

3R - 202

REPORTS

DATE:

2001

Certified Mail: #7001 1940 0003 1553 8513

February 28, 2002

RECEIVED

MAR 04 2002

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Mr. William C. Olson
New Mexico Oil Conservation Division
1220 St. Francis Dr.
Santa Fe, NM 87504

RE: 2001 Pit Project Annual Groundwater Report

Dear Mr. Olson:

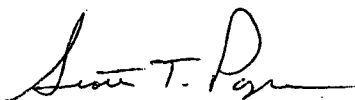
In accordance with reporting requirements, El Paso Field Services (EPFS) has enclosed annual reports for the 30 remaining groundwater impacted sites that were identified during our pit closure project of 1994 / 1995.

EPFS has organized the 30 reports (Volumes IA, IB, II and III), reports by land type. Volume IA and IB contain annual reports for sites found on Federal land. Volume II contains Non Federal sites and Volume III contains sites on Navajo land. Of the 30 reports submitted EPFS is requesting closure of three sites located on Navajo lands. Of the three Navajo sites submitted for closure OCD has closed the Charley Pah #4 and the John Charles #8. The Rementa et al #1 has not been closed by either agency. EPFS understands closure of groundwater sites on Navajo land falls under jurisdiction of the Navajo Environmental Protection Agency and original documents have been submitted to them for review. Other Navajo sites are included in the report for your information.

The Jaquez Com. C #1 and Jaquez Com. E #1 site is not included in with this report and will be submitted by the required deadline of April 1, 2002.

If you have any questions concerning the enclosed reports, please call me at (505) 599-2124.

Sincerely,



Scott T. Pope P.G.
Senior Environmental Scientist

xc: Mr. Denny Foust, NMOCD, Aztec - w / enclosures; **Certified Mail # 7001 1940 0003 1553 8506**
Mr. Bill Liesse, BLM - w / enclosures (federal sites only), **Certified Mail # 7001 1940 0003 1553 8520**

SAN JUAN BASIN PIT CLOSURES

San Juan Basin, New Mexico

**El Paso Field Services
Pit Project Groundwater Sites
Annual Report
Volume IA-Federal Sites**

March 2002

Prepared for

**El Paso Field Services
Farmington, New Mexico**



MWH

MONTGOMERY WATSON HARZA

EL PASO FIELD SERVICES ANNUAL GROUNDWATER REPORT

FEDERAL SITES VOLUME IA

TABLE OF CONTENTS

Site Map

METER or LINE ID	SITE NAME	TOWNSHIP	RANGE	SECTION	UNIT
89961	Fields A#7A	32N	11W	34	E
89232	Johnston Fed #6A	31N	09W	35	F
94715	James F. Bell #1E	30N	13W	10	P
89620	Sandoval GC A #1A	30N	09W	35	C
87493	W D Heath B-5	30N	09W	31	M
LD151	Lat 0-21 Line Drip	30N	09W	12	O
73220	Fogelson 4-1 Com. #14	29N	11W	4	P



MWH

MONTGOMERY WATSON HARZA

9630#

EPFS GROUNDWATER PITS

2001 ANNUAL GROUNDWATER REPORT

Johnston Fed #6A

Meter Code 89232

SITE DETAILS

Legals Twn: 31N Rng: 09W Sec: 35 UNIT: F
NMOCD Haz Ranking 40 Land Type: Federal Operator: Burlington Resources

PREVIOUS ACTIVITIES

Site Assessment: Aug-94 Excavation Sep-94 (80cy) Soil Boring: Aug-95 Monitor Well: Aug-95
Geoprobe: NA Additional MWs: Dec-95 Downgradient MW's: Jul-00 Replace MW: NA
PSH Removal Initiated: Jul-97 ORC Nutrient Injection NA Re-Excavation: NA
Quarterly Initiated Apr-96 Annual Initiated NA Quarterly Resumed: NA

2001 ACTIVITY

Phase Separated Hydrocarbons (PSH) Removal - PSH removal began in June 2001 at MW-1.
Monitoring of MW-2 through MW-5.

Specific gravity - Sample taken on September 5, 2001 at MW-1. Results 0.750 g/cc.

SUMMARY TABLES AND GRAPHS

PSH Removal presented in Product Removal Table. Copies of the laboratory data sheets and the associated quality assurance/quality control data are presented as Attachment 1. Included are BTEX Data graphs for MW-1 through MW-5 and a Free Product Recovery graph for MW-1.

SITE MAP

Site Maps with BTEX concentrations and groundwater elevations are attached.

GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS

No drilling activities were performed at this site for 2001.

DISPOSITION OF GENERATED WASTES

All PSH was removed and disposed of at Kutz Separator, Bloomfield, NM.

EPFS GROUNDWATER PITS 2001 ANNUAL GROUNDWATER REPORT

Johnston Fed #6A

Meter Code: 89232

ISOCONCENTRATION MAPS

Attached as Figure 2.

CONCLUSIONS

Free product removal resulted in the recovery of 2.0 gallons from MW-1 in 2001. A cumulative of 3.5 gallons of free phase product have been recovered at this site.

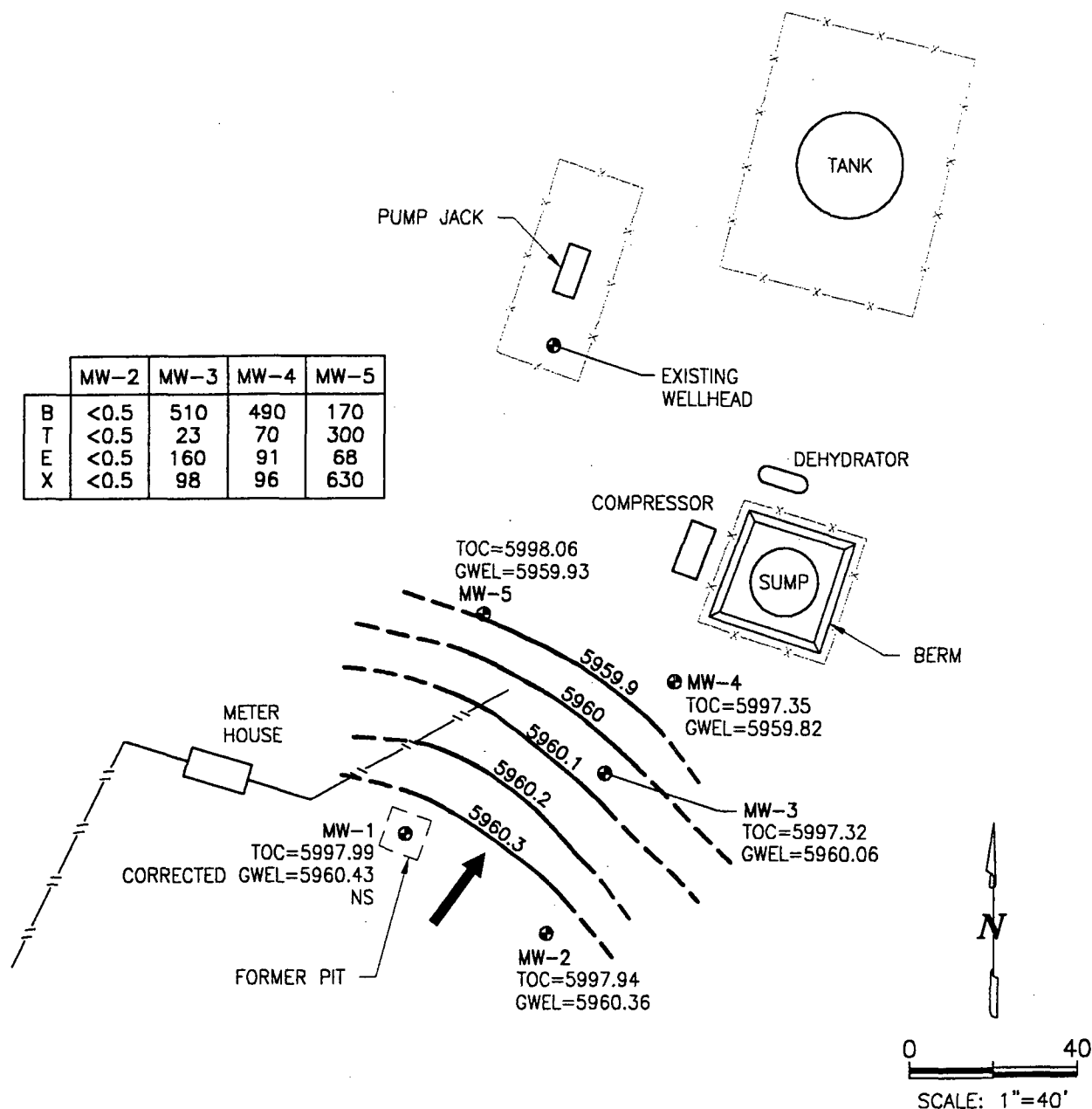
Dissolved phase hydrocarbon concentrations in MW-2 were less than analytical laboratory detection limits. Dissolved phase hydrocarbons in MW-3 through MW-5 ranged from 170 to 510 ppb benzene.

The downgradient extent of contamination remains undefined at this site, existing monitoring wells are presently cross-gradient to the source area near MW-1. The gradient has also changed from a northwestern direction in 2000 to a northeastern direction in 2001.

RECOMMENDATIONS

- > EPFS recommends the installation of one additional downgradient well to further define the extent of contamination associated with the former EPFS pit.
- > Evaluate and verify groundwater flow direction.
- > Product removal will continue as needed from MW-1.
- > Following free phase removal, monitoring wells MW-2 through MW-5 will be sampled annually until they approach NMWQCC standards, and then quarterly to achieve closure.
- > Upon closure from OCD, EPFS will abandon all monitoring wells per approved OCD guidance.

	MW-2	MW-3	MW-4	MW-5
B	<0.5	510	490	170
T	<0.5	23	70	300
E	<0.5	160	91	68
X	<0.5	98	96	630



LEGEND

● MW-1 Approximate Monitoring Well Location and Number

— x — x — Fence Line

— // — // — Pipe Line

B Benzene ($\mu\text{g/L}$)

T Toluene ($\mu\text{g/L}$)

E Ethylbenzene ($\mu\text{g/L}$)

X Total Xylenes ($\mu\text{g/L}$)

NS Not Sampled

GWEL Groundwater Elevation
(FT Above Mean Sea Level
Unless Noted Otherwise)

TOC Top of Casing

5960 Potentiometric Surface
(Approximate & Assumed Where Dashed)

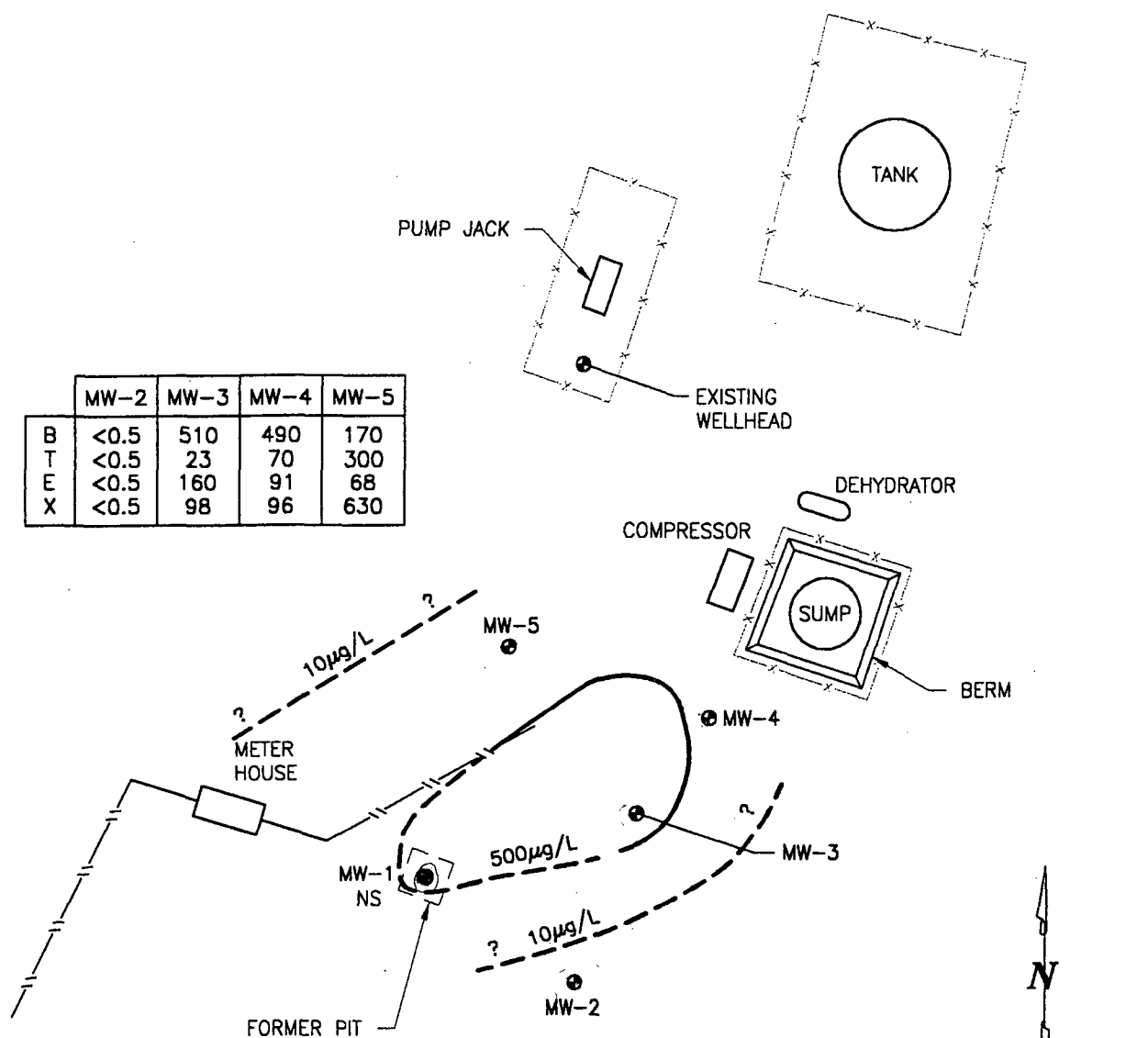
→ Direction of Groundwater Flow
(Estimated)

JOHNSTON FEDERAL #6A, METER 89232
JUNE, 2001

GROUNDWATER SITES
EL PASO FIELD SERVICES

FIGURE 1

	MW-2	MW-3	MW-4	MW-5
B	<0.5	510	490	170
T	<0.5	23	70	300
E	<0.5	160	91	68
X	<0.5	98	96	630



LEGEND

- MW-1 Approximate Monitoring Well Location and Number
- x — x — Fence Line
- // — // — Pipe Line
- 10 µg/L Benzene Contours (Assumed Where Dashed)
- B Benzene (µg/L)
- T Toluene (µg/L)
- E Ethylbenzene (µg/L)
- X Total Xylenes (µg/L)
- NS Not Sampled

JOHNSTON FEDERAL #6A, METER 89232
JUNE, 2001

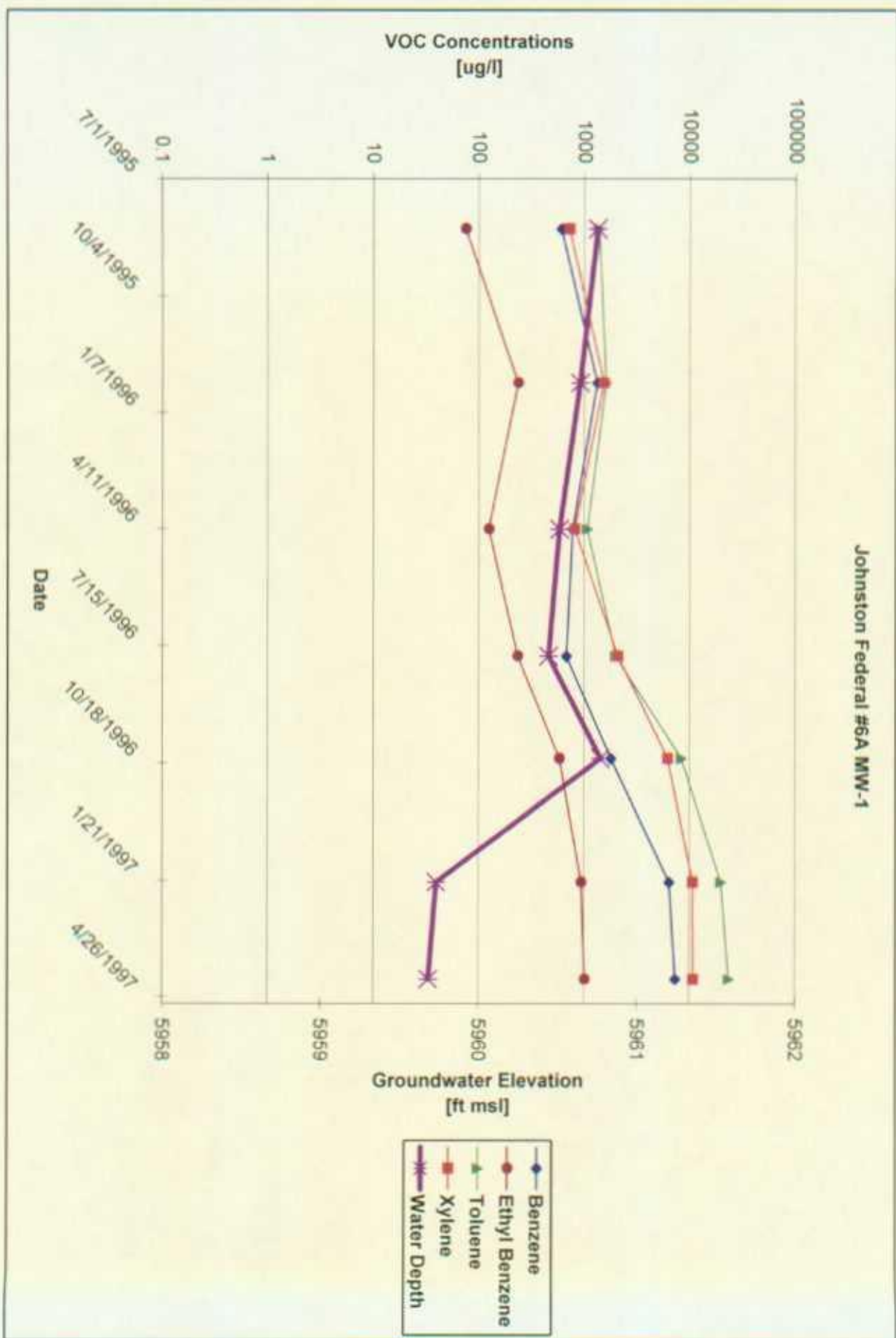
GROUNDWATER SITES
EL PASO FIELD SERVICES

FIGURE 2

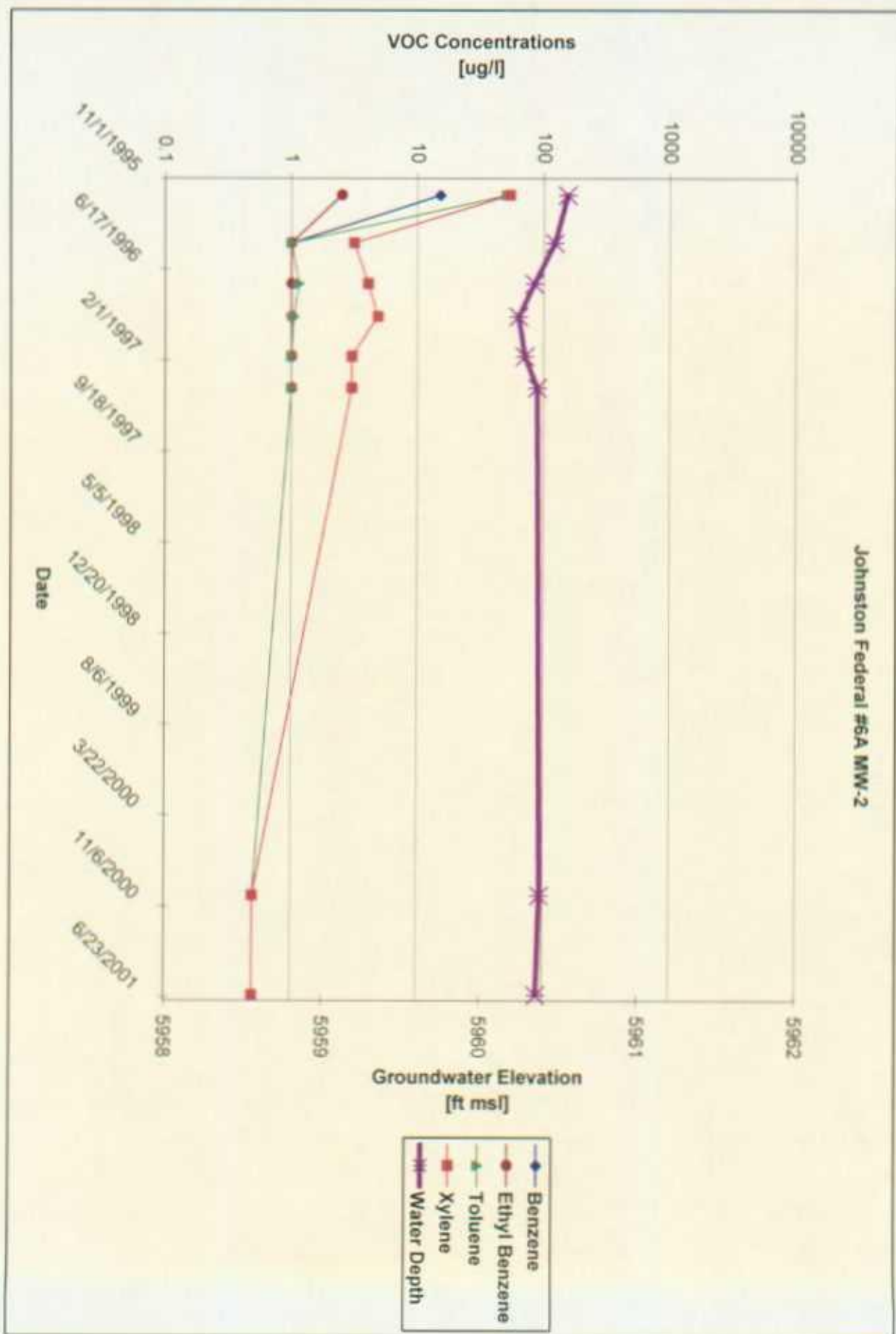
Table 1 BTEX
Johnston Federal #6A

Sample #	Meter Line #	Site Name	Sample Date	MW#	Benzene (µg/l)	Ethyl Benzene (µg/l)	Toluene (µg/l)	Total Xylenes (µg/l)	Depth to Water (Feet)	Groundwater Elevation (feet)
JOH0106	89232	Johnston Fed #6A	6/18/2001	2	< 0.5	< 0.5	< 0.5	< 0.5	37.58	5960.36
JOH0106	89232	Johnston Fed #6A	6/18/2001	3	510	160	23	98	37.26	5960.06
JOH0106	89232	Johnston Fed #6A	6/18/2001	4	490	91	70	96	37.53	5959.82
JOH0106	89232	Johnston Fed #6A	6/18/2001	5	170	68	300	630	38.13	5959.93

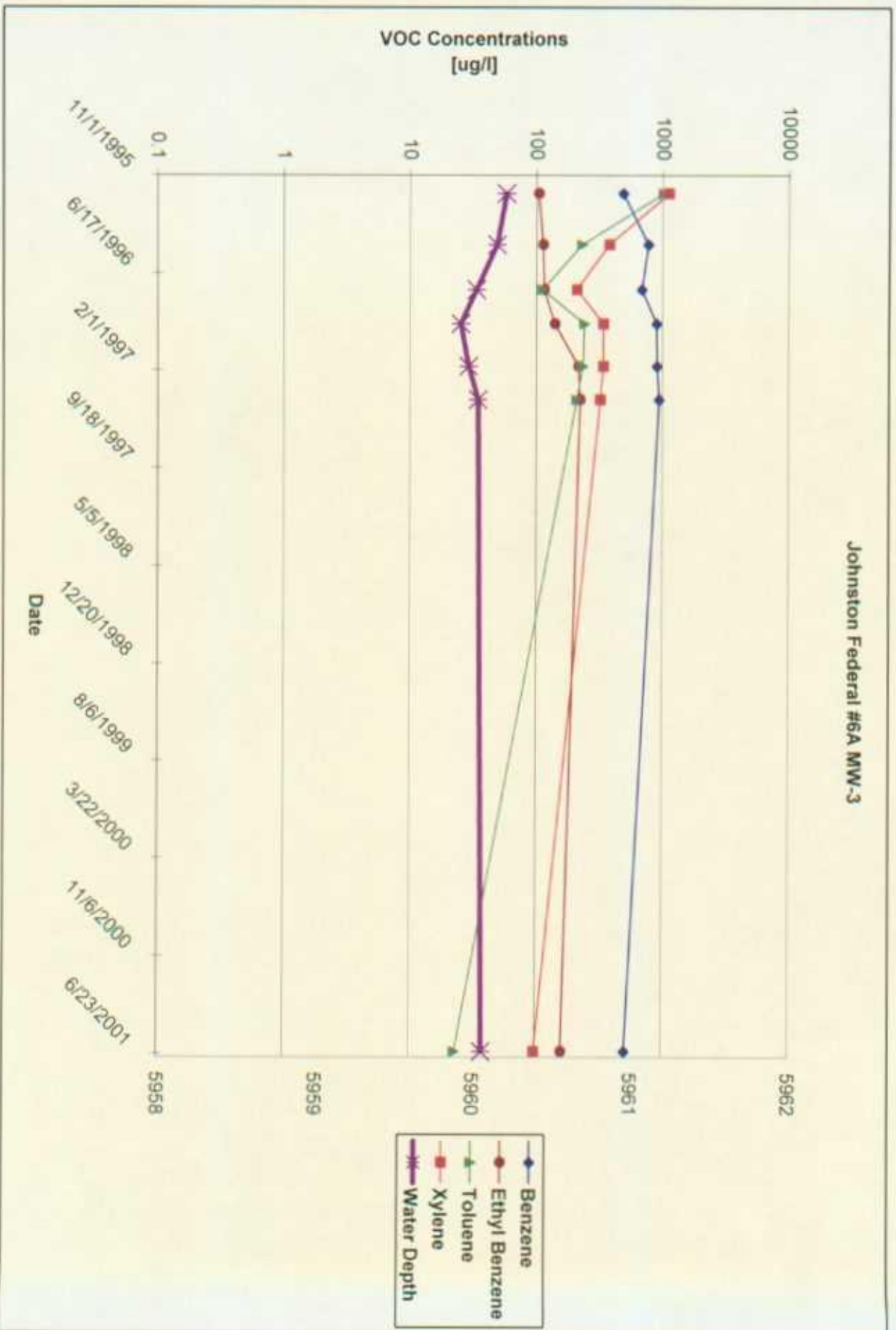
Johnston Federal #6A MW-1



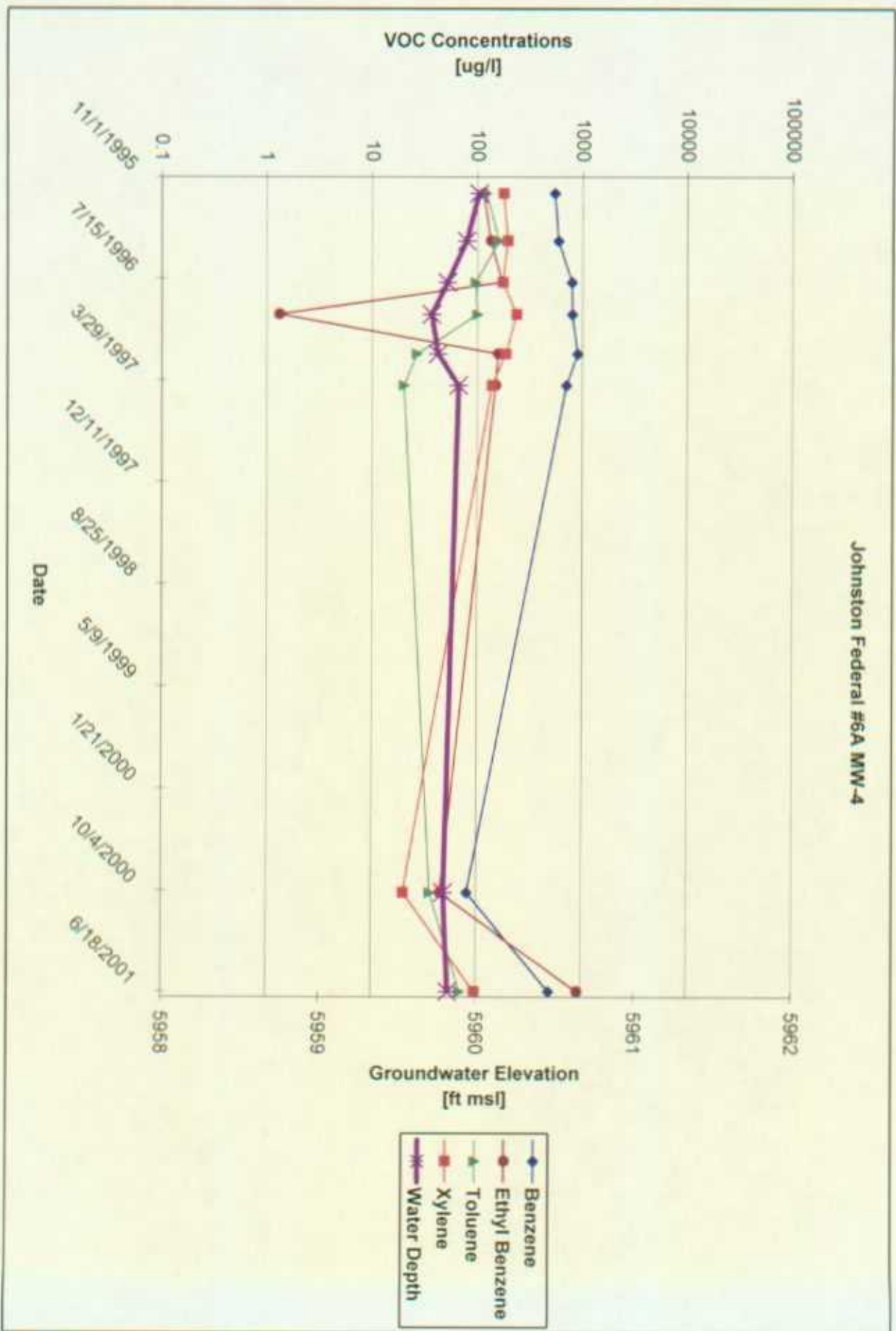
Johnston Federal #6A MW-2



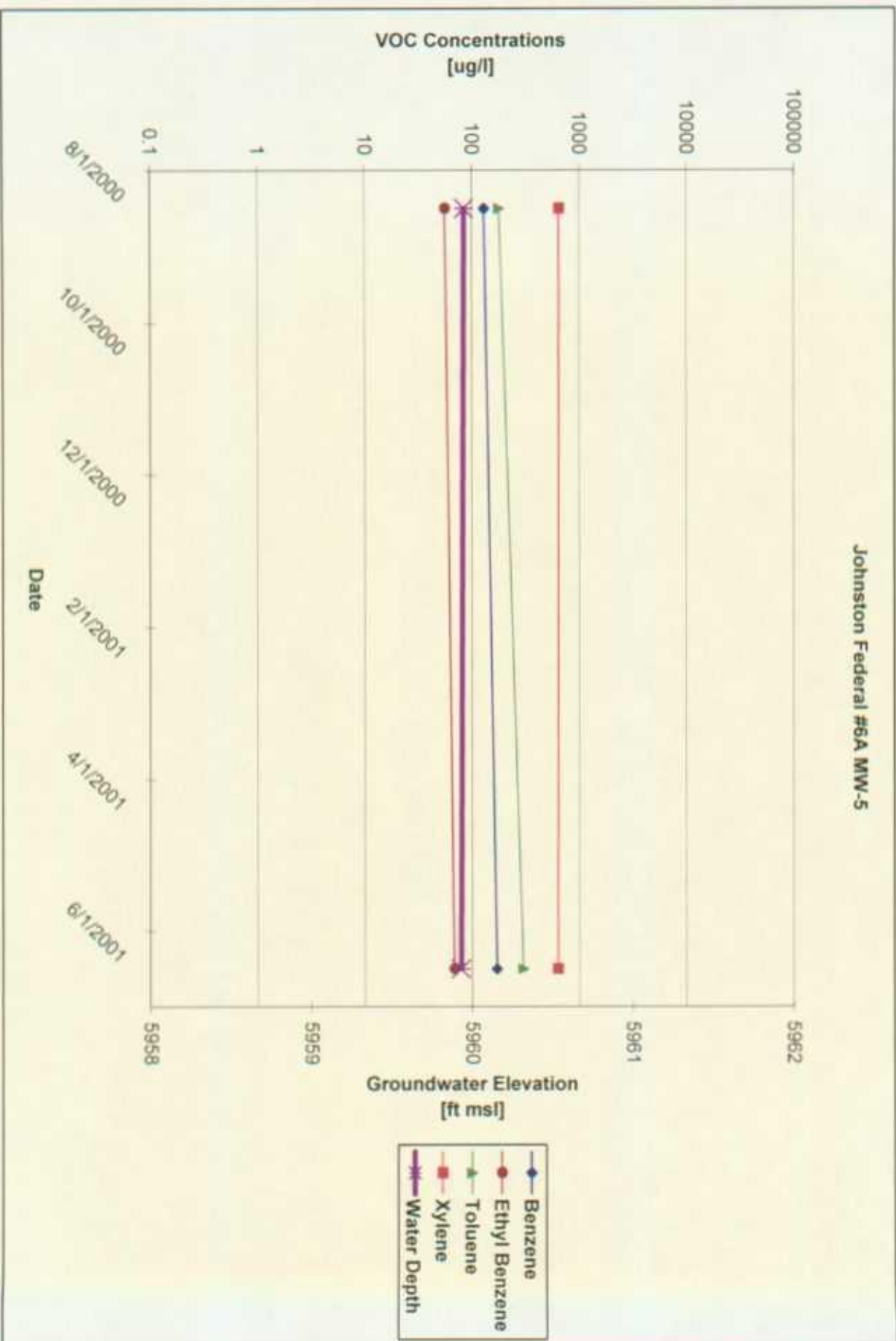
Johnston Federal #6A MW-3



Johnston Federal #6A MW-4



Johnston Federal #6A MW-5

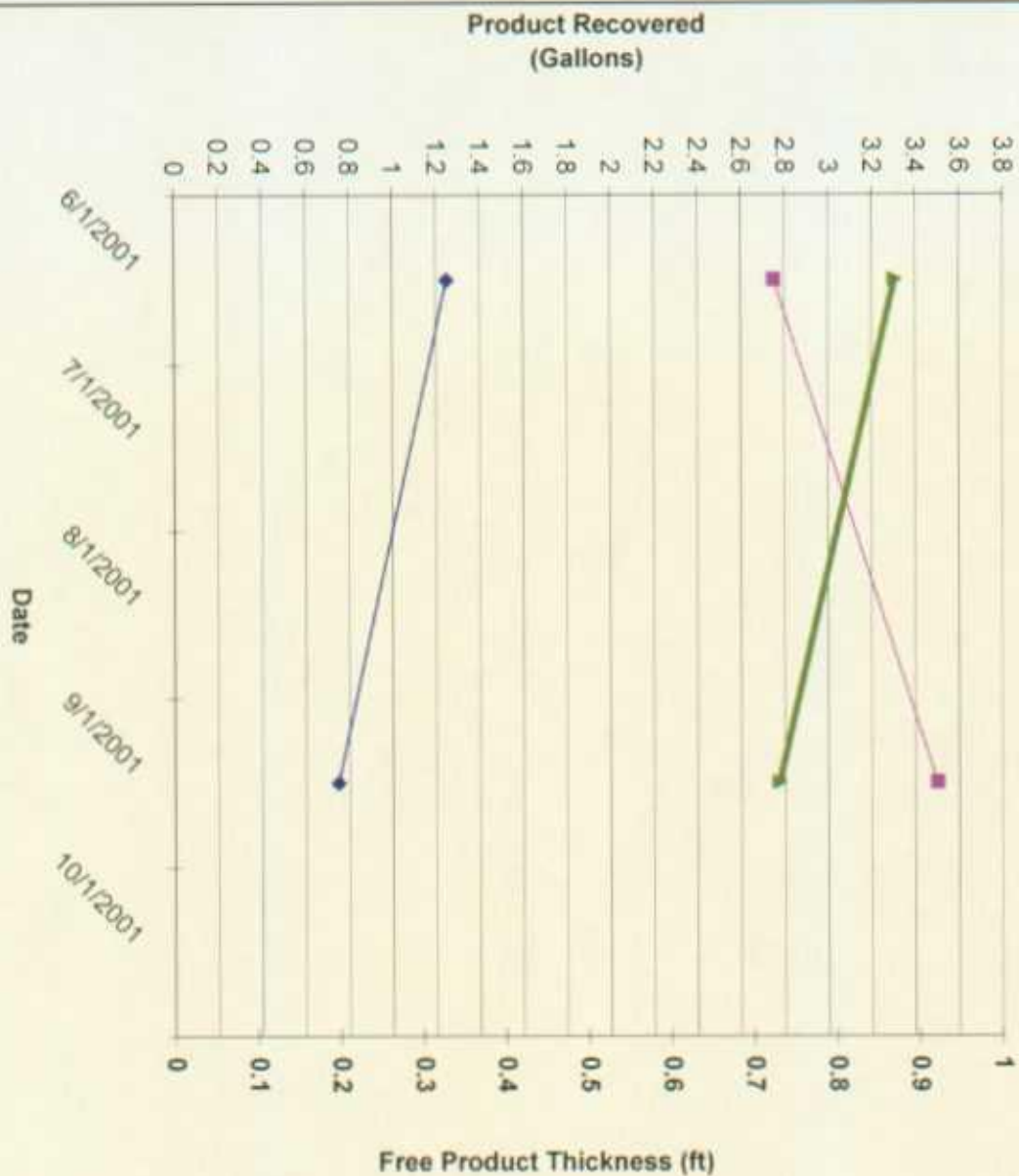


Product Removal Table
Johnston Federal #6A

Meter Line	Site Name	MW#	Date	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Volume Removed (Gallons)	Cumulative Total (Gallons)
89232	Johnston Fed #6A	1	6/18/01	37.34	38.21	0.87	1.25	2.75
89232	Johnston Fed #6A	1	9/4/01	37.54	38.27	0.73	0.75	3.5

No product removed from MW-2 through MW-5 for 2001

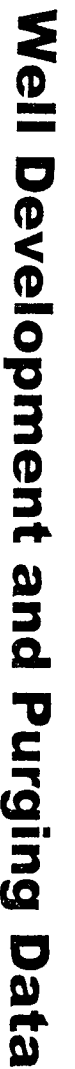
Free Product Recovery
Johnston Federal 6A MW-1



ATTACHMENT 1

2001 GROUNDWATER ANALYTICAL

Date 9-4-01



Name/Identification	John Sun Fel #6 (89232)	Site Address	Rural San Fern CO
---------------------	-------------------------	--------------	-------------------

Project Manager List Win

Water Volume Calculation

Initial Depth of Well (feet)	43.95
Initial Depth to Water (feet)	37.54

Height of Water Column in Well (feet) 6.27
Diameter (inches): Well 4" Gravel Pack

☐ Other

Water Disposa

RT Severe-Tor Bloomfield ALM

Sampling Activities	No. of Containers
Type of Container	1/04
	2

Date	Time	Development Method		Removal Rate (gal/min)	Intake Depth (feet)	Ending Water Depth (feet)	Water Volume		Product Volume		Temperature (°C)	pH	Conductivity (umhos/cm)	Dissolved Oxygen (mg/L)	Comments
		Pump	Bailer				Increment	Cumul	Increment	Cumul					
-14-01	1235		X				2.5	2.5			25.6	6.51	2890		519 d + 70 g per vent No collect data
	1240		X				2.5	5			21.1	6.71	2430		"
	1245		X				2.5	7.5			19.6	6.28	2410		"
	1249		X				2.5	10			18.9	6.67	2360		"
	1254		X			39.21	2.5	12.5			18.3	6.65	2360		No Change

Samples for BTEX 1300

6/22/20

CHAIN OF CUSTODY

DATE: 6-18-01

PAGE: 7 OF 10

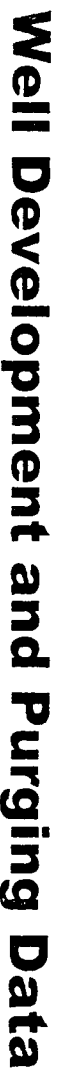
PL Accession #:

SHADED AREAS ARE FOR LAB USE ONLY.

DISTRIBUTION: White, Canary - Originator



Date _____



~~Purgings~~

Project Manager LISA Wynn

Diameter (inches): Well 41"

Drilling Fluids		
-----------------	--	--

Parameters Sampled For BTEX

☐ Other _____

Water Disposal

LeTZ Severe-Ton Brownfield NM.

Sampling Activities

KUTZ Seperator Bromfield N.M.

Type of Container UGA No. of Containers 2

Parameters Sampled For 57ex

--	--	--	--	--

Dissolved

[illegible]

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4	7
3	7
2	7
1	7

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[illegible][illegible]

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[illegible]

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Date _____

1



Project No. 6169

Task No. _____

Development ☐

Purging ☒

Site _____

Page 1 of 1

Client/Project Name	Eh, pa-so Field Services EPFS Remediation project
Project Manager	LISA WINK

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

Initial Depth of Well (feet) 45 87
 Initial Depth to Water (feet) 37.26
 Height of Water Column in Well (feet) 8.61

☒ pH Meter
☐ DO Monitor
☒ Conductivity Meter
☐ _____

Hydax
Hydax
Hydax

	Bailer	Item	Cubic Feet	Gallons	Removed	Water Disposal
Pump	☒ Bottom Valve	Well Casing	9.61	562X3	16.66	Water Disposal K&T2 Spillout Broomfield W.M.
☐ Centrifugal	☐ Double Check Valve	Gravel Pack				
☐ Submersible	☐ Stainless-steel Kemmerer	Drilling Fluids				
☐ Peristaltic						

Instruments

☒ PH Meter

☐ DO Monitor

☒ Conductivity Meter

☒ Temperature Meter

☐ Other

Serial No. (if applicable)

Hydarc

Hydarc

Hydarc

Kurt Seprenator Bloomfield N.M.

Sampling Activities	
Type of Container	WAT No. of Containers 2
Parameters Sampled For	MPX

[illegible]

Comments Sampled for BTEX 1400

Developer's Signature (s)	Date	Reviewer	Date
<i>Chitra A. M. S.</i>	8-18-01		



Project No. G169

Cost Code _____

Date 6-18-01

[illegible]

Reason Not Measured: D = Dry; O = Obstructed; N = Not Accessible

Comments _____

Signature Chris A. May

Date 6-18-01



Date: 9/11/01
Client: Golden Environmental Management
Lab ID: 0301W03833 - 3843
Project: G169

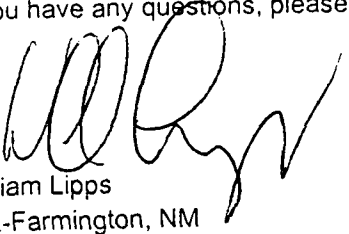
Dear Client:

The samples were received for analysis at Inter-Mountain Laboratories (IML), Farmington, New Mexico. Enclosed are the results of these analyses.

Comment:

Analytical results were obtained by approved methods. Sample analyses were obtained within the method specific holding times. Practical Quantitation Limits (PQL's) are based on method requirements, and any dilutions necessary to maintain proper method response without matrix interference.

If you have any questions, please call me at (505) 326-4737.



William Lipps
IML-Farmington, NM

Analytical Report

Client: Golden Environmental Management
Project: G169
IML Set: 0301W03833

Page 1 of 1

Date Received: 09/06/01

Date Reported: 09/11/01

Lab Id	Sample Id	Date Sampled	Specific Gravity g/cc
0301W03833	LIN-0109-MW1	09/04/01	0.811
0301W03834	CAN-0109-MW1	09/04/01	0.736
0301W03835	GAL-0109-MW1	09/04/01	0.833
0301W03836	JFB-0109-MW3	09/04/01	0.773
0301W03837	072-0109-MW2	09/04/01	0.751
0301W03838	MIL-0109-MW1	09/04/01	0.754

Reviewed By:



Analytical Report

Client: Golden Environmental Management
Project: G169
IML Set: 0301W03839

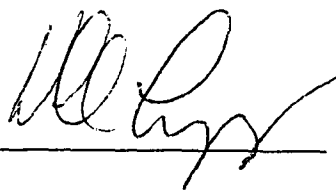
Page 1 of 1

Date Received: 09/06/01

Date Reported: 09/11/01

Lab Id	Sample Id	Date Sampled	Specific Gravity g/cc
0301W03839	JOH-0109-MW1	09/05/01	0.750
0301W03839D	JOH-0109-MW1	09/05/01	0.751
0301W03840	JON-0109-MW1	09/05/01	0.757
0301W03841	KNI-0109-MW1	09/05/01	0.790
0301W03842	STA-0109-MW3	09/05/01	0.741
0301W03843	JEN-0109-MW1	09/05/01	0.761

Reviewed By:



Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

PLI Accession #:

DATE: 9-6-01 PAGE: 1 OF 2

SHADED AREAS ARE FOR LAB USE ONLY.

PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT MANAGER: LISA WILSON			ANALYSIS REQUEST		
COMPANY: <u>GOLDEN ENVIRONMENTAL MGMT.</u> ADDRESS: <u>906 S. JAMES BLVD. SUITE D</u> <u>FARMINGTON NM. 87401</u> PHONE: <u>(505) 566-9114</u> FAX: <u>(505) 566-7120</u> BILL TO: <u>SCOTT PIPE</u> COMPANY: <u>EPASO Field Services</u> ADDRESS: <u>601 Rally Ave</u> <u>Farmington NM. 87401</u>			METALS OF CONTAINERS RCRA Metals by TCLP (Method 1311) RCRA Metals (8) Target Analyte List Metals (23) Priority Pollutant Metals (13) General Chemistry: Polynuclear Aromatics (610/8310/8270-SIMS) Base/Neutral/Acid Compounds GC/MS (625/8270) Herbicides (615/8151) Pesticides /PCB (608/8081/8082) 8260 (Landfill) Volatile Organics 8260 (CUST) Volatile Organics 8260 (Full) Volatile Organics 8260 (TCL) Volatile Organics 504.1 EDB ☐ /DBCP ☐		
SAMPLE ID DATE TIME MATRIX LAB I.D. JOH-0109-MW1 9-5-01 0700 Lg. HC JOH-0109-MW1 9-5-01 1000 Lg. HC RNL-0109-MW1 9-5-01 1100 Lg. HC STA-0109-MW3 9-5-01 1200 Lg. HC JEN-0109-MW1 9-5-01 1300 Lg. HC			Petroleum Hydrocarbons (418.1) TRPH (MOD.8015) Diesel/Direct Inject (M8015) Gas/Purge & Trap 8021 (BTEX)/8015 (Gasoline) MTBE 8021 (BTEX) ☐ MTBE ☐ TMB ☐ PCE 8021 (TCL) 8021 (EDX) 8021 (HALO) 8021 (CUST)		
			8260 (TCL) Volatile Organics 8260 (Full) Volatile Organics 8260 (CUST) Volatile Organics 8260 (Landfill) Volatile Organics Pesticides /PCB (608/8081/8082) Herbicides (615/8151) Base/Neutral/Acid Compounds GC/MS (625/8270) Polynuclear Aromatics (610/8310/8270-SIMS) General Chemistry: Priority Pollutant Metals (13) Target Analyte List Metals (23) RCRA Metals (8) RCRA Metals by TCLP (Method 1311) METALS OF CONTAINERS		

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS		RELINQUISHED BY:	
PROJ. NO:	6169	(RUSH) ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK	(NORMAL) ☒	Signature:	Time:
PROJ. NAME:	EPAS Remediation Project	CERTIFICATION REQUIRED: ☐ NM ☐ SDWA ☐ OTHER		Printed Name:	Date:
P.O. NO.:		METHANOL PRESERVATION ☐		Company:	
SHIPPED VIA:		COMMENTS: FIXED FEE ☐ JOHNSTON FIELD #6 (89232) JOHNSTON FIELD #4 (70194) KNIGHT #1 (22556) STATE GEO. COM. N#1 (21669) JENNEPAT #1 (21816)			
SAMPLE RECEIPT		RECEIVED BY:		RECEIVED BY: (LAB)	
NO. CONTAINERS		Signature:	Time:	Signature:	Time:
CUSTODY SEALS	Y/N/NA	Printed Name:	Date:	Printed Name:	Date:
RECEIVED INTACT		Company:		Company:	
BLUE ICE/CE		Pinnacle Laboratories Inc			

5:11 PM

Pinnacle Laboratories Inc.

CHAIN OF CUSTODY

PLI Accession #: 9-6-01

DATE: 9-6-01 PAGE: 1 OF 1

PROJECT MANAGER: Lisa Brown		ANALYSIS REQUEST		
COMPANY: GOLDEN ENVIROMENTAL Mgmt.	ADDRESS: 901 San Juan Blvd. Suite D Farmington NM. 87410	PHONE: 505-526-9116	FAX: 505-526-9120	
BILL TO: SCOTT POPE	COMPANY: EL PASO FIELD SERVICES	ADDRESS: 601 Kelly Ave Farmington NM. 87410		
SAMPLE ID	DATE	TIME	MATRIX	LAB ID
AIN-0109-MW1	9-4-01	1100	Liq HC	
CAN-0109-MW1	9-4-01	1300	Liq HC	
GAL-0109-MW1	9-4-01	1400	Liq HC	
JFB 009-MW3	9-4-01	1500	Liq HC	
QJ2-0109-MW2	9-4-01	1600	Liq HC	
MIL-0109-MW1	9-4-01	1700	Liq HC	
Petroleum Hydrocarbons (418.1) TRPH				
(MOD.8015) Diesel/Direct Inject				
(M8015) Gas/Purge & Trap				
8021 (BTEX)/8015 (Gasoline) MTBE				
8021 (BTEX) □ MTBE □ TMB □ PCE				
8021 (TCL)				
8021 (EDX)				
8021 (HALO)				
8021 (CUST)				
504.1 EDB □ / DBCP □				
8260 (TCL) Volatile Organics				
8260 (Full) Volatile Organics				
8260 (CUST) Volatile Organics				
8260 (Landfill) Volatile Organics				
Pesticides /PCB (608/8081/8082)				
Herbicides (615/8151)				
Base/Neutral/Acid Compounds GCMS (625/8270)				
Polynuclear Aromatics (610/8310/8270-SIMS)				
General Chemistry:				
Priority Pollutant Metals (13)				
Target Analyte List Metals (23)				
RCRA Metals (8)				
RCRA Metals by TCLP (Method 1311)				
Metals				

SHADED AREAS ARE FOR LAB USE ONLY. PLEASE FILL THIS FORM IN COMPLETELY.

PROJECT INFORMATION		PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS		RELINQUISHED BY:	
PROJ NO: 6169	(RUSH) ☐ 12hr ☐ 24hr ☐ 48hr ☐ 72hr ☐ 1 WEEK	(NORMAL) ☒		Signature: Lisa Brown	Time: 0911
PROJ NAME: PAPER	CERTIFICATION REQUIRED: ☐ INM ☐ SOWA ☐ OTHER			Printed Name: Lisa Brown	Date: 9-6-01
PO NO:	METHANOL PRESERVATION ☐			Company: Pinnacle Laboratories Inc.	
SHIPPED VIA:		COMMENTS: FIXED FEE ☐		RECEIVED BY: (LAB)	
SAMPLE RECEIPT		LTD 0109 B#24 (94967)		Signature: Scott Pope	Time: 9:14
NO. CONTAINERS		CANADA MESA #2 (87610)		Printed Name: Scott Pope	Date: 9/6/01
CUSTODY SEALS	Y/N/NA	GALL 0109 #134E (957005)		Company: Pinnacle Laboratories Inc.	
RECEIVED INTACT		JF. Bell #1E (94705)			
BLUE ICE/ICE		K-37 LD (LD 070)			
		MILLS FGD #1A (94810)			

PINNACLE
LABORATORIES

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

Pinnacle Lab ID number **106102**
June 29, 2001

GOLDEN ENVIRONMENTAL MNGT.
906 SAN JUAN BLVD.
FARMINGTON, NM 87401

EL PASO FIELD SERVICES
614 RIELLY AVENUE
FARMINGTON, NM 87499

Project Name EPFS REMEDIATION PROJECT
Project Number 6169

Attention: LISA WINN/SCOTT POPE

Johnston Fed #6, 89232

On 06/22/01 Pinnacle Laboratories, Inc., (ADHS License No. AZ0592 pending), received a request to analyze **aqueous** samples. The samples were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

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



H. Mitchell Rubenstein, Ph. D.
General Manager

MR: jt

Enclosure

PINNACLE
LABORATORIES

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

CLIENT	: GOLDEN ENVIRONMENTAL MNGT.	PINNACLE ID	: 106102
PROJECT #	: 6169	DATE RECEIVED	: 06/22/01
PROJECT NAME	: EPFS REMEDIATION PROJECT	REPORT DATE	: 06/29/01
PINNACLE			
ID #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
106102 - 01	JOH-0106-MW 2	AQUEOUS	06/18/01
106102 - 02	JOH-0106-MW 3	AQUEOUS	06/18/01
106102 - 03	JOH-0106-MW 4	AQUEOUS	06/18/01
106102 - 04	JOH-0106-MW 5	AQUEOUS	06/18/01

PINNACLE
LABORATORIES

2709-D Pan American Freeway NE
Albuquerque, New Mexico 87107
Phone (505) 344-3777
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GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : GOLDEN ENVIRONMENTAL MNGT.
PROJECT # : 6169
PROJECT NAME : EPFS REMEDIATION PROJECT

PINNACLE I.D.: 106102

SAMPLE			DATE	DATE	DATE	DIL.
ID. #	CLIENT I.D.	MATRIX	SAMPLED	EXTRACTED	ANALYZED	FACTOR
01	JOH-0106-MW 2	AQUEOUS	06/18/01	NA	06/26/01	1
02	JOH-0106-MW 3	AQUEOUS	06/18/01	NA	06/26/01	5
03	JOH-0106-MW 4	AQUEOUS	06/18/01	NA	06/27/01	5

PARAMETER	DET. LIMIT	UNITS	JOH-0106-MW 2	JOH-0106-MW 3	JOH-0106-MW 4
BENZENE	0.5	UG/L	< 0.5	510	490
TOLUENE	0.5	UG/L	< 0.5	23	70
ETHYLBENZENE	0.5	UG/L	< 0.5	160	91
TOTAL XYLENES	0.5	UG/L	< 0.5	98	96

SURROGATE:

BROMOFLUOROBENZENE (%)

100

111

117

SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:

N/A

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GAS CHROMATOGRAPHY RESULTS

TEST : EPA 8021 MODIFIED
CLIENT : GOLDEN ENVIRONMENTAL MNGT.
PROJECT # : 6169
PROJECT NAME : EPFS REMEDIATION PROJECT

PINNACLE I.D.: 106102

SAMPLE ID. #	CLIENT I.D.	MATRIX	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	DIL. FACTOR
04	JOH-0106-MW 5	AQUEOUS	06/18/01	NA	06/27/01	5

PARAMETER	DET. LIMIT	UNITS	JOH-0106-MW 5
BENZENE	0.5	UG/L	170
TOLUENE	0.5	UG/L	300
ETHYLBENZENE	0.5	UG/L	68
TOTAL XYLENES	0.5	UG/L	630

SURROGATE:
BROMOFLUOROBENZENE (%) 103
SURROGATE LIMITS (80 - 120)

CHEMIST NOTES:
N/A

PINNACLE
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GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 106102
BLANK I. D.	: 062601	DATE EXTRACTED	: NA
CLIENT	: GOLDEN ENVIRONMENTAL MNGT.	DATE ANALYZED	: 06/26/01
PROJECT #	: 6169	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS REMEDIATION PROJECT		

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

SURROGATE:
BROMOFLUOROBENZENE (%) 92

SURROGATE LIMITS: (80 - 120)

ANALYST NOTES:

PINNACLE
LABORATORIES

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GAS CHROMATOGRAPHY RESULTS
REAGENT BLANK

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 106102
BLANK I. D.	: 062701	DATE EXTRACTED	: NA
CLIENT	: GOLDEN ENVIRONMENTAL MNGT.	DATE ANALYZED	: 06/27/01
PROJECT #	: 6169	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS REMEDIATION PROJECT		

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

SURROGATE:
BROMOFLUOROBENZENE (%) 92

SURROGATE LIMITS: (80 - 120)

ANALYST NOTES:
N/A

PINNACLE
LABORATORIES

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GAS CHROMATOGRAPHY QUALITY CONTROL
MSMSD

TEST	: EPA 8021 MODIFIED	PINNACLE I.D.	: 106102
MSMSD #	: 106106-01	DATE EXTRACTED	: NA
CLIENT	: GOLDEN ENVIRONMENTAL MNGT.	DATE ANALYZED	: 06/26/01
PROJECT #	: 6169	SAMPLE MATRIX	: AQUEOUS
PROJECT NAME	: EPFS REMEDIATION PROJECT	UNITS	: UG/L

PARAMETER	SAMPLE RESULT	CONC SPIKE	SPIKED SAMPLE	% REC	DUP SPIKE	DUP % REC	RPD	REC LIMITS	RPD LIMITS
BENZENE	<0.5	20.0	21.3	107	22.7	114	6	(80 - 120)	20
TOLUENE	<0.5	20.0	20.4	102	21.9	110	7	(80 - 120)	20
ETHYLBENZENE	<0.5	20.0	20.6	103	22.5	113	9	(80 - 120)	20
TOTAL XYLENES	1.5	60.0	62.8	105	68.1	114	8	(80 - 120)	20

TEST NOTES:

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

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

ATTACHMENT 1

2001 GROUNDWATER ANALYTICAL
