

GW - 71-0

MONITORING REPORTS

DATE:

1999



February 2, 2000

Mr. Bill Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

RECEIVED

FEB 03 2000

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Dear Mr. Olson:

Please find enclosed reports on the following monitoring wells and waste water streams at the El Paso Field Services Co. (EPFS) Chaco Plant. These results are summarized on the attached tables.

- Semi-Annual analyses for monitoring wells 1 and 8.
- Quarterly analyses for monitoring wells 9 and 10.
- Annual analysis for all other monitoring wells.
- Annual analysis for the non-contact waste water discharge.

The analysis for monitoring wells 2, 3, 4, 5, 6, and 7 did not indicate any abnormally high reading for any analyte. Monitoring well 10, adjacent to the old flare pit which was closed in 1995, exceeds several water quality standards for organics.

Monitoring wells 1, 8, and 9 have not exceeded any state limits for organics during 1997, 1998, or 1999. Due to a change in plant operations during 1999, contact wastewater is no longer discharged to on-site ponds. This waste stream is now disposed of off site in a class 1 underground injection well. The water quality of the non-contact wastewater discharge is such that it would not degrade any waters of the state if the wastewater did percolate to groundwater. Therefore, EPFS requests authorization to cease monitoring the non-contact wastewater and monitoring wells 1 through 9. Due to high levels of BTEX, EPFS will continue to sample monitoring well 10 on a quarterly basis.

If you need any additional information for this reporting period, please call me at (505) 599-2256.

Sincerely yours,

David Bays
Principal Environmental Scientist

cc: Denny Foust - NMOCD - Aztec
Mike Hansen
Don Hensley
Chaco Regulatory File

Chaco Plant Groundwater Monitoring Well Results 1999

All Results Expressed as Micrograms/Liter (ppb)

Monitoring Well 1 (semi-annual)	3/17/99	6/15/99	9/21/99	12/8/99
Benzene	< 1		<0.5	
Toluene	< 1		<0.5	
Ethyl Benzene	< 1		<0.5	
Xylenes	< 3		<0.5	
Cadmium	< 0.005		ND	
Chromium	<0.01		ND	
Mercury	<0.0002		ND	
Total Naphthalenes	ND		ND	
Total Benzopyrenes	ND		ND	
Monitoring Well 8 (semi-annual)				
Benzene	< 1		<0.5	
Toluene	< 1		<0.5	
Ethyl Benzene	< 1		<0.5	
Xylenes	< 3		<0.5	
Cadmium	< 0.005		ND	
Chromium	<0.01		ND	
Mercury	<0.0002		ND	
Total Naphthalenes	0.92		ND	
Total Benzopyrenes	ND		ND	
Monitoring Well 9 (quarterly)				
Benzene	< 1	<0.5	<0.5	<0.5
Toluene	< 1	<0.5	<0.5	<0.5
Ethyl Benzene	< 1	<0.5	<0.5	<0.5
Xylenes	< 3	<0.5	<0.5	<0.5
Monitoring Well 10 (quarterly)				
Benzene	63.5	49	20	18
Toluene	13.9	7.1	9.2	<0.5
Ethyl Benzene	30.3	29	41	37
Xylenes	131	185	105	120

NA = Not Analyzed

ND = None Detected

Chaco Plant Groundwater Monitoring Well Results 1999

All Chemical Results Expressed as Milligrams/Liter (ppm)

pH Expressed in Standard Units (0 - 14 Scale)

Conductivity Expressed as Micromhos/Centimeter

All samples listed on this table were collected on July 9, 1999

Test	Well 2	Well 3	Well 4	Well 5	Well 6	Well 7	Non-Contact Wastewater
pH	7.2	7.3	6.9	7.2	8.1	7.2	8.0
Alkalinity - CO ₃	0	0	0	0	0	0	0
Alkalinity - HCO ₃	621	383	561	316	438	406	100
Calcium	87	124	467	213	51	219	234
Magnesium	24	28	79	40	9	42	57
Total Hardness	316	425	1491	697	164	720	819
Chloride	546	27	374	65	139	176	47
Sulfate as SO ₄	346	435	2637	987	1176	1171	933
Fluoride	1.91	<0.1	1.6	0.9	2.3	2.0	1.93
Nitrate as NO ₃	<0.6	<0.2	2.9	0.5	0.8	<0.6	0.90
Nitrate as NO ₂	<0.6	<0.2	<1.1	<0.2	<0.6	<0.6	<0.1
Ammonium as NH ₄	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Phosphate	<0.6	<0.2	<0.6	<0.2	<0.6	<0.6	<0.2
Potassium	4	3	12	3	3	4	37
Sodium	616	205	1179	363	790	556	165
TDS	1992	1126	5610	2060	2568	2700	1,814
Conductivity	2920	1391	5530	2300	3410	3170	1,807
Cadmium	ND	ND	ND	ND	ND	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND
Mercury	ND	ND	ND	ND	ND	ND	ND

April 8, 1999

Semi-Annual ANALYTICAL REPORT

Chaco Plant
Monitor Well #1, 8 - Semi Annual
Monitor Well #9, #10 - Quarterly
Lab Sample #'s 990101 to 990105
Sampled 3/17/99
Sampled by Dennis Bird

REMARKS:

These samples represent the first round 1999 semi-annual (MW#1 and #8) and quarterly (MW#9 and #10) results for these four wells. The New Mexico WQCC limit for Benzene was exceeded in MW#10. MW-9 and 10 were installed on July 24, 1997. They are being monitored quarterly for BTEX components. Product removal was initiated on MW#10 on October 15, 1998 using a PetroTrap brand passive skimmer. Since this time, 1,472 milliliters of product have been removed from this well.

Distribution:

Sandra Miller - W/O Attachments
Scott Pope - W/Attachments
Mike Hansen - W/O Attachments
Results File

Attachments



Natural Gas Company

A 2440

CHAIN OF CUSTODY RECORD



FIELD SERVICES LABORATORY
ANALYTICAL REPORT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990101
MTR CODE SITE NAME:	N/A	Chaco Plant
SAMPLE DATE TIME (Hrs):	3/17/99	1118
PROJECT:	Semi-Annual MW Sampling	
DATE OF BTEX EXT. ANAL:	NA	3/22/99
TYPE DESCRIPTION:	MW-1	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	<1	PPB				
TOLUENE	<1	PPB				
ETHYL BENZENE	<1	PPB				
TOTAL XYLENES	<3	PPB				
TOTAL BTEX	<6	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at 90.7 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

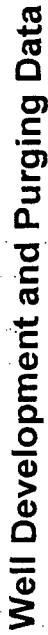
Narrative:

Approved By:

John L. Smith

Date:

5/7/99



Meter Code NA

☐ Development
☒ Purging

☒	3 to 5 Casing Volumes of Water Removal
☐	Stabilization of Indicator Parameters
☐	Other

Initial Depth of Well (feet) 25.15
Initial Depth to Water (feet) 14.63
Height of Water Column in Well (feet) 10.52

☐	Pump	☒	Bailer
☐	Centrifugal	☒	Bottom Valve
☐	Submersible	☐	Double Check Valve
☐	Peristaltic	☐	Stainless-steel Kemmerer

☒	pH Meter
☐	DO Monitor
☒	Conductivity Meter
☒	Temperature Meter
☒	Other <u>D.O. Controller</u>

KUTZ SEPARATOR

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		7.0	20.9
Gravel Pack			
Drilling Fluids			
Total			

Water Removal Data

[illegible]

Developer's Signature Dennis Bird

Date 3-17-99 Reviewer _____

John F. Fuld

Date 5/7/99



EL PASO FIELD SERVICES

FIELD SERVICES LABORATORY ANALYTICAL REPORT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990102
MTR CODE SITE NAME:	N/A	Chaco Plant
SAMPLE DATE TIME (Hrs):	3/17/99	1243
PROJECT:	Semi-Annual MW Sampling	
DATE OF BTEX EXT. ANAL.:	NA	3/22/99
TYPE DESCRIPTION:	MW-8	Water

Field Remarks: _____

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	<1	PPB				
TOLUENE	<1	PPB				
ETHYL BENZENE	<1	PPB				
TOTAL XYLENES	<3	PPB				
TOTAL BTEX	<6	PPB				

—BTEX is by EPA Method 8020 —

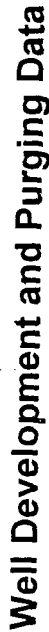
The Surrogate Recovery was at 119.0 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By: _____

Date: _____

5/7/99



Well Number MW-8
Meter Code NA

☐	Development
☒	Purging

Site Name CHACO PLANT

Development Criteria

- | | |
|-------------------------------------|--|
| ☒ | 3 to 5 Casing Volumes of Water Removal |
| ☐ | Stabilization of Indicator Parameters |
| ☐ | Other |

Methods of Development

- | | | | |
|--------------------------|-------------|-------------------------------------|--------------------------|
| ☐ | Pump | ☐ | Bailer |
| ☐ | Centrifugal | ☒ | Bottom Valve |
| ☐ | Submersible | ☐ | Double Check Valve |
| ☐ | Peristaltic | ☐ | Stainless-steel Kemmerer |

☐ Other

Water Volume Calculation

Initial Depth of Well (feet)	21.80
Initial Depth to Water (feet)	10.21
Height of Water Column in Well (feet)	11.59

Diameter (inches): Well 4 Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		7.7	23.0
Gravel Pack			
Drilling Fluids			
Total			

Instruments

- | | |
|-------------------------------------|--------------------|
| ☒ | pH Meter |
| ☐ | DO Monitor |
| ☒ | Conductivity Meter |
| ☒ | Temperature Meter |
| ☒ | Other <u>DO C</u> |

Water Disposal

KUTZ SEDAPATOP

Water Removal Data

[illegible]

Comments

Developer's Signature *Dennis Bied*

Date 3-17-99 Reviewer _____

John Fawcett

Date 5/7/99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990103
MTR CODE SITE NAME:	N/A	Chaco Plant
SAMPLE DATE TIME (Hrs):	3/17/99	1410
PROJECT:	Quarterly MW Sampling	
DATE OF BTEX EXT. ANAL.:	NA	3/22/99
TYPE DESCRIPTION:	MW-9	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	<1	PPB				
TOLUENE	<1	PPB				
ETHYL BENZENE	<1	PPB				
TOTAL XYLENES	<3	PPB				
TOTAL BTEX	<6	PPB				

—BTEX is by EPA Method 8020 —

The Surrogate Recovery was at 104.7 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

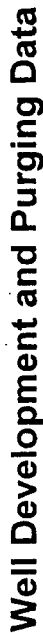
Narrative:

Approved By:

John L. L...

Date:

5/7/99



Well Number MW-9

Meter Code *NA*

☐	Development
☒	Purging

Development Criteria

☒	3 to 5 Casing Volumes of Water Removal
☐	Stabilization of Indicator Parameters
☐	Other

Water Volume Calculation

Initial Depth of Well (feet) 2142

Initial Depth to Water (feet) 11.49

Height of Water Column in Well (feet) 9.93

Methods of Development

☐	Pump	☒	Bailer
☐	Centrifugal	☐	Bottom Valve
☐	Submersible	☐	Double Check Valve
☐	Peristaltic	☐	Stainless-steel Kemmerer

Diameter (inches): Well

Water Volume in Well	Gallons to be

Item	Cubic Feet	Gallons	Removed
Greater Volume in each			Gallons to be

501	11		
-----	----	--	--

Well Casing	5,5	17,1
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Gravel Pack			
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Drilling Fluids

[illegible]

Total			
-------	--	--	--

100

Water Removal Data

[illegible]

Comments

Developer's Signature Dennis Bial

Date 3-17-99

Reviewer

Peter Sarda

Date _____

55/65



FIELD SERVICES LABORATORY
ANALYTICAL REPORT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990104
MTR CODE SITE NAME:	N/A	Chaco Plant
SAMPLE DATE TIME (Hrs):	3/17/99	1530
PROJECT:	Quarterly MW Sampling	
DATE OF BTEX EXT. ANAL.:	NA	3/22/99
TYPE DESCRIPTION:	MW-10	Water

Field Remarks: The well had a strong HC smell. Petro trap removed prior to sampling.

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	63.5	PPB				
TOLUENE	13.9	PPB				
ETHYL BENZENE	30.3	PPB				
TOTAL XYLENES	131	PPB				
TOTAL BTEX	239	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at 124.0 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

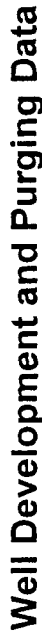
Narrative:

Approved By:

John Larch

Date:

5/7/99



Well Number *7W-10*

Meter Code *NA*

Development	☐
Purging	☒

Site Name CHACO PLANT

Development Criteria

- | | |
|-------------------------------------|--|
| ☒ | 3 to 5 Casing Volumes of Water Removal |
| ☐ | Stabilization of Indicator Parameters |
| ☐ | Other |

Water Volume Calculation

Initial Depth of Well (feet) 27.22
Initial Depth to Water (feet) 17.28
Height of Water Column in Well (feet) 10.94

Diameter (inches): Well 4 Gravel Pack 4

Methods of Development

- | | | | |
|--------------------------|-------------|-------------------------------------|--------------------------|
| ☐ | Pump | ☐ | Bailer |
| ☐ | Centrifugal | ☒ | Bottom Valve |
| ☐ | Submersible | ☐ | Double Check Valve |
| ☐ | Peristaltic | ☐ | Stainless-steel Kemmerer |

Instruments

- ☒ pH Meter
☐ DO Monitor
☒ Conductivity Meter
☒ Temperature Meter
☒ Other 200

Water Disposal

KUTZ SEPARATOR

Item	Water Volume In Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		7.3	26.7
Gravel Pack			
Drilling Fluids			
Total			

☐ Other

Water Removal Data

[illegible]

Comments THE WATER HAD A STRONG HYDROCARBON SMELL.

Developer's Signature
Tennis Bird

Date 3-17-99 Reviewer _____

John Fuller

Date 5/7/09



EL PASO FIELD SERVICES

FIELD SERVICES LABORATORY ANALYTICAL REPORT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	990105
MTR CODE SITE NAME:	N/A	Chaco Plant
SAMPLE DATE TIME (Hrs):	3/17/99	1530
PROJECT:	Quarterly MW Sampling	
DATE OF BTEX EXT. ANAL.:	NA	3/22/99
TYPE DESCRIPTION:	MW-10 Field Duplicate	Water

Field Remarks: Field Duplicate

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	43.9	PPB				
TOLUENE	10.7	PPB				
ETHYL BENZENE	25.1	PPB				
TOTAL XYLENES	103	PPB				
TOTAL BTEX	183	PPB				

—BTEX is by EPA Method 8020 —

The Surrogate Recovery was at 118.0 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

Approved By: John Linder

Date: 5/7/99



EL PASO FIELD SERVICES

QUALITY CONTROL REPORT

EPA METHOD 8020 - BTEX

Samples: 990101 to 990105

QA/QC for 03/22/99 Sample Set #2

LABORATORY CALIBRATION CHECKS / LABORATORY CONTROL SAMPLES:

SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE YES NO RANGE	
ICV LA-52589 50 PPB						
Benzene	Standard	50.0	51.2	102.4	75 - 125 %	X
Toluene	Standard	50.0	51.1	102.3	75 - 125 %	X
Ethylbenzene	Standard	50.0	52.1	104.3	75 - 125 %	X
m & p - Xylene	Standard	100	104.5	104.5	75 - 125 %	X
o - Xylene	Standard	50.0	51.8	103.6	75 - 125 %	X
SAMPLE NUMBER	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE YES NO RANGE	
LCS LA-45476 25 PPB						
Benzene	Standard	25.0	24.5	98	39 - 150	X
Toluene	Standard	25.0	24.5	98	46 - 148	X
Ethylbenzene	Standard	25.0	24.8	99	32 - 160	X
m & p - Xylene	Standard	50.0	49.7	99	Not Given	X
o - Xylene	Standard	25.0	24.9	100	Not Given	X

Narrative: Acceptable.

LABORATORY DUPLICATES:

SAMPLE ID	TYPE	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACCEPTABLE YES NO RANGE	
990101						
Benzene	Matrix Duplicate	<1	<1	0.00	+/- 20 %	X
Toluene	Matrix Duplicate	<1	<1	0.00	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	<1	<1	0.00	+/- 20 %	X
m & p - Xylene	Matrix Duplicate	<2	<2	0.00	+/- 20 %	X
o - Xylene	Matrix Duplicate	<1	<1	0.00	+/- 20 %	X

Narrative: Acceptable.

LABORATORY SPIKES:

SAMPLE ID	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACCEPTABLE YES NO RANGE	
990101						
Benzene	25	<1	21.8	87	75 - 125 %	X
Toluene	25	<1	21.9	88	75 - 125 %	X
Ethylbenzene	25	<1	21.7	87	75 - 125 %	X
m & p - Xylene	50	<2	43.7	87	75 - 125 %	X
o - Xylene	25	<1	22.0	88	75 - 125 %	X

Narrative: Acceptable.



PARAGON ANALYTICS, INC.

225 Commerce Drive ♦ Fort Collins, CO 80524 ♦ (800) 443-1511 ♦ (970) 490-1511 ♦ FAX (970) 490-1522

April 5, 1999

Mr. John Lambdin
El Paso Field Services
770 West Navajo
Farmington, NM 87401

RE: Paragon Workorder: 99-03-152
Client Project Name: Chaco Plant Monitor Wells
Client Project Number: None Submitted



Dear Mr. Lambdin:

Two water samples were received from El Paso Field Services on March 19, 1999. The samples were scheduled for Total Recoverable Metals (pages 1-11) and PAHs by HPLC (pages 1-8) analyses. The results for these analyses are contained in the enclosed reports.

Thank you for your confidence in Paragon Analytics, Inc. Should you have any questions, please call.

Sincerely,

Paragon Analytics, Inc.
Debbie Fazio
Project Manager

DF/rm
Enclosure: Report

Reviewed & Accepted
J. Lambdin 5/7/99

Paragon Analytics, Incorporated

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 9903152

Client Name: El Paso Field Services

Client Project Name: Chaco Plant Monitor Wells

Client Project Number:

Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
990101	9903152-1		WATER	3/17/99	11:18
990102	9903152-2		WATER	3/17/99	12:43



PARAGON ANALYTICALS, INC.
225 Commerce Drive Ft. Collins, CO 80524

(800) 443-1511 or (970) 490-1511
(970) 490-1522 - Fax

CHAIN OF CUSTODY

DATE 3-12-99 Page 1 of 1

ACCESSION NUMBER (LAB ID) 9903152

REPORT TO: JOHN GAMBON

COMPANY: EL PASO FIELD SERVICE

ADDRESS: 614 REVELL AVENUE

FARMINGTON NM 87401

SAMPLER: Benny Bird

505-597-2049 SOS-597-2061

PHONE NO. 505-597-2049 FAX NO. 505-597-2061

SAMPLE ID 990101 990102

DATE 3-17-99 3-17-99

TIME 11:18 11:03

MATRIX WATER WATER

LAB ID 02 02

PROJECT INFORMATION

PROJECT NUMBER:

PROJECT NAME: CHARCO PLANT MANHOLE WORKS

P.O. NUMBER:

TAT: ☒ STANDARD

SAMPLE DISPOSAL:

HAZ WASTE \$5.00 ea

HAZ CHEM \$15.00 ea

RETURN

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS:

CHAIN OF CUSTODY SEALS: Y/N

SEALS INTACT: Y/N

RECEIVED GOOD COND. COLLOID

RECEIVED

RELINQUISHED BY:

Sign: Benny Bird Time: 11:18

Print: DEANAS BIRD Date: 3-18-99

Company: EL PASO FELD

RECEIVED BY:

Sign: John Gambon Time: 3:19-99

Print: John Gambon Date: 3-19-99

Company: Fedex

RELINQUISHED BY:

Sign: John Gambon Time: 3:19-99

Print: John Gambon Date: 3-19-99

Company: Fedex

RECEIVED BY:

Sign: John Gambon Time: 3:19-99

Print: John Gambon Date: 3-19-99

Company: Fedex

RELINQUISHED BY:

Sign: John Gambon Time: 3:19-99

Print: John Gambon Date: 3-19-99

Company: Fedex

RECEIVED BY:

Sign: John Gambon Time: 3:19-99

Print: John Gambon Date: 3-19-99

Company: Fedex

COMMENTS: LOW LEVEL BENZOC(A)PYRENE < 0.7 ppb

Paragon Analytics, Inc. - Fort Collins, Colorado

CONDITION OF SAMPLE UPON RECEIPT FORM

CLIENT: El Paso Field Services

PROJECT MANAGER: D. FAZIO

WORKORDER NO: 9903152

INITIALS: DM DATE: 3.19.99

1.	Does this project require any special handling in addition to standard PAI procedures? PRESCREEN REQUIRED (Rad, DOE, etc.)	Yes	☒ No
2.	Are custody seals on the cooler intact? If so, how many <u>1</u>	N/A	☒ Yes ☐ No
3.	Are custody seals on sample containers intact? <u>NO Seal</u>	N/A	☒ Yes ☒ No
4.	Is there a Chain of Custody (COC) or other representative documents, letters, or shipping memos?	☒ Yes	☐ No
5.	Is the COC complete? Relinquished: Yes ☒ No ☐ Analyses Requested: Yes ☒ No ☐	N/A	☒ Yes ☐ No
6.	Is the COC in agreement with the samples received? No. of Samples: Yes ☒ No ☐ Sample ID's: Yes ☒ No ☐ Matrix: Yes ☒ No ☐ No. of Containers: Yes ☒ No ☐	☒ Yes	☐ No
7.	Are all aqueous samples requiring chemical preservation preserved correctly (excluding volatile organics)? Are all aqueous non-preserved samples at the correct pH?	N/A	☒ Yes ☐ No
8.	Is there enough sample? If so, are they in the proper containers?	☒ Yes	☐ No
9.	Are all samples within holding times for the requested analyses?	☒ Yes	☐ No
10.	Were the sample(s) shipped on ice?	N/A	☒ Yes ☐ No
11.	Were all sample containers received intact? (not broken or leaking, etc.)	☒ Yes	☐ No
12.	Are samples requiring no headspace, headspace free? Size of bubble < green pea > green pea	☒ N/A	☐ Yes ☐ No
13.	Are airbills present and removable?	☒ Yes	☐ No
14.	Shall Paragon dispose of samples?	☒ Yes	☐ No
15.	Were the cooler temperatures $\leq 6^{\circ}\text{C}$?	N/A	☒ Yes ☐ No

Cooler #'s #1
Temperature 30 °C

PM Reviewed/Date: _____

A NO RESPONSE TO ANY QUESTION (EXCEPT # 1&13) REQUIRES THE COMPLETION OF PAGE 2 OF THE FORM

PLEASE FOLD THIS SHIPPING DOCUMENT IN HALF AND PLACE IT IN A WAYBILL POUCH AFFIXED TO YOUR SHIPMENT SO THAT THE BAR-CODE PORTION OF THE LABEL CAN BE READ AND SCANNED.
***WARNING: USE ONLY THE PRINTED ORIGINAL LABEL FOR SHIPPING. USING A PHOTOCOPY OF THIS LABEL FOR SHIPPING PURPOSES IS FRAUDULENT AND COULD RESULT IN ADDITIONAL BILLING CHARGES, ALONG WITH THE CANCELLATION OF YOUR FEDEX ACCOUNT NUMBER.

FROM: John Lambdin (505)599-2144
El Paso Field Services
770 West Navajo

Farmington, NM 87401

SHIPPER'S FEDEX ACCOUNT NUMBER

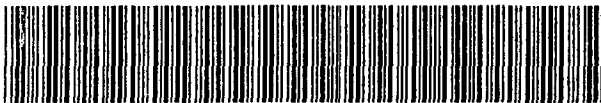


FedEx
Federal Express

TO: Sample Control (800)443-1511
Paragon Analytics, Inc.
225 Commerce Drive

SHIP DATE: 18MAR99
MAN-WGT: 40 LBS

REF: Fort Collins, CO 80524-
006574



DELIVERY ADDRESS BARCODE (FEDEX-EDR)

CAD # 2223546

STANDARD OVERNIGHT

FRI
AA

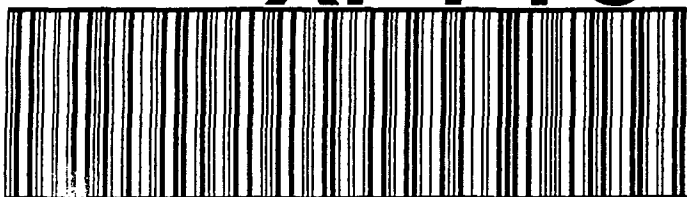
TRK # 7902 2175 3346 FORM 0201

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Deliver By:
19MAR99

80524-CO-US
DROP OFF

XF FTC





Paragon Analytics, Inc.

TOTAL RECOVERABLE METALS CASE NARRATIVE

El Paso Field Services

Chaco Plant Monitor Wells

Order Number - 9903152

1. This report consists of 2 water samples.
2. The samples were received cool and intact on 03/19/99.
3. The samples had been correctly preserved for the requested analyses.
4. The samples were prepared for analysis based on SW-846, 3rd Edition procedures.

For analysis by conventional ICP, the samples were digested following method 3005A and PAI SOP 806 Rev. 4.

For analysis by Cold Vapor AA (CVAA), the samples were digested following method 7470A and PAI SOP 812 Rev. 6.

5. The samples were analyzed following SW-846, 3rd Edition procedures.
Analysis by conventional ICP followed method 6010B and PAI SOP 805 Rev. 0.
Analysis by CVAA followed method 7470A and PAI SOP 812 Rev. 6.
6. All standards and solutions are NIST traceable and were used within their recommended shelf life.
7. The sample was prepared and analyzed within the established hold times.
8. Sample results which are below PAI's standard reporting limit are shown as the reporting limit with a "U" flag.

All in house quality control procedures were followed, as described below.

9. General quality control procedures.
 - A preparation (method) blank and laboratory control sample were digested and analyzed with the samples in each digestion batch. There were not more than 20 samples in each digestion batch.



- The preparation (method) blank results associated with each batch were below the reporting limits for the requested analytes. This indicates that no contaminants were introduced to the samples during the digestion procedure.
- The laboratory control sample associated with each batch was within acceptance limits. This indicates complete digestion according to the method.
- All initial and continuing calibration blanks associated with each batch were below the reporting limits for the requested analytes. This indicates a valid calibration and stable instrument conditions.
- All initial and continuing calibration verifications associated with each batch were within acceptance criteria for the requested analytes. This indicates a valid calibration and stable instrument conditions.
- The interference check samples, and high standard readbacks associated with Method 6010B analyses were within acceptance criteria.

10. PAI sample ID 9903123-7 was used as the QC sample for the ICP batch. PAI sample ID 9903089-1 was used as the QC sample for the mercury batch.

- A matrix spike and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for accuracy were met.
- A sample duplicate and spike duplicate were digested and analyzed with each batch. All acceptance criteria for precision were met.
- A serial dilution was analyzed with the ICP batch. All acceptance criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below:

Darryl Patrick

Darryl Patrick
Senior Inorganic Chemist

3/31/99
Date

SW
Reviewer's Initials

3/31/99
Date

CERTIFICATION

Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Paragon Analytics, Incorporated

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 9903152

Client Name: El Paso Field Services

Client Project Name: Chaco Plant Monitor Wells

Client Project Number:

Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
990101	9903152-1		WATER	3/17/99	11:18
990102	9903152-2		WATER	3/17/99	12:43

Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- C (Concentration) qualifier -- If the analyte was analyzed for but not detected a "U" is entered.
- Q qualifier -- Specified entries and their meanings are as follows:
 - E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
 - M - Duplicate injection precision was not met.
 - N - Spiked sample recovery not within control limits. A post spike is analyzed for all 6010B analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than 4 times the spike added concentration.
 - * - Duplicate analysis (relative percent difference) not within control limits.

Total Recoverable ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9903152

Client Name: El Paso Field Services

ClientProject ID: Chaco Plant Monitor Wells

Field ID	990101 (MW-1)
Lab ID	9903152-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 17-Mar-99

Date Extracted: 25-Mar-99

Date Analyzed: 26-Mar-99

Prep Batch: IP990325-1

QCBatchID: IP990325-1-1

Run ID: IP990326-1A1

Cleanup: NONE

Basis: As Received

Sample Aliquot: 50 G

Final Volume: 50 G

Result Units: MG/L

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-43-9	CADMIUM	1	0.005	0.005	U	
7440-47-3	CHROMIUM	1	0.01	0.01	U	

Data Package ID: IP9903152-1

Total Recoverable ICP Metals

Method SW6010

Sample Results

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9903152

Client Name: El Paso Field Services

ClientProject ID: Chaco Plant Monitor Wells

Field ID:	990102	(Mw-8)
Lab ID:	9903152-2	

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 17-Mar-99

Date Extracted: 25-Mar-99

Date Analyzed: 26-Mar-99

Prep Batch: IP990325-1

QC Batch ID: IP990325-1-1

Run ID: IP990326-1A1

Cleanup: NONE

Basis: As Received

Sample Aliquot: 50 G

Final Volume: 50 G

Result Units: MG/L

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-43-9	CADMIUM	1	0.005	0.005	U	
7440-47-3	CHROMIUM	1	0.01	0.01	U	

Data Package ID: IP9903152-1

ICP Metals

Method SW6010

Method Blank

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9903152

Client Name: El Paso Field Services

ClientProject ID: Chaco Plant Monitor Wells

Lab ID: FB990325-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 25-Mar-99

Date Analyzed: 26-Mar-99

Prep Batch: IP990325-1

QCBatchID: IP990325-1-1

Run ID: IP990326-1A1

Cleanup: NONE

Basis: N/A

Sample Aliquot: 50 G

Final Volume: 50 G

Result Units: MG/L

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-43-9	CADMIUM	1	0.005	0.005	U	
7440-47-3	CHROMIUM	1	0.01	0.01	U	

Data Package ID: IP9903152-1

Date Printed: Wednesday, March 31, 1999

Paragon Analytics Inc.

Page 1 of 1

0000007

ICP Metals

Method SW6010

Matrix Spike And Matrix Spike Duplicate

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9903152

Client Name: El Paso Field Services

ClientProject ID: Chaco Plant Monitor Wells

Field ID:	SHARED QC
LabID:	9903123-7MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 10-Mar-99
Date Extracted: 25-Mar-99
Date Analyzed: 26-Mar-99

Prep Batch: IP990325-1
QCBatchID: IP990325-1-1
Run ID: IP990326-1A1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 G
Final Volume: 50 G
Result Units: MG/L

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-43-9	CADMIUM	0.005	U	0.0482		0.005	0.05	96	80 - 120%
7440-47-3	CHROMIUM	0.038		0.23		0.01	0.2	96	80 - 120%

MSD Lab ID:	9903123-7MSD
-------------	--------------

CASNO	Target Analyte	Spike Added	MSD Result	MSD Qual	Reporting Limit	MSD % Rec.	RPD	RPD Limits
7440-43-9	CADMIUM	0.05	0.0484		0.005	97	0	20
7440-47-3	CHROMIUM	0.2	0.23		0.01	96	0	20

Data Package ID: IP9903152-1

Mercury
Method SW7470
Sample Results

Lab Name: Paragon Analytics, Inc.
Client Name: El Paso Field Services
Client Project ID: Chaco Plant Monitor Wells
Work Order Number: 9903152
Reporting Basis: As Received

Final Volume: 20 ML
Matrix: WATER
Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Detection Limit	Flag	Sample Aliquot
990101 (MW-1 Hg)	9903152-1	3/17/99	3/29/99	3/30/99	N/A	1	0.0002	0.0002	U	20 ML
990102 (MW-8 Hg)	9903152-2	3/17/99	3/29/99	3/30/99	N/A	1	0.0002	0.0002	U	20 ML

Comments:

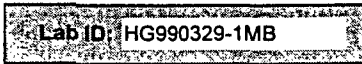
1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: HG9903152-1

000009

Mercury
Method SW7470
Method Blank

Lab Name: Paragon Analytics, Inc.
Work Order Number: 9903152
Client Name: El Paso Field Services
ClientProject ID: Chaco Plant Monitor Wells



Sample Matrix: WATER
% Moisture: N/A

Prep Batch: HG990329-1
QCBatchID: HG990329-1-1
Run ID: HG990330-1A1
Cleanup: NONE
Basis: N/A

Sample Aliquot: 20 ML
Final Volume: 20 ML
Result Units: MG/L

Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Detection Limit	Flag
HG990329-1MB	3/30/99	3/29/99	3/30/99	N/A	1	0.0002	0.0002	U

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: HG9903152-1

000010

Mercury

Method SW7470

Matrix Spike And Matrix Spike Duplicate

Lab Name: Paragon Analytics, Inc.

Work Order Number: 9903152

Client Name: El Paso Field Services

ClientProject ID: Chaco Plant Monitor Wells

Field ID:	SHARED QC
LabID:	9903089-1MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 09-Mar-99
Date Extracted: 29-Mar-99
Date Analyzed: 30-Mar-99

Prep Batch: HG990329-1
QCBatchID: HG990329-1-1
Run ID: HG990330-1A1
Cleanup: NONE
Basis: As Received

Sample Aliquot: 20 ML
Final Volume: 20 ML

Spike Added	Sample Result	Units	Reporting Limit	MS Result	MS % Rec.	MS Qualifier	Control Limits
0.002	0.0002	MG/L	0.0002	0.00199	100		80 - 120%

MSD Lab ID:	9903089-1MSD
-------------	--------------

Spike Added	MSD Result	MSD Qual	Reporting Limit	MSD % Rec.	RPD	RPD Limits
0.002	0.00194		0.0002	97	3	20

Data Package ID: HG9903152-1



Paragon Analytics, Inc.

PAHs by HPLC Case Narrative

El Paso Field Services

Chaco Plant Monitor Wells

Order Number - 9903152

1. This report consists of 2 water samples received by Paragon on 3/19/99.
2. These samples were extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water samples were extracted using continuous liquid-liquid extractors, based on Method 3520.
3. The extracts were then analyzed using HPLC with UV and fluorescence detectors with a reverse phase C18 column according to protocols based on Method 8310. All compounds are analyzed using UV at 254 nm. Confirmation is performed for positive results using the fluorescence detector or confirmed by UV at 280 nm for those compounds that do not respond to the fluorescence detector. The quantitation of each analyte is usually taken from the detector that exhibits the fewest interferences. For compounds that only respond to UV, the result is taken from the wavelength that exhibits fewer interferences. These quantitations minimize the chances of reporting elevated results based on interferences.
4. All initial and continuing calibration criteria were within acceptance criteria.
5. The method blank associated with this project was below the reporting limits for all analytes.
6. All laboratory control spike and laboratory control spike duplicate recoveries and RPDs were within the acceptance criteria.
7. Matrix spikes and matrix spike duplicates could not be performed because of insufficient sample. A laboratory control spike and laboratory control spike duplicate were performed instead.

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8. All samples were extracted and analyzed within the established holding times.
9. All surrogate recoveries were within acceptance criteria.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, Paragon Analytics, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Preston Mathiesen

Preston Mathiesen
HPLC Analyst

4/1/99

Date

EM

Reviewer's Initials

4-1-99

Date

000002

~~000013~~

Paragon Analytics, Inc.
Data Qualifier Flags
Chromatography and Mass Spectrometry

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
- J:** This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); and (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL.
- B:** This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.
- E:** This flag identifies compounds whose concentration exceeds the upper level of the calibration range.

Paragon Analytics, Incorporated

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 9903152

Client Name: El Paso Field Services

Client Project Name: Chaco Plant Monitor Wells

Client Project Number:

Client PO Number:

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
990101	9903152-1		WATER	3/17/99	11:18
990102	9903152-2		WATER	3/17/99	12:43

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Reagent Blank

Lab Name: Paragon Analytics, Inc.

Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: WMB1 3/22/99

Date Collected: N/A

Date Extracted: 3/22/99

Date Analyzed: 3/31/99

Sample Matrix: Water

Cleanup: N/A

Sample Volume: 1000 mL

Final Volume: 1 mL

Dilution Factor: 1

Analyte	Conc (ug/L)	Reporting Limit (ug/L)
Naphthalene	ND	0.50
Acenaphthylene	ND	1.0
1-Methylnaphthalene	ND	1.0
2-Methylnaphthalene	ND	1.0
Acenaphthene	ND	1.0
Fluorene	ND	0.10
Phenanthrene	ND	0.050
Anthracene	ND	0.10
Fluoranthrene	ND	0.10
Pyrene	ND	0.050
Benzo(a)anthracene	ND	0.050
Chrysene	ND	0.050
Benzo(b)fluoranthrene	ND	0.10
Benzo(k)fluoranthrene	ND	0.050
Benzo(a)pyrene	ND	0.10
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	88	35 - 119

ND = Not Detected at or above client requested reporting limit.

000005

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

MW-1
990101

Lab Name: Paragon Analytics, Inc.

Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: 9903152-1

Date Collected: 3/17/99

Date Extracted: 3/22/99

Date Analyzed: 3/31/99

Sample Matrix: Water

Cleanup: N/A

Sample Volume: 1050 mL

Final Volume: 1 mL

Dilution Factor: 1

Analyte	Conc (ug/L)	Reporting Limit (ug/L)
Naphthalene	ND	0.48
Acenaphthylene	ND	1.0
1-Methylnaphthalene	ND	1.0
2-Methylnaphthalene	ND	1.0
Acenaphthene	ND	1.0
Fluorene	ND	0.10
Phenanthrene	ND	0.048
Anthracene	ND	0.10
Fluoranthrene	ND	0.10
Pyrene	ND	0.048
Benzo(a)anthracene	ND	0.048
Chrysene	ND	0.048
Benzo(b)fluoranthrene	ND	0.10
Benzo(k)fluoranthrene	ND	0.048
Benzo(a)pyrene	ND	0.10
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	70	35 - 119

ND = Not Detected at or above client requested reporting limit.

990006

POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Lab Name: Paragon Analytics, Inc.
 Client Name: El Paso Field Services
 Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: 9903152-2

Sample Matrix: Water
 Cleanup: N/A

Sample ID

MW-8
990102

Date Collected: 3/17/99
 Date Extracted: 3/22/99
 Date Analyzed: 3/31/99

Sample Volume: 1050 mL
 Final Volume: 1 mL
 Dilution Factor: 1

Analyte	Conc (ug/L)	Reporting Limit (ug/L)
Naphthalene	0.92	0.48
Acenaphthylene	1.0	1.0
1-Methylnaphthalene	ND	1.0
2-Methylnaphthalene	ND	1.0
Acenaphthene	ND	1.0
Fluorene	0.76	0.10
Phenanthrene	0.051	0.048
Anthracene	ND	0.10
Fluoranthrene	ND	0.10
Pyrene	0.035 J	0.048
Benzo(a)anthracene	ND	0.048
Chrysene	ND	0.048
Benzo(b)fluoranthrene	ND	0.10
Benzo(k)fluoranthrene	ND	0.048
Benzo(a)pyrene	ND	0.10
Dibenzo(a,h)anthracene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Indeno(1,2,3-c,d)pyrene	ND	0.10

SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	90	35 - 119

ND = Not Detected at or above client requested reporting limit.

J = Estimated value. Below reporting limit.

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000007

POLYNUCLEAR AROMATIC HYDROCARBONS LABORATORY CONTROL SPIKE

Method 8310

Sample ID

Lab Name: Paragon Analytics, Inc.
Client Name: El Paso Field Services
Client Project ID: Chaco Plant Monitor Wells

Blank Spike

Lab Sample ID: WLCS1, 3/22/99

Date Extracted: 3/22/99

Date Analyzed: 3/31/99

Sample Matrix: Water

Cleanup: N/A

Sample Volume: 1,000 mL

Final Volume: 1 mL

Analyte	Spike Added (ug/L)	LCS Concentration (ug/L)	LCS Percent Recovery	QC Limits % Rec
Acenaphthylene	10.0	7.28	73	36 - 93
Phenanthrene	1.00	0.874	87	45 - 107
Pyrene	1.00	0.936	94	40 - 104
Benzo(k)fluoranthene	0.250	0.249	99	61 - 126
Dibenzo(a,h)anthracene	1.00	0.870	87	55 - 113

Lab Sample ID: WCLSD1, 3/22/99

Analyte	Spike Added (ug/L)	LCSD Concentration (ug/L)	LCSD Percent Recovery	RPD	QC Limits RPD
Acenaphthylene	10.0	6.72	67	8	20
Phenanthrene	1.00	0.774	77	12	20
Pyrene	1.00	0.972	97	4	20
Benzo(k)fluoranthene	0.250	0.243	97	2	20
Dibenzo(a,h)anthracene	1.00	0.863	86	1	20

SURROGATE RECOVERY BS/BS

Analyte	% Recovery LCS	% Recovery LCSD	% Rec Limits
2-Chloroanthracene	95	90	35 - 119

000008

June 20, 1999

Quarterly ANALYTICAL REPORT

**Chaco Plant
Monitor Well #9, #10 - Quarterly
Lab Sample #'s 990287 to 990289
Sampled 6/15/99
Sampled by Dennis Bird**

REMARKS:

These samples represent the 2nd quarter 1999 (MW#9 and #10) results for these two wells. The New Mexico WQCC limit for Benzene was exceeded in MW#10. MW-9 and 10 were installed on July 24, 1997. They are being monitored quarterly for BTEX components. Product removal was initiated on MW#10 on October 15, 1998 using a PetroTrap brand passive skimmer. Since this time, 1,528 milliliters (56 ml since 3/15/99) of product have been removed from this well.

Distribution:

Scott Pope - W/Attachments
Results File

Attachments



EL PASO FIELD SERVICES

FIELD SERVICES LABORATORY ANALYTICAL REPORT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	NA	990287
MTR CODE SITE NAME:	NA	Chaco Plant
SAMPLE DATE TIME (Hrs):	6/15/99	1213
PROJECT:	Quarterly Monitoring	
DATE OF BTEX EXT. ANAL.:	NA	6/22/99
TYPE DESCRIPTION:	MW-9	Water

Field Remarks: _____

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	<0.5	PPB	1			
TOLUENE	<0.5	PPB	1			
ETHYL BENZENE	<0.5	PPB	1			
TOTAL XYLENES	<0.5	PPB	1			
TOTAL BTEX	<2.0	PPB				

—BTEX is by EPA Method 8021 Modified—

The Surrogate Recovery was at 92 % for this sample All QA/QC was acceptable.
DF = Dilution Factor Used

Narrative:

This sample was analyzed by Pinnacle Laboratories, Albuquerque, NM.

Approved By: _____

John Lambdin

Date: _____

6/24/99



FIELD SERVICES LABORATORY
ANALYTICAL REPORT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	NA	990288
MTR CODE SITE NAME:	NA	Chaco Plant
SAMPLE DATE TIME (Hrs):	6/15/99	1350
PROJECT:	Quarterly Monitoring	
DATE OF BTEX EXT. ANAL:	NA	6/21/99
TYPE DESCRIPTION:	MW-10	Water

Field Remarks:

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	49	PPB	5	D		
TOLUENE	7.1	PPB	5	D		
ETHYL BENZENE	29	PPB	5	D		
TOTAL XYLENES	100	PPB	5	D		
TOTAL BTEX	185	PPB				

--BTEX is by EPA Method 8021 Modified --

The Surrogate Recovery was at 88 % for this sample All QA/QC was acceptable.

DF = Dilution Factor Used

The "D" qualifier indicates that the analyte calculated is based on a secondary dilution factor.

Narrative:

This sample was analyzed by Pinnacle Laboratories, Albuquerque, NM.

Approved By:

John Lumbach

Date:

6/24/99



EL PASO FIELD SERVICES

FIELD SERVICES LABORATORY ANALYTICAL REPORT

SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	NA	990289
MTR CODE SITE NAME:	NA	Chaco Plant
SAMPLE DATE TIME (Hrs):	6/15/99	1350
PROJECT:	Quarterly Monitoring	
DATE OF BTEX EXT. ANAL.:	NA	6/21/99
TYPE DESCRIPTION:	MW-10	Water

Field Remarks: Field Duplicate

RESULTS

PARAMETER	RESULT	UNITS	QUALIFIERS			
			DF	Q		
BENZENE	62	PPB	5	D		
TOLUENE	8.7	PPB	5	D		
ETHYL BENZENE	30	PPB	5	D		
TOTAL XYLENES	110	PPB	5	D		
TOTAL BTEX	211	PPB				

—BTEX is by EPA Method 8021 Modified —

The Surrogate Recovery was at 90 % for this sample All QA/QC was acceptable.

DF = Dilution Factor Used

The "D" qualifier indicates that the analyte calculated is based on a secondary dilution factor.

Narrative:

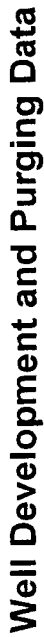
This sample was analyzed by Pinnacle Laboratories, Albuquerque, NM.

Approved By: _____

John Linder

Date: _____

6/24/99



☐	Development
☒	Purging

Well Number MW-9

Meter Code *11A*

☒	3 to 5 Casing Volumes of Water Removal
☐	Stabilization of Indicator Parameters
☐	Other

Water Volume Calculation

Initial Depth of Well (feet) 21.43
Initial Depth to Water (feet) 11.40
Height of Water Column in Well (feet) 10.03

Methods of Development

☐	Pump	☐	Bailer
☐	Centrifugal	☒	Bottom Valve
☐	Submersible	☐	Double Check Valve
☐	Peristaltic	☐	Stainless-steel Kemmerer

1

Instruments

☒ pH Meter
☐ DO Monitor
☒ Conductivity Meter
☒ Temperature Meter
☒ Other D.O. C

Water Disposal

KUTZ SEPARATOR

Water Removal Data

[illegible]

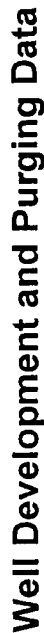
Comments

Developer's Signature *Dennis Bied*

Date 6-15-99 Reviewer

John Fambler

Date 6/24/99



Well Number MW-10

Meter Code *NA*

Development	☐
Purging	☒

Site Name CHACO PLANT

Development Criteria

- | | |
|-------------------------------------|--|
| ☒ | 3 to 5 Casing Volumes of Water Removal |
| ☐ | Stabilization of Indicator Parameters |
| ☐ | Other |

Methods of Development

- | | | | |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
| ☐ | ☐ | ☒ | ☐ |
| Pump | Bailer | Bottom Valve | |
| Centrifugal | | | |
| Submersible | | | |
| Peristaltic | | | |
| | | | Stainless-steel Kemmerer |

☐ Other _____

Water Volume Calculation

Initial Depth of Well (feet) 22.22

Initial Depth to Water (feet) 11.30

Height of Water Column in Well (feet) 12.92Diameter (inches): Well 4 Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		7.9	21.7
Gravel Pack			
Drilling Fluids			
Total			

Instruments

- | | |
|-------------------------------------|----------------------|
| ☒ | pH Meter |
| ☐ | DO Monitor |
| ☒ | Conductivity Meter |
| ☒ | Temperature Meter |
| ☒ | Other <u>D.O. Cr</u> |

Water Disposal

K072 SEP09A70P

Water Removal Data

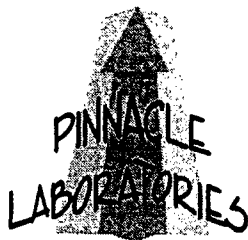
[illegible]

Comments THE WATER HAD A STRONG HYDROCARBON SMELL.

Developer's Signature *Donna Bird*

Date 6-15-99 Reviewer John Finkbein

Date 6/24/99



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number **906068**
June 22, 1999

EL PASO FIELD SERVICES
770 WEST NAVAJO
FARMINGTON, NM 87401

Project Name CHACO MW-9, MW-10
Project Number (none)

Attention: JOHN LAMBDIN

On 6/18/99 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

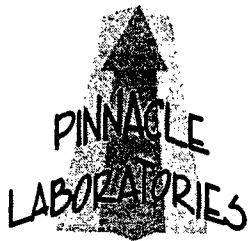
Kimberly D. McNeill
Project Manager

MR: mt

Enclosure

H. Mitchell Rubenstein, Ph. D.
General Manager

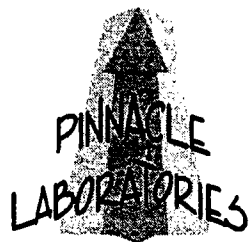
Reviewed & Accepted
J. Farch. 6/24/99



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT	: EL PASO FIELD SERVICES	PINNACLE ID	: 906068
PROJECT #	: (none)	DATE RECEIVED	: 6/18/99
PROJECT NAME	: CHACO MW-9, MW-10	REPORT DATE	: 6/22/99

PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	990287 Chaco MW-9	AQUEOUS	6/15/99
02	990288 Chaco MW-10	AQUEOUS	6/15/99
03	990289 Chaco MW-10 FD	AQUEOUS	6/15/99



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Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : CHACO MW-9, MW-10

PINNACLE I.D.: 906068

SAMPLE		MATRIX	DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	990287	AQUEOUS	6/15/99	NA	6/22/99	1
02	990288	AQUEOUS	6/15/99	NA	6/21/99	5
03	990289	AQUEOUS	6/15/99	NA	6/21/99	5
PARAMETER		DET. LIMIT	UNITS	990287	990288	990289
BENZENE		0.5	UG/L	< 0.5	49	62
TOLUENE		0.5	UG/L	< 0.5	7.1	8.7
ETHYLBENZENE		0.5	UG/L	< 0.5	29	30
TOTAL XYLENES		0.5	UG/L	< 0.5	100	110

SURROGATE:

BROMOFLUOROBENZENE (%)

92

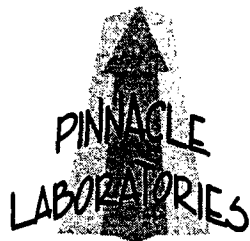
88

90

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A



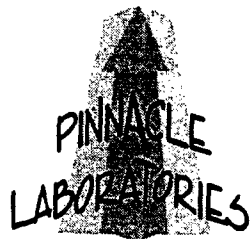
2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 906068
BLANK I. D.	: 062199	DATE EXTRACTED	: N/A
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 6/21/99
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: CHACO MW-9, MW-10		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5

SURROGATE:
BROMOFLUOROBENZENE (%) 93
SURROGATE LIMITS: (80 - 120)
CHEMIST NOTES:
N/A



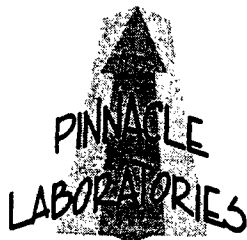
2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 906068
BLANK I. D.	: 062299	DATE EXTRACTED	: N/A
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 6/22/99
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: CHACO MW-9, MW-10		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5

SURROGATE:
BROMOFLUOROBENZENE (%) 90
SURROGATE LIMITS: (80 - 120)
CHEMIST NOTES:
N/A



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 062199
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : CHACO MW-9, MW-10

PINNACLE I.D. : 906068
DATE EXTRACTED : N/A
DATE ANALYZED : 6/21/99
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	22.1	111	22.0	110	0	(80 - 120)	20
TOLUENE	<0.5	20.0	19.8	99	20.1	101	2	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	21.4	107	20.5	103	4	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	61.2	102	59.1	99	3	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

CHAIN OF CUSTODY

DATE: 6-16-99 PAGE: 1 OF 1

AEN(NM) Accession #:

906068

PLEASE FILL THIS FORM IN COMPLETELY.

SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT MANAGER: JONATHAN SAMUELSON		COMPANY: EL PASO FIELD SERVICES		ADDRESS: 700 WEST AMHERST		PHONE: (505) 599-2144		FAX: (505) 599-2141		BILL TO: (Sample per HPLC)		COMPANY: EL PASO FIELD SERVICES		ADDRESS: 700 WEST AMHERST	
SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1) TRPH							ANALYSIS REQUEST			
1100002	6/16/99	14:00	WATER	01	(MOD.8015) Diesel/Direct Inject							8260 (TCL) Volatile Organics			
1100003	6/16/99	14:00	WATER	02	(M8015) Gas/Purge & Trap							8260 (Full) Volatile Organics			
1100004	6/16/99	14:00	WATER	03	8021 (BTX)/8015 (Gasoline)							8260 (CUST) Volatile Organics			
					8021 (BTX) ☐ MTBE ☐ TMB ☐ PCE							8260 (Landfill) Volatile Organics			
					8021 (TCL)							Pesticides /PCB (608/8081)			
					8021 (EDX)							Herbicides (615/8151)			
					8021 (HALO)							Base/Neutral/Acid Compounds GC/MS (625/8270)			
					8021 (CUST)							Polynuclear Aromatics (610/8310)			
					504.1 EDB ☐ / DBCP ☐							General Chemistry:			
												Priority Pollutant Metals (13)			
												Target Analyte List Metals (23)			
												RCRA Metals (8)			
												RCRA Metals by TCLP (Method 1311)			
												Metals:			
												NUMBER OF CONTAINERS			
PROJECT INFORMATION				PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS:				RELINQUISHED BY:				RELINQUISHED BY:			
PROJ. NO:				(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK				(NORMAL) ☒				Signature:			
PROJ. NAME:				CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER							Time:				
P.O. NO:				METHANOL PRESERVATION ☐							Printed Name:				
SHIPPED VIA:				COMMENTS: FIXED FEE ☐							Date:				
SAMPLE RECEIPT															
NO. CONTAINERS:															
CUSTODY SEALS:															
RECEIVED INTACT:															
BLUE ICE:															
RECEIVED BY:				RECEIVED BY:				RECEIVED BY:				RECEIVED BY:			
Signature:				Signature:				Signature:				Signature:			
Time:				Time:				Time:				Time:			
Printed Name:				Printed Name:				Printed Name:				Printed Name:			
Date:				Date:				Date:				Date:			
Company:				Company:				Company:				Company:			

August 8, 1999

ANNUAL TESTING ANALYTICAL REPORT

**Chaco Plant
Monitor Wells #2, 3, 4, 5, 6, 7 and 20" Discharge
Lab Sample #'s 990306 to 990313
Sampled 7/13/99
Sampled by Dennis Bird**

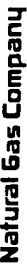
REMARKS:

These samples represent the annual required compliance testing for the listed wells and discharge.

Distribution:

Scott Pope
Mike Hansen - W/O Attachments
Results Files
MW Analytical History

Attachments



Page 7 of 7

FAX: 505-599-2261



EL PASO FIELD SERVICES

Field Services Laboratory

Analytical Report

SAMPLE IDENTIFICATION

EPFS LAB ID:	990306
DATE SAMPLED:	07/09/99
TIME SAMPLED (Hrs):	1405
SAMPLED BY:	Dennis Bird
MATRIX:	Water
METER CODE:	N/A
SAMPLE SITE NAME:	Chaco Plant
SAMPLE POINT:	20" Wastewater Discharge

FIELD REMARKS:

GENERAL CHEMISTRY WATER ANALYSIS RESULTS

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	8.0	Units	07/14/99
Alkalinity as CO_3	0	PPM	07/14/99
Alkalinity as HCO_3	100	PPM	07/14/99
Calcium as Ca	234	PPM	07/15/99
Magnesium as Mg	57	PPM	07/15/99
Total Hardness as CaCO_3	819	PPM	07/15/99
Chloride as Cl	47	PPM	07/14/99
Sulfate as SO_4	933	PPM	07/14/99
Fluoride as F	1.93	PPM	07/16/99
Nitrate as $\text{NO}_3\text{-N}$	0.90	PPM	07/14/99
Nitrite as $\text{NO}_2\text{-N}$	<0.1	PPM	07/14/99
Ammonium as NH_4^+	<0.2	PPM	07/15/99
Phosphate as PO_4	<0.2	PPM	07/14/99
Potassium as K	37	PPM	07/15/99
Sodium as Na	165	PPM	07/15/99
Total Dissolved Solids	1,814	PPM	07/16/99
Conductivity	1,807	umhos/cm	07/14/99
Anion/Cation %	4.1%	%, <5.0 Accepted	08/02/99

Lab Remarks:

Approved By:

John Savchen

Date:

8/2/99



EL PASO FIELD SERVICES

Field Services Laboratory

Analytical Report

SAMPLE IDENTIFICATION

EPFS LAB ID:	990307
DATE SAMPLED:	07/13/99
TIME SAMPLED (Hrs):	1030
SAMPLED BY:	Dennis Bird
MATRIX:	Water
METER CODE:	N/A
SAMPLE SITE NAME:	Chaco Plant
SAMPLE POINT:	MW-2

FIELD REMARKS:

GENERAL CHEMISTRY WATER ANALYSIS RESULTS

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	7.2	Units	07/14/99
Alkalinity as CO ₃	0	PPM	07/14/99
Alkalinity as HCO ₃	621	PPM	07/14/99
Calcium as Ca	87	PPM	07/15/99
Magnesium as Mg	24	PPM	07/15/99
Total Hardness as CaCO ₃	316	PPM	07/15/99
Chloride as Cl	546	PPM	07/14/99
Sulfate as SO ₄	346	PPM	07/14/99
Fluoride as F	1.91	PPM	07/16/99
Nitrate as NO ₃ -N	<0.6	PPM	07/14/99
Nitrite as NO ₂ -N	<0.6	PPM	07/14/99
Ammonium as NH ₄ ⁺	<0.2	PPM	07/15/99
Phosphate as PO ₄	<0.6	PPM	07/14/99
Potassium as K	4	PPM	07/15/99
Sodium as Na	616	PPM	07/15/99
Total Dissolved Solids	1,992	PPM	07/16/99
Conductivity	2,920	umhos/cm	07/14/99
Anion/Cation %	0.5%	%, <5.0 Accepted	08/06/99

Lab Remarks:

Approved By:

John Lander

Date:

8/6/99



EL PASO FIELD SERVICES

Field Services Laboratory

Analytical Report

SAMPLE IDENTIFICATION

EPFS LAB ID:	990308
DATE SAMPLED:	07/13/99
TIME SAMPLED (Hrs):	1157
SAMPLED BY:	Dennis Bird
MATRIX:	Water
METER CODE:	N/A
SAMPLE SITE NAME:	Chaco Plant
SAMPLE POINT:	MW-3

FIELD REMARKS:

GENERAL CHEMISTRY WATER ANALYSIS RESULTS

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	7.3	Units	07/14/99
Alkalinity as CO_3	0	PPM	07/14/99
Alkalinity as HCO_3	383	PPM	07/14/99
Calcium as Ca	124	PPM	07/15/99
Magnesium as Mg	28	PPM	07/15/99
Total Hardness as CaCO_3	425	PPM	07/15/99
Chloride as Cl	27	PPM	07/14/99
Sulfate as SO_4	435	PPM	07/14/99
Fluoride as F	<0.1	PPM	07/16/99
Nitrate as $\text{NO}_3\text{-N}$	<0.2	PPM	07/14/99
Nitrite as $\text{NO}_2\text{-N}$	<0.2	PPM	07/14/99
Ammonium as NH_4^+	<0.2	PPM	07/15/99
Phosphate as PO_4	<0.2	PPM	07/14/99
Potassium as K	3	PPM	07/15/99
Sodium as Na	205	PPM	07/15/99
Total Dissolved Solids	1,126	PPM	07/16/99
Conductivity	1,391	umhos/cm	07/14/99
Anion/Cation %	4.1%	%, <5.0 Accepted	08/02/99

Lab Remarks:

Approved By:

John L. Linder

Date:

8/2/99



EL PASO FIELD SERVICES

Field Services Laboratory

Analytical Report

SAMPLE IDENTIFICATION

EPFS LAB ID:	990309
DATE SAMPLED:	07/13/99
TIME SAMPLED (Hrs):	1255
SAMPLED BY:	Dennis Bird
MATRIX:	Water
METER CODE:	N/A
SAMPLE SITE NAME:	Chaco Plant
SAMPLE POINT:	MW-4

FIELD REMARKS:

GENERAL CHEMISTRY WATER ANALYSIS RESULTS

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	6.9	Units	07/14/99
Alkalinity as CO_3	0	PPM	07/14/99
Alkalinity as HCO_3	561	PPM	07/14/99
Calcium as Ca	467	PPM	07/15/99
Magnesium as Mg	79	PPM	07/15/99
Total Hardness as CaCO_3	1491	PPM	07/15/99
Chloride as Cl	374	PPM	07/14/99
Sulfate as SO_4	2637	PPM	07/14/99
Fluoride as F	1.6	PPM	07/16/99
Nitrate as $\text{NO}_3\text{-N}$	2.9	PPM	07/14/99
Nitrite as $\text{NO}_2\text{-N}$	<1.1	PPM	07/14/99
Ammonium as NH_4^+	<0.2	PPM	07/15/99
Phosphate as PO_4	<0.6	PPM	07/14/99
Potassium as K	12	PPM	07/15/99
Sodium as Na	1179	PPM	07/15/99
Total Dissolved Solids	5,610	PPM	07/16/99
Conductivity	5,530	umhos/cm	07/14/99
Anion/Cation %	4.1%	%, <5.0 Accepted	08/02/99

Lab Remarks:

Approved By:

John Landa

Date:

8/2/99



EL PASO FIELD SERVICES

Field Services Laboratory Analytical Report

SAMPLE IDENTIFICATION

EPFS LAB ID:	990310
DATE SAMPLED:	07/13/99
TIME SAMPLED (Hrs):	1423
SAMPLED BY:	Dennis Bird
MATRIX:	Water
METER CODE:	N/A
SAMPLE SITE NAME:	Chaco Plant
SAMPLE POINT:	MW-5

FIELD REMARKS:

GENERAL CHEMISTRY WATER ANALYSIS RESULTS

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	7.2	Units	07/14/99
Alkalinity as CO_3	0	PPM	07/14/99
Alkalinity as HCO_3	316	PPM	07/14/99
Calcium as Ca	213	PPM	07/15/99
Magnesium as Mg	40	PPM	07/15/99
Total Hardness as CaCO_3	697	PPM	07/15/99
Chloride as Cl	65	PPM	07/14/99
Sulfate as SO_4	987	PPM	07/14/99
Fluoride as F	0.9	PPM	07/16/99
Nitrate as $\text{NO}_3\text{-N}$	0.5	PPM	07/14/99
Nitrite as $\text{NO}_2\text{-N}$	<0.2	PPM	07/14/99
Ammonium as NH_4^+	<0.2	PPM	07/15/99
Phosphate as PO_4	<0.2	PPM	07/14/99
Potassium as K	3	PPM	07/15/99
Sodium as Na	363	PPM	07/15/99
Total Dissolved Solids	2,060	PPM	07/16/99
Conductivity	2,300	umhos/cm	07/14/99
Anion/Cation %	3.7%	%, <5.0 Accepted	08/02/99

Lab Remarks:

Approved By:

John L. Linder

Date:

8/2/99



EL PASO FIELD SERVICES

Field Services Laboratory

Analytical Report

SAMPLE IDENTIFICATION

EPFS LAB ID:	990311
DATE SAMPLED:	07/13/99
TIME SAMPLED (Hrs):	1423
SAMPLED BY:	Dennis Bird
MATRIX:	Water
METER CODE:	N/A
SAMPLE SITE NAME:	Chaco Plant
SAMPLE POINT:	MW-5 Field Duplicate

FIELD REMARKS:

GENERAL CHEMISTRY WATER ANALYSIS RESULTS

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	7.2	Units	07/14/99
Alkalinity as CO ₃	0	PPM	07/14/99
Alkalinity as HCO ₃	319	PPM	07/14/99
Calcium as Ca	205	PPM	07/15/99
Magnesium as Mg	38	PPM	07/15/99
Total Hardness as CaCO ₃	668	PPM	07/15/99
Chloride as Cl	64	PPM	07/14/99
Sulfate as SO ₄	955	PPM	07/14/99
Fluoride as F	0.9	PPM	07/16/99
Nitrate as NO ₃ -N	0.5	PPM	07/14/99
Nitrite as NO ₂ -N	<0.2	PPM	07/14/99
Ammonium as NH ₄ ⁺	<0.2	PPM	07/15/99
Phosphate as PO ₄	<0.2	PPM	07/14/99
Potassium as K	3	PPM	07/15/99
Sodium as Na	361	PPM	07/15/99
Total Dissolved Solids	1,996	PPM	07/16/99
Conductivity	2,240	umhos/cm	07/14/99
Anion/Cation %	3.8%	%, <5.0 Accepted	08/02/99

Lab Remarks:

Approved By:

John Linder

Date:

8/2/99



EL PASO FIELD SERVICES

Field Services Laboratory

Analytical Report

SAMPLE IDENTIFICATION

EPFS LAB ID:	990312
DATE SAMPLED:	07/13/99
TIME SAMPLED (Hrs):	1546
SAMPLED BY:	Dennis Bird
MATRIX:	Water
METER CODE:	N/A
SAMPLE SITE NAME:	Chaco Plant
SAMPLE POINT:	MW-6

FIELD REMARKS:

GENERAL CHEMISTRY WATER ANALYSIS RESULTS

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	8.1	Units	07/14/99
Alkalinity as CO ₃	0	PPM	07/14/99
Alkalinity as HCO ₃	438	PPM	07/14/99
Calcium as Ca	51	PPM	07/15/99
Magnesium as Mg	9	PPM	07/15/99
Total Hardness as CaCO ₃	164	PPM	07/15/99
Chloride as Cl	139	PPM	07/14/99
Sulfate as SO ₄	1176	PPM	07/14/99
Fluoride as F	2.3	PPM	07/16/99
Nitrate as NO ₃ -N	0.8	PPM	07/14/99
Nitrite as NO ₂ -N	<0.6	PPM	07/14/99
Ammonium as NH ₄ ⁺	<0.2	PPM	07/15/99
Phosphate as PO ₄	<0.6	PPM	07/14/99
Potassium as K	3	PPM	07/15/99
Sodium as Na	790	PPM	07/15/99
Total Dissolved Solids	2,568	PPM	07/16/99
Conductivity	3,410	umhos/cm	07/14/99
Anion/Cation %	2.6%	%, <5.0 Accepted	08/02/99

Lab Remarks:

Approved By:

John L. Larcher

Date:

8/2/99



EL PASO FIELD SERVICES

Field Services Laboratory

Analytical Report

SAMPLE IDENTIFICATION

EPFS LAB ID:	990313
DATE SAMPLED:	07/13/99
TIME SAMPLED (Hrs):	1702
SAMPLED BY:	Dennis Bird
MATRIX:	Water
METER CODE:	N/A
SAMPLE SITE NAME:	Chaco Plant
SAMPLE POINT:	MW-7

FIELD REMARKS:

GENERAL CHEMISTRY WATER ANALYSIS RESULTS

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	7.2	Units	07/14/99
Alkalinity as CO_3	0	PPM	07/14/99
Alkalinity as HCO_3	406	PPM	07/14/99
Calcium as Ca	219	PPM	07/15/99
Magnesium as Mg	42	PPM	07/15/99
Total Hardness as CaCO_3	720	PPM	07/15/99
Chloride as Cl	176	PPM	07/14/99
Sulfate as SO_4	1171	PPM	07/14/99
Fluoride as F	2.0	PPM	07/16/99
Nitrate as $\text{NO}_3\text{-N}$	<0.6	PPM	07/14/99
Nitrite as $\text{NO}_2\text{-N}$	<0.6	PPM	07/14/99
Ammonium as NH_4^+	<0.2	PPM	07/15/99
Phosphate as PO_4	<0.6	PPM	07/14/99
Potassium as K	4	PPM	07/15/99
Sodium as Na	556	PPM	07/15/99
Total Dissolved Solids	2,700	PPM	07/16/99
Conductivity	3,170	umhos/cm	07/14/99
Anion/Cation %	3.4%	%, <5.0 Accepted	08/02/99

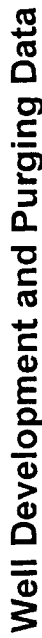
Lab Remarks:

Approved By:

John Sanchez

Date:

8/2/99



Well Number MW-3
Meter Code NA

☐ Development
☒ Purging

Site Name CHACO PLANT

Development Criteria

- | | |
|-------------------------------------|--|
| ☒ | 3 to 5 Casing Volumes of Water Removal |
| ☐ | Stabilization of Indicator Parameters |
| ☐ | Other |

Methods of Development

- | | | | |
|--------------------------|-------------|-------------------------------------|--------------------------|
| ☐ | Pump | ☐ | Bailer |
| ☐ | Centrifugal | ☒ | Bottom Valve |
| ☐ | Submersible | ☐ | Double Check Valve |
| ☐ | Peristaltic | ☐ | Stainless-steel Kemmerer |

□

Water Removal Data

[illegible]

Comments

Developer's Signature Dennis Bied

Date 7-13-99

Reviewer: John Stauden

Date 7/23/99



Well Number MW-3
Meter Code NA

☐	Development
☒	Purging

Site Name CHACO PLANT

Development Criteria

- ☒ 3 to 5 Casing Volumes of Water Removal
☐ Stabilization of Indicator Parameters
☐ Other

Methods of Development

- | | | | |
|-------------|--------------------------|--------------------------|-------------------------------------|
| Pump | ☐ | Bailer | ☐ |
| Centrifugal | ☐ | Bottom Valve | ☒ |
| Submersible | ☐ | Double Check Valve | ☐ |
| Peristaltic | ☐ | Stainless-steel Kemmerer | ☐ |

☐ Other _____

Water Volume Calculation

Initial Depth of Well (feet) 22.40
Initial Depth to Water (feet) 10.98
Height of Water Column in Well (feet) 11.42

Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		7.5	92.6
Gravel Pack			
Drilling Fluids			
Total			

Instruments

- | | |
|-------------------------------------|--------------------|
| ☒ | pH Meter |
| ☐ | DO Monitor |
| ☒ | Conductivity Meter |
| ☒ | Temperature Meter |
| ☒ | Other <u>D.O.C</u> |

Water Disposal

4072 5509B970P

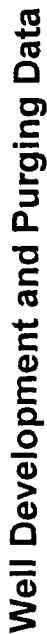
Water Removal Data

[illegible]

Comments THE WATER HAD A RUSTY RED COLOR. THE WELD BAILED DRY @ 11.0 GALLONS
71

Developer's Signature Dennis Bird

Date 7-13-99 Reviewer John Fadden Date 7/23/99



Well Number MW-5

Meter Code NA

☐	Development
☒	Purging

Development Criteria

☒ 3 to 5 Casing Volumes of Water Removal
☐ Stabilization of Indicator Parameters
☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 30.60

Initial Depth to Water (feet) 25.53

Height of Water Column in Well (feet)
508
508
508

Diameter (inches): Well

Methods of Development

☐	Pump	☐	Bailer
☐	Centrifugal	☒	Bottom Valve

☐ Submersible ☐ Double Check Valve

Material	Peristaltic	Stainless-steel Kemmerer
1	☐	☐
2	☐	☐
3	☐	☐
4	☐	☐
5	☐	☐
6	☐	☐
7	☐	☐
8	☐	☐
9	☐	☐
10	☐	☐
11	☐	☐
12	☐	☐
13	☐	☐
14	☐	☐
15	☐	☐
16	☐	☐
17	☐	☐
18	☐	☐
19	☐	☐
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89	☐	☐
90	☐	☐
91	☐	☐
92	☐	☐
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94	☐	☐
95	☐	☐
96	☐	☐
97	☐	☐
98	☐	☐
99	☐	☐
100	☐	☐

☐ Other

Instruments

☒ pH Meter

DO Monitor

☒ Conductivity Meter☒ Temperature Meter

Temperature Meter
Other 20.0

Water Disposal

KUTZ SEP 19 1975

Water Removal Data

[illegible]

Comments

Developer's Signature

Date 7-13-99

Date _____

Date _____

7/23/99



Well Number MW-6

Site Name CHACO PLANT

Meter Code *N/A*

☒	3 to 5 Casing Volumes of Water Removal
☐	Stabilization of Indicator Parameters
☐	Other

Initial Depth of Well (feet) 24.60
Initial Depth to Water (feet) 11.13
Height of Water Column in Well (feet) 13.47

☐	Pump	☒	Baller
☐	Centrifugal	☒	Bottom Valve
☐	Submersible	☐	Double Check Valve
☐	Peristaltic	☐	Stainless-steel Kemmerer

☒	pH Meter
☐	DO Monitor
☒	Conductivity Meter
☒	Temperature Meter
☒	Other <u>DO C</u>

Water Disposal

KUTZ SEPARATOR

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		8.9	26.7
Gravel Pack			
Drilling Fluids			
Total			

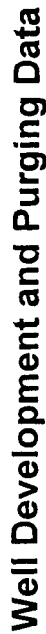
[illegible]

Comments THE WELL BAILED ONLY 25.0 GALLONS.

Developer's Signature
Dennis Bird

Date 7-13-99 Reviewer John Savol

Date 7/23/99



Well Number NW-7
Meter Code NA

Development	☐
Purging	☒

Site Name CHACO PLANT

Development Criteria

- ☒ 3 to 5 Casing Volumes of Water Removal
☐ Stabilization of Indicator Parameters
☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 19.50
Initial Depth to Water (feet) 12.47
Height of Water Column in Well (feet) 7.03

Methods of Development

- | | | | |
|--------------------------|-------------|-------------------------------------|--------------------------|
| ☐ | Pump | ☐ | Bailer |
| ☐ | Centrifugal | ☒ | Bottom Valve |
| ☐ | Submersible | ☐ | Double Check Valve |
| ☐ | Peristaltic | ☐ | Stainless-steel Kemmerer |

Instruments

- ☒ pH Meter
☐ DO Monitor
☒ Conductivity Meter
☒ Temperature Meter
☒ Other D.O. C

Water Disposal

KUTZ SEPARATOR

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		4.6	13.9
Gravel Pack			
Drilling Fluids			
Total			

Water Removal Data

[illegible]

Comments

Developer's Signature Jennis Bial

Date 7-13-99

John F. Luch Date 7/23/95



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

PL I.D. 907045



July 23, 1999

El Paso Field Services
770 W. Navajo
Farmington, NM 87401

Project Name/Number: CHACO PLANT MW NA

Attention: John Lambdin

On 07/15/99, Pinnacle Laboratories Inc., (ADHS License No. AZ0592), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

All analyses were performed by Environmental Services Laboratory, Durham, OR.

If you have any questions or comments, please do not hesitate to contact us at (505) 344-3777.

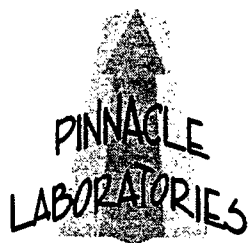
Kimberly D. McNeill
Project Manager

MR:jt

Enclosure

H. Mitchell Rubenstein, Ph.D.
General Manager

*Reviewed & Approved
J. J. J. 8/2/99*



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT : EL PASO FIELD SERVICES DATE RECEIVED : 07/15/99
PROJECT # : NA
PROJECT NAME : CHACO PLANT MW REPORT DATE : 07/23/99

PL ID: 907045

	PINNACLE ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	907045-01	990306	AQUEOUS	07/09/99
02	907045-02	990307	AQUEOUS	07/13/99
03	907045-03	990308	AQUEOUS	07/13/99
04	907045-04	990309	AQUEOUS	07/13/99
05	907045-05	990310	AQUEOUS	07/13/99
06	907045-06	990311	AQUEOUS	07/13/99
07	907045-07	990312	AQUEOUS	07/13/99
08	907045-08	990313	AQUEOUS	07/13/99

---TOTALS---

MATRIX
AQUEOUS

#SAMPLES
8

Environmental Services Laboratory, Inc.

17400 SW Upper Boones Ferry Road • Suite 270 • Portland, OR 97224 • (503) 670-8520

July 22, 1999

Kim McNeill
Pinnacle Laboratories
2709-D Pan American Fwy NE

Albuquerque, NM 87107

TEL: 505-344-3777

FAX (505) 344-4413

RE: 907045/EPFS/Chaco Plant NW

Order No.: 9907090

Dear Kim McNeill,

Environmental Services Laboratory received 8 samples on 7/16/99 for the analyses presented in the following report.

The Samples were analyzed for the following tests:

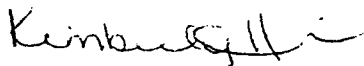
ICP Metals (ICPMET)

MERCURY (Mercury)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval from the Laboratory.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,



Kimberly Hill
Project Manager



Technical Review

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories

Client Sample ID: 907045-01 20" waste-

Lab Order: 9907090

Tag Number: water

Project: 907045/EPFS/Chaco Plant NW

Collection Date: 7/9/99

Lab ID: 9907090-01A

Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
MERCURY		SW 7470 / EPA 245.				Analyst: btn
Mercury	ND	0.0002		mg/L	1	7/21/99
ICP METALS		SW 6010 / EPA 200.				Analyst: btn
Cadmium	ND	0.002		mg/L	1	7/20/99
Chromium	ND	0.005		mg/L	1	7/20/99

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories
Lab Order: 9907090
Project: 907045/EPFS/Chaco Plant NW
Lab ID: 9907090-02A

Client Sample ID: 907045-02 *MW-2*
Tag Number:
Collection Date: 7/9/99
Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
MERCURY		SW 7470 / EPA 245.				Analyst: btn
Mercury	ND	0.0002		mg/L	1	7/21/99
ICP METALS		SW 6010 / EPA 200.				Analyst: btn
Cadmium	ND	0.002		mg/L	1	7/20/99
Chromium	ND	0.005		mg/L	1	7/20/99

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories

Client Sample ID: 907045-03 M.W. 3

Lab Order: 9907090

Tag Number:

Project: 907045/EPFS/Chaco Plant NW

Collection Date: 7/9/99

Lab ID: 9907090-03A

Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
MERCURY		SW 7470 / EPA 245.				Analyst: btn
Mercury	ND	0.0002		mg/L	1	7/21/99
ICP METALS		SW 6010 / EPA 200.				Analyst: btn
Cadmium	ND	0.002		mg/L	1	7/20/99
Chromium	ND	0.005		mg/L	1	7/20/99

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories

Client Sample ID: 907045-04 MW-4

Lab Order: 9907090

Tag Number:

Project: 907045/EPFS/Chaco Plant NW

Collection Date: 7/9/99

Lab ID: 9907090-04A

Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
MERCURY		SW 7470 / EPA 245.				Analyst: btn
Mercury	ND	0.0002		mg/L	1	7/21/99
ICP METALS		SW 6010 / EPA 200.				Analyst: btn
Cadmium	ND	0.002		mg/L	1	7/20/99
Chromium	ND	0.005		mg/L	1	7/20/99

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

E - Value above quantitation range

* - Value exceeds Maximum Contaminant Level

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories

Client Sample ID: 907045-05

MW-5

Lab Order: 9907090

Tag Number:

Project: 907045/EPFS/Chaco Plant NW

Collection Date: 7/9/99

Lab ID: 9907090-05A

Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
MERCURY		SW 7470 / EPA 245.				Analyst: btn
Mercury	ND	0.0002		mg/L	1	7/21/99
ICP METALS		SW 6010 / EPA 200.				Analyst: btn
Cadmium	ND	0.002		mg/L	1	7/20/99
Chromium	ND	0.005		mg/L	1	7/20/99

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories

Client Sample ID: 907045-06

Lab Order: 9907090

Tag Number:

Project: 907045/EPFS/Chaco Plant NW

Collection Date: 7/9/99

Lab ID: 9907090-06A

Matrix: AQUEOUS

mw-5

field dup.

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
MERCURY		SW 7470 / EPA 245.				Analyst: btn
Mercury	ND	0.0002		mg/L	1	7/21/99
ICP METALS		SW 6010 / EPA 200.				Analyst: btn
Cadmium	ND	0.002		mg/L	1	7/20/99
Chromium	ND	0.005		mg/L	1	7/20/99

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories

Client Sample ID: 907045-07

Lab Order: 9907090

Tag Number:

Project: 907045/EPFS/Chaco Plant NW

Collection Date: 7/9/99

Lab ID: 9907090-07A

Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
MERCURY		SW 7470 / EPA 245.				Analyst: btn
Mercury	ND	0.0002		mg/L	1	7/21/99
ICP METALS		SW 6010 / EPA 200.				Analyst: btn
Cadmium	ND	0.002		mg/L	1	7/20/99
Chromium	ND	0.005		mg/L	1	7/20/99

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories

Client Sample ID: 907045-08

Lab Order: 9907090

Tag Number: MW-7

Project: 907045/EPFS/Chaco Plant NW

Collection Date: 7/9/99

Lab ID: 9907090-08A

Matrix: AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
MERCURY		SW 7470 / EPA 245.				Analyst: btn
Mercury	ND	0.0002		mg/L	1	7/21/99
ICP METALS		SW 6010 / EPA 200.				Analyst: btn
Cadmium	ND	0.002		mg/L	1	7/20/99
Chromium	ND	0.005		mg/L	1	7/20/99

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories

Work Order: 9907090

Project: 907045/EPFS/Chaco Plant NW

QC SUMMARY REPORT

Method Blank

Sample ID: MB-643	Batch ID: 643	Test Code: ICPMET	Units: mg/L	Analysis Date 7/20/99	Prep Date: 7/19/99
Client ID:	9907090	Run ID: ICP_990720A		SeqNo: 18089	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Aluminum	ND	0.05			
Arsenic	ND	0.005			
Boron	ND	0.1			
Cadmium	ND	0.002			
Calcium	ND	0.05			
Chromium, 200.7	ND	0.005			
Cobalt, 200.7	ND	0.005			
Copper, 200.7	ND	0.005			
Iron	ND	0.01			
Lead, 200.7	ND	0.005			
Magnesium	ND	0.05			
Manganese	ND	0.005			
Molybdenum, 200.7	ND	0.005			
Nickel, 200.7	ND	0.005			
Potassium	ND	0.2			
Selenium	ND	0.005			
Silver	ND	0.005			
Sodium	ND	0.2			
Zinc, 200.7	ND	0.005			
Sample ID: MBlank	Batch ID: 648	Test Code: Mercury	Units: mg/L	Analysis Date 7/21/99	Prep Date: 7/20/99
Client ID:	9907090	Run ID: MERC_990721A		SeqNo: 18188	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	ND	0.0002			

Qualifiers: ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories

Work Order: 9907090

Project: 907045/EPPS/Chaco Plant NW

QC SUMMARY REPORT

Sample Duplicate

Sample ID: 9907091-05A DUP

Batch ID: 643

Test Code: ICPMET

Units: mg/L

Analysis Date 7/20/99

Prep Date: 7/19/99

Client ID:

9907090

Run ID: ICP_990720A

SeqNo: 18082

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	.2325	0.05	0	0	0.0%	0	0	0.2364	1.6%	20	
Arsenic	.02542	0.005	0	0	0.0%	0	0	0.0263	3.4%	20	
Boron	.2135	0.1	0	0	0.0%	0	0	0.215	0.7%	20	
Cadmium	ND	0.002	0	0	0.0%	0	0	0	0.0%	20	
Calcium	34.98	0.05	0	0	0.0%	0	0	35.53	1.6%	20	
Chromium, 200.7	.01146	0.005	0	0	0.0%	0	0	0.0115	0.4%	20	
Cobalt, 200.7	ND	0.005	0	0	0.0%	0	0	0	0.0%	20	
Copper, 200.7	.01169	0.005	0	0	0.0%	0	0	0.01174	0.5%	20	
Iron	2.299	0.01	0	0	0.0%	0	0	2.335	1.5%	20	
Lead, 200.7	ND	0.005	0	0	0.0%	0	0	0	0.0%	20	
Magnesium	10.26	0.05	0	0	0.0%	0	0	10.44	1.8%	20	
Manganese	.03247	0.005	0	0	0.0%	0	0	0.03316	2.1%	20	
Molybdenum, 200.7	.01595	0.005	0	0	0.0%	0	0	0.01665	4.3%	20	
Nickel, 200.7	.02785	0.005	0	0	0.0%	0	0	0.02851	2.3%	20	
Potassium	10.95	0.2	0	0	0.0%	0	0	10.72	2.1%	20	
Selenium	ND	0.005	0	0	0.0%	0	0	0	0.0%	20	
Silver	ND	0.005	0	0	0.0%	0	0	0	0.0%	20	
Sodium	52.74	0.2	0	0	0.0%	0	0	52.24	1.0%	20	
Zinc, 200.7	.0602	0.005	0	0	0.0%	0	0	0.06282	4.3%	20	E

Sample ID: 9907090-01A DUP

Batch ID: 648

Test Code: Mercury

Units: mg/L

Analysis Date 7/21/99

Prep Date: 7/20/99

Client ID: 907045-01

9907090

Run ID: MERC_990721A

SeqNo: 18200

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.0002	0	0	0.0%	0	0	0	0.0%	20	

Qualifiers: ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories

Work Order: 9907090

Project: 907045/EPFS/Chaco Plant NW

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 9907090-01A MS		Batch ID: 648	Test Code: Mercury	Units: mg/L	Analysis Date 7/21/99	Prep Date: 7/20/99
Client ID: 907045-01		9907090	Run ID: MERC_990721A		SeqNo: 18201	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit	HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	.00198	0.0002	0.002	0	99.0%	75 125 0.00198 1.0% 20
Sample ID: 9907090-01A MSD		Batch ID: 648	Test Code: Mercury	Units: mg/L	Analysis Date 7/21/99	Prep Date: 7/20/99
Client ID: 907045-01		9907090	Run ID: MERC_990721A		SeqNo: 18202	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit	HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	.00196	0.0002	0.002	0	98.0%	75 125 0.00198 1.0% 20

Qualifiers: ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories
Work Order: 9907090
Project: 907045/EPFS/Chaco Plant NW

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS-643	Batch ID: 643	Test Code: ICPMET	Units: mg/L	Analysis Date 7/20/99	Prep Date: 7/19/99						
Client ID: 9907090	Run ID: ICP_990720A	SeqNo: 18088									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	4.854	0.05	5	0	97.1%	80	120	0			
Arsenic	.5	0.005	0.5	0	100.0%	80	120	0			
Boron	.4215	0.1	0.5	0	84.3%	80	120	0			
Cadmium	.4587	0.002	0.5	0	91.7%	80	120	0			
Calcium	5.052	0.05	5	0	101.0%	80	120	0			
Chromium, 200.7	.4659	0.005	0.5	0	93.2%	85	115	0			
Cobalt, 200.7	.4477	0.005	0.5	0	89.5%	85	115	0			
Copper, 200.7	.449	0.005	0.5	0	89.8%	85	115	0			
Iron	5.179	0.01	5	0	103.6%	80	120	0			
Lead, 200.7	.4592	0.005	0.5	0	91.8%	85	115	0			
Magnesium	4.845	0.05	5	0	96.9%	80	120	0			
Manganese	.4942	0.005	0.5	0	98.8%	80	120	0			
Molybdenum, 200.7	.4887	0.005	0.5	0	97.7%	85	115	0			
Nickel, 200.7	.4535	0.005	0.5	0	90.7%	85	115	0			
Potassium	5.061	0.2	5	0	101.2%	80	120	0			
Selenium	.4438	0.005	0.5	0	88.8%	80	120	0			
Silver	.4935	0.005	0.5	0	98.7%	80	120	0			
Sodium	5.06	0.2	5	0	101.2%	80	120	0			
Zinc, 200.7	.4625	0.005	0.5	0	92.5%	85	115	0			
Sample ID: LCS	Batch ID: 648	Test Code: Mercury	Units: mg/L	Analysis Date 7/21/99	Prep Date: 7/20/99						
Client ID: 9907090	Run ID: MERC_990721A	SeqNo: 18189									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	.00085	0.0002	0.001	0	85.0%	80	120	0			

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories
Work Order: 9907090
Project: 907045/EPFS/Chaco Plant NW

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: ICV	Batch ID: 648	Test Code: Mercury	Units: mg/L	Analysis Date 7/21/99	Prep Date: 7/20/99						
Client ID: 9907090	Run ID: MERC_990721A			SeqNo: 18203							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	.00206	0.0002	0.002	0	103.0%	90	110	0			

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

Environmental Services Laboratory

Date: 22-Jul-99

CLIENT: Pinnacle Laboratories
Work Order: 9907090
Project: 907045/EPFS/Chaco Plant NW

QC SUMMARY REPORT

Minerals ICP for ICP

Sample ID: ICVHI	Batch ID: 643	Test Code: ICPMET	Units: mg/L	Analysis Date 7/20/99	Prep Date:						
Client ID:	9907090	Run ID: ICP_990720A		SeqNo: 18086							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	24.52	0.05	25	0	98.1%	90	110	0			
Calcium	25.16	0.05	25	0	100.6%	90	110	0			
Magnesium	24.28	0.05	25	0	97.1%	90	110	0			
Sodium	5.015	0.2	5	0	100.3%	90	110	0			
Sample ID: ICVLOW	Batch ID: 643	Test Code: ICPMET	Units: mg/L	Analysis Date 7/20/99	Prep Date:						
Client ID:	9907090	Run ID: ICP_990720A		SeqNo: 18087							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	.5158	0.005	0.5	0	103.2%	90	110	0			
Boron	.4855	0.1	0.5	0	97.1%	90	110	0			
Cadmium	.5059	0.002	0.5	0	101.2%	90	110	0			
Chromium, 200.7	.5112	0.005	0.5	0	102.2%	95	105	0			
Cobalt, 200.7	.4892	0.005	0.5	0	97.8%	95	105	0			
Copper, 200.7	.512	0.005	0.5	0	102.4%	95	105	0			
Iron	.523	0.01	0.5	0	104.6%	90	110	0			
Lead, 200.7	.5148	0.005	0.5	0	103.0%	95	105	0			
Manganese	.4987	0.005	0.5	0	99.7%	90	110	0			
Molybdenum, 200.7	.5061	0.005	0.5	0	101.2%	95	105	0			
Nickel, 200.7	.4987	0.005	0.5	0	99.7%	95	105	0			
Potassium	5.037	0.2	5	0	100.7%	90	110	0			
Selenium	.5051	0.005	0.5	0	101.0%	90	110	0			
Silver	.5039	0.005	0.5	0	100.8%	90	110	0			
Zinc, 200.7	.5063	0.005	0.5	0	101.3%	95	105	0			

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

Network Project Manager: Kimberly D. McNeill

Pinnacle Laboratories, Inc.
2709-D Pan American Freeway, NE
Albuquerque, New Mexico 87107
(505) 344-3777 Fax (505) 344-4413

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Metals (8) RCRA	RCRA TCLP METALS	Metals-13 PP List	Metals-TAL	TOX	TOC	Gen Chemistry	Oil and Grease	Volatile Organics GC/MS (8260)	BOD	COD	PESTICIDES/PCB (608/8080)	8270 BY GC/MS	PNA (8310)	8240 (TCLP 1311) ZHE	Herbicides (615/8150)	Base/Neutral Acid Compounds GC/MS (625/8270)	URANIUM	RADIUM 226+228	Gross Alpha/Beta	TO-14	NUMBER OF CONTAINERS
907045-01	7/9	1405	AC																							
-02	7/13	030																								
-03		1157																								
-04		1255																								
-05		1423																								
-06		1423																								
-07		1546																								
-08		1702																								

PROJECT INFORMATION		SAMPLE RECEIPT		SAMPLES SENT TO:		RELINQUISHED BY:		RELINQUISHED BY:	
PROJECT #:	907045	Total Number of Containers		PENACOLA - STL-FL		Signature:		Signature:	
PROJ. NAME:	CPES	Chain of Custody Seals		PORTLAND - ESL-OR		Time:		Time:	
QC LEVEL:	STD IV	Received Intact?		STL - CT		Printed Name:		Printed Name:	
QC REQUIRED:	MS MSD BLANK	Received Good Cond./Cold		STL-NEW JERSEY		Date:		Date:	
IAT:	STANDARD RUSH!!	LAB NUMBER:		N. CREEK		Pinnacle Laboratories, Inc.			
DUE DATE:	7/29	COMMENTS:		BARRINGER		RECEIVED BY:		RECEIVED BY:	
RUSH SURCHARGE:	-			SEQUOIA		Signature:		Signature:	
CLIENT DISCOUNT:	-					Time:		Time:	
SPECIAL CERTIFICATION						Printed Name:		Printed Name:	
REQUIRED: YES (NO)						Date:		Date:	
						Company		Company	

PLEASE FILL THIS FORM IN COMPLETELY.

SHADED AREAS ARE FOR LAB USE ONLY.

PROJECT MANAGER: John Lambdin
 COMPANY: El Paso Field Services
 ADDRESS: 7700 W. ALVAREZ
 FARMINGTON, NM 87401
 PHONE: (505) 599-2144
 FAX: (505) 599-2261
 BILL TO: (Same as Above)
 COMPANY:
 ADDRESS:

SAMPLE ID	DATE	TIME	MATRIX	LAB ID
990306	7/9/99	1405	Water	01
990307	7/13/99	1030		02
990308	7/13/99	1157		03
990309	7/13/99	1255		04
990310	7/13/99	1423		05
990311	7/13/99	1423		06
990312	7/13/99	1546		07
990313	7/13/99	1702	Water	08
990314				

Petroleum Hydrocarbons (418.1) TRPH
 (MOD.8015) Diesel/Direct Inject
 (M8015) Gas/Purge & Trap
 8021 (BTEX)/8015 (Gasoline)
 8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE
 8021 (TCL)
 8021 (EDX)
 8021 (HALO)
 8021 (CUST)
 504.1 EDB ☐ / DBCP ☐

8260 (TCL) Volatile Organics
 8260 (Full) Volatile Organics
 8260 (CUST) Volatile Organics
 8260 (Landfill) Volatile Organics
 Pesticides /PCB (608/8081)
 Herbicides (615/8151)
 Base/Neutral/Acid Compounds GC/MS (625/8270)
 Polynuclear Aromatics (610/8310)
 General Chemistry:

Priority Pollutant Metals (13)
 Target Analyte List Metals (23)
 RCRA Metals (8)
 RCRA Metals by TCLP (Method 1311)

Metals: Cd, Cr, Hg

NUMBER OF CONTAINERS

PROJECT INFORMATION

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

RELINQUISHED BY:

RELINQUISHED BY:

PROJ. NO.: NA

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK

(NORMAL) ☒

PROJ. NAME: Chaco Plant MW

CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER

P.O. NO.: NA

METHANOL PRESERVATION ☐

SHIPPED VIA: FedEx

COMMENTS: FIXED FEE ☐

SAMPLE RECEIPT

NO. CONTAINERS

8

CUSTODY SEALS

UN/N/A

RECEIVED INTACT

YES

RECEIVED

16c

No Ice

Signature: John Lambdin
 Date: 7/14/99
 Time: 1030

Signature: [Signature]
 Date: [Date]
 Time: [Time]

RECEIVED BY: El Paso Field Services

RECEIVED BY: (LAB)

Printed Name: [Name]

Printed Name: [Name]

Company: [Company]

Company: American Environmental Network (NM), Inc.

October 13, 1999

Semi-Annual ANALYTICAL REPORT

**Chaco Plant
Monitor Well #1, 8 - Semi Annual
Monitor Well #9, #10 - Quarterly
Lab Sample #'s 990388 to 990392
Sampled 9/21/99
Sampled by Dennis Bird**

REMARKS:

These samples represent the second round 1999 semi-annual (MW#1 and #8) and quarterly (MW#9 and #10) results for these four wells. The New Mexico WQCC limit for Benzene (10 PPB) was exceeded in MW#10. MW-9 and 10 were installed on July 24, 1997. They are being monitored quarterly for BTEX components. Product removal was initiated on MW#10 on October 15, 1998 using a PetroTrap brand passive skimmer. Since this time, 1,500 milliliters of product have been removed from this well.

Responsibility for sampling these monitor wells in the future will be contracted. All analytical work will be contracted and the Plant will be responsible for the invoices. Scott Pope is coordinating the effort to contract the sampling. I will continue to coordinate the analytical outsourcing.

Distribution:

Sandra Miller - W/O Attachments
Scott Pope - W/Attachments
Mike Hansen/Don Helsley - W/Attachments
Results File

Attachments



John F. Golder Date 10/13/99



Well Number 11W-8
Meter Code 11A

Site Name CHACO PLANT

Development Criteria

- | | |
|-------------------------------------|--|
| ☒ | 3 to 5 Casing Volumes of Water Removal |
| ☐ | Stabilization of Indicator Parameters |
| ☐ | Other |

Methods of Development

- | | | | | | |
|--------------------------|-------------|--------------------------|--------------|-------------------------------------|--------------------------|
| ☐ | Pump | ☐ | Bottom Valve | ☒ | Bailer |
| ☐ | Centrifugal | ☐ | Submersible | ☐ | Double Check Valve |
| ☐ | Peristaltic | ☐ | | ☐ | Stainless-steel Kemmerer |

☐ Other

Water Volume Calculation

Initial Depth of Well (feet) 21.80
Initial Depth to Water (feet) 10.88
Height of Water Column in Well (feet) 10.92

Diameter (inches): Well 4 Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		7.2	21.7
Gravel Pack			
Drilling Fluids			
Total			

Instruments

- | | |
|-------------------------------------|--------------------|
| ☒ | pH Meter |
| ☐ | DO Monitor |
| ☒ | Conductivity Meter |
| ☒ | Temperature Meter |
| ☒ | Other <u>D.O.C</u> |

Water Disposal

KOTZ SEPARATOR

Water Removal Data

[illegible]

Comments

Developer's Signature: Tennio Bied

Date 9-21-99 Reviewer _____

John F. Fuldner

Date 10/13/99



Well Number NW-9
Meter Code NA

☐	Development
☒	Purging

☒	3 to 5 Casing Volumes of Water Removal
☐	Stabilization of Indicator Parameters
☐	Other

☐	Pump Centrifugal	☒	Bailer Bottom Valve
☐	Submersible	☐	Double Check Valve
☐	Peristaltic	☐	Stainless-steel Kemmerer

Water Volume Calculation

Initial Depth of Well (feet) 21.43
Initial Depth to Water (feet) 11.57
Height of Water Column in Well (feet) 9.86

Diameter (inches): Well 4 Gravel Pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		6.5	19.5
Gravel Pack			
Drilling Fluids			
Total			

☒	pH Meter
☐	DO Monitor
☒	Conductivity Meter
☒	Temperature Meter
☒	Other <u>Refractometer</u>

KUTZ SEPARATOR

[illegible]

Developer's Signature Tennis Bied

Date 9-21-99 Reviewer

John Furbush Date 10/13/99



Site Name CHACO PLANT

	Development	Purging
1. Prevalence	☐ 10%	☒ 10%
2. Prevalence	☐ 10%	☒ 10%
3. Prevalence	☐ 10%	☒ 10%
4. Prevalence	☐ 10%	☒ 10%
5. Prevalence	☐ 10%	☒ 10%
6. Prevalence	☐ 10%	☒ 10%
7. Prevalence	☐ 10%	☒ 10%
8. Prevalence	☐ 10%	☒ 10%
9. Prevalence	☐ 10%	☒ 10%
10. Prevalence	☐ 10%	☒ 10%
11. Prevalence	☐ 10%	☒ 10%
12. Prevalence	☐ 10%	☒ 10%
13. Prevalence	☐ 10%	☒ 10%
14. Prevalence	☐ 10%	☒ 10%
15. Prevalence	☐ 10%	☒ 10%
16. Prevalence	☐ 10%	☒ 10%
17. Prevalence	☐ 10%	☒ 10%
18. Prevalence	☐ 10%	☒ 10%
19. Prevalence	☐ 10%	☒ 10%
20. Prevalence	☐ 10%	☒ 10%
21. Prevalence	☐ 10%	☒ 10%
22. Prevalence	☐ 10%	☒ 10%
23. Prevalence	☐ 10%	☒ 10%
24. Prevalence	☐ 10%	☒ 10%
25. Prevalence	☐ 10%	☒ 10%
26. Prevalence	☐ 10%	☒ 10%
27. Prevalence	☐ 10%	☒ 10%
28. Prevalence	☐ 10%	☒ 10%
29. Prevalence	☐ 10%	☒ 10%
30. Prevalence	☐ 10%	☒ 10%
31. Prevalence	☐ 10%	☒ 10%
32. Prevalence	☐ 10%	☒ 10%
33. Prevalence	☐ 10%	☒ 10%
34. Prevalence	☐ 10%	☒ 10%
35. Prevalence	☐ 10%	☒ 10%
36. Prevalence	☐ 10%	☒ 10%
37. Prevalence	☐ 10%	☒ 10%
38. Prevalence	☐ 10%	☒ 10%
39. Prevalence	☐ 10%	☒ 10%
40. Prevalence	☐ 10%	☒ 10%
41. Prevalence	☐ 10%	☒ 10%
42. Prevalence	☐ 10%	☒ 10%
43. Prevalence	☐ 10%	☒ 10%
44. Prevalence	☐ 10%	☒ 10%
45. Prevalence	☐ 10%	☒ 10%
46. Prevalence	☐ 10%	☒ 10%
47. Prevalence	☐ 10%	☒ 10%
48. Prevalence	☐ 10%	☒ 10%
49. Prevalence	☐ 10%	☒ 10%
50. Prevalence	☐ 10%	☒ 10%
51. Prevalence	☐ 10%	☒ 10%
52. Prevalence	☐ 10%	☒ 10%
53. Prevalence	☐ 10%	☒ 10%
54. Prevalence	☐ 10%	☒ 10%
55. Prevalence	☐ 10%	☒ 10%
56. Prevalence	☐ 10%	☒ 10%
57. Prevalence	☐ 10%	☒ 10%
58. Prevalence	☐ 10%	☒ 10%
59. Prevalence	☐ 10%	☒ 10%
60. Prevalence	☐ 10%	☒ 10%
61. Prevalence	☐ 10%	☒ 10%
62. Prevalence	☐ 10%	☒ 10%
63. Prevalence	☐ 10%	☒ 10%
64. Prevalence	☐ 10%	☒ 10%
65. Prevalence	☐ 10%	☒ 10%
66. Prevalence	☐ 10%	☒ 10%
67. Prevalence	☐ 10%	☒ 10%
68. Prevalence	☐ 10%	☒ 10%
69. Prevalence	☐ 10%	☒ 10%
70. Prevalence	☐ 10%	☒ 10%
71. Prevalence	☐ 10%	☒ 10%
72. Prevalence	☐ 10%	☒ 10%
73. Prevalence	☐ 10%	☒ 10%
74. Prevalence	☐ 10%	☒ 10%
75. Prevalence	☐ 10%	☒ 10%
76. Pre		

Well Number MW-10
Meter Code NA

☒	3 to 5 Casing Volumes of Water Removal
☐	Stabilization of Indicator Parameters
☐	Other

Initial Depth of Well (feet) 22.22
Initial Depth to Water (feet) 11.45
Height of Water Column in Well (feet) 10.77

☐	Pump	☐	Baller
☐	Centrifugal	☒	Bottom Valve
☐	Submersible	☐	Double Check Valve
☐	Peristaltic	☐	Stainless-steel Kemmerer

Instruments

☒	pH Meter
☐	DO Monitor
☒	Conductivity Meter
☒	Temperature Meter
☒	Other <u>None</u>

Water Disposal

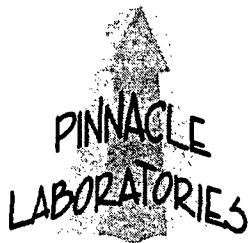
KUTZ SEPARATOR

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		7.1	21.4
Gravel Pack			
Drilling Fluids			
Total			

[illegible]

Comments	Petro Tripp removed 2 days prior to Sampling	30ml Product Recovered
	Petro Tripp removed 2 days prior to Sampling	30ml Product Recovered

Developer's Signature Kevin Bied Date 9-21-99 Reviewer John Fubler Date 10/13/99



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number 909067
October 11, 1999

EL PASO FIELD SERVICES
770 WEST NAVAJO
FARMINGTON, NM 87401

Project Name CHACO MONITOR WELLS
Project Number (none)

Attention: JOHN LAMBDIN

On 9/23/99 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

EPA method 8021 was performed by Pinnacle Laboratories, Inc., Albuquerque, NM.

All other parameters were performed by Severn Trent (FL) Inc., Pensacola, FL.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

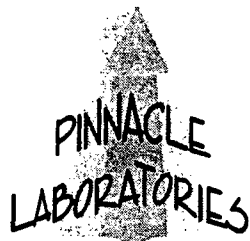
H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

*MW-1 7 bi-annual
MW-8
MW-9 7 Quarterly
MW-10*

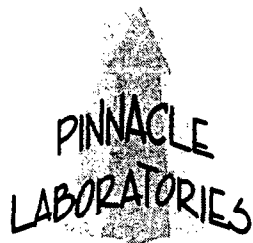
*Reviewed & Accepted
10-13-99
J. Lardner*



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT	: EL PASO FIELD SERVICES	PINNACLE ID	: 909067
PROJECT #	: (none)	DATE RECEIVED	: 9/23/99
PROJECT NAME	: CHACO MONITOR WELLS	REPORT DATE	: 10/11/99

PIN ID. #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	990388 MW-1	AQUEOUS	9/21/99
02	990389 MW-8	AQUEOUS	9/21/99
03	990390 MW-9	AQUEOUS	9/21/99
04	990391 MW-10	AQUEOUS	9/21/99
05	990392 MW-10 Field Duplicate	AQUEOUS	9/21/99
06	TRIP BLANK	AQUEOUS	9/21/99



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : CHACO MONITOR WELLS

PINNACLE I.D.: 909067

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	990388	AQUEOUS	9/21/99	NA	9/24/99	1
02	990389	AQUEOUS	9/21/99	NA	9/24/99	1
03	990390	AQUEOUS	9/21/99	NA	9/24/99	1

PARAMETER	DET. LIMIT	UNITS	990388	990389	990390
BENZENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
TOLUENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
ETHYLBENZENE	0.5	UG/L	< 0.5	< 0.5	< 0.5
TOTAL XYLENES	0.5	UG/L	< 0.5	< 0.5	< 0.5

SURROGATE:

TRIFLUOROTOLUENE (%)

106

101

98

SURROGATE LIMITS (69 - 117)

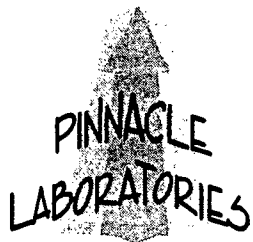
mw-1

mw-8

mw-9

CHEMIST NOTES:

N/A



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Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : CHACO MONITOR WELLS

PINNACLE I.D.: 909067

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
04	990391	AQUEOUS	9/21/99	NA	9/24/99	10
05	990392	AQUEOUS	9/21/99	NA	9/24/99	5
06	TRIP BLANK	AQUEOUS	9/21/99	NA	9/27/99	1

PARAMETER	DET. LIMIT	UNITS	990391	990392	TRIP BLANK
BENZENE	0.5	UG/L	20	13	< 0.5
TOLUENE	0.5	UG/L	9.2	3.0	< 0.5
ETHYLBENZENE	0.5	UG/L	41	27	< 0.5
TOTAL XYLENES	0.5	UG/L	105	75	< 0.5

SURROGATE:

TRIFLUOROTOLUENE (%)

SURROGATE LIMITS (69 - 117)

99 102 105

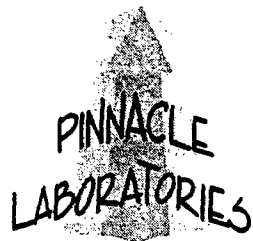
mw-10

mw-10

CHEMIST NOTES:

N/A

Field
Duplicate



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 909067
BLANK I. D.	: 092499	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 9/24/99
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: CHACO MONITOR WELLS		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5

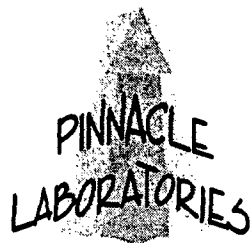
SURROGATE:

TRIFLUOROTOLUENE (%)	103
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SURROGATE LIMITS (69 - 117)

CHEMIST NOTES:

N/A



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GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 909067
BLANK I. D.	: 092799	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 9/27/99
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: CHACO MONITOR WELLS		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
METHYL-t-BUTYL ETHER	UG/L	<2.5
1,3,5-TRIMETHYLBENZENE	UG/L	<0.5
1,2,4-TRIMETHYLBENZENE	UG/L	<0.5

SURROGATE:

TRIFLUOROTOLUENE (%)

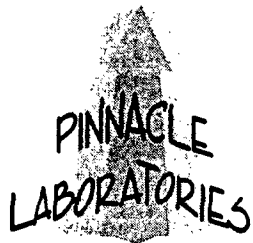
105

SURROGATE LIMITS

(69 - 117)

CHEMIST NOTES:

N/A



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 909067
BLANK I. D.	: 092999	DATE EXTRACTED	: NA
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 9/29/99
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: CHACO MONITOR WELLS		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5
METHYL-t-BUTYL ETHER	UG/L	<2.5
1,3,5-TRIMETHYLBENZENE	UG/L	<0.5
1,2,4-TRIMETHYLBENZENE	UG/L	<0.5

SURROGATE:

TRIFLUOROTOLUENE (%)

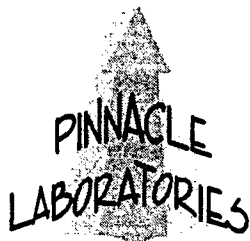
116

SURROGATE LIMITS

(69 - 117)

CHEMIST NOTES:

N/A



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 092999
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : CHACO MONITOR WELLS

PINNACLE I.D. : 909067
DATE EXTRACTED : NA
DATE ANALYZED : 9/30/99
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	10.0	11.4	114	11.8	118	3	(80 - 120)	20
TOLUENE	<0.5	10.0	11.0	110	11.1	111	1	(80 - 120)	20
ETHYLBENZENE	<0.5	10.0	10.2	102	10.1	101	1	(80 - 120)	20
TOTAL XYLENES	<0.5	30.0	32.4	108	31.9	106	2	(80 - 120)	20
METHYL-t-BUTYL ETHER	<2.5	10.0	12.1	121	11.4	114	6	(70 - 133)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$



Severn Trent Laboratories
11 East Olive Road
Pensacola FL 32514

SIGNATURE PAGE

Tel: (850) 474-1001
Fax: (850) 478-2671

Reviewed by:


STL Project Manager

Client: PINNACLE LABORATORIES
ALBUQUERQUE, NEW MEXICO

Project Name: EPFS
Project Number: 909067
Project Location: CHACO MONITOR WELLS
Accession Number: 909661

Project Manager: KIMBERLY D. MCNEILL
Sampled By: N/S

Other Laboratory Locations:

- 149 Rangeway Road, North Billerica MA 01862
- 16203 Park Row, Suite 110, Houston TX 77064
- 200 Monroe Turnpike, Monroe CT 06468
- 55 South Park Drive, Colchester VT 05446

- 315 Fullerton Avenue, Newburgh NY 12550
- Westfield Executive Park, 53 Southampton Road, Westfield MA 01085
- 628 Route 10, Whippany NY 07981
- 77 New Durham Road, Edison NJ 08817

a part of

Severn Trent Services Inc



**SEVERN TRENT LABORATORIES, INC. – PENSACOLA, FLORIDA
STATE CERTIFICATIONS**

Alabama Department of Environmental Management, Laboratory ID No. 40150 (Drinking Water by Reciprocity with FL)

Arizona Department of Health Services, Lab ID No. AZ0589 (Hazardous Waste & Wastewater)

Arkansas Department of Pollution Control and Ecology, (No Laboratory ID No. assigned by state) (Environmental)

State of California, Department of Health Services, Laboratory ID No. 2338 (Hazardous Waste and Wastewater)

State of Connecticut, Department of Health Services, Connecticut Lab Approval No. PH-0697 (Drinking Water, Hazardous Waste and Wastewater)

Delaware Health & Social Services, Division of Public Health, Laboratory ID No. FL094 (Drinking Water by Reciprocity with FL)

Florida DOH Laboratory ID No. 81142 (Drinking Water), Laboratory ID No. E81010 (Hazardous Waste and Wastewater)

Florida, Radioactive Materials License No. G0733-1

Foreign Soil Permit, Permit No. S-37599

Kansas Department of Health & Environment, Laboratory ID No. E10253 (Wastewater and Hazardous Waste)

Commonwealth of Kentucky, Natural Resources and Environmental Protection Cabinet, Laboratory ID No. 90043 (Drinking Water)

State of Louisiana, DHH, Office of Public Health Division of Laboratories, Laboratory ID No. 98-25 (Drinking Water)

State of Maryland, DH&MH Laboratory ID No. 233 (Drinking Water by Reciprocity with Florida)

Commonwealth of Massachusetts, DEP, Laboratory ID No. M-FL094 (Hazardous Waste and Wastewater)

State of Michigan, Bureau of E&OccH (No Laboratory ID No. assigned by state) (Drinking Water by Reciprocity with Florida)

New Hampshire DES, Laboratory ID No. 250598-A (Wastewater)

State of New Jersey, Department of Environmental Protection & Energy, Laboratory ID No. 49006 (Wastewater and Hazardous Waste)

New York State, Department of Health, Laboratory ID No. 11503 (Wastewater and Solids/Hazardous Waste)

North Carolina Department of Environment, Health, & Natural Resources, Laboratory ID No. 314 (Hazardous Waste and Wastewater)

North Dakota DH&Consol Labs, Laboratory ID No. R-108 (Hazardous Waste and Wastewater by Reciprocity with Florida)

State of Oklahoma, Oklahoma Department of Environmental Quality, Laboratory ID No. 9810 (Hazardous Waste and Wastewater)

Commonwealth of Pennsylvania, Department of Environmental Resources, Laboratory ID No. 68-467 (Drinking Water)

South Carolina DH&EC, Laboratory ID No. 96026 (Wastewater by Reciprocity with FL and Solids/Hazardous Waste by Reciprocity with CA)

Tennessee Department of Health & Environment, Laboratory ID No. 02907 (Drinking Water)

Tennessee Division of Underground Storage Tanks Approved Laboratory

Virginia Department of General Services, Laboratory ID No. 00008 (Drinking Water by Reciprocity with FL)

State of Washington, Department of Ecology, Laboratory ID No. C282 (Hazardous Waste and Wastewater)

West Virginia Division of Environmental Protection, Office of Water Resources, Laboratory ID No. 136 (Hazardous Waste and Wastewater by Reciprocity with FL)

American Industrial Hygiene Association (AIHA) Accredited Laboratory, Laboratory ID No. 9133

SEVERN TRENT LABORATORIES

11 East Olive Road Pensacola, Florida 32514 (850) 474-1001

Analysis Report

Analysis: Group of Single Metals

Accession:	909661
Client:	PINNACLE LABORATORIES
Project Number:	909067
Project Name:	EPFS
Project Location:	CHACO MONITOR WELLS
Department:	METALS

[0] Page 1
Date 29-Sep-99

"FINAL REPORT FORMAT - SINGLE"

Accession: 909661
Client: PINNACLE LABORATORIES
Project Number: 909067
Project Name: EPFS
Project Location: CHACO MONITOR WELLS
Test: Group of Single Metals
Matrix: WATER
QC Level: II

MW-1

Lab Id: 001
Client Sample Id: 909067-01

Sample Date/Time: 21-SEP-99 1246
Received Date: 24-SEP-99

Parameters:	Units:	Results:	Rpt Lmts:	Q:	Batch:	Analyst:
MERCURY (245.1)	MG/L	ND	0.0002		M2W093	CH
CADMIUM (200.7)	MG/L	ND	0.005		CYW284	GSP
CHROMIUM (200.7)	MG/L	ND	0.005		HYW284	GSP

Comments:

[0] Page 2
Date 29-Sep-99

"FINAL REPORT FORMAT - SINGLE"

Accession: 909661
Client: PINNACLE LABORATORIES
Project Number: 909067
Project Name: EPFS
Project Location: CHACO MONITOR WELLS
Test: Group of Single Metals
Matrix: WATER
QC Level: II

mw-8

Lab Id: 002
Client Sample Id: 909067-02

Sample Date/Time: 21-SEP-99 1246
Received Date: 24-SEP-99

Parameters:	Units:	Results:	Rpt Lmts:	Q:	Batch:	Analyst:
MERCURY (245.1)	MG/L	ND	0.0002		M2W093	CH
CADMIUM (200.7)	MG/L	ND	0.005		CYW284	GSP
CHROMIUM (200.7)	MG/L	ND	0.005		HYW284	GSP

Comments:

SEVERN TRENT LABORATORIES

11 East Olive Road Pensacola, Florida 32514 (850) 474-1001

Analysis Report

Analysis: POLYNUCLEAR AROMATICS BY 8310

Accession:	909661
Client:	PINNACLE LABORATORIES
Project Number:	909067
Project Name:	EPFS
Project Location:	CHACO MONITOR WELLS
Department:	SEMI-VOLATILE FUELS

[0] Page 1
Date 05-Oct-99

"FINAL REPORT FORMAT - SINGLE"

Accession: 909661
Client: PINNACLE LABORATORIES
Project Number: 909067
Project Name: EPFS
Project Location: CHACO MONITOR WELLS
Test: POLYNUCLEAR AROMATICS BY 8310
Analysis Method: 8310/SW-846, 3rd Ed, Sep 1986.
Extraction Method: 3510C/SW-846, 3rd Ed, 3rd Update, Dec 1996.
Matrix: WATER
QC Level: II

mw-1

Lab Id: 001 Sample Date/Time: 21-SEP-99 1246
Client Sample Id: 909067-01 Received Date: 24-SEP-99
Batch: PAW270 Extraction Date: 28-SEP-99
Blank: A Dry Weight %: N/A Analysis Date: 04-OCT-99

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/L	ND	1	
ACENAPHTHYLENE	UG/L	ND	1	
ANTHRACENE	UG/L	ND	1	
BENZO(a)ANTHRACENE	UG/L	ND	1	
BENZO(a)PYRENE	UG/L	ND	0.7	
BENZO(b)FLUORANTHENE	UG/L	ND	1	
BENZO(g,h,i)PERYLENE	UG/L	ND	1	
BENZO(k)FLUORANTHENE	UG/L	ND	1	
CHRYSENE	UG/L	ND	1	
DIBENZO(a,h)ANTHRACENE	UG/L	ND	1	
FLUORANTHENE	UG/L	ND	1	
FLUORENE	UG/L	ND	1	
INDENO(1,2,3-cd)PYRENE	UG/L	ND	1	
NAPHTHALENE	UG/L	ND	1	
PHENANTHRENE	UG/L	ND	1	
PYRENE	UG/L	ND	1	
1-METHYLNAPHTHALENE	UG/L	ND	1	
2-METHYLNAPHTHALENE	UG/L	ND	1	
2-CHLOROANTHRACENE	%REC/SURR	93	28-138	
ANALYST	INITIALS	SB		

Comments:

[0] Page 2
Date 05-Oct-99

"FINAL REPORT FORMAT - SINGLE"

Accession: 909661
Client: PINNACLE LABORATORIES
Project Number: 909067
Project Name: EPFS
Project Location: CHACO MONITOR WELLS
Test: POLYNUCLEAR AROMATICS BY 8310
Analysis Method: 8310/SW-846, 3rd Ed, Sep 1986.
Extraction Method: 3510C/SW-846, 3rd Ed, 3rd Update, Dec 1996.
Matrix: WATER
QC Level: II

mw-8

Lab Id: 002 Sample Date/Time: 21-SEP-99 1246
Client Sample Id: 909067-02 Received Date: 24-SEP-99
Batch: PAW270 Extraction Date: 28-SEP-99
Blank: A Dry Weight %: N/A Analysis Date: 04-OCT-99

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/L	ND	1	
ACENAPHTHYLENE	UG/L	ND	1	
ANTHRACENE	UG/L	ND	1	
BENZO(a)ANTHRACENE	UG/L	ND	1	
BENZO(a)PYRENE	UG/L	ND	0.7	
BENZO(b)FLUORANTHENE	UG/L	ND	1	
BENZO(g,h,i)PERYLENE	UG/L	ND	1	
BENZO(k)FLUORANTHENE	UG/L	ND	1	
CHRYSENE	UG/L	ND	1	
DIBENZO(a,h)ANTHRACENE	UG/L	ND	1	
FLUORANTHENE	UG/L	ND	1	
FLUORENE	UG/L	2	1	
INDENO(1,2,3-cd)PYRENE	UG/L	ND	1	
NAPHTHALENE	UG/L	ND	1	
PHENANTHRENE	UG/L	ND	1	
PYRENE	UG/L	ND	1	
1-METHYLNAPHTHALENE	UG/L	ND	1	
2-METHYLNAPHTHALENE	UG/L	ND	1	
2-CHLOROANTHRACENE	%REC/SURR	88	28-138	
ANALYST	INITIALS	SB		

Comments:

[0] Page 3
Date 05-Oct-99

"Method Report Summary"

Accession Number: 909661
Client: PINNACLE LABORATORIES
Project Number: 909067
Project Name: EPFS
Project Location: CHACO MONITOR WELLS
Test: POLYNUCLEAR AROMATICS BY 8310

Client Sample Id:	Parameter:	Unit:	Result:
909067-02	FLUORENE	UG/L	2

Data Qualifiers for Final Report

STL-Pensacola Inorganic/Organic and AFCEE Projects (under QAPP)

J4	(For positive results)	Temperature limits exceeded ($\leq 2^{\circ}\text{C}$ or $\geq 6^{\circ}\text{C}$)
J5	(TICs)	The reported value is quantitated as a TIC; therefore, it is estimated
J6	(For positive results)	LCS or Surrogate %R is $>$ upper control limit (UCL) or $<$ lower control limit (LCL)
J7	(For positive results)	The reported value is $>$ the laboratory MDL and $<$ lowest calibration standards; therefore, the quantitation is an estimation.
J (AFCEE description)		The analyte was positively identified, the quantitation is an estimation
R1	(For nondetects)	Temperature limits exceeded ($\leq 2^{\circ}\text{C}$ or $\geq 6^{\circ}\text{C}$)
R2		Improper preservation, no preservative present in sample upon receipt
R3		Improper preservation, incorrect preservative present in sample upon receipt
R4		Holding time exceeded
R10		Holding time exceeded, non-reportable for NDPES compliance monitoring
R5		Collection requirements not met, improper container used for sample
R6		LCS or surrogate %R is $<$ LCL and analyte is not detected or surrogate %R is $<$ 10% for detects/nondetects
R7		Internal standard area outside -50% to +100% of initial calibration midpoint standard.
R8		Initial calibration or any calibration verification exceeds acceptance criteria.
R9		Improper preservation, sample not filtered in the field.
R (AFCEE description)		The data are unusable due to deficiencies in the ability to analyze the sample and meet QC criteria
F		$<$ laboratory or AFCEE RL and $>$ laboratory MDL
F (AFCEE description)		The analyte was positively identified but the associated numerical value is below the AFCEE or lab RL
U2		$\leq$ Laboratory MDL (value for result will be the MDL, never below the MDL)
U (AFCEE description)		The analyte was analyzed for but not detected. The associated numerical value is at or below the MDL
B (AFCEE description)		The analyte was found in the associated blank, as well as in the sample
B1		Analyte was detected in the associated method blank.
@		Adjusted reporting limit due to sample matrix (dilution prior to digestion and/or analysis)
+		Elevated reporting limit due to dilution into calibration range
* (Metals & Wet Chem)		Elevated reporting limit due to matrix interference (dilution prior to digestion and/or analysis)
** (Organics)		Compounds flagged are not within the five point initial calibration curve. They are searched for qualitatively or as TICs.
#		Elevated reporting limit due to insufficient sample size
D		Diluted out
M		A matrix effect was present (sample was analyzed twice to confirm or chromatogram had interfering peaks)
S		Incorrect sample amount was submitted to the laboratory for analysis
T		Second-column confirmation exceeded the SW-846 criteria of 40% RPD for this compound.
E		Compound concentration exceeds the upper calibration range of the instrument.
W		Post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is less than 50% spike absorbance.

ND = Not Detected at or above the STL-Pensacola reporting limit (RL)

N/S = Not Submitted

N/A = Not Applicable

IDL = Laboratory Instrument Detection Limit

MDL = Laboratory Method Detection Limit

RL = Reporting Limit (AFCEE RLs are listed in the AFCEE QAPP)

Any time a sample arrives at the laboratory improperly preserved (at improper pH or temperature) or after holding time has expired or prepared or analyzed after holding time, client must be notified in writing (i.e. case narrative)

Florida Projects Inorganic/Organic

Y1	Improper preservation, no preservative present in sample upon receipt
Y2	Improper preservation, incorrect preservative present in sample upon receipt
Y3	Improper preservation, sample temperature exceeded EPA temperature limits of 2-6°C upon receipt
Y (FL description)	The analysis was from an unpreserved or improperly preserved sample. Data may not be accurate
Q	Sample held beyond the accepted holding time
I	The reported value is $<$ Laboratory RL and $>$ laboratory MDL
U1	The reported value is $\leq$ Laboratory MDL (value for sample result is reported as the MDL)
U (FL description)	Indicates the compound was analyzed for but not detected
T	The reported value is $<$ Laboratory MDL (value shall not be used for statistical analysis)
V	The analyte was detected in both the sample and the associated method blank
J1	Surrogate recovery outside acceptance limits. Not enough sample available to reextract and/or reanalyze.
J2	The sample matrix interfered with the ability to make any accurate determinations
J3	The reported value failed to meet the established quality control criteria for either precision or accuracy
J (FL description)	Estimated value; not accurate

CLP and CLP-like Projects: Refer to referenced CLP Statement of Work (SOW) for explanation of data qualifiers.

SEVERN TRENT LABORATORIES

11 East Olive Road Pensacola, Florida 32514 (850) 474-1001

Quality Control Report

Analysis: Group of Single Metals

Accession:	909661
Client:	PINNACLE LABORATORIES
Project Number:	909067
Project Name:	EPFS
Project Location:	CHACO MONITOR WELLS
Department:	METALS

[0] Page 1
Date 29-Sep-99

"Metals Quality Control Report"

Parameter:	MERCURY	CADMIUM	CHROMIUM
Batch Id:	M2W093	CYW284	HYW284
Blank Result:	<0.0002	<0.005	<0.005
Anal. Method:	245.1	6010B	6010B
Prep. Method:	245.1	3010A	3010A
Analysis Date:	28-SEP-99	28-SEP-99	28-SEP-99
Prep. Date:	28-SEP-99	27-SEP-99	27-SEP-99

Sample Duplication

Sample Dup:	909635-2	909661-1	909661-1
Rept Limit:	<0.0002	<0.005	<0.005
Sample Result:	0.0063	0.50	1.0
Dup Result:	0.0062	0.50	1.0
Sample RPD:	2	0	0
Max RPD:	20	20	20
Dry Weight%	N/A	N/A	N/A

Matrix Spike

Sample Spiked:	909635-2	909661-1	909661-1
Rept Limit:	<0.0002	<0.005	<0.005
Sample Result:	0.0013	<0.005	<0.005
Spiked Result:	0.0063	0.50	1.0
Spike Added:	0.0050	0.5	1.0
% Recovery:	100	100	100
% Rec Limits:	75-125	75-125	75-125
Dry Weight%	N/A	N/A	N/A

ICV

ICV Result:	0.004	0.51	1.0
True Result:	0.0040	0.5	1.0
% Recovery:	100	102	100
% Rec Limits:	90-110	90-110	90-110

LCS

LCS Result:	0.0046	0.51	1.0
True Result:	0.0050	0.5	1.0
% Recovery:	92	102	100
% Rec Limits:	85-115	80-120	80-120

[0] Page 2
Date 29-Sep-99

--- Data Qualifiers for Metals QC Report ----

N/A = NOT APPLICABLE.
N/S = NOT SUBMITTED.
N/C = SAMPLE AND DUPLICATE RESULTS ARE AT OR BELOW THE REPORTING LIMIT;
THEREFORE, THE RPD IS "NOT CALCULABLE" AND NO CONTROL LIMITS APPLY.
N/D = NOT DETECTED AT OR ABOVE THE STL-PENSACOLA REPORTING LIMIT (RL).
DISS. OR D = DISSOLVED
T & D = TOTAL AND DISSOLVED
R = REACTIVE
T = TOTAL
G = SAMPLE AND/OR DUPLICATE RESULT IS BELOW 5 X THE REPORTING LIMIT AND
THE ABSOLUTE DIFFERENCE BETWEEN THE SAMPLE AND DUPLICATE RESULT IS AT
OR BELOW STL REPORTING LIMIT; THEREFORE, THE RESULTS ARE "IN CONTROL".
Q = THE ANALYTICAL (POST-DIGESTION) SPIKE IS REPORTED DUE TO PERCENT RECOVERY
BEING OUTSIDE ACCEPTANCE LIMITS ON THE MATRIX (PRE-DIGESTION) SPIKE.
= ELEVATED REPORTING LIMIT DUE TO INSUFFICIENT SAMPLE.
+ = ELEVATED REPORTING LIMIT DUE TO DILUTION INTO CALIBRATION RANGE.
* = ELEVATED REPORTING LIMIT DUE TO MATRIX INTERFERENCE. (DILUTION PRIOR
TO ANALYSIS)
@ = ADJUSTED REPORTING LIMIT DUE TO SAMPLE MATRIX. (DILUTION PRIOR TO
DIGESTION)
P = ANALYTICAL (POST DIGESTION) SPIKE.
I = DUPLICATE INJECTION.
& = AUTOMATED
F = SAMPLE SPIKED > 4 X SPIKE CONCENTRATION.
N/C+ = NOT CALCULABLE
N/C* = NOT CALCULABLE; SAMPLE SPIKED > 4 X SPIKE CONCENTRATION.
H = SAMPLE AND/OR DUPLICATE RESULT IS BELOW 5 X STL REPORTING LIMIT AND THE
ABSOLUTE DIFFERENCE BETWEEN THE RESULTS EXCEEDS THE STL REPORTING
LIMIT; THEREFORE, THE RESULTS ARE "OUT OF CONTROL".
A = SAMPLE AND DUPLICATE RESULTS ARE "OUT OF CONTROL".
Z = THE SAMPLE RESULT FOR THE SPIKE IS BELOW THE STL REPORTING LIMIT. HOWEVER,
THIS RESULT IS REPORTED FOR ACCURATE QC CALCULATIONS.
NH= THE RELATIVE PERCENT DIFFERENCE (RPD) EXCEEDS THE STL CONTROL LIMIT
AND IS "OUT OF CONTROL; DUE TO A NON-HOMOGENEOUS SAMPLE MATRIX.
J = (FLORIDA DEP 'J' FLAG) - MATRIX SPIKE AND POST SPIKE RECOVERY IS OUT OF
THE ACCEPTABLE RANGE. SEE OUT OF CONTROL EVENTS FORM.
U = (FLORIDA DEP 'U' FLAG) - THE COMPOUND WAS ANALYZED FOR, BUT NOT DETECTED.
S = METHOD OF STANDARD ADDITIONS (MSA) WAS PERFORMED ON THIS SAMPLE.
M = A MATRIX EFFECT WAS PRESENT (SAMPLE WAS ANALYZED TWICE TO CONFIRM).
SCN = SEE CASE NARRATIVE.

FROM QUALITY CONTROL REPORT:

RPD= RELATIVE PERCENT DEVIATION.

REPT LIMIT= REPORTING LIMIT BASED ON METHOD DETECTION LIMIT STUDIES.

NOTE: ALL RESULTS REPORTED UNDER 'SAMPLE DUPLICATION' ARE THE MS/MSD.

NOTE: THE UNITS REPORTED ON THE QUALITY CONTROL REPORT ARE REPORTED ON AN AS
RUN BASIS. (NOT ADJUSTED FOR DRY WEIGHT).

SW-846, 3rd Edition.

EPA 600/4-79-020, Revised March 1983.

NIOSH Manual of Analytical Methods, 4th Edition.

Standard Methods For the Examination of Water and Wastewater, 18th Edition, 1992.

Methods For the Determination of Metals in Environmental Samples - Supplement I,

EPA 600/R-94-111, May 1994.

GSP = GARY ST PERE

KN = KAREN NALL

CH = CHRIS HIGH

JL = JANET LECLEAR

MPE = MARTY EDWARDS

SEVERN TRENT LABORATORIES

11 East Olive Road Pensacola, Florida 32514 (850) 474-1001

Quality Control Report

Analysis: POLYNUCLEAR AROMATICS BY 8310

Accession:	909661
Client:	PINNACLE LABORATORIES
Project Number:	909067
Project Name:	EPFS
Project Location:	CHACO MONITOR WELLS
Department:	SEMI-VOLATILE FUELS

[0] Page 1
Date 05-Oct-99

"QC Report"

Title: Water Blank
Batch: PAW270
Analysis Method: 8310/SW-846, 3rd Ed, Sep 1986.
Extraction Method: 3510C/SW-846, 3rd Ed, 3rd Update, Dec 1996.

Blank Id: A Date Analyzed: 04-OCT-99 Date Extracted: 28-SEP-99

Parameters:	Units:	Results:	Reporting Limits:
ACENAPHTHENE	UG/L	ND	1
ACENAPHTHYLENE	UG/L	ND	1
ANTHRACENE	UG/L	ND	1
BENZO (a) ANTHRACENE	UG/L	ND	1
BENZO (a) PYRENE	UG/L	ND	1
BENZO (b) FLUORANTHENE	UG/L	ND	1
BENZO (g, h, i) PERYLENE	UG/L	ND	1
BENZO (k) FLUORANTHENE	UG/L	ND	1
CHRYSENE	UG/L	ND	1
DIBENZO (a, h) ANTHRACENE	UG/L	ND	1
FLUORANTHENE	UG/L	ND	1
FLUORENE	UG/L	ND	1
INDENO (1, 2, 3-cd) PYRENE	UG/L	ND	1
NAPHTHALENE	UG/L	ND	1
PHENANTHRENE	UG/L	ND	1
PYRENE	UG/L	ND	1
1-METHYLNAPHTHALENE	UG/L	ND	1
2-METHYLNAPHTHALENE	UG/L	ND	1
2-CHLOROANTHRACENE	%REC/SURR	100	28-138
ANALYST	INITIALS	SB	

Comments:

[0] Page 2
Date 05-Oct-99

"QC Report"

Title: Water LCS
Batch: PAW270
Analysis Method: 8310/SW-846, 3rd Ed, Sep 1986.
Extraction Method: 3510C/SW-846, 3rd Ed, 3rd Update, Dec 1996.

RS Date Analyzed: 04-OCT-99

RS Date Extracted: 28-SEP-99

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	Rec Lmts
ACENAPHTHYLENE	12.0	<1	6.4	53	45-127
BENZO (k) FLUORANTHENE	10.0	<1	7.9	79	68-131
CHRYSENE	10.0	<1	9.6	96	69-131
PHENANTHRENE	10.0	<1	6.6	66	63-124
PYRENE	11.0	<1	9.3	85	61-126
Surrogates:					
2-CHLOROANTHRACENE				82	28-138

Comments:

Notes:

N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT

UG/L = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.

* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.

SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE
PROGRAM AND REFERENCED METHOD.

[0] Page 3
Date 05-Oct-99

"QC Report"

Title: Water Matrix Spike/Matrix Spike Duplicate
Batch: PAW270
Analysis Method: 8310/SW-846, 3rd Ed, Sep 1986.
Extraction Method: 3510C/SW-846, 3rd Ed, 3rd Update, Dec 1996.

Dry Weight %: N/A
Sample Spiked: 909661-1

MS Date Analyzed: 04-OCT-99
MSD Date Analyzed: 04-OCT-99

MS Date Extracted: 28-SEP-99
MSD Date Extracted: 28-SEP-99

Parameters:	Spike Added	Sample Conc	MS Conc	MS %Rec	MSD Conc	MSD %Rec	RPD	Rec Lmts
ACENAPHTHYLENE	12.0	<1	7.6	63	6.5	54	15	18-146
BENZO (k) FLUORANTHENE	10.0	<1	9.5	95	9.1	91	4	26-137
CHRYSENE	10.0	<1	9.9	99	9.5	95	4	16-156
PHENANTHRENE	10.0	<1	8.1	81	7.6	76	6	30-145
PYRENE	11.1	<1	9.9	89	9.4	85	5	39-137

Surrogates:
2-CHLOROANTHRACENE 91 88 28-138

Comments:

Notes:

N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/L = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE
PROGRAM AND REFERENCED METHOD.

Common Notation for Organic Reporting

N/S = NOT SUBMITTED
N/A = NOT APPLICABLE
UG = MICROGRAMS
UG/L = PARTS PER BILLION
UG/KG = PARTS PER BILLION
MG/M3 = MILLIGRAM PER CUBIC METER
PPMV = PART PER MILLION BY VOLUME
MG/KG = PARTS PER MILLION
MG/L = PARTS PER MILLION
< = LESS THAN
ND = NOT DETECTED AT OR ABOVE THE STL-PENSACOLA REPORTING LIMIT (RL).
E = EXCEED THE CALIBRATION CURVE; THEREFORE, RESULTS ARE ESTIMATED.

SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ORGANIC SOILS ARE REPORTED ON A DRYWEIGHT BASIS.

RPT LMTS = REPORTING LIMITS BASED ON METHOD DETECTION LIMIT STUDIES.

RPD = RELATIVE PERCENT DIFFERENCE (OR DEVIATION)

STL/GC/FID

STL GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME IONIZATION DETECTOR (FID).

STL/GC/FIX

STL GAS CHROMATOGRAPHIC METHOD FOR ANALYSIS OF FIXED GASES EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD) AND FLAME IONIZATION DETECTOR (FID).

STL/GC/FPD

STL GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME PHOTOMETRIC DETECTOR (FPD) IN SULFUR-SPECIFIC MODE.

STL/GC/PID

STL GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH PHOTOIONIZATION DETECTOR (PID).

STL/GC/TCD

STL GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD).

SW-846 METHOD 9020

PARTICULATE MATTER IS REMOVED BY ALLOWING PARTICULATES TO SETTLE IN THE SAMPLE CONTAINER AND DECANTING THE SUPERNATANT LIQUID. EXCESSIVE PARTICULATES ARE REMOVED BY FILTRATION OF THE SUPERNATANT LIQUID.

RSK 175

SAMPLE PREPARATION AND CALCULATIONS FOR DISSOLVED GAS ANALYSIS IN WATER SAMPLES USING A GC HEADSPACE EQUILIBRATION TECHNIQUE, RSK SOP-175, ROBERT S. KERR ENVIRONMENTAL RESEARCH LABORATORY, USEPA, AUGUST 11, 1994.

STL-PN USES THE MOST CURRENT PROMULGATED METHODS CONTAINED IN THE REFERENCE MANUALS.

SW = STEVE WILHITE
RP = ROB PEREZ
RW = RITA WINGO
KS = KENDALL SMITH
LBL = LISA BIZZELL-LOWE
WEM = WARREN MILBRANDT
PLD = PAULA DOUGHTY
SB = STEPHANIE BUBIEN
AHT = AUBURN H. THOMPSON, JR.
BT = BECKY TREMMEL
HAH = HOLLIE HOFFMAN
HC = HOLLY CHANCE

Severn Trent Laboratories of Florida
PROJECT SAMPLE INSPECTION FORM

Lab Accession #: 9090661

Date Received: 24-Sep-99

- | | |
|---|---|
| <p>1. Was there a Chain of Custody? ☒ Yes No*</p> <p>2. Was Chain of Custody properly filled out and relinquished? ☒ Yes No*</p> <p>3. Were samples received cold? ☒ Yes No* N/A
(Criteria: 2° - 6°C: STL-SOP 1055)</p> <p>4. Were all samples properly labeled and identified? ☒ Yes No*</p> <p>5. Did samples require splitting? Yes* ☒ No
Req By: PM Client Other*</p> <p>6. Were samples received in proper containers for analysis requested? ☒ Yes No*</p> <p>7. Were all sample containers received intact? ☒ Yes No*</p> | <p>8. Were samples checked for preservative? ☒ Yes No* N/A
(Check pH of all H₂O requiring preservative (STL-PN SOP 917) except VOA vials that require zero headspace)*</p> <p>9. Is there sufficient volume for analysis requested? ☒ Yes No* N/A (Can)</p> <p>10. Were samples received within Holding Time? ☒ Yes No* (REFER TO STL-SOP 1040)</p> <p>11. Is Headspace visible > 1/4" in diameter in VOA vials? Yes* No ☒ N/A
If any headspace is evident, comment in out-of-control section.</p> <p>12. If sent, were matrix spike bottles returned? Yes No* ☒ N/A</p> <p>13. Was Project Manager notified of problems? (initials: <u>LKW</u>) ☒ Yes No* ☒ N/A ^{LK}</p> |
|---|---|

Airbill Number(s): W 9/24 138781680140882653

Shipped By: UPS

Cooler Number(s): Thurs

Shipping Charges: N/A

Cooler Weight(s): N/A

Cooler Temp(s) (°C): 5.5°C
CCK 10
(LIST THERMOMETER NUMBER(S) FOR VERIFICATION)

Out of Control Events and Inspection Comments:

Samples received packed on blue ice w/o a temp blank, temp taken of Ambient air 9/24/99

Two one liter Ambers were submitted for 909067-2, but weren't listed on the coc. 9/24/99

Analyze #2 8310 per client 9/27 1600

(USE BACK OF PSIF FOR ADDITIONAL NOTES AND COMMENTS)

Inspected By: LKW Date: 24-Sep-99 Logged By: LKW Date: 24-Sep-99

- * Note all Out-of-Control and/or questionable events on Comment Section of this form.
- * Note who requested the splitting of samples on the Comment Section of this form.
- * All preservatives for the State of North Carolina, the State of New York, and other requested samples are to be recorded on the sheet provided to record pH results (STL-SOP 938).
- * According to EPA, 1/4" of headspace is allowed in 40 ml vials requiring volatile analysis, however, STL makes it policy to record any headspace as out-of-control (STL-SOP 938).

Network Project Manager: Kimberly D. McNeill

[illegible]

SHADED AREAS ARE FOR LAB USE ONLY

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: JOHN CAMPBELL
COMPANY: EL PASO FIELD SERVICES
ADDRESS: 710 WEST ANILATO
BIRMINGHAM, AL 35201
PHONE: (505) 599-2144
FAX: (505) 599-2231
BILL TO: STATE OF ARIZONA
COMPANY: _____
ADDRESS: _____

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Petroleum Hydrocarbons (418.1) TRPH	(MOD.8015) Diesel/Direct Inject	(M8015) Gas/Purge & Trap	8021 (BTEX)/8015 (Gasoline)	8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE	8021 (TCL)	8021 (EDX)	8021 (HALO)	504.1 EDB ☐ / DBCP ☐	8260 (TCL) Volatile Organics	8260 (Full) Volatile Organics	8260 (CUST) Volatile Organics	8260 (Landfill) Volatile Organics	Pesticides /PCB (608/8081)	Herbicides (615/8151)	Base/Neutral/Acid Compounds GC/MS (625/8270)	Polynuclear Aromatics (610/8310)	General Chemistry:	Priority Pollutant Metals (13)	Target Analyte List Metals (23)	RCRA Metals (8)	RCRA Metals by TCLP (Method 1311)	Metals: <u>TOTAL MERCURY,</u>	<u>CADMIUM, CHROMIUM</u>	NUMBER OF CONTAINERS	
990388	9-21-99	1246	WATER					X																						
990389	9-21-99	1315	WATER					X																						
990390	9-21-99	1447	WATER					X																						
990391	9-21-99	1667	WATER					X																						
990392	9-21-99	1607	WATER					X																						
TRIP BLANK	9-21-99		WATER					X																						

PROJECT INFORMATION

PROJ. NO.: _____

PROJ. NAME: CHACO MOUNTAIN WEA

P.O. NO.: _____

SHIPPED VIA: FED-1

SAMPLE RECEIPT

NO. CONTAINERS: 1

CUSTOMER: Y/NM

RECEIVED BY: YES

BLUE/CE: 42

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒ X

CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER

METHANOL PRESERVATION ☐

COMMENTS: FIXED FEE
LOW LEVEL BENCH (A) PYRENE 40198

RECEIVED BY

Signature: John Campbell Time: 1458

Printed Name: JOHN CAMPBELL Date: 9-22-99

Company: EL PASO FIELD SERVICES

RECEIVED BY

Signature: _____ Time: _____

Printed Name: _____ Date: _____

Company: _____

December 29, 1999

Quarterly ANALYTICAL REPORT

**Chaco Plant
Monitor Well #9, #10
Lab Sample #'s 990468 to 990470
Sampled 12/8/99
Sampled by Dennis Bird**

REMARKS:

These samples represent the fourth quarter 1999 sampling for MW#9 and #10. The New Mexico WQCC limit for Benzene (10 PPB) was exceeded in MW#10. MW-9 and 10 were installed on July 24, 1997. They are being monitored quarterly for BTEX components. Product removal was initiated on MW#10 on October 15, 1998 using a PetroTrap brand passive skimmer. Since this time, 1,555 milliliters of product have been removed from this well. Product removal was stopped on December 8, 1999 and the petro-trap removed.

Starting January 1, 1999, responsibility for sampling these monitor wells is contracted to PSC. All analytical work will be contracted to Pinnacle laboratories in Albuquerque, NM and Scott Pope will be the coordinator.

Distribution:

Scott Pope - W/Attachments
Mike Hansen/Don Hensley - W/Attachments
Results File

Attachments



Well Development and Purging Data

Well Number MW-9

Meter Code *NA*

☒ 3 to 5 Casing Volumes of Water Removal
☐ Stabilization of Indicator Parameters
☐ Other

☐	Pump Centrifugal	☒	Bailer Bottom Valve
☐	Submersible	☐	Double Check Valve
☐	Peristaltic	☐	Stainless-steel Kemmerer

☐ Other

Initial Depth of Well (feet) 21.42
Initial Depth to Water (feet) 11.85
Height of Water Column in Well (feet) 9.57

4
Diameter (inches): Well Gravel pack

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		6,3	19.0
Gravel Pack			
Drilling Fluids			
Total			

☒ pH Meter
☐ DO Monitor
☒ Conductivity Meter
☒ Temperature Meter
☒ Other D.O.C.

Water Disposal

KUTZ SEPARATOR

Water Removal Data

[illegible]

Comments

Developer's Signature *Donnie Bird*

Date 12-8-99 Reviewer

John Santolucito Date 12/29/99



Well Development and Purging Data

Site Name CHACO PLANT

Well Number NW-10

Meter Code NA

☐ Development
☒ Purging

Development Criteria

- ☒ 3 to 5 Casing Volumes of Water Removal
☐ Stabilization of Indicator Parameters
☐ Other _____

Methods of Development

- Pump
☐ Centrifugal ☒ Bottom Valve
☐ Submersible ☐ Double Check Valve
☐ Peristaltic ☐ Stainless-steel Kemmerer

☐ Other _____

Water Volume Calculation

Initial Depth of Well (feet) 22.22
Initial Depth to Water (feet) 11.84
Height of Water Column in Well (feet) 10.38

Diameter (inches): Well 4 Gravel Pack _____

Item	Water Volume in Well		Gallons to be Removed
	Cubic Feet	Gallons	
Well Casing		<u>7.0</u>	<u>21.0</u>
Gravel Pack			
Drilling Fluids			
Total			

Instruments

- ☒ pH Meter
☐ DO Monitor
☒ Conductivity Meter
☒ Temperature Meter
☒ Other D.O. CHEMETS KIT

Water Disposal

KOTZ SEPARATOR

Water Removal Data

Date	Time	Development Method	Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume Removed (gal)		Product Volume Removed (gallons)		Temperature °C	pH	Conductivity µmho/cm	Dissolved Oxygen mg/L	Comments
						Increment	Cumulative	Increment	Cumulative					
12-8-99	1143									11.3	7.32	2650		
12-8-99	1150					5.0	5.0			12.7	7.19	2710		
12-8-99	1158					5.0	10.0			12.3	7.32	2590		
12-8-99	1206					5.0	15.0			12.4	7.44	2600		
12-8-99	1217					5.0	20.0			13.5	7.84	2700		
12-8-99	1231					5.0	25.0			11.6	8.00	2660	0.5	

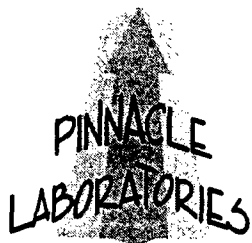
Comments THE WATER HAD A LIGHT HYDROCARBON SMELL,

Developer's Signature Dennis Bird

Date 12-8-99

Reviewer John Fadden

Date 12/29/99



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

Pinnacle Lab ID number
December 22, 1999

912040



EL PASO FIELD SERVICES
770 WEST NAVAJO
FARMINGTON, NM 87401

Project Name CHACO MONITOR WELLS
Project Number (none)

Attention: JOHN LAMBDIN

On 12/14/99 Pinnacle Laboratories, Inc. Inc., (ADHS License No. AZ0592 pending), received a request to analyze aqueous samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

If you have any questions or comments, please do not hesitate to contact us at (505)344-3777.

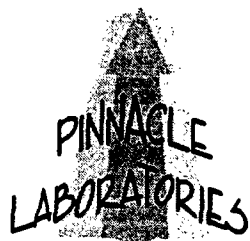
Kimberly D. McNeill
Project Manager

H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

Reviewed & Approved
J. Sanchez
12/15/99

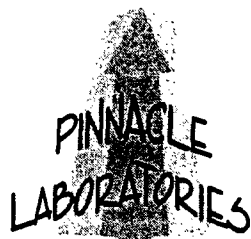


2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : CHACO MONITOR WELLS

PINNACLE ID : 912040
DATE RECEIVED : 12/14/99
REPORT DATE : 12/21/99

PIN			DATE
ID. #	CLIENT DESCRIPTION	MATRIX	COLLECTED
01	990468 - <i>mw-9</i>	AQUEOUS	12/8/99
02	990469 - <i>mw-10</i>	AQUEOUS	12/8/99
03	990470 - <i>mw-10 Field Duplicate</i>	AQUEOUS	12/8/99
04	TRIP BLANK	AQUEOUS	12/8/99



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : CHACO MONITOR WELLS

PINNACLE I.D.: 912040

SAMPLE		MATRIX	DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.		SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	990468	AQUEOUS	12/8/99	NA	12/17/99	1
02	990469	AQUEOUS	12/8/99	NA	12/17/99	1
03	990470	AQUEOUS	12/8/99	NA	12/17/99	1
PARAMETER		DET. LIMIT	UNITS	990468	990469	990470
BENZENE		0.5	UG/L	< 0.5	18	< 0.5
TOLUENE		0.5	UG/L	< 0.5	< 0.5	< 0.5
ETHYLBENZENE		0.5	UG/L	< 0.5	37	22
TOTAL XYLENES		0.5	UG/L	< 0.5	120	61

SURROGATE:

BROMOFLUOROBENZENE (%)

102

109

101

SURROGATE LIMITS (80 - 120)

MW-9

MW-10

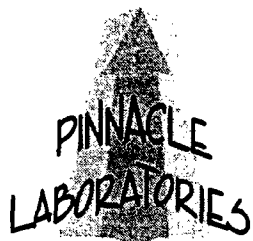
MW-10

CHEMIST NOTES:

N/A

Field
Duplicate

Poor Duplication?
LAs OK Good!



2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
Fax (505) 344-4413

GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : CHACO MONITOR WELLS

PINNACLE I.D.: 912040

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	TRIP BLANK	AQUEOUS	12/8/99	NA	12/17/99	1
PARAMETER	DET. LIMIT	UNITS	TRIP BLANK			
BENZENE	0.5	UG/L	< 0.5			
TOLUENE	0.5	UG/L	< 0.5			
ETHYLBENZENE	0.5	UG/L	< 0.5			
TOTAL XYLENES	0.5	UG/L	< 0.5			

SURROGATE:

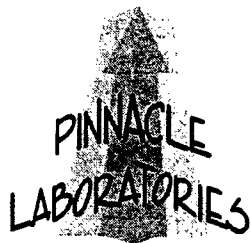
BROMOFLUOROBENZENE (%)

110

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A



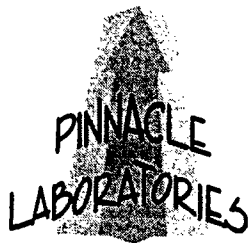
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GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 912040
BLANK I. D.	: 121799	DATE EXTRACTED	: N/A
CLIENT	: EL PASO FIELD SERVICES	DATE ANALYZED	: 12/17/99
PROJECT #	: (none)	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: CHACO MONITOR WELLS		

PARAMETER	UNITS	
BENZENE	UG/L	<0.5
TOLUENE	UG/L	<0.5
ETHYLBENZENE	UG/L	<0.5
TOTAL XYLENES	UG/L	<0.5

SURROGATE:
BROMOFLUOROBENZENE (%) 105
SURROGATE LIMITS: (80 - 120)
CHEMIST NOTES:
N/A



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GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST : EPA 8021 MODIFIED
MSMSD # : 121799
CLIENT : EL PASO FIELD SERVICES
PROJECT # : (none)
PROJECT NAME : CHACO MONITOR WELLS

PINNACLE I.D. : 912040
DATE EXTRACTED : N/A
DATE ANALYZED : 12/17/99
SAMPLE MATRIX : AQUEOUS
UNITS : UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	22.2	111	22.1	111	0	(80 - 120)	20
TOLUENE	<0.5	20.0	20.9	105	20.9	104	0	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	21.8	109	21.7	108	1	(80 - 120)	20
TOTAL XYLENES	<0.5	60.0	65.8	110	64.7	108	2	(80 - 120)	20

CHEMIST NOTES:
N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Acceptable
J.S.
12/29/99

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: JOHN CANNON		ANALYSIS REQUEST			
COMPANY: EL PASO FIELD SERVICES ADDRESS: 710 WEST ARROYO PHONE: (505) 599-2144 FAX: (505) 599-2281 BILL TO: SAME AS ABOVE COMPANY: ADDRESS:		Petroleum Hydrocarbons (418.1) TRPH (MOD.8015) Diesel/Direct Inject (M8015) Gas/Purge & Trap 8021 (BTEX)/8015 (Gasoline) MTBE 8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE 8021 (TCL) 8021 (EDX) 8021 (HALO) 8021 (CUST) 504.1 EDB ☐ / DBCP ☐ 8260 (TCL) Volatile Organics 8260 (Full) Volatile Organics 8260 (CUST) Volatile Organics 8260 (Landfill) Volatile Organics Pesticides /PCB (608/8081/8082) Herbicides (615/8151) Base/Neutral/Acid Compounds GC/MS (625/8270) Polynuclear Aromatics (610/8310/8270-SIMS) General Chemistry: Priority Pollutant Metals (13) Target Analyte List Metals (23) RCRA Metals (8) RCRA Metals by TCLP (Method 1311) Metals:			
SAMPLE ID DATE TIME MATRIX LAB I.D.		NUMBER OF CONTAINERS			
990468	12-8-99	11:12	WATER	01	1
990469	12-8-99	12:42	WATER	02	2
990470	12-8-99	12:42	WATER	03	2
990471	12-8-99	12:42	WATER	04	1
PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS			
PROJ. NO.: PROJ. NAME: CHICO MOUNTAIN WELLS P.O. NO.: SHIPPED VIA: FED-X SAMPLE RECEIPT NO. CONTAINERS: 7 CUSTODY SEALS: Y/N (N) RECEIVED INTACT: YES BLUE ICE/ICE: YES	(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK (NORMAL) ☒	CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER METHANOL PRESERVATION ☐ COMMENTS: FIXED FEE ☐			
RELINQUISHED BY: Signature: <i>John Cannon</i> Time: 1543 Printed Name: <i>John Cannon</i> Date: 12-8-99 Company: EL PASO FIELD SERVICES		RELINQUISHED BY: Signature: _____ Time: _____ Printed Name: _____ Date: _____ Company: _____			
RECEIVED BY: Signature: _____ Time: _____ Printed Name: _____ Date: _____ Company: _____		RECEIVED BY: (LAB) Signature: <i>Monica</i> Time: 1405 Printed Name: <i>Monica</i> Date: 12/14/99 Company: Pinnacle Laboratories Inc.			