>6/15</u>			
	Time <u>15</u>			

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.	Carrier # <u>Farlo 4 372 8361 131</u>
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TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

Lubbock, Texas 79424
El Paso, Texas 79922

800•794•1296
888•588•3443

FAX 806•794•1298
FAX 915•585•4944

E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Date: Jun 23, 1998

Project: N/A

Proj Name: Quarterly RO Reject

Proj Loc: Artesia, NM

Lab Receiving #: 98060000231

Date Rec: 6/13/98

Sampling Date: 6/12/98

Sample Condition: Intact and Cool

Sample Received By: NG

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
100289	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
QC			0.001	0.001	0.001	0.001	0.001	0.001
			0.109	0.106	0.105	0.111	0.343	

RPD

% Extraction Accuracy

% Instrument Accuracy

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTX	N/A	6/18/98	EPA 602	6/18/98	JG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

6-23-98

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

Lubbock, Texas 79424 800•378•1296
El Paso, Texas 79922 888•588•3443
E-Mail: lab@traceanalysis.com

806•794•1296 FAX 806•794•1298
915•585•3443 FAX 915•585•4944

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 98060000231
Date Rec: 6/13/98
Sampling Date: 6/12/98
Sample Condition: Intact and Cool
Sample Received By: NG

Date: Jun 17, 1998
Project: N/A
Proj Name: Quarterly RO Reject
Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
100288	RA-2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	
Reporting Limit			0.001	0.001	0.001	0.001	0.001	
QC			0.095	0.099	0.098	0.099	0.302	

RPD
% Extraction Accuracy
% Instrument Accuracy

2 1 1 2
105 107 106 100
95 99 98 99

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	6/15/98	EPA 602	6/15/98	JG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

6-17-98

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
 Attention Darrell Moore
 501 E. Main
 Artesia NM 88210

Lab Receiving # : 9806000336
 Date Rec: 6/19/98
 Sampling Date: 6/18/98
 Sample Condition: Intact and Cool
 Sample Received By: VW

Date: Jun 24, 1998
 Project: N/A
 Proj Name: Monthly Off-Site Plume
 Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
100690	RA-3156	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
100691	RA-1331	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
100692	RA-307	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
100693	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
100694	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC								
			0.111	0.116	0.115	0.112	0.351	

RPD
 % Extraction Accuracy
 % Instrument Accuracy

0 1 0 0
 109 102 103 106
 111 116 115 112 117

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTX	N/A	6/21/98	EPA 602	6/21/98	JG	0.100 ea	0.1 ea

BS

6-24-98

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

Lubbock, Texas 79424
El Paso, Texas 79922

806•794•1296
915•585•3443

FAX 806•794•1298
FAX 915•585•4944

E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Date: Jun 24, 1998
Project: N/A
Proj Name: Monthly Off-Site Plume
Proj Loc: Artesia, NM

Lab Receiving #: 9806000336
Date Rec: 6/19/98
Sampling Date: 6/18/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
100695	RA-314	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
100696	RA-2723	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
100697	RA-3353	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	
Reporting Limit			0.001	0.001	0.001	0.001	0.001	
QC			0.096	0.101	0.104	0.098	0.306	

RPD
% Extraction Accuracy
% Instrument Accuracy

1 1 1 1
109 110 109 104
96 101 104 98

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	6/23/98	EPA 602	6/23/98	JG	0.100 ea	0.1 ea

6-24-98

BS

Director, Dr. Blair Leftwich

Date

Star Enterprise

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Consulting Company Name:

Address: *Navajo*

Phone #:

505 748-3311

Fax #:

505 748-9077

Consulting Contact:

Darrell Moore

Star Contract:

Location Code:

McAtkey Off-site Plume

Star Job #

Consultant Job #

Location Address:

Antonia NM 88210

Sampler Signature:

Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME
160690	RA-3156	2	40mL	X				X		X		11/18/98	9:45
691	RA-1331	2	"	X				X		X		"	9:55
692	RA-307	2	"	X				X		X		"	10:00
693	RA-4196	2	"	X				X		X		"	10:05
694	RA-4798	2	"	X				X		X		"	10:20
695	RA-314	2	"	X				X		X		"	10:45
696	RA-2723	2	"	X				X		X		"	11:05
97	RA-3353	2	"	X				X		X		"	11:20

Relinquished by: <i>Darrell Moore</i>	Date: <i>11/18/98</i>	Time: <i>16:15</i>	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at Laboratory by: <i>Darrell Moore</i>	Date: <i>6-20-98</i>	Time: <i>9:40am</i>

Submission of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

ANALYSIS REQUEST

(Circle or Specify Method No.)

PAH 8270	
Total Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Volatiles	
TCLP Semi Volatiles	
RCI	
GC/MS Vol. 8240/8260/624	
GC/MS Semi. Vol. 8270/625	
PCBs 8080/608	
Pest. 8080/608	
BOD, TSS, PH	
Turn Around Time if different from standard	

LAB USE ONLY

REMARKS:

Intact	Y	N
Headspace	Y	N
Temp	2	°
Log-in Review	NA	

Fr-5-98

Carrier # *Fr Ex 375 0047 384*

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
 Attention Darrell Moore
 501 E. Main
 Artesia NM 88210

Lab Receiving # : 98060000510
 Date Rec: 6/27/98
 Sampling Date: 6/26/98
 Sample Condition: Intact and Cool
 Sample Received By: VW

Date: Jul 06, 1998
 Project: N/A
 Proj Name: Monthly Off-Site Plume
 Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M,P,O XYLENE (mg/L)	TOTAL BTX (mg/L)
101435	RA-313	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
101436	RA-1227	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
101437	KWB-9	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
101438	KWB-3A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC								
			0.001	0.001	0.001	0.001	0.001	
			0.095	0.100	0.097	0.098	0.303	

RPD	1	0	0	1	1		
% Extraction Accuracy	109	107	105	105	111		
% Instrument Accuracy	95	100	97	98	101		
TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	7/2/98	EPA 602	7/2/98	JG	0.100 ea	0.1 ea

7-6-98

Date

Director, Dr. Blair Leftwich

TRACE ANALYSIS, INC.

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 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888-588-3443 915-585-3443 FAX 915-585-4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
 Attention Darrell Moore
 501 E. Main
 Artesia NM 88210

Lab Receiving # : 98060000510
 Date Rec: 6/27/98
 Sampling Date: 6/26/98
 Sample Condition: Intact and Cool
 Sample Received By: VW

Date: Jul 07, 1998
 Project: N/A
 Proj Name: Monthly Off-Site Plume
 Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
101439	MW-45	Water	0.006	<0.005	<0.005	<0.005	<0.005	<0.005
	Method Blank		<0.001	<0.001	<0.001	<0.001	<0.001	
	Reporting Limit		0.001	0.001	0.001	0.001	0.001	
QC			0.105	0.103	0.100	0.102	0.312	

RPD
 % Extraction Accuracy
 % Instrument Accuracy

0 0 0
 110 109 106
 105 103 100

0
 112
 104

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	7/6/98	EPA 602	7/6/98	JG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

7-7-98

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Company Name: Navajo Refining Phone #: 505 748 3311
Address: Darrell Moore Fax #: 505 748 9077
Contact Person: Darrell Moore
Invoice to: (If different from above)

Project #: Mo/October Offsite Plumes Project Name:
Project Location: Antonia NM 68240 Sampler Signature: [Signature]

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				DATE	TIME
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE		
101435	RA-313	2	40ml	X	X	X	X	X	X	X	X	6/24/98	11:20
36	RA-1227	3	3	X	X	X	X	X	X	X	X	11:30	XX
37	KWB-9	3	3	X	X	X	X	X	X	X	X	11:45	XX
38	KWB-3A	3	3	X	X	X	X	X	X	X	X	14:00	XX
39	AW-45	3	3	X	X	X	X	X	X	X	X	14:40	XX

Relinquished by: Darrell Moore Date: 6/24/98 Time: 16:15
Received by: [Signature] Date: 6/24/98 Time: 10:00
Relinquished by: [Signature] Date: 6/24/98 Time: 10:00
Received by: [Signature] Date: 6/24/98 Time: 10:00

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID # 510

ANALYSIS REQUEST

(Circle or Specify Method No.)

PAH 8270	
Total Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Volatiles	
TCLP Semi Volatiles	
RCI	
GC/MS Vol. 8240/8260/624	
GC/MS Semi. Vol. 8270/625	
PCB's 8080/608	
Pest. 8080/608	
BOD, TSS, PH	
Turn Around Time if different from standard	

REMARKS:
LAB USE ONLY
Intact Y N
Headspace Y N
Temp 2
Log-in Review 2
Carrier # 380 60771 242

TRACE ANALYSIS, INC.

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 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
 Attention Darrell Moore
 501 E. Main
 Artesia NM 88210

Lab Receiving # : 9807000105
 Date Rec: 7/7/98
 Sampling Date: 7/6/98
 Sample Condition: Intact and Cool
 Sample Received By: VW

Date: Jul 13, 1998
 Project: N/A
 Proj Name: Bi-Weekly/Qtly Offsite
 Proj Loc: Artesia, NM 88210

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
102110	RA-2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
102111	KWB-1A	Water	0.037	<0.001	<0.001	<0.001	<0.001	<0.001
102116	KWB-11A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
102117	KWB-7A	Water	0.005	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC								
			0.001	<0.001	<0.001	<0.001	<0.001	<0.001
			0.094	0.091	0.091	0.091	0.285	

RPD
 % Extraction Accuracy
 % Instrument Accuracy

1	1	1	2
95	94	94	100
94	91	91	95

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	7/9/98	EPA 602	7/9/98	JG	0.100 ea	0.1 ea

7-13-98

Date

Director, Dr. Blair Leftwich

TRACE ANALYSIS, INC.

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 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
 Attention Darrell Moore
 501 E. Main
 Artesia NM 88210

Date: Jul 14, 1998
 Project: N/A
 Proj Name: Bi-Weekly/Qtly Offsite
 Proj Loc: Artesia, NM 88210

Lab Receiving #: 9807000105
 Date Rec: 7/7/98
 Sampling Date: 7/6/98
 Sample Condition: Intact and Cool
 Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
102112	KWB-1C	Water	0.095	<0.001	<0.001	<0.001	<0.001	<0.001
102113	KWB-12A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
102114	MW-18	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
102115	KWB-2A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Reporting Limit			0.001	0.001	0.001	0.001	0.001	0.001
QC			0.109	0.105	0.102	0.104	0.322	0.322

RPD		0	1	1	0	1	
% Extraction Accuracy		118	119	116	115	122	
% Instrument Accuracy		109	105	102	104	107	
TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	7/11/98	EPA 602	7/11/98	JG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

7-14-98

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

1. *Journal of the American Medical Association*, 1997; 277: 1001-1005.

[illegible]

Address: _____

Fax #: _____

Contact Person: _____

Invoice to:

Project #:	Project Name:
Project #:	Project Name:

[illegible]

	PRESERVATIVE	S		As As 08/08/07
	PRESERVATIVE	S		As As 08/08/07

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING		MTBE 8020(602)	BTX 8020(602)	TPH	PAH 8270	Total Metals Ag As	TCLP Metals Ag As	TCLP Volatiles	TCLP Semi Volatile	RCI	GC/MS Vol. 8240/8	GC/MS Semi. Vol.	PCB's 8080/608	Pest. 8080/608	BOD, TSS, PH	Turn Around Time if Hold
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME															
102110	RA-2723	2	40ml X					X	X	X			7/6/8	8:30	X	X												
11	KWB-1A	2	40ml X					X	X	X			"	8:45	X	X												
12	KWB-1C	2	40ml X					X	X	X			"	8:55	X	X												
13	KWB-12A	2	40ml X					X	X	X			"	9:30	X	X												
14	MW-18	2	40ml X					X	X	X			"	10:15	X	X												
15	KWB-2A	2	40ml X					X	X	X			"	13:45	X	X												
16	KWB-11A	2	40ml X					X	X	X			"	14:15	X	X												
17	KWB-7A	2	40ml X					X	X	X			"	14:40	X	X												

Relinquished by: <i>James H. [Signature]</i>	Date: <i>7/1/98</i>	Time: <i>16:15</i>	Received by: _____	Date: _____	Time: _____	LAB USE ONLY Intact <i>X</i> N Headspace <i>Y</i> N Temp <i>2</i> ° Log-In Review <i>mt</i>	REMARKS:
Relinquished by: _____	Date: _____	Time: _____	Received by: _____	Date: _____	Time: _____		
Relinquished by: _____	Date: _____	Time: _____	Received at Laboratory by: _____	Date: _____	Time: _____		
Relinquished by: _____	Date: _____	Time: _____	Received at Laboratory by: <i>Ch. W. [Signature]</i>	Date: <i>7-7-98</i>	Time: <i>10:15 am</i>		

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

TRACE ANALYSIS, INC.

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 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
 Attention Darrell Moore
 501 E. Main
 Artesia NM 88210

Lab Receiving #: 9807000119
 Date Rec: 7/8/98
 Sampling Date: 7/7/98
 Sample Condition: Intact and Cool
 Sample Received By: VW

Date: Jul 14, 1998
 Project: Qtrly Offsite
 Proj Name: N/A
 Proj Loc: 501 E Main, Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
102156	NP-1	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
102157	NP-2	Water	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	
Reporting Limit			0.001	0.001	0.001	0.001	0.001	
QC			0.109	0.105	0.102	0.104	0.322	

RPD		0	1	1	0	1	
% Extraction Accuracy		118	119	116	115	122	
% Instrument Accuracy		109	105	102	104	107	
TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	7/11/98	EPA 602	7/11/98	JG	0.100 ea	0.1 ea

2-14-98

Director, Dr. Blair Leftwich

Date

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Company Name: Navajo Refining
Address:
Phone #: 505 748 3311
Fax #:

Address: _____ Fax #: 505 748 9077

Contact Person:	Darrell Moore
Invoice to:	(If different from above)

Project #:	
Project Name:	NCS

Project Location: - 111

8ampler Signature: *[Signature]*

Sampler Signature: Mune M. Dant
DOESERVATIVE

[illegible]

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
<i>Paula M. [Signature]</i>	7/1/98	16:15			

Relinquished by:	Date:	Time:
Received by:	Date:	Time:

Relinquished by:	Date:	Time:	Received at Laboratory by:	Date:	Time:
			William	7-8-48	9:45 AM

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID # 19

ANALYSIS REQUEST

(Circle or Specify Method No.)

[illegible]

LAB USE ONLY

Intact Y N
 Headspace Y N
 Temp -2 °
 Log-in Review MA

REMARKS:

Carrier # 565 8560 083 Fedex 380 36927

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main NM 88210
Artesia

Lab Receiving # : 9807000482
Date Rec: 7/28/98
Sampling Date: 7/27/98
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Aug 03, 1998
Project: N/A
Proj Name: Monthly Off-Site Plume
Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
103514	RA-314	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
103515	RA-1331	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
103516	RA-307	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
103517	RA-4196	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
103518	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
103519	RA-2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Reporting Limit			0.001	0.001	0.001	0.001	0.001	
QC			0.107	0.102	0.098	0.099	0.303	

RPD
% Extraction Accuracy
% Instrument Accuracy

2 2 3 2 2
119 113 110 111 118
107 102 98 99 101

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	7/30/98	EPA 602	7/30/98	JG	0.100 ea	0.1 ea

BB

8-3-98

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888-588-3443
E-Mail: lab@traceanalysis.com

806-794-1296 FAX 806-794-1298
915-585-3443 FAX 915-585-4944

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9807000552
Date Rec: 7/31/98
Sampling Date: 7/29/98
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Aug 03, 1998
Project: N/A
Proj Name: Monthly Off-Site Plume
Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
103774	RA-1227	Water	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
	Method Blank		<0.001	<0.001	<0.001	<0.001	<0.001	
	Reporting Limit		0.001	0.001	0.001	0.001	0.001	
QC			0.095	0.106	0.102	0.103	0.318	

RPD
% Extraction Accuracy
% Instrument Accuracy

2 1 0
109 112 108
95 106 102
103 106

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	8/1/98	EPA 602	8/1/98	JG	0.100 ea	0.1 ea

[Signature]

8-3-98

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore

501 E. Main

Artesia

NM 88210

Date: Aug 17, 1998

Project: N/A

Proj Name: Bi-Weekly/Qtly Offsite

Proj Loc: Artesia, NM 88210

Lab Receiving # : 9808000188

Date Rec: 8/11/98

Sampling Date: 8/10/98

Sample Condition: Intact and Cool

Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
104635	RA-2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Method Blank

Reporting Limit

QC

<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	0.001	0.001	0.001	0.001	0.001
0.101	0.096	0.092	0.094	0.289	

RPD

% Extraction Accuracy

% Instrument Accuracy

2	1	1	1	1	1
111	106	104	106	113	
101	96	92	94	96	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTX	N/A	8/13/98	EPA 602	8/13/98	JG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

8-17-98

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving #: 9808000601
Date Rec: 8/29/98
Sampling Date: 8/28/98
Sample Condition: Intact and Cool
Sample Received By: NG

Date: Sep 01, 1998
Project: N/A
Proj Name: Monthly Off-Site Plume
Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
106348	RA-1227	Water	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
	Method Blank		<0.001	<0.001	<0.001	<0.001	<0.001	
	Reporting Limit		0.001	0.001	0.001	0.001	0.001	
QC			0.102	0.097	0.093	0.095	0.296	

RPD
% Extraction Accuracy
% Instrument Accuracy

1	2	1	0	0
102	113	109	109	117
102	97	93	95	99

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	8/30/98	EPA 602	8/30/98	CS	0.100 ea	0.1 ea

RB

9-1-98

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining

Attention Darrell Moore

501 E. Main

Artesia

NM 88210

Lab Receiving # : 9808000513

Date Rec: 8/26/98

Sampling Date: 8/25/98

Sample Condition: Intact and Cool

Sample Received By: VW

Date: Sep 01, 1998

Project: N/A

Proj Name: Monthly Off-Site Plume

Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
106107	RA-313	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
106108	RA-314	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
106109	RA-2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
106110	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC			0.100	0.092	0.092	0.094	0.272	

RPD

% Extraction Accuracy

% Instrument Accuracy

1	1	1	1	1
109	99	99	99	98
100	92	92	94	91

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	8/30/98	EPA 602	8/30/98	CS	0.100 ea	0.1 ea

82

9-1-98

Director, Dr. Blair Leftwich

Date

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Company Name: Navajo

Address:

Phone # (505) 748-3311

Fax # (505) 748-9077

Contact Person: Darrell Moore

Invoice to: (if different from above)

Project #:

Project Name: Off-site Plume

Project Location: Cortina NM 88210

Sampler Signature: Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD			DATE	TIME
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE		
106107	RA-313	2	40ml X					X		X	8/25/98	9:40
108	RA-314	2	40ml X					X		X	8/25	9:45
109	RA-3723	2	40ml X					X		X	"	9:50
110	RA-4196	2	40ml X					X		X	"	9:55

Relinquished by: Darrell Moore Date: 8/25/98 Time: 16:05

Received by:

Date: Time:

Relinquished by:

Received by:

Date: Time:

Relinquished by:

Received at Laboratory by:

Date: Time:

1161 Wadley 826-58 10:00 PM

LAB USE ONLY

Intact Y N
Headspace Y N
Temp -2 °
Log-in Review AM

REMARKS:

9/1/98

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

Carrier # FedEx 398 4243 821

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID # 513

ANALYSIS REQUEST

(Circle or Specify Method No.)

TPH	
PAH 8270	
Total Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Volatiles	
TCLP Semi Volatiles	
RCI	
GC/MS Vol. 8240/8260/624	
GC/MS Semi. Vol. 8270/625	
PCB's 8080/608	
Pest. 8080/608	
BOD, TSS, PH	
Turn Around Time if different from standard	
Hold	

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9809000043
Date Rec: 9/2/98
Sampling Date: 9/1/98
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Sep 08, 1998

Project: N/A

Proj Name: Monthly Off-Site Plume

Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
106504	RA-1331	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
106505	RA-307	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC								
			0.114	0.113	0.098	0.099	0.001	0.293

RPD

% Extraction Accuracy

% Instrument Accuracy

0	1	1	1
112	110	107	107
114	113	98	98

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	9/5/98	EPA 602	9/5/98	CS	0.100 ea	0.1 ea

B

9-8-98

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore

501 E. Main

Artesia

NM 88210

Date: Sep 14, 1998

Project: N/A

Proj Name: Monthly Off-Site Plume

Proj Loc: Artesia, NM

Lab Receiving # : 9809000043

Date Rec: 9/2/98

Sampling Date: 9/1/98

Sample Condition: Intact and Cool

Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
106506	RA-4798	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Method Blank		<0.001	<0.001	<0.001	<0.001	<0.001	
	Reporting Limit		0.001	0.001	0.001	0.001	0.001	
	QC		0.100	0.107	0.087	0.088	0.271	

RPD

% Extraction Accuracy

% Instrument Accuracy

2	1	1	1
106	110	106	114
100	107	87	90

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTX	N/A	9/11/98	EPA 602	9/11/98	CS	0.100 ea	0.1 ea

RE

9-18-98

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore

501 E. Main

Artesia

NM 88210

Date: Sep 21, 1998

Project: N/A

Proj Name: Qrtly Offsite Plume

Proj Loc: Artesia.NM

Lab Receiving # : 9809000292

Date Rec: 9/17/98

Sampling Date: 9/16/98

Sample Condition: Intact and Cool

Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
107508	RA-1331	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
107509	RA-307	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
107510	RA-4196	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
107511	RA-4798	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
107512	RA-3353	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
107513	KWB-3A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
107514	KWB-7	Water	0.005	<0.001	<0.001	<0.001	<0.001	<0.001
107515	KWB-11A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Method Blank

Reporting Limit

QC

RPD	5	4	4	4	4
% Extraction Accuracy	113	109	110	110	118
% Instrument Accuracy	104	103	103	104	108

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	9/17/98	EPA 602	9/17/98	CS	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

9-21-98

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
 Tel (806) 794 1296 Fax (806) 794 1298
 I (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID # 292

Company Name: Nuway Phone # (505) 748-3311
 Address: (505) 748-9077
 Contact Person: Darrell Moore
 Invoice to: (If different from above)
 Project #: Artesia NM

Project Name: Outcrop Off-site Plume
 Sampler Signature: [Signature]

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX			PRESERVATIVE METHOD				DATE	SAMPLING TIME
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE		
107508	RA-1331	2	40ml	X				X		X	9/16/98	9:45
9	RA-307		"	X				X		X	"	9:50
10	RA-4196		"	X				X		X	"	10:00
11	RA-4798		"	X				X		X	"	10:10
12	RA-3353		"	X				X		X	"	10:25
13	KWB-3A		"	X				X		X	"	10:45
14	KWB-7		"	X				X		X	"	11:00
15	KWB-11A		"	X				X		X	"	11:30

Relinquished by: [Signature] Date: 9/16/98 Time: 16:15
 Relinquished by: [Signature] Date: 9/16/98 Time: 16:15
 Relinquished by: [Signature] Date: 9-17-98 Time: 9:20 AM

ANALYSIS REQUEST

(Circle or Specify Method No.)

PAH 8270	
Total Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Volatiles	
TCLP Semi Volatiles	
RCI	
GC/MS Vol. 8240/8260/624	
GC/MS Semi. Vol. 8270/625	
PCB's 8080/608	
Pest. 8080/608	
BOD, TSS, PH	
Turn Around Time if different from standard	

REMARKS: 9/22

LAB USE ONLY

Intact Y N
 Headspace Y N
 Temp 22 °
 Log-in Review NA

Carrier # Fidelity 202 1539 237

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

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TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9809000495
Date Rec: 9/26/98
Sampling Date: 9/25/98
Sample Condition: Intact and Cool
Sample Received By: RS

Date: Sep 30, 1998
Project: N/A
Proj Name: Qrtly Offsite Plume
Proj Loc: Artesia.NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
108266	RA-314	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
108267	RA-2723	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
108268	KWB-12A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
108269	RA-3156	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC								
			0.001	0.001	0.001	0.001	0.001	0.001
			0.096	0.103	0.101	0.104	0.330	

RPD

% Extraction Accuracy

% Instrument Accuracy

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	9/26/98	EPA 602	9/26/98	CS	0.100 ea	0.1 ea

PS

9-30-98

Director, Dr. Blair Leftwich

Date

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Phone #: (505) 748-3311
Fax #:

Fax #: _____

1000

Project Name: OAP, 402

Sampler Signature

Sampler Signature: Aurel A. Daniel

MATRIX	PRESERVATIVE METHOD				SAMPLING TIME
	AIR	SLUDGE	HCL	HNO3	
			X	X	14
			X	X	14
			X	X	14
			X	X	14

LAB #	FIELD CODE	# CONTAINERS	Volume/Amount	SOIL	
				WATER	
108266	RA-314	2	40ml	X	
267	RA-2723	2	"	X	
268	KWB-12A	2	"	X	
269	RA-3156	2	"	X	

[illegible][illegible]

Date:	Time:
Date:	Time:

Story by: hulle
9-26-98 10:00 a.m.

Relinquished by: <i>[Signature]</i>	Date: <i>9/1/98</i>	Time: <i>16:15</i>	Received by:
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received at Labora <i>Rachael S.</i>

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

100

Carrier #	Fed EX # 205-7829-453
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CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUIREMENTS

LAB Order ID # 792

ANALYSIS REQUEST

(Circle or Specify Method No.)

[illegible]

REMARKS:

LAB USE ONLY

Intact Y / N
 Headspace Y / N
 Temp °
 Log-in Review

9/30

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9810000015
Date Rec: 10/1/98
Sampling Date: 9/28/98 - 9/30/98
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Oct 08, 1998
Project: N/A
Proj Name: Qrtly Offsite Plume
Proj Loc: Artesia.NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTEX (mg/L)
108732	NP-2	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
108733	NP-1	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
108734	MW-18	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
108735	KWB-2A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
108736	KWB-9	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
108737	RA-1227	Water	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
108738	MW-45	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Reporting Limit			0.001	0.001	0.001	0.001	0.001	
QC			0.097	0.087	0.089	0.091	0.268	

RPD

% Extraction Accuracy

% Instrument Accuracy

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	10/8/98	EPA 602	10/8/98	CS	0.100 ea	0.1 ea



10-8-98

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Date: Oct 08, 1998

Project: N/A

Proj Name: Qrtly Offsite Plume

Proj Loc: Artesia.NM

Lab Receiving #: 98100000015

Date Rec: 10/1/98

Sampling Date: 9/30/98

Sample Condition: Intact and Cool

Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M,P,O XYLENE (mg/L)	TOTAL BTX (mg/L)
108739	KWB-1C	Water	0.089	0.002	<0.001	<0.001	<0.001	0.002
108740	KWB-1A	Water	0.067	0.002	<0.001	<0.001	<0.001	0.002
108741	RA-313	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC								
			0.001	0.001	0.001	0.001	0.001	
			0.099	0.098	0.099	0.096	0.284	

RPD

% Extraction Accuracy

% Instrument Accuracy

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTX	N/A	10/6/98	EPA 602	10/6/98	CS	0.100 ea	0.1 ea

BL

10-8-98

Director, Dr. Blair Leftwich

Date

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Phone #: 714-241-1111

Phone #: 714-241-1111

Fax # 718-957-

Contact Person: Therrell Moore

Invoice to:
(If different from above)

Project Name: Cartier Offsite Plume

Sampler Signature: *James M. Samuel*

Sampler Signature: *James M. Samuel*

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME
108730	NP-2	2	46m	X				X				9/28/98	8:20
33	NP-1	"	"	X				X				"	8:40
34	MW-18	"	"	X				X				"	16:00
35	KWB-2A	"	"	X				X				"	16:45
36	KWB-9	"	"	X				X				9/29/98	15:45
37	RA-1227	"	"	X				X				9/30/98	9:15
38	MW-45	"	"	X				X				"	9:40
39	KWB-1C	"	"	X				X				"	11:15
40	KWB-1A	"	"	X				X				"	11:30
41	RA-313	"	"	X				X				"	14:50

Relinquished by: McDaniel Date: 9/30/98 Time: 11:15

Date: _____ Time: _____

Date: _____ Time: _____

Date: _____ Time: _____

Date: _____ Time: _____

Date: _____ Time: _____

ORIGINAL COPY

LAB Order ID

(Circle or Specify Method No.)

[illegible]

REMARKS:

Headspace
Y / N

33

7edov

Fedex 208961613

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9810000252
Date Rec: 10/10/98
Sampling Date: 10/9/98
Sample Condition: Intact and Cool
Sample Received By: JS

Date: Oct 20, 1998
Project: N/A
Proj Name: Bi-Weekly/Qtly Offsite
Proj Loc: Artesia, NM 88210

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
109817	RA-2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Method Blank		<0.001	<0.001	<0.001	<0.001	<0.001	
	Reporting Limit		0.001	0.001	0.001	0.001	0.001	
QC			0.108	0.108	0.107	0.106	0.305	

RPD

% Extraction Accuracy

% Instrument Accuracy

3	0	3	2	2
106	109	110	108	104
108	108	107	106	102

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	10/19/98	EPA 602	10/19/98	CS	0.100 ea	0.1 ea

BS

10-20-98

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

Lubbock, Texas 79424
El Paso, Texas 79922

800•378•1296
806•794•1296
915•585•3443
915•585•4944

E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Date: Oct 30, 1998

Project: N/A

Proj Name: Monthly Off-Site Plume

Proj Loc: Artesia, NM

Lab Receiving #: 9810000588

Date Rec: 10/27/98

Sampling Date: 10/26/9

Sample Condition: Intact and Cool

Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTEX (mg/L)
111238	RA-2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
111239	RA-4196	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
111240	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC								
			0.001	0.001	0.001	0.001	0.001	
			0.104	0.120	0.110	0.104	0.305	

RPD

% Extraction Accuracy

% Instrument Accuracy

4	5	5	4	4
110	126	117	111	113
104	120	110	104	102

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	10/29/98	EPA 602	10/29/98	CS	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

10-30-98

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Date: Nov 20, 1998

Project: N/A

Proj Name: Bi-Weekly/Ortly Offsite

Proj Loc: Artesia, NM 88210

Lab Receiving # : 9811000330

Date Rec: 11/17/98

Sampling Date: 11/16/9

Sample Condition: Intact and Cool

Sample Received By: VW

TA# Field Code

112844 RA-2723

Method Blank

Reporting Limit

QC

MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	<0.001	<0.001	<0.001	<0.001	<0.001	
	0.001	0.001	0.001	0.001	0.001	
	0.096	0.095	0.090	0.088	0.256	

RPD
% Extraction Accuracy
% Instrument Accuracy

11 7 10 13 16
95 103 99 104 105
96 95 90 88 85

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	11/19/98	EPA 602	11/19/98	CS	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

11-20-98

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Company Name: Way Phone #: (505) 748-3311
Address: _____ Fax #: _____

Contact Person: Barbara Moore

Invoice to: _____
(if different from above)

Project #: 2-11, Project Name: 2162

Project Location: _____

[illegible]

Relinquished by: <i>W. J. Daniel</i>	Date: <i>11/16/98</i>	Time: <i>16:53</i>	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at Laboratory by:	Date:	Time:

11-17-98 *10:00 AM*

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

...continued from page 100

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID # 330

ANALYSIS REQUEST

(Circle or Specify Method No.)

	MI RE 8020/602	
	BTEX 8020/602	
	TPH	
	PAH 8270	
	Total Metals Ag As Ba Cd Cr Pb Hg Se	
	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	
	TCLP Volatiles	
	TCLP Semi Volatiles	
	RCI	
	GC/MS Vol. 8240/8260/624	
	GC/MS Semi. Vol. 8270/625	
	PCB's 8080/608	
	Pest. 8080/608	
	BOD, TSS, PH	
	Turn Around Time if different from standard	Hold

LAB USE ONLY

Intact Y N
 Headspace Y N
 Temp -2
 Log-in Review MB

REMARKS:

Carrier # FedEx 218 1075 811

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

Lubbock, Texas 79424
El Paso, Texas 79922
E-Mail: lab@traceanalysis.com

800•378•1296
888•588•3443

806•794•1296
915•585•3443
FAX 806•794•1298
FAX 915•585•4944

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving #: 9811000520
Date Rec: 11/24/98
Sampling Date: 11/23/9
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Nov 30, 1998

Project: N/A

Proj Name: Monthly Off-Site Plume

Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
113571	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
113572	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Reporting Limit			0.001	0.001	0.001	0.001	0.001	0.001
QC			0.106	0.103	0.096	0.099	0.117	0.117

RPD

% Extraction Accuracy

% Instrument Accuracy

1	1	1	1	1
120	113	113	125	129
106	103	96	99	39

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	11/27/98	EPA 602	11/27/98	CS	0.100 ea	0.1 ea

BS

11-30-98

Director, Dr. Blair Leftwich

Date

6701 Aberdeen Avenue, Ste. 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

TraceAnalysis, Inc.

4725 Ripley Dr., Ste A
El Paso, Texas 79922-1028
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

Company Name: NAIAD
Address: (Street, City, Zip)
Contact Person: Carrell Moore
Invoice to: (If different from above)
Project #:
Project Location: Artesia NM
Project Name: Northrup Offsite Plume
Sampler Signature: Gaurie M. Gaurie

Phone #: 505 748-3311
Fax #: 505 748-9017

LAB #
(LAB USE ONLY)

FIELD CODE

CONTAINERS

VOLUME/AMOUNT

MATRIX

PRESERVATIVE METHOD

SAMPLING DATE

TIME

113571 RA-4196

72 RA-4798

240ml X

240ml X

WATER

SLUDGE

AIR

SOIL

HCL

HNO3

ICE

NONE

11/23/98 14:00

11/23/98 14:10

ANALYSIS REQUEST
(Circle or Specify Method No.)

GC/MS Vol. 8260B/624

GC/MS Semi. Vol. 8270C/625

PCBs 8082/608

Pesticides 8081A/608

BOD, TSS, pH

Turn Around Time if different from standard

LAB USE ONLY

REMARKS:

11/30

Relinquished by: Michael 11/23/98 16:15

Relinquished by:

Relinquished by:

Date: 11/23/98 Time: 16:15

Date: Time:

Date: Time:

Received by: Michael 11/23/98 16:15

Received by:

Received by:

Date: 11/23/98 Time: 16:15

Date: Time:

Date: Time:

Received at Laboratory by: Michael 11/23/98 10:00

Received at Laboratory by:

Received at Laboratory by:

Date: 11/23/98 Time: 10:00

Date: Time:

Date: Time:

Carrier # Headex

217 6945 565

2176945365

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TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
 Attention Darrell Moore
 501 E. Main
 Artesia NM 88210

Lab Receiving # : 9812000101
 Date Rec: 12/4/98
 Sampling Date: 12/3/98
 Sample Condition: Intact and Cool
 Sample Received By: VW

Date: Dec 07, 1998
 Project: N/A
 Proj Name: Bi-weekly Plume
 Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
114071	RA 2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Method Blank		<0.001	<0.001	<0.001	<0.001	<0.001	
	Reporting Limit		0.001	0.001	0.001	0.001	0.001	
QC			0.094	0.099	0.061	0.100	0.284	

RPD	0	2	1	2	1
% Extraction Accuracy	117	105	70	130	131
% Instrument Accuracy	94	99	61	100	95

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	12/4/98	EPA 602	12/4/98	CS	0.100 ea	0.1 ea

BS

12.7.98

Director, Dr. Blair Leftwich

Date

6701 Aberdeen Avenue, Ste. 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

TraceAnalysis, Inc.

4725 Ripley Dr., Ste A
El Paso, Texas 79922-1028
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

Company Name: Navajo

Address: (Street, City, Zip)

Contact Person: Darrell Moore

Invoice to: (If different from above)

Project #:

Project Location: Artesia NM

Phone #: (505) 748-3311

Fax #:

LAB #
(LAB USE ONLY)

114671 RA-2723

FIELD CODE

CONTAINERS

2

VOLUME/AMOUNT

2

MATRIX

WATER

AIR

SLUDGE

PRESERVATIVE METHOD

HCL

HNO3

ICE

NONE

DATE

4/28/98 15:50

TIME

15:50

Project Name: Bi-weekly Flume

Sampler Signature: Laura Ing Daniel

LAB Order ID # 101

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ANALYSIS REQUEST
(Circle or Specify Method No.)

PAH 8270C

Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7

TCLP Metals Ag As Ba Cd Cr Pb Se Hg

TCLP Volatiles

TCLP Semi Volatiles

TCLP Pesticides

RCI

GC-MS Vol. 8260B/624

GC/MS Semi. Vol. 8270C/625

PCB's 8082/608

Pesticides 8081A/608

BOD, TSS, pH

Hold

Turn Around Time if different from standard

LAB USE ONLY

Intact Y N

Headspace Y N

Temp -2

Log-in Review

REMARKS:

12/17

Relinquished by: Ing Daniel 12/31/98 16:15

Relinquished by:

Relinquished by:

Relinquished by:

Received by:

Received by:

Received by:

Received at Laboratory by: Vicki Wheeler 12-4-98 11:00

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

Carrier # Fed ex 2261828405

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Date: Dec 14, 1998

Project: N/A

Proj Name: Qrtly Offsite Plume

Proj Loc: Artesia.NM

Lab Receiving # : 9812000283

Date Rec: 12/11/98

Sampling Date: 12/10/9

Sample Condition: Intact and Cool

Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
114692	KWB-2A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
114693	KWB-12A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
114694	RA-3156	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
114695	KWB-9	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
114696	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
114697	KWB-1C	Water	0.120	0.002	<0.001	<0.001	<0.001	0.002
114698	KWB-1A	Water	0.117	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Reporting Limit			0.001	0.001	0.001	0.001	0.001	
QC			0.108	0.102	0.109	0.118	0.343	

RPD
% Extraction Accuracy
% Instrument Accuracy

7 0 2 3
113 104 114 126
108 102 109 118

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	12/11/98	EPA 602	12/11/98	CS	0.100 ea	0.1 ea

[Signature]

12-14-98

Director, Dr. Blair Leftwich

Date

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Company Name: Naveja Phone #: (505) 748-3311
Address: Fax #:

Contact Person: Darrell Moore

Invoice to:
(If different from above)

Project #:

Project Name: Ortley Offsite
Project Location: Arteria NM
Sampler Signature: Lawrence Daniel

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				DATE	SAMPLING TIME
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE		
114692	KWB-2A	2	40ml X					X	X	X		12/11/98	8:55
93	KWB-12A	2	40ml X					X	X	X		12/11/98	9:30
94	RA-315C	2	40ml X					X	X	X		12/11/98	9:50
95	KWB-9	2	40ml X					X	X	X		12/11/98	11:15
96	RA-4798	2	40ml X					X	X	X		12/11/98	8:20
97	KWB-1C	2	40ml X					X	X	X		12/11/98	9:00
98	KWB-1A	2	40ml X					X	X	X		12/11/98	9:15

Relinquished by: Lawrence Daniel Date: 12/11/98 Time: 16:15
Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Date: _____ Time: _____
Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Date: _____ Time: _____
Received at Laboratory by: Mike W. Moore Date: 12-11-98 Time: 10:15 AM

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID # 283

ANALYSIS REQUEST

(Circle or Specify Method No.)

TPH	
PAH 8270	
Total Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Volatiles	
TCLP Semi Volatiles	
RCI	
GC/MS Vol. 8240/8260/624	
GC/MS Semi. Vol. 8270/625	
PCB's 8080/608	
Pest. 8080/608	
BOD, TSS, PH	
Turn Around Time if different from standard	

REMARKS: 12/11

LAB USE ONLY
Intact Y / N
Headspace Y / N
Temp -27 °
Log-in Review MB

Carrier # Fed ex 218394980

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9812000303
Date Rec: 12/12/98
Sampling Date: 12/11/9
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Dec 14, 1998

Project: N/A

Proj Name: Qrtly Offsite Plume

Proj Loc: Artesia.NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTEX (mg/L)
114772	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
114773	KWB-11A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
114774	KWB-3A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
114775	RA-3353	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC								
			0.001	0.001	0.001	0.001	0.001	
			0.108	0.102	0.109	0.118	0.343	

RPD

% Extraction Accuracy

% Instrument Accuracy

7	0	2	3
113	104	114	126
108	102	109	114

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	12/11/98	EPA 602	12/11/98	CS	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

12-14-98

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

Lubbock, Texas 79424 800-378-1296
El Paso, Texas 79922 888-588-3443
E-Mail: lab@traceanalysis.com

806-794-1296 FAX 806-794-1298
915-585-3443 FAX 915-585-4944

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving #: 9812000345
Date Rec: 12/16/98
Sampling Date: 12/15/9
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Dec 17, 1998

Project: N/A

Proj Name: Qrtly Offsite Plume

Proj Loc: Artesia.NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
115016	KWB-7	Water	0.044	0.004	<0.001	<0.001	<0.001	0.004
115017	NP-2	Water	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
115018	NP-1	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC			0.094	0.098	0.101	0.104	0.296	

RPD
% Extraction Accuracy
% Instrument Accuracy

8 7 8 11 12
93 90 94 96 90
94 98 101 104 99

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	12/16/98	EPA 602	12/16/98	CS	0.100 ea	0.1 ea

183

12-17-98

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Navajo Refining
 Attention Darrell Moore
 501 E. Main
 Artesia NM 88210

Lab Receiving # : 9812000371
 Date Rec: 12/17/98
 Sampling Date: 12/16/9
 Sample Condition: Intact and Cool
 Sample Received By: VW

Date: Dec 18, 1998
 Project: N/A
 Proj Name: Qrtly Offsite Plume
 Proj Loc: Artesia.NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
115135	MW-45	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
115136	MW-18	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Reporting Limit			0.001	0.001	0.001	0.001	0.001	0.001
QC			0.078	0.098	0.101	0.105	0.300	0.300

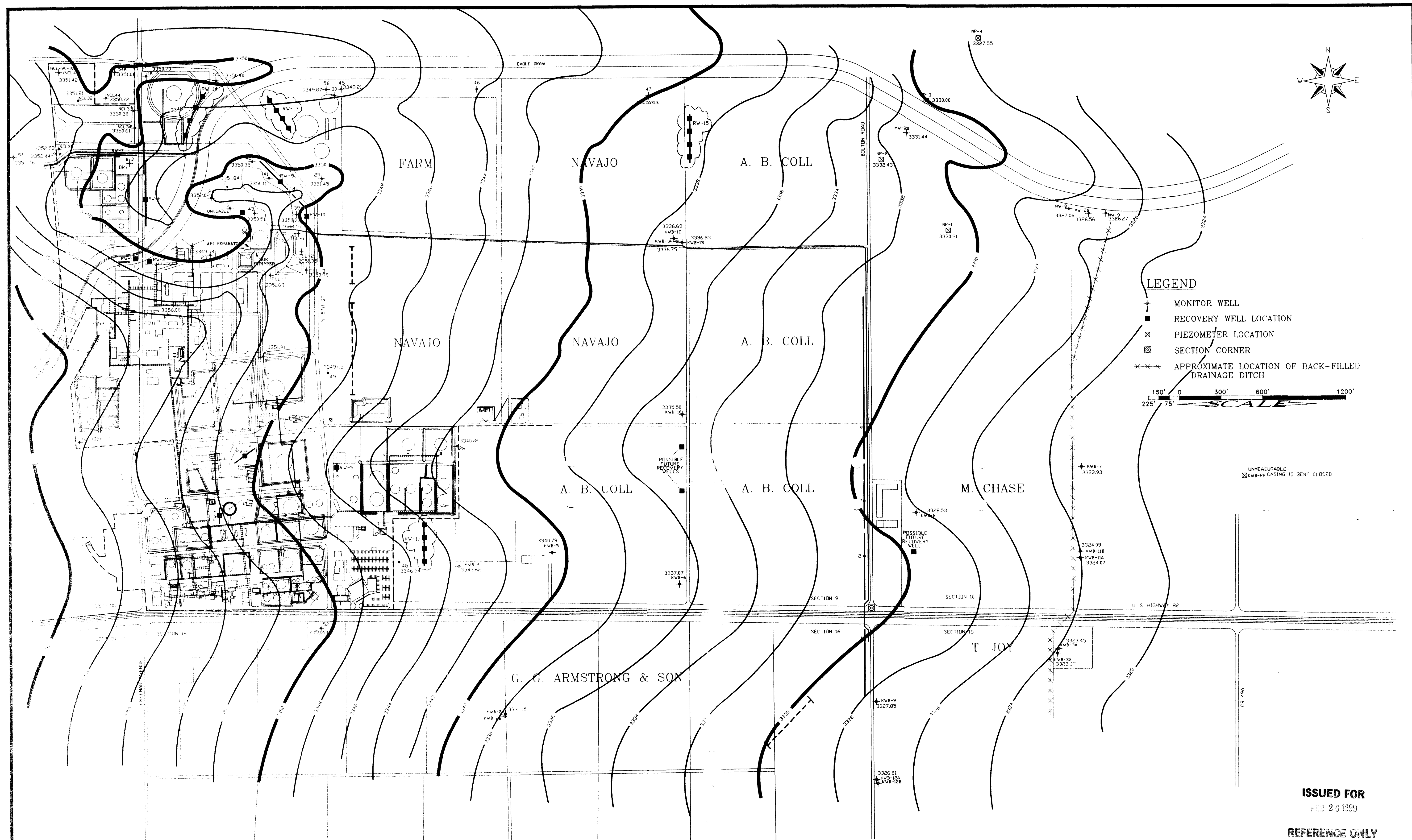
RPD	1	2	3	2	2
% Extraction Accuracy	90	101	109	121	122
% Instrument Accuracy	78	98	101	105	100

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	N/A	12/17/98	EPA 602	12/17/98	CS	0.100 ea	0.1 ea

12-18-98

Director, Dr. Blair Leftwich

Date



ISSUED FOR
FEB 26 1999

REFERENCE ONLY

RECEIVED
MAR 02 1999

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

NOTES:

REVISIONS

ADD 1996 FUTURE TRANCHES

REFERENCE DRAWINGS

NO.	REVISIONS	BY	CHK.	DATE	APPR.	APPR.
10	SEP. 1998 READINGS	LGR	DGM	8/26/98	DGM	DGJ
9	JUN. 1998 READINGS	LGR	DGM	8/26/98	DGM	DGJ

NO.	REVISIONS	BY	CHK.	DATE	APPR.	APPR.
8	MAR. 1998 READINGS	LGR	DGM	8/26/98	DGM	DGJ
7	JAN. 1998 READINGS	LGR	DGM	8/26/98	DGM	DGJ
6	DEC. 1996 READINGS	DLW	DGM	8/26/98	DGM	DGJ
5	AUGUST, 1996 READINGS	DLW	DGM	8/26/98	DGM	DGJ
4	MAY, 1996 READINGS	DLW	DGM	8/26/98	DGM	DGJ
3	JANUARY, 1996 READINGS	DLW	DGM	8/26/98	DGM	DGJ
2	SEPTEMBER, 1995 READINGS	PETE	DGM	8/26/98	DGM	DGJ
1	JUNE, 1995 READINGS	PETE	DGM	7-13-95	DGM	ILS
0	ISSUED WITH MARCH, 1995 READINGS	PETE	DGM	8/26/98	DGM	ILS

DRAWING TITLE

GROUNDWATER
POTENTIOMETRIC MAP
NAVAJO REFINING

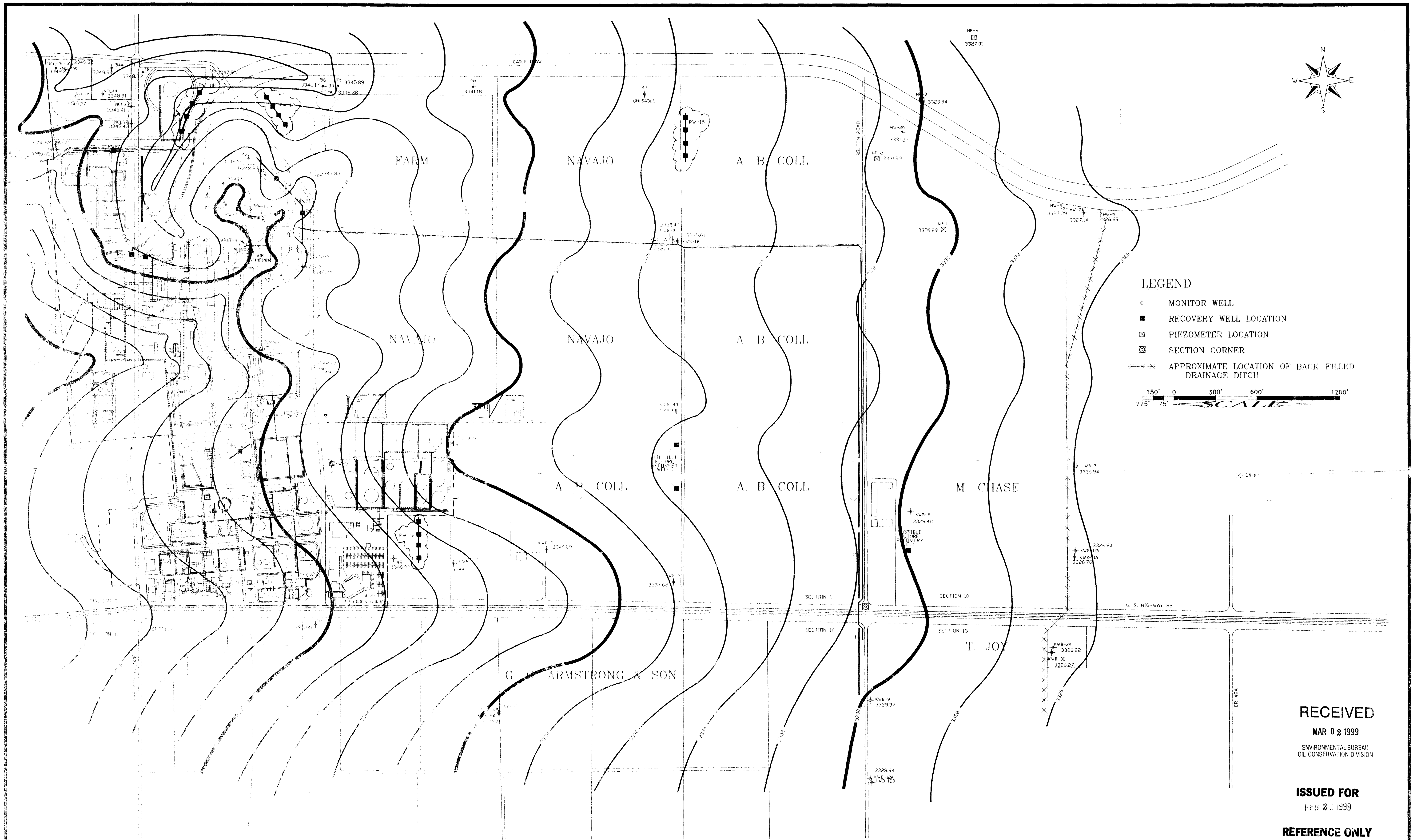
1st QTR.



NAVJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 359
ARTESIA, NEW MEXICO

DRAWN BY	CHK'D BY	SCALE
DLW	DGM	AS SHOWN
DATE	APPR BY	DRAWING NUMBER
3-17-95	ILS	90-44-E

REV. 10



RECEIVED

MAR 02 1999

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

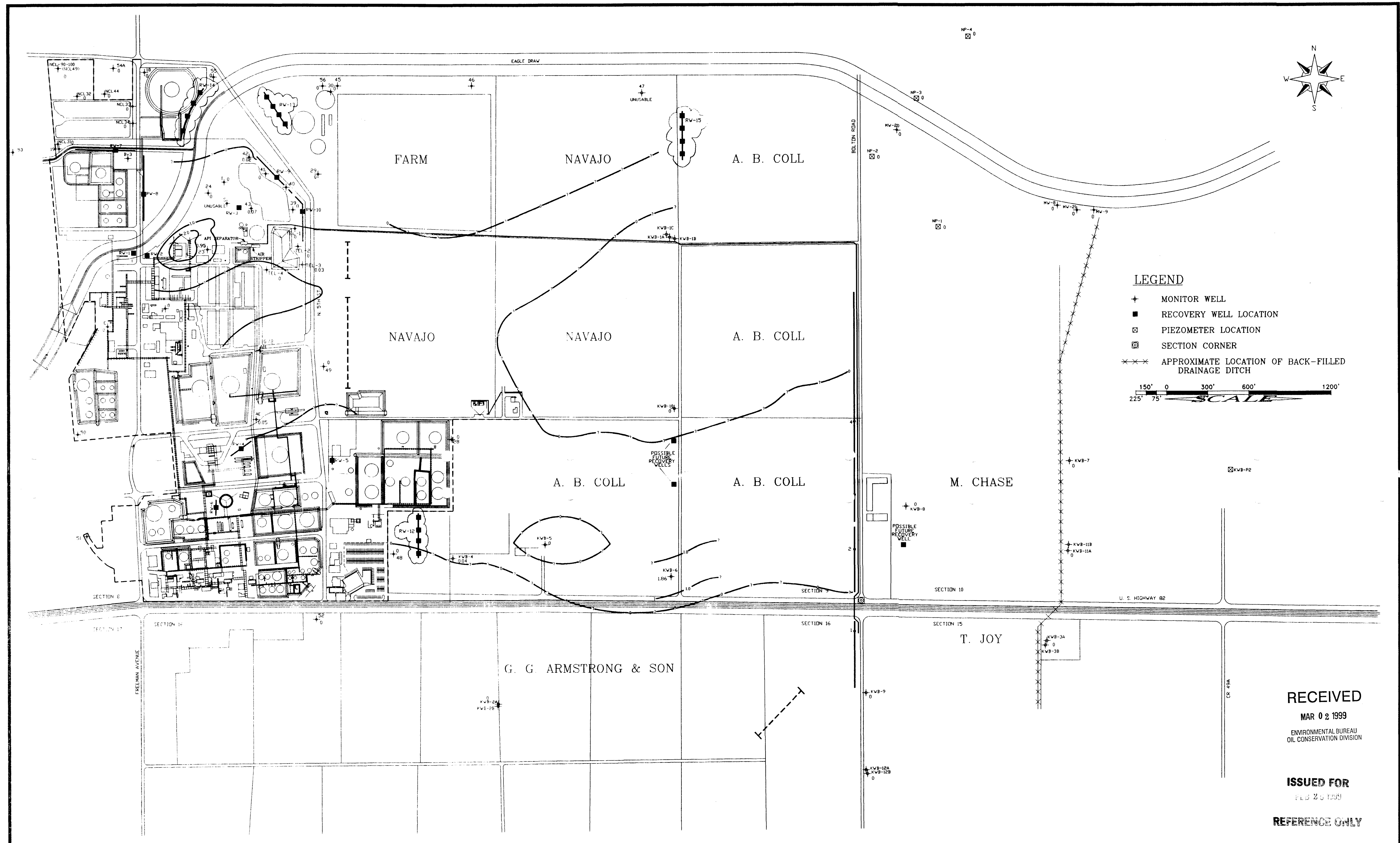
ISSUED FOR

FEB 23 1999

REFERENCE ONLY

NO.	REVISIONS	BY	CHK	DATE	APPR	APPR	NO.	REVISIONS	BY	CHK	DATE	APPR	APPR	DRAWING TITLE
8	MAR. 1998 READINGS						8	MAR. 1998 READINGS	LGR	DGM	3/2/98	DCM	DGJ	GROUNDWATER POTENTIOMETRIC MAP NAVAJO REFINING 4th QTR.
7	JAN. 1998 READINGS						7	JAN. 1998 READINGS	LGR	DGM	2/18/98	DCM	DGJ	
6	OCT. 1996 READINGS						6	OCT. 1996 READINGS	DLW	DGJ	10/26/96	DCM	DGJ	
5	AUGUST, 1996 READINGS						5	AUGUST, 1996 READINGS	DLW	DGJ	8/20/96	DCM	DGJ	
4	MAY, 1996 READINGS						4	MAY, 1996 READINGS	DLW	DGJ	5/10/96	DCM	DGJ	
3	JANUARY, 1996 READINGS						3	JANUARY, 1996 READINGS	DLW	DGJ	1/10/96	DCM	DGJ	
2	SEPTEMBER, 1995 READINGS						2	SEPTEMBER, 1995 READINGS	PETE	DGJ	9/7/95	DCM	DGJ	
1	JUNE, 1995 READINGS						1	JUNE, 1995 READINGS	PETE	DGJ	6/7/95	DCM	DGJ	
0	ISSUED WITH MARCH, 1995 READINGS						0	ISSUED WITH MARCH, 1995 READINGS	PETE	DGJ	3/2/95	DCM	DGJ	
10	3-17-95 READINGS													
9	JUN 1999 READINGS													

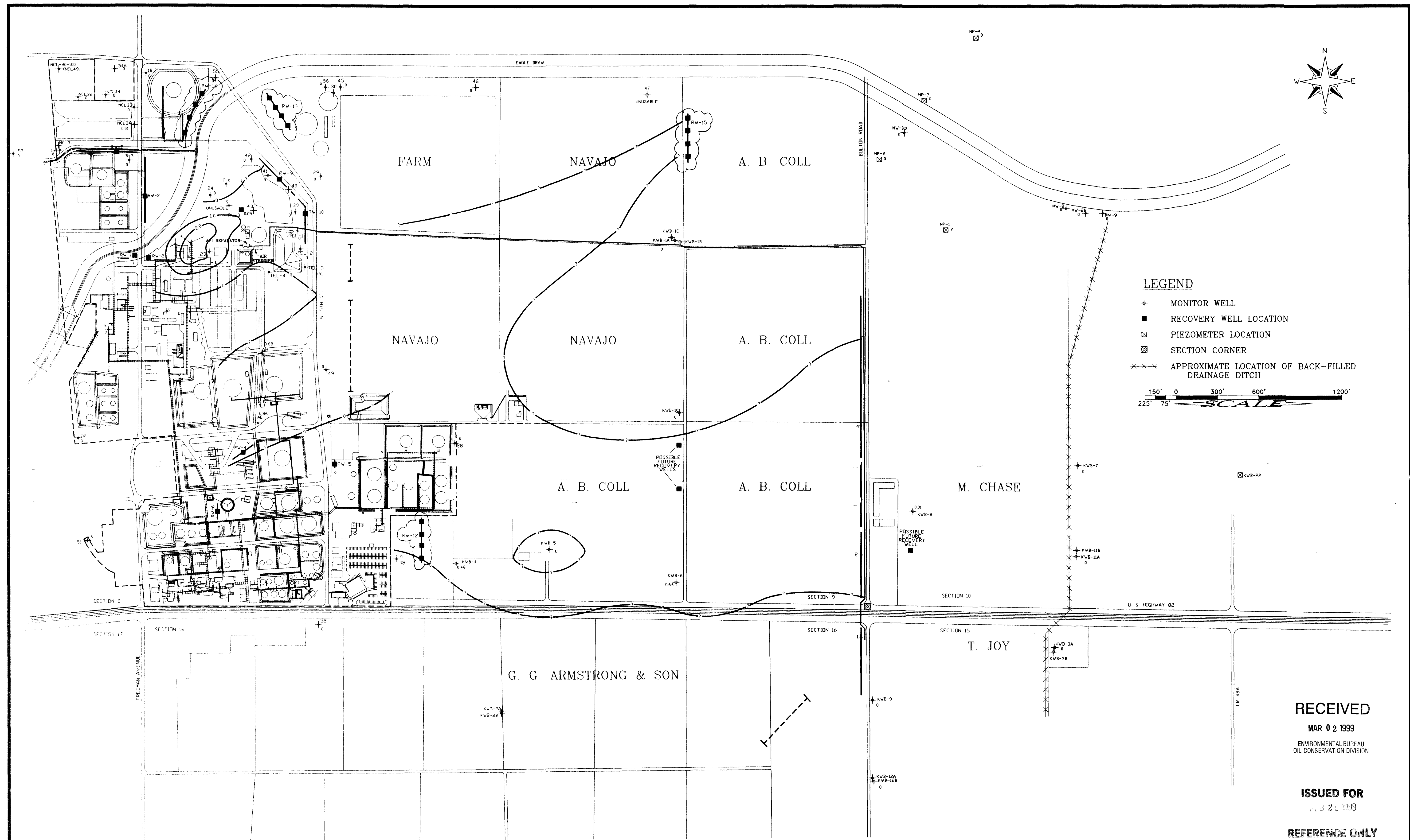
NAVAJO REFINING CO. ENGINEERING DEPARTMENT P.O. DRAWER 159 ARTESIA, NEW MEXICO	
DRAWN BY: DLW	SCALE: AS SHOWN
DATE: 3-17-95	ISSUED BY: ILS
DRAWING NUMBER: 90-44-B	REV: 10



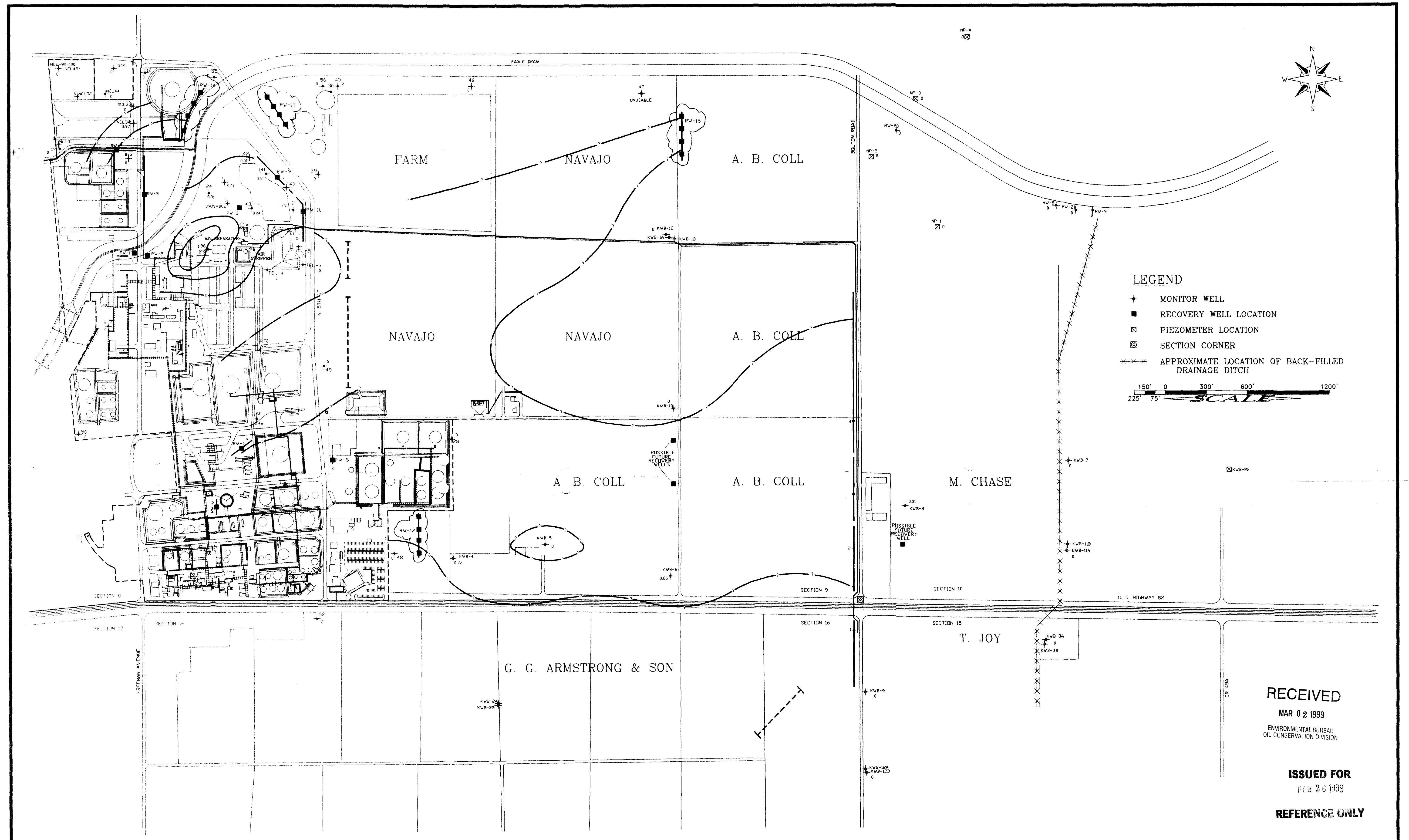
RECEIVED
MAR 02 1999
ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

ISSUED FOR
FEB 25 1999
REFERENCE ONLY

NOTES							REFERENCE DRAWINGS							DRAWING TITLE							NAVAJO REFINING CO. ENGINEERING DEPARTMENT P.O. DRAWER 159 ARTESIA, NEW MEXICO			
TRENCHES							PRODUCT THICKNESS MAP NAVAJO REFINING 1st QTR.							DRAWN BY DLW				CHK'D BY DGM		SCALE AS SHOWN				
POSSIBLE FUTURE TRENCHES														DATE 3-17-95		APPR BY ILS		DRAWING NUMBER 90-45-D		REV. 10				



NOTES		REFERENCE DRAWINGS		REV. 10							REV. 10						
TRENCHES _____																	
POSSIBLE FUTURE TRENCHES -----																	



NOTES:
TRENCHES
POSSIBLE FUTURE TRENCHES

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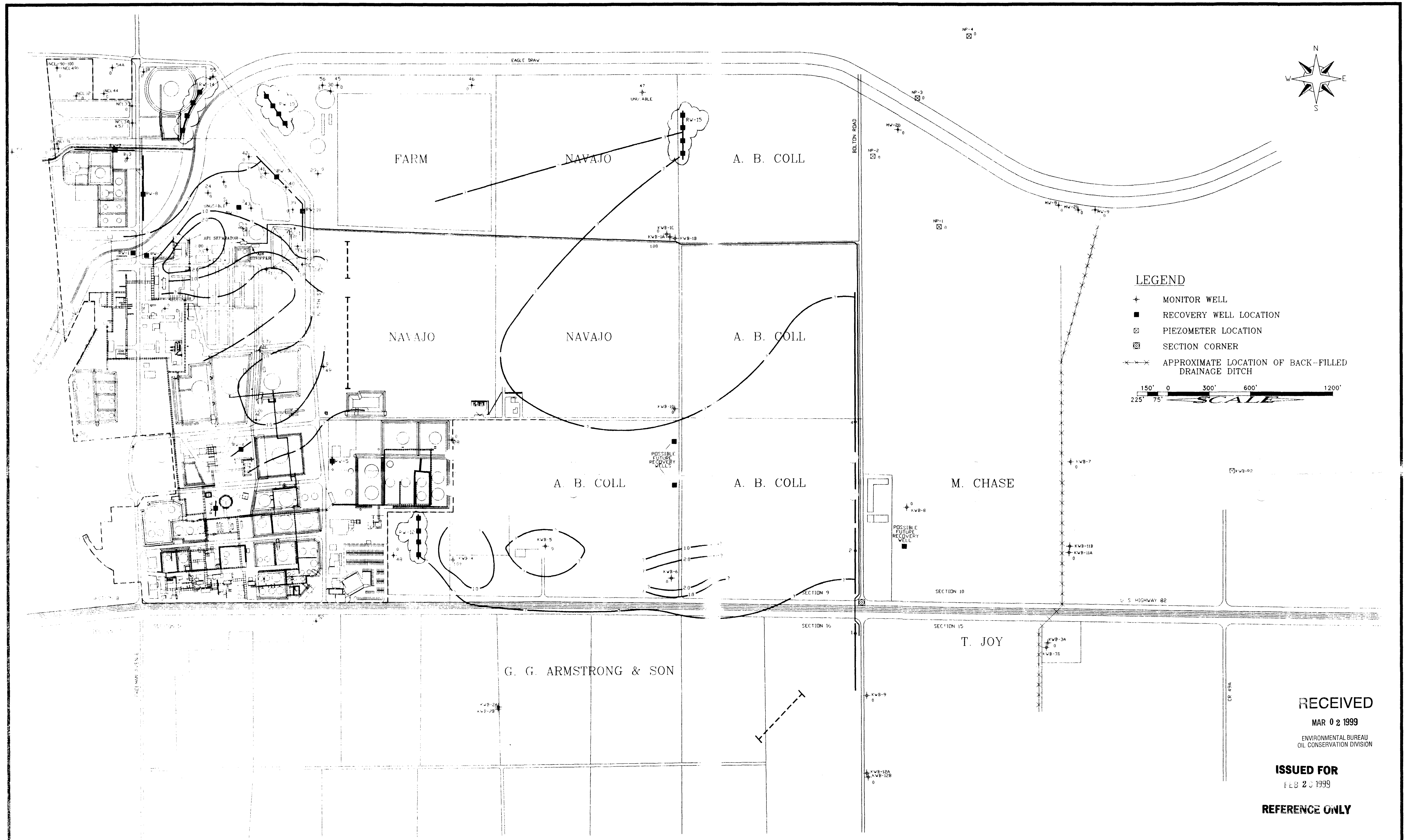
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DRAWING TITLE
PRODUCT THICKNESS
MAP
NAVAJO REFINING
3rd QTR.

DRAWN BY DLW		CHK'D BY DGM		SCALE AS SHOWN	
DATE 3-17-95		APPR BY ILS		DRAWING NUMBER 90-45-D	
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NO.	REVISIONS
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9	JUN. 1998 READINGS

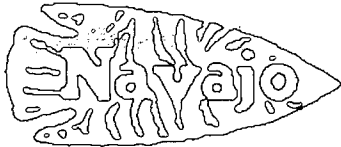
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NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 1592
ARTESTA, NEW MEXICO

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DLW	DGM	AS SHOWN
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3-17-95	ILS	90-45-10

TELEPHONE
(505) 748-3311

EASYLINK
62905278



REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

February 27, 1998

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(505) 746-4438 P / L

Mr. Bill Olson
Hydrogeologist
Environmental Bureau
Oil Conservation Division
2040 S. Pacheco St.
Santa Fe, NM 87505-5472

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Oil Conservation Division

CERTIFIED MAIL/RETURN RECEIPT
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RE: 1997 Annual Ground Water and Treatment System Monitoring Report, Navajo Refining

Dear Bill,

Enclosed please find four ground water potentiometric maps, four product thickness maps, thirteen graphs depicting elevation and thickness vs. time, four Quarterly Oil Recovery Reports for FY 1997, one table showing hits on wells, and the analysis from monitor, residential, and irrigation wells relating to the Ground Water and Treatment System Monitoring that is taking place at Navajo Refining. Per your agencies letter of June 14, 1996, the reporting frequency of this report was changed from quarterly to yearly.

For 1997, Navajo pumped 15,397,253 gallons of water out of our recovery wells and 449,129 gallons of product. The amount that came from each well is detailed in each quarterly report. All water that is pumped out of these wells is sent to our waste water plant to be treated and then to the Evaporation Ponds to be disposed. Product is taken to the various API oil/water separators and is eventually introduced back into the refinery for reprocessing. In 1997, we were able to greatly increase the amount of product that was recovered with only a slight increase in the amount of water that we pumped. This is attributed to the fact that we now have a person dedicated to maintaining and operating the recovery trenches. You will notice that, again, wells number 9 and 10 did not operate during the year. These wells are located along the east side of the Truck By Pass Landfarm. We found that these wells were producing copious amounts of water and virtually no product. The monitor wells in this area are being watched for any increase in product. If this occurs, these wells can be restarted.

We have included several graphs showing the thickness of product vs. time in the wells that are contaminated. Several wells show a decrease in product thickness. However, others are static or increasing. Overall, we have noticed a drop in thickness around the North Colony Landfarm and the Truck By pass Landfarm when compared to last years report. Also, monitor wells AE and AH in the center of the refinery have consistently gone down and are now almost undetectable. On the flip side, product due east of the office building is still some of the thickest we see.

To further enhance our recovery efforts, Navajo is in the process of installing four new recovery systems around the refinery. A 400 ft. trench will be dug between Navajo and Tool Pushers Supply due east of the office building (A1b on the maps). This should lower the product in KWB 4 and hopefully in KWB 6 and under the Coll farm. However, with the trenches at Bolton Road, we have some downstream insurance that this product will be recovered eventually. We are also putting a trench up in the Northeast area (Labeled

A1c on the maps). We have a plume in this area that we are concerned may impact Eagle Draw if it isn't caught. The other two trenches are being installed near our trickling filter (A1a and A2a on the maps) and are being driven by NMED. Per our telephone conversation and your resulting letter, we are finishing up the preliminary investigations in the areas Navajo has designated as possible areas of future recovery. Dave Boyer is currently onsite finishing up his drilling program to verify the electro-magnetic survey. Once this is done, Navajo will evaluate the trenches or wells in these areas. Tentatively, we could expect to see some recovery in these areas by March, 1999.

The analysis that we did for the year shows several hits on different wells. We have included a table showing sampling frequency and hits. We haven't seen any sustained numbers in any of the irrigation wells or the residential wells. However, we have started to see the leading edge of the plume reaching KWB-7 and KWB-11. These monitor wells are all east of Bolton Road. If you remember, we sited the recovery wells on Bolton Road knowing that part of the plume was past this point. We feel that this is the part of the plume now reaching these wells. We have also started to see some MTBE in KWB 9. This well is located on Joy's Farm south of the pecan orchard. Also, RA 1227, which is the irrigation well on the Joy Farm, shows a persistent 1- 2 ppb hit of MTBE. However, it seems to be holding steady and has not increased. Finally, RA 2723, which is the tenant farmers residential well on the Coll Farm, has gone dry and is not in use. You will notice that the well was not sampled for the second half of the year.

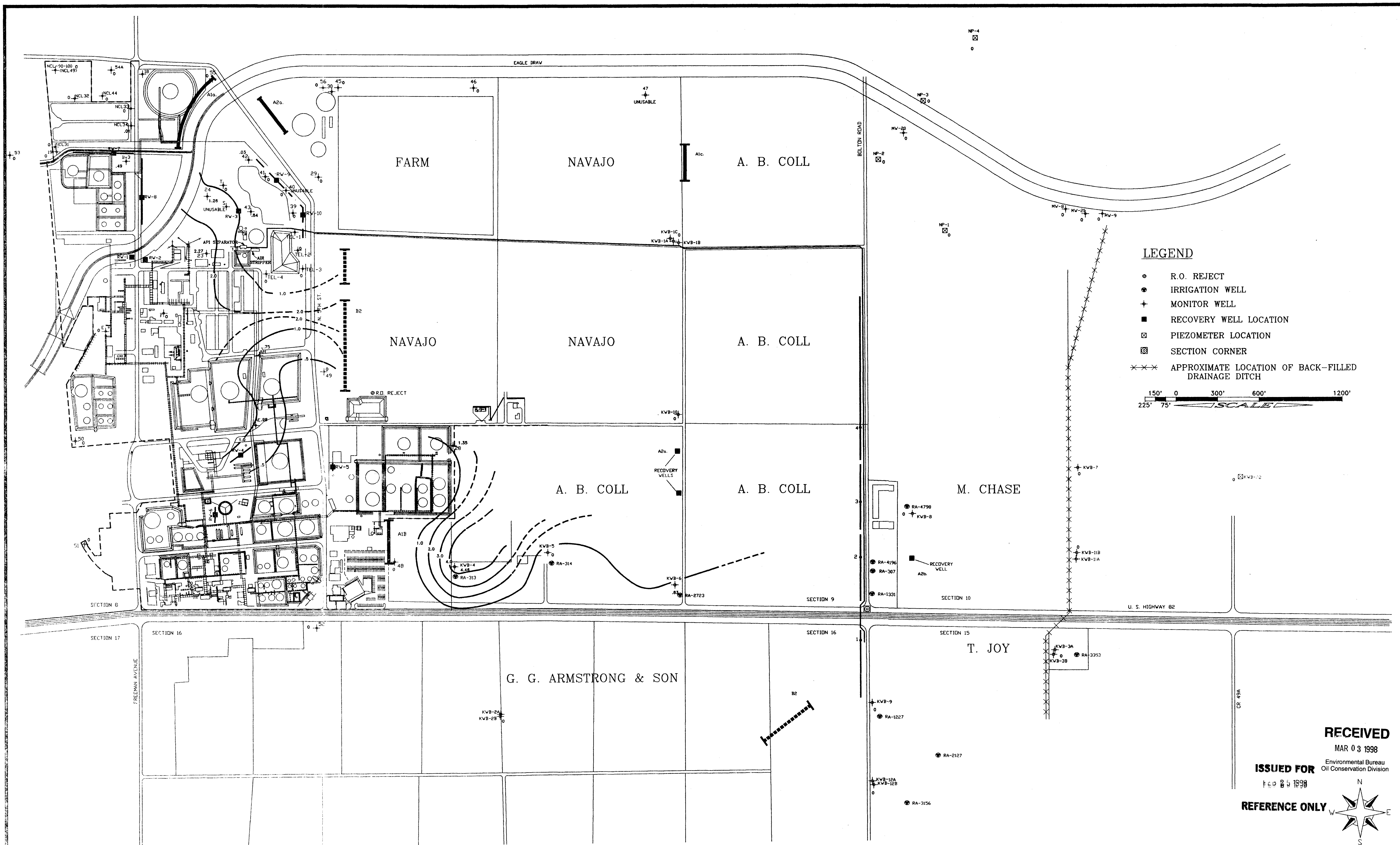
We feel that the program is working well at both recovering lost product and insuring the safety of drinking and irrigation water in the area. Navajo is working with Dave Boyer on selecting sites for additional recovery wells to further enhance the success of this program. I thank you for your time in this matter. As always, if there are any questions, please feel free to call me at 505-748-3311.

Sincerely,
Navajo Refining Co.



Darrell Moore
Environmental Mgr. for Water and Waste

Encl.
cc: PLY, VRL, MPC (without enclosures)



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PLANNED TRENCHES

POSSIBLE FUTURE TRENCHES

REFERENCE DRAWINGS

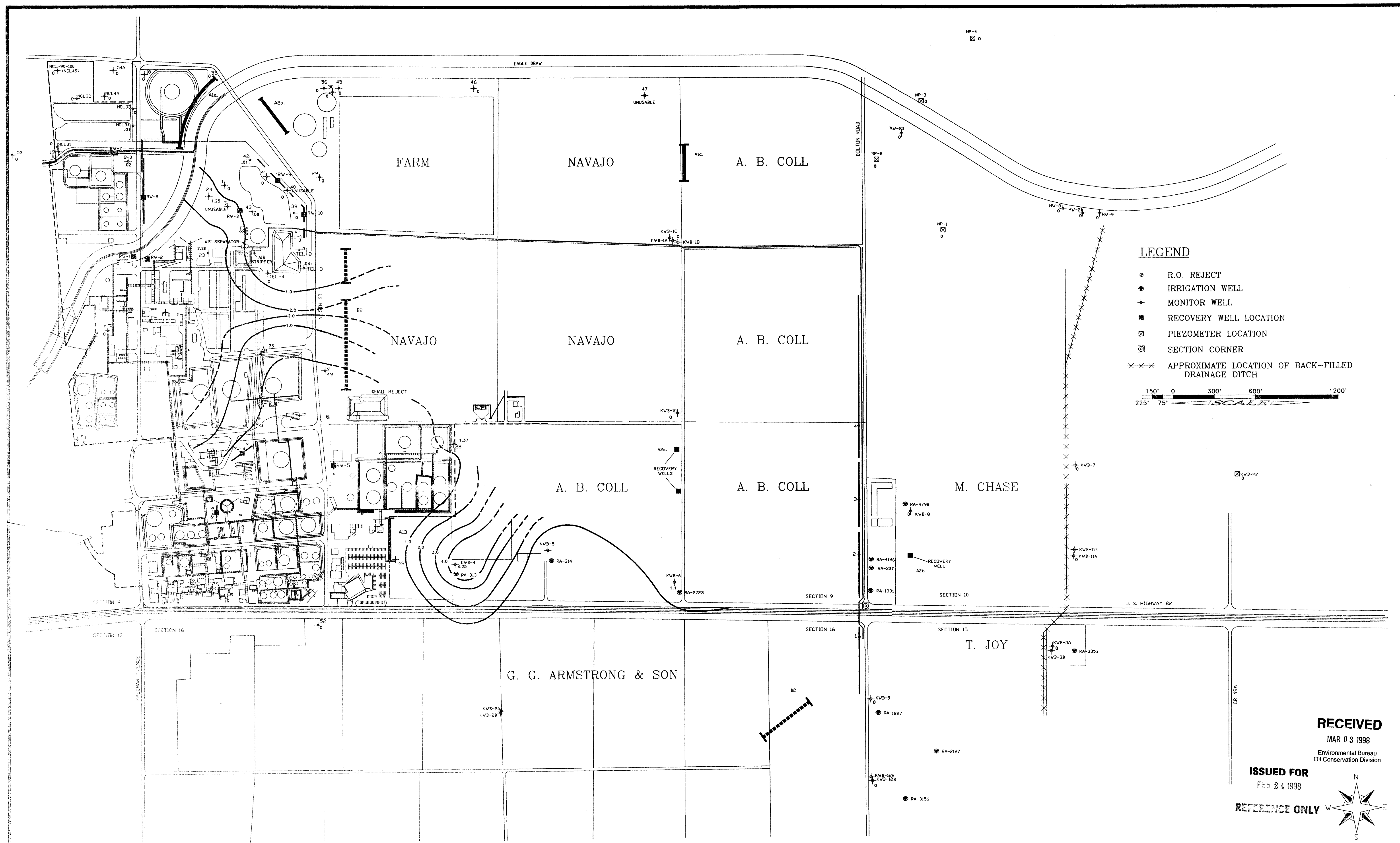
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DRAWING TITLE

1 ST. QUARTER
PRODUCT THICKNESS
MAP
NAVAJO REFINING

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

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DATE 3-17-95	APPR BY ILS	DRAWING NUMBER 90-45-D
		REV. 7



NOTES

PLANNED TRENCHES
 POSSIBLE FUTURE TRENCHES

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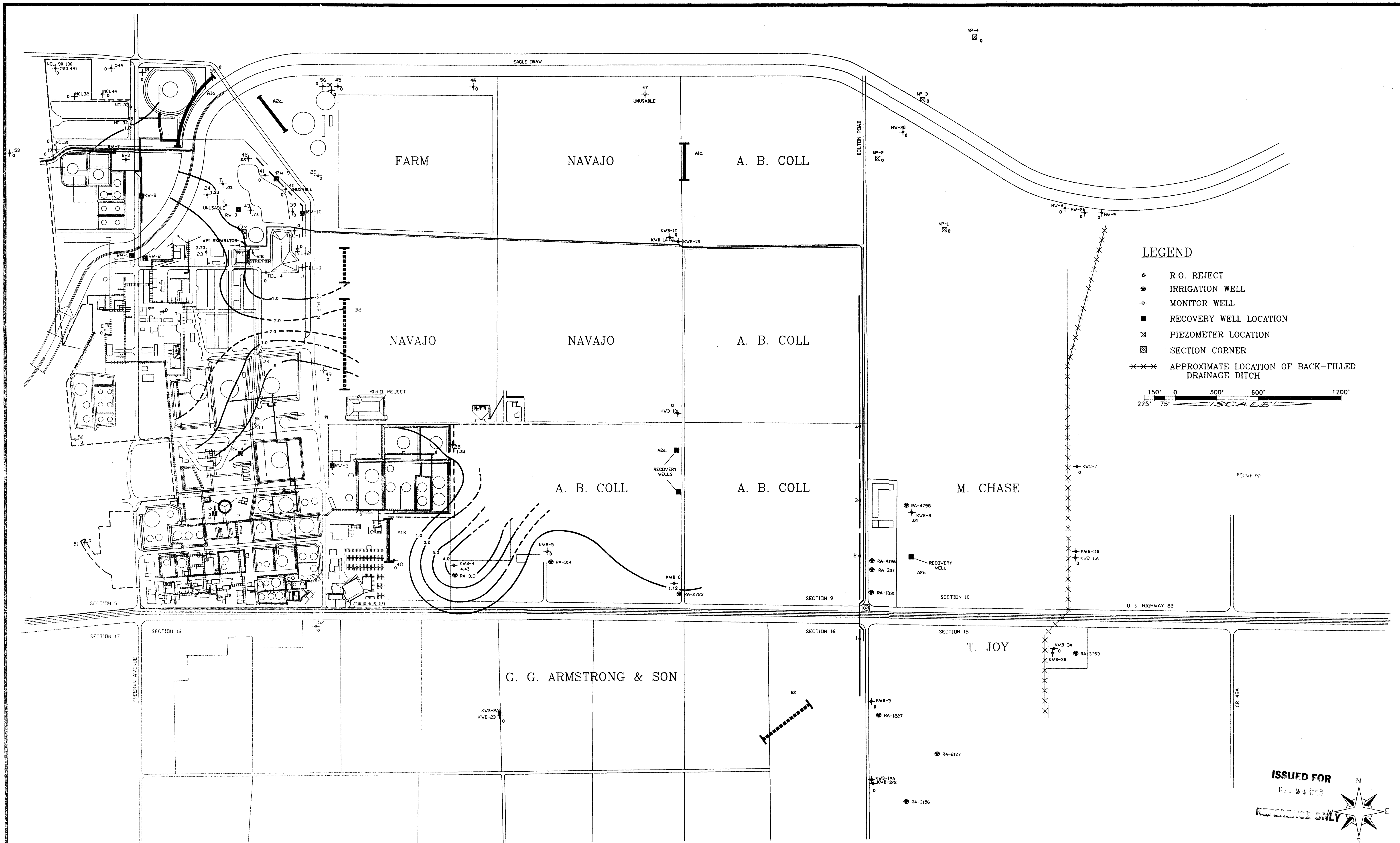
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 MAP
 NAVAJO REFINING

DATE	APPR. BY	SCALE	DRAWING NUMBER	REV.
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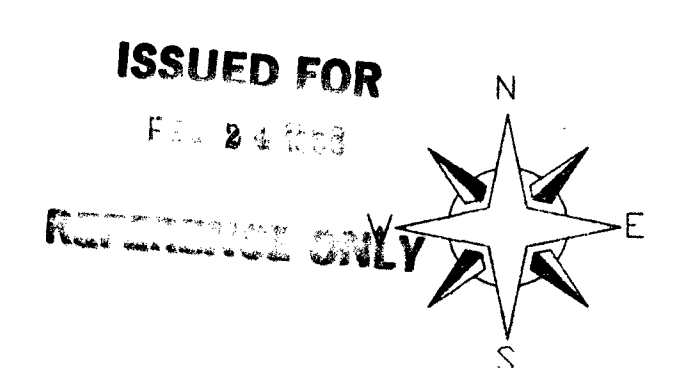
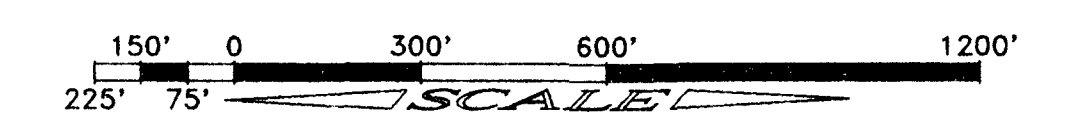
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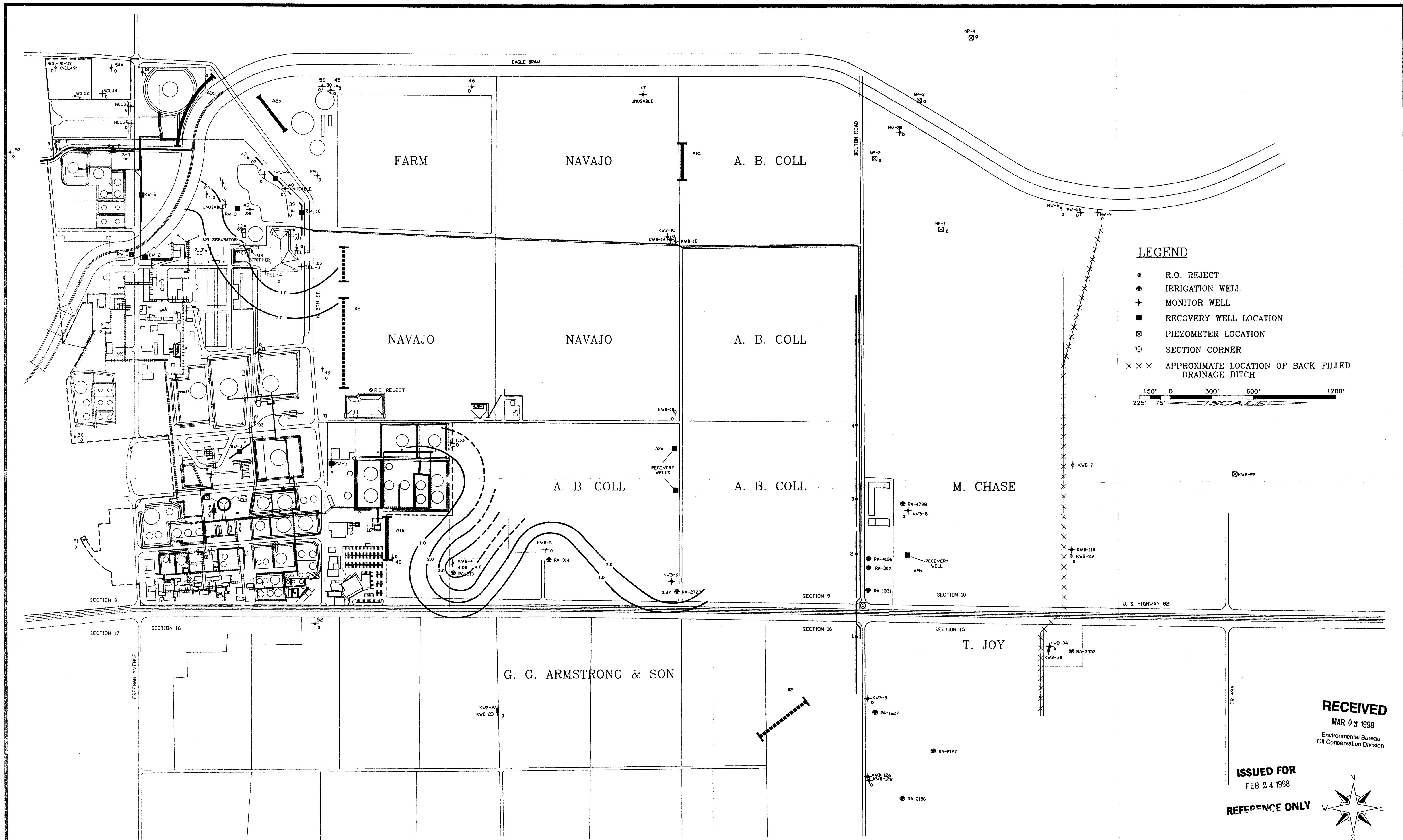


LEGEND

- R.O. REJECT
- IRRIGATION WELL
- ✦ MONITOR WELL
- RECOVERY WELL LOCATION
- ⊠ PIEZOMETER LOCATION
- ⊞ SECTION CORNER
- *** APPROXIMATE LOCATION OF BACK-FILLED DRAINAGE DITCH



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PLANNED TRENCHES

POSSIBLE FUTURE TRENCHES

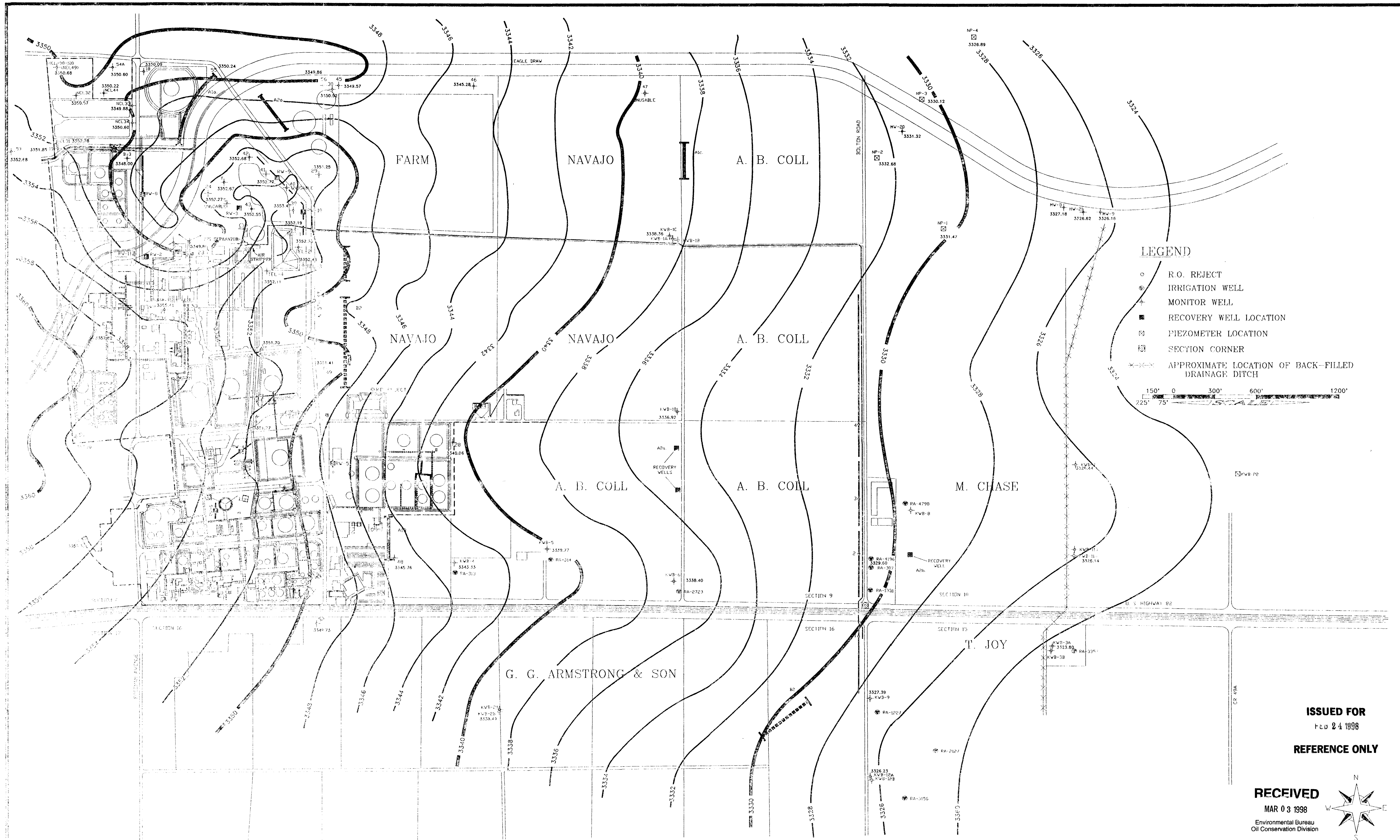
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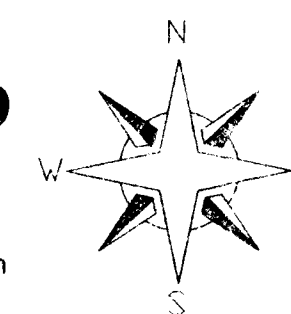
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PRODUCT THICKNESS
MAP
NAVAJO REFINING

NAVAJO REFINING CO.		ENGINEERING DEPARTMENT	
P.O. DRAWER 159		ARTESIA, NEW MEXICO	
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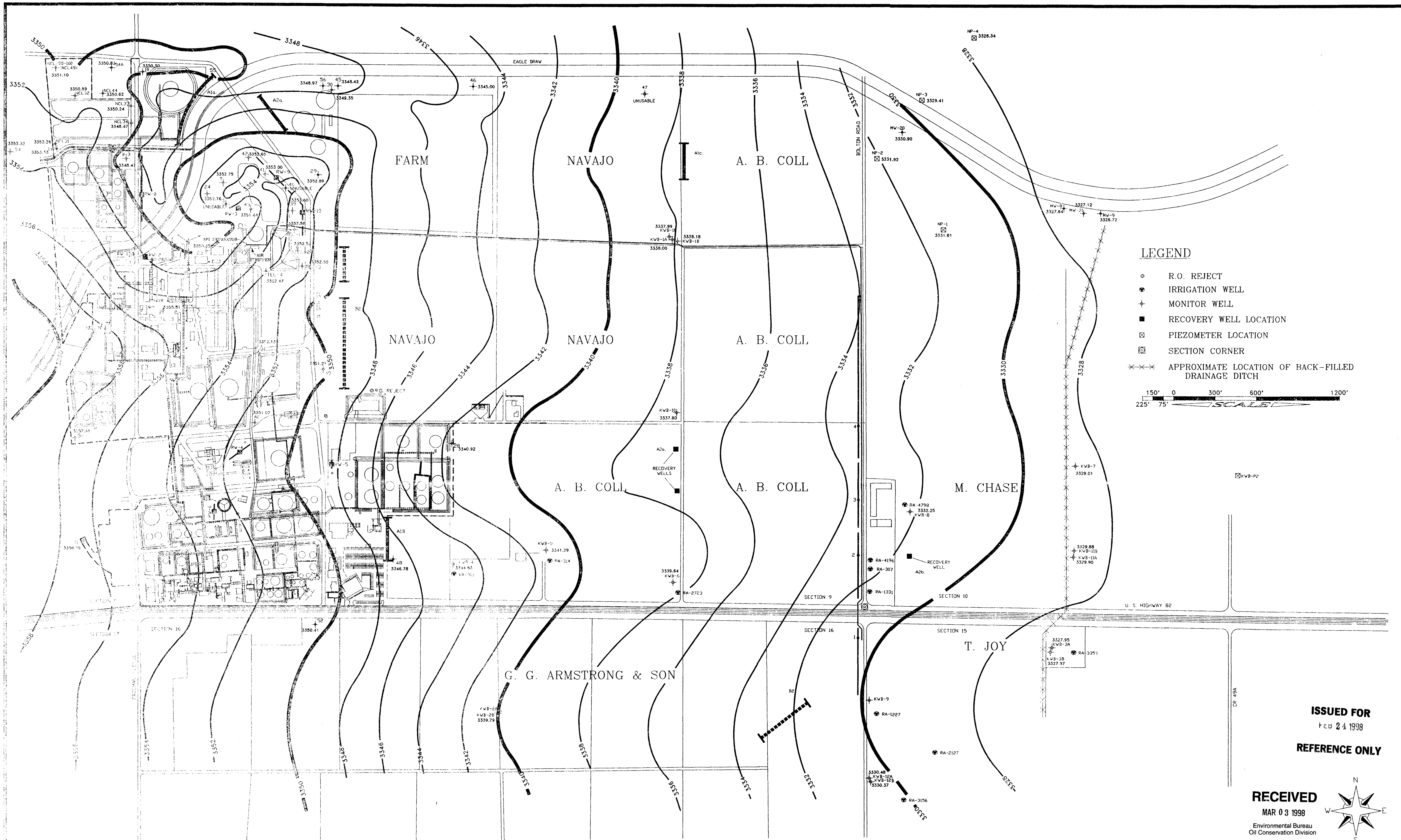
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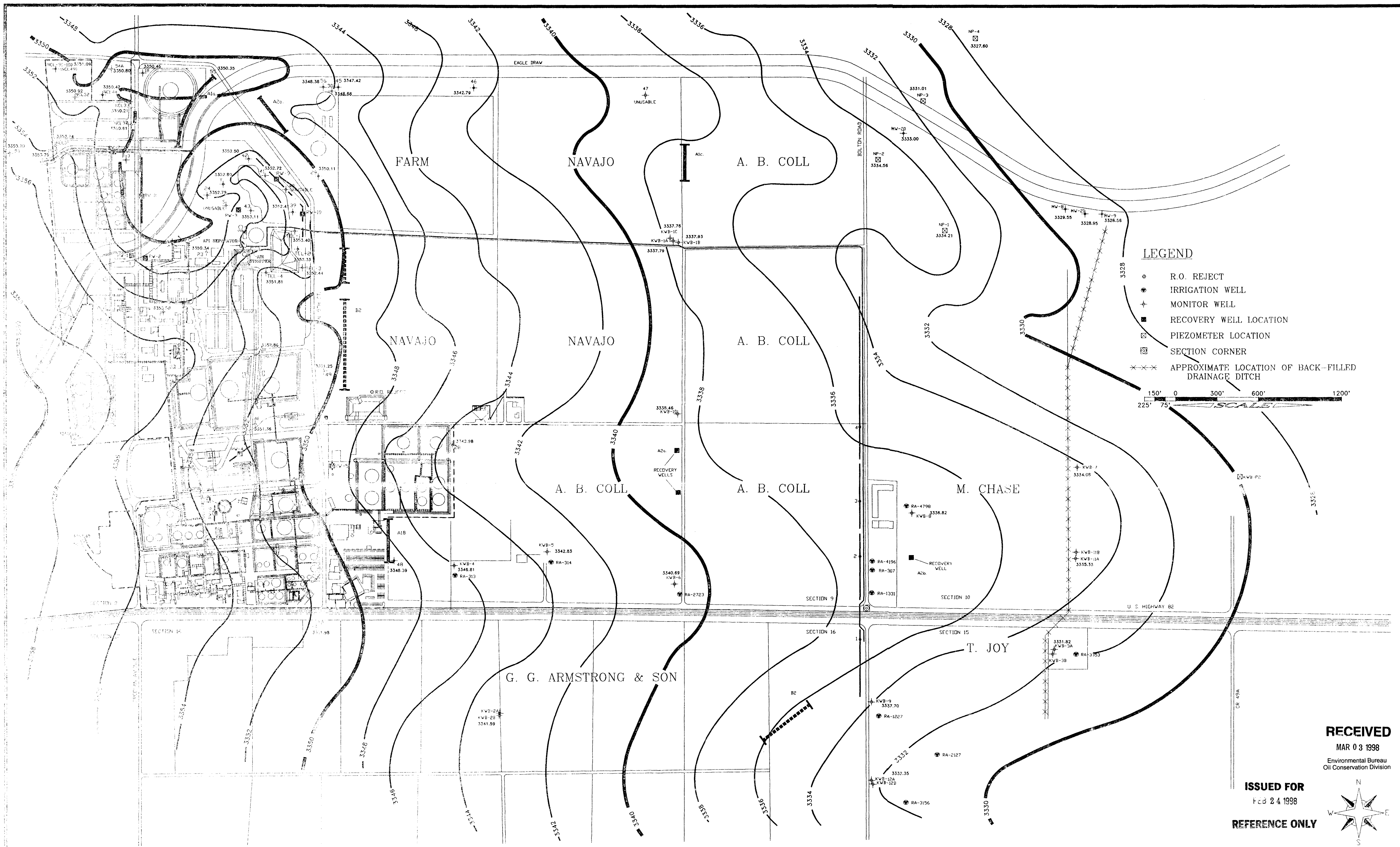


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POTENTIOMETRIC MAP
NAVAJO REFINING

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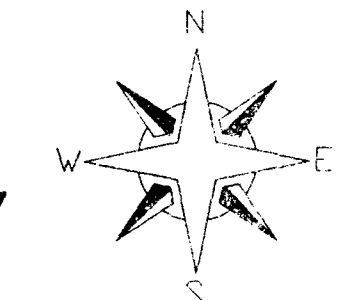
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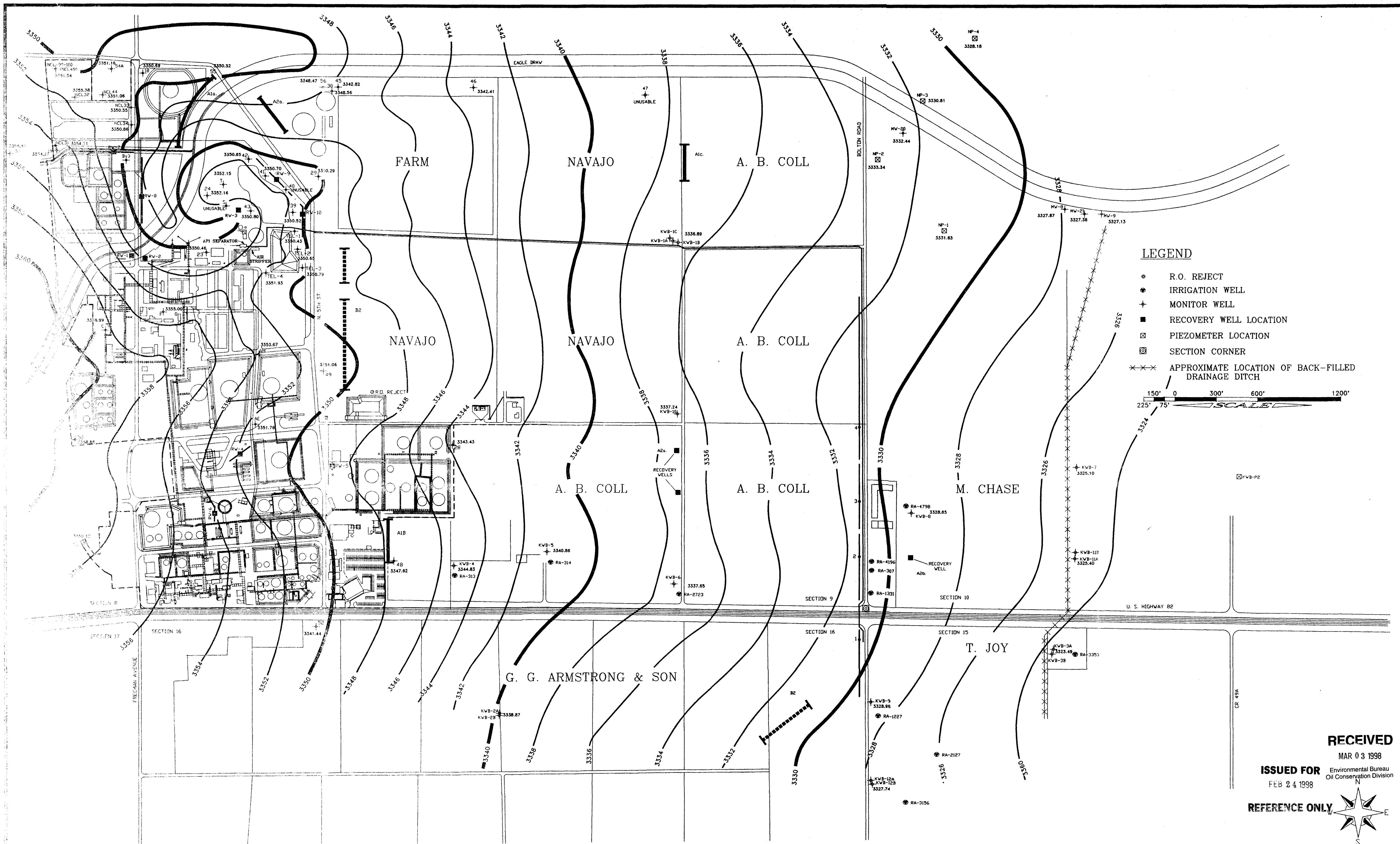
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REFERENCE ONLY

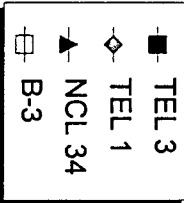
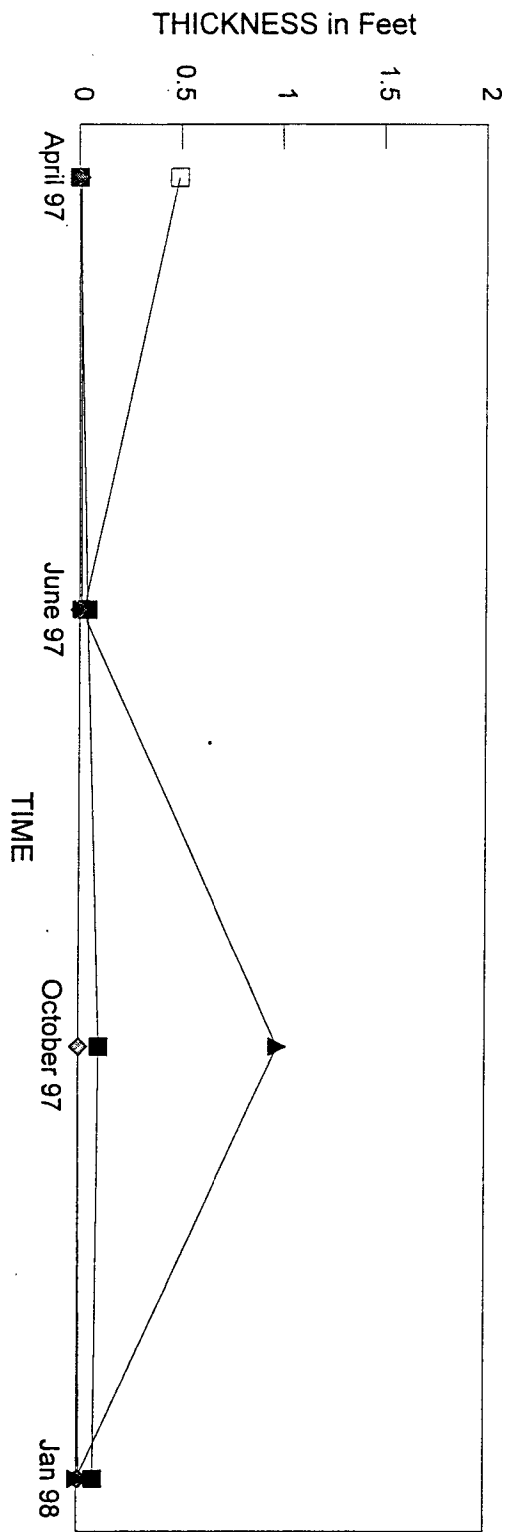
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				8 PLANNED TRENCHES LGR DGJ 6/26/97 DGM DGJ			
				7 JAN. 1997 READINGS LGR DGJ 6/26/97 DGM DGJ			
				6 OCT. 1996 READINGS DLV DGJ 8/28/96 DGM DGJ			
				5 AUGUST, 1996 READINGS DLV DGJ 8/28/96 DGM DGJ			
				4 MAY, 1996 READINGS DLV DGJ 8/28/96 DGM DGJ			
				3 JANUARY, 1996 READINGS DLV DGJ 8/28/96 DGM DGJ			
				2 SEPTEMBER, 1995 READINGS PETE DGJ 8/27/95 DGM DGJ			
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HITS IN OFFSITE WELLS

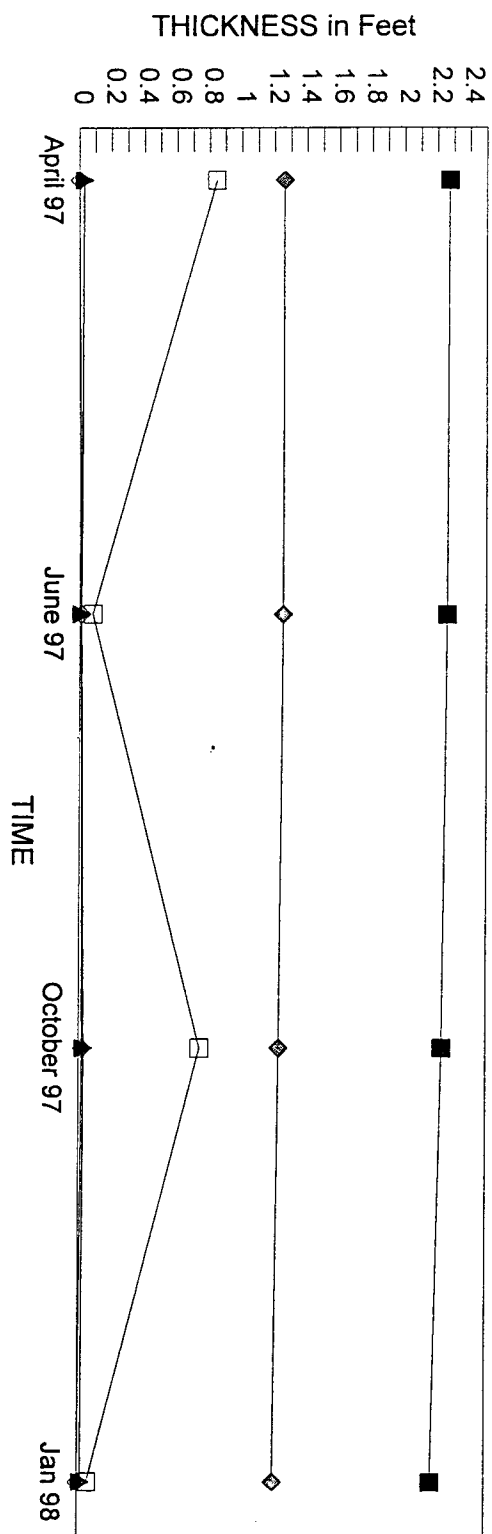
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* denotes well was sampled

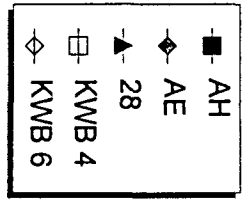
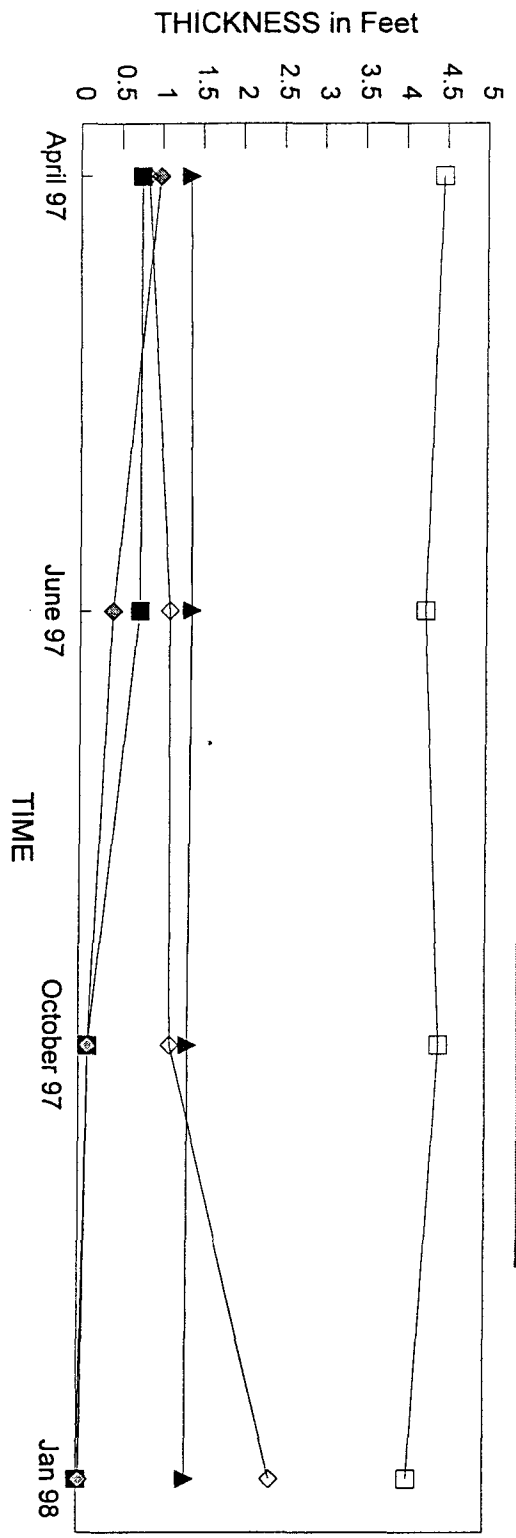
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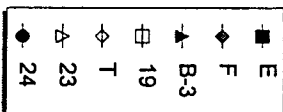
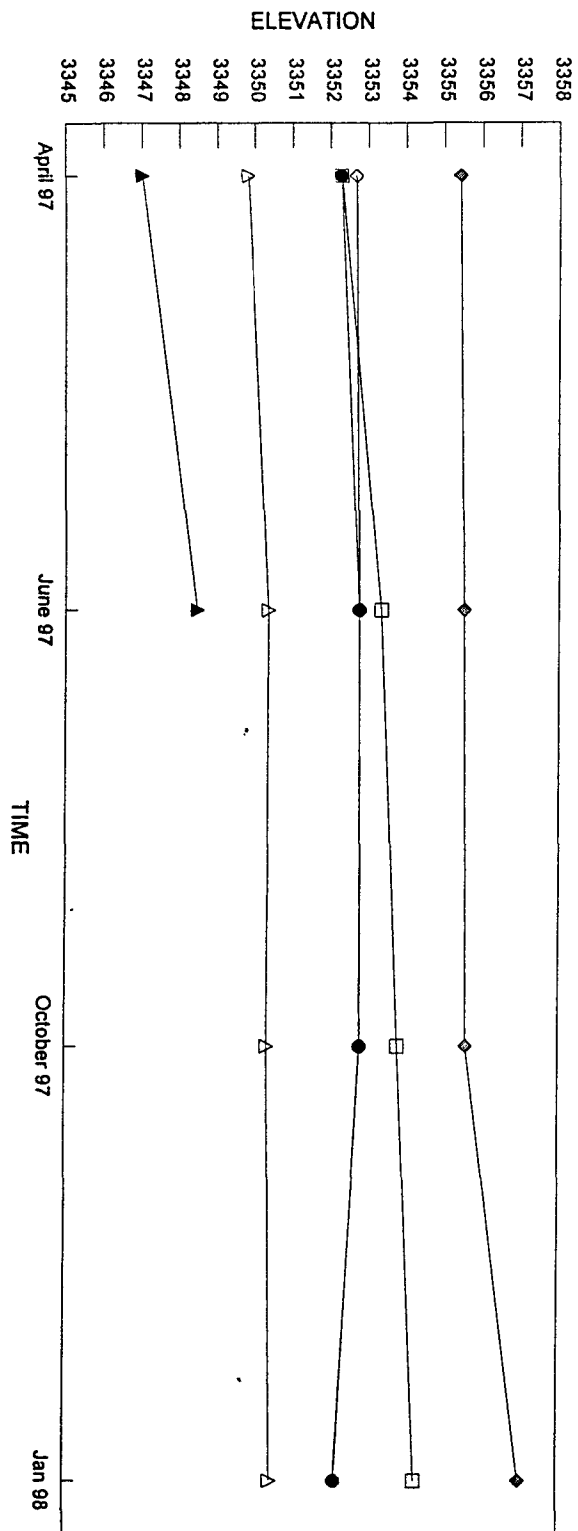
PRODUCT THICKNESS VS. TIME Truck By Pass Landfarm Area



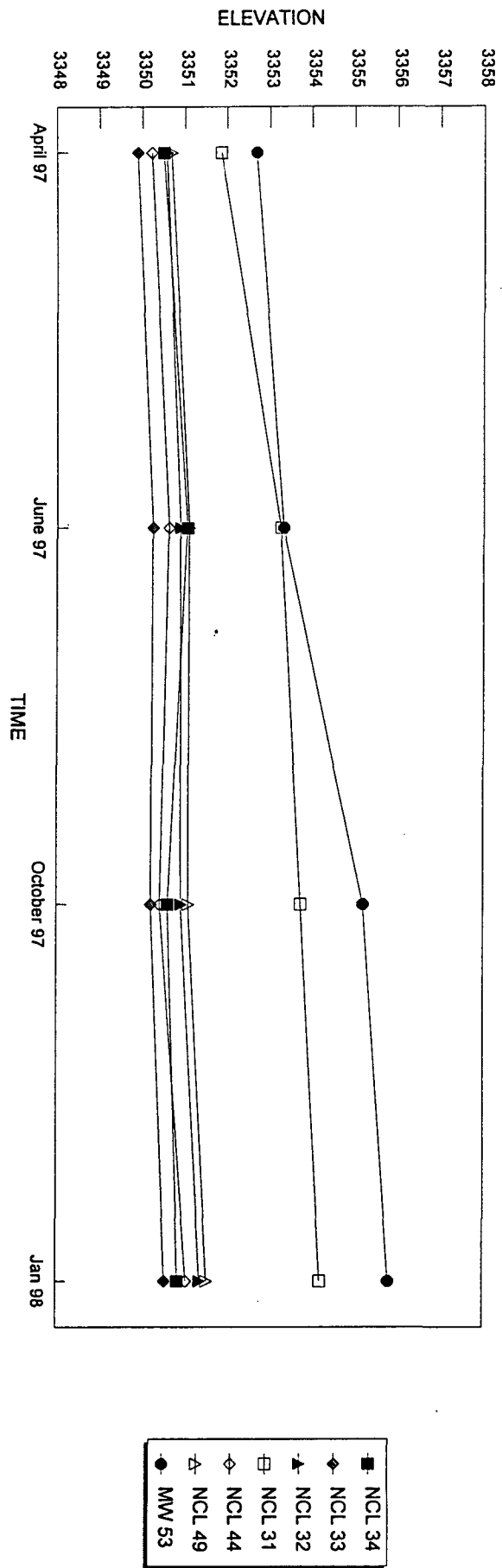
PRODUCT THICKNESS VS. TIME South East Part of Refinery



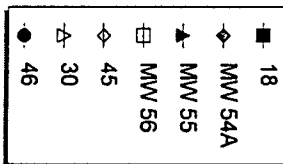
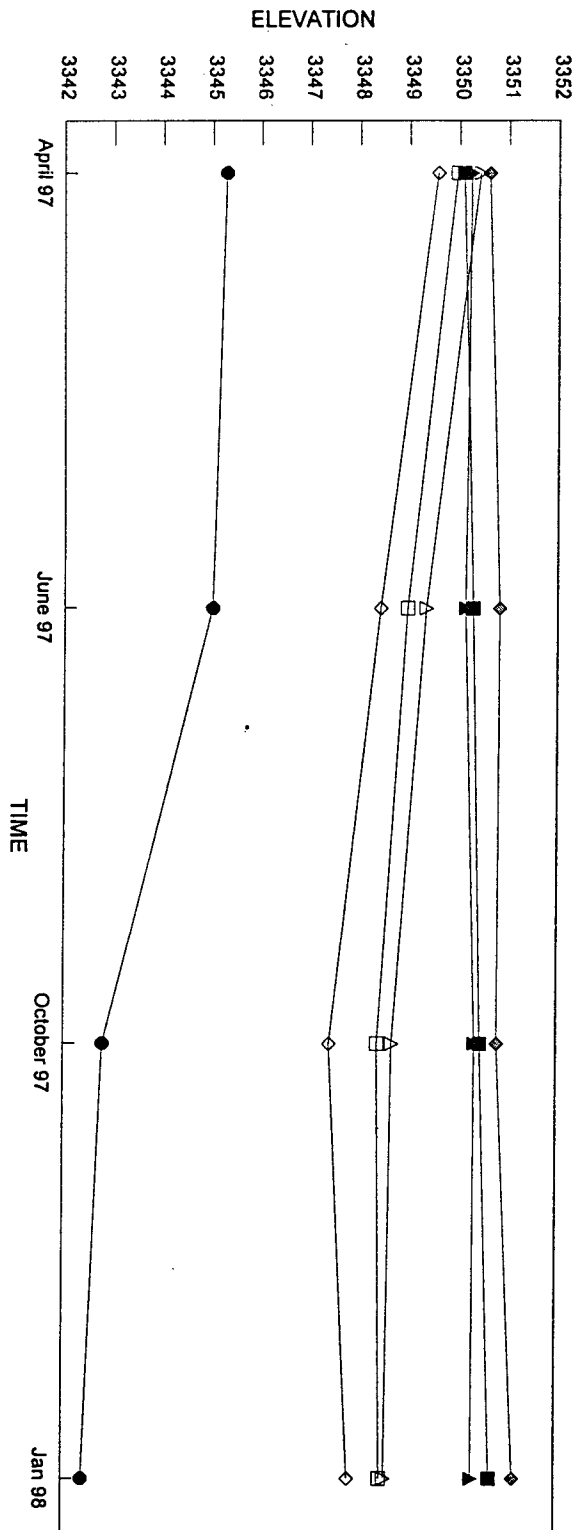
ELEVATION VS. TIME



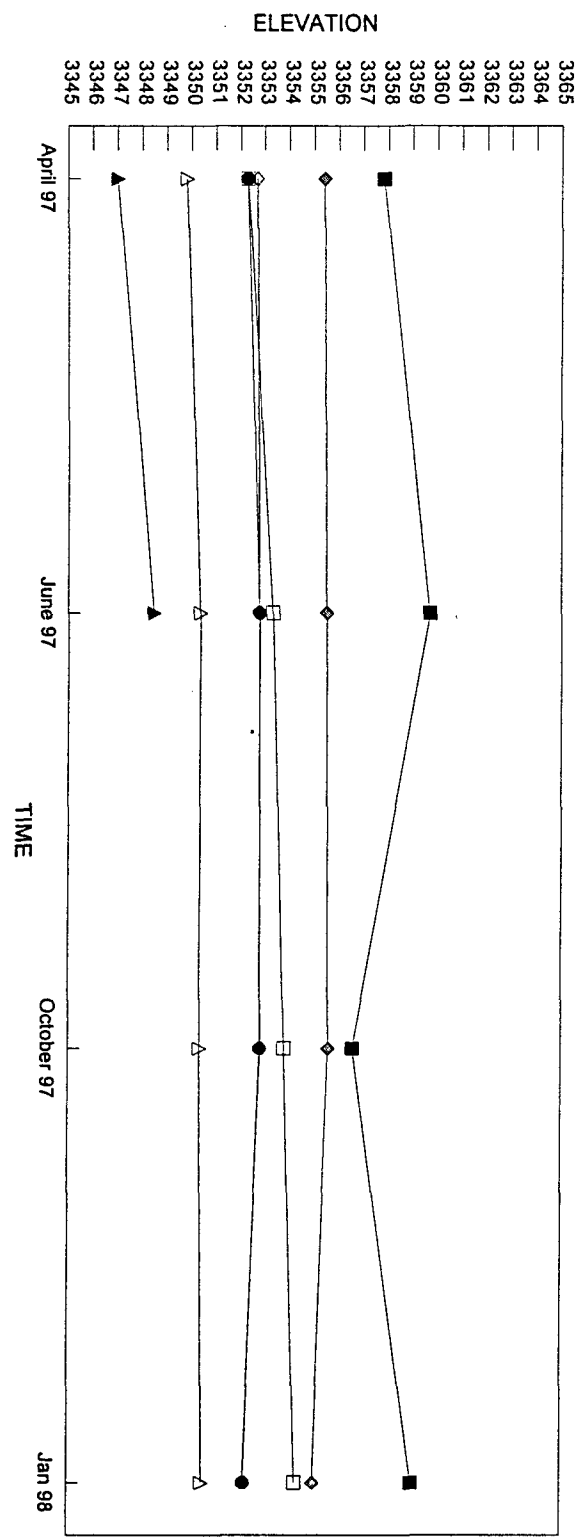
ELEVATION VS. TIME



ELEVATION VS. TIME

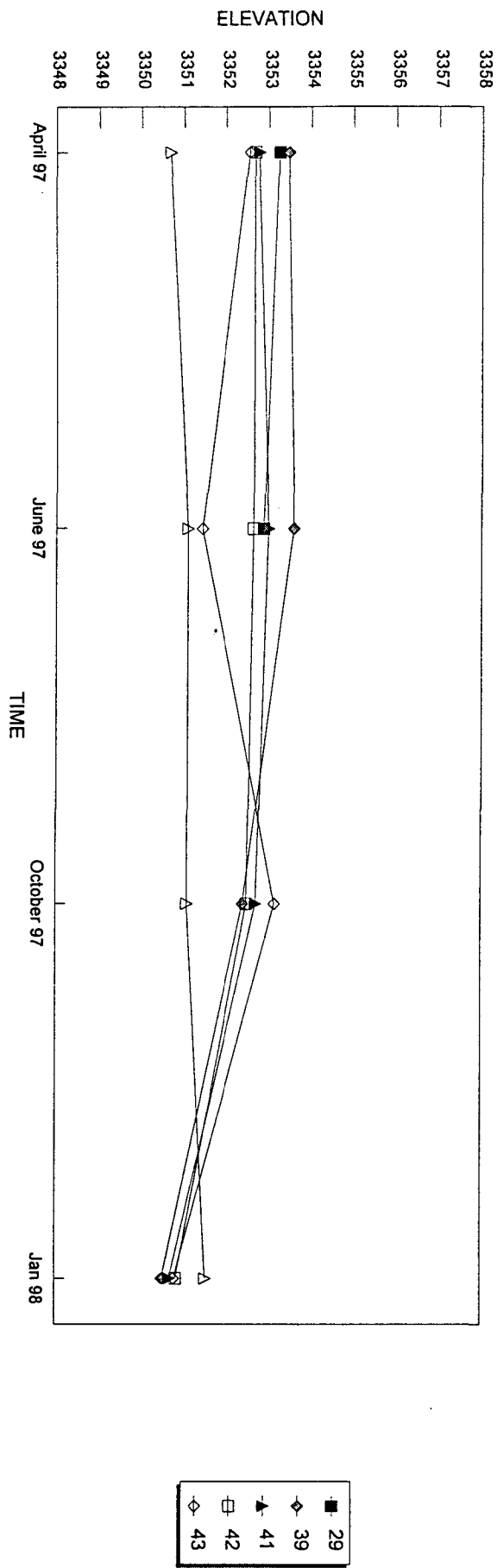


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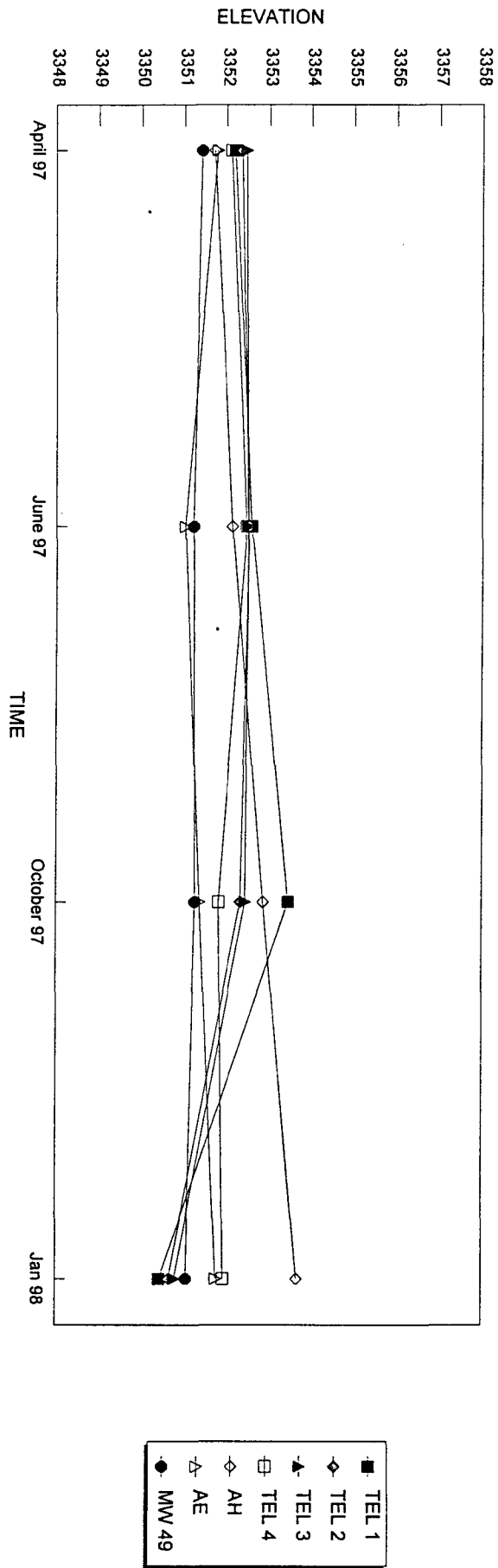


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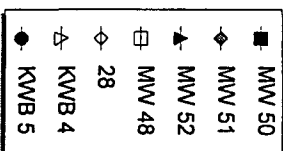
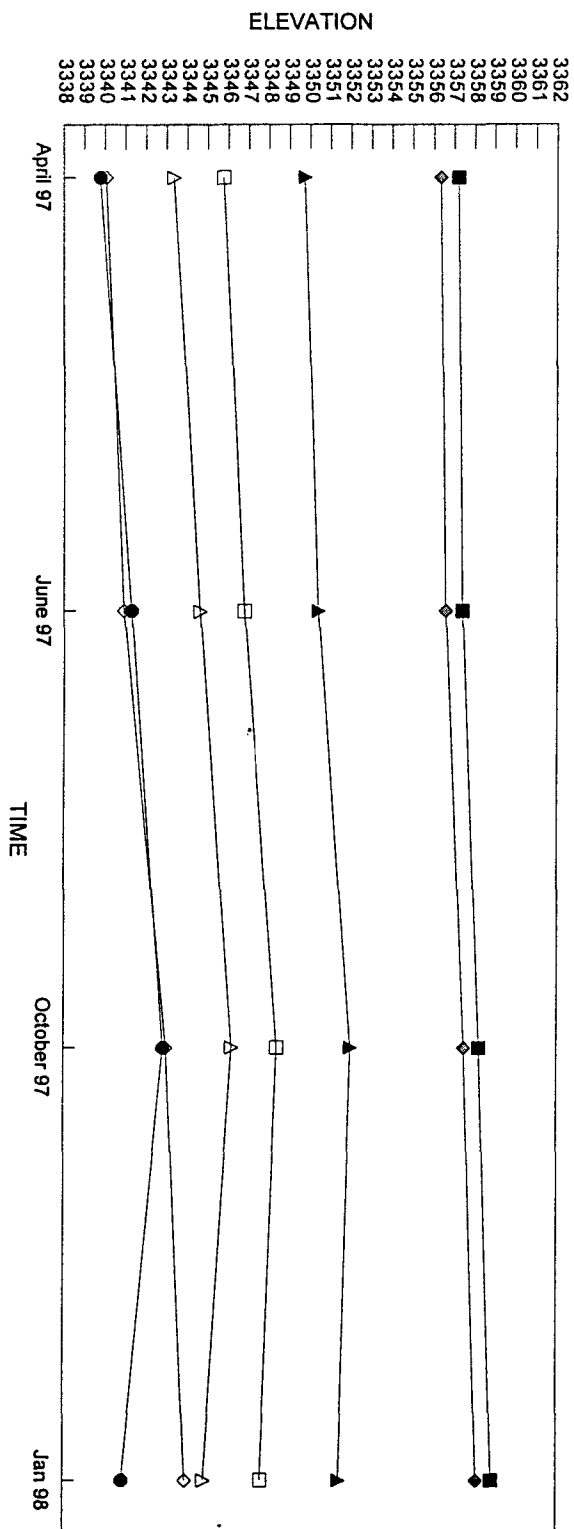
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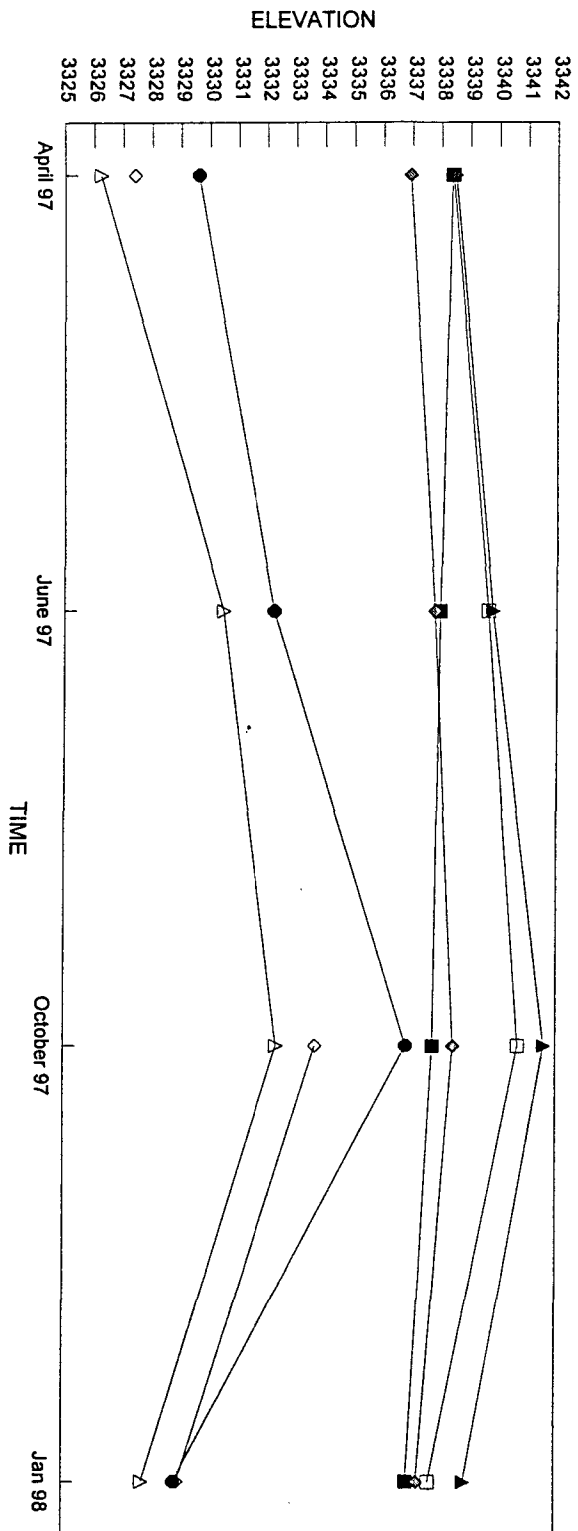
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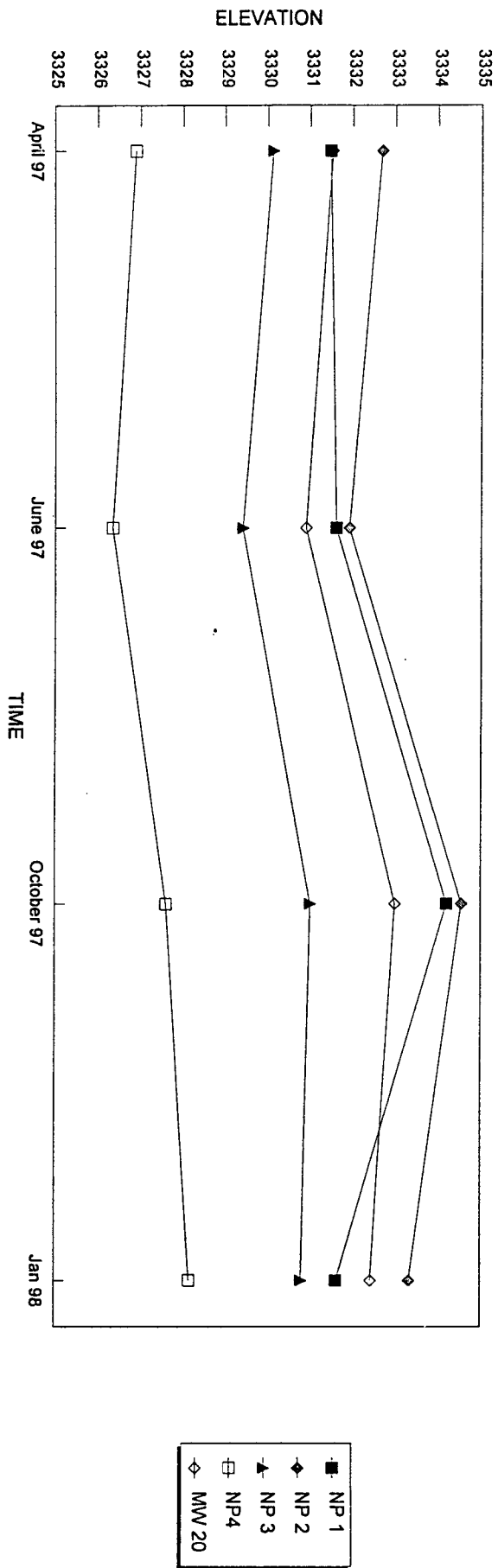
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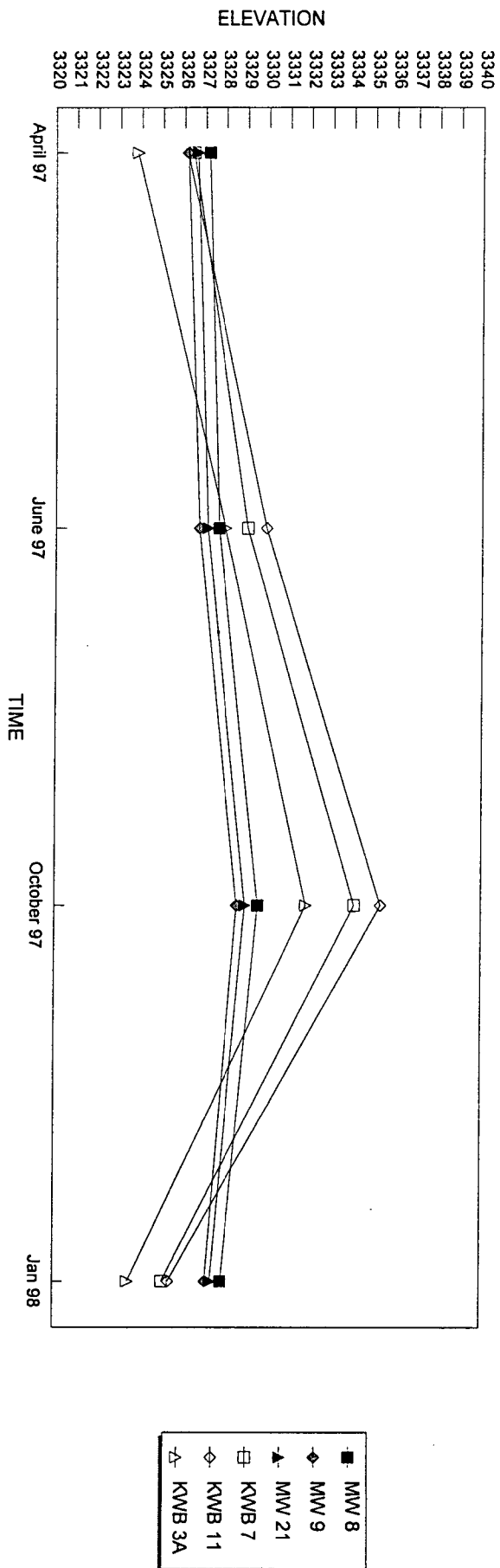
ELEVATION VS. TIME



ELEVATION VS. TIME



ELEVATION VS. TIME



pg.1

1st. Quarter Oil Recovery Well Report

01 Jan 97 To 31 March 97

21 May 97

Totals

Total Production

	Gallons	Barrels
Total H2O Production 1st. Quarter	2057832	48996

Total Oil Production 1st. Quarter	29489	702
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H2O GPM Flow	15.7	Gallons
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H2O BPD	538.4	Barrels
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Oil GPM Flow	0.2	Gallons
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Oil BPD	7.7	Barrels
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pg. 2

1st. Quarter Oil Recovery Well Report

01 Jan 97 To 31 March 97

21 May 97

H2O Data

	Total H2O Produced	Highest Produced	Lowest Produced	Avg H2O Produced
Well #				
1	46512	6048	0	3578
2	719280	121104	0	55329
4	95976	50184	0	7383
5	12816	2808	0	986
7	394128	61272	0	30318
8	536256	80640	0	41250

Total in plant H2O 1804968 Gallons 42975.4 Barrels

Bolton Rd. Wells

1	0	0	0	0
2	0	0	0	0
3	3744	3744	0	288
4	249120	47880	0	19163

Total Bolton Rd. H2O 252864 Gallons 6020.6 Barrels

Total H2O Production in gallons 2057832 Gallons 48996 Barrels

pg. 3

1ST Quarter 97 Recovery Well Report

01 Jan 97 To 31 March 97

21 May 97

H2O Data

* All Data in Gallons

wk	Well# 1	Well#2	Well#4	Well# 5	Well# 7	Well# 8	Weekly Totals	GPM
1	3960.0	18000.0	0.0	1872.0	60048.0	58896.0	142776.0	14.2
2	1368.0	576.0	0.0	216.0	11592.0	8856.0	22608	2.2
3	4320.0	0.0	0.0	0.0	2088.0	1512.0	7920.0	0.8
4	6048.0	0.0	0.0	1656.0	0.0	0.0	7704.0	0.8
5	4104.0	16128.0	0.0	2160.0	46008.0	53424.0	121824.0	12.1
6	4320.0	120096.0	0.0	2160.0	61272.0	72288.0	260136.0	25.8
7	4968.0	84960.0	0.0	1944.0	29232.0	39960.0	161064.0	16.0
8	4392.0	120960.0	44496.0	2808.0	45648.0	60120.0	278424.0	27.6
9	2880.0	82656.0	50184.0	0.0	47880.0	61416.0	245016.0	24.3
10	2880.0	121104.0	0.0	0.0	41400.0	80640.0	246024.0	24.4
11	3600.0	120888.0	1296.0	0.0	14112.0	27864.0	167760.0	16.6
12	3672.0	33912.0	0.0	0.0	34848.0	71280.0	143712.0	14.3
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Bolton Rd Wells

WK	Well# 11	Well# 12	Well#13	Well#14	Weekly Totals	GPM
1	0.0	0.0	0.0	20952.0	20952.0	2.1
2	0.0	0.0	0.0	16488.0	16488.0	1.6
3	0.0	0.0	0.0	18720.0	18720.0	1.9
4	0.0	0.0	0.0	14400.0	14400.0	1.4
5	0.0	0.0	3744.0	47880.0	51624.0	5.1
6	0.0	0.0	0.0	33480.0	33480.0	3.3
7	0.0	0.0	0.0	41760.0	41760.0	4.1
8	0.0	0.0	0.0	16560.0	16560.0	1.6
9	0.0	0.0	0.0	35280.0	35280.0	3.5
10	0.0	0.0	0.0	720.0	720.0	0.1
11	0.0	0.0	0.0	144.0	144.0	0.0
12	0.0	0.0	0.0	2736.0	2736.0	0.3
13	0.0	0.0	0.0	0.0	0.0	0.0

pg. 4

1st. Quarter Oil Recovery Well Report

01 Jan 97 To 31 March 97

21 May 97

Oil Data

All Data in Gallons

	Total Oil	Peak Oil	Low Oil	Average
Well #	Produced	Production	Production	Production
1	7567.3	1420.0	0.0	582.1
2	1880.2	1519.7	0.0	144.6
4	9533.5	4495.2	0.0	733.3
5	2000.1	601.5	0.0	153.9
7	2871.5	1337.7	0.0	220.9
8	718.9	517.8	0.0	55.3
10	0.0	0.0	0.0	0.0

Total Oil Produced Inplant 24571.5 Gallons 585.0 Barrels

Bolton Rd. Wells

1	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0
3	71.7	42.6	0.0	5.5
4	4845.6	1238.4	0.0	372.7

Total Oil Produced Bolton Rd. 4917.3 Gallons 117.1 Barrels

Total Oil 1st. Quarter 29488.8 Gallons 702.1 Barrels

pg. 5

1st. Quarter Oil Recovery Well Report

01 Jan 97 To 31 March 97

21 May 97

Oil Data

Well #		All Data In Gallons							
Week #	1	2	4	5	7	8	wk total	GPM	
1	553.5	80.5	205.9	396.9	1152.1	517.8	2906.7	0.3	
2	59.9	0.0	9.2	56.7	58.6	37.3	221.7	0.0	
3	204.2	0.0	0.0	0.0	10.3	0.0	214.5	0.0	
4	578.1	18.9	11.3	601.5	0.0	0.0	1209.8	0.1	
5	911.1	16.3	1327.7	372.9	76.6	3.0	2707.6	0.3	
6	658.5	100.8	2104.0	296.6	0.7	4.0	3164.6	0.3	
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
8	1420	35.8	559.4	236.3	227.1	138	2616.6	0.3	
9	416	24.7	655.8	23.1	0	0.3	1119.9	0.1	
10	714.0	44.6	138.4	1.6	8.4	0.6	907.6	0.1	
11	697.0	38.9	26.6	4.7	0.0	0.0	767.2	0.1	
12	1355.0	1519.7	4495.2	9.8	1337.7	17.9	8735.3	0.9	
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Bolton Rd. Wells

Week #	1	2	3	4	Wk Totals	GPM
1	0.0	0.0	0.0	79.8	79.8	0.0
2	0.0	0.0	0.0	103.1	103.1	0.0
3	0.0	0.0	0.0	641.2	641.2	0.1
4	0.0	0.0	0.0	143.7	143.7	0.0
5	0.0	0.0	42.6	532.0	574.6	0.1
6	0.0	0.0	29.2	213.3	242.4	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	361.5	361.5	0.0
9	0.0	0.0	0.0	284.8	284.8	0.0
10	0.0	0.0	0.0	623.0	623.0	0.1
11	0.0	0.0	0.0	624.7	624.7	0.1
12	0.0	0.0	0.0	1238.4	1238.4	0.1
13	0.0	0.0	0.0	0.0	0.0	0.0

H2O Flow Rate Data

Well #	Quarterly H2O Flow Rate Per Well	gpm	gph
1		0.4	21.3
2		5.5	329.3
4		0.7	43.9
5		0.1	5.9
7		3.0	180.5
8		4.1	245.5
	In Plant Flow Rate	2.3	137.7
Bolton Rd Wells		gpm	gph
1		0.0	0.0
2		0.0	0.0
3		0.0	1.7
4		1.9	114.1
	Bolton Rd Flow rate	0.5	28.9
Average H2O Flow Rate For 1st. Quarter		2.5	152.2
		gpm	gph
Total in Plant H2O Flow		13.8	826.5
Total Bolton Rd H2O Flow Rate		1.9	115.8
1st. Quarter H2O Flow Rate		15.7	942.2

Oil Flow Rate Data

Well #	Quarterly Oil Flow Rate Per Well	gpm	gph
1		0.1	3.5
2		0.0	0.9
4		0.1	4.4
5		0.0	0.9
7		0.0	1.3
8		0.0	0.3
	In Plant Flow Rate	0.0	1.9
	Bolton Rd Wells	gpm	gph
1		0.0	0.0
2		0.0	0.0
3		0.0	0.0
4		0.0	2.2
	Bolton Rd Flow Rate	0.0	0.6
Average Oil Flow Rate For 1st. Quarter		0.0	1.5
		gpm	gph
Total In Plant Oil Flow Rate		0.2	11.3
Total Bolton Rd Oil Flow Rate		0.0	2.1
Total 1st. Quarter Oil Flow Rate		0.2	13.4

pg.1

2nd. Quarter Oil Recovery Well Report

31 March 97 TO 01 July 97

01 July 97

Totals

Total Production

	Gallons	Barrels
Total H2O Production 1st. Quarter	4736448	112773
Total Oil Production 1st. Quarter	114565	2728

H2O GPM Flow	36.1	Gallons
H2O BPD	1239.3	Barrels
Oil GPM Flow	0.9	Gallons
Oil BPD	30.0	Barrels

pg. 2

2nd. Quarter Oil Recovery Well Report

31 March 97 To 01 July 97

01 July 97

H2O Data

	Total H2O	Highest	Lowest	Avg H2O
Well #	Produced	Produced	Produced	Produced
1	149472	48816	0	11498
2	386712	120672	0	29747
4	45288	34272	0	3484
5	25488	21600	0	1961
7	474768	418968	0	36521
8	633456	555552	0	48727

Total in plant H2O 1715184 Gallons 40837.7 Barrels

Bolton Rd. Wells

1	0	0	0	0
2	1299024	603504	0	99925
3	1093824	372312	0	84140
4	628416	311616	0	48340

Total Bolton Rd. H2O 3021264 Gallons 71934.9 Barrels

Total H2O Production in gallons 4736448 Gallons 112772.5 Barrels

pg. 3

2ND Quarter 97 Recovery Well Report

31 March 97 TO 01 July 97

01 July 97

H2O Data

* All Data In Gallons

wk	Well# 1	Well#2	Well#4	Well# 5	Well# 7	Well# 8	Weekly Totals	GPM
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	30024.0	83592.0	34272.0	3888.0	418968.0	555552.0	1126296	111.7
8	48816.0	0.0	7128.0	21600.0	50040.0	77688.0	205272.0	20.4
9	33912.0	720.0	3528.0	0.0	5040.0	216.0	43416.0	4.3
10	6480.0	0.0	360.0	0.0	720.0	0.0	7560.0	0.8
11	432.0	81648.0	0.0	0.0	0.0	0.0	82080.0	8.1
12	5616.0	120672.0	0.0	0.0	0.0	0.0	126288.0	12.5
13	24192.0	100080.0	0.0	0.0	0.0	0.0	124272.0	12.3

Bolton Rd Wells

WK	Well# 11	Well# 12	Well#13	Well#14	Weekly Totals	GPM
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	603504.0	372312.0	311616.0	1287432	127.7
8	0.0	136800.0	135432.0	58320.0	330552.0	32.8
9	0.0	102240.0	104400.0	42480.0	249120.0	24.7
10	0.0	121176.0	120960.0	45360.0	287496.0	28.5
11	0.0	119304.0	120096.0	56160.0	295560.0	29.3
12	0.0	121176.0	121104.0	60480.0	302760.0	30.0
13	0.0	94824.0	119520.0	54000.0	268344.0	26.6

pg. 4

2nd. Quarter Oil Recovery Well Report

31 March 97 To 01 July 97

01 July 97

Oil Data

All Data in Gallons

	Total Oil	Peak Oil	Low Oil	Average
Well #	Produced	Production	Production	Production
1	12342.0	6310.0	0.0	949.4
2	30555.0	30244.0	0.0	2350.4
4	42921.0	28494.0	0.0	3301.6
5	6782.8	2067.8	0.0	521.8
7	6238.0	6202.0	0.0	479.8
8	3351.3	598.0	0.0	257.8
10	0.0	0.0	0.0	0.0

Total Oil Produced Inplant

102190.1 Gallons

2433.1 Barrels

Bolton Rd. Wells

1	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0
3	77.0	33.8	0.0	5.9
4	12297.4	4051.0	0.0	946.0

Total Oil Produced Bolton Rd.

12374.4 Gallons

294.6 Barrels

Total Oil 1st. Quarter

114565 Gallons

2727.7 Barrels

pg. 5

1st. Quarter Oil Recovery Well Report

01 Jan 97 To 31 March 97

24 March 97

Oil Data

Well #		All Data In Gallons							
Week #	1	2	4	5	7	8	wk total	GPM	
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	4325.0	30244.0	28494.0	1889.0	6202.0	598.0	71752.0	7.1	
8	40	30.2	4236	0	36	20.6	4362.8	0.4	
9	898	3.2	4137	2067.8	0	509.2	7615.2	0.8	
10	6310.0	7.3	5944.0	1319.7	0.0	589.8	14170.8	1.4	
11	340.0	69.1	12.4	877.3	0.0	546.2	1845.0	0.2	
12	350.0	107.4	0.0	212.0	0.0	557.3	1226.7	0.1	
13	79.0	93.8	97.6	417.0	0.0	530.2	1217.6	0.1	

Bolton Rd. Wells

Week #	1	2	3	4	Wk Totals	GPM
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	4051.0	4051.0	0.4
8	0.0	0.0	33.8	814.5	848.3	0.1
9	0.0	0.0	3.1	1945.8	1948.9	0.2
10	0.0	0.0	0.0	1522.7	1522.7	0.2
11	0.0	0.0	2.2	1367.4	1369.6	0.1
12	0.0	0.0	4.8	1290.7	1295.5	0.1
13	0.0	0.0	33.1	1305.3	1338.4	0.1

H2O Flow Rate Data

Well #	Quarterly H2O Flow Rate Per Well	gpm	gph
1		1.1	68.4
2		3.0	177.1
4		0.3	20.7
5		0.2	11.7
7		3.6	217.4
8		4.8	290.0
	In Plant Flow Rate	2.2	130.9
Bolton Rd Wells		gpm	gph
1		0.0	0.0
2		9.9	594.8
3		8.3	500.8
4		4.8	287.7
	Bolton Rd Flow rate	5.8	345.8
Average H2O Flow Rate For 1st. Quarter		5.1	303.8

	gpm	gph
Total in Plant H2O Flow	13.1	785.3
Total Bolton Rd H2O Flow Rate	23.1	1383.4
1st. Quarter H2O Flow Rate	36.1	2168.7

2nd. Quarter Oil Recovery Wells Report

31 March 97 To 01 July 97

01 July 97

Oil Flow Rate Data

Well #	Quarterly Oil Flow Rate Per Well	gpm	gph
1		0.1	5.7
2		0.2	14.0
4		0.3	19.7
5		0.1	3.1
7		0.0	2.9
8		0.0	1.5
	In Plant Flow Rate	0.1	7.8
	Bolton Rd Wells	gpm	gph
1		0.0	0.0
2		0.0	0.0
3		0.0	0.0
4		0.1	5.6
	Bolton Rd Flow Rate	0.0	1.4
	Average Oil Flow Rate For 1st. Quarter	0.1	5.3
		gpm	gph
	Total In Plant Oil Flow Rate	0.8	46.8
	Total Bolton Rd Oil Flow Rate	0.1	5.7
	Total 1st. Quarter Oil Flow Rate	0.9	52.5

pg.1

3rd Quarter Oil Recovery Well Report

01 July To Sept 26. 97

Totals

Total Production

	Gallons	Barrels
Total H2O Production 3rd Quarter	5055604	120372

Total Oil Production 3rd Quarter	93186	2219
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H2O GPM Flow	38.6	Gallons
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H2O BPD	1322.8	Barrels
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Oil GPM Flow	0.7	Gallons
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Oil BPD	23.4	Barrels
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pg. 2

3 RD Quarter 97 Recovery Well Report

1 July 97 To Sep1 26. 97

H2O Data

Well #	Total H2O Produced	Highest Produced	Lowest Produced	Avg H2O Produced
1	108432	37728	0	8341
2	120528	120528	0	9271
4	95472	15840	0	7344
5	0	0	0	0
7	719556	83520	32760	55350
8	897912	88344	52488	69070

Total in plant H2O 1941900 Gallons 46235.7 Barrels

Bolton Rd. Wells

1	0	0	0	0
2	1405624	122400	12064	108125
3	848880	127440	0	65298
4	859200	118296	0	66092

Total Bolton Rd. H2O 3113704 Gallons 74135.8 Barrels

Total H2O Production in gallons 5055604 Gallons 120371.5 Barrels

pg. 3rd

3.RD Quarter 97 Recovery Well Report

1 July 97 To Sept 26. 97

H2O Data

* All Data In Gallons

wk	Well# 1	Well#2	Well#4	Well# 5	Well# 7	Well# 8	Weekly Totals	GPM
1	8640.0	0.0	648.0	0.0	83520.0	76464.0	169272.0	16.8
2	37728.0	0.0	0.0	0.0	75600.0	66960.0	180288	17.9
3	36000.0	0.0	0.0	0.0	65520.0	59760.0	161280.0	16.0
4	3384.0	0.0	0.0	0.0	59256.0	56304.0	118944.0	11.8
5	2736.0	0.0	15768.0	0.0	43416.0	68112.0	130032.0	12.9
6	2880.0	120528.0	9288.0	0.0	39168.0	66960.0	238824.0	23.7
7	1872.0	0.0	13824.0	0.0	54348.0	77544.0	147588	14.6
8	3312.0	0.0	13896.0	0.0	49968.0	74880.0	142056.0	14.1
9	3384.0	0.0	15840.0	0.0	53424.0	77256.0	149904.0	14.9
10	2160.0	0.0	9864.0	0.0	32760.0	52488.0	97272.0	9.7
11	3600.0	0.0	1368.0	0.0	51768.0	70200.0	126936.0	12.6
12	2736.0	0.0	504.0	0.0	44136.0	62640.0	110016.0	10.9
13	0.0	0.0	14472.0	0.0	66672.0	88344.0	169488.0	16.8

Bolton Rd Wells

WK	Well# 11	Well# 12	Well#13	Well#14	Weekly Totals	GPM
1	0.0	76320.0	115920.0	99360.0	291600.0	28.9
2	0.0	120240.0	127440.0	84960.0	332640.0	33.0
3	0.0	121680.0	121680.0	8640.0	252000.0	25.0
4	0.0	122400.0	122400.0	25920.0	270720.0	26.9
5	0.0	119808.0	119808.0	116640.0	356256.0	35.3
6	0.0	116640.0	120384.0	103608.0	340632.0	33.8
7	0.0	120672.0	121248.0	46224.0	288144	28.6
8	0.0	116640.0	0.0	0.0	116640.0	11.6
9	0.0	116640.0	0.0	99432.0	216072.0	21.4
10	0.0	12064.0	0.0	47736.0	59800.0	5.9
11	0.0	120888.0	0.0	96408.0	217296.0	21.6
12	0.0	121608.0	0.0	11976.0	133584.0	13.3
13	0.0	120024.0	0.0	118296.0	238320.0	23.6

pg. 4

3rd Quarter Oil Recovery Well Report

01 July To Sept 26. 97

Oil Data

All Data in Gallons

Well #	Total Oil Produced	Peak Oil Production	Low Oil Production	Average Production
1	12020.2	3150.0	0.0	924.6
2	1348.2	626.8	0.0	103.7
4	11767.7	3448.0	24.8	905.2
5	6105.8	1421.0	83.4	469.7
7	14069.2	2543.1	0.0	1082.2
8	598.6	308.0	0.0	46.0
10	0.0	0.0	0.0	0.0

Total Oil Produced Inplant 45909.7 Gallons 1093.1 Barrels

Bolton Rd. Wells

1	0.0	0.0	0.0	0.0
2	17360.3	5089.8	0.0	1335.4
3	153.1	96.1	0.0	11.8
4	29763.1	5954.4	0.0	2289.5

Total Oil Produced Bolton Rd. 47276.5 Gallons 1125.6 Barrels

Total Oil 3rd Quarter 93186 Gallons 2218.7 Barrels

pg. 5

3rd Quarter Oil Recovery Well Report

01 July To Sept 26. 97

Oil Data

Well #		All Data In Gallons					
Week #	1	2	4	5	7	8	wk total GPM
1	2041.0	9.6	142.0	158.0	0.0	100.1	2450.7 0.2
2	3150.0	2.0	3448.0	290.0	0.6	7.0	6897.6 0.7
3	1375.0	81.7	2546.0	149.0	3.4	0.8	4155.9 0.4
4	935.2	75.3	445.4	84.4	57.4	0.0	1597.7 0.2
5	935.2	626.8	445.1	84.4	57.4	3.5	2152.4 0.2
6	1470.7	71.3	680.9	471.4	301.5	308.0	3303.8 0.3
7	977.7	68.6	204.0	721.1	321.0	89.7	2382.1 0.2
8	855	108.9	100.2	942.7	1329.8	38	3374.6 0.3
9	130.7	101.9	131.6	279.4	2506	18.3	3167.9 0.3
10	47.0	48.4	183.4	83.4	1967.7	6.8	2336.7 0.2
11	47.3	126.4	367.8	392.0	2543.1	18.1	3494.7 0.3
12	55.4	27.3	24.8	1029.0	2535.9	3.1	3675.5 0.4
13	0.0	0.0	3048.5	1421.0	2445.4	5.2	6920.1 0.7

Bolton Rd. Wells

Week #	1	2	3	4	Wk Totals	GPM
1	0.0	0.0	54.0	584.7	638.7	0.1
2	0.0	0.0	0.0	1264.6	1264.6	0.1
3	0.0	0.0	0.0	996.7	996.7	0.1
4	0.0	0.0	0.0	3086.2	3086.2	0.3
5	0.0	0.0	96.1	3086.3	3182.4	0.3
6	0.0	0.0	0.7	3651.0	3651.7	0.0
7	0.0	2746.0	0.1	2846.4	5592.5	0.6
8	0.0	1909.8	0.1	0.0	1909.9	0.2
9	0.0	1568.5	0.1	847.4	2416.0	0.2
10	0.0	990.0	0.0	747.6	1737.6	0.2
11	0.0	5089.8	2.0	2448.6	7540.4	0.7
12	0.0	3675.9	0.1	4249.2	7925.2	0.8
13	0.0	1380.3	0.0	5954.4	7334.7	0.7

pg. 6

3 RD.Quarter 97 Recovery Well Report
01 July To Sept 26. 97

H2O Flow Rate Data

Well #	Quarterly H2O Flow Rate Per Well	gpm	gph
1		0.8	49.6
2		0.9	55.2
4		0.7	43.7
5		0.0	0.0
7		5.5	329.5
8		6.9	411.1
	In Plant Flow Rate	2.5	148.2
Bolton Rd Wells		gpm	gph
1		0.0	0.0
2		10.7	643.6
3		6.5	388.7
4		6.6	393.4
	Bolton Rd Flow rate	5.9	356.4
Average H2O Flow Rate For 3rd Quarter		5.4	326.4
		gpm	gph
Total In Plant H2O Flow		14.8	889.1
Total Bolton Rd H2O Flow Rate		23.8	1425.7
3rd Quarter H2O Flow Rate		38.6	2314.8

pg. 7

**3 RD.Quarter 97 Recovery Well Report
01 July To Sept 26. 97**

Oil Flow Rate Data

Well #	Quarterly Oil Flow Rate Per Well	gpm	gph
1		0.1	5.5
2		0.0	0.6
4		0.1	5.4
5		0.0	2.8
7		0.1	6.4
8		0.0	0.3

In Plant Flow Rate 0.1 3.5

Bolton Rd Wells	gpm	gph
1	0.0	0.0
2	0.1	7.9
3	0.0	0.1
4	0.2	13.6

Bolton Rd Flow Rate 0.1 5.4

Average Oil Flow Rate For 3rd 0.1 7.2

	gpm	gph
Total In Plant Oil Flow Rate	0.4	21.0
Total Bolton Rd Oil Flow Rate	0.3	20.0
Total 3rd Quarter Oil Flow Rate	0.7	41.0

pg.1

4th Quarter Oil Recovery Well Report

26 Sept To Dec 29. 97

Totals

Total Production

	Gallons	Barrels
Total H2O Production 4th Quarter	3547369	84461
Total Oil Production 4th Quarter	211889	5045

H2O GPM Flow	27.1	Gallons
H2O BPD	928.1	Barrels
Oil GPM Flow	1.4	Gallons
Oil BPD	47.6	Barrels

pg. 2

4th Quarter Oil Recovery Well

26 Sept To Dec 29. 97

H2O Data

Well #	Total H2O Produced	Highest Produced	Lowest Produced	Avg H2O Produced
1	264744	120096	0	20365
2	0	0	0	0
4	200088	22392	5184	15391
5	0	0	0	0
7	375768	80928	0	28905
8	1121041	106056	61128	86234

Total in plant H2O 1961641 Gallons 46705.7 Barrels

Bolton Rd. Wells

1	0	0	0	0
2	909648	135432	0	69973
3	0	0	0	0
4	676080	108288	72	52006

Total Bolton Rd. H2O 1585728 Gallons 37755.4 Barrels

Total H2O Production in gallons 3547369 Gallons 84461.16 Barrels

pg. 3rd

4th Quarter Oil Recovery Well Report

26 Sept To Dec 29. 97

H2O Data

*** All Data In Gallons**

wk	Well# 1	Well#2	Well#4	Well# 5	Well# 7	Well# 8	Weekly Totals	GPM
1	0.0	0.0	22392.0	0.0	49680.0	72936.0	145008.0	14.4
2	7344.0	0.0	15120.0	0.0	80928.0	102096.0	205488	20.4
3	1656.0	0.0	15480.0	0.0	72432.0	106056.0	195624.0	19.4
4	6624.0	0.0	17496.0	0.0	61848.0	103824.0	189792.0	18.8
5	8136.0	0.0	5184.0	0.0	43200.0	92592.0	149112.0	14.8
6	7488.0	0.0	15336.0	0.0	5112.0	82224.0	110160.0	10.9
7	81360.0	0.0	16992.0	0.0	0.0	82008.0	180360	17.9
8	120096.0	0.0	17568.0	0.0	0.0	80424.0	218088.0	21.6
9	5832.0	0.0	16560.0	0.0	1584.0	77544.0	101520.0	10.1
10	6048.0	0.0	15408.0	0.0	30024.0	79992.0	131472.0	13.0
11	5976.0	0.0	14184.0	0.0	27144.0	74808.0	122112.0	12.1
12	6192.0	0.0	13824.0	0.0	3816.0	61128.0	84960.0	8.4
13	7992.0	0.0	14544.0	0.0	0.0	105408.8	127944.8	12.7

Bolton Rd Wells

WK	Well# 11	Well# 12	Well#13	Well#14	Weekly Totals	GPM
1	0.0	121032.0	0.0	108288.0	229320.0	22.8
2	0.0	119160.0	0.0	96768.0	215928.0	21.4
3	0.0	121032.0	0.0	86616.0	207648.0	20.6
4	0.0	120960.0	0.0	75816.0	196776.0	19.5
5	0.0	121248.0	0.0	65808.0	187056.0	18.6
6	0.0	89064.0	0.0	56016.0	145080.0	14.4
7	0.0	135432.0	0.0	25920.0	161352	16.0
8	0.0	0.0	0.0	34272.0	34272.0	3.4
9	0.0	0.0	0.0	72.0	72.0	0.0
10	0.0	77184.0	0.0	35280.0	112464.0	11.2
11	0.0	4536.0	0.0	33912.0	38448.0	3.8
12	0.0	0.0	0.0	30960.0	30960.0	3.1
13	0.0	0.0	0.0	26352.0	26352.0	2.6

pg. 4

4th Quarter Oil Well Report

26 Sept To Dec 29. 97

Oil Data

All Data in Gallons

	Total Oil	Peak Oil	Low Oil	Average
Well #	Produced	Production	Production	Production
1	778.3	417.3	0.0	59.9
2	2504.8	402.7	0.0	192.7
4	217.5	58.4	2.1	16.7
5	41257.0	24450.0	588.0	3173.6
7	15388.5	1860.7	0.1	1183.7
8	714.3	167.2	5.1	54.9
10	0.0	0.0	0.0	0.0

Total Oil Produced Inplant

60860.4 Gallons

1449.1 Barrels

Bolton Rd. Wells

1	0.0	0.0	0.0	0.0
2	67965.2	16338.9	73.0	5228.1
3	19955.9	5906.1	0.0	1535.1
4	63107.1	10991.4	0.7	4854.4

Total Oil Produced Bolton Rd.

151028.2 Gallons

3595.9 Barrels

Total Oil 4th Quarter

211889 Gallons

5045.0 Barrels

pg. 5

4th Quarter Oil Recoery Well Report

26Sept To Dec 29. 97

Oil Data

Well #		All Data In Gallons					
Week #	1	2	4	5	7	8	wk total GPM
1	0.0	0.0	58.4	24450.0	524.6	5.1	25038.1 2.5
2	0.0	130.9	31.1	1666.0	0.1	8.3	1836.4 0.2
3	0.0	26.8	19.8	2499.0	295.5	21.1	2862.2 0.3
4	31.3	103.7	10.4	1715.0	726.9	23.2	2610.5 0.3
5	135.9	162.4	3.4	2058.0	1860.7	40.4	4260.8 0.4
6	59.0	75.2	17.6	1813.0	1654.9	167.2	3786.9 0.4
7	18.5	402.7	8.4	980.0	1545.6	90.5	3045.7 0.3
8	31.7	255.6	32.1	1421	1517.7	77.8	3335.9 0.3
9	417.3	224	7.3	1176	1531.5	60.2	3416.3 0.3
10	7.5	299.2	4.9	735.0	1591.8	72.3	2710.7 0.3
11	17.5	266.2	2.1	1176.0	1437.0	71.6	2970.4 0.3
12	35.8	365.8	15.6	980.0	1164.2	50.1	2611.5 0.3
13	23.8	192.3	6.4	588.0	1538.0	26.5	2375.0 0.2

Bolton Rd. Wells

Week #	1	2	3	4	Wk Totals	GPM
1	0.0	2712.6	0.0	6966.1	9678.7	1.0
2	0.0	592.8	0.0	10991.4	11584.2	1.1
3	0.0	4718.9	0.0	9878.1	14597.0	1.4
4	0.0	16338.9	0.0	2324.8	18663.7	1.9
5	0.0	11864.0	1310.3	1150.2	14324.5	1.4
6	0.0	12829.0	5906.1	0.7	18735.8	0.0
7	0.0	4416.0	4722.2	2048.6	0.0	0.0
8	0.0	9698.5	1260.4	2526.5	13485.4	1.3
9	0.0	3292.1	698.1	5254.2	9244.4	0.9
10	0.0	885.2	480.1	3378.9	4744.2	0.5
11	0.0	73.0	1992.9	6081.6	8147.5	0.8
12	0.0	244.2	1792.9	6253.0	8290.1	0.8
13	0.0	300.0	1792.9	6253.0	8345.9	0.8

pg. 6

4th Quarter Oil Recovery Well Report

26 Sept To Dec 29. 97

H2O Flow Rate Data

Well #	Quarterly H2O Flow Rate Per Well	gpm	gph
1		2.0	121.2
2		0.0	0.0
4		1.5	91.6
5		0.0	0.0
7		2.9	172.1
8		8.6	513.3
	In Plant Flow Rate	2.5	149.7
Bolton Rd Wells		gpm	gph
1		0.0	0.0
2		6.9	416.5
3		0.0	0.0
4		5.2	309.6
	Bolton Rd Flow rate	3.0	181.5
Average H2O Flow Rate Flow 4th Quarter		4.0	240.5

	gpm	gph
Total In Plant H2O Flow	15.0	898.2
Total Bolton Rd H2O Flow Rate	12.1	726.1
4th Quarter H2O Flow Rate	27.1	1624.3

pg. 7

4th Quarter Recovery Well Report

26 Sept To Dec 29, 97

Oil Flow Rate Data

Well #	Quarterly Oil Flow Rate Per Well	gpm	gph
1		0.0	0.4
2		0.0	1.1
4		0.0	0.1
5		0.3	18.9
7		0.1	7.0
8		0.0	0.3

In Plant Flow Rate 0.1 4.6

Bolton Rd Wells	gpm	gph
1	0.0	0.0
2	0.5	31.1
3	0.2	9.1
4	0.5	28.9

Bolton Rd Flow Rate 0.3 17.3

Average Oil Flow Rate For 4th Quarter 0.2 19.6

	gpm	gph
Total In Plant Oil Flow Rate	0.5	27.9
Total Bolton Rd Oil Flow Rate	0.9	55.5
Total 4th Quarter Oil Flow Rate	1.4	83.3

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock Texas 79424
ANALYTICAL RESULTS FOR

806•794•1296

FAX 806•794•1298

Date: Jan 28, 1997
Date Rec: 1/25/97
Project: Artesia
Proj Name: Navaajo
Proj Loc: Artesia, NM

Navaajo Refining
Attention Darrell Moore
501 E. Main
Artesia

NM 88210

Lab Receiving # : 9701000347
Sampling Date: 1/25/97
Sample Condition: Intact and Cool
Sample Received By: BL

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
-----	------------	--------	----------------	-------------------	-------------------	-----------------------------	-----------------------------	------------------------

T 66389	RA.2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 66390	RA.4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 66391	RA.4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 66392	RA.3156	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 66393	RA.3353	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
QC			0.102	0.102	0.102	0.102	0.307	

RPD			0	1	0	0	0	
% Extraction Accuracy			105	103	103	104	104	
% Instrument Accuracy			102	102	102	102	102	

Reporting Limit:

0.001 0.001 0.001 0.001 0.001

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
MTBE/BTEX	EPA 5030	1/26/97	EPA 8020	1/26/97	RW	0.100 ea	0.100 ea

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

Date

1-28-97

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

342

Project Manager:

Darrell Moore

Phone #:

FAX #:

Company Name & Address:

Navajo Refining Co.

Project #:

Project Name:

Project Location:

Artesia NM

Sampler Signature:

Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				DATE	TIME	REMARKS	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE				
66385	RA-2723	2	4001 X	X				X				1/25/97	8:40	X	BTEX, MTBE
90	RA-4196	1	11	X								"	8:28	X	TPH
91	RA-4798	"	"	"				"				"	8:35	X	Total Metals Ag As Ba Cd Cr Pb Hg Se
92	RA-3156	"	"	"				"				"	8:45	X	TCLP Metals Ag As Ba Cd Cr Pb Hg Se
93	RA-3353	"	"	"				"				"	9:00	X	TCLP Volatiles
															TCLP Semi Volatiles
															RCI
															8240 / 8260
															8270
															Turn around # of days
															Fax ASAP
															Hold

RECEIVED BY:

Date: Time:

Received by:

Date: Time:

Relinquished by:

Date: Time:

Received by:

Date: Time:

Relinquished by:

Date: Time:

Received at Laboratory by:

Date: Time:

Kevin Johnson (1-25-97) F/C

Up

25 Apr

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining

Attention Darrell Moore

501 E. Main

Artesia

NM 88210

Lab Receiving # : 9701000421

Sampling Date: 1/29/97

Sample Condition: Intact and Cool

Sample Received By: JH

Date: Feb 03, 1997
Date Rec: 1/30/97
Project: Artesia
Proj Name: Navajo
Proj Loc: Artesia, NM

TA# Field Code MATRIX

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M,P,O XYLENE (mg/L)	TOTAL BTX (mg/L)
T 66690	RA-2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 66691	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 66692	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
QC			0.101	0.102	0.103	0.103	0.312	

RPD
& Extraction Accuracy
& Instrument Accuracy

5	4	3	3	3
108	108	108	109	109
101	102	103	103	104

Reporting Limit:

0.001 0.001 0.001 0.001 0.001

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
MTBE/BTEX	EPA 5030	1/30/97	EPA 8020	1/30/97	RW	0.100 ea	0.100 ea

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

Date

2-3-97

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424
ANALYTICAL RESULTS FOR

806•794•1296 FAX 806•794•1298

Date: Feb 26, 1997

Project: N/A

Proj Name: N/A

Proj Loc: N/A

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9702000236
Date Rec: 2/17/97
Sampling Date: 2/14/97
Sample Condition: Intact and Cool
Sample Received By: JH

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M,P,O XYLENE (mg/L)	TOTAL BTX (mg/L)
T 67746	RA-2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
QC			0.106	0.108	0.107	0.105	0.317	

RPD	3	4	5	6	5
% Extraction Accuracy	102	104	106	106	106
% Instrument Accuracy	106	108	107	105	106

Reporting Limit:

0.001 0.001 0.001 0.001 0.001

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
MTBE/BTEX	EPA 5030	2/21/97	EPA 8020	2/21/97	RW	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

Date

2-26-97

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Darrell Moore

Phone #: 505-748-3311
FAX #:

Company Name & Address:

Nuvaip Refining Co.

Project #:

Project Name:

Project Location:

Sampler Signature:

Darrell Moore

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD			SAMPLING	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE

6774p AA-272.3

2 404 X

X X

2/19/97 14:00 X

BTEX, MTBE
TPH
Total Metals Ag As Ba Cd Cr Pb Hg Se
TCLP Metals Ag As Ba Cd Cr Pb Hg Se
TCLP Volatiles
TCLP Semi Volatiles
RCI
8240 / 8260
8270

Turn around # of days
Fax ASAP
Hold

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	REMARKS
------------------	-------	-------	--------------	-------	-------	---------

Darrell Moore 2/19/97 16:15

Relinquished by:

Date: Time:

Received by:

Date: Time:

Relinquished by:

Date: Time:

Received at Laboratory by:

Date: Time:

Darrell Moore 2/19/97 10:35

REMARKS

ANALYSIS REQUEST												SPECIAL HANDLING	
Turn around # of days													
Fax ASAP													
Hold													

[Signature]

CIT

U&AF

236

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining

Attention Darrell Moore

501 E. Main

Artesia

NM 88210

Lab Receiving # : 9703000008

Date Rec: 3/1/97

Sampling Date: 2/28/97

Sample Condition: Intact and Cool

Sample Received By: DH

Date: Mar 05, 1997
Project: Artesia
Proj Name: Navajo
Proj Loc: Artesia, NM

TA# Field Code MATRIX

TA#	Field Code	MATRIX	MTBE				BENZENE		TOLUENE		ETHYL- BENZENE		M,P,O XYLENE		TOTAL BTX	
			(mg/L)				(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)	
T 68380	RA-2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 68381	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 68382	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
QC			0.094	0.091	0.090	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091

RPD			3	3	3	3	3	3	4
% Extraction Accuracy			94	89	89	92	90	90	90
% Instrument Accuracy			94	91	90	91	90	90	90

Reporting Limit:

0.001

0.001

0.001

0.001

0.001

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
MTBE/BTEX	EPA 5030	3/1/97	EPA 8020	3/1/97	RW	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

3-5-97

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

SPECIAL HANDLING

David Moore

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	REMARKS
1 David M. Moore	2/28/97	16:15				
Relinquished by:	Date:	Time:	Received by:	Date:	Time:	

1

Handwritten signature

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 9, 1997

Receiving Date: 04/03/97

Sample Type: Water

Project No: NA

Project Location: Artesia, NM

Prep Date: 04/04/97

Analysis Date: 04/04/97

Sampling Date: 03/31/97

Sample Condition: Intact & Cool

Sample Received by: JH

Project Name: NA

TA #: T70532

FIELD CODE: RA-313

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND



TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

Project Location: Artesia, NM

TAF: T70532

FIELD CODE: RA-313

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	93
Toluene-d8	97
4-Bromofluorobenzene	93

ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP



Director, Dr. Blair Leftwich4-9-97

Date

6707 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

**ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210**

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/04/97
Analysis Date: 04/04/97
Sampling Date: 03/31/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70533
FIELD CODE: RA-1227

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

Project Location: Artesia, NM

TA#: T70533

FIELD CODE: RA-1227

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	94
Toluene-d8	95
4-Bromofluorobenzene	93

ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP



Director, Dr. Blair Leftwich4-9-97

Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

**ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210**

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/04/97
Analysis Date: 04/04/97
Sampling Date: 04/01/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70534
FIELD CODE: RA-2723

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

NAVAJO REFINING COMPANY

PAGE 2 of 2

Project Location: Artesia, NM

TA#: T70534

FIELD CODE: RA-2223

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	95
Toluene-d8	95
4-Bromofluorobenzene	94

ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP



Director, Dr. Blair Leftwich

Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/04/97
Analysis Date: 04/04/97
Sampling Date: 04/01/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70535
FIELD CODE: KWB-1A

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

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TA#: T70535
FIELD CODE: KWB-1A

624 Compounds	Reporting Limit	Concentration ug/L)
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Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/L)

	RT	CONC
(1) Methyl-tert-butyl-ether	9.05	17

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

95
96
95

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-9-97

Date

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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/04/97
Analysis Date: 04/04/97
Sampling Date: 04/01/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70536
FIELD CODE: KWB-1C

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	2
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

TA#: T70536
FIELD CODE: KWB-1C

624 Compounds	Reporting Limit	Concentration ug/L)
---------------	--------------------	------------------------

Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/L)

	RT	CONC
(1) (E)-2-Butene	5.06	6
(2) 2-methoxy-2-methyl-propane	8.68	53

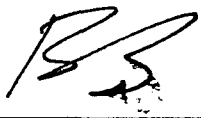
SURROGATES

% RECOVERY

Dibromofluoromethane	98
Toluene-d8	96
4-Bromofluorobenzene	95

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-9-97

Date

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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/04/97
Analysis Date: 04/04/97
Sampling Date: 04/01/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70537
FIELD CODE: RA-4196

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

TA#: T70537
FIELD CODE: RA-4196

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/L)

	RT	CONC
(1) TetrahydroFuran	11.08	29

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

96
95
95

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-9-97

Date

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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/04/97
Analysis Date: 04/04/97
Sampling Date: 04/01/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70538
FIELD CODE: RA-4798

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

Project Location: Artesia, NM

TA#: T70538

FIELD CODE: RA-4798

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

SURROGATES

% RECOVERY

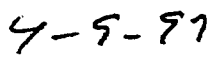
Dibromofluoromethane	97
Toluene-d8	95
4-Bromofluorobenzene	95

ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP



Director, Dr. Blair Leftwich

Date

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**ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210**

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/07/97
Analysis Date: 04/07/97
Sampling Date: 04/01/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70539
FIELD CODE: KWB-11A

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

Project Location: Artesia, NM

TA#: T70539

FIELD CODE: KWB-11A

624 Compounds	Reporting Limit	Concentration ug/L)
---------------	--------------------	------------------------

Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/L)

	RT	CONC
(1) 3-Nitro-1,2-Benzenedicarboxy-HC Acid	23.2	6

SURROGATES

% RECOVERY

Dibromofluoromethane	95
Toluene-d8	95
4-Bromofluorobenzene	93

ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP



Director, Dr. Blair Leftwich4-9-97

Date

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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/07/97
Analysis Date: 04/07/97
Sampling Date: 04/01/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70540
FIELD CODE: KWB-12A

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	2
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

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NAVAJO REFINING COMPANY

PAGE 2 of 2

Project Location: Artesia, NM

TA#: T70540

FIELD CODE: KWB-12A

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

93
96
93

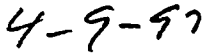
ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP



Director, Dr. Blair Leftwich



Date

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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/04/97
Analysis Date: 04/04/97
Sampling Date: 04/01/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70541
FIELD CODE: KWB-9

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	4
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

NAVAJO REFINING COMPANY

PAGE 2 of 2

Project Location: Artesia, NM

TA#: T70541

FIELD CODE: KWB-9

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

98
95
94

ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP



Director, Dr. Blair Leftwich

4-9-97

Date

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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/04/97
Analysis Date: 04/04/97
Sampling Date: 04/01/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70542
FIELD CODE: MW-18

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

Project Location: Artesia, NM

TA#: T70542

FIELD CODE: MW-18

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	98
Toluene-d8	95
4-Bromofluorobenzene	93

ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP



Director, Dr. Blair Leftwich

4-9-97

Date

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**ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210**

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/07/97
Analysis Date: 04/07/97
Sampling Date: 04/01/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

**TA #: T70543
FIELD CODE: MW-45**

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	2
Toluene	1	1
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

NAVAJO REFINING COMPANY

PAGE 2 of 2

Project Location: Artesia, NM

TA#: T70543

FIELD CODE: MW-45

624 Compounds	Reporting Limit	Concentration ug/L)
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Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS (ug/L)

	RT	CONC
(1) Sec-butyl-isopropyl-sulfide	17.53	10
(2) Unidentified Hydrocarbon	20.42	6
(3) Unidentified Hydrocarbon	20.68	13
(4) Unidentified Hydrocarbon	21.44	6
(5) Unidentified Hydrocarbon	22.84	10

SURROGATES

% RECOVERY

Dibromofluoromethane	95
Toluene-d8	95
4-Bromofluorobenzene	95

ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP


Director, Dr. Blair Leftwich

4-9-97
Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/04/97
Analysis Date: 04/04/97
Sampling Date: 04/01/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70544
FIELD CODE: KWB-2A

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	2
Toluene	1	1
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

NAVAJO REFINING COMPANY

PAGE 2 of 2

Project Location: Artesia, NM

TA#: T70544

FIELD CODE: KWB-2A

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

SURROGATES

% RECOVERY

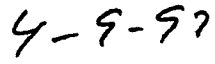
Dibromofluoromethane	98
Toluene-d8	96
4-Bromofluorobenzene	94

ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP



Director, Dr. Blair Leftwich

Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/04/97
Analysis Date: 04/04/97
Sampling Date: 04/02/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70545
FIELD CODE: KWB-7

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

TA#: T70545
FIELD CODE: KWB-7

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

TENTATIVELY IDENTIFIED COMPOUNDS AND ESTIMATED CONCENTRATIONS	(ug/L)
	RT CONC
(1) 2-methoxy-2-methyl-propane	9.04 7

SURROGATES	% RECOVERY
Dibromofluoromethane	98
Toluene-d8	97
4-Bromofluorobenzene	95

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-9-97

Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/04/97
Analysis Date: 04/04/97
Sampling Date: 04/02/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70546
FIELD CODE: KWB-3A

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

TA#: T70546

FIELD CODE: KWB-3A

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

94
96
93

ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP



Director, Dr. Blair Leftwich

4-9-97

Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
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**ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210**

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/07/97
Analysis Date: 04/07/97
Sampling Date: 04/02/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70547
FIELD CODE: RA-3353

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

TA#: T70547
FIELD CODE: RA-3353

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

SURROGATES	% RECOVERY
Dibromofluoromethane	95
Toluene-d8	95
4-Bromofluorobenzene	96

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-9-97
Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 9, 1997
Receiving Date: 04/03/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/04/97
Analysis Date: 04/04/97
Sampling Date: 04/02/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

TA #: T70548
FIELD CODE: RA-3156

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

TA#: T70548
FIELD CODE: RA-3156

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	2	ND

SURROGATES	% RECOVERY
Dibromofluoromethane	97
Toluene-d8	98
4-Bromofluorobenzene	94

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-9-97
Date

70532-48

1 of 2 044

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Darrell Moore		Phone #:		FAX #:									
Company Name & Address: Navajo Refining		Project Name:											
Project #:		Project Location: Artesia NM											
Project Location: Artesia NM		Sampler Signature: Darrell Moore											
LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	VOLUME/AMOUNT	MATRIX			PRESERVATIVE METHOD			SAMPLING			
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME
70532	RA-313	2	4.1	X				X				3/31/97	9:00
33	RA-1227	"	"	"				"				"	10:00
34	RA-2223	"	"	"				"				4/1/97	7:30
35	KWB-1A	"	"	"				"				"	7:45
36	KWB-1C	"	"	"				"				"	8:00
37	RA-4196	"	"	"				"				"	8:25
38	RA-4798	"	"	"				"				"	8:30
39	KWB-11A	"	"	"				"				"	9:00
40	KWB-12A	"	"	"				"				"	9:30
41	KWB-9	"	"	"				"				"	10:40
42	KWB-18	"	"	"				"				"	13:30
Relinquished by:		Date:	Time:	Received by:		Date:	Time:	REMARKS					
Relinquished by:		Date:	Time:	Received by:		Date:	Time:	REMARKS					
Relinquished by:		Date:	Time:	Received by:		Date:	Time:	REMARKS					

5-10-97

Received at Laboratory by: G.O. Darrell 4/3/97 905-121
C/I

Q3AC

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Project Manager:

Phone #:**FAX #:****Company Name & Address:**

Project #:

Project Name :

Project Location:**Sampler Signature:**[illegible]

Relinquished by:

Date: _____ Time: _____

Received by:

Date: _____ Time: _____

Timor

Relinquished by:

Date: _____
Time: _____

Received by:

Date: _____ Time: _____

Time:

Relinquished by:

Date: _____ Time: _____

Received at L

Date: _____ Time: _____

Time:

REMARKS

EMARKS
Samples were kept on ice.

Received at Laboratory by:	Date:	Time:
G. O. Hardell	4-3-97	9:05A

c/I

02A

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 17, 1997
Receiving Date: 04/08/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/09/97
Analysis Date: 04/09/97
Sampling Date: 04/07/97
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: NA

TA #: T70989
FIELD CODE: RA-2723

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

FIELD CODE: RA-2723
TA#: T70989

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

94
93
95

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-17-97

Date

6707 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 23, 1997
Receiving Date: 04/18/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/21/97
Analysis Date: 04/21/97
Sampling Date: 04/17/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

FIELD CODE: RA313
TA #: T71879

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

NAVAJO REFINING COMPANY

PAGE 2 of 2

Project Location: Artesia, NM

FIELD CODE: RA313

TA#: T71879

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	103
Toluene-d8	102
4-Bromofluorobenzene	99

ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP

BP

Director, Dr. Blair Leftwich

4-23-97

Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
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**ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210**

PAGE 1 of 2

April 23, 1997
Receiving Date: 04/18/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/21/97
Analysis Date: 04/21/97
Sampling Date: 04/17/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

FIELD CODE: RA2723
TA #: T71880

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

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FIELD CODE: RA2723
TA#: T71880

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	103
Toluene-d8	100
4-Bromofluorobenzene	97

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-23-91

Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 23, 1997
Receiving Date: 04/18/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/21/97
Analysis Date: 04/21/97
Sampling Date: 04/17/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

FIELD CODE: RA4196
TA #: T71881

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

FIELD CODE: RA4196
TA#: T71881

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	104
Toluene-d8	101
4-Bromofluorobenzene	97

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-23-97

Date

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Lubbock, Texas 79424
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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 23, 1997
Receiving Date: 04/18/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/21/97
Analysis Date: 04/21/97
Sampling Date: 04/17/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

FIELD CODE: RA4798
TA #: T71882

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

FIELD CODE: RA4798
TA#: T71882

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	105
Toluene-d8	101
4-Bromofluorobenzene	99

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-23-97

Date

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**ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210**

PAGE 1 of 2

April 23, 1997
Receiving Date: 04/18/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/21/97
Analysis Date: 04/21/97
Sampling Date: 04/17/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

**FIELD CODE: RA307
TA #: T71883**

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

FIELD CODE: RA307
TA#: T71883

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	105
Toluene-d8	100
4-Bromofluorobenzene	98

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-23-97

Date

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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 23, 1997
Receiving Date: 04/18/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/21/97
Analysis Date: 04/21/97
Sampling Date: 04/17/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

FIELD CODE: RA1331
TA #: T71884

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

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A Laboratory for Advanced Environmental Research and Analysis

NAVAJO REFINING COMPANY

PAGE 2 of 2

Project Location: Artesia, NM

FIELD CODE: RA1331

TA#: T71884

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	108
Toluene-d8	100
4-Bromofluorobenzene	97

ND = Not Detected

METHODS: EPA 624.

CHEMIST: RP



Director, Dr. Blair Leftwich4-23-97

Date

11811-04

344

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

DARRELL MOORE

Phone #:

FAX #:

Company Name & Address:

NAVASO

Project #:

Project Name:

Project Location:

ARTESIA

Sampler Signature:

McDaniel

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING		BTEX, MTBE	TPH	Total Metals Ag As B	TCLP Metals Ag As	TCLP Volatiles	TCLP Semi Volatiles	RCI	8240 / 8260	8270	Turn around # of Fax ASAP Hold	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME											
71879	RA313	2	40ml	X				X				4/11/97	0745											
80	RA2723	2	40ml	X				X				"	0755											
81	RA4196	2	"	X				X				"	0805											
82	RA4798	2	"	X				X				"	0825											
83	RA307	2	"	X				X				"	0830											
84	RA1331	2	"	X				X				"	0840											
																							</	

Relinquished by: *McDaniel* Date: 4/11/97 Time: 1615

Received by: _____ Date: _____ Time: _____

REMARKS

Relinquished by: _____ Date: _____ Time: _____

Received at Laboratory by: *Dr. D. Moore* Date: 4/15/97 Time: 1045A

10841

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Lubbock, Texas 79424
806•794•1296
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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 29, 1997
Receiving Date: 04/24/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 04/24/97
Analysis Date: 04/25/97
Sampling Date: 04/21/97
Sample Condition: Intact & Cool
Sample Received by: JH
Project Name: NA

FIELD CODE: RA-314
TA #: T72221

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

NAVAJO REFINING COMPANY
Project Location: Artesia, NM

PAGE 2 of 2

FIELD CODE: RA-314
TA#: T72221

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	5	ND
MTBE	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	102
Toluene-d8	102
4-Bromofluorobenzene	98

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-29-97

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

April 29, 1997

Receiving Date: 04/24/97

Sample Type: Water

Project No: NA

Project Location: Artesia, NM

Prep Date: 04/24/97

Analysis Date: 04/25/97

Sampling Date: 04/23/97

Sample Condition: Intact & Cool

Sample Received by: JH

Project Name: NA

FIELD CODE: RA-1227

TA #: T72222

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

FIELD CODE: RA-1227
TA#: T72222

624 Compounds	Reporting Limit	Concentration ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,2-Dibromoethane	5	ND
MTBE	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	103
Toluene-d8	100
4-Bromofluorobenzene	100

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

4-29-97

Date

6701 Aberdeen Avenue
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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

June 6, 1997
Receiving Date: 05/31/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 06/03/97
Analysis Date: 06/03/97
Sampling Date: 05/30/97
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: NA

FIELD CODE: RA-313
TA #: T74756

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

FIELD CODE: RA-313
TA#: T74756

624 Compounds	Reporting Limit	Concentration (ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	99
Toluene-d8	100
4-Bromofluorobenzene	95

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

6-6-97

Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

June 6, 1997
Receiving Date: 05/31/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 06/03/97
Analysis Date: 06/03/97
Sampling Date: 05/30/97
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: NA

FIELD CODE: RA-4196
TA #: T74757

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

June 6, 1997
Receiving Date: 05/31/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 06/03/97
Analysis Date: 06/03/97
Sampling Date: 05/30/97
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: NA

FIELD CODE: RA-4798
TA #: T74758

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

FIELD CODE: RA-4798
TA#: T74758

624 Compounds	Reporting Limit	Concentration (ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	104
Toluene-d8	98
4-Bromofluorobenzene	98

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich



Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
806•794•1296
FAX 806•794•1298

ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

June 6, 1997
Receiving Date: 05/31/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 06/03/97
Analysis Date: 06/03/97
Sampling Date: 05/30/97
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: NA

FIELD CODE: RA-307
TA #: T74759

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND



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A Laboratory for Advanced Environmental Research and Analysis

FIELD CODE: RA-307
TA#: T74759

624 Compounds	Reporting Limit	Concentration (ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND

SURROGATES

% RECOVERY

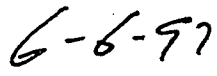
Dibromofluoromethane	100
Toluene-d8	100
4-Bromofluorobenzene	97

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich



Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

June 6, 1997
Receiving Date: 05/31/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 06/03/97
Analysis Date: 06/03/97
Sampling Date: 05/30/97
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: NA

FIELD CODE: RA-1331
TA #: T74760

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

FIELD CODE: RA-1331
TA#: T74760

624 Compounds	Reporting Limit	Concentration (ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	105
Toluene-d8	98
4-Bromofluorobenzene	97

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich

6-6-97

Date

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Lubbock, Texas 79424
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ANALYTICAL RESULTS FOR
NAVAJO REFINING COMPANY
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

PAGE 1 of 2

June 6, 1997
Receiving Date: 05/31/97
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

Prep Date: 06/03/97
Analysis Date: 06/03/97
Sampling Date: 05/30/97
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: NA

FIELD CODE: RA-1227
TA #: T74761

624 Compounds	Reporting Limit	Concentration (ug/L)
Dichlorodifluoromethane	1	ND
Chloromethane	1	ND
Vinyl chloride	1	ND
Bromomethane	5	ND
Chloroethane	1	ND
Trichlorofluoromethane	1	ND
1,1-Dichloroethene	1	ND
Iodomethane	5	ND
Carbon disulfide	1	ND
Methylene chloride	5	ND
trans-1,2-Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Vinyl acetate	1	ND
2-Butanone	50	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloropropane	1	ND
Trichloroethene	1	ND
Bromodichloromethane	1	ND
cis-1,3-Dichloropropene	1	ND
4-Methyl-2-pentanone	50	ND
trans-1,3-Dichloropropene	1	ND
Toluene	1	ND
1,1,2-Trichloroethane	1	ND
2-Hexanone	50	ND

FIELD CODE: RA-1227
TA#: T74761

624 Compounds	Reporting Limit	Concentration (ug/L)
Dibromochloromethane	1	ND
Tetrachloroethene	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
m & p-Xylene	1	ND
Bromoform	1	ND
Styrene	1	ND
o-Xylene	1	ND
1,1,2,2-Tetrachloroethane	1	ND
trans 1,4-Dichloro-2-butene	5	ND
cis 1,4-Dichloro-2-butene	5	ND
1,4-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND

SURROGATES

% RECOVERY

Dibromofluoromethane	104
Toluene-d8	100
4-Bromofluorobenzene	100

ND = Not Detected

METHODS: EPA 624.
CHEMIST: RP



Director, Dr. Blair Leftwich



Date

TRACE ANALYSIS, INC.

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ANALYTICAL RESULTS FOR

Navajo Refining

Attention Darrell Moore

501 E. Main

Artesia

NM 88210

Lab Receiving # : 9706000276

Date Rec: 6/17/97

Sampling Date: 6/16/97

Sample Condition: Intact and Cool

Sample Received By: JH

Date: Jun 19, 1997

Project: Artesia

Proj Name: Navajo

Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	BENZENE (mg/L)	ETHYL- (mg/L)	M, P, O (mg/L)	TOTAL (mg/L)
T75627	RA 314	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
QC			0.098	0.101	0.099	0.096	0.308		
RPD			4	4	5	6	6		
% Extraction Accuracy			103	105	100	99	106		
% Instrument Accuracy			98	101	99	96	103		

Reporting Limit:

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
MTBE/BTEX	EPA 5030	6/17/97	EPA 8020	6/17/97	AG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

6-19-97

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ANALYTICAL RESULTS FOR

806•794•1296

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TRACE ANALYSIS, INC.

Date: Jul 09, 1997
Project: Artesia
Proj Name: Navaio
Proj Loc: Artesia, NMNavaio Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210Lab Receiving #: 9707000090
Date Rec: 7/3/97
Sampling Date: 7/2/97
Sample Condition: Intact and Cool
Sample Received By: JH

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
T76861	KWB-12A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T76862	RA-3156	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T76863	KWB-9	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T76864	KWB-3A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T76865	KWB-11A	Water	0.004	<0.001	<0.001	<0.001	<0.001	<0.001
T76866	RA-3353	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T76867	RA-2723	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T76868	KWB-1A	Water	0.021	<0.001	<0.001	<0.001	<0.001	<0.001
T76869	KWB-1C	Water	0.060	0.004	<0.001	<0.001	<0.001	0.004
T76870	KWB-7A	Water	0.007	<0.001	<0.001	<0.001	<0.001	<0.001
T76871	MW-45	Water	0.004	<0.001	<0.001	<0.001	<0.001	<0.001
T76872	KWB-2A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T76873	MW-18	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
QC			0.097	0.093	0.095	0.096	0.299	

RPD
% Extraction Accuracy
% Instrument Accuracy

Reporting Limit:

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
MTBE/BTEX	EPA 5030	7/7/97	EPA 8020	7/8/97	AG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock Texas 79424
ANALYTICAL RESULTS FOR

806•794•1296
FAX 806•794•1298

Date: Aug 07, 1997
Project: Artesia
Proj Name: Navaio
Proj Loc: Artesia, NM

Navaio Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving #: 9708000010
Date Rec: 8/1/97
Sampling Date: 7/31/97
Sample Condition: Intact and Cool
Sample Received By: JH

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
T78741	RA-314	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T78742	RA-307	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T78743	RA-1331	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T78744	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T78745	RA-1227	Water	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
T78748	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
QC			0.101	0.100	0.098	0.100	0.304	

RPD	3	2	3	3	3
% Extraction Accuracy	94	99	97	99	100
% Instrument Accuracy	101	100	98	100	101

Reporting Limit:

0.001 0.001 0.001 0.001 0.001

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
MTBE/BTEX	EPA 5030	8/6/97	EPA 8020	8/4/97	AG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

[Signature]

8-7-97

18141-48

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TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

DARRELL MOORE

Phone #:

FAX #:

Company Name & Address:

NAVAJO

Project #:

Project Name:

Project Location:

ACTESIA

Supplier Signature:

Michael

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING		BTEX, MTBE	TPH	Total Metals Ag As	TCLP Metals Ag As	TCLP Volatiles	TCLP Semi Volatile	RCI	8240 / 8260	8270	Turn around #	Fax ASAP	Hold	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME													
18741	EA-314	2	40ml	X				X		X			7/31/11	15:15	X											
42	EA-307	1		X				X		X			11:45	X	X											
43	EA-1331	1		X				X		X			11:55	X	X											
44	EA-4196	1		X				X		X			12:10	X	X											
45	EA-1227	1		X				X		X			12:25	X	X											
46	Alley Cnd Tror-Inlet	1		X				X		X			13:35	X	X											
47	Alley Cnd Tror-Outlet	1		X				X		X			13:40	X	X											
48	EA-4798	1		X				X		X			14:15	X	X											

Relinquished by: *Michael Moore* Date: *7/31/11* Time: *16:45*

Received by: _____ Date: _____ Time: _____

REMARKS: *NAVAJO 46. XLS (456)*

Relinquished by: _____ Date: _____ Time: _____

Received at Laboratory by: *Michael Moore* Date: *8/1/11* Time: *10:00A*

REMARKS: *NAVAJO 46. XLS (456)*

File # 280-7116 693 CI I AA602. XLS (456) 21345

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424
806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9708000094
Date Rec: 8/6/97
Sampling Date: 8/5/97
Sample Condition: Intact and Cool
Sample Received By: JH

Date: Aug 18, 1997
Project: Artesia
Proj Name: Navajo
Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTEX (mg/L)
T79092	RA-313	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
QC			0.001	0.001	0.001	0.001	0.001	0.001
			0.103	0.100	0.100	0.099	0.313	0.313

RPD
% Extraction Accuracy
% Instrument Accuracy

0 2 2 4
102 102 106 113
103 100 100 99 104

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	8/13/97	EPA 8020	8/13/97	AG	0.100 ea	0.1 ea

[Signature]

8-18-97

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424
806•794•1296

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ANALYTICAL RESULTS FOR

Navajo Refining

Attention Darrell Moore

501 E. Main

Artesia

NM 88210

Date: Aug 29, 1997

Project: Artesia

Proj Name: Offsite Plume - Monthly

Proj Loc: Artesia, NM

Lab Receiving #: 9708000541

Date Rec: 8/27/97

Sampling Date: 8/26/97

Sample Condition: Intact and Cool

Sample Received By: JH

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTEX (mg/L)
T80484	RA-313	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T80485	RA-1331	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T80486	RA-307	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T80487	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T80488	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Method Blank

Reporting Limit

QC

<0.001	<0.001	<0.001	<0.001	<0.001
0.001	0.001	0.001	0.001	0.001
0.106	0.100	0.100	0.099	0.308

RPD	4	3	3	3
% Extraction Accuracy	103	100	101	106
% Instrument Accuracy	106	100	100	103

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	8/27/97	EPA 8020	8/27/97	AG	0.100 ea	0.1 ea

[Signature]

8-25-97

Director, Dr. Blair Leftwich

Date

547

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6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

DARRELL MOORE

Phone #:

(505) 748-3311

FAX #:

Company Name & Address:

Navigo

Project #:

Project Name:

Offsite Pume - Monthly

Project Location:

Artesia NM

Sampler Signature:

Guerrero-Mendoza

LAB # (LAB USE) ONLY	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME
80484	RA-313	2	40ml	X				X		X		8/26/97	14:05
85	RA-1331	11	X	X				X		X		11/14/15	
86	RA-307	11	X	X				X		X		11/14/20	
87	RA-4196	11	X	X				X		X		11/14/30	
88	RA-4798	11	X	X				X		X		11/14/40	

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	REMARKS	
Guerrero-Mendoza	8/26/97	16:15				280	
Relinquished by:	Date:	Time:	Received by:	Date:	Time:		
Relinquished by:	Date:	Time:	Received at Laboratory by:	Date:	Time:		

Relinquished by: Date: Time: Received at Laboratory by: Date: Time: Received by: Date: Time: 1000A 8/27/97

Fed Ex Anna Star 2950697373

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TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424
ANALYTICAL RESULTS FOR

806•794•1296

FAX 806•794•1298

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9709000136
Date Rec: 9/9/97
Sampling Date: 9/8/97
Sample Condition: Intact and Cool
Sample Received By: JH

Date: Sep 10, 1997
Project: Artesia
Proj Name: Offsite Plume - Monthly
Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTEX (mg/L)
T81144	RA-1227	Water	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T81145	RA-314	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC								
			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
			0.001	0.001	0.001	0.001	0.001	0.001
			0.099	0.098	0.098	0.096	0.300	0.300

RPD
% Extraction Accuracy
% Instrument Accuracy

2 0 0
106 102 103
99 98 98

1 0
102 108
96 100

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	9/9/97	EPA 8020	9/9/97	AG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

9-10-97

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore

501 E. Main

NM 88210

Artesia

Lab Receiving # : 9710000007

Date Rec: 10/1/97

Sampling Date: 9/29/97 - 9/30/97

Sample Condition: Intact and Cool

Sample Received By: VW

Date: Oct 07, 1997

Project: N/A

Proj Name: Quarterly Mo Offsite Plume

Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
T 82475	RA-1331	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 82476	RA-307	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 82477	RA-4196	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 82478	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 82479	MW-18	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 82480	KWB-12A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 82481	RA-3156	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 82482	KWB-9	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 82483	KWB-11A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 82484	KWB-3A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 82485	RA-3353	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC								
			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
			0.001	0.001	0.001	0.001	0.001	0.001
			0.106	0.107	0.111	0.113	0.363	

RPD	7	3	1	1	2		
% Extraction Accuracy	102	107	112	115	124		
% Instrument Accuracy	106	107	111	113	121		
TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	10/3/97	EPA 8020	10/3/97	AG	0.100 ea	0.1 ea

mgf
Director, Dr. Blair Leftwich

10-7-97
Date

FAX 806•794•1298

Navajo Refining
Attention Darrell Moore

Date: Oct 07, 1997

Project: N/A

Proj Name: Quarterly Mo Offsite Plume
Proj Loc: Artesia, NM

Lab Receiving # : 9710000007

Date Rec: 10/1/97

Sampling Date: 9/30/97

Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTEX (mg/L)
T 82486	KWB-7A	Water	0.015	<0.001	<0.001	<0.001	<0.001	<0.001
T 82487	MW-45	Water	0.007	<0.001	0.002	0.001	0.003	0.006
T 82488	KWB-1A	Water	0.012	<0.001	<0.001	<0.001	<0.001	<0.001
T 82489	KWB-1C	Water	0.079	0.003	<0.001	<0.001	0.001	0.004
T 82490	KWB-2A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit			<0.001	<0.001	<0.001	<0.001	<0.001	
QC			0.001	0.001	0.001	0.001	0.001	
			0.106	0.107	0.111	0.113	0.363	

RPD				7	3	1	2
% Extraction Accuracy				102	107	112	124
% Instrument Accuracy				106	107	111	121
TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	10/3/97	EPA 8020	10/3/97	AG	0.100 ea	0.1 ea

mdoz

Director, Dr. Blair Leftwich

10-7-97

Date _____

✓2007

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Phone #: (505) 748-3311
FAX #: (505) 748-3311

FAX #: (505) 748-3311

--	--

Project Name: Orf-Hy/MO Offsite Plume

Project Name: Artful/No Offsite Plume

Sampler Signature: *Danire M. Daniel*

[illegible]

Relinquished by: Daniel Date: 8/30/97 Time: 16:15

Received by:	Date:	Time:	REMARKS
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Relinquished by: _____ Date: _____ Time: _____

Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Date: _____ Time: _____

Received at Laboratory by:	Date:	Time:
----------------------------	-------	-------

274AF
Fed ex 305 9349 483

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Project Manager:

Darrell Moore

Phone #:

(505) 748-3311

Company Name & Address:

Narzo

Project #:

Ortho/Mo Off-site Plum

Project Location:

Atsiz NM

Project Name:

Sampler Signature:

Daniel

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME
82486	KWB-7A	2	10ml	X				X		X		8/17/10	10:00
87	MW-45	"	"	X				X		X		"	10:30
88	KWB-1A	"	"	X				X		X		"	13:55
89	KWB-1C	"	"	X				X		X		"	14:15
90	KWB-2A	"	"	X				X		X		"	14:30

Relinquished by: *Daniel* Date: *8/20/10* Time: *16:15*

Relinquished by: _____ Date: _____ Time: _____

Relinquished by: _____ Date: _____ Time: _____

Received by: _____ Date: _____ Time: _____

Received by: _____ Date: *8* Time: _____

Received at Laboratory by: *Heidi Lindman* Date: *10-1-97* Time: *9:55 AM*

REMARKS

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Phone #:

(505) 748-3311

Company Name & Address:

Narzo

Project #:

Ortho/Mo Off-site Plum

Project Location:

Atsiz NM

Project Name:

Sampler Signature:

Daniel

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME
82486	KWB-7A	2	10ml	X				X		X		8/17/10	10:00
87	MW-45	"	"	X				X		X		"	10:30
88	KWB-1A	"	"	X				X		X		"	13:55
89	KWB-1C	"	"	X				X		X		"	14:15
90	KWB-2A	"	"	X				X		X		"	14:30

Relinquished by: *Daniel* Date: *8/20/10* Time: *16:15*

Relinquished by: _____ Date: _____ Time: _____

Relinquished by: _____ Date: _____ Time: _____

Received by: _____ Date: _____ Time: _____

Received by: _____ Date: *8* Time: _____

Received at Laboratory by: *Heidi Lindman* Date: *10-1-97* Time: *9:55 AM*

REMARKS

ANALYSIS REQUEST

Total Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Volatiles	
TCLP Semi Volatiles	
RCI	
8240 / 8260	
8270	
Turn around # of days	
Fax ASAP	
Hold	

SPECIAL HANDLING

274A04

FedEx 303 2229 033 -10

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424
806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining

Attention Darrell Moore

501 E. Main

Artesia NM 88210

Date: Nov 06, 1997

Project: Mo Off-Site For Old

Proj Name: Mo Off-Site For Old

Proj Loc: Artesia, NM

Lab Receiving #: 9710000525

Date Rec: 10/31/97

Sampling Date: 10/30/97

Sample Condition: Intact and Cool

Sample Received By: VW

TA# Field Code

MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTEX (mg/L)
--------	----------------	-------------------	-------------------	-----------------------------	-----------------------------	-------------------------

T84393 RA-4196

T84394 RA-4798

Method Blank

Reporting Limit

QC

Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	0.001	0.001	0.001	0.001	0.001	0.001
	0.109	0.108	0.108	0.109	0.319	0.319

RPD

% Extraction Accuracy

% Instrument Accuracy

2	3	2	3	2
99	104	105	103	104
109	108	108	109	106

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	11/3/97	EPA 8020	11/3/97	AG	0.100 ea	0.1 ea

BE

11-6-97

Director, Dr. Blair Leftwich

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424 806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9711000384
Date Rec: 11/25/97
Sampling Date: 11/24/97
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Dec 01, 1997
Project: N/A
Proj Name: Monthly Off-Site Plume
Proj Loc: Artesia, NM

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTEX (mg/L)
T86047	RA-4196	Water	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
T86048	RA-4798	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
Reporting Limit								
QC			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
			0.001	0.001	0.001	0.001	0.001	0.001
			0.093	0.099	0.098	0.105	0.314	

RPD	4	1	1	1
% Extraction Accuracy	58	99	96	103
% Instrument Accuracy	93	99	98	105

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	11/26/97	EPA 8020	11/26/97	AG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

12-1-97

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Company Name: Navajo Phone #: (505) 748-3311
Address: Address: Fax #:

Contact Person: Darrell Moore

Invoice to:
(If different from above)

Project #:	Project Name:
Project Location:	Monthly off-site plume
	Sampler Signature:

[illegible]

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID #

ANALYSIS REQUEST
(Circle or Specify Method No.)

	MTBE	8020/602	X	X	X
	BTEX	8020/602	X	X	X
	TPH				
	PAH	8270			
	Total Metals	Aq As Ba Cd Cr Pb Hg Se			
	TCLP Metals	Aq As Ba Cd Cr Pb Hg Se			
	TCLP Volatiles				
	TCLP Semi Volatiles				
	HCI				
	GC/MS Vol.	8240/8260/624			
	GC/MS Semi.	Vol. 8270/625			
	PCB's	8080/608			
	Pest.	8080/608			
	BOD, TSS,	PH			
	Turn Around Time if different from standard	Hold			

Relinquished by: <i>Donna M. Daniel</i>	Date: <i>Aug 7</i>	Time: <i>16:15</i>	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at Laboratory by:	Date:	Time:
			<i>Vicki W. Mathews</i>	<i>11-25-97</i>	<i>9:00 AM</i>

LAB USE ONLY

REMARKS:

Intact Y N
 Headspace Y N
 Temp 2 °
 Log-in Review B

Submission of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

ORIGINAL COPY

Log-In Review <u>0</u>	329AB
Carrier # <u>3206183</u>	Fidelity 3206183 434

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining

Attention Darrell Moore

501 E. Main

Artesia

NM 88210

Date: Jan 08, 1998

Project: N/A

Proj Name: Qtrly Offsite/Mo Alky Cooling Tower

Proj Loc: Artesia, NM

Lab Receiving #: 9801000012

Date Rec: 1/3/98

Sampling Date: 12/30/98 - 1/2/98

Sample Condition: Intact and Cool

Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTEX (mg/L)
T 88279	KWB-2A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 88280	KWB-1C	Water	0.041	0.002	<0.001	<0.001	<0.001	0.002
T 88281	KWB-1A	Water	0.031	<0.001	<0.001	<0.001	<0.001	<0.001
T 88282	KWB-12A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 88283	KWB-3A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 88284	RA-3356	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T 88287	MW-18	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Method Blank

Reporting Limit

QC

<0.001	<0.001	<0.001	<0.001	<0.001
0.001	0.001	0.001	0.001	0.001
0.099	0.097	0.096	0.094	0.276

RPD
% Extraction Accuracy
% Instrument Accuracy

3	2	2	1	1
101	100	98	97	98
99	97	96	94	92

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	1/5/98	EPA 8020	1/5/98	AG	0.100 ea	0.1 ea

BS

1-8-98

Director, Dr. Blair Leftwich

Date

Star Enterprise

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Consulting Company Name: *Naneyo*
Address: *Naneyo*
Phone #: *806-794-3311*
Fax #: *806-794-9077*
Star Contract: *6057748-3311*

Consulting Contact: *Darrell Moore*
Location Code: *Citry off site + no Alky Cool Tower*
Casualty Loss #: *159, Artesia, NM*
Star Job #: *159, Artesia, NM*
Sampler Signature: *Darrell Moore*

Location Address: *PO Box 159, Artesia, NM*

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				DATE	TIME
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE		
88279	KWB-2A	2	40ml	X	X	X	X	X	X	X	X	12/30/97	14:10
88280	KWB-1C	1	"	X	X	X	X	X	X	X	X	12/31/97	15:15
88281	KWB-1A	1	"	X	X	X	X	X	X	X	X	12/31/97	15:30
88282	KWB-12A	1	"	X	X	X	X	X	X	X	X	12/31/97	15:50
88283	KWB-3A	1	"	X	X	X	X	X	X	X	X	12/31/98	11:10
88284	PA-3350	1	"	X	X	X	X	X	X	X	X	12/31/98	11:25
88285	Alky Cool Tur-Turret	1	"	X	X	X	X	X	X	X	X	12/31/98	13:15
88286	Alky Cool Tur- Out-let	1	"	X	X	X	X	X	X	X	X	12/31/98	13:20
88287	MW-18	1	"	X	X	X	X	X	X	X	X	12/31/98	13:35

Relinquished by: <i>Darrell Moore</i>	Date: <i>12/30/98</i>	Time: <i>14:30</i>	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at Laboratory by:	Date:	Time:

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.
12/31/98

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID # *12*

ANALYSIS REQUEST

(Circle or Specify Method No.)

PAH 8270	
Total Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Volatiles	
TCLP Semi Volatiles	
RCI	
GC/MS Vol. 8240/8260/624	
GC/MS Semi. Vol. 8270/625	
PCB's 8080/608	
Pest. 8080/608	
BOD, TSS, PH	
Turn Around Time if different from standard	

LAB USE ONLY	REMARKS:
Intact <i>Y</i>	
Headspace <i>Y</i>	
Temp <i>6-2</i>	
Log-in Review	

Carrier # *FedEx 339 0275 996*

FAX 806•794•1298

0.1 ea

Date

1-0-98

Star Enterprise

Trace Analysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID #

38

Consulting Company Name:

Phone #: 505-748-3311

Address:

Fax #:

505-748-9077

Consulting Contact:

Star Contract:

Barrel Moore

Location Code:

Casualty Loss #:

Star Job #

Consultant Job #

City of Abilene

Sampler Signature:

501 E Main, Artesia NM

James M. Shivers

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME

MTBE 8020/602	
BTEX 8020/602	
TPH	
PAH 8270	
Total Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Volatiles	
TCLP Semi Volatiles	
RCI	
GC/MS Vol. 8240/8260/624	
GC/MS Semi. Vol. 8270/625	
PCB's 8080/608	
Pest. 8080/608	
BOD, TSS, PH	
Turn Around Time if different from standard	
Hold	

LAB #

88364

100B-11A

2 40ml X

X X

15/98 8:45

X X

LAB #

65

100B-7A

2 40ml X

X X

15/98 9:15

X X

LAB #

66

100B-45

2 40ml X

X X

11 10:30

X X

LAB #

67

100B-9

2 40ml X

X X

11 14:05

X X

LAB #

68

EA-4196

2 40ml X

X X

11 14:15

X X

LAB #

69

EA-4198

2 40ml X

X X

11 14:25

X X

Relinquished by:

Date: Time:

Received by:

Date: Time:

Relinquished by:

Date: Time:

Received by:

Date: Time:

Relinquished by:

Date: Time:

Received at Laboratory by:

Date: Time:

REMARKS:

LAB USE ONLY

Intact

Y/N

Headspace

Y/N

Temp

-2

Log-In Review

M



TRACE ANALYSIS, INC.

6701 Aberdeen Avenue
Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Bryan Madrid

501 E. Main

Artesia, NM 88210

February 18, 1998

Receiving Date: 01/16/98

Sample Type: Water

Project No: NA

Project Location: NA

Prep Date: 01/22/98

Analysis Date: 01/22/98

Sampling Date: 01/14/98

Sample Condition: Intact & Cool

Sample Received by: VW

Project Name: NA

TA#	FIELD CODE	NITRATE-N (mg/L)	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCO3)	
						HC03	C03

T89209	KWB-1C	0.07	190	0.24	2,600	540	<1.0
T89210	KWB-24	24	110	0.24	1,600	260	<1.0
T89211	KWB-12A	11	110	0.19	1,900	330	<1.0
T89212	KWB-9	2.0	110	0.13	1,200	430	<1.0
T89213	KWB-3A	21	460	0.15	2,500	280	<1.0
T89215	KWB-7	11	670	0.25	1,300	570	<1.0
T89216	MW-18	1.2	190	0.26	1,200	370	<1.0
T89217	MW-45	0.87	460	0.52	2,900	250	<1.0
ICV		1.318	501	1.04	24	--	--
CCV		1.338	496	1.07	24	--	--

REPORTING LIMIT

1.0 1.0

RPD

% Extraction Accuracy

% Instrument Accuracy

*NOTE: LRB and LRBS used instead of MS and MSD due to lack of enough sample.

METHODS: EPA 300.0, 310.1.

CHEMIST: NITRATE-N: RS CHLORIDE: RC FLUORIDE: JS/RC SULFATE/ALKALINITY: JS

SPIKE: 500 mg/L CHLORIDE; 1.0 mg/L FLUORIDE; 2,500 mg/L SULFATE; 1.333 mg/L NITRATE-N.

CV: 500 mg/L CHLORIDE; 1.0 mg/L FLUORIDE; 25 mg/L SULFATE; 1.333 mg/L NITRATE-N.

Handwritten signature

Director, Dr. Blair Leftwich

Date

2-18-98

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Bryan Madrid

501 E. Main

Artesia, NM 88210

February 18, 1998

Receiving Date: 01/16/98

Sample Type: Water

Project No: NA

Project Location: NA

Prep Date: 01/22/98

Analysis Date: 01/22/98

Sampling Date: 01/14/98

Sample Condition: Intact & Cool

Sample Received by: VW

Project Name: NA

TA#	FIELD CODE	NITRATE-N (mg/L)	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCO3)	
						HC03	C03
T89214	KWB-11A	17	530	0.35	1,400	440	<1.0
ICV		1.338	501	1.04	24	---	---
CCV		1.350	496	1.07	24	---	---

REPORTING LIMIT

RPD	2	1	1	0	6	6
% Extraction Accuracy	104	96	90	63	---	---
% Instrument Accuracy	101	100	106	97	---	---

METHODS: EPA 300.0, 310.1.

CHEMIST: NITRATE-N: RS CHLORIDE: RC FLUORIDE: JS/RC SULFATE/ALKALINITY: JS

SPIKE: 500 mg/L CHLORIDE; 1.0 mg/L FLUORIDE; 2,500 mg/L SULFATE; 19,995 mg/L NITRATE-N.

CV: 500 mg/L CHLORIDE; 1.0 mg/L FLUORIDE; 25 mg/L SULFATE; 1,333 mg/L NITRATE-N.

Director, Dr. Blair Leftwich

Date

2-18-98

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1298

ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Bryan Madrid

501 E. Main

Artesia, NM 88210

February 18, 1998

Receiving Date: 01/16/98

Sample Type: Water

Project No: NA

Project Location: NA

Prep Date: 01/22/98

Analysis Date: 01/22/98

Sampling Date: 01/14/98

Sample Condition: Intact & Cool

Sample Received by: VW

Project Name: NA

ALKALINITY
(mg/L as CaCO₃)
HCO₃ CO₃

SULFATE
(mg/L)

FLUORIDE
(mg/L)

CHLORIDE
(mg/L)

NITRATE-N
(mg/L)

FIELD CODE

TA#

T89208 KWB-1A

ICV

CCV

REPORTING LIMIT

RPD

% Extraction Accuracy

% Instrument Accuracy

530 <1.0

1.0 1.0

6 6

2,600

24

24

10

0

78

97

0.27

1.04

1.07

0.1

1

90

106

190

501

496

0.5

1

96

100

0.20

1.318

1.338

0.01

0*

100*

100

*NOTE: LRB and LRBS used instead of MS and MSD due to lack of enough sample.

METHODS: EPA 300.0, 310.1.

CHEMIST: NITRATE-N: RS CHLORIDE: RC FLUORIDE: JS/RC SULFATE/ALKALINITY: JS

SPIKE: 500 mg/L CHLORIDE; 1.0 mg/L FLUORIDE; 500 mg/L SULFATE; 1.333 mg/L NITRATE-N.

CV: 500 mg/L CHLORIDE; 1.0 mg/L FLUORIDE; 25 mg/L SULFATE; 1.333 mg/L NITRATE-N.

Director, Dr. Blair Leftwich

Date

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FAX 806•794•1298

February 18, 1998

Receiving Date: 01/16/98

Sample Type: Water

Project No: NA

Project Location: NA

ANALYTICAL RESULTS FOR

NAVAJO REFINING.

Attention: Bryan Madrid

501 E. Main

Artesia, NM 88210

Prep Date: 01/21/98

Analysis Date: 01/28/98

Sampling Date: 01/14/98

Sample Condition: Intact & Cool

Sample Received by: VW

Project Name: NA

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T89208	KWB-1A	5.4	410	540	350
T89209	KWB-1C	5.9	380	550	370
T89210	KWB-24	4.5	220	440	140
T89211	KWB-12A	5.2	210	510	269
T89212	KWB-9	4.1	160	370	130
T89213	KWB-3A	6.1	280	620	510
T89214	KWB-11A	10	230	430	290
T89215	KWB-7	5.1	300	440	300
T89216	MW-18	5.4	200	340	70
T89217	MW-45	13.6	340	620	510
T89218	Ponds (Outfall)	51	98	48	1,200
ICV		50	49	49	50
CCV		50	48	48	51
Reporting Limit		0.50	0.50	0.50	0.50
METHOD BLANK		<0.50	<0.50	<0.50	<0.50
RPD		4	3	4	5
% Extraction Accuracy		108	104	107	110
% Instrument Accuracy		100	97	97	101

METHODS: EPA 200.7.

CHEMIST: RR

SPIKE: 100 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

CV: 50 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich

Date

2-18-98

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 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Bryan Madrid
 501 E. Main
 Artesia, NM 88210

February 18, 1998
 Receiving Date: 01/16/98
 Sample Type: Water
 Sampling Date: 01/14/98
 Sample Condition: I & C
 Sample Received by: VW
 Extraction Date: 01/21/98
 Analysis Date: 01/22/98

PAH	Reporting	T89208				
8270 Compounds (mg/L)	Limit	KWB-1A	QC	RPD	%EA	%IA
Naphthalene	0.001	ND	74	4	41	93
Acenaphthylene	0.001	ND	74	0	73	93
Acenaphthene	0.001	ND	73	1	71	91
Fluorene	0.001	ND	68	---	72	85
Phenanthrene	0.001	ND	74	11	76	93
Anthracene	0.001	ND	78	8	80	98
Fluoranthene	0.001	ND	72	20	72	90
Pyrene	0.001	ND	74	---	111	93
Benzo[a]anthracene	0.001	ND	78	---	81	98
Chrysene	0.001	ND	74	---	98	93
Benzo[b]fluoranthene	0.001	ND	74	---	69	93
Benzo[k]fluoranthene	0.001	ND	88	---	98	110
Benzo[a]pyrene	0.001	ND	77	---	85	96
Indeno[1,2,3-cd]pyrene	0.001	ND	74	---	91	93
Dibenz[a,h]anthracene	0.001	ND	69	---	91	86
Benzo[g,h,i]perylene	0.001	ND	70	---	86	87

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR

66

2-Fluorobiphenyl SURR

64

Terphenyl-d14 SURR

103

METHODS: EPA SW 846-8270, 3510.

CHEMIST: MB



2.18-98

Director, Dr. Blair Leftwich

DATE

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ANALYTICAL RESULTS FOR NAVAJO REFINING

Attention: Bryan Madrid
 501 E. Main
 Artesia, NM 88210

February 18, 1998
 Receiving Date: 01/16/98
 Sample Type: Water
 Sampling Date: 01/14/98
 Sample Condition: I & C
 Sample Received by: VW
 Extraction Date: 01/21/98
 Analysis Date: 01/22/98

PAH	Reporting	T89209				
8270 Compounds (mg/L)	Limit	KWB-1C	QC	RPD	%EA	%IA
Naphthalene	0.001	ND	74	4	41	93
Acenaphthylene	0.001	ND	74	0	73	93
Acenaphthene	0.001	ND	73	1	71	91
Fluorene	0.001	ND	68	---	72	85
Phenanthrene	0.001	ND	74	11	76	93
Anthracene	0.001	ND	78	8	80	98
Fluoranthene	0.001	ND	72	20	72	90
Pyrene	0.001	ND	74	---	111	93
Benzo [a] anthracene	0.001	ND	78	---	81	98
Chrysene	0.001	ND	74	---	98	93
Benzo [b] fluoranthene	0.001	ND	74	---	69	93
Benzo [k] fluoranthene	0.001	ND	88	---	98	110
Benzo [a] pyrene	0.001	ND	77	---	85	96
Indeno [1,2,3-cd] pyrene	0.001	ND	74	---	91	93
Dibenz [a,h] anthracene	0.001	ND	69	---	91	86
Benzo [g,h,i] perylene	0.001	ND	70	---	86	87

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR
 2-Fluorobiphenyl SURR
 Terphenyl-d14 SURR

63
 61
 109

METHODS: EPA SW 846-8270, 3510.

CHEMIST: MB

BS

2-18-98

Director, Dr. Blair Leftwich

DATE

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ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Bryan Madrid
 501 E. Main
 Artesia, NM 88210

February 18, 1998

Receiving Date: 01/16/98

Sample Type: Water

Sampling Date: 01/14/98

Sample Condition: I & C

Sample Received by: VW

Extraction Date: 01/21/98

Analysis Date: 01/22/98

PAH	Reporting	T89210				
8270 Compounds (mg/L)	Limit	KWB-2A	QC	RPD	%EA	%IA
Naphthalene	0.001	ND	74	4	41	93
Acenaphthylene	0.001	ND	74	0	73	93
Acenaphthene	0.001	ND	73	1	71	91
Fluorene	0.001	ND	68	---	72	85
Phenanthrene	0.001	ND	74	11	76	93
Anthracene	0.001	ND	78	8	80	98
Fluoranthene	0.001	ND	72	20	72	90
Pyrene	0.001	ND	74	---	111	93
Benzo[a]anthracene	0.001	ND	78	---	81	98
Chrysene	0.001	ND	74	---	98	93
Benzo[b]fluoranthene	0.001	ND	74	---	69	93
Benzo[k]fluoranthene	0.001	ND	88	---	98	110
Benzo[a]pyrene	0.001	ND	77	---	85	96
Indeno[1,2,3-cd]pyrene	0.001	ND	74	---	91	93
Dibenz[a,h]anthracene	0.001	ND	69	---	91	86
Benzo[g,h,i]perylene	0.001	ND	70	---	86	87

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR

11*

2-Fluorobiphenyl SURR

1*

Terphenyl-d14 SURR

144*

*NOTE: Surrogate out of standard range.

METHODS: EPA SW 846-8270, 3510.

CHEMIST: MB

BS

2-18-98

Director, Dr. Blair Leftwich

DATE

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ANALYTICAL RESULTS FOR NAVAJO REFINING

Attention: Bryan Madrid
 501 E. Main
 Artesia, NM 88210

February 18, 1998
 Receiving Date: 01/16/98
 Sample Type: Water
 Sampling Date: 01/14/98
 Sample Condition: I & C
 Sample Received by: VW
 Extraction Date: 01/21/98
 Analysis Date: 01/22/98

PAH	Reporting	T89211				
8270 Compounds (mg/L)	Limit	KWB-12A	QC	RPD	%EA	%IA
Naphthalene	0.001	ND	74	4	41	93
Acenaphthylene	0.001	ND	74	0	73	93
Acenaphthene	0.001	ND	73	1	71	91
Fluorene	0.001	ND	68	---	72	85
Phenanthrene	0.001	ND	74	11	76	93
Anthracene	0.001	ND	78	8	80	98
Fluoranthene	0.001	ND	72	20	72	90
Pyrene	0.001	ND	74	---	111	93
Benzo[a]anthracene	0.001	ND	78	---	81	98
Chrysene	0.001	ND	74	---	98	93
Benzo[b]fluoranthene	0.001	ND	74	---	69	93
Benzo[k]fluoranthene	0.001	ND	88	---	98	110
Benzo[a]pyrene	0.001	ND	77	---	85	96
Indeno[1,2,3-cd]pyrene	0.001	ND	74	---	91	93
Dibenz[a,h]anthracene	0.001	ND	69	---	91	86
Benzo[g,h,i]perylene	0.001	ND	70	---	86	87

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR
 2-Fluorobiphenyl SURR
 Terphenyl-d14 SURR

43
 45
 83

METHODS: EPA SW 846-8270, 3510.

CHEMIST: MB

BZ

2-18-98

Director, Dr. Blair Leftwich

DATE

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 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR NAVAJO REFINING

Attention: Bryan Madrid
 501 E. Main
 Artesia, NM 88210

February 18, 1998
 Receiving Date: 01/16/98
 Sample Type: Water
 Sampling Date: 01/14/98
 Sample Condition: I & C
 Sample Received by: VW
 Extraction Date: 01/21/98
 Analysis Date: 01/22/98

PAH	Reporting	T89212				
8270 Compounds (mg/L)	Limit	KWB-9	QC	RPD	%EA	%IA
Naphthalene	0.001	ND	74	4	41	93
Acenaphthylene	0.001	ND	74	0	73	93
Acenaphthene	0.001	ND	73	1	71	91
Fluorene	0.001	ND	68	---	72	85
Phenanthrene	0.001	ND	74	11	76	93
Anthracene	0.001	ND	78	8	80	98
Fluoranthene	0.001	ND	72	20	72	90
Pyrene	0.001	ND	74	---	111	93
Benzo [a] anthracene	0.001	ND	78	---	81	98
Chrysene	0.001	ND	74	---	98	93
Benzo [b] fluoranthene	0.001	ND	74	---	69	93
Benzo [k] fluoranthene	0.001	ND	88	---	98	110
Benzo [a] pyrene	0.001	ND	77	---	85	96
Indeno [1,2,3-cd] pyrene	0.001	ND	74	---	91	93
Dibenz [a,h] anthracene	0.001	ND	69	---	91	86
Benzo [g,h,i] perylene	0.001	ND	70	---	86	87

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR
 2-Fluorobiphenyl SURR
 Terphenyl-d14 SURR

62
 60
 102

METHODS: EPA SW 846-8270, 3510.

CHEMIST: MB

B

2-18-98

Director, Dr. Blair Leftwich

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 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Bryan Madrid
 501 E. Main
 Artesia, NM 88210

February 18, 1998

Receiving Date: 01/16/98

Sample Type: Water

Sampling Date: 01/14/98

Sample Condition: I & C

Sample Received by: VW

Extraction Date: 01/21/98

Analysis Date: 01/22/98

PAH	Reporting	T89213				
8270 Compounds (mg/L)	Limit	KWB-3A	QC	RPD	%EA	%IA
Naphthalene	0.001	ND	74	4	41	93
Acenaphthylene	0.001	ND	74	0	73	93
Acenaphthene	0.001	ND	73	1	71	91
Fluorene	0.001	ND	68	---	72	85
Phenanthrene	0.001	ND	74	11	76	93
Anthracene	0.001	ND	78	8	80	98
Fluoranthene	0.001	ND	72	20	72	90
Pyrene	0.001	ND	74	---	111	93
Benzo[a]anthracene	0.001	ND	78	---	81	98
Chrysene	0.001	ND	74	---	98	93
Benzo[b]fluoranthene	0.001	ND	74	---	69	93
Benzo[k]fluoranthene	0.001	ND	88	---	98	110
Benzo[a]pyrene	0.001	ND	77	---	85	96
Indeno[1,2,3-cd]pyrene	0.001	ND	74	---	91	93
Dibenz[a,h]anthracene	0.001	ND	69	---	91	86
Benzo[g,h,i]perylene	0.001	ND	70	---	86	87

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR

53

2-Fluorobiphenyl SURR

54

Terphenyl-d14 SURR

98

METHODS: EPA SW 846-8270, 3510.

CHEMIST: MB



2-18-98

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 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Bryan Madrid
 501 E. Main
 Artesia, NM 88210

February 18, 1998

Receiving Date: 01/16/98

Sample Type: Water

Sampling Date: 01/14/98

Sample Condition: I & C

Sample Received by: VW

Extraction Date: 01/21/98

Analysis Date: 01/22/98

PAH	Reporting	T89214				
8270 Compounds (mg/L)	Limit	KWB-11A	QC	RPD	%EA	%IA
Naphthalene	0.001	ND	74	4	41	93
Acenaphthylene	0.001	ND	74	0	73	93
Acenaphthene	0.001	ND	73	1	71	91
Fluorene	0.001	ND	68	---	72	85
Phenanthrene	0.001	ND	74	11	76	93
Anthracene	0.001	ND	78	8	80	98
Fluoranthene	0.001	ND	72	20	72	90
Pyrene	0.001	ND	74	---	111	93
Benzo[a]anthracene	0.001	ND	78	---	81	98
Chrysene	0.001	ND	74	---	98	93
Benzo[b]fluoranthene	0.001	ND	74	---	69	93
Benzo[k]fluoranthene	0.001	ND	88	---	98	110
Benzo[a]pyrene	0.001	ND	77	---	85	96
Indeno[1,2,3-cd]pyrene	0.001	ND	74	---	91	93
Dibenz[a,h]anthracene	0.001	ND	69	---	91	86
Benzo[g,h,i]perylene	0.001	ND	70	---	86	87

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR

66

2-Fluorobiphenyl SURR

66

Terphenyl-d14 SURR

115

METHODS: EPA SW 846-8270, 3510.

CHEMIST: MB

RB

2-18-98

Director, Dr. Blair Leftwich

DATE

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 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Bryan Madrid
 501 E. Main
 Artesia, NM 88210

February 18, 1998

Receiving Date: 01/16/98

Sample Type: Water

Sampling Date: 01/14/98

Sample Condition: I & C

Sample Received by: VW

Extraction Date: 01/21/98

Analysis Date: 01/22/98

PAH	Reporting	T89215				
8270 Compounds (mg/L)	Limit	KWB-7	QC	RPD	%EA	%IA
Naphthalene	0.001	ND	74	4	41	93
Acenaphthylene	0.001	ND	74	0	73	93
Acenaphthene	0.001	ND	73	1	71	91
Fluorene	0.001	ND	68	---	72	85
Phenanthrene	0.001	ND	74	11	76	93
Anthracene	0.001	ND	78	8	80	98
Fluoranthene	0.001	ND	72	20	72	90
Pyrene	0.001	ND	74	---	111	93
Benzo[a]anthracene	0.001	ND	78	---	81	98
Chrysene	0.001	ND	74	---	98	93
Benzo[b]fluoranthene	0.001	ND	74	---	69	93
Benzo[k]fluoranthene	0.001	ND	88	---	98	110
Benzo[a]pyrene	0.001	ND	77	---	85	96
Indeno[1,2,3-cd]pyrene	0.001	ND	74	---	91	93
Dibenz[a,h]anthracene	0.001	ND	69	---	91	86
Benzo[g,h,i]perylene	0.001	ND	70	---	86	87

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR

70

2-Fluorobiphenyl SURR

68

Terphenyl-d14 SURR

103

METHODS: EPA SW 846-8270, 3510.

CHEMIST: MB

PS

2-18-98

Director, Dr. Blair Leftwich

DATE

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 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Bryan Madrid
 501 E. Main
 Artesia, NM 88210

February 18, 1998

Receiving Date: 01/16/98

Sample Type: Water

Sampling Date: 01/14/98

Sample Condition: I & C

Sample Received by: VW

Extraction Date: 01/21/98

Analysis Date: 01/22/98

PAH

Reporting

T89216

8270 Compounds (mg/L)	Limit	MW-18	QC	RPD	%EA	%IA
Naphthalene	0.001	ND	74	4	41	93
Acenaphthylene	0.001	ND	74	0	73	93
Acenaphthene	0.001	ND	73	1	71	91
Fluorene	0.001	ND	68	---	72	85
Phenanthrene	0.001	ND	74	11	76	93
Anthracene	0.001	ND	78	8	80	98
Fluoranthene	0.001	ND	72	20	72	90
Pyrene	0.001	ND	74	---	111	93
Benzo[a]anthracene	0.001	ND	78	---	81	98
Chrysene	0.001	ND	74	---	98	93
Benzo[b]fluoranthene	0.001	ND	74	---	69	93
Benzo[k]fluoranthene	0.001	ND	88	---	98	110
Benzo[a]pyrene	0.001	ND	77	---	85	96
Indeno[1,2,3-cd]pyrene	0.001	ND	74	---	91	93
Dibenz[a,h]anthracene	0.001	ND	69	---	91	86
Benzo[g,h,i]perylene	0.001	ND	70	---	86	87

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR

63

2-Fluorobiphenyl SURR

62

Terphenyl-d14 SURR

105

METHODS: EPA SW 846-8270, 3510.

CHEMIST: MB

BL

2-18-98

Director, Dr. Blair Leftwich

DATE

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR NAVAJO REFINING

Attention: Bryan Madrid
 501 E. Main
 Artesia, NM 88210

February 18, 1998
 Receiving Date: 01/16/98
 Sample Type: Water
 Sampling Date: 01/14/98
 Sample Condition: I & C
 Sample Received by: VW
 Extraction Date: 01/21/98
 Analysis Date: 01/22/98

PAH	Reporting	T89217				
8270 Compounds (mg/L)	Limit	MW-45	QC	RPD	%EA	%IA
Naphthalene	0.001	ND	74	4	41	93
Acenaphthylene	0.001	ND	74	0	73	93
Acenaphthene	0.001	ND	73	1	71	91
Fluorene	0.001	ND	68	---	72	85
Phenanthrene	0.001	ND	74	11	76	93
Anthracene	0.001	ND	78	8	80	98
Fluoranthene	0.001	ND	72	20	72	90
Pyrene	0.001	ND	74	---	111	93
Benzo[a]anthracene	0.001	ND	78	---	81	98
Chrysene	0.001	ND	74	---	98	93
Benzo[b]fluoranthene	0.001	ND	74	---	69	93
Benzo[k]fluoranthene	0.001	ND	88	---	98	110
Benzo[a]pyrene	0.001	ND	77	---	85	96
Indeno[1,2,3-cd]pyrene	0.001	ND	74	---	91	93
Dibenz[a,h]anthracene	0.001	ND	69	---	91	86
Benzo[g,h,i]perylene	0.001	ND	70	---	86	87

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR
 2-Fluorobiphenyl SURR
 Terphenyl-d14 SURR

60
 59
 81

METHODS: EPA SW 846-8270, 3510.

CHEMIST: MB



2-18-98

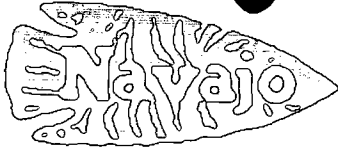
Director, Dr. Blair Leftwich

DATE

B

TELEPHONE
(505) 748-3311

EASYLINK
62905278

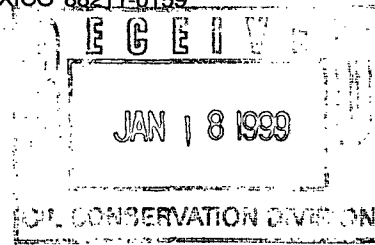


REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

January 14, 1999



Mr. Roger Anderson
Environmental Bureau
Oil Conservation Division
2040 S. Pacheco St.
Santa Fe, NM 87505-5472

Dear Roger,

Enclosed are the results of Navajo Refining Company's annual sampling of the effluent into our evaporation ponds. In Navajo's letter of December 21, 1991, (response to NOV NMD048918817), Navajo agreed to send a copy of these results to ED.

If you have any questions concerning these results, please call me at 505-748-3311. Thank you for your time in this matter.

Sincerely,
NAVAJO REFINING COMPANY

Darrell Moore
Environmental Mgr. for Water and Waste

encl.
cc: NM Environment Dept.



TRACE ANALYSIS, INC.

6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR

NAVAJO REFINING CO.

Attention: Darrell Moore

501 E. Main

Artesia, NM 88210

December 24, 1998

Receiving Date: 12/09/98

Sample Type: Water

Project No:

Project Location: Artesia

Sampling Date: 12/08/98

Sample Condition: Intact

Sample Received by: VW

Project Name: Annual Navajo Refining Effluent

TA#	FIELD CODE	As (mg/L)	Se (mg/L)	Cd (mg/L)	Cr (mg/L)	Pb (mg/L)	Ag (mg/L)	Ba (mg/L)	Al (mg/L)	Be (mg/L)	Co (mg/L)	Cu (mg/L)	Fe (mg/L)	Mn (mg/L)	Mo (mg/L)	Ni (mg/L)	TOTAL
T114384	Effluent	<0.10	0.64	<0.01	0.07	0.01	0.01	<0.10	0.75	<0.01	0.08	<0.10	3.8	<0.10	<0.10	<0.10	<0.10
ICV		1.0	1.0	1.0	1.0	1.0	0.21	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.99	1.0	1.0
CCV		0.97	0.99	1.0	1.0	1.0	0.20	1.0	1.0	1.0	1.0	0.99	1.0	1.0	0.98	1.0	1.0
REPORTING LIMIT		0.10	0.01	0.01	0.05	0.005	0.005	0.10	0.10	0.01	0.05	0.10	0.10	0.10	0.10	0.10	0.10
RPD		0	4	0	5	5	2	0	0	0	5	0	5	5	5	5	5
% Extraction Accuracy		110	105	95	100	90	100	90	100	100	95	100	95	95	95	90	90
% Instrument Accuracy		98	99	100	100	100	100	100	100	100	100	99	100	100	100	100	100
PREP DATE		12/10/98	12/10/98	12/10/98	12/10/98	12/10/98	12/10/98	12/10/98	12/10/98	12/10/98	12/10/98	12/10/98	12/10/98	12/10/98	12/10/98	12/10/98	12/10/98
ANALYSIS DATE		12/14/98	12/14/98	12/14/98	12/14/98	12/14/98	12/14/98	12/14/98	12/14/98	12/14/98	12/14/98	12/14/98	12/14/98	12/14/98	12/14/98	12/14/98	12/14/98

METHODS: EPA 200.7

CHEMIST: As, Se, Cd, Cr, Pb, Ag, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni: RR

TOTAL METAL SPIKE: 2.0 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni 0.50 mg/L Ag

TOTAL METAL CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni 0.20 mg/L Ag

182

Director, Dr. Blair Leftwich

12-24-98

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806 • 794 • 1296

FAX 806 • 794 • 1298

December 24, 1998

Receiving Date: 12/09/98

Sample Type: Water

Project No:

Project Location: Artesia

ANALYTICAL RESULTS FOR

NAVAJO REFINING CO.

Attention: Darrell Moore

501 E. Main

Artesia, NM 88210

Sampling Date: 12/08/98

Sample Condition: Intact

Sample Received by: VW

Project Name: Annual Navajo Refining Effluent

TA#	FIELD CODE	CHLORIDE (mg/L)	FLUORIDE (mg/L)	S04 (mg/L)	ALKALINITY	
					HCO3 mg/L as CaCO3	CO3 mg/L as CaCO3
T114384	Effluent	442	199	1,246	208	94
ICV		11.25	2.43	12.15	1160	2560
CCV		11.31	2.42	12.32	1100	2200
REPORTING LIMIT		0.5	0.1	0.5	1	1
RPD		0	2	2	1	1
% Extraction Accuracy		90	92	96	---	---
% Instrument Accuracy		90	97	98	92	92
PREP DATE		12/11/98	12/10/98	12/10/98		12/11/98
ANALYSIS DATE		12/11/98	12/10/98	12/10/98		12/11/98

METHODS: EPA 300.0, 310.1
 CHEMIST: CL, F, SO4: SA ALKALINITY: MD
 CHLORIDE SPIKE: 62.5 mg/L CHLORIDE.
 S04 SPIKE: 62.5 mg/L S04.
 F SPIKE: 12.5 mg/L

CHLORIDE CV: 12.5 mg/L CHLORIDE.
 S04 CV: 12.5 mg/L S04.
 F CV: 2.5 mg/L NH3-N.

Director, Dr. Blair Leftwich

DATE

12-24-98

TRACE ANALYSIS, INC.

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El Paso, Texas 79922

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ANALYTICAL RESULTS FOR
NAVAJO REFINING CO.
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

December 24, 1998
Receiving Date: 12/09/98
Sample Type: Water
Project Name: Annual Navajo
Refining Effluent
Project Loc.: Artesia
Sampling Date: 12/08//98
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 12/11/98
Analysis Date: 12/14/98

PAH	Reporting	T114384				
8270 Compounds (mg/L)	Limit	Effluent	QC	RPD	%EA	%IA
Naphthalene	0.005	0.021	78	*35	84	98
Acenaphthylene	0.005	ND	78	*23	93	98
Acenaphthene	0.005	ND	78	*22	86	98
Fluorene	0.005	ND	81	*21	93	101
Phenanthrene	0.005	0.006	79	*22	95	99
Anthracene	0.005	ND	82	20	99	103
Fluoranthene	0.005	ND	77	16	95	96
Pyrene	0.005	ND	74	16	95	93
Benzo[a]anthracene	0.005	ND	75	17	90	94
Chrysene	0.005	ND	77	16	92	96
Benzo[b]fluoranthene	0.005	ND	86	7	88	108
Benzo[k]fluoranthene	0.005	ND	73	7	88	91
Benzo[a]pyrene	0.005	ND	79	16	96	99
Indeno[1,2,3-cd]pyrene	0.005	ND	70	14	83	88
Dibenz[a,h]anthracene	0.005	ND	68	15	85	85
Benzo[g,h,i]perylene	0.005	ND	68	15	86	85

ND = Not Detected

*RPD of of reporting limit

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR

46

2-Fluorobiphenyl SURR

43

Terphenyl-d14 SURR

51

METHODS: EPA SW 846-8270, 3510.

CHEMIST: MA



12-24-98

Director, Dr. Blair Leftwich

DATE

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

December 24, 1998

Receiving Date: 12/09/98

Sample Type: Water

Project No:

Project Location: Artesia

ANALYTICAL RESULTS FOR

NAVAJO REFINING CO.

Attention: Darrell Moore

501 E. Main

Artesia, NM 88210

Prep Date: 12/10/98

Prep Date: 12/15/98

Sampling Date: 12/08/98

Sample Condition: Intact & Cool

Sample Received by: VW

Project Name: Annual Navajo
Refining Effluent

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T114384	Effluent	15	26	21	552
ICV		24	25	24	24
CCV		24	25	26	25
Reporting Limit		0.50	0.50	0.50	0.50
RPD		10	12	8	12
% Extraction Accuracy		105	103	123	97
% Instrument Accuracy		96	96	100	100

METHODS: EPA SW 846-6010B, 3015

CHEMIST: RR

SPIKE: 100 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

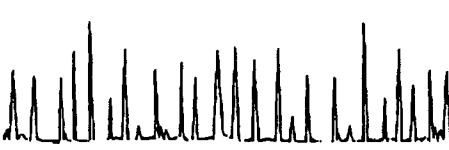
CV: 25 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

RR

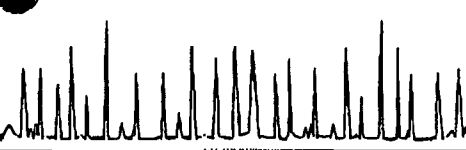
12-28-98

Director, Dr. Blair Leftwich

Date



TRACEANALYSIS, INC.



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FAX 915-585-4944

E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR NAVAJO REFINING CO. Attention: Darrell Moore 501 E. Main Artesia, NM 88210

January 11, 1999

Receiving Date: 12/09/98

Sample Type: Water

Project No:

Project Location: Artesia

Sampling Date: 12/08/98

Sample Condition: Intact

Sample Received by: VW

Project Name: Annual Navajo Refining Effluent

CORRECTED

TA#	FIELD CODE	TOTAL V (mg/L)	TOTAL Zn (mg/L)	TOTAL B (mg/L)	TOTAL U (mg/L)	TOTAL Hg (mg/L)
T114384	Effluent	<0.10	0.18	0.27	<5.0	<0.0002
ICV		1.0	1.0	1.0	1.1	0.0011
CCV		1.0	1.0	1.0	0.98	0.0010
REPORTING LIMIT		0.01	0.05	0.005	5.0	0.0002
RPD		0	5	4	5	10
% Extraction Accuracy		100	100	105	85	100
% Instrument Accuracy		100	100	100	100	110
PREP DATE		12/10/98	12/10/98	12/10/98	1/7/99	12/15/98
ANALYSIS DATE		12/14/98	12/14/98	12/14/98	1/8/99	12/16/98

* This is a re-run.

METHODS: EPA 200.7

CHEMIST: As, Se, Cd, Cr, Pb, Ag, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni: RR

TOTAL METAL SPIKE: 2.0 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni 0.50 mg/L Ag

TOTAL METAL CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni 0.20 mg/L Ag



Director, Dr. Blair Leftwich

1-11-99
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore

501 E. Main

Artesia

NM 88210

Date: Dec 11, 1998

Project: Annual RO Reject Water

Proj Name: N/A

Proj Loc: Artesia, NM 88210

Lab Receiving #: 9812000196

Date Rec: 12/9/98

Sampling Date: 12/8/98

Sample Condition: Intact and Cool

Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M,P,O XYLENE (mg/L)	TOTAL BTEX (mg/L)
114384	Effluent	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Method Blank		<0.001	<0.001	<0.001	<0.001	<0.001	
	Reporting Limit		0.001	0.001	0.001	0.001	0.001	
QC			0.099	0.098	0.102	0.107	0.307	

RPD
% Extraction Accuracy
% Instrument Accuracy

0	0	1	1
110	101	108	118
99	98	102	102

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	12/11/98	EPA 8021B	12/11/98	CS	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

12-11-98

TELEPHONE
(505) 748-3311

EASYLINK
62905278

OIL CONSERVATION DIVISION
Mr. Roger Anderson

NM Oil Conservation Division
Environmental Bureau
Oil Conservation Division
2040 S. Pacheco St.
Santa Fe, NM 87505-5472

REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P/L

January 5, 1999

Certified Mail Receipt
Z 378 881 323

RE: FALL 1998 REPORT GROUND WATER SAMPLING AROUND EVAPORATION PONDS

Dear Roger:

Enclosed are results from our Fall 1998 sampling of the monitor wells around the evaporation ponds. This is on a staggered schedule per your letter of October 21, 1991. The following is a summary of field observations:

<u>Well #</u>	<u>Ground water</u> <u>ft amsl</u>	<u>pH</u>	<u>EC</u> <u>umhos</u>	<u>Deg. C</u>	<u>Description</u>
MW-1	3301.73	7.84	8600	20.8	Slight Odor
MW-2A	3300.93	7.81	11800	21.1	Odor
MW-3	3299.23	7.56	7500	21.6	Moderate odor
MW-4	3298.99	7.99	7300	19.9	Mod. Odor
MW-5A	3298.06	7.54	13800	20.6	Odor, Silty
OCD-2A	3299.97	7.38	9500	20.2	Odor
OCD-4	3298.77	7.40	9800	20.1	Odor
OCD-6	3299.35	8.01	9840	20.3	Mild odor
OCD-8A	3298.02	7.56	8200	21.9	Odor

If you have any questions, please contact me at 748-3311, extension 281.

Respectfully yours,
NAVAJO REFINING CO.

Darrell Moore

Darrell Moore
Environmental Mgr. for Water and Waste

Encl.
cc: USEPA

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue

Lubbock, Texas 79424

806-794-1296

FAX 806-794-1298

December 16, 1998

Receiving Date: 11/18/98

Sample Type: Water

Project No: NA

Project Location: Artesia, NM

ANALYTICAL RESULTS FOR
NAVAJO REFINING

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Sampling Date: 11/17/98
Sample Condition: Intact & Cool
Sample Received by: NG
Project Name: Semi-Annual
Evap. Ponds

TA#	FIELD CODE	TOTAL METALS									
		As (mg/L)	Se (mg/L)	Cd (mg/L)	Cr (mg/L)	Pb (mg/L)	Ag (mg/L)	Ba (mg/L)	Al (mg/L)	Be (mg/L)	Co (mg/L)

T113067	MW-4	<0.10	<0.01	<0.01	<0.05	<0.005	<0.002	<0.10	0.10	<0.01	<0.05
ICV		1.0	0.96	1.0	1.0	1.0	0.20	1.0	1.0	1.0	0.95
CCV		0.97	1.0	1.0	1.0	1.0	0.20	1.0	1.0	1.0	1.0
METHOD BLANK		<0.10	<0.01	<0.01	<0.05	<0.005	<0.002	<0.10	<0.05	<0.01	<0.05
REPORTING LIMIT		0.10	0.01	0.01	0.05	0.005	0.002	0.10	0.05	0.01	0.05
RPD		5*	24	15	0	5	0	5	10*	14	15
% Extraction Accuracy		110*	115	110	110	105	100	110	100*	115	105
% Instrument Accuracy		98	98	100	100	100	100	100	100	100	97
PREP DATE		11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98
ANALYSIS DATE		12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98

		Cu (mg/L)	Fe (mg/L)	Mn (mg/L)	Mo (mg/L)	Ni (mg/L)	V (mg/L)	Zn (mg/L)	B (mg/L)	U (mg/L)	Hg (mg/L)
T113067	MW-4	<0.10	2.7	1.8	<0.02	0.01	<0.10	<0.10	0.61	0.76	<0.0010
ICV		1.0	1.0	1.0	0.97	0.99	1.0	0.97	1.0	1.0	0.0045
CCV		1.0	1.0	1.0	0.99	1.0	1.0	1.0	1.0	1.0	0.0049
METHOD BLANK		<0.10	<0.05	<0.02	<0.02	<0.01	<0.10	<0.10	<0.10	<0.50	<0.0010
REPORTING LIMIT		0.10	0.05	0.02	0.02	0.01	0.10	0.10	0.10	0.50	0.0010
RPD		5*	0	14	14	4	10	4*	5*	15	0
% Extraction Accuracy		105*	100	105	115	110	115	115*	105*	105	100**
% Instrument Accuracy		100	100	100	98	99	100	98	100	100	94
PREP DATE		11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/24/98
ANALYSIS DATE		12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	11/25/98

*NOTE: Used LCS and LCSD for Extraction Accuracy and RPD.
**NOTE: % Extraction Accuracy was not useable due to matrix affects.

METHODS: EPA 200.7, 245.1.

CHEMIST: As, Cd, Cr, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, Se, Pb, Ag, B, U: RR Hg: BP

TOTAL METALS SPIKE: 0.20 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, B, 2.0 mg/L U; 0.05 mg/L Ag; 0.0050 mg/L Hg.

TOTAL METALS CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, B, U; 0.20 mg/L Ag; 0.0050 mg/L Hg.

Director, Dr. Blair Leftwich

DATE

12-18-98

TRACE ANALYSIS, INC.

December 16, 1998
 Receiving Date: 11/18/98
 Sample Type: Water
 Project No: NA
 Project Location: Artesia, NM

6701 Aberdeen Avenue Lubbock, Texas 79424
 ANALYTICAL RESULTS FOR
 NAVAJO REFINING
 Attention: Darrell Moore
 501 E. Main
 Artesia, NM 88210

806°794°1296 FAX 806°794°1298
 Sampling Date: 11/17/98
 Sample Condition: Intact & Cool
 Sample Received by: NG
 Project Name: Semi-Annual
 Evap. Ponds

TA#	FIELD CODE	TOTAL METALS									
		As	Se	Cd	Cr	Pb	Ag	Ba	Al	Be	Co
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)

TT13068	MMW-5A	0.15	<0.01	<0.01	<0.05	<0.005	<0.002	<0.10	0.28	<0.01	<0.05
ICV		1.0	0.96	1.0	1.0	1.0	0.20	1.0	1.0	1.0	0.95
CCV		0.97	1.0	1.0	1.0	1.0	0.20	1.0	1.0	1.0	1.0
METHOD BLANK		<0.10	<0.01	<0.01	<0.05	<0.005	<0.002	<0.10	<0.05	<0.01	<0.05
REPORTING LIMIT		0.10	0.01	0.01	0.05	0.005	0.002	0.10	0.05	0.01	0.05
RPD		5*	24	15	0	5	0	5	10*	14	15
% Extraction Accuracy		110*	115	110	110	105	100	110	100*	115	105
% Instrument Accuracy		98	98	100	100	100	100	100	100	100	97
PREP DATE		11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98
ANALYSIS DATE		12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98

		Cu	Fe	Mn	Mo	Ni	V	Zn	B	U	Hg
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
TT13068	MMW-5A	<0.10	4.3	1.1	0.03	0.02	<0.10	<0.10	1.3	0.82	<0.0010
ICV		1.0	1.0	1.0	0.97	0.99	1.0	0.97	1.0	1.0	0.0045
CCV		1.0	1.0	1.0	0.99	1.0	1.0	1.0	1.0	1.0	0.0049
METHOD BLANK		<0.10	<0.05	<0.02	<0.02	<0.01	<0.10	<0.10	<0.10	<0.50	<0.0010
REPORTING LIMIT		0.10	0.05	0.02	0.02	0.01	0.10	0.10	0.10	0.50	0.0010
RPD		5*	0	14	14	4	10	4*	5*	15	0
% Extraction Accuracy		105*	100	105	115	110	115	115*	105*	105	100**
% Instrument Accuracy		100	100	100	98	99	100	98	100	100	94
PREP DATE		11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/24/98
ANALYSIS DATE		12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	11/25/98

NOTE: Used LCS and LCSD for Extraction Accuracy and RPD.
 **NOTE: % Extraction Accuracy was not useable due to matrix affects.

METHODS: EPA 200.7, 245.1.

CHEMIST: As, Cd, Cr, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, Se, Pb, Ag, B, U: RR Hg: BP
 TOTAL METALS SPIKE: 0.20 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, B; 2.0 mg/L U; 0.05 mg/L Ag; 0.0050 mg/L Hg.
 TOTAL METALS CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, B, U; 0.20 mg/L Ag; 0.0050 mg/L Hg.

Director, Dr. Blair Leftwich

DATE 12-16-98

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue Lubbock, Texas 79424 806-794-1296 FAX 806-794-1298

December 16, 1998
Receiving Date: 11/18/98
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Sampling Date: 11/17/98
Sample Condition: Intact & Cool
Sample Received by: NG
Project Name: Semi-Annual
Evap. Ponds

TA#	FIELD CODE	TOTAL METALS									
		As (mg/L)	Se (mg/L)	Cd (mg/L)	Cr (mg/L)	Pb (mg/L)	Ag (mg/L)	Ba (mg/L)	Al (mg/L)	Be (mg/L)	Co (mg/L)

T113069	OCD-8A	0.11	<0.01	<0.01	<0.05	<0.005	0.005	<0.10	0.92	<0.01	<0.05
ICV		1.0	0.96	1.0	1.0	1.0	0.20	1.0	1.0	1.0	0.95
CCV		0.97	1.0	1.0	1.0	1.0	0.20	1.0	1.0	1.0	1.0
METHOD BLANK		<0.10	<0.01	<0.01	<0.05	<0.005	<0.002	<0.10	<0.05	<0.01	<0.05
REPORTING LIMIT		0.10	0.01	0.01	0.05	0.005	0.002	0.10	0.05	0.01	0.05
RPD		5*	24	15	0	5	0	5	10*	14	15
% Extraction Accuracy		110*	115	110	110	105	100	110	100*	115	105
% Instrument Accuracy		98	98	100	100	100	100	100	100	100	97
PREP DATE		11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98
ANALYSIS DATE		12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98

	Cu (mg/L)	Fe (mg/L)	Mn (mg/L)	Mo (mg/L)	Ni (mg/L)	V (mg/L)	Zn (mg/L)	B (mg/L)	U (mg/L)	Hg (mg/L)

T113069	OCD-8A	<0.10	3.5	3.0	<0.02	0.02	<0.10	<0.10	0.80	0.99	<0.0010
ICV		1.0	1.0	1.0	0.97	0.99	1.0	0.97	1.0	1.0	0.0045
CV		1.0	1.0	1.0	0.99	1.0	1.0	1.0	1.0	1.0	0.0049
METHOD BLANK		<0.10	<0.05	<0.02	<0.02	<0.01	<0.10	<0.10	<0.10	<0.50	<0.0010
REPORTING LIMIT		0.10	0.05	0.02	0.02	0.01	0.10	0.10	0.10	0.50	0.0010
RPD		5*	0	14	14	4	10	4*	5*	15	0
% Extraction Accuracy		105*	100	105	115	110	115	115*	105*	105	100**
% Instrument Accuracy		100	100	100	98	99	100	98	100	100	94
PREP DATE		11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/24/98
ANALYSIS DATE		12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	11/25/98

*NOTE: Used LCS and LCSD for Extraction Accuracy and RPD.
**NOTE: % Extraction Accuracy was not useable due to matrix affects.

METHODS: EPA 200.7, 245.1.

CHEMIST: As, Cd, Cr, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, Se, Pb, Ag, B, U: RR Hg: BP
TOTAL METALS SPIKE: 0.20 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, B; 2.0 mg/L U; 0.05 mg/L Ag; 0.0050 mg/L Hg.
TOTAL METALS CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, B, U; 0.20 mg/L Ag; 0.0050 mg/L Hg.

Director, Dr. Blair Leftwich

DATE

12-16-98

TRACE ANALYSIS, INC.

December 16, 1998
 Receiving Date: 11/18/98
 Sample Type: Water
 Project No: NA
 Project Location: Artesia, NM

6701 Aberdeen Avenue Lubbock, Texas 79424
 ANALYTICAL RESULTS FOR
 NAVAJO REFINING
 Attention: Darrell Moore
 501 E. Main
 Artesia, NM 88210

Sampling Date: 11/17/98
 Sample Condition: Intact & Cool
 Sample Received by: NG
 Project Name: Semi-Annual
 Evap.Ponds

TA#	FIELD CODE	TOTAL METALS									
		As (mg/L)	Se (mg/L)	Cd (mg/L)	Cr (mg/L)	Pb (mg/L)	Ag (mg/L)	Ba (mg/L)	Al (mg/L)	Be (mg/L)	Co (mg/L)

T113070	OCD-4	<0.10	<0.01	<0.01	<0.05	<0.005	<0.002	<0.10	0.15	<0.01	<0.05
ICV		1.0	0.96	1.0	1.0	1.0	0.20	1.0	1.0	1.0	0.95
CCV		0.97	1.0	1.0	1.0	1.0	0.20	1.0	1.0	1.0	1.0
METHOD BLANK		<0.10	<0.01	<0.01	<0.05	<0.005	<0.002	<0.10	<0.05	<0.01	<0.05
REPORTING LIMIT		0.10	0.01	0.01	0.05	0.005	0.002	0.10	0.05	0.01	0.05
RPD		5*	24	15	0	5	0	5	10*	14	15
% Extraction Accuracy		110*	115	110	110	105	100	110	100*	115	105
% Instrument Accuracy		98	98	100	100	100	100	100	100	100	97
PREP DATE		11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98
ANALYSIS DATE		12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98

		Cu (mg/L)	Fe (mg/L)	Mn (mg/L)	Mo (mg/L)	Ni (mg/L)	V (mg/L)	Zn (mg/L)	B (mg/L)	U (mg/L)	Hg (mg/L)
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
T113070	OCD-4	<0.10	3.9	0.22	<0.02	0.01	<0.10	<0.10	1.3	1.1	<0.0010
ICV		1.0	1.0	1.0	0.97	0.99	1.0	0.97	1.0	1.0	0.0045
CV		1.0	1.0	1.0	0.99	1.0	1.0	1.0	1.0	1.0	0.0049
METHOD BLANK		<0.10	<0.05	<0.02	<0.02	<0.01	<0.10	<0.10	<0.10	<0.50	<0.0010
REPORTING LIMIT		0.10	0.05	0.02	0.02	0.01	0.10	0.10	0.10	0.50	0.0010
RPD		5*	0	14	14	4	10	4*	5*	15	0
% Extraction Accuracy		105*	100	105	115	110	115	115*	105*	105	100**
% Instrument Accuracy		100	100	100	98	99	100	98	100	100	94
PREP DATE		11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/24/98
ANALYSIS DATE		12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	11/25/98

*NOTE: Used LCS and LCSD for Extraction Accuracy and RPD.
 **NOTE: % Extraction Accuracy was not useable due to matrix affects.

METHODS: EPA 200.7, 245.1.
 CHEMIST: As, Cd, Cr, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, Se, Pb, Ag, B, U: RR Hg: BP
 TOTAL METALS SPIKE: 0.20 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, B; 2.0 mg/L U; 0.05 mg/L Ag; 0.0050 mg/L Hg.
 TOTAL METALS CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, B, U; 0.20 mg/L Ag; 0.0050 mg/L Hg.

Director, Dr. Blair Leftwich

DATE

12-16-98

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue Lubbock, Texas 79424 806-794-1296 FAX 806-794-1298

December 16, 1998
Receiving Date: 11/18/98
Sample Type: Water
Project No: NA
Project Location: Artesia, NM

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Sampling Date: 11/17/98
Sample Condition: Intact & Cool
Sample Received by: NG
Project Name: Semi-Annual
Evap. Ponds

TA#	FIELD CODE	TOTAL METALS									
		As (mg/L)	Se (mg/L)	Cd (mg/L)	Cr (mg/L)	Pb (mg/L)	Ag (mg/L)	Ba (mg/L)	Al (mg/L)	Be (mg/L)	Co (mg/L)

T113071	OCD-2A	<0.10	<0.01	<0.01	<0.05	<0.005	0.004	<0.10	0.88	<0.01	<0.05
ICV		1.0	0.96	1.0	1.0	1.0	0.20	1.0	1.0	1.0	0.95
CCV		0.97	1.0	1.0	1.0	1.0	0.20	1.0	1.0	1.0	1.0
METHOD BLANK		<0.10	<0.01	<0.01	<0.05	<0.005	<0.002	<0.10	<0.05	<0.01	<0.05
REPORTING LIMIT		0.10	0.01	0.01	0.05	0.005	0.002	0.10	0.05	0.01	0.05
RPD		5*	24	15	0	5	0	5	10*	14	15
% Extraction Accuracy		110*	115	110	110	105	100	110	100*	115	105
% Instrument Accuracy		98	98	100	100	100	100	100	100	100	97
PREP DATE		11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98
ANALYSIS DATE		12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98

		Cu (mg/L)	Fe (mg/L)	Mn (mg/L)	Mo (mg/L)	Ni (mg/L)	V (mg/L)	Zn (mg/L)	B (mg/L)	U (mg/L)	Hg (mg/L)
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
T113071	OCD-2A	<0.10	7.8	1.6	<0.02	0.02	<0.10	<0.10	0.66	1.0	<0.0010
ICV		1.0	1.0	1.0	0.97	0.99	1.0	0.97	1.0	1.0	0.0045
CCV		1.0	1.0	1.0	0.99	1.0	1.0	1.0	1.0	1.0	0.0049
METHOD BLANK		<0.10	<0.05	<0.02	<0.02	<0.01	<0.10	<0.10	<0.10	<0.50	<0.0010
REPORTING LIMIT		0.10	0.05	0.02	0.02	0.01	0.10	0.10	0.10	0.50	0.0010
RPD		5*	0	14	14	4	10	4*	5*	15	0
% Extraction Accuracy		105*	100	105	115	110	115	115*	105*	105	100**
% Instrument Accuracy		100	100	100	98	99	100	98	100	100	94
PREP DATE		11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/19/98	11/24/98
ANALYSIS DATE		12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	12/08/98	11/25/98

*NOTE: Used LCS and LCSD for Extraction Accuracy and RPD.
**NOTE: % Extraction Accuracy was not useable due to matrix affects.

METHODS: EPA 200.7, 245.1.

CHEMIST: As, Cd, Cr, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, Se, Pb, Ag, B, U: RR Hg: BP
TOTAL METALS SPIKE: 0.20 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, B; 2.0 mg/L U; 0.05 mg/L Ag; 0.0050 mg/L Hg.
TOTAL METALS CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, B, U; 0.20 mg/L Ag; 0.0050 mg/L Hg.

Director, Dr. Blair Lefthich

DATE

12-16-98

6701 Aberdeen Avenue

Lubbock, Texas 79424

806°794°1296

FAX 806°794°1298

TRACE ANALYSIS, INC.

December 16, 1998

Receiving Date: 11/18/98

Sample Type: Water

Project No: NA

Project Location: Artesia, NM

ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Darrell Moore

501 E. Main

Artesia, NM 88210

Sampling Date: 11/17/98

Sample Condition: Intact & Cool

Sample Received by: NG

Project Name: Semi-Annual

Evap. Ponds

TA#	FIELD CODE	N03-N (mg/L)	CHLORIDE (mg/L)	FLUORIDE (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCO3) HCO3 C03
T113067	MW-4	<2.0	1,300	2.9	1,700	220 <1.0
T113068	MW-5A	<2.0	4,000	5.0	6,300	410 <1.0
T113069	OCD-8A	<2.0	2,300	4.2	3,600	430 <1.0
T113070	OCD-4	<2.0	5,000	2.3	2,900	210 <1.0
T113071	OCD-2A	<2.0	4,800	2.8	4,000	540 <1.0
ICV		4.8	11	2.3	11	1,150 1,100
CCV		4.8	11	2.3	12	1,180 1,120
REPORTING LIMIT		2.0	0.5	0.1	0.5	1.0 1.0
RPD		3	0	7	1	2 2
% Extraction Accuracy		107	87	97	97	---
% Instrument Accuracy		97	95	100	96	96 96
PREP DATE		11/18/98	11/19/98	11/18/98	11/19/98	11/27/98
ANALYSIS DATE		11/18/98	11/19/98	11/18/98	11/19/98	11/27/98

METHODS: EPA 300.0, 310.1.

CHEMIST: CHLORIDE/SULFATE/FLUORIDE/N03-N: JS ALKALINITY: RS

SPIKE: 2,500 mg/L CHLORIDE; 12.5 mg/L FLUORIDE; 2,500 mg/L SULFATE; 25 mg/L N03-N.

CV: 12.5 mg/L CHLORIDE; 2.5 mg/L FLUORIDE; 12.5 mg/L SULFATE; 5.0 mg/L N03-N.

Director Dr. Blair Leftwich

Date

12-16-98

6701 Aberdeen Avenue

Lubbock, Texas 79424

806-794-1296

FAX 806-794-1298

TRACE ANALYSIS, INC.

December 16, 1998

Receiving Date: 11/18/98

Sample Type: Water

Project No: NA

Project Location: Artesia, NM

ANALYTICAL RESULTS FOR

NAVAJO REFINING CO.

Attention: Darrell Moore

501 E. Main

Artesia, NM 88210

Prep Date: 11/19/98

Analysis Date: 12/10/98

Sampling Date: 11/17/98

Sample Condition: Intact & Cool

Sample Received by: NG

Project Name: Semi-Annual

Evap. Ponds

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T113067	MW-4	20	127	384	850
T113068	MW-5A	23	722	540	3,270
T113069	OCD-8A	24	265	596	1,690
T113070	OCD-4	66	280	813	2,550
T113071	OCD-2A	23	350	670	2,580
ICV		24	24	25	23
CCV		25	25	26	25

Reporting Limit
METHOD BLANK

0.50	0.50	0.50	0.50
<0.50	<0.50	<0.50	<0.50

RPD
% Extraction Accuracy
% Instrument Accuracy

2*	08	1*	2*
108*	103*	103*	102*
96	96	100	96

*NOTE: Used LCS and LCSD for Extraction Accuracy and RPD due to required dilutions.

METHODS: EPA 200.7.

CHEMIST: RR

SPIKE: 100 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

CV: 25 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich

Date

12-16-98

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A

Lubbock, Texas 79424 800•378•1296
El Paso, Texas 79922 888•588•3443
E-Mail: lab@traceanalysis.com

806•794•1296 FAX 806•794•1298
915•585•3443 FAX 915•585•4944

ANALYTICAL RESULTS FOR NAVAJO REFINING

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

December 16, 1998
Receiving Date: 11/18/98
Sample Type: Water
Proj. Loc.: Artesia, NM
Proj. Name: Semi-Annual
Evap. Ponds
Sampling Date: 11/17/98
Sample Condition: I & C
Sample Received by: NG
Extraction Date: 11/19/98
Analysis Date: 11/25/98

PAH

Reporting T113067

8270 Compounds (mg/L)	Limit*	MW-4	QC	RPD	%EA	%IA
Naphthalene	0.01	ND	85	4	56	106
2-Methylnaphthalene	0.01	ND	84	4	55	105
1-Methylnaphthalene	0.01	ND	84	4	65	105

ND = Not Detected

SURROGATES

% RECOVERY

Nitrobenzene-d5 SURR
2-Fluorobiphenyl SURR
Terphenyl-d14 SURR
2-Fluorophenol SURR
Phenol-ds SURR
2,4,6-Tribromophenol SURR

57
67
84
17
8
48

*NOTE: Elevated reporting limits due to matrix.

METHODS: EPA SW 846-8270C, 3510C.

CHEMIST: DG



Director, Dr. Blair Leftwich

12-16-98

DATE

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

TRACE ANALYSIS, INC.

ANALYTICAL RESULTS FOR

Navajo Refining
Attention Darrell Moore

501 E. Main

Artesia

NM 88210

Date: Nov 23, 1998

Project: N/A

Proj Name: Semi Annual Evap. Ponds

Proj Loc: Artesia, NM

Lab Receiving # : 9811000378

Date Rec: 11/18/98

Sampling Date: 11/17/9

Sample Condition: Intact and Cool

Sample Received By: NG

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M, P, O XYLENE (mg/L)	TOTAL BTX (mg/L)
113067	MM-4	Water	<0.001	0.003	0.010	0.016	0.024	0.053
113068	MM-5A	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
113069	OCD-8A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
113070	OCD-4	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
113071	OCD-2A	Water	0.006	<0.001	<0.001	<0.001	<0.001	<0.001
	Method Blank		<0.001	<0.001	<0.001	<0.001	<0.001	
	Reporting Limit		0.001	0.001	0.001	0.001	0.001	
QC			0.096	0.104	0.104	0.106	0.308	

RPD
% Extraction Accuracy
% Instrument Accuracy

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	11/20/98	EPA 8021B	11/20/98	CS	0.100 ea	0.1 ea

Director, Dr. Blair Lefewich

Date

11-23-98

113067-71

Page 1 of 1

Trace Analysis, Inc.

6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424

Tel (806) 794 1296 Fax (806) 794 1298

1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

LAB Order ID # 378

Company Name:

Navy

Phone # (505) 748-3311

Address:

Fax #:

(505) 748-9077

Contact Person:

Dannell Moore

Invoice to:

(If different from above)

Project #:

Project Name:

Project Location:

Semi Annual Emp Bonds

Sampler Signature:

Dannell Moore

LAB #
(LAB USE ONLY)

FIELD CODE

CONTAINERS

Volume/Amount

WATER

SOIL

AIR

SLUDGE

MATRIX

PRESERVATIVE

SAMPLING

HCL

HNO3

ICE

NONE

DATE

TIME

MTBE 8020/602

BTEX 8020/602

TPH

PAH 8270

Total Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Metals Ag As Ba Cd Cr Pb Hg Se

TCLP Volatiles

TCLP Semi Volatiles

RCI

GC/MS Vol. 8240/8260/624

GC/MS Semi. Vol. 8270/625

PCB's 8080/608

Pest. 8080/608

BOD, TSS, PH

Turn Around Time if different from standard

Hold

ANALYSIS REQUEST

(Circle or Specify Method No.)

Relinquished by:

Date: Time:

Received by:

Date: Time:

Relinquished by:

Date: Time:

Received by:

Date: Time:

Relinquished by:

Date: Time:

Received at Laboratory by:

Date: Time:

LAB USE ONLY

Intact (Y/N)

Headspace (Y/N)

Temp (Y/N)

Log-in Review

REMARKS:

The bottles labeled

OCD-24 which were

mailed 1/16 should

have been MU-24

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

ORIGINAL COPY

Carrier #

Felix 2136071157

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
4725 Ripley Avenue, Suite A
Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
El Paso, Texas 79922 888-588-3443 915-585-3443 FAX 915-585-4944
E-Mail: lab@traceanalysis.com

December 29, 1998

Receiving Date: 11/17/98

Sample Type: Water

Project No: NA

Project Location: Artesia

ANALYTICAL RESULTS FOR

NAVAJO REFINING CO.

Attention: Darrell Moore

501 E. Main

Artesia, NM 88210

Prep Date: 11/18/98

Analysis Date: 12/10/98

Sampling Date: 11/16/98

Sample Condition: Intact & Cool

Sample Received by: VW

Project Name: Semi-Annual

Evap. Ponds

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
-----	------------	---------------------	---------------------	-------------------	------------------

T112840	MW-3	6.5	224	622	1,100
T112841	OCD-6	12	169	575	2,500
T112842	MW-2A	7.3	67	604	2,200
T112843	MW-1	0.24	365	796	1,580
ICV		27	26	26	26
CCV		27	27	27	27

Reporting Limit	0.10	0.10	0.10	0.10
-----------------	------	------	------	------

METHOD BLANK	<0.10	<0.10	<0.10	<0.10
--------------	-------	-------	-------	-------

RPD
% Extraction Accuracy
% Instrument Accuracy

Director Dr. Blair Leftwich

29DEC98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888-588-3443 915-585-3443 FAX 915-585-4944
 E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Darrell Moore

501 E. Main

Artesia, NM 88210

December 29, 1998
 Receiving Date: 11/17/98
 Sample Type: Water
 Project No: NA
 Project Location: Artesia

Sampling Date: 11/16/98
 Sample Condition: Intact & Cool
 Sample Received by: VW
 Project Name: Semi-Annual
 Evap. Ponds

TA#	FIELD CODE	FLUORIDE (mg/L)	CHLORIDE (mg/L)	NO3-N (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCO3) HC03 CO3
T112840	MMW-3	3.2	1,400	<2.0	2,400	290 <1.0
T112841	OCD-6	4.5	2,700	<2.0	3,500	590 <1.0
ICV		2.4	11	4.8	12	1,150 1,100
CCV		2.4	11	4.8	12	1,180 1,120
REPORTING LIMIT		0.1	0.5	2.0	0.5	1.0 1.0
RPD		1	0	2	2	2 2
% Extraction Accuracy		97	81	106	80	---
% Instrument Accuracy		98	94	97	100	96 96
PREP DATE		11/17/98	11/17/98	11/17/98	11/17/98	11/27/98
ANALYSIS DATE		11/17/98	11/17/98	11/17/98	11/17/98	11/27/98

METHODS: EPA 300.0, 310.1.
 CHEMIST: CHLORIDE/FLUORIDE/SULFATE: JS ALKALINITY: RS
 SPIKE: 625 mg/L CHLORIDE; 125 mg/L FLUORIDE; 625 mg/L SULFATE; 250 mg/L NO3-N.
 CV: 12.5 mg/L CHLORIDE; 2.5 mg/L FLUORIDE; 12.5 mg/L SULFATE; 5.0 mg/L NO3-N.

Director, Dr. Blair Leftwich

29 DEC 98
 Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888-588-3443 915-585-3443 FAX 915-585-4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Darrell Moore

501 E. Main

Artesia, NM 88210

December 29, 1998
Receiving Date: 11/17/98
Sample Type: Water
Project No: NA
Project Location: Artesia

Sampling Date: 11/16/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Semi-Annual
Evap. Ponds

TA#	FIELD CODE	FLUORIDE (mg/L)	CHLORIDE (mg/L)	NO3-N (mg/L)	SULFATE (mg/L)	ALKALINITY (mg/L as CaCO3) HCO3 C03
T112842	MW-2A	13	2,300	<2.0	3,000	160 <1.0
T112843	MW-1	2.5	2,700	<2.0	2,500	300 <1.0
ICV		2.4	11	4.8	12	1,150 1,100
CCV		2.4	11	4.8	12	1,180 1,120
REPORTING LIMIT		0.1	0.5	2.0	0.5	1.0 1.0
RPD		0	0	2	3	2 2
% Extraction Accuracy		96	80	105	86	---
% Instrument Accuracy		98	94	96	98	96 96
PREP DATE		11/17/98	11/17/98	11/17/98	11/17/98	11/27/98
ANALYSIS DATE		11/17/98	11/17/98	11/17/98	11/17/98	11/27/98

METHODS: EPA 300.0, 310.1.
CHEMIST: CHLORIDE/FLUORIDE/SULFATE: JS ALKALINITY: RS
SPIKE: 625 mg/L CHLORIDE; 125 mg/L FLUORIDE; 625 mg/L SULFATE; 250 mg/L NO3-N.
CV: 12.5 mg/L CHLORIDE; 2.5 mg/L FLUORIDE; 12.5 mg/L SULFATE; 5.0 mg/L NO3-N.

Director, Dr. Blair Leftwich

29 DEC 98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
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Lubbock, Texas 79424
El Paso, Texas 79922
800-378-1296
888-588-3443
806-794-1296
915-585-3443
FAX 806-794-1296
FAX 915-585-4944

December 29, 1998
Receiving Date: 11/17/98
Sample Type: Water
Project No: NA
Project Location: Artesia

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210
Sampling Date: 11/16/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Semi-Annual
Evap. Ponds

#	FIELD CODE	TOTAL METALS									
		Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)

T112840	MW-3	0.03	1.1	0.11	0.91	<0.10	<0.01	<0.01	<0.05	<0.05	<0.10
ICV		0.20	0.98	0.99	0.99	0.92	0.97	0.97	0.99	0.98	0.97
CCV		0.20	0.98	0.92	0.98	0.98	0.99	0.97	0.96	0.99	0.99
METHOD BLANK		<0.005	<0.05	<0.05	<0.10	<0.10	<0.01	<0.01	<0.05	<0.05	<0.10
REPORTING LIMIT		0.005	0.05	0.05	0.10	0.10	0.01	0.01	0.05	0.05	0.10
RPD		6	11	0	0	0	5	0	0	10	10
% Extraction Accuracy		78	90	85	85	75	85	85	85	80	80
% Instrument Accuracy		100	98	95	98	95	98	97	98	98	98
PREP DATE		12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98
ANALYSIS DATE		12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98

T112840	MW-3	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
ICV		2.5	2.8	<0.10	<0.10	<0.005	<0.01	<5.0	<0.10	<0.10	<0.0010
CCV		0.97	0.96	0.97	0.98	0.98	0.90	0.90	0.97	0.99	0.0045
METHOD BLANK		0.95	0.99	0.93	0.99	1.0	0.90	1.0	0.96	0.95	0.0049
REPORTING LIMIT		<0.10	<0.10	<0.10	<0.10	<0.005	<0.01	<5.0	<0.10	<0.10	<0.0010
RPD		0.10	0.10	0.10	0.10	0.005	0.01	5.0	0.10	0.10	0.0010
% Extraction Accuracy		0*	0	0	0	0	0	0	6	5	0
% Instrument Accuracy		100*	75	85	85	85	80	100	80	95	100**
PREP DATE		96	98	95	98	99	90	95	96	97	94
ANALYSIS DATE		12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	11/24/98
		12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	11/25/98

*NOTE: Used LCS and LCSD for Extraction Accuracy and RPD.
**NOTE: % Extraction Accuracy was not useable due to matrix affects.

METHODS: EPA 200.7, 245.1.

CHEMIST: As, Cd, Cr, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, Se, Pb, Ag, B, U, RR Hg: BP

TOTAL METALS SPIKE: 0.40 mg/L Ag; 2.0 mg/L Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se, U, V, Zn; 0.0050 mg/L Hg.
TOTAL METALS SPIKE: 0.20 mg/L Ag; 1.0 mg/L Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se, U, V, Zn; 0.0050 mg/L Hg.

Director, Dr. Blair Leftwich

DATE

29 DEC 98

TRACE ANALYSIS, INC.

December 29, 1998

Receiving Date: 11/17/98

Sample Type: Water

Project No: NA

Project Location: Artesia

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888-588-3443 915-585-3443 FAX 915-585-4944

ANALYTICAL RESULTS FOR

NAVAJO REFINING

Attention: Darrell Moore

501 E. Main

Artesia, NM 88210

Sampling Date: 11/16/98

Sample Condition: Intact & Cool

Sample Received by: VW

Project Name: Semi-Annual

Evap. Ponds

#	FIELD CODE	Ag (mg/L)	Al (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Co (mg/L)	Cr (mg/L)	Cu (mg/L)
---	------------	--------------	--------------	--------------	-------------	--------------	--------------	--------------	--------------	--------------	--------------

T112841 OCD-6

ICV

CCV

METHOD BLANK

REPORTING LIMIT

RPD

% Extraction Accuracy

% Instrument Accuracy

PREP DATE

ANALYSIS DATE

T112841 OCD-6

ICV

CCV

METHOD BLANK

REPORTING LIMIT

RPD

% Extraction Accuracy

% Instrument Accuracy

PREP DATE

ANALYSIS DATE

*NOTE: Used LCS and LCSD for Extraction Accuracy and RPD.

**NOTE: % Extraction Accuracy was not useable due to matrix affects.

METHODS: EPA 200.7, 245.1.

CHEMIST: As, Cd, Cr, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, Se, Pb, Ag, B, U, RR Hg: BP

TOTAL METALS SPIKE: 0.40 mg/L Ag; 2.0 mg/L Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se, U, V, Zn; 0.0050 mg/L Hg.

TOTAL METALS SPIKE: 0.20 mg/L Ag; 1.0 mg/L Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se, U, V, Zn; 0.0050 mg/L Hg.

Director: Dr. Blair Leftwich

DATE

29 Dec 98

TRACE ANALYSIS, INC.

December 29, 1998
 Receiving Date: 11/17/98
 Sample Type: Water
 Project No: NA
 Project Location: Artesia

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1296
 4725 Ripley Avenue, Suite A El Paso, Texas 79922 888-588-3443 915-585-3443 FAX 915-585-4944
ANALYTICAL RESULTS FOR
NAVAJO REFINING
 Attention: Darrell Moore
 501 E. Main
 Artesia, NM 88210
 Sampling Date: 11/16/98
 Sample Condition: Intact & Cool
 Sample Received by: VW
 Project Name: Semi-Annual
 Evap. Ponds

#	FIELD CODE	Ag (mg/L)	Al (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Co (mg/L)	Cr (mg/L)	Cu (mg/L)
---	------------	--------------	--------------	--------------	-------------	--------------	--------------	--------------	--------------	--------------	--------------

T112842	MW-2A	0.04	<0.05	0.25	0.49	<0.10	<0.01	<0.01	<0.05	<0.05	<0.10
ICV		0.20	0.98	0.99	0.99	0.92	0.97	0.97	0.99	0.98	0.97
CCV		0.20	0.98	0.92	0.98	0.98	0.99	0.97	0.96	0.99	0.99
METHOD BLANK		<0.005	<0.05	<0.05	<0.10	<0.10	<0.01	<0.01	<0.05	<0.05	<0.10
REPORTING LIMIT		0.005	0.05	0.05	0.10	0.10	0.01	0.01	0.05	0.05	0.10
RPD		6	11	0	0	0	5	0	0	10	10
% Extraction Accuracy		78	90	85	85	75	85	85	85	80	80
% Instrument Accuracy		100	98	95	98	95	98	97	98	98	98
PREP DATE		12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98
ANALYSIS DATE		12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98

T112842	MW-2A	4.5	2.9	<0.10	<0.10	0.03	0.18	<5.0	<0.10	<0.10	<0.0010
ICV		0.97	0.96	0.97	0.98	0.98	0.90	0.90	0.97	0.99	0.0045
CCV		0.95	0.99	0.93	0.99	1.0	0.90	1.0	0.96	0.95	0.0049
METHOD BLANK		<0.10	<0.10	<0.10	<0.10	<0.005	<0.01	<5.0	<0.10	<0.10	<0.0010
REPORTING LIMIT		0.10	0.10	0.10	0.10	0.005	0.01	5.0	0.10	0.10	0.0010
RPD		0*	0	0	0	0	0	0	6	5	0
% Extraction Accuracy		100*	75	85	85	85	80	100	80	95	100**
% Instrument Accuracy		96	98	95	98	99	90	95	96	97	94
PREP DATE		12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	11/24/98
ANALYSIS DATE		12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	11/25/98

**NOTE: % Extraction Accuracy was not useable due to matrix affects.

METHODS: EPA 200.7, 245.1.

CHEMIST: As, Cd, Cr, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, Se, Pb, Ag, B, U: RR Hg: BP
 TOTAL METALS SPIKE: 0.40 mg/L Ag; 2.0 mg/L Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se, U, V, Zn; 0.0050 mg/L Hg.
 TOTAL METALS SPIKE: 0.20 mg/L Ag; 1.0 mg/L Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se, U, V, Zn; 0.0050 mg/L Hg.

Director, DeBlair Leftwich

DATE

29 DEC 98

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888-588-3443 915-585-3443 FAX 915-585-4944

December 29, 1998
Receiving Date: 11/17/98
Sample Type: Water
Project No: NA
Project Location: Artesia

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210
Sampling Date: 11/16/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Semi-Annual
Evap. Ponds

#	FIELD CODE	TOTAL METALS									
		Ag (mg/L)	Al (mg/L)	As (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Co (mg/L)	Cr (mg/L)	Cu (mg/L)

T112843	MW-1	0.05	1.7	<0.05	0.46	<0.10	<0.01	<0.01	0.07	0.48	0.16
ICV		0.20	0.98	0.99	0.99	0.92	0.97	0.97	0.99	0.98	0.97
CCV		0.20	0.98	0.92	0.98	0.98	0.99	0.97	0.96	0.99	0.99
METHOD BLANK		<0.005	<0.05	<0.05	<0.10	<0.10	<0.01	<0.01	<0.05	<0.05	<0.10
REPORTING LIMIT		0.005	0.05	0.05	0.10	0.10	0.01	0.01	0.05	0.05	0.10
RPD		6	11	0	0	0	5	0	0	10	10
% Extraction Accuracy		78	90	85	85	75	85	85	85	80	80
% Instrument Accuracy		100	98	95	98	95	98	97	98	98	98
PREP DATE		12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98
ANALYSIS DATE		12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98

	Fe (mg/L)	Mn (mg/L)	Mo (mg/L)	Ni (mg/L)	Pb (mg/L)	Se (mg/L)	U (mg/L)	V (mg/L)	Zn (mg/L)	Hg (mg/L)
T112843 MW-1	4.8	3.0	<0.10	0.23	0.07	0.03	<5.0	<0.10	<0.10	<0.0010
ICV	0.97	0.96	0.97	0.98	0.98	0.90	0.90	0.97	0.99	0.0045
CV	0.95	0.99	0.93	0.99	1.0	0.90	1.0	0.96	0.95	0.0049
METHOD BLANK	<0.10	<0.10	<0.10	<0.10	<0.005	<0.01	<5.0	<0.10	<0.10	<0.0010
REPORTING LIMIT	0.10	0.10	0.10	0.10	0.005	0.01	5.0	0.10	0.10	0.0010
RPD	0*	0	0	0	0	0	0	6	5	0
% Extraction Accuracy	100*	75	85	85	85	80	100	80	95	100**
% Instrument Accuracy	96	98	95	98	99	90	95	96	97	94
PREP DATE	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	11/24/98
ANALYSIS DATE	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98	11/25/98

*NOTE: Used LCS and LCSD for Extraction Accuracy and RPD.
**NOTE: % Extraction Accuracy was not useable due to matrix affects.

METHODS: EPA 200.7, 245.1.

CHEMIST: As, Cd, Cr, Ba, Al, Be, Co, Cu, Fe, Mn, Mo, Ni, V, Zn, Se, Pb, Ag, B, U, RR Hg: BP
TOTAL METALS SPIKE: 0.40 mg/L Ag; 2.0 mg/L Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se, U, V, Zn; 0.0050 mg/L Hg.
TOTAL METALS SPIKE: 0.20 mg/L Ag; 1.0 mg/L Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se, U, V, Zn; 0.0050 mg/L Hg.

Director, D Blair Leftwich

DATE

29 DEC 98

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

TRACE ANALYSIS, INC.

ANALYTICAL RESULTS FOR

Date: Nov 23, 1998

Project: N/A

Proj Name: Semi Annual Evap. Ponds
Proj Loc: Artesia, NMNavajo Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210

Lab Receiving # : 9811000329

Date Rec: 11/17/98

Sampling Date: 11/16/9

Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	MTBE (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL- BENZENE (mg/L)	M,P,O XYLENE (mg/L)	TOTAL BTX (mg/L)
112840	MM-3	Water	<0.005	0.005	0.011	0.010	0.011	0.037
112843	MM-1	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank								
			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
			0.001	0.001	0.001	0.001	0.001	0.001
			0.096	0.095	0.090	0.088	0.256	
Reporting Limit								
QC								

RPD

% Extraction Accuracy

% Instrument Accuracy

11 7 10 13 16

95 103 99 104 105

96 95 90 88 85

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTX	EPA 5030	11/19/98	EPA 8021B	11/19/98	CS	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date

11-23-98

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

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Navaio Refining
Attention Darrell Moore
501 E. Main
Artesia NM 88210Date: Nov 23, 1998
Project: N/A
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Proj Loc: Artesia, NMLab Receiving #: 9811000329
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112841	OCD-6	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
112842	MM-2A	Water	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Method Blank		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Reporting Limit		0.001	0.001	0.001	0.001	0.001	0.001
QC			0.096	0.104	0.104	0.106	0.308	

RPD
% Extraction Accuracy
% Instrument Accuracy3 1 1 2 2
103 106 107 107 105
96 104 104 106 103

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTX	EPA 5030	11/20/98	EPA 8021B	11/20/98	CS	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

Date