GW - 7 -0

# MONITORING REPORTS

DATE: 1998





FFB | **N** 1999

February 8, 1999

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

Dear Mr. Olson:

Please find enclosed reports on the following monitoring wells and waste water streams at the El Paso Natural Gas Co. Chaco Plant. These results are summarized on the attached tables.

Semi-Annual analyses for monitoring wells 1, 8, 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.

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

Sincerely yours,

**David Bays** 

Principal Environmental Scientist

mil Bay

cc: Denny Foust - NMOCD - Aztec

Danny Baker

Mike Hansen

S. D. Miller/Chaco Regulatory File

### Chaco Plant Groundwater Monitoring Well Results 1998 All Results Expressed as Micrograms/Liter (ppb)

Monitoring Well 1	3/24/98	9/15/98		
Benzene	< 1	< 1		
Toluene	< 1	< 1		
Ethyl Benzene	< 1	< 1		
Xylenes	< 3	< 3		
Cadmium	< 0.0001	< 0.0002		
Chromium	0.0010	< 0.004		
Mercury	< 0.0003	< 0.0002		
Total Naphthalenes	ND	ND		
Total Benzopyrenes	ND	ND		

Monitoring Well 8	3/24/98	9/15/98	
Benzene	< 1	< 1	
Toluene	< 1	< 1	
Ethyl Benzene	< 1	< 1	
Xylenes	< 3	< 3	
Cadmium	< 0.0001	< 0.0002	
Chromium	0.0020	< 0.004	
Mercury	< 0.0003	< 0.0002	
Total Naphthalenes	3.7	2.3	
Total Benzopyrenes	ND	ND	

NA = Not Analyzed

ND = None Detected

### Chaco Plant Groundwater Monitoring Well Results 1998 All Results Expressed as Micrograms/Liter (ppb)

Monitoring Well 9	3/30/98	9/15/98		
Benzene	3.15	< 1	<del></del>	
Toluene	< 1	< 1		
Ethyl Benzene	< 1	< 1		
Xylenes	< 3	< 3		
Cadmium	< 0.0001	<0.0002	, , , , , , , , , , , , , , , , , , , ,	
Chromium	0.0010	< 0.004		
Mercury	< 0.0003	< 0.0002		
Total Naphthalenes	ND	ND		
Total Benzopyrenes	ND	ND		

Monitoring Well 10	3/30/98	<b>\$</b> 9/15/98	
Benzene	488	923	
Toluene	653	432	
Ethyl Benzene	40	47	
Xylenes	323	312	
Cadmium	< 0.0001	< 0.0002	
Chromium	0.0020	< 0.004	
Mercury	< 0.0003	< 0.0002	
Total Naphthalenes	45	ND	
Total Benzopyrenes	ND	ND	

NA = Not Analyzed

ND = None Detected

# Chaco Plant Groundwater Monitoring Well Results 1998

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 June 9, 1998

Test	Well 2	Well 3	Well 4	Well 5	Well 6	Well 7	Non-Contact Wastewater
Hd	7.3	7.3	6.9	7.2	8.0	7.2	8.2
Alkalinity - CO <sub>3</sub>	0.0	0	0	0	0	0	0
Alkalinity - HCO <sub>3</sub>	420	328	995	361	425	343	171
Calcium	66	120	447	318	86	188	228
Magnesium	24	24	78	28	18	36	44
Total Hardness	346	398	1437	1033	908	618	751
Chloride	197	31	398	69	257	126	72
Sulfate as SO <sub>4</sub>	892	474	2701	1378	1826	866	99 <i>L</i>
Fluoride	2.2	6.0	1.9	6.0	2.7	2.4	6.1
Nitrate as NO <sub>3</sub>	9.0	9.0	6.4	1.4	1.8	9.0	0.3
Nitrate as $NO_2$	9.0	9.0	9.0	9.0	9.0	9.0	0.2
Ammonium as NH <sub>4</sub>	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Phosphate	9.0	9.0	9.0	0.6	9.0	9.0	0.2
Potassium	2.9	2.4	11.3	3.9	6.2	5.1	72
Sodium	504	216	1133	405	1095	414	110
TDS	1836	1080	5250	2524	3612	2048	1462
Conductivity	2640	1562	5930	3050	5090	2690	1721
Cadmium	.001	.001	.001	.001	.001	.001	100.
Chromium	500.	500.	500.	.005	500.	500.	.005
Mercury	.0002	.0002	.0002	.0002	.0002	.0002	.0002

#### **October 6, 1998**

#### Semi-Annual ANALYTICAL REPORT

# Chaco Plant Monitor Well #1, 8, 9 and #10 Lab Sample #'s 980643 to 980647 Sampled 9/15/98 Sampled by Dennis Bird

#### **REMARKS:**

These samples represents the second round 1998 semi-annual testing requirements for these four monitor wells. The New Mexico WQCC limit for Benzene was exceeded for MW-10. This monitor well has free product present.

#### **Distribution:**

Sandra Miller - W/O Attachments David Bays - W/Attachments Mike Hansen - W/O Attachments Results Log Book

Attachments



A 2395

	CHAIN	CHAIN OF CUSTODY RECORD	
Project No. Project Name	Mas RIGHT		Requested
Samplers: (Signature)	They Date: 9-15-98	No. Sample of Sample ochnique	Remarks
Atti. Date Time Comp. GRAB	B Sample Number		
MITTER PIESTS 1112 X	180843	31 42 X	1-91 JOSON STOTINGS
ALL 6-12 112-6 X	44,9086	1424 15	172/1 0/07/
X 4581 1894 X	9808451	X 24 15	170k W800
X 4351 BACK BASE	980846	200	1700 MELL
WITTH PLANTING X	787847	8 2 Jah 8 25	17010 WELL 1110-10
A LASTINA		6-140X	7
		/	
Relinquished by: (Signature)	Date/Time Received by: (Signature)	Relinquished by: (Signature)	Date/Time Received by: (Signature)
Willman The	76701642		
Relinquished by: (Signature)	Date/Time Received by: (Signature)	Relinquished by: (Signature)	Date/Time Received by: (Signature)
Relinquished by: (Signature)	Date/Time Received for Laboratory by: (Signature)	Signature) 9/ Date/Time Remarks:	
Carrier Co:	11/1alm Masses	fer Phone No. 16/98 1530 Date Result	Date Results Reported / by: (Signature)
Air Bill No.:			
			and item teach Tiles



	SAMPLE	IDENTIFIC	ATION			
_	Fiel	d ID		Lab ID		_
SAMPLE NUMBER:	N	/A		980643		
MTR CODE   SITE NAME:	N.	/A	C	haco Plant		
SAMPLE DATE   TIME (Hrs):	9/1!	5/98		1112		
PROJECT:		Chae	co Plant			
DATE OF BTEX EXT.   ANAL.:	9/18	3/98		9/18/98		
TYPE   DESCRIPTION:	Wa	iter		MW-1		
Field Remarks: _						
		RESULTS				
PÄRAMETER	RESULT	UNITS	DF	QUALIFIE Q	:RS	
BENZENE	<1	PPB				
TOLUENE	<1	PPB				
ETHYL BENZENE	<1	PPB				

--BTEX is by EPA Method 8020 --

PPB

PPB

The Surrogate Recovery was at	87.6	_% for this sample	All QA/QC was acceptable.
DE = Dilution Factor Used		_	

<3

<6

TOTAL XYLENES

TOTAL BTEX

Narrative:				
Approved By:	oler Labels.	Date:	9/28/98	



#### SAMPLE IDENTIFICATION

-	Field ID	Lab ID
SAMPLE NUMBER:	N/A	980644
MTR CODE   SITE NAME:	N/A	Chaco Plant
SAMPLE DATE   TIME (Hrs):	9/15/98	1139
PROJECT:	Chace	o Plant
DATE OF BTEX EXT.   ANAL.:	9/18/98	9/18/98
TYPE   DESCRIPTION:	Water	MW-8

Field Remarks:		

#### **RESULTS**

PARAMETER	RESULT	UNITS		QUALIFI	ERS	
			DF DF			
BENZENE	<1	PPB		<del> </del>	<del> </del>	
TOLUENE	<1	PPB		ļ		
ETHYL BENZENE	<1	PPB				
TOTAL XYLENES	<3	PPB				
TOTAL BTEX	<6	PPB				

--BTEX is by EPA Method 8020 --

The Surrogate Recovery was at	89.5	% for this sample	All QA/QC was acceptable.
DF = Dilution Factor Oseu			
Narrative:			

approved By: Date: 7/28/9



	SAMPLI	E IDENTIFICAT	ION	
	Fie	ıld ID	Lab ID	
SAMPLE NUMBER:	N	I/A	980645	
MTR CODE   SITE NAME:	N	I/A	Chaco Plar	nt
SAMPLE DATE   TIME (Hrs):	9/1	5/98	1354	
PROJECT:	,	Chaco P	Plant	
DATE OF BTEX EXT.   ANAL.:	9/1	8/98	9/18/98	
TYPE   DESCRIPTION:	W	ater	MW-9	
Field Remarks:		DECLU TO		
	(	RESULTS		
PARAMETER	RESULT	UNITS	QUAL DF Q	IFIERS
BENZENE	<1	PPB		
TOLUENE	<1	PPB		
ETHYL BENZENE	<1	РРВ		
TOTAL XYLENES	<3	PPB		
TOTAL BTEX	<6	PPB		
	90.1	BTEX is by EPA Method 80 % for this sample	20 All QA/QC was acce	ptable.
arrative:				
TOTAL BTEX  The Surrogate Recovery was at of a point of the surrogate Recovery was at of the surrow was at of the surrogate Recovery was at of the surrogate Recovery	90.1	BTEX is by EPA Method 80 % for this sample		ptable.

980645BTEXChacoPlant,9/25/98



	SAMPLE	<b>IDENTIFICA</b>	TION			
	Fie	ld ID		Lab ID		
SAMPLE NUMBER:	N	I/A		980646		
MTR CODE   SITE NAME:	N	I/A		Chaco Plant		
SAMPLE DATE   TIME (Hrs):	9/1	5/98		1354		
PROJECT:		Chaco	Plant			
DATE OF BTEX EXT.   ANAL.:	9/1	8/98	<u>                                     </u>	9/18/98		
TYPE   DESCRIPTION:	W	ater	M	N-9 Field Duj	р	
Field Remarks:		RESULTS	18 Responsence page 35 25 25 25 25 25 25 25 25 25 25 25 25 25			
PARAMETER	RESULT	UNITS	DF	QUALIFII Q	ERS	
BENZENE	<1	PPB				
TOLUENE	<1	PPB				
ETHYL BENZENE	<1	PPB				
TOTAL XYLENES	<3	PPB				
TOTAL BTEX	<6	PPB				
	89.7	BTEX is by EPA Method % for this sample		was accepta	able.	
ne Surrogate Recovery was at F = Dilution Factor Used	00.7	•				

Date:



				<u>-</u>
SAMPLE	IDENTIFICA	TION		
Fiel	d ID		Lab iD	
: N	/A		980647	
: N	/A		haco Plant	
9/1	5/98	<u></u>	1505	
:	Chaco	Plant		
9/24	1/98		9/24/98	
: Wa	ter		MW-10	
	RESULTS			
RESULT	UNITS	DF	QUALIFI Q	ERS
923	РРВ	10	D	
432	PPB	10	D	
46.6	PPB	10	D	
312	PPB	10	D	
1714	PPB			
	% for this sample	All QA/QC	•	able.
	Fiel  No.  9/11  9/24  Wa  RESULT  923  432  46.6  312  1714	Field ID   N/A   N/A   N/A   9/15/98   Chaco   9/24/98   Water     RESULTS     PPB     432   PPB     46.6   PPB     312   PPB     1714   PPB     1714   PPB     -BTEX is by EPA Method   90.1   % for this sample	N/A	Field ID

980647BTEXChacoPlant,9/25/98

Date: \_



#### QUALITY CONTROL REPORT EPA METHOD 8020 - BTEX

980643 to

Samples: 980647

QA/QC for 9/24/98 Sample Set

#### LABORATORY CALIBRATION CHECKS / LABORATORY CONTROL SAMPLES:

SAMPLE	TION CITEORS / EABOY	EXPECTED	ANALYTICAL		ACCEPTABLE
NUMBER	TYPE	RESULT	RESULT	%R	
ICV LA-52589		PPB	PPB		YES NO
50 PPB					RANGE
Benzene	Standard	50.0	46.7	93.3	75 - 125 % X
Toluene	Standard	50.0	46.7	93	75 - 125 % X
Ethylbenzene	Standard	50.0	46.8	94	75 - 125 % X
m & p - Xylene	Standard	100	94.2	94.2	75 - 125 % X
o - Xylene	Standard	50.0	46.8	94	75 - 125 % X
SAMPLE		EXPECTED	ANALYTICAL		ACCEPTABLE
NUMBER	TYPE	RESULT	RESULT	%R	
LCS LA-45476		PPB	PPB		YES NO
25 PPB					RANGE
Benzene	Standard	25.0	22.6	90.3	39 - 150 X
Toluene	Standard	25.0	22.8	91	46 - 148 X
Ethylbenzene	Standard	25.0	22.9	92	32 - 160 X
m & p - Xylene	Standard	50.0	46.2	92	Not Given X
o - Xylene	Standard	25.0	23.1	92	Not Given X
SAMPLE		EXPECTED	ANALYTICAL		ACCEPTABLE
NUMBER	TYPE	RESULT	RESULT	%R	
CCV LA-52589		PPB	PPB		YES NO
50 PPB					RANGE
Benzene	Standard	50.0	49.1	98.3	75 - 125 % X
Toluene	Standard	50.0	49.1	98.3	75 - 125 % X
Ethylenzene	Standard	50.0	49.1	98.2	75 - 125 % X
m & p - Xylene	Standard	100	98.7	98.7	75 - 125 % X
o - Xylene	Standard	50.0	49.4	99	75 - 125 % X
SAMPLE		EXPECTED	ANALYTICAL		ACCEPTABLE
NUMBER	TYPE	RESULT	RESULT	%R	
CCV LA-52589		PPB	PPB		YES NO
CCV LA-52589 50 PPB	-		PPB		YES NO RANGE
	Standard		PPB 47.6	95.3	
50 PPB		РРВ		95.3 94.8	RANGE
50 PPB Benzene	Standard	<b>PPB</b> 50.0	47.6		<b>RANGE</b> 75 - 125 % X
50 PPB  Benzene  Toluene	Standard Standard	50.0 50.0	47.6 47.4	94.8	<b>RANGE</b> 75 - 125 % X 75 - 125 % X

Narrative: Acceptable.

SAMPLE NUMBER CCV LA-52589 50 PPB	ТҮРЕ	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACCEPTABLE  YES NO RANGE
Benzene	Standard	50.0	47.0	93.9	75 - 125 % X
Toluene	Standard	50.0	46.7	93.5	75 - 125 % X
Ethylbenzene	Standard	50.0	46.4	92.8	75 - 125 % X
m & p - Xylene	Standard	100	92.9	92.9	75 - 125 % X
o - Xylene	Standard	50.0	46.9	93.9	75 - 125 % X

Narrative: Acceptable.

LABORATORY DUPLICATES:

SAMPLE ID 980647	ТҮРЕ	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	AC RANGE	CEPTABLE YES NO
Benzene	Matrix Duplicate	92.4	93.3	0.99	+/- 20 %	X
Toluene	Matrix Duplicate	43.2	43.6	0.90	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	4.65	4.68	0.64	+/- 20 %	Х
m & p - Xylene	Matrix Duplicate	25.4	25.5	0.47	+/- 20 %	X
o - Xylene	Matrix Duplicate	5.81	5.82	0.17	+/- 20 %	X

Narrative: Acceptable.

#### LABORATORY SPIKES:

SAMPLE ID 2nd Analysis 980647	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACCEPT YES RANGE	
Benzene	50	92.4	140	95.3	75 - 125 % X	
Toluene	50	43.2	89.7	93	75 - 125 % X	
Ethylbenzene	50	4.7	51.5	94	75 - 125 % X	
m & p - Xylene	100	25.4	120	94.3	75 - 125 % X	
o - Xylene	50	5.8	52.5	93	75 - 125 % X	

Narrative: Acceptable

AUTO BLANK	SOURCE	PPB (1 analyzed with set)	STATUS
Benzene	Boiled Water	<1.0	ACCEPTABLE
Toluene	Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

SOIL VIAL BLANK	SOURCE Lot MB1461	PPB (none analyzed with set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

CONTAMINATION CARRYOVER CHECK	SOURCE	PPB (none analyzed with this set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

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TRIP BLANK	SOURCE	PPB (none analyzed with this set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

Reported By:

Approved By: John Kulln Date: 9/28/98

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Site Name CHACO PUANT	3 0.4	AC0	2	NAN	7	ı	-		Development Purging	Meter Code	Meter Code	MA		
<b>Jevelopment Criteria</b>	nent Crit	teria												
	3 to 5 Casing Volumes of Water Removel Stabilization of Indicator Parameters Other	Volumes of	of Water F Paramete	Removel	-	Water Volume Caninitial Depth of Well (feet)	ter Volume Calculation Depth of Well (feet) 75.75	ulation 5.75			Instruments	ments  ph Meter		
) ] !						Height of Water	Height of Water Column in Well (feet)	(feet) 6	29				y Meter	
<b>Methods of Development</b>	of Devel	lopmer	¥		_,	Diameter (inches): Well	s): Well	Gravel Pack	ıck			X Temperatur	Temperature Meter	Atten.
	Pump Centrifugal	Bai Bo	Bailer  Sottom Valve	ě		Item	Water Volume in Well Cubic Feet   Gallons	ne in Well Gallons	Gallons to be Removed	o pe	Ŋ		C 140	MC13 11
]	Submersible		ouble Ch	Double Check Valve		Well Casing		45	13.5		Water	Water Disposal	•	(
	Peristaltic	<b>∞</b>	tainless-	Stainless-steel Kemmerer	nerer	Gravel Pack					KUTZ	2 56	SEPARATOR	10%
						Drilling Fluids								
	Other					Total								
Water Removal	moval D	Data												
Date	Time	Development Method	<u> </u>	Removal Rate	Intake Depth	Ending Water Depth	Water Volume Removed (gal)	olume ed (gal)	Product Volume Removed ( gallons)	Ime Temperature	ture	Conductivity µmho/cm	Dissolved Oxygen	Com
	_	Pump B	ailer	(gal/min)	(feet)	(feet)	Increment	Cumulative	드		-	-	mg/L	
9-15-80	0935									17.0		1639		
P-15-88 0942	2442						5.0	2.0		16.0	6.87	1655		
9-15-88 095	1560		<u> </u>				30	08		191	20% 0	1631		
8-15-18/1003	500						2.0	0'01		1/9/	123/	1699	0%	
												,		
				-										
			-					_]:						
Comments	THE WELL BAILED DAY @	WELL	100	11181	116	<b>\</b> I	10,0 SAU	Chons	5					
Surface Subsequence	The contract	99	. M. W.	. 5 N		/,			21-6 etec	Date 9-15-98 Beviewer	2	Low		3/6
Developer a c	Griature 24	1	1	1	,				מוני לי לי	7	A111.11		,	

IL PASO	TELD SERVICES
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									Development	Wel	Well Number MW-8	MM-		
ite Nar	ne C/	HACI	2	site Name CHACO DUANT		1	-	X	Purging	Me	Meter Code	MH		
)evelop	Jevelopment Criteria  3 to 5 Casing Volum	ment Criteria 3 to 5 Casing Volumes of Water Removel Stabilization of Indicator Parameters	s of Wate tor Param	er Removel leters		Water Volume Calculation	ume Calc	ulation			Instru ∑	Instruments M pH Meter		
	Other				1	Initial Depth to Water (feet) 76. Height of Water Column in Well (feet)	Vater (feet) // Column in Wel	(feet) //	33			DO Monitor Conductivity Meter	y Meter	
Method	Methods of Development	velopm	ent			Diameter (inches): Well 4	s): Well 🗜	Gravel Pack	jc Yo		) <b>(</b> 2x		re Meter	
	Pump		Bailer				Water Volume in Well	ne in Well	Gallons to be	o be		X Other Z	0,046	Other 20, CHEME 15 KII
	Centrifugal		Sottom Valve	/alve		Item	Cubic Feet	Gallons	Removed		ł	1		
	Submersible	ole	Double (	Double Check Valve		Well Casing		25	725	•	Water	Water Disposal	,	4
	Peristaltic		Stainles	Stainless-steel Kemmerer	merer	Gravel Pack					KOI	KUTE SEPARATOR	NARAI	70K
						Drilling Fluids						•		
	Other					Total								
Nater R	Nater Removal Data	i Data												
		Development	oment	Removal	Intake	Ending Water	Water Volume	olume	Product Volume	Г	Temperature	Conductivity Dissolved	Dissolved	
Date	Time	Method	В	Rate	Depth	Depth	Removed (gal)	d (gal)		llons)	S F	mp/oum	Oxygen	Comme
		Pump	Bailer	(gal/min)	(feet)	(feet)	Increment	Cumulative	Increment Cu	Cumulative			mg/t	
9-15-98 10-20	1020									12	20.6 7.32	1767		
915-9 1075	1035						20	50		20	200 702	CE\$1		

	Comments									
Dissolve	Oxygen	mg/L						62		
Conductivity Dissolved	mpyo/cm		1287	1832	18/8	1923	2080	5/20 145		
	핍		7.32	202	216	7.35	136	747		
Temperature	ပွ		20.6	20.0	14.61	195 735	1521	18.3		
Product Volume	Removed (gallons)	Cumulative Increment Cumulative								
Produc	Remove	Increment								
Vater Volume	Removed (gal)	Cumulative		5.0	10.0	15.0	20.0	250		
Water \	Remov	Increment		20	50	50	50	20		
Ending Water	Depth	(feet)								
Intake	Depth	(feet)								
Removal	Rate	(gal/min)								
Development	Method	Bailer								
Devek	Met	Pump								
	Time		1020	1025	1033	1041	1048	1055		
	Date		215-98 1020	8.15-98 1025	9-15-18 1033	41598 1041	215-98 1048	7.15-78 1055		

Developer's Signature of Common Bulk

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	pH Meter DO Monitor Conductivity Meter Temperature Meter Other D.C. CHEMETS KIT ISPOSAI SEMMATOR	Comments
_	Meter S. Meter C.	Dissolved Oxygen mg/L
Well Number MW-9 Meter Code MA	Instruments  PH Meter DO Monitor Conductivity Meter	Conductivity µmho/cm   1560   1710   1710   1711
nberde/	Instruments    PH M	E SER LOS
Well Number /		Temperature o C 22.0 22.0 22.0 22.0 22.0 22.0 22.0 22
	Gallons to be Removed	Volume ( gallons) Cumulative
Development Purging		Product Volume Removed (gallons) Increment Cumulati
	Ulation (1.3.3) I (feet) 6.6 Gravel Pack Be in Well Gallons	O O O O O O O O O O O O O O O O O O O
-	ume Calculation Vell (feet) Vater (feet) Column in Well (feet) S): Well Water Volume in Well Cubic Feet Gallons	Water Volume Removed (gal) increment Cumu 5.0 5.0 5.0 7.0 5.0 7.0 5.0 7.0
	Water Volume Calculation Initial Depth of Well (feet) Height of Water Column in Well (feet) Diameter (inches): Well Gravel F Under Volume in Well Hem Cubic Feet Gallons Well Casing Gravel Pack Drilling Fluids Total	Ending Water Depth (feet)
	nerer	Intake Depth (feet)
NAN	of Water Removel r Parameters ant sailer Bottom Valve Double Check Valve Stainless-steel Kemmerer	Removal Rate (gal/min)
000	and	Development Method mp Bailer
HAC	Criteria sing Volum ion of Indic velopn ible	Pump Mel
ne C	3 to 5 casing Stabilization of Other Pump Centrifugal Submersible Peristaltic	Time 13/2/1/3/2/3/3/5/3/3/5/3/3/5/3/3/5/4/3/3/5/4/4/3/3/5/4/4/3/3/5/4/4/3/3/5/4/4/4/3/3/5/4/4/4/3/3/5/4/4/4/3/3/5/4/4/4/3/3/5/4/4/4/4
lite Name CHACO PUAN	Sevelopment Criteria  3 to 5 Casing Volumes of V Stabilization of Indicator Pa Other  Pump Pump Baile Centrifugal Submersible Dou  Other	Nater Removal Data  Date Time Devel  P.15-78 1317  7.15-78 1323  7.15-78 1335  7.15-78 1335  7.15-78 1344

Developer's Signature\_\_

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				Development	Well Number MW-10
ite Name CHACO PURNT	•	-	XÎ.	Purging	Meter Code NA
evelopment Criteria					
3 to 5 Casing Volumes of Water Removel	Water Vo	Water Volume Calculation	ulation		Instruments
Stabilization of Indicator Parameters	Initial Depth of	Well (feet)	2.00		ph Meter
Other	Initial Depth to Height of Wate	Initial Depth to Water (feet) 14, 67 Height of Water Column in Well (feet) 93	(feet) 9.9	3	Conductivity Meter
lethods of Development	Diameter (inch	inches): Well	Gravel Pack		Temperature Meter
Pump Bailer		Water Volume in Well	ne in Well	Gallons to be	A other 0.0. CH6/10/5 KI/
Centrifugal X Bottom Valve	Item	Cubic Feet	Gallons	Removed	]
Submersible Double Check Valve	Well Casing		9.9	19.9	Water Disposal
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	Drilling Fluids				•
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		Comments										
	Dissolved	Oxygen	mg/L					57				
	Conductivity Dissolved	mp/oum		6.25 3460	6.37 3430	CAS 2 88.9	212 3/40	228				
		핂		6.25	6.37	A479	2/2	12%				
	Temperature	ပ		23.0	872	102	900	122 531				M.
	Product Volume	Removed (gallons)	Cumulative									CARR
	Product	Removed	Increment									4/VORO
	Volume	d (gal)	Cumulative   Increment   Cumulative		50	100	150	30.0				11/10
	Water V	Removed (gal)	Increment		50	50	20	50				ROAT
	Ending Water	Depth	(feet)									Comments THE WELL HAD 1.39 OFFREE FLOATING HYDROCARBON
	Intake	Depth	(feet)									9,66
	Removal	Rate	(gal/min)									10 1.
	Development	Method	Bailer									17 17
l Data	Develo	Met	Pump					}				WEC
emova		Time		1433	1438	1443	6/1/1	1455				7746
Water Kemoval Data		Date		915-8 1433	264/26-514	8/15-8/14/3	9-15-8 149	254/82				Comments

Date 815.99 Reviewer

Developer's Signature of My Chia



#### PARAGON ANALYTICS, INC.

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

October 1, 1998

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

RE:

Paragon Workorder: 98-09-110

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 September 17, 1998. The samples were scheduled for PAHs by HPLC (pages 1-6) and Total Recoverable Metals (pages 1-9) 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. Adrienne Mackzum

advenne Mackyum

Project Manager

AAM/kmp

**Enclosure: Report** 

perieved and 10/10/1988
Accepted Rando

#### **Paragon Analytics, Incorporated**

#### Sample Number(s) Cross-Reference Table

Paragon OrderNum: 9809110

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
980643	9809110-1		Water	9/15/98	11:12
980644	9809110-2		Water	9/15/98	11:39



# Paragon Analytics, Inc.

#### PAHs by HPLC Case Narrative

#### El Paso Field Services

Chaco Plant Monitor Wells

**Order Number - 9809110** 

- 1. This report consists of 2 water samples received by Paragon on 9/17/98.
- 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.

- 2
- 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 HPLC Analyst

Reviewer's Initials

Date

9-26-98 Date

(800) 443-1511 or (970) 490-1511 225 Commerce Drive Ft. Collins, CO 80524 PARAGON ANALYTICS, INC.

(970) 490-1522 - Fax

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### CONDITION OF SAMPLE UPON RECEIPT

CLIENT: IL POUD FIELD SHIPPING CONTAINER	1#: <u>[[]</u>	ent co	oder
WORKORDER NO. 9809110 INITIALS:	DAT	E: 9/17	98
1. Does this project require special handling according to NEESA, Level 3,		Yes	No ·
or CLP protocols?			
If yes, complete a. and b.			
a. Cooler Temperature			.
b. Lot No's			- 1
c. Airbill Number			
2. Are custody seals on the cooler intact? If so, how many	NA	Yes	No
3. Are custody seals on sample containers intact?	(N/A	Yes	No
4. Is there a Chain of Custody (COC) or other representative documents,		Yes	No
letters or shipping memos?			
5. Is the COC complete?	N/A	Yes	No
Relinquished: Yes No Requested Analysis: Yes No			
6. Is the COC in agreement with the samples received?		Yes	No
No. of Samples: Yes No Sample ID's: Yes No			
Matrix: Yes No No. of Containers: Yes No			
7. Are the samples requiring chemical preservation preserved correctly?	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?		(es)	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?	(N/A)	Yes	No
13. Do the samples require quarantine?		Yes	(No)
14. Do samples require Paragon disposal?		Yes)	No
15. Did the client return any unused bottles?		Yes	No
Describe "NO" items (except No's 1, 13, &14):			- -
Was the client contacted?  YesNo  If yes, Date:Name of person contacted:  Describe actions taken or client instructions:			-
Group Leader's Signature: Date:			_

Cooler Temperature: 3°C

#### POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Paragon Analytics, Inc. Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: WMB1 9/18/98

Sample Matrix: Water

Cleanup: N/A

Reagent Blank

Date Collected: N/A
Date Extracted: 9/18/98
Date Analyzed: 9/23/98

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	52	35 - 119

#### POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

980643

Charo Plunt

mu -1

Lab Name: Paragon Analytics, Inc.

Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: 9809110-1

Sample Matrix: Water

Cleanup: N/A

Date Collected: 9/15/98

Date Extracted: 9/18/98

Date Analyzed: 9/23/98

Sample Volume: 1000 mL

Final Volume: 1 mL

Dilution Factor: 1

		Reporting
Analyte	Conc (ug/L)	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	65	35 - 119

#### POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

980644

Charo Plant mw-8

Lab Name: Paragon Analytics, Inc.

Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: 9809110-2

Sample Matrix: Water

Cleanup: N/A

Date Collected: 9/15/98

Date Extracted: 9/18/98

Date Analyzed: 9/24/98

Sample Volume: 1000 mL

Final Volume: 1 mL Dilution Factor: 1

Reporting Wacc Analyte Conc (ug/L) Limit (ug/L) 2imi+ Naphthalene 2.3 0.50 TOTAL Naphthalonea 2.9 1.0 <30 m/L ND 1.0 ND 1.0  $\overline{\text{ND}}$ 1.0 1.9 0.10

Acenaphthylene 1-Methylnaphthalene 2-Methylnaphthalene Acenaphthene Fluorene 0.085 Phenanthrene 0.050 0.12 0.10 Anthracene Fluoranthrene ND 0.10 Pyrene 0.077 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

40.7 Mg/L

#### SURROGATE RECOVERY

Analyte	% Recovery	% Rec Limits
2-Chloroanthracene	67	35 - 119

#### POLYNUCLEAR AROMATIC HYDROCARBONS BLANK SPIKE

Method 8310

Sample ID

Lab Name: Paragon Analytics, Inc. Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: WLCS1, 9/18/98

Sample Matrix: Water

Cleanup: N/A

Blank Spike

Date Extracted:

9/18/98

Date Analyzed:

9/23/98

Sample Volume: 1,000 mL

Final Volume: 1 mL

Analyte	Spike Added (ug/L)	BS Concentration (ug/L)	BS Percent Recovery	QC Limits % Rec
	100			26.00
Acenaphthylene	10.0	5.99	60	36 - 93
Phenanthrene	1.00	0.675	67	45 - 107
Pyrene	1.00	0.880	88	40 - 104
Benzo(k)fluoranthene	0.250	0.163	65	61 - 126
Dibenzo(a,h)anthracene	1.00	0.655	66	55 - 113

Lab Sample ID: WCLSD1, 9/18/98

	Spike	BSD	BSD		QC
	Added	Concentration	Percent		Limits
Analyte	(ug/L)	(ug/L)	Recovery	RPD	RPD
Acenaphthylene	10.0	5.57	56	7	20
Phenanthrene	1.00	0.639	64	5	20
Pyrene	1.00	0.795	79	10	20
Benzo(k)fluoranthene	0.250	0.157	63	4	20
Dibenzo(a,h)anthracene	1.00	0.606	61	8	20

#### **SURROGATE RECOVERY BS/BSD**

Analyte	% Recovery BS	% Recovery BSD	% Rec Limits
2-Chloroanthracene	62	57	35 -119

000006



# Paragon Analytics, Inc.

# TOTAL RECOVERABLE METALS CASE NARRATIVE

#### El Paso Field Services

**Chaco Plant Monitoring Wells** 

#### **Order Number - 9809110**

- 1. This report consists of 2 water samples
- 2. The samples were received cool and intact on 09/17/98.
- 3. The samples had been correctly preserved for the requested analyses.
- 4. The samples were prepared for analysis based on SW-846, 3<sup>rd</sup> Edition procedures. For analysis by conventional ICP the samples were digested following method 3005A.
- 5. The samples were analyzed following SW-846 protocols by conventional ICP (Method 6010B).
- 6. All standards and solutions are NIST traceable and were used within their recommended shelf life.
- 7. The samples were prepared and analyzed within the established hold times.
- 8. Sample results which are below PAI's standard reporting limits are reported as "ND" on the enclosed report.

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. Samples from other Order Numbers were used as the QC samples for these batches.
  - 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 conventional ICP batch. All acceptance criteria were met.

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



Kim Hamacher

9/29/98 Date

Senior Inorganic Chemist

SW Reviewer's Initials 9/29/98 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: 9809110

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
980643	9809110-1		Water	9/15/98	11:12
980644	9809110-2		Water	9/15/98	11:39

Page 1 of 1



Lab Name: Paragon Analytics, Inc. Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: RB 9809110

Sample ID

Reagent Blank

Date Collected: N/A Prep Date: 09/21, 23/98

Date Analyzed: 09/22, 24/98

Analyte	Concentration mg/L	Reporting Limit mg/L
Maryte	i iig.t	ing <u>s</u>
Cadmium	ND	0.005
Chromium	ND	0.01
Mercury	ND	0.0002

ND = Not detected at or above the reporting limit.

### TOTAL RECOVERABLE METALS

Lab Name: Paragon Analytics, Inc. Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: 9809110-1

Sample Matrix: Water

Sample ID Charo Plant
980643 MW-1

Date Collected: 09/15/98 Prep Date: 09/21, 23/98

Date Analyzed: 09/22, 24/98

Analyte	Concentration mg/L	Reporting Limit mg/L
Cadmium	ND	0.005
Chromium	ND	0.01
Mercury	ND	0.0002

ND = Not detected at or above the reporting limit.

Lab Name: Paragon Analytics, Inc. Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: 9809110-2

Sample Matrix: Water

Sample ID

Charo Plant MW-8

980644

Date Collected: 09/15/98 Prep Date: 09/21, 23/98

Date Analyzed: 09/22, 24/98

Analyte	Concentration mg/L	Reporting Limit mg/L
Cadmium	ND	0.005
Chromium	ND	0.01
Mercury	ND	0.0002

ND = Not detected at or above the reporting limit.

### TOOL RECOVERABLE METALS MATRIX SPIKE

Sample ID

Lab Name: Paragon Analytics, Inc. Client Name: El Paso Field Services

Lab Sample ID: 9808151-9

In House

Prep Date: 09/23/98

Date Analyzed: 09/24/98

Sample Matrix: Water

Analyte	Spike Added mg/L	Sample Conc. mg/L	MS Conc. mg/L	% Rec. (limits 80-120%)	Flags
Cadmium	0.050	< 0.005	0,045	90	
Chromium	0.20	< 0.01	0.19	95	

Analyte	MSD Conc. mg/L	MSD % Rec. (limits 80-120%)	Relative % Difference (limits 0-20%)	Flags
Cadmium Chromium	0.044 0.19	88 95	2 0	

### TOTAL RECOVERABLE METALS MATRIX SPIKE

Lab Name: Paragon Analytics, Inc. Client Name: El Paso Field Services

Lab Sample ID: 9809096-6

Sample ID

In House

Sample Matrix: Water

Prep Date: 09/21/98

Date Analyzed: 09/22/98

Analyte	Spike Added mg/L	Sample Conc. mg/L	MS Conc. mg/L	% Rec. (limits 80-120%)	Flags
Mercury	0.0020	< 0.0002	0.0020	100	

	MSD	MSD	Relative	
	Conc.	% Rec.	% Difference	
Analyte	mg/L	(limits 80-120%)	(limits 0-20%)	Flags
Mercury	0.0020	100	0	

### August 10, 1998

### ANNUAL TESTING ANALYTICAL REPORT

### Chaco Plant Monitor Wells #2, 3, 4, 5, 6, 7 and 20" Discharge Lab Sample #'s 980461 to 980468 Sampled 6/9/98 Sampled by Dennis Bird

### **REMARKS:**

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

### Distribution:

David Bays
Sandra Miller - W/O Attachments
Mike Hansen - W/O Attachments
Results Files
MW Analytical History Spreadsheet

Attachments

El Paso Natural Gas Company

A 2370

Natural Gas Company
CHAIN OF CUSTODY RECORD

Symptom   PMM   Symptom   PMM   Symptom   PMM	Project No.	Project Name											
Company   Comp		)	ソリ	HCO	d)	ANT	Туре		\		Requested Analysis		
Date   Time   Comp Grade   Sumple Number	Samplers: (Signaturi	of his	1.9	River	1	Date: 6-9-9		\*\*	noiseve eupinit	No.		\	Remarks
6.9.78 (110 K 980462 P 400 K MM/72P WEUMUN	MATRIY Date	Time	Tp. GR	AB AB	S.	mple Number	Contain-	arb .	100				
6.8 th 110 x 990462	WATER 6-9-33		$ \hat{\ } $	\ \ \	6	19408,	/4	100 to	  ×		121	W/70P W	15W MW-2
6.9-78 1225 X 930-463 P. 1 4°C X MOUTOR WELL MW. 6.9-78 1237 X 930-464 P. 1 4°C X MOUTOR WELL MW. 6.9-78 1237 X 930-465 P. 1 4°C X MOUTOR WELL MW. 6.9-78 1237 X 930-465 P. 1 4°C X MOUTOR WELL MW. 6.9-78 1237 X 930-465 P. 1 4°C X MOUTOR WELL MW. 6.9-78 1237 X 930-465 P. 1 4°C X MOUTOR WELL MW. 6.9-78 1237 X 930-465 P. 1 4°C X MOUTOR WELL MW. 6.9-78 1237 X 930-465 P. 1 69-10-10-10-10-10-10-10-10-10-10-10-10-10-	MICH GAR		~	<b>~</b>	6	23hode		\$C	×			WITCH IN	THE
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d by: (Signature)  Mode Signature)  Date/Time Received by: (Signature)  A by: (Signature)  Date/Time Received by: (Signature)  Date/Time Received by: (Signature)  A by: (Signature)  Date/Time Received for Laboratory by: (Signature)  Carrier Mode No.  Date/Time Reported / by: (Signature)  Carrier Mode No.  Date Results Reported / by: (Signature)			_						<i>/</i>				
d by: (Signature)  Mid Mid Mid Mid Mid Mid Mid Mid Mid Mid			$\dashv$								<i> </i>		
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d by: (Signature)  Date/Time Received by: (Signature)  A by: (Signature)  Date/Time Received for Laboratory by: (Signature)  A by: (Signature)  Date/Time Received for Laboratory by: (Signature)  Carrier No.  Date Results Reported / by: (Signature)	Relinguished by: (Si.	gnature)	\	Date	/Time 		(1	Relinqui	shed by: (Sig	Inature)		Date/Time	Received by: (Signature)
d by: (Signature)  Date/Time Received by: (Signature)  A by: (Signature)  Date/Time Received for Laboratory by: (Signature)  A by: (Signature)  Date/Time Received for Laboratory by: (Signature)  Carrier Mone No.  Date Results Reported / by: (Signature)	Johnson	Chis	$^{\prime\prime}$	6-1-98	1843		,						
d by: (Signature)  Date/Time Received for Laboratory by: (Signature)  (298   1515	Relinquished by: (Si	gnature)		Date	/Time	Received by: (Signature	(1	Relinqui	shed by: (Sig	nature)		Date/Time	Received by: (Signature)
d by: (Signature)  Date/Time  Received for Laboratory by: (Signature)    Manual Manual								,					
(12/98/15/15) Carrier Mone No.	Relinquished by: (Si	gnature)		Date	Time	D //		\	ate/Time	Rema	rks:		
Carrier Prone No.						///ann/x	General	_	38/15/2	<u>ک</u>			
Air BIII No.:	Carrier Co:					Garri	ier Brone No.			Date	Results Repo	ted / by: (Signature)	
	Air Bill No.:	i											



### SAMPLE IDENTIFICATION

5050 LAD ID	980461	
EPFS LAB ID:		
DATE SAMPLED:	06/09/98	
TIME SAMPLED (Hrs):	0944	
SAMPLED BY:	DB	
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	7.30	Units	06/10/98
Alkalinity as C0 <sub>3</sub>	0	РРМ	06/10/98
Alkalinity as HC0 <sub>3</sub>	420	PPM	06/10/98
Calcium as Ca	99	PPM	06/12/98
Magnesium as Mg	24	PPM	06/12/98
Total Hardness as CaC0 <sub>3</sub>	346	РРМ	06/12/98
Chloride as Cl	197	PPM	06/10/98
Sulfate as S0 <sub>4</sub>	768	PPM	06/10/98
Fluoride as F	2.2	PPM	06/16/98
Nitrate as N0 <sub>3</sub> -N	<0.6	PPM	06/10/98
Nitrite as N0 <sub>2</sub> -N	<0.6	PPM	06/10/98
Ammonium as NH <sub>4</sub> <sup>+</sup>	<0.2	PPM	06/10/98
Phosphate as PO <sub>4</sub>	<0.6	PPM	06/10/98
Potassium as K	2.9	PPM	06/12/98
Sodium as Na	504	PPIM	06/12/98
Total Dissolved Solids	1,836	PPIM	06/16/98
Conductivity	2,640	umhos/cm	06/10/98
Anion/Cation %	0.6%	%, <5.0 Accepted	06/22/98

Lab Remarks:

Approved By: Colon Faubolin Date: 6/23/48

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# Well Development and Purging Data

				ment	Well Number MW-4
ite Name CHACO PUANT		-	<u> </u>	Purging	Meter Code WH
Development Criteria					
3 to 5 Casing Volumes of Water Removel	Water Vo	Water Volume Calculation	ulation		Instruments
Stabilization of Indicator Parameters	Initial Depth of	of Well (feet) 37.60	7.60		DH Meter
Other	Initial Depth to Height of Water	Initial Depth to Water (feet) 6.85 Height of Water Column in Well (feet) 77.75	5.85 (feet)	36	Do Monitor Conductivity Mater
Aethods of Development	Diameter (inche	Diameter (inches): Well & Gravel Pack	Gravel Pac		X Temperature Meter
Pump Bailer		Water Volume in Well	e in Well	Gallons to be	/17 of 07/0/12/12/12/12/12/12/12/12/12/12/12/12/12/
Centrifugal X Bottom Valve	Item	Cubic Feet	Gallons	Removed	
Submersible Double Check Valve	Well Casing		//	21.3	Water Disposal
Peristaltic	Gravel Pack				CHACO SOUTH CONTACT PO.
	Drilling Fluids				
Other	Total				

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	Comments											
Dissolved	Oxygen	mg/L						7.0				
Conductivity Dissolved	mmho/cm Oxygen		0/16	0166	6.44 2820	6.64 2870	2940	7898				
	표		2,93	2.26	6.44	69.9	18.9	EAS				
Temperature	ပွ		150	725/	145	9%/	36/	641				
/olume	gallons)	Cumulative										
Product Volume	Removed (gallons)	Increment										
tume	d (gal)	Cumulative		0.5	10,0	15.0	200	25.0				
Water Volume	Removed (gal)	Increment   Cumulative Increment   Cumulative			50	50	50	5.0				
Ending Water	Depth	(feet)										
Intake	Depth	(feet)										
Removal	Rate	(gal/min)										
Development	hod	Bailer										
Develo	Method	Pump										
	Time		6580	5060	1160	6/60	0925	0933				
	Date		6580 866-9	5060 843-9	1160 86-6-9	6/60 8669	6.9.98 0925	6.9.18 0933				

Developer's Signature *APMMO* 

Comments



### SAMPLE IDENTIFICATION

980462	
06/09/98	
1110	
DB	
Water	
The state of the s	
	06/09/98 1110

FIELD REMARKS:

### **GENERAL CHEMISTRY WATER ANALYSIS RESULTS**

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	7.32	Units	06/10/98
Alkalinity as C0 <sub>3</sub>	0	PPM	06/10/98
Alkalinity as HC0 <sub>3</sub>	328	PPM	06/10/98
Calcium as Ca	120	PPM	06/12/98
Magnesium as Mg	24	PPM	06/12/98
Total Hardness as CaC0 <sub>3</sub>	398	PPM	06/12/98
Chloride as Cl	31	PPM	06/10/98
Sulfate as S0 <sub>4</sub>	474	PPM	06/10/98
Fluoride as F	0.9	PPM	06/16/98
Nitrate as N0 <sub>3</sub> -N	< 0.6	PPM	06/10/98
Nitrite as NO <sub>2</sub> -N	< 0.6	PPM	06/10/98
Ammonium as NH <sub>4</sub> <sup>+</sup>	<0.2	PPM	06/10/98
Phosphate as PO <sub>4</sub>	< 0.6	PPM	06/10/98
Potassium as K	2.4	PPM	06/12/98
Sodium as Na	216	PPM	06/12/98
Total Dissolved Solids	1,080	PPM	06/16/98
Conductivity	1,562	umhos/cm	06/10/98
Anion/Cation %	3.7%	%, <5.0 Accepted	06/22/98

Lab Remarks:

Approved By: John Hawlen. Date: 6/23/48 Reported By: CFV

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# Well Development and Purging Data

								Development	Well Number MW-3	MW-3		
Site Na	me ()	Site Name CHACO DLANT	TWE		ı		<b>X</b>	Purging	Meter Code WA	NA		
Develo	Development Criteria	riteria										
X	3 to 5 Cas	3 to 5 Casing Volumes of Water Removel	er Removel		Water Volume Calculation	ume Calc	ulation		Instru	Instruments		
	Stabilizatio Other	Stabilization of Indicator Parameters Other	neters	1	Initial Depth of Well (feet) 32.40 Initial Depth to Water (feet) 10.48	of Well (feet) 72,40 to Water (feet) 10.48	100			PH Meter DO Monitor		
					Height of Water Column in Well (feet)	Column in We	// (teet)	2		X Conductivity Meter	y Meter	
Methoo	s of De	Methods of Development			Diameter (inches): Well	s): Well 🔏	Gravel Pack	ick		Temperature Meter	e Meter	100
	Pump	Bailer				Water Volume in Well	me in Well	Gallons to be		Other 🖉	0,000	Other 0.0. 046/15/15 KI
	Centrifugal	Bottom Valve	Valve		ltem	Cubic Feet	Gallons	Removed		1		
X	Submersible	<b>Q</b>	Double Check Valve	Ф.	Well Casing		7.9	23.6	Water	Water Disposal		
	Peristaltic		Stainless-steel Kemmerer	ımerer	Gravel Pack				CHAC	20 5007	TH CONI	CHACO SOUTH CONTACT PON
					Drilling Fluids							•
	Other				Total							
Water	Water Removal Data	i Data										
		Development	Removal	Intake	Ending Water	Water Volume	Nater Volume	Product Volume	Temperature	Conductivity Dissolved	Dissolved	

Water Removal Data	emova	ıl Data														
		Development	pment	Removal	Intake	Ending Water	Water V	Volume	Produc	Product Volume	Temperature		Conductivity Dissolved	Dissolved		
Date	Time	Method	pot	Rate	Depth	Depth	Removed (gal)	ed (gal)	Removec	Removed (gallons)	ပွ	H	mp/oum	Oxygen	Comments	
	]	Pump	Bailer	(gal/min)	(feet)	(feet)	Increment	Cumulative	Increment	Cumulative				mg/L		
8-6-8	6101										6:51	7113	8251			
1201 86-59	1201						30	30			15.3	7.13	7991			
5201 86.8	5201						2.0	5.0			941	7.12	7.12 1657			
6-99 1031	103/						30	2.2			6/6/	80%	2191			
8.98/03	1501						2.0	0001			241	112	3091			
6.9-98/1050	1050						20	12.0				78%	9691			
6.9.78 1103	1103						30	150				139	6851	3.5		
L		,										•				
:																
Comments	17/6	MM.	TER	HAD	A	Comments THE WATER HAD A RUSTY RED COLOPR.	RED CI	scope.	,							
		,											-			]

Date 6-298 Reviewer

Developer's Signature WEMMOD.



### **SAMPLE IDENTIFICATION**

980463	
06/09/98	
1205	
DB	
Water	
N/A	
MW-4	
_	06/09/98 1205 DB Water N/A Chaco Plant

FIELD REMARKS:

### **GENERAL CHEMISTRY WATER ANALYSIS RESULTS**

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	6.90	Units	06/10/98
Alkalinity as C0 <sub>3</sub>	0	PPM	06/10/98
Alkalinity as HC0 <sub>3</sub>	566	PPM	06/10/98
Calcium as Ca	447	PPM	06/12/98
Magnesium as Mg	78	PPM	06/12/98
Total Hardness as CaCO <sub>3</sub>	1437	PPM	06/12/98
Chloride as Cl	389	PPM	06/10/98
Sulfate as SO <sub>4</sub>	2701	PPM	06/10/98
Fluoride as F	1.9	PPM	06/16/98
Nitrate as N0 <sub>3</sub> -N	6.4	PPM	06/10/98
Nitrite as N0 <sub>2</sub> -N	< 0.6	PPM	06/10/98
Ammonium as NH <sub>4</sub> <sup>+</sup>	<0.2	PPM	06/10/98
Phosphate as PO <sub>4</sub>	< 0.6	PPM	06/10/98
Potassium as K	11.3	PPM	06/12/98
Sodium as Na	1133	PPM	06/12/98
Total Dissolved Solids	5,250	PPM	06/16/98
Conductivity	5,930	umhos/cm	06/10/98
Anion/Cation %	0.8%	%, <5.0 Accepted	06/22/98

Lab Remarks:

Reported By: Approved By: Solus Rubby Date: 4/23/98

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# Well Development and Purging Data

Site Na	me Ch	Site Name CHACO DUANT	TWBI			-		Development Purging	Well Number MW - 4 Meter Code MA	r MW-	1 6	
Develop ☑□ [Ŋ]	Development Criteria  3 to 5 Casing Volum Stabilization of Indic	ment Criteria 3 to 5 Casing Volumes of Water Removel Stabilization of Indicator Parameters Other	iter Removel meters		Water Volume Calculation Initial Depth of Well (feet) 30 Pluitial Depth to Water (feet) 1932 Height of Water Column in Well (feet)	Water Volume Calcula nitial Depth of Well (feet)	ulation 20 90		Ins	Instruments    PH Meter   DO Monitor   Conductivity Meter   Conductivity   Con	or vitv Meter	
Method	Is of Dev	<b>Methods of Development</b>			Diameter (inches): Well 4 Gravel Pack	s): Well 4	Gravel Pa	ž.		Temperat	ure Meter	11/1
	Pump Centrifugal	Bailer X Bottom Valve	Valve		Item	Water Volume in Well Cubic Feet   Gallons	me in Well Gallons	Gallons to be Removed		Other	10. CHC	S other DO. CHEMC 15 KI/
	Submersible		Double Check Valve		Well Casing		2.7	23.2	Wa	Water Disposal	=	,
	Peristattic	Stainle	Stainless-steel Kemmerer	merer	Gravel Pack				TO TO	ACO SOL	oTH CO	CHACO SOUTH CONTACT PO.
					Drilling Fluids							
	Other				Total							
Water	Water Removal Data	Data										
	E S	Development	Removal	Intake	Ending Water	Water Volume	Nater Volume	Product Volume	Temperature	Conductivity	Conductivity Dissolved	o inomination

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	Comments									
Dissolved	Oxygen	mg/L						67		
Conductivity Dissolved	mp/oum		6530	2849	0929	0559	2079	8600		
	표	7	0859 789	6.89	8.88 L	163	6.89	6.90		
Temperature	ပ		15.3	841	8%1	147	147	150		
Product Volume	(gallons)	Cumulative								
Product	Removed (gallons)	Increment								
olume	d (gal)	Cumulative Increment   Cumulative		5.0	001	15.0	oit	256		
Water Volume	Removed (gal)	Increment		5.0	5.0	5.0	5.0	20		
Ending Water	Depth	(feet)								
Intake	Depth	(feet)								
Removal	Rate	(gal/min)								
Development	poq	Bailer								
Develo	Method	Pump								
	Time		1173	8271	5871	1743	0511	9511		
	Date		86-6-9	26-6-9	26-6-9	26-6.9	6.9-83	8-8-8		

Developer's Signature W.P.M.

Date 6-9-99 Reviewer



### SAMPLE IDENTIFICATION

EPFS LAB ID:	980464
DATE SAMPLED:	06/09/98
TIME SAMPLED (Hrs):	1359
SAMPLED BY:	DB
MATRIX:	Water
METER CODE:	N/A
SAMPLE SITE NAME:	Chaco Plant
SAMPLE POINT:	MW-5
SAIVIPLE PUINT:	141 44 - 9

FIELD REMARKS:

### **GENERAL CHEMISTRY WATER ANALYSIS RESULTS**

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	7.21	Units	06/10/98
Alkalinity as C0 <sub>3</sub>	0	PPM	06/10/98
Alkalinity as HC0 <sub>3</sub>	361	PPM	06/10/98
Calcium as Ca	318	PPM	06/12/98
Magnesium as Mg	58	PPM	06/12/98
Total Hardness as CaC0 <sub>3</sub>	1033	PPM	06/12/98
Chloride as Cl	69	PPM	06/10/98
Sulfate as SO <sub>4</sub>	1378	PPM	06/10/98
Fluoride as F	0.9	PPM	06/16/98
Nitrate as N0 <sub>3</sub> -N	1.4	PPM	06/10/98
Nitrite as N0 <sub>2</sub> -N	<0.6	PPM	06/10/98
Ammonium as NH <sub>4</sub> <sup>+</sup>	<0.2	PPM	06/10/98
Phosphate as PO <sub>4</sub>	<0.6	PPM	06/10/98
Potassium as K	3.9	PPM	06/12/98
Sodium as Na	405	PPM	06/12/98
Total Dissolved Solids	2,524	PPM	06/16/98
Conductivity	3,050	umhos/cm	06/10/98
Anion/Cation %	2.2%	%, < 5.0 Accepted	06/22/98

Lab Remarks:

Reported By: Oki Approved By: John Hubch: Date: 6/23/18

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# Well Development and Purging Data

Purging  Meter Code  MACON Meter Code	Instruments    PH Meter   DO Monitor   DO Mo
□ <b>X</b> )	Water Volume Calculation Initial Depth of Well (feet) 30,60 Initial Depth to Water (feet) 25,10 Initial Depth to Water (feet) 25,10 Initial Depth to Water Column in Well (feet) 5,50 Diameter (inches): Well Gravel Pack  Well Casing Gravel Pack  Drilling Fluids  Total
	Water Volu Initial Depth of We Initial Depth to Water C Diameter (inches): Item Item Well Casing Gravel Pack Drilling Fluids Total
Site Name CHACO PLANT	## Criteria  3 to 5 Casing Volumes of Water Removel Stabilization of Indicator Parameters Other  Of Development Pump Bailer Centrifugal Submersible Double Check Valve Peristaltic Stainless-steel Kemmerer
Site Name CH	Development Criteria    3 to 5 Casing Volumes of W     Stabilization of Indicator Pa     Other     Other     Centrifugal     Bailer     Centrifugal     Botto     Submersible     Dou

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Wate	

_			Intake	Development   Removal   Intake   Ending Water
Rem	Depth Removed (gal)	Depth	Depth	Rate Depth Depth
ment	(feet) Increment	(feet)	(feet)	(feet) (feet)
0	30	30	30	30
0	20	20	20	20
7	30	30	30	30
0	20	2.0	20	20
0	5.0	5.0	5.0	5.0

Developer's Signature Lemma Street

Comments

Date 6-9-9 Reviewer

Date (0/



### SAMPLE IDENTIFICATION

980465	
06/09/98	
1524	
DB	
Water	
N/A	
Chaco Plant	
MW-6	
	06/09/98 1524 DB Water N/A Chaco Plant

FIELD REMARKS:

### **GENERAL CHEMISTRY WATER ANALYSIS RESULTS**

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	8.01	Units	06/10/98
Alkalinity as C0 <sub>3</sub>	0	PPM	06/10/98
Alkalinity as HC0 <sub>3</sub>	425	PPM	06/10/98
Calcium as Ca	93	PPM	06/12/98
Magnesium as Mg	18	PPM	06/12/98
Total Hardness as CaC0 <sub>3</sub>	306	PPM	06/12/98
Chloride as Cl	257	PPM	06/10/98
Sulfate as SO <sub>4</sub>	1826	PPM	06/10/98
Fluoride as F	2.7	PPM	06/16/98
Nitrate as N0 <sub>3</sub> -N	1.8	PPM	06/10/98
Nitrite as N0 <sub>2</sub> -N	< 0.6	PPIM	06/10/98
Ammonium as NH <sub>4</sub> <sup>+</sup>	<0.2	PPM	06/10/98
Phosphate as PO <sub>4</sub>	< 0.6	PPM	06/10/98
Potassium as K	6.2	PPM	06/12/98
Sodium as Na	1095	PPM	06/12/98
Total Dissolved Solids	3,612	PPIVI	06/16/98
Conductivity	5,090	umhos/cm	06/10/98
Anion/Cation %	1.3%	%, < 5.0 Accepted	06/22/98

Lab Remarks:

Reported By: (YZV

Approved By: John Kentolin Date: 6/23/65

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# Well Development and Purging Data

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ater R	Water Removal Data	Data				ŀ										ſ
		Development	oment	Removal	Intake	ᇤ	Water Volume	/olume	Product	Product Volume	Temperature		Conductivity Dissolved	Dissolved		
Date	Time	Method	po	Rate	Depth	Depth	Remov	Removed (gal)	Removed	Removed (gallons)	ပွ	핍	mp/oumm	Oxygen	Comments	
		Pump	Bailer	(gal/min)	(feet)	(feet)	Increment	Cumulative	Increment	Cumulative Increment Cumulative				mg/L		
6.9.98 1435	1435										16.7	7.14	7.14 5030			<u></u>
CHA1 8669	1440						5.0	5.0			551	_	ases 192			
8-6	1445						5.0	10:0			251	2.73	266			
26.65	8.9.98 1453						5.0	0:51			851	22%	5400			
866	6.9.98 1459						5.0	200			5:51	65%	8538			
84	5151 2639						4.0	340			16.3	7.50	2140	0%		
																<u> </u>
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nments	77/6	WELL	1 815	9374	120	Comments THE WELL BAILED DAY PAHO SALLONS	SALL	415.								Ì
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Developer's Signature *MLPMM* 



### SAMPLE IDENTIFICATION

EPFS LAB ID:	980466
DATE SAMPLED:	06/09/98
TIME SAMPLED (Hrs):	1633
SAMPLED BY:	DB
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	7.25	Units	06/10/98
Alkalinity as C0 <sub>3</sub>	0	PPIM	06/10/98
Alkalinity as HC0 <sub>3</sub>	343	PPM	06/10/98
Calcium as Ca	188	PPM	06/12/98
Magnesium as Mg	36	PPM	06/12/98
Total Hardness as CaC0 <sub>3</sub>	618	PPM	06/12/98
Chloride as Cl	126	PPM	06/10/98
Sulfate as SO <sub>4</sub>	998	PPM	06/10/98
Fluoride as F	2.4	PPM	06/16/98
Nitrate as N0 <sub>3</sub> -N	< 0.6	PPM	06/10/98
Nitrite as N0 <sub>2</sub> -N	< 0.6	PPM	06/10/98
Ammonium as NH <sub>4</sub> <sup>+</sup>	<0.2	PPM	06/10/98
Phosphate as PO <sub>4</sub>	< 0.6	PPM	06/10/98
Potassium as K	5.1	PPM	06/12/98
Sodium as Na	414	PPM	06/12/98
Total Dissolved Solids	2,048	PPM	06/16/98
Conductivity	2,690	umhos/cm	06/10/98
Anion/Cation %	0.6%	%, <5.0 Accepted	06/22/98

Lab Remarks:

Reported By: Y2/

Approved By: John Feeboli. Date: 6/33/48



### **SAMPLE IDENTIFICATION**

EPFS LAB ID:	980467	
DATE SAMPLED:	06/09/98	
TIME SAMPLED (Hrs):	1633	
SAMPLED BY:	DB	
MATRIX:	Water	
METER CODE:	N/A	
SAMPLE SITE NAME:	Chaco Plant	
SAMPLE POINT:	MW-7	

FIELD REMARKS: Field Duplicate

### **GENERAL CHEMISTRY WATER ANALYSIS RESULTS**

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	7.26	Units	06/10/98
Alkalinity as C0 <sub>3</sub>	0	. PPM	06/10/98
Alkalinity as HC0 <sub>3</sub>	346	PPM	06/10/98
Calcium as Ca	190	PPM	06/12/98
Magnesium as Mg	37	PPM	06/12/98
Total Hardness as CaCO <sub>3</sub>	627	PPM	06/12/98
Chloride as Cl	130	РРМ	06/10/98
Sulfate as S0 <sub>4</sub>	1022	PPM	06/10/98
Fluoride as F	2.5	PPM	06/16/98
Nitrate as N0 <sub>3</sub> -N	< 0.6	PPM	06/10/98
Nitrite as N0 <sub>2</sub> -N	< 0.6	РРМ	06/10/98
Ammonium as NH <sub>4</sub> <sup>+</sup>	<0.2	PPM	06/10/98
Phosphate as PO <sub>4</sub>	<0.6	PPM	06/10/98
Potassium as K	4.2	PPM	06/12/98
Sodium as Na	426	PPM	06/12/98
Total Dissolved Solids	2,088	PPM	06/16/98
Conductivity	2,690	umhos/cm	06/10/98
Anion/Cation %	0.6%	%, <5.0 Accepted	06/22/98

Lab Remarks:

Reported By: <u>(YZV</u>

Approved By: John Fent de.

ASO	SERVICES
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# Well Development and Purging Data

Well Number MW-7 Meter Code WH	Instruments    PH Meter   DO Monitor   DO Monitor   Conductivity Meter   DO Monitor	-----------------------------------	--
Development Purging	SK Gallons to be Removed / 63		
	Callons Sales		
-	ne Calc (feet) / ar (feet) / lumn in W. Well / Water Volu		
	Water Volume Cal Initial Depth of Well (feet) Initial Depth to Water (feet) Height of Water Column in W Diameter (inches): Well Water Vol Item Cubic Feet Well Casing Gravel Pack Drilling Fluids Total		
Site Name CHACO PUANT	Development Criteria    3 to 5 Casing Volumes of Water Removel Stabilization of Indicator Parameters   3 to 5 Casing Volumes of Water Removel Stabilization of Indicator Parameters   Other		

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	Comments										
Dissolved	Oxygen	mg/L					2.5				
Conductivity Dissolved	μmho/cm   Oxygen		6.44 2480	7.04 2300	3350	34%	16.5 724 3350 2.5				
	玉		1119	10%	OE'L	22%	124	,			
Temperature	ပွ		181	17.0	16.4 7.20	222 5.91	16.5				
Product Volume	Removed (gallons)	Increment Cumulative									
Produc	Remove	Increment									
/olume	Removed (gal)	Cumulative		5.0	10,0	15.0	20,0				
Water Volume	Remov	Increment		5.0	5.0	5.0	5.0				
Ending Water	Depth	(feet)									
Intake	Depth	(feet)							İ		
Removal	Rate	(gal/min)									
Development	pot.	Bailer									
Develo	Method	Pump									
	Time		1603	1608	1612	1620	1626				
	Date		866-9	8091 86-6-9	6.9.98 1612	8.8.3	901263				

Date 6.9.98 Reviewer Developer's Signature KLPM

Comments



### SAMPLE IDENTIFICATION

EPFS LAB ID:	980468	
DATE SAMPLED:	06/09/98	
TIME SAMPLED (Hrs):	1723	
SAMPLED BY:	DB	
MATRIX:	Water	
METER CODE:	N/A	
SAMPLE SITE NAME:	Chaco Plant	
SAMPLE POINT:	20" Waste Water Discharge	

FIELD REMARKS:

### **GENERAL CHEMISTRY WATER ANALYSIS RESULTS**

PARAMETER	RESULT	UNITS	DATE ANALYZED
Laboratory pH	8.24	Units	06/10/98
Alkalinity as C0 <sub>3</sub>	0	PPM	06/10/98
Alkalinity as HC0 <sub>3</sub>	171	PPM	06/10/98
Calcium as Ca	228	РРМ	06/12/98
Magnesium as Mg	44	PPM	06/12/98
Total Hardness as CaC0 <sub>3</sub>	751	PPM	06/12/98
Chloride as Cl	27	PPM	06/10/98
Sulfate as S0 <sub>4</sub>	766	PPM	06/10/98
Fluoride as F	1.9	PPM	06/16/98
Nitrate as N0 <sub>3</sub> -N	0.3	PPM	06/10/98
Nitrite as N0 <sub>2</sub> -N	<0.2	PPM	06/10/98
Ammonium as NH <sub>4</sub> <sup>+</sup>	<0.2	PPM	06/10/98
Phosphate as PO <sub>4</sub>	<0.2	PPM	06/10/98
Potassium as K	27.2	PPM	06/12/98
Sodium as Na	110	PPM	06/12/98
Total Dissolved Solids	1,462	PPM	06/16/98
Conductivity	1,721	umhos/cm	06/10/98
Anion/Cation %	2.1%	%, < 5.0 Accepted	06/22/98

Lab Remarks:

Reported By: CRV Approved By: Slew Hubda. Date: 4/23/45

### American Environmental Network, Inc.

AEN I.D. 806357



July 23, 1998

El Paso Field Service 770 West Navajo Farmington, NM 87401



Project Name/Number: CHACO MW'S + 20 INCH TOTAL Discharge

Attention: John Lambdin

On 06/16/98, American Environmental Network (NM) Inc., (ADHS License No. AZ0015), 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 American Environmental Network (FL), Inc., Pensacola, FL.

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

2709-D Pan American Freeway, NE • Albuquerque, NM 87107 • (505) 344-3777 • Fax (505) 344-4413

Kimberly D. McNeill Project Manager

H. Mitchell Rubenstein, Ph.D. General Manager

MR:jt

Enclosure

Reviewed & Approved A-S. 8/10/98

American Environmental Network, Inc.

CLIENT

:EL PASO FIELD SERVICE

DATE RECEIVED

:06/16/98

PROJECT #

: (NONE)

PROJECT NAME

: CHACO MW'S

REPORT DATE

:07/23/98

AEN ID: 806357

	AEN ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	806357-01	980461 M	w-2. AQUEOUS	06/09/98
02	806357-02	980462 mi	~~3 AQUEOUS	06/09/98
03	806357-03	980463 mi	v-4 AQUEOUS	09/09/98
04	806357-04	980464 mh	AQUEOUS	06/09/98
05	806357-05	980465 mh	√-6 AQUEOUS	06/09/98
06	806357-06	980466 mw	-7 AQUEOUS	06/09/98
7	806357-07	980467 mw	-7 TOP AQUEOUS	06/09/98
8	806357-08	980468 20 inch	Discharge AQUEOUS	06/09/98

---TOTALS---

MATRIX AQUEOUS **#SAMPLES** 

### AEN STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.



### American Environmental Network, Inc.

11 EAST OLIVE ROAD • PENSACOLA, FL 32514 • (904) 474-1001

SIGNATURE PAGE

Reviewed by:

Client:

AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.

ALBUQUERQUE, NEW MEXICO

Project Name:

EL PASO FIELD SERVICES

Project Number:

806357

Project Location:

CHACO MW'S

Accession Number:

806174

Project Manager:

KIMBERLY D. MCNEILL

Sampled By:

N/S

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

Analysis Report

Analysis: Group of Single Metals

Accession:

806174

Client:

AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.

806357 EL PASO FIELD SERVICES

Project Number: Project Name: Project Location: Department:

CHACO MW'S

METALS

[0) Page 1 Date 30-Jun-98

### "FINAL REPORT FORMAT - MULTIPLE"

Accession:

806174

Client:

AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.

Project Number: 806357
Project Name: EL PASO FIELD SERVICES
Project Location: CHACO MW'S
Test: Group of Single Metals

QcLevel:

Comments:

II

~						
Parameter:	Unit:	Result:		R.L:	Batch:	Q:
Client ID: 806357-01			Lab	ID:001		
CADMIUM (200.7) CHROMIUM (200.7) MERCURY (245.1)	MG/L MG/L MG/L	ND ND ND		0.001 0.005 0.0002	CXW171 HXW171 M2W078	mw-Z
Comments:						
Client ID: 806357-02			Lab	ID:002		
CADMIUM (200.7) CHROMIUM (200.7) MERCURY (245.1)	MG/L MG/L MG/L	ND ND ND		0.001 0.005 0.0002	CXW171 HXW171 M2W078	mw-3
Comments:						
Client ID: 806357-03			Lab	ID:003		
CADMIUM (200.7) CHROMIUM (200.7) MERCURY (245.1)	MG/L MG/L MG/L	ND ND ND		0.001 0.005 0.0002	CXW171 HXW171 M2W078	mw-4
Comments:						
Client ID: 806357-04			Lab	ID:004		
CADMIUM (200.7) CHROMIUM (200.7) MERCURY (245.1)	MG/L MG/L MG/L	ND ND ND		0.001 0.005 0.0002	CXW171 HXW171 M2W078	mw-5
Comments:						
Client ID: 806357-05			Lab	ID:005		
CADMIUM (200.7) CHROMIUM (200.7) MERCURY (245.1)	MG/L MG/L MG/L	ND ND ND		0.001 0.005 0.0002	CXW171 HXW171 M2W078	mw-6
Comments:						
Client ID: 806357-06			Lab	ID:006		
CADMIUM (200.7) CHROMIUM (200.7) MERCURY (245.1)	MG/L MG/L MG/L	ND ND ND		0.001 0.005 0.0002	CXW171 HXW171 M2W078	mw-7

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

[0) Page 2 Date 27-Jul-98

### "FINAL REPORT FORMAT - MULTIPLE"

Accession:

806174

Clienc:

AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.

Clienc:
Project Number: 806357
Project Name: EL PASO FIELD SERVICES
Project Location: CHACO MW'S
Group of Single Metals

Parameter:	Unit:	Result:	R.L:	Batch:	Q:
Client ID: 806357-07		I	ab ID:007		
CADMIUM (200.7) CHROMIUM (200.7) MERCURY (245.1)	MG/L MG/L MG/L	ND ND ND	0.001 0.005 0.0002	CXW171 HXW171 M2W078	mw-7 Dyplea
Comments:				i :	
lient ID: 806357-08		I	ab ID:008		
CADMIUM (200.7) CHROMIUM (200.7) MERCURY (245.1)	MG/L MG/L MG/L	ND 0.007 ND	0.001 0.005 0.0002	CXW171 HXW171 M2W078	20 INCH WASTEWATER Discharge
Comments:					Discharge

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

[0] Page 3 Date 30-Jun-98

### "FINAL REPORT FORMAT - MULTIPLE"

Accession:

806174

Client: Project Number: Project Name: Project Location: Test:	AMERICAN ENVIRONMENTAL NETWORK 806357 EL PASO FIELD SERVICES CHACO MW'S Group of Single Metals	(NEW MEXICO)	INC.	
Client Id:	Lab Matrix:		Date/Time	Date
	<pre>Id:</pre>		Sampled:	Received:
806357-01	001 WATER		09-JUN-98 094	9 17-JUN-98
806357-02	002 WATER		09-JUN-98 1110	17-JUN-98
806357-03	003 WATER		09-JUN-98 120	5 17-JUN-98
806357-04	004 WATER		09-JUN-98 1359	9 17-JUN-98
806357-05	005 WATER		09- <b>JUN-98</b> 1524	17-JUN-98
806357-06	006 WATER		09-JUN-98 1633	3 17-JUN-98
806357-07	007 WATER		09-JUN-98 1633	3 17-JUN-98
806357-08	008 WATER		09-JUN-98 1723	3 17-JUN-98

### 11 East Olive Road Pensacola, Florida 32514 (850) 474-1001 AMERICAN ENVIRONMENTAL NETWORK

[0) Page 4 Date 30-Jun-98

"Method Report Summary"

Accession Number: 806174

Client:

AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.

806357

Project Number: Project Name: EL PASO FIELD SERVICES

Project Location: CHACO MW'S
Test: Group of Single Metals

Unit: Result: Client Sample Id: Parameter:

MG/L 0.007 806357-08 CHROMIUM (200.7)

11 East Olive Rd

Pensacola, FL 32514

(850) 474-1001

### **Data Qualifiers for Final Report**

AEN-Pensacola Inorganic/Organic

Adjusted reporting limit due to sample matrix (dilution prior to digestion and/or analysis) @

Elevated reporting limit due to dilution into calibration range

Elevated reporting limit due to matrix interference (dilution prior to digestion and/or analysis)

# Elevated reporting limit due to insufficient sample size

D Diluted out

J5 The reported value is quantitated as a TIC; therefore, it is estimated

ND = Not Detected N/S = Not Submitted N/A = Not Applicable

Florida Projects Inorganic/Organic

ΥI Improper preservation, no preservative present in sample upon receipt **Y2** Improper preservation, incorrect preservative present in sample upon receipt

Improper preservation, sample temperature exceeded EPA temperature limits of 2-6°C upon receipt **Y3** 

The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate. Y (FL description)

Sample held beyond the accepted holding time Q

The reported value is < Laboratory RL and > laboratory MDL

The reported value is  $\leq$  Laboratory MDL (value for sample result is reported as the MDL)

Indicates the compound was analyzed for but not detected. U (FL description)

The reported value is < Laboratory MDL (value shall not be used for statistical analysis) T

The analyte was detected in both the sample and the associated method blank.

J1 Surrogate recovery limits have been exceeded

J2 The sample matrix interfered with the ability to make any accurate determinations

The reported value failed to meet the established quality control criteria for either precision or accuracy J3

Estimated value; not accurate. J (FL description)

AFCEE Projects (under OAPP) and All Other (AEN-PN) Projects/Sites for Inorganic/Organic Parameters

(For positive results) Temperature limits exceeded ( $\leq$ 2°C or  $\geq$  6°C) J (AFCEE description) The analyte was positively identified, the quantitation is an estimation (For nondetects) Temperature limits exceeded ( $\leq 2^{\circ}$ C or  $\geq 6^{\circ}$ C) RI

R2 Improper preservation, no preservative present in sample upon receipt Improper preservation, incorrect preservative present in sample upon receipt R3

R4 Holding time exceeded

Collection requirements not met, improper container used for sample R5

The data are unusable due to deficiencies in the ability to analyze the sample and meet QC criteria R (AFCEE description)

< RL and > laboratory MDL

F (AFCEE description) The analyte was positively identified but the associated numerical value is below the AFCEE or lab RL

≤ 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

ICR Projects Inorganic/Organic

Acceptable A Rejected R6

Examples: ICR Flags

R6 = Laboratory extracted the sample but the refrigerator malfunctioned so the extract became warm and client was notified

R6 = Sample arrived in laboratory in good condition; however, the laboratory did not analyze it within EPA's established holding time limit.

CLP and CLP-like Projects

Refer to referenced CLP Statement of Work (SOW) for explanation of data qualifiers

IDL = Laboratory Instrument Detection Limit

MDL = Laboratory Method Detection Limit

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

CLP CRDL = CLP Contract Required Detection Limit (these limits are listed in the EPA CLP Statement of Work or SOW)

CLP CRQL = CLP Contract Required Quantitation Limit (these limits are listed in the EPA CLP Statement of Work or SOW)

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).

AEN-Pensacola uses the most current promulgated methods contained in the reference manuals.

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revised 10/13/97

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

Quality Control Report

Analysis: Group of Single Metals

Accession:

806174

Client:

AMERICAN ENVIRONMENTAL NETWORK (NEW MEXICO) INC.

Project Number: 806357
Project Name: EL PASO FIELD SERVICES
Project Location: CHACO MW'S
Department: METALS

[0) Page 1 Date 30-Jun-98

Parameter: Batch Id: Blank Result: Anal. Method: Prep. Method: Analysis Date: Prep. Date:	CADMIUM CXW171 <0.001 200.7 200.7 28-JUN-98 25-JUN-98	"Metals C CHROMIUM HXW171 <0.005 200.7 200.7 28-JUN-98 25-JUN-98	puality Cont   MERCURY   M2W078   <0.0002   245.1   245.1   26-JUN-98   26-JUN-98	rol Report"
Sample Dup	lication			
Sample Dup: Rept Limit:	806175-15 <0.001	806175-15 <0.005	806272-1 <0.0002	•
Sample Result: Dup Result: Sample RPD: Max RPD: Dry Weight%	2.02 2.02 0 20 N/A	2.02 2.01 0 20 N/A	0.0046 0.0040 14 20 N/A	
Matrix Spi	ke			
Sample Spiked: Rept Limit:	806175-15 <0.001	806175-15  <0.005	806272-1  <0.0002	
Sample Result: Spiked Result: Spike Added: % Recovery: % Rec Limits: Dry Weight%	<0.001 2.02 2.0 101 75-125 N/A	0.006 2.02 2.0 101 75-125 N/A	<0.0002 0.0046 0.0050 92 75-125 N/A	
ICV		,		
ICV Result: True Result: % Recovery: % Rec Limits:	1.02 1.0 102 95-105	0.99 1.0 99 95-105	0.0039 0.0040 98 90-110	
LCS				
LCS Result: True Result: % Recovery: % Rec Limits:	2.00 2.0 100 80-120	2.04 2.0 102 80-120	0.0051 0.0050 102 85-115	

8/10/68

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

(0) Page 2 Date 30-Jun-98

### ---- Common Footnotes Metals ----

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

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 AEN 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 AEN REPORTING LIMIT AND THE ABSOLUTE DIFFERENCE BETWEEN THE RESULTS EXCEEDS THE AEN 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 AEN REPORTING LIMIT. HOWEVER,

THIS RESULT IS REPORTED FOR ACCURATE QC CALCULATIONS.

NH= THE RELATIVE PERCENT DIFFERENCE (RPD) EXCEEDS THE AEN 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
- BUT NOT DETECTED.

S = METHOD OF STANDARD ADDITIONS (MSA) WAS PERFORMED ON THIS SAMPLE.

FROM OUALITY 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.

THE UNITS REPORTED ON THE QUALITY CONTROL REPORT ARE REPORTED ON AN AS NOTE: 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.

GJ = GARY JACOBS JLH = JAMES L. HERED

GSP = GARY ST PERE JL = JANET LECLEAR

### American Environmental Network of Florida PROJECT SAMPLE INSPECTION FORM

Lab	Accession #: 500	1784	1 6/17	Date Received: 17-5m-58
1.	Was there a Chain of Custody?		•	8. Were samples checked for preservative? (Check pH of all H <sub>2</sub> O requiring preservative (AEN-PN SOP 917) except VOA vials that require zero
2.	Was Chain of Custody properly filled out and relinquished?	Yes No	•	9. Is there sufficient volume for analysis requested?
3.	Were samples received cold? (Criteria: 2° - 6°C: AEN-SOP	Ves No	N/A	10. Were samples received within Holding Time? (REFER TO AEN-SOP 1040)
4. 5.	1055) Were all samples properly labeled and identified? Did samples require splitting? Req By: PM Client Other*	Yes No	·	11. Is Headspace visible > ¼ " in Yes* No (N/A) diameter in VOA vials?* If any headspace is evident, comment in out-of-control
6.	Were samples received in proper containers for analysis	Yes No	• .	12. If sent, were matrix spike Yes No* N/A bottles returned?
7.	requested? Were all sample containers received intact?	Yes No	. 1	13. Was Project Manager notified Yes No N/A of problems? (initials:)
Airb	ill Number(s):		<del>-</del> 1-1-	Shipped By:
Coo	ler Number(s):	ارز عرد ا		Shipping Charges: MA
Coo	ler Weight(s):/	A		Cooler Temp(s) (°C): 4,0°C
Out	of Control Events and Insp	ection Com	ments:	!
		<u></u>		
		·		(Use back of PSIFFOR Additional notes and comments )
Insp	ected By	_ Date: <u>//</u> /-	Jun-1	Ducky   State   17- Jun - 58

- 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 (AEN-SOP 938, section 2.2.9).
- According to EPA, '%" of headspace is allowed in 40 ml vials requiring volatile analysis, however, AEN makes it policy to record any headspace as out-ofcontrol (AEN-SOP 938, section 2.2.12).

AMERICAN ENVIRONMENTAL NETWORK
Albuquerque, New Mexico

## Interlab Chain of Custody

DATE: 6/16/98 PAGE: 1 OF

Harris Marie Mark

NUMBER OF CONTAINERS

TO COLD Avendance	1				SPECIAL CERTIFICATION REQUIRED: TYES ONO	
Kinda Kitt	Company				CLIENT DISCOUNT:	
Finied Name; Date:	Printed Name: Date:				BUSH SUBCHARGE:	
					19/2/2	
[	Time:	N.CAROLINA				
RECEIVED BY- // AB)	RECEIVED BY.	PHOENIX		LAB NUMBER	TAT: STANDARD RUSHI	
Company:	Albuquerque	PORTLAND		RECEIVED GOOD COND/COLD	OC REQUIRED MS MSD BLANK	
Finited Name. Date:	ne Tanviolo/16/98	PENSACOLA X		INTACT?	OC LEVEL: (STD) IV	
	TIME Name:	ILLINOIS		CHAIN OF CUSTODY SEALS	PROJECT NAME: EDFS	
Signature: Time:		TICUT	S	TOTAL NUMBER OF CONTAINERS	PROJECT NUMBER: 806357	_
RELINQUISHED BY:	RELINQUISHED BY: 1.	SAMPLES SENT TO:		SAMPLE RECEIPT	PROJECT INFORMATION	•
						7
		×		1/0 V	<i>V</i> 6	'
		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	+	2000		
			-	11,23		
		X		1633 1013		
	~ 3	X		1524	-05	
		X		1359	-04	
		X		1205	-03	
		Χ.		1110	-02	
		X		M41 RQ	806357-01	
8240 (TO 8270 (TO TO-14 Gross A	Herbicid Base/Net Volatile Polynuc	TOX TOC Gen Ch	Metals - Metals - Metals -	TIME MATRIX LABID	m McNeill	
CLP 13	es/PCE les (615 utral Acid Organid lear Ard	Ho	- PP Lis - RCRA		CLIENT PROJECT MANAGER:	
	3 (608/8080) 5/8150) d Compounds GC/ cs GC/MS (624/6 omatics (610/83	, Cd, Cr		10174	308	
	3240)			NTAL NETWORK 9way, NE	COMPANY: AMERICAN ENVIRONMENTAL NETWORK ADDRESS: 2709-D Pan American Freeway, NE Albuquerque, NM 87107	
All the second second second	ANALYSIS REQUEST			KIMBERLY D. McNEILL	PHOJECI MANAGEH:	

SHADED AREAS ARE FOR LABUSE ONE PLEASE FILL THIS FORM IN COMPLETELY. 15/98 AEN Inc.: American Environmental Network (NM), Inc. • 2709-D Pan American Freeway, NE • Albuquerque, New Mexico 87107 • (505) 344-3777 • Fax (505) 344-4413 P.O. NO.: PROJ. NAME: SHIPPED VIA: PROJ. NO.: PROJECT INFORMATION BILL TO: FAX: PHONE: **ADDRESS** COMPANY: **ADDRESS** COMPANY: CININA. なかめ なるか - PRIOR AUTHORIZATI CERTIFICATION REQUIRED: COMMENTS: FIXED FEE [] METHANOL PRESERVATION (RUSH) [] 24hr □ 48hr ☐ 72hr NN NN 1 WEEK EQUIRED FO SDWA 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) (NORMAL) 8021 (EDX) 8021 (HALO) 8021 (CUST) 504.1 EDB □ / DBCP □ ANALYSIS REQUESTANT OF Company W BELINQUISHED BY TO Printed Name: Signature: 8260 (TCL) Volatile Organics 8260 (Full) Volatile Organics 8260 (CUST) Volatile Organics PMD 6-15-98 8260 (Landfill) Volatile Organics Date Pesticides /PCB (608/8081) Herbicides (615/8151) Base/Neutral/Acid Compounds GC/MS (625/8270) Polynuclear Aromatics (610/8310) REMNOUISHED BY General Chemistry: Printed Name Signature: Company Priority Pollutant Metals (13) Target Analyte List Metals (23) RCRA Metals (8) Date Time

American Environmental Network (NM), Inc.

PROJECT MANAGER:

RCRA Metals by TCLP (Method 1311)

NUMBER OF CONTAINERS

70TA

DISTRIBUTION: White - AEN, Canary - Originato

### F

CHAIN OF CUSTODY

American Environmental Network (NM), Inc.

PLEASE FILL THIS	FOR	M IN C	OMPLETELY.	SHADED AREAS ARE FOR LAB USE O	NLY.
SHIPPED VIA: LEVEL TO CONTAINERS SAMPLE RECEIPT  NO. CONTAINERS SITE OF A LIVE CONTAINERS SITE OF A LIVE CENCE STORY SEALS SITE OF A LIVE CENCE STORY SEALS SITE OF A LIVE CENCE SITE OF A LIVE OF A	PO. NO.:	JECT INFORMATION	3 43426 3 434386 3 434386	2462 2462 2462 2462 2466 2466 2466 2466	COMPANY: EL PROD I
COMMENTS: FIXED FEE	METHANOL PRESERVATION   METHAN	PRIOR AUTHORIZATION IS RE	(~?~?? /633 WATER 00 6~?~?? /633 WATER 074 6~?~?? /723 WATER 08	100 100 100 100 100 100 100 100 100 100	FIEW SERVICE
	SDWA DOTHER	EQUIRED FOR RUSH PROJECTS		Petroleum Hydrocarbons (418.1) TR  (MOD.8015) Diesel/Direct Inject  (M8015) Gas/Purge & Trap  8021 (BTEX)/8015 (Gasoline)  8021 (BTEX) □ MTBE □ TMB □ PO  8021 (TCL)  8021 (EDX)  8021 (EDX)  8021 (CUST)  504.1 EDB □ / DBCP □	
Company.  Company:  Compan	Printed Name: Date: 6-15-78  OCIUMS BIRD	RELINQUISHED BY: 4 1735 Sepance Time 0735 Ventural Strat		8260 (TCL) Volatile Organics 8260 (Full) Volatile Organics 8260 (CUST) Volatile Organics 8260 (Landfill) Volatile Organics 8260 (Landfill) Volatile Organics Pesticides /PCB (608/8081) Herbicides (615/8151) Base/Neutral/Acid Compounds GC/MS (625/82) Polynuclear Aromatics (610/8310)	ANALYSIS HERUDIA
American Environmental Natwork (NIM), Inc.	Printed Name: Date:	HEUNIONSHED BV: Signature: Time:		General Chemistry:  Priority Pollutant Metals (13)  Target Analyte List Metals (23)  RCRA Metals (8)  RCRA Metals by TCLP (Method 1311  Metals: TOTAL MENCYN  Metals: TOTAL MENCYN  NUMBER DE CONTAINERS	

1/5/98 AEN Inc.: American Environmental Network (NM), Inc. • 2709-D Pan American Freeway, NE • Albuquerque, New Mexico 87107 • (505) 344-3777 • Fax (505) 344-4413

### June 10, 1998

### **ANALYTICAL REPORT**

### Chaco Plant Monitor Wells #9 and #10 Lab Sample #'s 980450 and 980451 Sampled 6/3/98 Sampled by Dennis Bird

### **REMARKS:**

These samples represents the second quarter 1998 samples from these wells. These wells were installed on July 24, 1997. They are being monitored quarterly for BTEX components. The New Mexico WQCC limit for Benzene was exceeded in MW#10. MW-10 had 1.14 feet of free product on it.

### Distribution:

Sandra Miller - W/O Attachments David Bays - W/Attachments Mike Hansen - W/O Attachments Results File

Attachments

EIPASO
Natural Gas Company
CHAIN OF CUSTODY RECORD

11me Comp.	is Med	Date: 12-100		\ \	•	
6.4.70 0mp. Comp. 5.4.70 0mp. 5.4.70 1/33 5.4.70 1/33 5.4.70 5.4.70 1/33 5.4.70 5.4.70 1/33 5.4.70 1	11011	<u> </u>	ppinkae se po	\ \ \	Remarks	
1(33		Sample Number ers				
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6372   133	X	30451 S	Joh 1	Mo	MITON WELL MINION	
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Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	ure)	Date/Time Received by: (Signature)	
Il grimas Chost	93-18 154P					
Relinquisfied by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	ure)	Date/Time Received by: (Signature)	
Relinquisned by: (Signature)	OBIG. I'Me	Medin Month	(5/48   0800	Remarks:		
Carrier Co:		Carrie Phone No.		Date Results Reported / by: (Signature)	d / by: (Signature)	
Air Bill No.:						



## SAMPLE IDENTIFICATION

	Field ID	Lab ID	
SAMPLE NUMBER:	N/A	980450	
MTR CODE   SITE NAME:	N/A	Chaco Plant	
SAMPLE DATE   TIME (Hrs):	6/3/98	0951	
PROJECT:	Chaco Plant		
DATE OF BTEX EXT.   ANAL.:	6/5/98	6/5/98	
TYPE   DESCRIPTION:	MW-9		

		-ei	

Field Remarks:

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

TOTAL BTEX	<6	PPB					
BTEX is by EPA Method 8020							
The Surrogate Recovery was at DF = Dilution Factor Used	90.0	_% for this sample	All QA/QC	was accepta	ble.		
Narrative:							
	1 0						



## SAMPLE IDENTIFICATION

	Field ID	Lab ID	
SAMPLE NUMBER:	N/A	980451	
MTR CODE   SITE NAME:	N/A	Chaco Plant	
SAMPLE DATE   TIME (Hrs):	6/3/98	1133	
PROJECT:	Chaco Plant		
DATE OF BTEX EXT.   ANAL.:	6/5/98	6/5/98	
TYPE   DESCRIPTION:	MW-10		

Field Remarks:			

## **RESULTS**

PARAMETER	RESULT UNITS		QUALIFIERS			
			DF	0		
BENZENE	2520	PPB	20	D		
TOLUENE	1240	PPB	20	D		
ETHYL BENZENE	72.6	PPB	20	D		
TOTAL XYLENES	554	PPB	20	D		
TOTAL BTEX	4387	PPB	i			

The Surrogate Recovery was at 93.7 % for this sample All QA/QC was acceptable.

DF = Dilution Factor Used
The "D" qualifier indiciates that the analyte calculated is based on a secondary dilution factor.

Narrative:

Approved By: Sur Lately Date: 6/8/98



## **SAMPLE IDENTIFICATION**

	Field ID	Lab ID	
SAMPLE NUMBER:	N/A	980452	
MTR CODE   SITE NAME:	N/A	Chaco Plant	
SAMPLE DATE   TIME (Hrs):	6/3/98	1133	
PROJECT:	Chaco Plant		
DATE OF BTEX EXT.   ANAL.:	6/5/98	6/5/98	
TYPE   DESCRIPTION:	MW-10 Field Dup		

Field Remarks:		

## **RESULTS**

PARAMETER	RESULT UNITS		QUALIFIERS			
			ÐĒ	a		
BENZENE	2830	PPB	20	D		
TOLUENE	1410	PPB	20	D		
ETHYL BENZENE	73.0	PPB	20	D		
TOTAL XYLENES	545	PPB	20	D		
TOTAL BTEX	4858	PPB				

--BTEX is by EPA Method 8020 --% for this sample All QA/QC was acceptable.

The Surrogate Recovery was at

94.6

DF = Dilution Factor Used

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

Narrative:					
	*				
		$\cap$			

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												(	,		
							□8	Development	3	Well Number MW-7	oer //	1M-7			
Site Name CHACO PUANT	CH	400	MANI		ı	-			Σ	Meter Code_	e ///	6			
<b>Development Criteria</b>	nt Criter	ia a													
3 to (	5 Casing Vol ilization of In	3 to 5 Casing Volumes of Water Removel Stabilization of Indicator Parameters	ter Removel neters	_	Water Volume Calculati Initial Depth of Well (feet) ユスノダ	Volume Calc	ulation			드	Instruments ⊠ ph м	e <b>nts</b> pH Meter			
Other	16				Initial Depth to Water (feet) // 6. Height of Water Column in Well (feet)	Vater (feet) Column in Wel	(feet)	20				DO Monitor Conductivity Meter	Meter		
<b>Methods of Development</b>	Develo	pment		_	Diameter (inches): Well_	s): Well $\boldsymbol{\xi}$	Gravel Pack	×			X	Temperature	Meter	//	j
Cert	Pump Centrifugal	Bailer  Bottom Valve	Valve		ltem	Water Volume in Well Cubic Feet Gallons	ne in Well Gallons	Gallons to be Removed	to be		X	Other 1/0 C	Other <u>U. O. CHC/1</u> 5 KI	5/5 KI	>
Subi	Submersible		Double Check Valve		Well Casing		6.5	184		\$	ater D	Water Disposal	,	(	
Peri	Peristaltic	Stainle	Stainless-steel Kemmerer		Gravel Pack					7	2/1/2	2 SEP	OAPHI.	26	1
					Orilling Fluids							•			
Other	Jr.			 	Total										
Water Removal Data	oval Dat	Œ													
, i.	De	Development	Removal	Intake	Ending Water	Water Volume	olume	Product Volume		Temperature	7	Conductivity	Dissolved	ata a man o	4
	P	Neti Iod	(gal/min)	(feet)	(feet)	Increment	lative	Increment   Cu	Cumulative		5.		mg/L		2
6-3-98 0907	├									6.0 6	18	1780		-	
6-3-88 08	2					50	5.0			148 6	180	5461			
6-3-8009	8/					50	10.0		/	9 9%/	8.8P	14.81			
6-3-98 0925	52					50	15.0		/	1 4.3	1.00	5281		:	
6-3-98 093/	3/					5.0	290		/	47	6.97	1873			
6.3-80 09	0937					50	250		,	9 8%	46.	1881	2.5		
												-			
		·													
Comments THE WATER HAD A CIGHT	16 W	97ER	NHO	178	L	- HYDROSEN SULFIDE SMELL	SEN S	OCFID	ESM.	Ell.			ļ		l

Developer's Signature\_



Site Name CHACO WANT				Development Purging	Well Number MW -/O
	l				Meter Code
Development Criteria					
3 to 5 Casing Volumes of Water Removel	Water Vo	Water Volume Calculation	ulation		Instruments
Stabilization of Indicator Parameters Other	Initial Depth of Well (feet)	Well (feet) 2222	230		pH Meter
	Height of Wate	Height of Water Column in Well (feet)	(fact	20	DO Monitor
Methods of Development	Diameter (inch	Diameter (inches): Well	Gravel Pack		Conductivity Meter  Conductivity Meter
		Water Volume in Well	ne in Well	Gallons to be	Other D.O. C. U. C. M. C. V. V. V. V. V. V. V. V. V. V. V. V. V.
Centrifugal X Bottom Valve	ltem	Cubic Feet	Gallons	Removed	
Submersible Double Check Valve	Well Casing		6.4	193	Water Disposai
Peristaltic Stainless-steel Kemmerer	Gravel Pack				KUTZ SEDARATOR
	Drilling Fluids				
Other	Total				

6.3-98 1030 6.3-98 1030	ailer	-		Ending Water	Water Volume	olume	Product	Г	Temperature		Conductivity Dissolved	Dissolved	
950/	+	Nate	Lida Debru		Kemove	loved (gal)	Removed (gallons)	( gallons)	ပ	H	umho/cm	Oxygen	Commente
3-72 1030 3-78 1030 3-78 1035		(gal/min)	(feet)	(feet)	Increment	Cumulative Increment I Cumulative	Increment	Cumulative				1000	
3-78 1030					Π							7/BLJ	
3-8 1035		-			50	200			1/5	11/11	117 1017		
					200	001			100	272	7007	+	
63-92 1044	-	H			100	150			100	1	11.12 0 1000		
13-78/1053	_				200	200				1	0//2/07/0	-	
1/00 V		_				1 1			0,7	1,0	2/2	1	
(47)	+		1	+	10	200			18,0	1.00	6,8 7.00 3050	5.	
	$\frac{1}{1}$					_							
	1	+					<b>+</b>	1					
		-											

Date 6-3-99 Reviewer

Developer's Signature Memory Grap

## **April 10, 1998**

## **ANALYTICAL REPORT**

# Chaco Plant Monitor Wells #9 and #10 Lab Sample #'s 980264 and 980265 Sampled 3/30/98 Sampled by Dennis Bird

### **REMARKS:**

These samples represents the first quarter 1998 samples from these wells. These wells were installed on July 24, 1997. They are being monitored quarterly for BTEX components. The New Mexico WQCC limit for Benzene was exceeded in MW#10. MW-10 had free product on it.

### **Distribution:**

Sandra Miller - W/O Attachments David Bays - W/Attachments Mike Hansen - W/O Attachments Results File

Attachments

CHAIN OF CUSTODY RECORD

**A** 2650

Received by: (Signature) Received by: (Signature) Remarks Date Results Reported / by: (Signature) Date/Time Date/Time Requested Analysis Remarks: Relinquished by: (Signature) Relinquished by: (Signature) 00/0 86/ noiseVaesed Technical Date/Time ひるびら 184 Type and No. of Sample Contain-ers Received for Laboratory by: (Signature) S Received by: (Signature) Received by: (Signature) Sample Number CHASS BLAS 530-8 172 Date/Time Date/Time Comp. GRAB Project Name Time ATTEN 3-35/7 1337 Relinquished by: (Signature) Relinquished by: (Signature) Relinquished by: (Signature) Samplers: (Signature) MATTER Date Project No. Carrier Co: Air Bill No.:

san juan repro Form 71-55 A



## SAMPLE IDENTIFICATION

	Field	d ID	Lab	ID	_
SAMPLE NUMBER:	N/	Ά	980	264	
MTR CODE   SITE NAME:	N/	A	Chaco	Plant	
SAMPLE DATE   TIME (Hrs):	3/30	)/98	13	32	
PROJECT:		Monitor W	/ell		
DATE OF BTEX EXT.   ANAL.:	4/6/	/98	4/6	/98	
TYPE   DESCRIPTION:	MW	/-9	Wa	ter	]
Field Remarks:					_
		RESULTS			- Y
PARAMETER	RESULT	UNITS	O DF	UALIFIERS Q	
BENZENE	3.15	PPB			
TOLUENE	<1	PPB			
	<1	РРВ			
ETHYL BENZENE					
TOTAL XYLENES	<3	PPB			

980264BTEXChaco,4/7/98



## SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	980265
MTR CODE   SITE NAME:	N/A	Chaco Plant
SAMPLE DATE   TIME (Hrs):	3/30/98	1451
PROJECT:	Monit	tor Well
DATE OF BTEX EXT.   ANAL.:	4/6/98	4/6/98
TYPE   DESCRIPTION:	WW-10	Water

Field Remarks:		

## **RESULTS**

PARAMETER	RESULT	UNITS		QUALIFI	ERS
			DE	Q	
BENZENE	488	PPB	5	D	
TOLUENE	653	PPB	5	D	
ETHYL BENZENE	39.7	PPB	5	D	
TOTAL XYLENES	323	PPB	5	D	
TOTAL BTEX	1504	PPB			

The Surrogate Recovery was at 99.8 % for this sample All QA/QC was acceptable.

DF = Dilution Factor Used
The "D" qualifier indiciates that the analyte calculated is based on a secondary dilution factor.

Narrative:

Approved By: \_

980265BTEXChaco,4/7/98

Date: 4/10/48

ASO .D SERVICE:
교교

		Temperature Meter CHEMETS KIT Other D. C. HEMETS	•	26				Comments										
	v Meter	re Meter		KUTZ SEPARATOR				Dissolved Oxygen	mg/L						57			
Well Number <u> </u>	nents pH Meter DO Monitor Conductivity Meter	Temperatu Other	Water Disposal	2 56				Conductivity umho/cm		1812	1766	1805	1743	0/2/	1830			
nber	Instruments  PH M DO M		Water	が丁				Hď		6.53	6.36	6.57	6.85	6.83	208			
Well Number M								Temperature °C		12.5	199	10,3	10,1	6.7				1
	1 1	Gallons to be	Removed 1927					Product Volume Removed ( gallons)	Cumulative									SMEL
Development Purging			Rem //					Product Removed	Increment									IDE
	Mation (42)	Gravel Pack	Gallons 6,4					lume 1 (gal)	Cumulative		20	10.0	150	20,07	35.0			SOLF
-	olume Calculation of Well (feet) 27, 47 o Water (feet) 17, 25 fer Column in Well (feet) 9	s): Well Gravel Water Volume in Well	Cubic Feet					Water Volume Removed (gal)	Increment		20	20	50	50	5.0			DROSEN SOLFIDE SMEUL
	Water Volume Calculati Initial Depth of Well (feet) 27, 97, Initial Depth to Water (feet) 11, 25 Heinth of Water Column in Well (feet)	Diameter (inches): Well	Item Well Casing	Gravel Pack	Drilling Fluids	Total		Ending Water Depth	(feet)									3
		. <u></u>						Intake Depth	(feet)									1184
1811	r Removel.		3ottom Valve Double Check Valve	Stainless-steel Kemmerer				Removal Rate	(gal/min)									H 04
d	es of Wate	nent Bailer		Stainles				pment nod	ailer									ST H
HACI	riteria ing Volume in of Indica	/elopm	<ul><li>✓ □</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li><li>=</li></ul>				Data	Development Method	Pump									NF TE
e C7	ment Criteria 3 to 5 Casing Volumes of Water Removel. Stabilization of Indicator Parameters Other	of Dev	Centrifugal Submersible	Peristaltic		Other	∋moval	Time	1	1347	(253	1300	(305)	1181	3/8			THE
Site Name CHACO DUANT	Development Criteria     3 to 5 Casing Volum   Stabilization of Indic	Methods of Development					Water Removal Data	Date		3-30-92	3-30-98 (255	330 99 1300	3-32-98 1305	3.30.9p 131	3-30-98			Comments THE WATER HAD A UICHT

Developer's Signature **Wennua** 

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-			Well Number /// W / O
Water Volume Calcinitial Death of Well (feet)	ulation		Instruments
al Depth to Water (feet)	2.78		DO Monitor
Height of Water Column in Wel	(feet)	9	Conductivity Meter
meter (inches): Well	Gravel Pack	ļ	Temperature Meter
Water Volum	ne in Well	Gallons to be	Other D.O. CHEME/5 KI/
Item Cubic Feet	Gallons	Removed	]
Well Casing	9,9	199	Water Disposal
Gravel Pack			KUTZ SEPARATOR
Drilling Fluids			
Total			
ीं के बाह्य हैं विकास का	ter Volume Calc Depth of Well (feet) A Depth to Water (feet) It of Water Column in Well eter (inches): Well Water Volum tem Cubic Feet Casing g Fluids	olume Calculation of Well (feet) 72.32 to Water (feet) 72.32 ther Column in Well (feet) 10 Water Volume in Well Cubic Feet Gallons Cubic Feet Gallons	ation 22 46 A Co. Od Stavel Pack Nivell Gallons to be allons 1, 6 / 9, 9

		Development	yment	Removal	Intake	Ending Water	Water Volume	olume	Product	Product Volume	Temperature		Conductivity Dissolved	Dissolved		
Date	Time	Method	Ь	Rate	Depth	Depth	Removed (gal)	d (gal)	Removed (gallons)	(gallons)	ပွ	Ŧ	mp/oum	Oxygen	Comments	
		Pump	Bailer	(gal/min)	(feet)	(feet)	Increment	nt Cumulative	Increment   Cumulative	Cumulative				mg/L		
330-981	2041										190	190 6.38 4300	4300			
3-30-98	50/1						50	5.0			101	6.32	6.32 4930			
3-30-57	1410						50	10:0			17.0	6.84	6.84 3900			
3.30-93	811/						50	057			811	702	1,8 702 3820			
3-36-981	5641						20	20.05			501	6,63 37/0	37/0			
3-30-19/437	1437						5.0	25.0			193	208	193 7.08 3950 35	35		
Comments	THE	WELL	1. 115	10 0.	199	Comments THE WELL HAD O.66' OF FREE	`	SATIA	11 S/	VDPOC	CLOATING HYDROCARBON.	2				
•		0														

Date 3-30. 98 Reviewer

Developer's Signature almonia Brief



## QUALITY CONTROL REPORT EPA METHOD 8020 - BTEX

Samples: 980260 to 980265, 980267 to 980273, 980276 to 980278

QA/QC for 4/6/98 Sample Set

## LABORATORY CALIBRATION CHECKS / LABORATORY CONTROL SAMPLES:

SAMPLE	TION OFFICE OF EADO	EXPECTED	ANALYTICAL		ACCEPTABLE
NUMBER	TYPE	RESULT	RESULT	%R	
ICV LA-52589		PPB	PPB		YES NO
50 PPB		''-	. · · ·		RANGE
Benzene	Standard	50.0	48.9	97.9	75 - 125 % X
Toluene	Standard	50.0	52.7	105	75 - 125 % X
Ethylbenzene	Standard	50.0	53.3	107	75 - 125 % X
m & p - Xylene	Standard	100	107.8	107.8	75 - 125 % X
o - Xylene	Standard	50.0	52.5	105	75 - 125 % X
SAMPLE		EXPECTED	ANALYTICAL		ACCEPTABLE
NUMBER	TYPE	RESULT	RESULT	%R	
LCS LA-45476		PPB	PPB		YES NO
25 PPB					RANGE
Benzene	Standard	25.0	24.3	97.2	39 - 150 X
Toluene	Standard	25.0	26.2	105	46 - 148 X
Ethylbenzene	Standard	25.0	26.5	106	32 - 160 X
m & p - Xylene	Standard	50.0	54.1	108	Not Given X
o - Xylene	Standard	25.0	26.2	105	Not Given X
SAMPLE		EXPECTED	ANALYTICAL		ACCEPTABLE
NUMBER	TYPE	RESULT	RESULT	%R	
	na Baban Julia di baba di baba da wasa ang ang atao da mara ka mara ka ka sa ka ang atao ka ang atao ka ang at				
CCV LA-52589		PPB	PPB		YES NO
CCV LA-52589 50 PPB		PPB	РРВ		RANGE
	Standard	<b>РРВ</b> 50.0	PPB 45.9	91.8	
50 PPB	Standard Standard			91.8 104.0	RANGE
50 PPB  Benzene  Toluene  Ethylenzene	1	50.0	45.9		<b>RANGE</b> 75 - 125 % X
50 PPB Benzene Toluene	Standard	50.0 50.0	45.9 52.0	104.0	75 - 125 % X 75 - 125 % X
50 PPB  Benzene  Toluene  Ethylenzene	Standard Standard	50.0 50.0 50.0	45.9 52.0 53.6	104.0 107.1	75 - 125 % X 75 - 125 % X 75 - 125 % X
50 PPB  Benzene  Toluene  Ethylenzene  m & p - Xylene	Standard Standard Standard	50.0 50.0 50.0 100	45.9 52.0 53.6 108.1	104.0 107.1 108.1	RANGE  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X
50 PPB  Benzene  Toluene  Ethylenzene  m & p - Xylene  o - Xylene	Standard Standard Standard	50.0 50.0 50.0 100 50.0	45.9 52.0 53.6 108.1 52.2	104.0 107.1 108.1	RANGE  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X
50 PPB  Benzene  Toluene  Ethylenzene  m & p - Xylene  o - Xylene  SAMPLE	Standard Standard Standard Standard	50.0 50.0 50.0 100 50.0	45.9 52.0 53.6 108.1 52.2 ANALYTICAL	104.0 107.1 108.1 104	RANGE  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X
50 PPB  Benzene  Toluene  Ethylenzene  m & p - Xylene  o - Xylene  SAMPLE  NUMBER	Standard Standard Standard Standard	50.0 50.0 50.0 100 50.0 EXPECTED RESULT	45.9 52.0 53.6 108.1 52.2 ANALYTICAL RESULT	104.0 107.1 108.1 104	RANGE  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X  ACCEPTABLE
50 PPB  Benzene  Toluene  Ethylenzene  m & p - Xylene  o - Xylene  SAMPLE  NUMBER  CCV LA-52589	Standard Standard Standard Standard	50.0 50.0 50.0 100 50.0 EXPECTED RESULT	45.9 52.0 53.6 108.1 52.2 ANALYTICAL RESULT	104.0 107.1 108.1 104	RANGE  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X  ACCEPTABLE  YES NO
50 PPB  Benzene Toluene Ethylenzene m & p - Xylene o - Xylene SAMPLE NUMBER CCV LA-52589 50 PPB	Standard Standard Standard Standard	50.0 50.0 50.0 100 50.0 EXPECTED RESULT PPB	45.9 52.0 53.6 108.1 52.2 ANALYTICAL RESULT PPB	104.0 107.1 108.1 104 %R	RANGE  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X  ACCEPTABLE  YES NO  RANGE
50 PPB  Benzene Toluene Ethylenzene m & p - Xylene o - Xylene SAMPLE NUMBER CCV LA-52589 50 PPB  Benzene	Standard Standard Standard Standard  TYPE  Standard	50.0 50.0 50.0 100 50.0 EXPECTED RESULT PPB	45.9 52.0 53.6 108.1 52.2 ANALYTICAL RESULT PPB	104.0 107.1 108.1 104 %R 95.4 103.1	RANGE  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X  75 - 125 % X  ACCEPTABLE  YES NO  RANGE  75 - 125 % X
50 PPB  Benzene Toluene Ethylenzene m & p - Xylene o - Xylene SAMPLE NUMBER CCV LA-52589 50 PPB  Benzene Toluene	Standard Standard Standard Standard  TYPE  Standard Standard	50.0 50.0 50.0 100 50.0 EXPECTED RESULT PPB	45.9 52.0 53.6 108.1 52.2 ANALYTICAL RESULT PPB	104.0 107.1 108.1 104 %R 95.4 103.1 103.4	75 - 125 % X 75 - 125 % X 75 - 125 % X 75 - 125 % X 75 - 125 % X 75 - 125 % X ACCEPTABLE  YES NO RANGE  75 - 125 % X 75 - 125 % X

Narrative: Acceptable.

SAMPLE NUMBER CCV LA-52589 50 PPB	ТУРЕ	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%R	ACC RANGE	EPTABLE YES NO
Benzene	Standard	50.0	49.4	98.7	75 - 125 %	х
Toluene	Standard	50.0	50.9	101.7	75 - 125 %	X
Ethylbenzene	Standard	50.0	52.0	104.0	75 - 125 %	X
m & p - Xylene o - Xylene	Standard	100	104.8	104.8	75 - 125 %	x
o - Xylene	Standard	50.0	50.9	101.7	75 - 125 %	X

Narrative: Acceptable.

SAMPLE NUMBER CCV LA-52589 50 PPB	ТҮРЕ	EXPECTED RESULT PPB	RESULT	%R	ACC RANGE	EEPTABLE YES NO
Benzene	Standard	50.0	49.5	99.0	75 - 125 %	Х
Toluene	Standard	50.0	49.9	99.7	75 - 125 %	X
Ethylbenzene	Standard	50.0	50.4	100.8	75 - 125 %	X
m & p - Xylene o - Xylene	Standard	100	101.0	101.0	75 - 125 %	x
o - Xylene	Standard	50.0	49.5	98.9	75 - 125 %	Х

Narrative: Acceptable.

LABORATORY DUPLICATES:

SAMPLE ID 980260	ТҮРЕ	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACC RANGE	CEPTABLE YES NO
Benzene	Matrix Duplicate	9.1	9.3	1.59	+/- 20 %	X
Toluene	Matrix Duplicate	<1	<1	0.00	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	14.80	14.84	0.25	+/- 20 %	X
m & p - Xylene	Matrix Duplicate	<2	<2	0.00	+/- 20 %	х
o - Xylene	Matrix Duplicate	2.90	2.92	0.65	+/- 20 %	X

Narrative: Acceptable.

LABORATORY SPIKES:

SAMPLE ID 2nd Analysis 980260	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACC RANGE	CEPTABLE YES NO
Benzene	50	9.1	52.8	87.3	75 - 125 %	X
Toluene	50	<1	52.3	105	75 - 125 %	X
Ethylbenzene	50	14.8	66.0	102	75 - 125 %	x
m & p - Xylene o - Xylene	100	<2	107.7	107.7	75 - 125 %	X
o - Xylene	50	2.9	54.5	103	75 - 125 %	X

Narrative: Acceptable

LABORATORY DUPLICATES:

SAMPLE ID 980271	TYPE	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	AC RANGE	CEPTABLE YES NO	
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 o - 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 2nd Analysis 980271	SPIKE ADDED PPB	SAMPLE RESULT PPB	NESULI	%R	ACC RANGE	CEPTABLE YES NO
Benzene	50	<1	49.5	99.0	75 - 125 %	X
Toluene	50	<1	51.2	102	75 - 125 %	X
Ethylbenzene	50	<1	51.4	103	75 - 125 %	Х
m & p - Xylene o - Xylene	100	<2	103.9	103.9	75 - 125 %	х
o - Xylene	50	<1	51.0	102	75 - 125 %	Χ

Narrative: Acceptable

AUTO BLANK	SOURCE	PPB (2 analyzed with set)	STATUS
Benzene	Boiled Water	<1.0	ACCEPTABLE
Toluene	Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

SOIL VIAL BLANK	SOURCE Lot MB1461	PPB (none analyzed with set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

CONTAMINATION CARRYOVER CHECK	SOURCE	PPB (none analyzed with this set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

TRIP BLANK	SOURCE	PPB (2 analyzed with this set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

Reported By:

Approved By: Shiffell Date: 4/10/48

## 150° 45 1100-

## **April 10, 1998**

## ANALYTICAL REPORT

# Chaco Plant Monitor Wells #9 and #10 Lab Sample #'s 980264 and 980265 Sampled 3/30/98 Sampled by Dennis Bird

## **REMARKS:**

These samples represents the first quarter 1998 samples from these wells. These wells were installed on July 24, 1997. They are being monitored quarterly for BTEX components. The New Mexico WQCC limit for Benzene was exceeded in MW#10. MW-10 had free product on it.

### Distribution:

Sandra Miller - W/O Attachments David Bays - W/Attachments Mike Hansen - W/O Attachments Results File

Attachments

EIPSSONATURAL GAS COMPANY CHAIN OF CUSTODY RECORD

	Requested Analysis	Remarks		PUNITOR WALL MINES	MONITOR WELL MUNO							:	Date/Time Received by: (Signature)	\$	Date/Time Received by: (Signature)		ا برگری	Date Results Reported / by: (Signature)
F CUSTODY RECORD		and No. No. of the series of t	Contain- ers	X U.S. /5	Dato 6				/	/			Relinquished by: (Signature)		Relinquished by: (Signature)	iture) & Date/Time Remarks:	,	
CHAIN OF	1	3-31-PD	Sample Number	480364	592066							Ī	Time Received by: (Signature)	7	Time Received by: (Signature)	Received for Laborate		Carrier Phone No.
	Project No. Project Name CHATS DIA	Samplers: (Signature) A Missi	A. T. T. Date Time Comp. GRAB	* 1335 X	WHITE STUBILIES X								by: (Signature)	winds was the	Relinquished by: (Signature) Date/	Relinquished by: (Signature) Date/Time		Carrier Co:



	SAMPLE	IDENTIFICA	ATION			
	Fiel	d ID		Lab ID		
SAMPLE NUMBER:	N	/A		980264		1
MTR CODE   SITE NAME:	N	/A	(	Chaco Plant		
SAMPLE DATE   TIME (Hrs):	3/3	0/98		1332		
PROJECT:		Moni	tor Well			
DATE OF BTEX EXT.   ANAL.:	4/6	3/98		4/6/98		
TYPE   DESCRIPTION:	M	N-9		Water_		
		RESULTS			000000000000000000000000000000000000000	
PARAMETER	RESULT	ŲNITS		QUALIFI	#*( <b>C</b>	
		Ver	DF	0		
BENZENE	3.15	PPB				
TOLUENE	<1	PPB				
ETHYL BENZENE	<1	PPB				
TOTAL XYLENES	<3	PPB				
TOTAL BTEX	3	PPB				
The Surrogate Recovery was at DF = Dilution Factor Used	100.8	BTEX is by EPA Meth % for this sampl		was accepta	able.	
Narrative:						

980264BTEXChaco,4/7/98

Date: \_\_\_

## SAMPLE IDENTIFICATION

	Field ID	Lab ID
SAMPLE NUMBER:	N/A	980265
MTR CODE   SITE NAME:	N/A	Chaco Plant
SAMPLE DATE   TIME (Hrs):	3/30/98	1451
PROJECT:	Monito	or Well
DATE OF BTEX EXT.   ANAL.:	4/6/98	4/6/98
TYPE   DESCRIPTION:	MW-10	Water

Field Remarks:	
	_

## **RESULTS**

PARAMETER	RESULT	UNITS		QUALIFI	ERS
			DF	C	
BENZENE	488	РРВ	5	D	
TOLUENE	653	PPB	5	D	
ETHYL BENZENE	39.7	PPB	5	D	
TOTAL XYLENES	323	PPB	5	D	
TOTAL BTEX	1504	PPB			

TOTAL BTEX

1504

PPB

-BTEX is by EPA Method 8020 -
The Surrogate Recovery was at 99.8 % for this sample All QA/QC was acceptable.

DF = Dilution Factor Used

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

Narrative:

980265BTEXChaco,4/7/98

Date: 4/10/47

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0			∑ 2 ∑ 2	DO CHEM	_	SEDARATOR					Oxygen						1,5						
Mu	H	<b>nents</b> pH Meter	_	Other DOC	Water Disposal					Conductivity	mp/oum	(181	(766	1805	1743	044)	1830						•
mber	ode_	Instruments			Water I	KUTZ				<u></u>	<u>.</u>	6,52	6.36	6.57	6,85	6,93	308						
Well Number My 9	Meter Code_									Temperature	د	12.5	10.9	10,3	101	6.7	6.7					\;	
		<b>{</b>	1 1	Gallons to be Removed	193						Cumulative											MEG	
Development Purgina			Š		61					Product Volume	Increment   Cumulati											NOF S	
	]	ulation	(feet) 26 Gravel Pack	e in Well Gallons	4'9				1	olume	Cumulative		50	100	150	20,0	350					SULF.	
-	-	olume Calculation	Initial Depth to Water (feet) // / / / / Height of Water Column in Well (feet)_ Diameter (inches): Well Grav	Water Volume in Well Cubic Feet   Gallons						Water Volume	Increment Cumu		50	50	50	5.0	5,0					OROSEN SULFIDE SMELL.	
	ı	Water Volume Cal	Initial Depth to Water (feet), Height of Water Column in Diameter (inches): Well	ítem	Well Casing	Gravel Pack	Drilling Fluids	Total		Ending Water	(feet)											1	
}				<u> </u>	g.	nmerer				Intake	(feet)											1/04	•
7	1/2/2	ıter Removei meters		Vaive	Double Check Valve	Stainless-steel Kemmerer			;	Removal Rate	(gal/min)											140 14	(
	93	<b>ria</b> olumes of We ndicator Para	pment	Bailer  Sottom Vaive	Double	Stainle		-	ta	Development Method	Bailer			_				$\frac{1}{1}$	1	_		125/2 10	\
,	CHA	ment Criteria 3 to 5 Casing Volumes of Water Removel. Stabilization of Indicator Parameters Other	f Develo	Pump Centrifugal	Submersible	Peristaltic		Jer	ioval Dat	Time	Pum	1347	53	00	85	//	8/	1	1		- - - ,	Ch Will	ţ
	Site Name CHACO //	Development Criteria  X 3 to 5 Casing Volum  Stabilization of Indica	Methods of Development	<b>5</b>	ns [			Other	Nater Removal Data	Date	$\dashv$	230-PP 12	-30-88 1253	130 PP 1300	1-30-98 1305	3098 131	1-30-78 131					comments THE WATER HAD A WEHT	

Developer's Signature Kenny

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Water Volume Calcul Initial Depth of Well (feet) 32, Initial Depth of Well (feet) 43, Height of Water Column in Well (feet) Diameter (inches): Well 45 Well Casing Well Casing Drilling Fluids Total Total Total Total  Total  Total  S.O S.O S.O S.O S.O S.O S.O S.O S.O S.	water Volume Calcul initial Depth of Well (feet) 32. Initial Depth to Water (feet) 32. Initial Depth to Water Column in Well (feet) 32. Height of Water Column in Well (feet) 32. Height of Water Column in Well (feet) 32. Height of Water Column in Well (feet) 43.  Item Cubic Feet   Column   Cubic Feet   Column   Coupic Feet   Column   Column   Coupic Feet   Column   Co
Water Volume Calculation Initial Depth of Waler (feet) 22,32 Initial Depth of Waler (feet) 22,32 Initial Depth of Waler (feet) 22,32 Initial Depth of Waler Volume in Well Item	Mater Volume Calculation   Mater Volume Calculation   Meter Code
Water Volume Calculation Initial Depth of Waler (feet) 22,32 Initial Depth of Waler (feet) 22,32 Initial Depth of Waler (feet) 22,32 Initial Depth of Waler Volume in Well Item	The Control of Indiator Parameters  The Control of Indiator Parameters  The Control of Indiator Parameters  The Control of Indiator Parameters  Of Development  Submersible  Control of Indiator Parameters  Other  The Control of India of I
Water Volume Calculation Initial Depth of Well (feet) 72,73 Initial Depth of Well (feet) 72,73 Initial Depth of Well (feet) 72,73 Initial Depth of Well (feet) 72,73 Initial Depth of Water Column in Well (feet) 6,6 Item Cubic Feet Gallons to be Removed (gallons) Initial Ending Water Water Volume Product Volume Depth (feet) Increment Cumulative Increment Cumulative (feet) 75,0 7,0 7,0 7,0 7,0 7,0 7,0 7,0 7,0 7,0 7	Development   Period   Peri
Water Volume Calculation Initial Depth of Well (feet) 32,32 Initial Depth to Water (feet) 32,32 Initial Depth to Water (feet) 32,32 Initial Depth to Water Column in Well Height of Water Column in Well Item Cubic Feet Gallons Well Casing Well Casing Well Casing Well Casing Well Casing Well Casing Well Casing Water Volume Depth Ceet) Intake Ending Water Depth Ceet)  Total  Total  Total  Total  Total  Total  ASO ASO  ASO  ASO  ASO  ASO  ASO  ASO	nent Criteria  The Composition of Indicator Parameters Sublication of Indicator Parameters Submissible □ Double Check Valve Time □ Development   Peristallic □ Stainless-steel Kemmerer   Tradal   Pump   Depth   Pump
Water Volume Calcul Initial Depth of Well (feet) 32, Initial Depth of Well (feet) 43, Initial Depth of Water Column in Well (feet) Drilling Fluids Total Total Total Total  Total  (feet) (feet)  (feet)  Soo  Soo  Soo  Soo  Soo  Soo  Soo  S	ment Criteria  ment Criteria  nutrial Depth of Water Volume Calcul Stabilization of Indicator Parameters Other—  Of Development  Pump Bailer Centritigal Submersible  Development Time  Development  Pump Bailer  Other  Submersible  Development  Time  Development  Pump Bailer  Submersible  Development  Time  Development  Development  Removal  Time  Development  Development  Time  Development  Removal  Time  Development  Time  Development  Removal  Time  Development  Time  Development  Removal  Time  Development  Time  Development  Time  Development  Time  Development  Time  Development  Time  Development  Time  Development  Time  Development  Time  Development  Time  Development  Time  Development  Total  Tota
Intake Depth (feet)	nent Criteria  nent Criteria 3 to 5 Casing Volumes of Water Removel Stabilization of Indicator Parameters Of Development Pump Bailer Centrifugal Submersible Double Check Valve Peristaltic Stainless-steel Kemmerer Other  Other  Time Method Rate Depth Pump Bailer (gal/min) (feet)  Wes  Wes  Wes  Wes  Wes  Wes  Wes  We
Intake Depth (feet)	nent Criteria  nent Criteria 3 to 5 Casing Volumes of Water Removel Stabilization of Indicator Parameters Other  of Development Pump Bailer Centrifugal Submersible Double Check Valve Peristaltic Stainless-steel Kemmerer  Other  Other  Web  Web  Web  Web  Web  Web  Web  W
teria  Volumes of Water Removel  Volumes of Water Removel  Iopment  Bailer  Bailer  Bailer  Stainless-steel Ker  Dovelopment  Rate  Imp  Bailer  Gal/min)	nent Criteria 3 to 5 Casing Volumes Stabilization of Indicato Other  Centrifugal Pump Pump Peristaltic  Other  Oth
teria  Volumes of Wat Volumes of Wat Volumes of Wat Volumes of Wat Volumes of Wat Volumes of Wat Volumes of Wat Bailer Bailer  Double  Double  Method Imp Bailer  Bailer  Data	nent Criteria 3 to 5 Casing Volumes Stabilization of Indicato Other  Centrifugal B Centrifugal B Centrifugal Centrifugal Cump Pump Data Develop Time Pump Pump Develop Time Pump Develop Time Pump Develop Time Devel
	ment Cri 3 to 5 Casing Stabilization of Other contribugal Submersible Peristaltic Time Peristaltic  Ti

Developer's Signature



## QUALITY CONTROL REPORT EPA METHOD 8020 - BTEX

Samples: 980260 to 980265, 980267 to 980273, 980276 to 980278

QA/QC for 4/6/98 Sample Set

### LABORATORY CALIBRATION CHECKS / LABORATORY CONTROL SAMPLES:

SAMPLE NUMBER	TYPE	EXPECTED RESULT	ANALYTICAL RESULT	%R	ACCEPTABLE
ICV LA-52589 50 PPB		РРВ	PPB		YES NO RANGE
Benzene	Standard	50.0	48.9	97.9	75 - 125 % X
Toluene	Standard	50.0	52.7	105	75 - 125 % X
Ethylbenzene	Standard	50.0	53.3	107	75 - 125 % X
m & p - Xylene	Standard	100	107.8	107.8	75 - 125 % X
o - Xylene	Standard	50.0	52.5	105	75 - 125 % X
SAMPLE		EXPECTED	ANALYTICAL		ACCEPTABLE
NUMBER	TYPE	RESULT	RESULT	%R	
LCS LA-45476		PPB	PPB		YES NO
25 PPB					RANGE
Benzene	Standard	25.0	24.3	97.2	39 - 150 X
Toluene	Standard	25.0	26.2	105	46 - 148 X
Ethylbenzene	Standard	25.0	26.5	106	32 - 160 X
m & p - Xylene	Standard	50.0	54.1	108	Not Given X
o - Xylene	Standard	25.0	26.2	105	Not Given X
SAMPLE		EXPECTED	ANALYTICAL		ACCEPTABLE
NUMBER	TYPE	RESULT	RESULT	%R	
CCV LA-52589		PPB	PPB		YES NO
50 PPB					RANGE
Benzene	Standard	50.0	45.9	91.8	75 - 125 % X
Toluene	Standard	50.0	52.0	104.0	75 - 125 % X
Ethylenzene	Standard	50.0	53.6	107.1	75 - 125 % X
m & p - Xylene	Standard	100	108.1	108.1	75 - 125 % X
o - Xylene	Standard	50.0	52.2	104	75 - 125 % X
SAMPLE		EXPECTED	ANALYTICAL		ACCEPTABLE
NUMBER	TYPE	RESULT	RESULT	%R	
CCV LA-52589		PPB	PPB		YES NO
50 PPB					RANGE
Benzene	Standard	50.0	47.7	95.4	75 - 125 % X
Toluene	Standard	50.0	51.5	103.1	75 - 125 % X
Ethylbenzene	Standard	50.0	51.7	103.4	75 - 125 % X
m & p - Xylene	Standard	100	104.3	104.3	75 - 125 % X
o - Xylene	Standard	50.0	51.3	102.6	75 - 125 % X

Narrative: Acceptable.

SAMPLE NUMBER CCV LA-52589	TY/PE	EXPECTED RESULT	ANALYTICAL RESULT	%A		EPTABLE YES NO
50 PPB					RANGE	
Benzene	Standard	50.0	49.4	98.7	75 - 125 %	X
Toluene	Standard	50.0	50.9	101.7	75 - 125 %	X
Ethylbenzene	Standard	50.0	52.0	104.0	75 - 125 %	X
m & p - Xylene	Standard	100	104.8	104.8	75 - 125 %	X
m & p - Xylene o - Xylene	Standard	50.0	50.9	101.7	75 - 125 %	X

Narrative: Acceptable.

SAMPLE NUMBER CCV LA-52589 50 PPB	TYPE	EXPECTED RESULT PPB	ANALYTICAL RESULT PPB	%Я	ACCEPTABLE  YES NO  RANGE
Benzene	Standard	50.0	49.5	99.0	75 - 125 % X
Toluene	Standard	50.0	49.9	99.7	75 - 125 % X
Ethylbenzene	Standard	50.0	50.4	100.8	75 - 125 % X
m & p - Xylene o - Xylene	Standard	100	101.0	101.0	75 - 125 % X
o - Xylene	Standard	50.0	49.5	98.9	75 - 125 % X

Narrative: Acceptable.

LABORATORY DUPLICATES:

SAMPLE (D 980260	ТҮРЕ	SAMPLE RESULT PPB	DUPLICATE RESULT PPB	RPD	ACC RANGE	EPTABLE YES NO
Benzene	Matrix Duplicate	9.1	9.3	1.59	+/- 20 %	Х
Toluene	Matrix Duplicate	<1	<1	0.00	+/- 20 %	X
Ethylbenzene	Matrix Duplicate	14.80	14.84	0.25	+/- 20 %	X
m & p - Xylene	Matrix Duplicate	<2	<2	0.00	+/- 20 %	Х
o - Xylene	Matrix Duplicate	2.90	2.92	0.65	+/- 20 %	X

Narrative: Acceptable.
LABORATORY SPIKES:

SAMPLE ID 2nd Analysis 980260	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R		TES NU
Benzene	50	9.1	52.8	87.3	75 - 125 %	X
Toluene	50	<1	52.3	105	75 - 125 %	X
Ethylbenzene	50	14.8	66.0	102	75 - 125 %	X
m & p - Xylene o - Xylene	100	<2	107.7	107.7	75 - 125 %	X
o - Xylene	50	2.9	54.5	103	75 - 125 %	X

Narrative: Acceptable

LABORATORY DUPLICATES:

		SAMPLE	DUPLICATE		ACCEPTABLE
SAMPLE	TYPE	RESULT	RESULT	RPD	
ID 980271		PPB	PPB		YES NO RANGE
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 2nd Analysis 980271	SPIKE ADDED PPB	SAMPLE RESULT PPB	SPIKE SAMPLE RESULT PPB	%R	ACC RANGE	EPTABLE YES NO
Benzene	50	<1	49.5	99.0	75 - 125 %	Х
Toluene	50	<1	51.2	102	75 - 125 %	X
Ethylbenzene	50	<1	51.4	103	75 - 125 %	X
Ethylbenzene m & p - Xylene o - Xylene	100	<2	103.9	103.9	75 - 125 %	x
o - Xylene	50	<1	51.0	102	75 - 125 <b>%</b>	X

Narrative: Acceptable

AUTO BLANK	SOURCE	PPB (2 analyzed with set)	STATUS
Benzene	Boiled Water	<1.0	ACCEPTABLE
Toluene	Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

SOIL VIAL BLANK	SOURCE Lot MB1461	PPB (none analyzed with set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

CONTAMINATION CARRYOVER CHECK	SOURCE	PPB (none analyzed with this set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

TRIP BLANK	SOURCE	PPB (2:analyzed with this set)	STATUS
Benzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Toluene	Vial + Boiled Water	<1.0	ACCEPTABLE
Ethylbenzene	Vial + Boiled Water	<1.0	ACCEPTABLE
Total Xylenes	Vial + Boiled Water	<3.0	ACCEPTABLE

Narrative: Acceptable.

Reported By:

Approved By: Shiffell Date: 4/10/44

## **April 6, 1998**

## Semi-Annual ANALYTICAL REPORT

# Chaco Plant Monitor Well #1, 8 Lab Sample #'s 980250 to 980252 Sampled 3/24/98 Sampled by Dennis Bird

### **REMARKS:**

These samples represents the first round 1998 semi-annual testing requirements for these two monitor wells. The New Mexico WQCC limits for Benzene, Polyaromatic Hydrocarbons, Cadmium, Chromium and Mercury were not exceeded in any sample.

### Distribution:

Sandra Miller - W/O Attachments David Bays - W/Attachments Mike Hansen - W/O Attachments Results Log Book

Attachments



Project No.		CHAIN	OF COS	COSTODY RECO	2			
CH/	900 F	JANT	Туре	\	Requested Analysis	ested ysis		
Samplers: (Signature)	Ried	Date: 3-24-43	No.	reservation chnique	沙鱼			Remarks
MATRY Date Time Comp. GRAB	Sample	Sample Number	Contain- ers	シ				
WACA 3-24-95 1121 X	256	360 /	6-1	40C X 7	<u>~</u>	MONT	70 20	ES MY-1
_	226	25/		4°C X X	*	at INCW	2	1.
1/48	286	252	(F)	40C X X	\ 	Men To	200	DO MONTHER OF
MER 3248 - X -				X 004		10 JUST	100	7
						,		
		/						
							/	
Helinguished by: (Signature)	Date/Time Re	Received by: (Signature)		Relinquished by: (Signature)	Signature)	Date/Time	Time	Received by: (Signature)
nature)	ime	Received by: (Signature)		Relinquished by: (Signature)	Signature)	Date/Time	Time	Received by: (Signature)
Selinguished by: (Cionette)								
ت. او المسلمان (Signature)	Date/Time	Heceived for Laboratory by: (Signature)	ignature)	3/ Date/Time	Remarks:			
Carrier Co:		Carrie Pho	Phone No.			Date Results Reported / by: (Signature)	nature)	
Air Bill No.:								
					:	:		san juan repro Form 71-55 A
								ean jean rabio com v



## SAMPLE IDENTIFICATION

_	Fie	eld ID		Lab ID		
SAMPLE NUMBER:		N/A		980250		
MTR CODE   SITE NAME:		N/A		Chaco Plant		
SAMPLE DATE   TIME (Hrs):	3/2	24/98		1121		
PROJECT:		Monite	or Well			
DATE OF BTEX EXT.   ANAL.:	3/2	27/98		3/27/98		
TYPE   DESCRIPTION:	M	W-1		Water		
Field Remarks:			·			
		RESULTS				
PARAMETER	RESULT	UNITS	DF	QUALIFIE	RS	
BENZENE	<1	PPB				
TOLUENE	<1	PPB				
ETHYL BENZENE	<1	PPB				
TOTAL XYLENES	<3	PPB				
TOTAL BTEX	<6	PPB				
The Surrogate Recovery was at DF = Dilution Factor Used	98.1	BTEX is by EPA Method _% for this sample		was acceptab	ole.	
larrative:						
approved By:	) W.C. 9802!	50BTEXChaco,3/31/98	Date:	4/3/48		



	SAMPLE	IDENTIFIC	ATION			
	Fiel	d ID		Lab ID		_
SAMPLE NUMBER:	N	/A		980251		]
MTR CODE   SITE NAME:	N	/A	C	haco Plant		
SAMPLE DATE   TIME (Hrs):	3/24	4/98	-	1148		
PROJECT:		Moni	itor Well			
DATE OF BTEX EXT.   ANAL.:	3/2	7/98		3/27/98		
TYPE   DESCRIPTION:	MV	V-8		Water		
Field Remarks:		RESULTS				
PARAMETER	RESULT	UNITS	DF	QUALIFII Q	ERS	
BENZENE	<1	РРВ				
TOLUENE	<1	PPB				
ETHYL BENZENE	<1	PPB				
TOTAL XYLENES	<3	PPB				
TOTAL BTEX	<6	PPB				
The Surrogate Recovery was at DF = Dilution Factor Used	99.5	BTEX is by EPA Meth % for this samp		was accepta	ble.	
Narrative:						
Δ.						

Approved By:

980251BTEXChaco, 3/31/98

Date: 4/3/9/



## SAMPLE IDENTIFICATION

	Field	I ID		Lab ID	
SAMPLE NUMBER:	N/	A		980252	
MTR CODE   SITE NAME:	N/	A		Chaco Plant	
SAMPLE DATE   TIME (Hrs):	3/24	/98		1148	
PROJECT:		Monito	r Well		
DATE OF BTEX EXT.   ANAL.:	3/27	'/98		3/27/98	
TYPE   DESCRIPTION:	MW-8 Fi	eld Dup		Water	
Field Remarks:		RESULTS			
PARAMETER	RESULT	UNITS	DF	QUALIFI Q	ERS
BENZENE	<1	PPB			3) 1800 1800 1800 1800 1800 1800 1800 180
TOLUENE	<1	PPB			
ETHYL BENZENE	<1	PPB			
TOTAL XYLENES	<3	PPB			
	<6	PPB			
TOTAL BTEX	<b>~</b> 0 1	110			
e Surrogate Recovery was at E = Dilution Factor Used		BTEX is by EPA Method % for this sample		was accepta	able.

EL PASO FIELD SERVICES
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Site Name	1 1	HAC	0	CHACO PUAN	7			<b>⊠</b> □	Development Purging	ā	Well Number_	N N	MW-1		
Development Criteria	ment C	riteria	•												
	3 to 5 Casing Volumes of Water Rei	ing Volum	les of Wat	3 to 5 Casing Volumes of Water Removel Stabilization of Indicator Parameters		Water Volume Calculation	lume Calc	ulation				Instruments	nents		
	Other	0 110	- a	i de la companya de l		Initial Depth to	Well (reet)	70.7%		i		X	pH Meter		
	, ,	: 	•			Height of Water Column in Well (feet)	r Column in We	II (feet)	64	1 1		X	Conductivity Meter	y Meter	
Methods of Development	of De	velopn	nent			Diameter (inches): Well	s): Well 4	Gravel Pack	ŠK.			X		re Meter	
	Pump Centrifugal	_	Bailer  Bottom Valve	Valve		Item	Water Volume in Well Cubic Feet Gallons	ne in Well Gallons	_	Gallons to be Removed		X		O. CHE	Other B.C. CHEMETS KIT
	Submersible	<b>€</b>	Double	Double Check Valve	Ф	Well Casing		84	21	9		Water I	Water Disposal		
	Peristaltic		Stainle	Stainless-steel Kemmerer	nmerer	Gravel Pack						K07	2 58	SEDARATOR	1700
						Drilling Fluids									
	Other					Total									
Water Removal Data	emova	Data													
Date	Time	Developme Method	Development Method	Removal Rate	Intake Depth	Ending Water Depth	Water Volume Removed (gal)	olume ed (gal)	Product Removed	Product Volume Removed (gallons)	Temperature °C	PH	Conductivity µmho/cm	Dissolved Oxygen	Comments
3-24-98	0935			Ó						Horomork Cumulative	153	727	7561	iig/c	
3-24-82 0944	0944						5.0	5.0			141		2020		
3-24-87 0953	0953						3.0	80			141	_	0800		
300/ But	1000						2.0	10.0			14.5	Ľ	2150	20	
		ŀ													
Comments	746	HE WELL	١.	BAILED	00	110/00	0100 SALLONS.	Moss	S.						
•		W		0				•	J	) }		*	1		
Developer's Signature	ignature <u>Ø</u>		end	Emmo D	MA				Date 5-14-78	10-18 R	Reviewer	Fre	talle		Date 4/3/65

	_								
Site Name CHACO PUANT		_		Development Purging	Well Number MW-8 Meter Code MA	nber 🖊	14-8	"	
Development Criteria									
3 to 5 Casing Volumes of Water Removel	Water Volume Calculation	ume Calc	ujation			Instruments	ents		
	Initial Depth of Well (feet)	Vell (feet) <b>2</b> _	08.			X	pH Meter		
Other	Initial Depth to Water (feet)	Nater (feet)	507				DO Monitor		
	Height of Water Column in Weil (feet)_	Column in Wel	(feet) //2	75		X	Conductivity Meter	/ Meter	
Methods of Development	Diameter (inches): Well	s): Well	Gravel Pack	옷   		X	Temperatur	e Meter	
Pump Bailer		Water Volume in Well	ne in Well	Gallons to be		X.	Other 2	0.071	Other D.O. CHEMO15 KI
Centrifugal Softom Valve	Item	Cubic Feet	Gallons	Removed	<u> </u>				
Submersible Double Check Valve	Well Casing		7.7	2/3		Water D	)isposal		
Peristaltic Stainless-steel Kemmerer	Gravel Pack				<u> </u>	KOTZ	KUTZ SEDARATOR	OARS	1/2/2
	Drilling Fluids				J		•		
Other	Total								
Water Removal Data								-	
Development Removal Intake  Date Time Method Rate Depth	Ending Water Depth	Water Volume Removed (gal)	olume ed (gal)	Product Volume Removed (gallons)	Temperature °C	Hd	Conductivity µmho/cm	Dissolved Oxygen	Comments
Τ'''	(Jeel)	Increment	Cumulative	Increment Cumulative	e	2		mg/L	
3-34.18 /072					192	7/17	1380		
3-24-98 1033		5.0	5.0		13,4	7.86	2380		
3-248 1038		50	10.0		133	7.63	2350		
3.4% 1050		50	150		140	7.68	2420		
52498 1055		5.0	200		140	7.62	2580		
3-2481/105		50	250		145	7.75	2390	5.5	
	_	_			_	_	-		

Developer's Signature ARMIN Bind

Date 3249 Reviewer

Comments\_

## Polynuclear Aroma + Hydrara bons



## PARAGON ANALYTICS, INC.

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

April 1, 1998

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

RE:

Paragon Workorder: 98-03-173

Client Project Name: Chaco Plant Monitor Wells

Client Project Number: Not Submitted

Dear Mr. Lambdin:

Two soil samples were received from El Paso Natural Gas Co. on March 25, 1998. The samples were scheduled for PAHs by HPLC analysis. The results for this analysis are contained in the enclosed report pages 1-5.

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

Sincerely,

adreme Mackym Paragon Analytics, Inc.

Adrienne Mackzum

Project Manager

AM/nmu

**Enclosure: Report** 

Personal Recripted

FEPTS Saypla # 980250 980251

Charo Plent mw-1 + mw-8





## PAHs by HPLC Case Narrative

## El Paso Field Services

Chaco Plant Monitor Wells

**Order Number - 9803173** 

- 1. This report consists of 2 water samples received by Paragon on 3/25/98.
- These samples were extracted and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water 2. 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. These quantitations minimize the chances of reporting elevated results based on interferences. If compounds do not confirm quantitatively (if the higher amount is greater than twice the lower amount the 2 amounts are considered not to confirm each other quantitatively), then the value is flagged with a "K" and noted on the report page.
- 4. All samples were extracted and analyzed within the established holding times.
- 5. The method blank associated with this project was below the reporting limits for all analytes.
- 6. All Blank Spike and Blank 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 volume. A Blank Spike and Blank Spike Duplicate were performed instead. See Item 6 for details on recoveries.
- 8. All surrogate recoveries were within acceptance criteria.
- 9. All initial and continuing calibration criteria 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.

Freston Mathiesen 3/3//98

Date

**HPLC** Analyst

3.3/-95 Date

## POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

Lab Name: Paragon Analytics, Inc. Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: WMB1, 3/25/98

Sample Matrix: Water

Cleanup: N/A

Reagent Blank

Date Collected: N/A

Date Extracted: 3/25/98 Date Analyzed: 3/27/98

Sample Volume: 1000 mL

Final Volume: 1 mL Dilution Factor: 1

. 1		Reporting
Analyte	Conc (ug/L)	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	50	35 - 119

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

10

## POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

980250

chaco

Lab Name: Paragon Analytics, Inc.

Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: 9803173-1

Sample Matrix: Water

Cleanup: N/A

Date Collected: 3/24/98

Date Extracted: 3/25/98

Date Analyzed: 3/27/98

Sample Volume: 1000 mL

Final Volume: 1 mL

Dilution Factor: 1

Amalada	Cons (well)	Reporting
Analyte	Conc (ug/L)	Limit (ug/L)
Naphthalene 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**

62 35 - 119



## POLYNUCLEAR AROMATIC HYDROCARBONS

Method 8310

Sample ID

chaco mw-8

Lab Name: Paragon Analytics, Inc.

Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: 9803173-2

Sample Matrix: Water

Cleanup: N/A

980251

Date Collected: 3/24/98

Date Extracted: 3/25/98

Date Analyzed: 3/27/98

Sample Volume: 1000 mL

Final Volume: 1 mL Dilution Factor: 1

A 1 - 4 -	Cons (va/I)	Reporting
Analyte	Conc (ug/L)	Limit (ug/L)
	0.57	0.50
Naphthalene	3.7 K	0.50
Acenaphthylene	5.3 K	1.0
1-Methylnaphthalene	0.55 J, K	1.0
2-Methylnaphthalene	ND	1.0
Acenaphthene	ND	1.0
Fluorene	1.8	0.10
Phenanthrene	0.15	0.050
Anthracene	0.16	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
0 (1)		25 110
2-Chloroanthracene	67	35 - 119

Total Northchus = 3.7 Benzo @ Pyroni = 20.10

m

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

K = Concentration confirmation does not agree within 50%.

J = Estimated value. Below reporting limits.

## POLYNUCLEAR AROMATIC HYDROCARBONS BLANK SPIKE

Method 8310

Sample ID

Lab Name: Paragon Analytics, Inc. Client Name: El Paso Field Services

Client Project ID: Chaco Plant Monitor Wells

Lab Sample ID: WLCS1, 3/25/98

Sample Matrix: Water

Cleanup: N/A

Blank Spike

Date Extracted:

3/25/98

Date Analyzed:

3/27/98

Sample Volume: 1,000 mL

Final Volume: 1 mL

Analyte	Spike Added (ug/L)	BS Concentration (ug/L)	BS Percent Recovery	QC Limits % Rec
Acenaphthylene	10.0	6.41	64	36 - 93
Phenanthrene	1.00	0.649	65	45 - 107
Pyrene	1.00	0.719	72	40 - 104
Benzo(k)fluoranthene	0.250	0.177	71	61 - 126
Dibenzo(a,h)anthracene	1.00	0.670	67	55 - 113

Lab Sample ID: WCLSD1, 3/25/98

	Spike	BSD	BSD		QC
	Added	Concentration	Percent		Limits
Analyte	(ug/L)	(ug/L)	Recovery	RPD	RPD
Acenaphthylene	10.0	5.90	59	8	20
Phenanthrene	1.00	0.586	59	10	20
Pyrene	1.00	0.678	68	6	20
Benzo(k)fluoranthene	0.250	0.173	69	2	20
Dibenzo(a,h)anthracene	1.00	0.660	66	2	20

## SURROGATE RECOVERY BS/BSD

Analyte	% Recovery BS	% Recovery BSD	% Rec Limits
2-Chloroanthracene	70	62	35 -119

### Paragon Analytics, Incorporated

#### Sample Number(s) Cross-Reference Table

Paragon OrderNum: 9803173

Client Name: El Paso Field Services

**Client Project Name:** 

**Client Project Number: Chaco Plant Monitor Wells** 

**Client PO Number:** 

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
980250	9803173-1	· · · · · · · · · · · · · · · · · · ·	Water	3/24/98	11:21
980251	9803173-2		Water	3/24/98	11:48

(800) 443-1511 or (970) 490-1511 225 Commerce Drive Ft. Collins, CO 80524 PARAGON ANALYTICS, INC.

970) 490-1522 · Fax

CHAIN OF CUSTODY DATE FOR Page

sianie) *уапшрек* Тіте Time Date Date RELINDUISHED BY: RECEIVED BY: % Moisture Сотрапу Сотрапу 8315 - Formaldehyde \*ACCESSION NUMBER (LABID) 👇 🖔 🖒 Sign. Print Print 06 | 68 muitnort2 Tritium (H3) 3-25-98 Date (S) Date Time 822 / 922 muibeA (A9X) muinerU latoT 100 A J. M. F. muinerU siqotosl RELINQUISHED BY: Company PIP muinotula siqotosi RECEIVED BY: **ANALYSIS REQUESTED** sads emmeð EL DASO FIELOS POLAS Company emmed ssord *Print*< Print etsa / edqlA ecta Print DE 11.115 BIR Date TCLP: "(specify perameters in comments) Time Date Total Metals "(specify in comments) XT · XOA · XO3 · XOT 8141/614 · OP Pesticides RELINGUISHED BY: 8150 - Herbicides RECEIVED BY: \$310/010 - HDTC BNV.8 Сотрапу 8080 - PCB's only Sign. Print 8080 - Pesticides/PCB's \$,20AS SW/29 - 0LZ8 \$540\8500 · GC/W2 NOC.\$ RETURN 8020 - BELX only X138/əniloseə - 0208/m2108 8015 Mod. - Diesel 9015 Mod. - Gasoline H481 - 1.814 RAD CHEM \$15.00 ea 0il & Grease 9070/9071/413.2 SAMPLE RECEIPT 14810 のかってのアスタン FAX NO. PROJECT NAME: CHACO OLA NIT MONITOR WALLS 32+82 1/45 44+1EP MATRIX WATER NIU BIN COMMENTS: DY LEVEL BENZO 50/2 1/8/ TIME PA50 FIEW RUSH DUE HAZ WASTE \$5.00 ea 514 PE14 DATE PHONE NO 🗙 SТАМОАНО SAMPLEID PROJECT INFORMATION PROJECT NUMBER: REPORT TO: COMPANY: SAMPLER: ADDRESS:

DISTRIBUTION: White, Canary - PARAGON ANALYTICS, INC. Pink - Originator

## CONDITION OF SAMPLE UPON RECEIPT

CLIENT: Was July Service SHIPPING CONTAINE	r#: <u>(</u> 0	oler-Pr	11
WORKORDER NO. $9803173$ INITIALS:	DAT	TE: 3/25	198
1. Does this project require special handling according to NEESA, Level 3,		Yes	(No)
or CLP protocols?			
If yes, complete a. and b.		}	
a. Cooler Temperature			
b. Lot No's			
c. Airbill Number			
2. Are custody seals on the cooler intact? If so, how many	(N/A)	Yes	No
3. Are custody seals on sample containers intact?	N/A)	Yes	No
4. Is there a Chain of Custody (COC) or other representative documents,		Y(es)	No
letters or shipping memos?			
5. Is the COC complete?	N/A	Yes	No
Relinquished: Yes No Requested Analysis: Yes No			
6. Is the COC in agreement with the samples received?		(Yes)	No
No. of Samples: Yes Vo_ Sample ID's: Yes Ves_ No_			
Matrix: Yes No No. of Containers: Yes No			
7. Are the samples requiring chemical preservation preserved correctly?	N/A	Yes	No
8. Is there enough sample? If so, are they in the proper containers?		(es)	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?	(N/A)	Yes	No
13. Do the samples require quarantine?		Yes	No
14. Do samples require Paragon disposal?		(Yes)	No
15. Did the client return any unused bottles?		Yes	No)
Describe "NO" items (except No's 1, 13, &14):			-
Was the client contacted? Yes No  If yes, Date: Name of person contacted:  Describe actions taken or client instructions:			
Group Leader's Signature: Date:			

Cooler Temperature: / 0



# American Environmental Network, Inc.

AEN I.D. 804370

May 1, 1998

El Paso Field Service 614 Rielly Avenue Farmington, NM 87401



Project Name/Number: CHACO MW'S (NONE)

Attention: John Lambdin

On 04/15/98, American Environmental Network (NM) Inc., (ADHS License No. AZ0015), 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 American Environmental Network (OR), Inc., 17400 SW Upper Boones Ferry Road, Suite 270, 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

Project Manager

MR:ft

Enclosure

H. Mitchell Rubenstein, Ph.D. General Manager

Friend & Sould

American Environmental Network, Inc.

CLIENT

: EL PASO FIELD SERVICE

DATE RECEIVED

:04/15/98

PROJECT #

: (NONE)

PROJECT NAME

: CHACO MW'S

REPORT DATE

:05/01/98

AEN ID: 804370

	AEN ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED					
01	804370-01	980250	AQUEOUS	03/24/98					
02	804370-02	980251	AQUEOUS	03/24/98					
03	804370-03	980252	AQUEOUS	03/24/98					

---TOTALS---

MATRIX AQUEOUS #SAMPLES

#### AEN STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.



17400 SW Upper Boones Ferry Road • Suite 270 • Portland, OR 97224 • (503) 684-0447

Kim McNeill AEN - Albuquerque 2709-D Pan American Fwy NE Albuquerque, NM 87107 Date: 04/24/1998

AEN Account No.: 90147 AEN Job Number: 98.00959

Project:

804370/El Paso Field Services

Location: CHACO MW's

Sample analysis in support of the project referenced above has been completed and results are presented on the following pages. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Sample		Matrix	Date	Date
Number	Sample Description	Туре	Taken	Received
93213	804370-01 (980250)	Water	03/24/1998	04/16/1998
93214	804370-02 (980251)	Water	03/24/1998	04/16/1998
93215	804370-03 (980252)	Water	03/24/1998	04/16/1998

Approved by:

Andi Nøevet Project Manager AEN, INC.

Technical Review AEN, INC.

The results from these samples relate only to the items tested. This report shall not be reproduced, except in full, without the written approval of the laboratory.

#### ANALYTICAL REPORT

Kim McNeill AEN - Albuquerque 2709-D Pan American Fwy NE Albuquerque, NM 87107

04/24/1998

Job No.: 98.00959

Page: 2

Project Name: Date Received:

804370/El Paso Field Services 04/16/1998

Sample Number

Sample Description

93213	804370-01 (9	90250)					
PARAMETERS ICP/AA Digestion -	Water	METHODS ICP	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED 04/21/1998	FLAG
Cadmium, ICP		6010	ND	0.002	mg/L	04/21/1998	
Chromium, ICP		6010	ND	0.010	mg/L	04/21/1998	Q,MI
Mercury Prep (W)		7470	-			04/21/1998	
Mercury, CV (W)		7470	ND	0.0002	mg/L	04/22/1998	
Sample Number 93214	Sample Descr: 804370-02 (98	-					
PARAMETERS		METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
ICP/AA Digestion -	Water	ICP	-			04/21/1998	
Cadmium, ICP		6010	ND	0.002	mg/L	04/21/1998	
Chromium, ICP		6010	ND	0.005	mg/L	04/21/1998	
Mercury Prep (W)		7470	-	•		04/21/1998	
Mercury, CV (W)		7470	ND	0.0002	mg/L	04/22/1998	
Sample Number 93215	Sample Descri 804370-03 (98	-					
PARAMETERS		METHODS	RESULTS	REPORT LIMIT	UNITS	DATE ANALYZED	FLAG
ICP/AA Digestion -	Water	ICP	-			04/21/1998	
Cadmium, ICP		6010	ND	0.002	mg/L	04/21/1998	
Chromium, ICP		6010	ND	0.005	mg/L	04/21/1998	
Mercury Prep (W)		7470	-			04/21/1998	
Mercury, CV (W)		7470	ND	0.0002	mg/L	04/22/1998	

A sample result of ND indicates the parameter was Not Detected at the reporting limit.

American Environmental Network, Inc. (503) 684-0447 (503) 620-0393 FAX 17400 SW Upper Boones Ferry Rd., Suite 270, Fortland, OR 97224

All reported detection bolow te tour

### OUALITY CONTROL REPORT CONTINUING CALIBRATION VERIFICATION

AEN - Albuquerque 2709-D Pan American Fwy NE Albuquerque, NM 87107

Date: 04/24/1998

Job Number: 98.00959

Contact: Kim McNeill

Project: 804370/El Paso Field Services

	CCA			
	True	Concentration	Percent	Date
Analyte	Concentration	Found	Recovery	Analyzed
Cadmium, ICP	0.500	0.508	101.6	04/21/1998
Chromium, ICP	0.500	0.511	102.2	04/21/1998
Mercury, CV (W)	0.00200	0.00203	101.5	04/22/1998



CCV - Continuing Calibration Verification

American Environmental Network, Inc. (503)684-0447 (503)620-0393 FAX 17400 SW Upper Boones Ferry Rd., Suite 270, Portland, OR 97224

### **QUALITY CONTROL REPORT LABORATORY CONTROL STANDARD**

AEN - Albuquerque 2709-D Pan American Fwy NE Albuquerque, NM 87107 Date: 04/24/1998

Job Number: 98.00959

Contact: Kim McNeill

Project: 804370/El Paso Field Services

•	LCS				
	True	Concentration	LCS		Date
Analyte	Concentration	Found	% Recovery	Flags	Analyzed
Cadmium, ICP	0.500	0.475	95.0		04/21/1998
Chromium, ICP	0.500	0.488	97.6		04/21/1998
Mercury, CV (W)	0.00100	0.000936	93.6		04/22/1998



LCS - Laboratory Control Standard

American Environmental Network , Inc. (503)684-0447 (503)620-0393 FAX 17400 SW Upper Boones Ferry Rd., Suite 270, Portland OR 97224

#### OUALITY CONTROL REPORT MATRIX SPIKE/MATRIX SPIKE DUPLICATE

AEN - Albuquerque 2709-D Pan American Fwy NE Date: 04/24/1998

Albuquerque, NM 87107

Job Number: 98.00959

Contact: Kim McNeill

Project: 804370/El Paso Field Services

Analyte	Matrix Spike Result	Sample Result	Spike Amount	Units	Percent Recovery	MSD Result	MSD Spike Amount	Units	Percent Recovery	MS/MSD RPD	Flags
Cadmium, ICP	0.478	ND	0.500	mg/L	95.6	0.485	0.500	mg/L	97.0	1.5	
Chromium, ICP	0.493	ND	0.500	mg/L	98.6	0.496	0.500	mg/L	99.2	0.6	
Mercury, CV (W)	0.00207	ND	0.0020	mg/L	103.5	0.0020	0.0020	mg/L	104.5	1.0	

QC Sample:

A

NOTE: Matrix Spike Samples may not be samples from this job.

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

dil. = Diluted Out

American Environmental Network, Inc. (503)684-0447 (503)620-0393 FAX 17400 SW Upper Boones Ferry Rd., Portland, OR 97224

### QUALITY CONTROL REPORT BLANKS

AEN - Albuquerque 2709-D Pan American Fwy NE Albuquerque, NM 87107

Date: 04/24/1998

Job Number: 98.00959

Contact: Kim McNeill

Project: 804370/El Paso Field Services Location: CHACO MW's

	Blank	Report		Date
Analyte	Analysis	Limit	Units	Analyzed
-				
Cadmium, ICP	ND	0.002	mg/L	04/21/1998
Chromium, ICP	ND	0.005	mg/L	04/21/1998
Mercury, CV (W)	ND	0.0002	mg/L	04/22/1998



(503)620-0393 FAX American Environmental Network, Inc. (503)684-0447 17400 SW Upper Boones Ferry Rd., Portland, OR 97224

#### FLAG GLOSSARY

- A This sample does not have a typical gasoline pattern.
- B1 This sample does not have a typical diesel pattern.
- B Analyte found in the associated blank as well as the sample.
- C The sample contains a lighter hydrocarbon than gasoline.
- CN See case narrative
- CS Outside control limits or unusual matrix; see case narrative.
- D The sample extends to a heavier hydrocarbon range than gasoline.
- d Results on a dry weight basis
- DIL Result was calculated from dilution.
- E The sample extends to a lighter hydrocarbon range than diesel.
- F The sample extends to a heavier hydrocarbon range than diesel.
- G The positive result for gasoline is due to single component comtamination.
- I The oil pattern for this sample is not typical.
- J The result for this compound is an estimated concentration.
- L The LCS recovery exceeded control limits. See the LCS page of this report.
- IM The LCS recovery exceeded control limits; the MS/MSD were in control validating the batch.
- M MS and/or MSD percent recovery exceeds control limits.
- MD Unable to calculate MS/MSD recovery due to high amount of analyte; greater than 4 times spike level.
- MR The MS/MSD RPD is greater than method critera. The sample was re-extracted and re-analyzed with similar results indica a non-homogeneous sample.
- MM The Matrix Spike exceeded control limits; LCS was in control validating the batch.
- MI Outside control limits due to matrix interference.
- N Manual integration performed on sample for quantification.
- N/A Not Applicable.
- NC Not calcuable.
- NO Not Analyzed.
- P A post digestion spike was analyzed, and recoveries were within control limits.
- Q Detection limits elevated due to sample matrix.
- Q1 Detection limits elevated due to high levels of non-target compounds. Sample(s) run at a dilution.
- R The duplicate RPD was greater than 20%. The sample was re-extracted and re-analyzed with similar results. This indicates a matrix interference in the sample, likely a non-homogeneity of the sample.
- RD RPD not applicable for results less than five times the reporting limit.
- RP MS/MSD RPD is greater than 20%
- SR Surrogate recovery outside control limits. See the surrogate page of the report.
- SD Unable to quantitate surrogate due to sample dilution.
- SC Sample not provided to laboratory in proper sampling container.
- V Volatile analysis was requested, sample container received with headspace.
- X1 The duplicate RPD was greater than 20%. Due to insufficient sample, re-analysis was not possible.
- X Sample was analyzed outside recommended holding times.
- The result for this parameter was greater than the TCLP regulatory limit.
- The pattern seen for the parameter being analyzed is not typical.

निर्धाः वर्धाः । वर्षाः PLEASE FILL THIS FORM IN COMPLETELY. SHIPPED VIA: P.O. NO. PROJ. NAME: CAISCO PROJ. NO. PROJECT MANAGER: FAX: PHONE: BILL TO: **ADDRESS** COMPANY **ADDRESS** COMPANY: AEN-Inc.: American Environmental Network (NM), Inc. • 2709-D Pan American Freeway, NE • Albuquerque, New Mexico 87107 PRIOR AUTHORIZATION IS REQUIRED FOR BUSH PROJECTS CERTIFICATION REQUIRED: NM COMMENTS: METHANOL PRESERVATION (RUSH) □ 24hr □ 48hr FIXED FEE □ 72hr 1 WEEK SDWA Petroleum Hydrocarbons (418.1) TRPH (MOD.8015) Diesel/Direct/Inject -OTHER (M8015) Gas/Purge & Trap Gasoline/BTEX & MTBE (M8015/8020) BTXE/MTBE (8020) (NORMAL) BTEX & Chlorinated Aromatics (602/8020) BTEX/MTBE/EDC & EDB (8020/8010/Short) Chlorinated Hydrocarbons (601/8010) Printed Name: Signature E PASO FIEWO STRUCE 504 EDB / DBCP Polynuclear Aromatics (610/8310) Volatile Organics (624/8240) GC/MS Volatile Organics (8260) GC/MS Date: Time Pesticides/PCB (608/8080) Herbicides (615/8150) Base/Neutral/Acid Compounds GC/MS (625/8270) General Chemistry: Printed Name: Priority Pollutant Metals (13) Target Analyte List Metals (23) RCRA Metals (8) Date RCRA Metals by TCLP (Method 1311)

Metals: TOTAL

American Environmental Network (NM), Inc. Albuquerque • Phoenix • Pensacola • Portland • Pleasant Hills • Columbia

DISTRIBUTION: White, Canary - AEN Pink - ORIGINATOR