3R - 79

REPORTS

DATE:

3/19/1999

BIOTECH REMEDIATION INC.

710 East 20th Street, Suite 400 ◎ Farmington, NM 87401 ○ (505) 632-3365 ◎ Fax (505) 632-9850

SEMI-ANNUAL GROUNDWATER SAMPLING
THOMAS No. 1

BLOOMFIELD, NEW MEXICO

RECEIVED

APR 01 1999

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

prepared for the

NEW MEXICO OIL CONSERVATION DIVISION
Mr. Will Olsen, Project Manager, Santa Fe Offfice
and
Mr. Denny Foust, Aztec Office

March 19, 1999

BioTech
REMEDIATION

710 East 20th Street, Suite 400
Farmington, New Mexico 87401
Field Office: (505) 632-3365
Fax: (505) 632-9850

Tele: 505-327-4965
Fax: 505-564-3604

REPORT OF SEMI-ANNUAL GROUNDWATER SAMPLING BURLINGTON RESOURCES OIL AND GAS COMPANY'S THOMAS No.1 LOCATION (NOW CLAYTON INVESTMENTS) BLOOMFIELD, NEW MEXICO

Prepared for the
NEW MEXICO OIL CONSERVATION DIVISION

Mr. Will Olsen, Project Manager, Santa Fe Office
and
Mr. Denny Foust, Aztec Office

Prepared by
BIOTECH REMEDIATION, INC.
710 E. 20TH STREET, SUITE 400
FARMINGTON, NM 87401

March 13, 1999

Prepared by:

Ken Sinks,
Project Scientist

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1.0 INTRODUCTION

In compliance with and pursuant to the requirements of the New Mexico Oil Conservation Division (NMOCD), BioTech Remediation, Inc. (BioTech), on behalf of Clayton Investments, submits the following 1998 Semi-Annual Monitoring and Sampling Report for the Burlington Resources Oil and Gas Company's Thomas No. 1 location in Bloomfield, New Mexico.

This report summarizes the monitoring and sampling activities, compilation of groundwater measurement and laboratory analyses for groundwater monitoring wells for 1998.

2.0 SEMI-ANNUAL MONITORING AND SAMPLING ACTIVITIES

BioTech personnel completed the monitoring and sampling requirements for the 1998 Semi-Annual Monitoring and Sampling Report for the Burlington Resources Oil and Gas Company's Thomas No. 1 location in Bloomfield, New Mexico. During each monitoring and sampling event, groundwater monitoring well measurements and sample collection strictly followed the procedures outlined below.

2.1 Groundwater Measurement

During each groundwater-sampling event, depth-to-groundwater measurements were made in each monitoring well. A Solonist Probe was used to measure from the survey point on the top of the well casing to the top of groundwater. Depth measurements were made in feet and were recorded following the measurement of each monitoring well. Groundwater measurement data is summarized and presented in Table 1, and groundwater contour plots based on the elevation data were constructed and are found in Figures 1 and 2.

2.2 Groundwater Sample Collection and Analyses

Before groundwater samples were collected, each monitoring well was purged of approximately three well volumes and then allowed a short recovery period in order for the groundwater to equilibrate within the well casing. During groundwater purging, the temperature, pH, dissolved oxygen (DO) and electrical conductivity were measured and recorded onto Water Sampling Record forms. Each monitoring well was considered to be successfully purged and ready for sample collection when the pH and conductivity readings stabilized and did not vary by more than ten percent over two purged well volumes. Following the use of each measuring instrument, a thorough decontamination and rinsing was performed. The decontamination and rinsing protocols employed are detailed in Section 3.0.

During BTEX sample collection, a disposable bailer was lowered slowly into the well casing, taking care not to agitate the casing water. The bailer was allowed to take on water and then carefully removed from the well. Once removed, the bailer was fitted with a flow regulating sample collection nipple to transfer the samples into the appropriate sample container. Groundwater samples were added to each sample container at an approximate rate of 100 ml per minute. In transferring the sample from the bailer to the sample container, extreme care was taken to ensure that each container was filled from the bottom completely until a meniscus formed and no headspace or air bubbles were present. The containers were then tightly sealed and observed while rotating to further ascertain that each was completely void of air.

2.3 Sample Preservation

Sample preservation consisted of the following; the vials were prepared in advance by the analyzing laboratory with hydrochloric acid (HCl) as required by the laboratory sample protocol. The HCl was added primarily to prevent bacterial degradation of hydrocarbons during sample transport and laboratory holding time.

2.4 Sample Identification

Immediately following sample collection, containers were labeled with the sample origin, time and date of collection, type of sample, sampler identification, preservative used, and the requested analysis. Once labeled, each sample was logged onto a Chain of Custody Record. As they were collected, properly labeling and logging each of the samples avoided the potential for sample misidentification.

2.5 Sample Transport

Once each sample had been collected, labeled, and logged onto the Chain of Custody Record, the containers were placed in an insulated cooler containing ice, where the samples were maintained at approximately 4° C until delivered to On-Site Technologies Laboratory, Farmington, New Mexico. The Chain of Custody Record was completed at the laboratory, and the samples were then relinquished.

2.6 Analyses

Groundwater sampling of the two monitor wells was conducted Semi-Annually. During each sampling event, collected samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) per EPA Method 8020 at On-Site Technologies in Farmington, New Mexico. The laboratory results of BTEX analyses are presented in Table 2.

3.0 EQUIPMENT DECONTAMINATION

In order to ensure data validity and prevent cross-contamination, BioTech personnel employed and strictly followed decontamination protocols. During all monitor well measurement and sample collection, the following methods for decontaminating equipment were employed:

- wash with detergent (Alconox) and distilled water
- rinse with distilled water
- wash with detergent (Alconox) and distilled water
- double rinse with distilled water

4.0 DISCUSSION AND RECOMMENDATIONS

The contaminant concentrations in MW-03 continue to be below the NMWQCC standards for all contaminants. The contaminant concentrations in MW-02 continue to be below the NMWQCC standards for Toluene and Ethylbenzene while the total Xylenes the benzene contaminant concentration continues to fluctuate (see Table 2).

Table 1 shows the groundwater elevation data along with pH, conductivity, groundwater temperature and dissolved oxygen content of the groundwater in the entire monitoring area from MW-01 to MW-05.

TABLES

TABLE 1
SUMMARY GROUNDWATER MONITORING DATA
THOMAS NO.1 WELL
BLOOMFIELD, NM

WELL	DATE	TIME	OUTAGE FT.	TOC ELEV.	GROUND WATER ELEVATION	DO ppm	pH	TEMP ^{o}C	COND. uohms/cm
MW-01	10/20/94				5371.95		6.81	14.8	2,280
	01/04/95				5371.72		6.96	7.5	2,120
	07/10/95				7372.05		7.05	16.7	2,790
	01/10/96				5372.04		7.18	8.9	3,960
	07/15/96				5371.76		7.04	17.8	2,160
	01/08/97				5372.14		7	10.2	2,200
	08/21/98	-	3.29	5376.91	5373.62	NM	NM	NM	NM
	03/03/99	1450	3.20	5376.91	5373.71	0.07	6.5	10.0	4300
MW-02	10/28/92				5370.54		7.2	20.0	2,200
	11/13/92				5370.48		6.97	16.1	2,250
	10/20/94				5371.26		6.64	19.1	2,460
	01/04/95				5371.02		6.95	7.1	2,160
	07/10/95				5371.23		NR	NR	NR
	01/10/96				5371.40		NR	NR	NR
	07/15/96				5371.23		NR	NR	NR
	01/08/97				5371.53		NR	NR	NR
	08/21/98	-	4.09	5376.97	5372.88	NM	NM	NM	NM
	03/03/99	1239	3.73	5376.97	5373.24	0.01	7	9.7	2170
MW-03	10/28/92				5371.08		7.12	20.0	2,450
	11/13/92				5371.00		7.03	13.5	2,300
	10/20/94				5371.26		2.86	16.5	2,970
	01/04/95				5371.01		5.35	6.3	2,640
	07/11/95				5371.21		7.08	17.0	2,160
	01/10/96				5371.29		7.43	8.4	4,640
	07/15/96				5371.11		6.95	23.2	1,610
	01/08/97				5371.42		7.21	9.3	2,550
	08/21/98	-	2.90	5375.56	5372.66	NM	NM	NM	NM
	03/03/99	1355	2.27	5375.56	5373.29	0.02	7.11	8.3	4820
MW-04	10/20/94				5370.04		6.92	11.9	4,160
	01/04/95				5370.80		6.97	6.1	2,350
	07/10/95				5370.98		7.11	15.0	1,840
	01/10/96				5371.15		7.52	8.4	2,770
	07/16/96				5370.98		7.2	21.6	1,470
	01/08/97				5371.27		7.23	8.2	1,660
	08/21/98	-	2.95	5375.56	5372.61	NM	NM	NM	NM
	03/03/99	1420	2.44	5375.56	5373.12	0.12	8.2	8.1	6820
MW-05	01/04/95				5370.31		6.97	6.1	2,350
	07/11/95				5370.38		7.11	15.0	1,840
	10/20/95				5370.55		6.92	11.9	4,160
	01/10/96				5370.54		7.44	8.8	3,190
	07/15/96				5370.47		7.02	14.8	1,290
	01/08/97				5370.65		6.85	8.5	2,070
	08/21/98	-	NM	5376.35	NM	NM	NM	NM	NM
	03/03/99	1505	3.62	5376.35	5372.73	0.09	6.5	9.2	3690

TABLE 2
SUMMARY OF LABORATORY ANALYSES OF BTEX
THOMAS NO.1 WELL
BLOOMFIELD, NM
BTEX CONCENTRATIONS IN ug/L

WELL	WELL A	DATE	TIME	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES
FIELD BLANK	FIELD BLANK	08/21/98	1415	ND	ND	ND	ND
MW-01	MW-01	11/01/91		ND	ND	ND	ND
	MW-01	09/01/92		ND	ND	ND	ND
	MW-01	06/15/93		ND	ND	ND	ND
	MW-01	10/20/94		<0.3	<0.3	<0.3	<0.9
	MW-01	01/04/95		<0.3	<0.3	<0.3	<0.9
	MW-01	07/10/95		1.9	ND (1.0)	2.20	ND (2.0)
	MW-01	01/10/96		ND (1.0)	ND (1.0)	ND (1.0)	ND (2.0)
	MW-01	07/15/96		<0.10	0.10	<0.10	<0.20
	MW-01	01/08/97		<1.0	1.20	<1.0	<1.0
	MW-01	08/21/98	-	NS	NS	NS	NS
	MW-01	03/03/99	-	NS	NS	NS	NS
MW-02	MW-02	08/18/91		10.0	750	750	620
	MW-02	08/31/91		800.0	2800	400	8100
	MW-02	11/01/91		800.0	2800	400	8100
	MW-02	09/01/92		251.0	64	23	346
	MW-02	09/15/92		251.0	64	23	397
	MW-02	10/28/92		1230.0	570	113	2750
	MW-02	11/13/92		3.0	484	164	1190
	MW-02	12/07/92		850.0	291	98	912
	MW-02	06/15/93		860.0	420	130	2540
	MW-02	10/20/94		556.0	<0.3	79.4	569
	MW-02	01/04/95		448.0	8.3	48	340
	MW-02	07/10/95		400.0	ND (10.0)	47	324
	MW-02	01/10/96		390.0	ND (10.0)	64	395
	MW-02	07/15/96		150.0	<5.0	22	110
	MW-02	01/08/97		400.0	2.3	78	400
	MW-02	08/21/98	1420	180.0	4.1	48.00	487.40
	MW-02	03/03/99	1239	260.0	3.7	68.00	703.00
MW-03	MW-03	08/18/91		10.0	750	750	620
	MW-03	08/31/91		1500.0	30000	2000	38000
	MW-03	11/01/91		1500.0	30000	2000	36000
	MW-03	09/01/92		ND	8220	ND	ND
	MW-03	09/15/92		ND	8220	ND	3630
	MW-03	10/28/92		256.0	11400	1120	5640
	MW-03	11/13/92		117.0	4270	980	9850
	MW-03	12/08/92		25.6	1560	570	1720
	MW-03	06/15/93		ND	7800	780	7100
	MW-03	10/20/94		521.0	10900	455	4040
	MW-03	01/04/95		122.0	2700	155	1322
	MW-03	07/11/95		ND (10.0)	620	61	273
	MW-03	01/10/96		ND (25.0)	1200	88	470

TABLE 2
SUMMARY OF LABORATORY ANALYSES OF BTEX
THOMAS NO.1 WELL
BLOOMFIELD, NM
BTEX CONCENTRATIONS IN ug/L

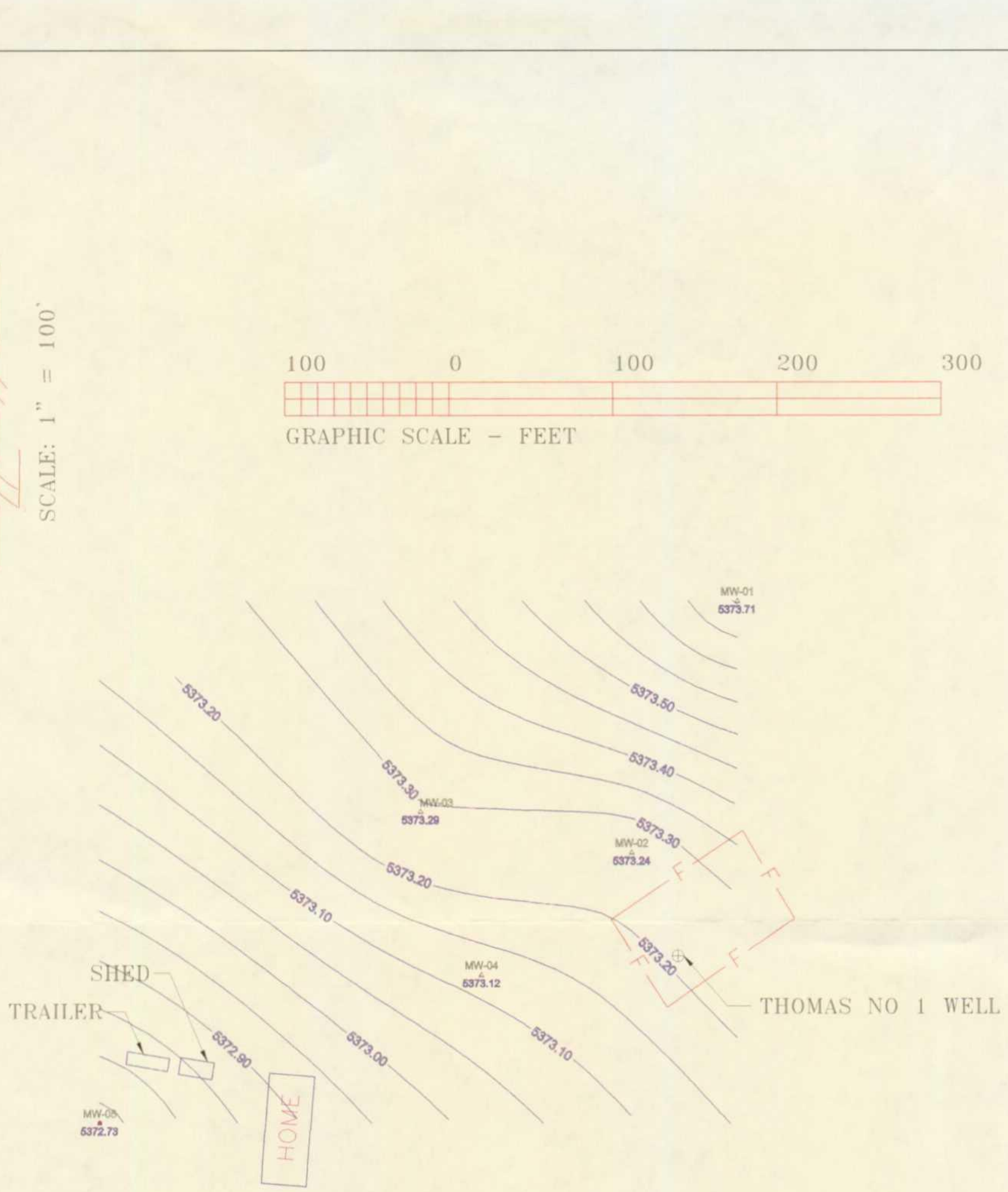
WELL	WELL A	DATE	TIME	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES
	MW-03	07/15/96		<1.0	57	8	33
	MW-03	01/08/97		<1.0	150	22	77
	MW-03	08/21/98	1500	ND	4.6	13.0	16.2
	MW-03	03/03/99	1355	ND	51.0	14.0	40.2
MW-04	MW-04	11/01/91		ND	ND	ND	ND
	MW-04	09/04/92		ND	ND	ND	ND
	MW-04	06/15/93		ND	ND	ND	ND
	MW-04	10/20/94		<0.3	<0.3	<0.3	<0.9
	MW-04	01/04/95		<0.3	<0.3	<0.3	<0.5
	MW-04	07/10/95		ND (1.0)	ND (1.0)	ND (1.0)	1.3
	MW-04	01/10/96		ND (1.0)	ND (1.0)	3.6	15.4
	MW-04	07/16/96		<1.0	0.1	<0.10	0.2
	MW-04	01/08/97		<1.0	1.3	3.7	35
	MW-04	08/21/98	-	NS	NS	NS	NS
	MW-04	03/03/99	-	NS	NS	NS	NS
MW-05	MW-05	11/01/91		ND	ND	ND	ND
	MW-05	09/01/92		ND	ND	ND	ND
	MW-05	06/15/93		9.7	ND	ND	ND
	MW-05	10/20/94		<0.3	<0.3	<0.3	<0.9
	MW-05	01/04/95		<0.3	<0.3	<0.3	<0.9
	MW-05	07/11/95		13.0	6.1	3.7	9
	MW-05	01/10/96		ND (1.0)	ND (1.0)	ND (1.0)	ND (2.0)
	MW-05	07/16/96		<0.10	<0.01	<0.10	<0.20
	MW-05	01/08/97		<1.0	1.1	<1.0	<1.0
	MW-05	08/21/98	-	NS	NS	NS	NS
	MW-05	03/03/99	-	NS	NS	NS	NS
TRAVEL BLANK	TRAVEL BLANK	03/03/99	833	ND	ND	ND	ND
	TRAVEL BLANK	10/20/94		<0.3	<0.3	<0.3	<0.9
NMWQCC				10.0	750.00	750.00	620.00

FIGURES

SCALE: 1" = 100'

100 0 100 200 300

GRAPHIC SCALE – FEET



THOMAS NO. 1
BLOOMFIELD, NM

99THO\030398WL

DRAWN BY: K. SINKS
FIGURE 2
GROUNDWATER
CONTOUR MAP
MARCH 3, 1999

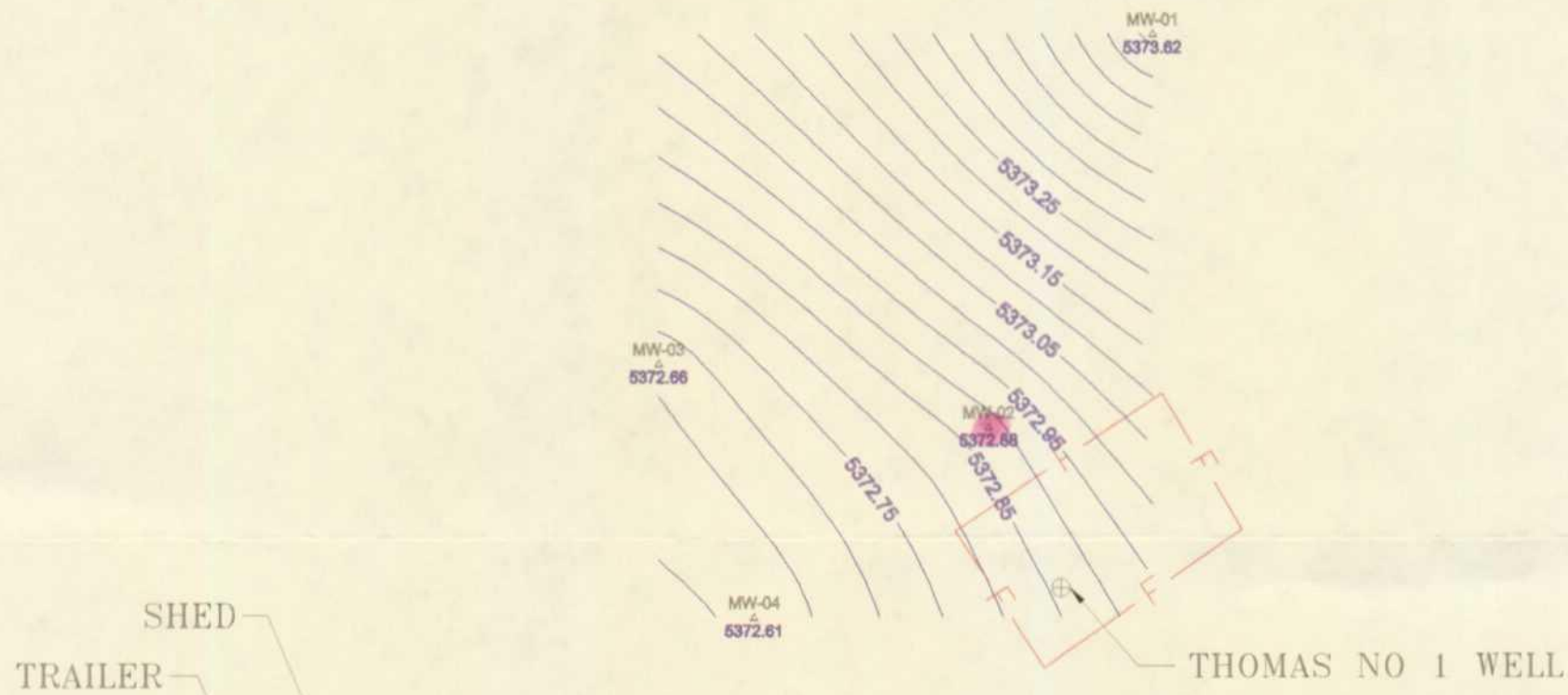
BioTech REMEDIATION

710 EAST 20TH STREET, SUITE 400
FARMINGTON, NEW MEXICO 87401
OFFICE: (505) 327-4965
FAX: (505) 564-3604

SCALE: 1" = 100'

100 0 100 200 300

GRAPHIC SCALE – FEET



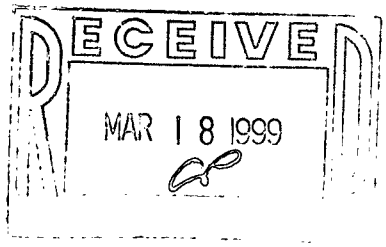
THOMAS NO. 1 WELL BLOOMFIELD, NM 99THO\052198WL	PROJECT SCITNTIST ROSS KENNEMER DRAWN BY: K. SINKS FIGURE 1 GROUNDWATER CPNTOUR MAP AUGUST 21, 1998	BioTech REMEDIATION 710 EAST 20TH STREET, SUITE 400 FARMINGTON, NEW MEXICO 87401 OFFICE: (505) 327-4965 FAX: (505) 564-3604

APPENDIX

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556



March 12, 1999

Terry Griffin
BioTech Remediation, Inc.
710 E. 20th, Suite 400
Farmington, NM 87401
TEL: (505) 327-4965
FAX (505) 564-3604

RE: Thomas #1 Well Site

Order No.: 9903014

Dear Terry Griffin,

On Site Technologies, LTD. received 3 samples on 3/3/99 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
BTEX (SW8021B)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

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

Sincerely,

David Cox

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

On Site Technologies, LTD.

Date: *12-Mar-99*

CLIENT: BioTech Remediation, Inc.
Project: Thomas #1 Well Site
Lab Order: 9903014

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

Analytical Comments for METHOD BTEX_W, SAMPLE 9903014-03A: The water sample was analyzed at a dilution factor of five (DF-5X) due to non-target parameter interference observed in initial analysis on 3/9/99 at DF-1X.

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: *12-Mar-99*

Client:	BioTech Remediation, Inc.	**Client Sample Info:**	Thomas #1 Well Site
Work Order:	9903014	**Client Sample ID:**	Travel Blank
Lab ID:	9903014-01A **Matrix:** AQUEOUS	**Collection Date:**	3/3/99 8:33:00 AM
Project:	Thomas #1 Well Site	**COC Record:**	10021

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		**SW8021B**				Analyst: **HR**
Benzene	ND	0.5		µg/L	1	3/9/99
Toluene	ND	0.5		µg/L	1	3/9/99
Ethylbenzene	ND	0.5		µg/L	1	3/9/99
m,p-Xylene	ND	1		µg/L	1	3/9/99
o-Xylene	ND	0.5		µg/L	1	3/9/99

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: *12-Mar-99*

Client:	BioTech Remediation, Inc.	**Client Sample Info:**	Thomas #1 Well Site
Work Order:	9903014	**Client Sample ID:**	MW-2
Lab ID:	9903014-02A **Matrix:** AQUEOUS	**Collection Date:**	3/3/99 12:39:00 PM
Project:	Thomas #1 Well Site	**COC Record:**	10021

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		**SW8021B**				Analyst: **HR**
Benzene	260	2.5		µg/L	5	3/10/99
Toluene	3.7	2.5		µg/L	5	3/10/99
Ethylbenzene	68	2.5		µg/L	5	3/10/99
m,p-Xylene	690	5		µg/L	5	3/10/99
o-Xylene	13	2.5		µg/L	5	3/10/99

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: *12-Mar-99*

Client:	BioTech Remediation, Inc.	**Client Sample Info:**	Thomas #1 Well Site
Work Order:	9903014	**Client Sample ID:**	MW-3
Lab ID:	9903014-03A **Matrix:** AQUEOUS	**Collection Date:**	3/3/99 1:55:00 PM
Project:	Thomas #1 Well Site	**COC Record:**	10021

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		**SW8021B**				Analyst: **HR**
Benzene	ND	2.5		µg/L	5	3/10/99
Toluene	51	2.5		µg/L	5	3/10/99
Ethylbenzene	14	2.5		µg/L	5	3/10/99
m,p-Xylene	31	5		µg/L	5	3/10/99
o-Xylene	9.2	2.5		µg/L	5	3/10/99

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

On Site Technologies, LTD.

Date: *12-Mar-99*

CLIENT: BioTech Remediation, Inc.
Work Order: 9903014
Project: Thomas #1 Well Site

QC SUMMARY REPORT
Method Blank

Sample ID: **MB1** Batch ID: **GC-1_990309** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/9/99** Prep Date:
Client ID: **9903014** Run ID: **GC-1_990309A** SeqNo: **11935**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.0322	0.5									J
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	1									
Methyl tert-Butyl Ether	ND	1									
o-Xylene	ND	0.5									
Toluene	.0696	0.5									J

Sample ID: **MB1** Batch ID: **GC-1_990310** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/10/99** Prep Date:
Client ID: **9903014** Run ID: **GC-1_990310A** SeqNo: **11953**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.0415	0.5									J
Ethylbenzene	ND	0.5									
m,p-Xylene	.1444	1									J
Methyl tert-Butyl Ether	ND	1									
o-Xylene	.0294	0.5									J
Toluene	.0837	0.5									J

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

On Site Technologies, LTD.

Date: *12-Mar-99*

CLIENT: BioTech Remediation, Inc.
Work Order: 9903014
Project: Thomas #1 Well Site

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: **9902095-01AMS** Batch ID: **GC-1_990309** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/9/99** Prep Date:
Client ID: **9903014** Run ID: **GC-1_990309A** SeqNo: **11936**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	2150	10	800	1400	93.8%	73	115				
Ethylbenzene	1203	10	800	440	95.4%	74	117				
m,p-Xylene	6651	20	1600	5100	97.0%	76	112				
Methyl tert-Butyl Ether	799.4	20	800	10	98.7%	62	122				
o-Xylene	1710	10	800	940	96.3%	83	112				
Toluene	1292	10	800	520	96.5%	71	120				

Sample ID: **9902095-01AMSD** Batch ID: **GC-1_990309** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/9/99** Prep Date:
Client ID: **9903014** Run ID: **GC-1_990309A** SeqNo: **11937**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	2194	10	800	1400	99.2%	73	115	2150	2.0%	8	
Ethylbenzene	1226	10	800	440	98.3%	74	117	1203	1.9%	9	
m,p-Xylene	6782	20	1600	5100	105.2%	76	112	6651	2.0%	9	
Methyl tert-Butyl Ether	798.8	20	800	10	98.6%	62	122	799.4	0.1%	7	
o-Xylene	1737	10	800	940	99.7%	83	112	1710	1.6%	9	
Toluene	1317	10	800	520	99.6%	71	120	1292	1.9%	9	

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

CLIENT: BioTech Remediation, Inc.
Work Order: 9903014
Project: Thomas #1 Well Site

QC SUMMARY REPORT
Sample Matrix Spike

Sample ID: **9903014-02AMS** Batch ID: **GC-1_990310** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/10/99** Prep Date:
Client ID: **MW-2** **9903014** Run ID: **GC-1_990310A** SeqNo: **11954**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	458.2	2.5	200	262.5	97.8%	73	115				
Ethylbenzene	271.1	2.5	200	67.52	101.8%	74	117				
m,p-Xylene	1106	5	400	689.1	104.3%	76	112				
Methyl tert-Butyl Ether	193.7	5	200	2.614	95.5%	62	122				
o-Xylene	226.2	2.5	200	12.91	106.7%	83	112				
Toluene	216.7	2.5	200	3.701	106.5%	71	120				

Sample ID: **9903014-02AMSD** Batch ID: **GC-1_990310** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/10/99** Prep Date:
Client ID: **MW-2** **9903014** Run ID: **GC-1_990310A** SeqNo: **11955**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	446.4	2.5	200	262.5	92.0%	73	115	458.2	2.6%	8	
Ethylbenzene	265	2.5	200	67.52	98.8%	74	117	271.1	2.3%	9	
m,p-Xylene	1079	5	400	689.1	97.4%	76	112	1106	2.5%	9	
Methyl tert-Butyl Ether	192.3	5	200	2.614	94.9%	62	122	193.7	0.7%	7	
o-Xylene	219.7	2.5	200	12.91	103.4%	83	112	226.2	2.9%	9	
Toluene	211.2	2.5	200	3.701	103.8%	71	120	216.7	2.6%	9	

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

On Site Technologies, LTD.

Date: *12-Mar-99*

CLIENT: BioTech Remediation, Inc.
Work Order: 9903014
Project: Thomas #1 Well Site

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS WATER** Batch ID: **GC-1_990309** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/9/99** Prep Date:
Client ID: **9903014** Run ID: **GC-1_990309A** SeqNo: **11934**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	42.9	0.5	40	0.0322	107.2%	84	110				
Ethylbenzene	42.86	0.5	40	0	107.1%	86	113				
m,p-Xylene	83.6	1	80	0	104.5%	81	114				
Methyl tert-Butyl Ether	40.07	1	40	0	100.2%	69	129				
o-Xylene	42.74	0.5	40	0	106.8%	86	112				
Toluene	42.3	0.5	40	0.0696	105.6%	85	111				

Sample ID: **LCS WATER** Batch ID: **GC-1_990310** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/10/99** Prep Date:
Client ID: **9903014** Run ID: **GC-1_990310A** SeqNo: **11952**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	43.85	0.5	40	0.0415	109.5%	84	110				
Ethylbenzene	44.06	0.5	40	0	110.1%	86	113				
m,p-Xylene	85.94	1	80	0.1444	107.2%	81	114				
Methyl tert-Butyl Ether	42	1	40	0	105.0%	69	129				
o-Xylene	43.99	0.5	40	0.0294	109.9%	86	112				
Toluene	43.5	0.5	40	0.0837	108.6%	85	111				

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

On Site Technologies, LTD.

Date: *12-Mar-99*

CLIENT: BioTech Remediation, Inc.
Work Order: 9903014
Project: Thomas #1 Well Site

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: **CCV1 QC0606/07** Batch ID: **GC-1_990309** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/9/99** Prep Date:
Client ID: **9903014** Run ID: **GC-1_990309A** SeqNo: **11931**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	22.02	0.5	20	0	110.1%	85	115				
Ethylbenzene	22	0.5	20	0	110.0%	85	115				
m,p-Xylene	42.87	1	40	0	107.2%	85	115				
Methyl tert-Butyl Ether	20.45	1	20	0	102.2%	85	115				
o-Xylene	21.92	0.5	20	0	109.6%	85	115				
Toluene	21.63	0.5	20	0	108.2%	85	115				
1,4-Difluorobenzene	93.81	0	100	0	93.8%	84	100				
4-Bromochlorobenzene	97.39	0	100	0	97.4%	87	105				
Fluorobenzene	95.24	0	100	0	95.2%	87	99				

Sample ID: **CCV2 QC0606/07** Batch ID: **GC-1_990309** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/9/99** Prep Date:
Client ID: **9903014** Run ID: **GC-1_990309A** SeqNo: **11932**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.61	0.5	20	0	108.1%	85	115				
Ethylbenzene	21.46	0.5	20	0	107.3%	85	115				
m,p-Xylene	41.72	1	40	0	104.3%	85	115				
Methyl tert-Butyl Ether	20.46	1	20	0	102.3%	85	115				
o-Xylene	21.54	0.5	20	0	107.7%	85	115				
Toluene	21.25	0.5	20	0	106.2%	85	115				
1,4-Difluorobenzene	93.76	0	100	0	93.8%	84	100				
4-Bromochlorobenzene	95.93	0	100	0	95.9%	87	105				
Fluorobenzene	95.2	0	100	0	95.2%	87	99				

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

CLIENT: BioTech Remediation, Inc.
Work Order: 9903014
Project: Thomas #1 Well Site

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: **CCV3 QC0606/07** Batch ID: **GC-1_990309** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/9/99** Prep Date:
Client ID: **9903014** Run ID: **GC-1_990309A** SeqNo: **11933**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.29	0.5	40	0	103.2%	85	115				
Ethylbenzene	41.08	0.5	40	0	102.7%	85	115				
m,p-Xylene	80.13	1	80	0	100.2%	85	115				
Methyl tert-Butyl Ether	40.9	1	40	0	102.3%	85	115				
o-Xylene	41.55	0.5	40	0	103.9%	85	115				
Toluene	40.78	0.5	40	0	101.9%	85	115				
1,4-Difluorobenzene	93.31	0	100	0	93.3%	84	100				
4-Bromochlorobenzene	95.03	0	100	0	95.0%	87	105				
Fluorobenzene	94.73	0	100	0	94.7%	87	99				

Sample ID: **CCV1 QC0606/07** Batch ID: **GC-1_990310** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/10/99** Prep Date:
Client ID: **9903014** Run ID: **GC-1_990310A** SeqNo: **11949**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.76	0.5	20	0	108.8%	85	115				
Ethylbenzene	21.82	0.5	20	0	109.1%	85	115				
m,p-Xylene	42.47	1	40	0	106.2%	85	115				
Methyl tert-Butyl Ether	20.77	1	20	0	103.9%	85	115				
o-Xylene	21.81	0.5	20	0	109.1%	85	115				
Toluene	21.52	0.5	20	0	107.6%	85	115				
1,4-Difluorobenzene	93.72	0	100	0	93.7%	84	100				
4-Bromochlorobenzene	96.65	0	100	0	96.6%	87	105				
Fluorobenzene	95.09	0	100	0	95.1%	87	99				

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

CLIENT: BioTech Remediation, Inc.
Work Order: 9903014
Project: Thomas #1 Well Site

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: **CCV2 QC0606/07** Batch ID: **GC-1_990310** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/10/99** Prep Date:
Client ID: **9903014** Run ID: **GC-1_990310A** SeqNo: **11950**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	22.23	0.5	20	0	111.2%	85	115				
Ethylbenzene	21.8	0.5	20	0	109.0%	85	115				
m,p-Xylene	42.36	1	40	0	105.9%	85	115				
Methyl tert-Butyl Ether	20.8	1	20	0	104.0%	85	115				
o-Xylene	21.78	0.5	20	0	108.9%	85	115				
Toluene	21.59	0.5	20	0	107.9%	85	115				
1,4-Difluorobenzene	93.95	0	100	0	93.9%	84	100				
4-Bromochlorobenzene	97.01	0	100	0	97.0%	87	105				
Fluorobenzene	95.54	0	100	0	95.5%	87	99				

Sample ID: **CCV3 QC0606/07** Batch ID: **GC-1_990310** Test Code: **SW8021B** Units: **µg/L** Analysis Date **3/10/99** Prep Date:
Client ID: **9903014** Run ID: **GC-1_990310A** SeqNo: **11951**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.22	0.5	40	0	103.1%	85	115				
Ethylbenzene	41.16	0.5	40	0	102.9%	85	115				
m,p-Xylene	80.31	1	80	0	100.4%	85	115				
Methyl tert-Butyl Ether	40.63	1	40	0	101.6%	85	115				
o-Xylene	41.48	0.5	40	0	103.7%	85	115				
Toluene	40.88	0.5	40	0	102.2%	85	115				
1,4-Difluorobenzene	92.9	0	100	0	92.9%	84	100				
4-Bromochlorobenzene	96.7	0	100	0	96.7%	87	105				
Fluorobenzene	94.68	0	100	0	94.7%	87	99				

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

On Site Technologies, LTD.

Date: 12-Mar-99

CLIENT: BioTech Remediation, Inc.
Work Order: 9903014
Project: Thomas #1 Well Site
Test No: SW8021B

QC SUMMARY REPORT
SURROGATE RECOVERIES

BTEX

Sample ID	14FBZ	4BCBZ	FLBZ
9902089-02A	91.7	95.6	94.3
9902095-01A	88.3	93.4	91
9902095-01AMS	88.5	94.1	91.3
9902095-01AMSD	88.1	93.4	91.3
9902095-02A	93.9	97.4	96
9903012-01A	94.5	97.5	96.2
9903012-02A	94.3	98.1	96
9903012-03A	94.1	98.2	96.1
9903012-04A	94	98.2	96.1
9903012-05A	92.8	96.6	95
9903014-01A	94.2	96.9	96
9903014-02A	89.4	93.8	91.4
9903014-02AMS	87.6	93.7	89.8
9903014-02AMSD	87.7	92.4	90.1
9903014-03A	87.4	89.4	89.2
9903024-01A	92.5	96.5	93.1
9903024-02A	93	96.6	95.7
9903024-03A	93.8	96.9	96.2
9903025-01A	93.7	98.6	95.7
9903025-02A	94.1	96.4	95.6
9903025-03A	93.9	97.2	95.8
9903025-04A	94.3	96.8	95.6
9903025-05A	94.1	97.2	95.6
9903031-01A	93.8	95.9	95.9
9903031-02A	93.6	97.7	95.8
9903031-03A	92.1	97.3	95.8
9903031-04A	93.9	97.2	95.8

Acronym		Surrogate	QC Limits
14FBZ	=	1,4-Difluorobenzene	84-100
4BCBZ	=	4-Bromochlorobenzene	87-105
FLBZ	=	Fluorobenzene	87-99

*** Surrogate recovery outside acceptance limits**

CLIENT: BioTech Remediation, Inc.
Work Order: 9903014
Project: Thomas #1 Well Site
Test No: SW8021B

QC SUMMARY REPORT
SURROGATE RECOVERIES

BTEX

Sample ID	14FBZ	4BCBZ	FLBZ					
9903032-01A	92.8	97.1	95					
9903032-02A	91.1	95.3	93.7					
9903032-03A	90.3	95.3	92.4					
CCV1 QC0606/07	93.7	96.6	95.1					
CCV2 QC0606/07	93.9	97	95.5					
CCV3 QC0606/07	92.9	96.7	94.7					
LCS WATER	93.1	97.2	95					
MB1	93.9	96.4	96.1					

Acronym		Surrogate	QC Limits
14FBZ	=	1,4-Difluorobenzene	84-100
4BCBZ	=	4-Bromochlorobenzene	87-105
FLBZ	=	Fluorobenzene	87-99

*** Surrogate recovery outside acceptance limits**

CHAIN OF CUSTODY RECORD

ON SITE TECHNOLOGIES, LTD.

612 E. Murray Dr. • P.O. Box 2606 • Farmington, NM 87499
LAB: (505) 325-5667 • FAX: (505) 327-1496

Date: 3/3/99

Page: 1 of 1

Purchase Order No.: 9056	Project No.		
SEND INVOICE TO Name		**REPORT RESULTS TO** Name Terry Gant	Title
Company	Dept.	Company Giant Refining	
Address		Mailing Address 50 E. 30th Bloomfield, NM 87413	
City, State, Zip		City, State, Zip Bloomfield, NM 87413	
		Telephone No. 505-632-4166	Telefax No.

PROJECT LOCATION: Giant Bloomfield Refining Bloomfield, New Mexico

SAMPLER'S SIGNATURE: Ken Sisk

SAMPLE IDENTIFICATION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE PRES.	Number of Containers	ANALYSIS REQUESTED: BTEX	LAB ID
Tank Bank	3/3	0933	H2O	Ice	1		
MW-2	3/3	1030	"	"	3	"	
MW-3	3/3	1055	"	"	3	"	

Relinquished by:	Date/Time 3/3/99 1530	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
Method of Shipment:		Rush	24-48 Hours	10 Working Days	By Date

Authorized by: _____ Date 3/3/99
(Client Signature Must Accompany Request)

Special Instructions / Remarks:

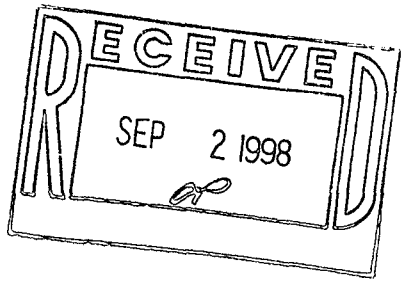
Distribution: White - On Site Yellow - LAB Pink - Sampler Goldenrod - Client

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

August 28, 1998



Terry Griffin
BioTech Remediation, Inc.
710 E. 20th, Suite 400
Farmington, NM 87401
TEL: (505) 632-3365
FAX (505) 632-0030

RE: Thomas #1 DK Bloomfield, NM

Order No.: 9808049

Dear Terry Griffin,

On Site Technologies, LTD. received 3 samples on 8/24/98 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
BTEX (SW8020A)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

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

Sincerely,

David Cox

OFF: (505) 325-5667

ON SITE
TECHNOLOGIES, LTD.

LAB: (505) 325-1556

On Site Technologies, LTD. **Date:** *28-Aug-98*

CLIENT: BioTech Remediation, Inc.
Project: Thomas #1 DK Bloomfield, NM
Lab Order: 9808049

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: *28-Aug-98*

Client:	BioTech Remediation, Inc.	**Client Sample Info:**	Thomas #1 DK
Work Order:	9808049	**Client Sample ID:**	MW-2
Lab ID:	9808049-01A **Matrix:** AQUEOUS	**Collection Date:**	8/21/98 2:20:00 PM
Project:	Thomas #1 DK Bloomfield, NM	**COC Record:**	5266

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		**SW8020A**				Analyst: **DC**
Benzene	180	2.5		µg/L	5	8/27/98
Toluene	4.1	0.5		µg/L	1	8/26/98
Ethylbenzene	48	0.5		µg/L	1	8/26/98
m,p-Xylene	480	5		µg/L	5	8/27/98
o-Xylene	7.4	0.5		µg/L	1	8/26/98

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

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ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: *28-Aug-98*

Client:	BioTech Remediation, Inc.	**Client Sample Info:**	Thomas #1 DK
Work Order:	9808049	**Client Sample ID:**	MW-3
Lab ID:	9808049-02A **Matrix:** AQUEOUS	**Collection Date:**	8/21/98 3:00:00 PM
Project:	Thomas #1 DK Bloomfield, NM	**COC Record:**	5266

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		**SW8020A**				Analyst: **DC**
Benzene	ND	0.5		µg/L	1	8/26/98
Toluene	4.6	0.5		µg/L	1	8/26/98
Ethylbenzene	13	0.5		µg/L	1	8/26/98
m,p-Xylene	14	1		µg/L	1	8/26/98
o-Xylene	2.2	0.5		µg/L	1	8/26/98

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: *28-Aug-98*

Client:	BioTech Remediation, Inc.	**Client Sample Info:**	Thomas #1 DK
Work Order:	9808049	**Client Sample ID:**	Field Blank
Lab ID:	9808049-03A **Matrix:** AQUEOUS	**Collection Date:**	8/21/98 2:15:00 PM
Project:	Thomas #1 DK Bloomfield, NM	**COC Record:**	5266

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		**SW8020A**				Analyst: **DC**
Benzene	ND	0.5		µg/L	1	8/26/98
Toluene	ND	0.5		µg/L	1	8/26/98
Ethylbenzene	ND	0.5		µg/L	1	8/26/98
m,p-Xylene	ND	1		µg/L	1	8/26/98
o-Xylene	ND	0.5		µg/L	1	8/26/98

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

On Site Technologies, LTD.

Date: *28-Aug-98*

CLIENT: BioTech Remediation, Inc.
Work Order: 9808049
Project: Thomas #1 DK Bloomfield, NM

QC SUMMARY REPORT

Method Blank

Sample ID: **MB1** Batch ID: **GC-1_980826** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/26/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980826A** SeqNo: **5904**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.0537	0.5									J
Ethylbenzene	.0742	0.5									J
m,p-Xylene	.1896	1									J
Methyl tert-Butyl Ether	ND	1									
o-Xylene	.1079	0.5									J
Toluene	.1064	0.5									J

Sample ID: **MB1** Batch ID: **GC-1_980827** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/27/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980827A** SeqNo: **5917**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.0346	0.5									J
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	1									
o-Xylene	ND	0.5									
Toluene	.0769	0.5									J

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

On Site Technologies, LTD.

Date: *28-Aug-98*

CLIENT: BioTech Remediation, Inc.
Work Order: 9808049
Project: Thomas #1 DK Bloomfield, NM

QC SUMMARY REPORT
Sample Matrix Spike

Sample ID: **9808044-02AMS** Batch ID: **GC-1_980826** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/26/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980826A** SeqNo: **5905**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21590	100	8000	14990	82.4%	56	128				
Ethylbenzene	7875	100	8000	948.7	86.6%	78	107				
m,p-Xylene	16550	200	16000	3481	81.7%	67	118				
Methyl tert-Butyl Ether	12040	200	8000	5511	81.7%	70	130				
o-Xylene	7984	100	8000	981.9	87.5%	78	107				
Toluene	13350	100	8000	6571	84.8%	74	116				

Sample ID: **9808044-02AMSD** Batch ID: **GC-1_980826** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/26/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980826A** SeqNo: **5906**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21680	100	8000	14990	83.5%	56	128	21590	0.4%	12	
Ethylbenzene	7900	100	8000	948.7	86.9%	78	107	7875	0.3%	11	
m,p-Xylene	16610	200	16000	3481	82.1%	67	118	16550	0.4%	10	
Methyl tert-Butyl Ether	12190	200	8000	5511	83.5%	70	130	12040	1.2%	15	
o-Xylene	8018	100	8000	981.9	88.0%	78	107	7984	0.4%	14	
Toluene	13410	100	8000	6571	85.5%	74	116	13350	0.4%	14	

Sample ID: **9808046-02AMS** Batch ID: **GC-1_980827** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/27/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980827A** SeqNo: **5918**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	878.2	10	800	161.8	89.5%	56	128				
Ethylbenzene	784.7	10	800	16.73	96.0%	78	107				
m,p-Xylene	2573	20	1600	1184	86.8%	67	118				
o-Xylene	1058	10	800	325.4	91.6%	78	107				
Toluene	2438	10	800	1751	85.9%	74	116				

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

CLIENT: BioTech Remediation, Inc.
Work Order: 9808049
Project: Thomas #1 DK Bloomfield, NM

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Sample ID: **9808046-02AMSD** Batch ID: **GC-1_980827** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/27/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980827A** SeqNo: **5919**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	858	10	800	161.8	87.0%	56	128	878.2	2.3%	12	
Ethylbenzene	764	10	800	16.73	93.4%	78	107	784.7	2.7%	11	
m,p-Xylene	2505	20	1600	1184	82.6%	67	118	2573	2.7%	10	
o-Xylene	1038	10	800	325.4	89.1%	78	107	1058	1.9%	14	
Toluene	2370	10	800	1751	77.4%	74	116	2438	2.8%	14	

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

On Site Technologies, LTD.

Date: *28-Aug-98*

CLIENT: BioTech Remediation, Inc.
Work Order: 9808049
Project: Thomas #1 DK Bloomfield, NM

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS WATER** Batch ID: **GC-1_980826** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/26/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980826A** SeqNo: **5903**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	37.94	0.5	40	0.0537	94.7%	56	128				
Ethylbenzene	39.43	0.5	40	0.0742	98.4%	78	107				
m,p-Xylene	74.04	1	80	0.1896	92.3%	67	118				
Methyl tert-Butyl Ether	41.58	1	40	0	103.9%	70	130				
o-Xylene	38.13	0.5	40	0.1079	95.1%	78	107				
Toluene	37.64	0.5	40	0.1064	93.8%	74	116				

Sample ID: **LCS WATER** Batch ID: **GC-1_980827** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/27/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980827A** SeqNo: **5916**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	36.42	0.5	40	0.0346	91.0%	56	128				
Ethylbenzene	38.22	0.5	40	0	95.5%	78	107				
m,p-Xylene	71.74	1	80	0	89.7%	67	118				
o-Xylene	36.96	0.5	40	0	92.4%	78	107				
Toluene	36.36	0.5	40	0.0769	90.7%	74	116				

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

On Site Technologies, LTD.

Date: *28-Aug-98*

CLIENT: BioTech Remediation, Inc.
Work Order: 9808049
Project: Thomas #1 DK Bloomfield, NM

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: **CCV1 QC0606/07** Batch ID: **GC-1_980826** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/26/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980826A** SeqNo: **5900**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.55	0.5	20	0	97.8%	85	115				
Ethylbenzene	19.9	0.5	20	0	99.5%	85	115				
m,p-Xylene	37.57	1	40	0	93.9%	85	115				
Methyl tert-Butyl Ether	21.1	1	20	0	105.5%	85	115				
o-Xylene	19.54	0.5	20	0	97.7%	85	115				
Toluene	19.42	0.5	20	0	97.1%	85	115				
1,4-Difluorobenzene	86.53	0	100	0	86.5%	70	130				
4-Bromochlorobenzene	89.29	0	100	0	89.3%	70	130				
Fluorobenzene	83.74	0	100	0	83.7%	70	130				

Sample ID: **CCV2 QC0606/07** Batch ID: **GC-1_980826** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/26/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980826A** SeqNo: **5901**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.04	0.5	20	0	95.2%	85	115				
Ethylbenzene	19.86	0.5	20	0	99.3%	85	115				
m,p-Xylene	37.04	1	40	0	92.6%	85	115				
Methyl tert-Butyl Ether	20.65	1	20	0	103.2%	85	115				
o-Xylene	19.11	0.5	20	0	95.5%	85	115				
Toluene	18.92	0.5	20	0	94.6%	85	115				
1,4-Difluorobenzene	86.65	0	100	0	86.7%	70	130				
4-Bromochlorobenzene	86.67	0	100	0	86.7%	70	130				
Fluorobenzene	83.32	0	100	0	83.3%	70	130				

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

CLIENT: BioTech Remediation, Inc.
Work Order: 9808049
Project: Thomas #1 DK Bloomfield, NM

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: **CCV3 QC0606/07** Batch ID: **GC-1_980826** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/26/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980826A** SeqNo: **5902**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	36.53	0.5	40	0	91.3%	85	115				
Ethylbenzene	37.38	0.5	40	0	93.5%	85	115				
m,p-Xylene	71.13	1	80	0	88.9%	85	115				
Methyl tert-Butyl Ether	35.39	1	40	0	88.5%	85	115				
o-Xylene	37.1	0.5	40	0	92.8%	85	115				
Toluene	36.87	0.5	40	0	92.2%	85	115				
1,4-Difluorobenzene	86.32	0	100	0	86.3%	70	130				
4-Bromochlorobenzene	80.87	0	100	0	80.9%	70	130				
Fluorobenzene	83.24	0	100	0	83.2%	70	130				

Sample ID: **CCV1 QC0606/07** Batch ID: **GC-1_980827** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/27/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980827A** SeqNo: **5914**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.68	0.5	20	0	98.4%	85	115				
Ethylbenzene	20.62	0.5	20	0	103.1%	85	115				
m,p-Xylene	38.57	1	40	0	96.4%	85	115				
o-Xylene	19.75	0.5	20	0	98.7%	85	115				
Toluene	19.58	0.5	20	0	97.9%	85	115				
1,4-Difluorobenzene	86.6	0	100	0	86.6%	70	130				
4-Bromochlorobenzene	88.17	0	100	0	88.2%	70	130				
Fluorobenzene	83.79	0	100	0	83.8%	70	130				

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

CLIENT: BioTech Remediation, Inc.
Work Order: 9808049
Project: *Thomas #1 DK Bloomfield, NM*

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: **CCV2 QC0606/07** Batch ID: **GC-1_980827** Test Code: **SW8020A** Units: **µg/L** Analysis Date **8/27/98** Prep Date:
Client ID: **9808049** Run ID: **GC-1_980827A** SeqNo: **5915**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.44	0.5	20	0	97.2%	85	115				
Ethylbenzene	20.35	0.5	20	0	101.7%	85	115				
m,p-Xylene	38.02	1	40	0	95.1%	85	115				
o-Xylene	19.62	0.5	20	0	98.1%	85	115				
Toluene	19.4	0.5	20	0	97.0%	85	115				
1,4-Difluorobenzene	86.61	0	100	0	86.6%	70	130				
4-Bromochlorobenzene	87	0	100	0	87.0%	70	130				
Fluorobenzene	83.39	0	100	0	83.4%	70	130				

Qualifiers:
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J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 28-Aug-98

CLIENT: BioTech Remediation, Inc.
Work Order: 9808049
Project: Thomas #1 DK Bloomfield, NM
Test No: SW8020A

QC SUMMARY REPORT
SURROGATE RECOVERIES

BTEX

Sample ID	14FBZ	4BCBZ	FLBZ					
9808040-07A	87.3	93.8	83.6					
9808040-08A	85.8	89.4	82.6					
9808040-09A	87.5	84.9	83.5					
9808043-01A	87.5	95.1	84.3					
9808043-02A	85.9	81.6	83					
9808044-01A	87.2	95.6	84.6					
9808044-02A	88.1	81.7	87.2					
9808044-02AMS	86.6	80.8	84.9					
9808044-02AMSD	86.7	81.1	85					
9808046-02A	85.4	75.6	82.1					
9808046-02AMS	85.3	84.3	82.4					
9808046-02AMSD	85.7	86.8	82.4					
9808047-01A	88	94.8	84.8					
9808047-02A	86.9	83.1	83.6					
9808047-03A	86.8	86.3	84.2					
9808047-04A	87.8	87.2	84.1					
9808049-01A	85.4	88.3	82.9					
9808049-02A	75.6	76.1	72.8					
9808049-03A	87.6	95.9	84.8					
9808052-01A	84.6	85.9	80.8					
9808052-02A	84.9	84.6	81					
9808053-01A	87.4	83.2	83.2					
9808053-02A	86.2	74.8	83					
9808054-01A	86.3	73.3	83.4					
CCV1 QC0606/07	86.6	88.2	83.8					
CCV2 QC0606/07	86.6	87	83.4					
CCV3 QC0606/07	86.3	80.9	83.2					

Acronym		Surrogate	QC Limits
14FBZ	=	1,4-Difluorobenzene	70-130
4BCBZ	=	4-Bromochlorobenzene	70-130
FLBZ	=	Fluorobenzene	70-130

*** Surrogate recovery outside acceptance limits**

CLIENT: BioTech Remediation, Inc.
Work Order: 9808049
Project: Thomas #1 DK Bloomfield, NM
Test No: SW8020A

QC SUMMARY REPORT
SURROGATE RECOVERIES

BTEX

Sample ID	14FBZ	4BCBZ	FLBZ					
LCS WATER	86.2	87.1	83.4					
MB1	87.2	86.1	84.3					

Acronym		Surrogate	QC Limits
14FBZ	=	1,4-Difluorobenzene	70-130
4BCBZ	=	4-Bromochlorobenzene	70-130
FLBZ	=	Fluorobenzene	70-130

*** Surrogate recovery outside acceptance limits**

CHAIN OF CUSTODY RECORD

ON SITE TECHNOLOGIES, LTD.

Date: _____ Page _____ of _____

657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

Purchase Order No.: B98436	Job No.		
SEND INVOICE TO: Name		REPORT RESULTS TO: Name	Title
Company	Dept.	Company	
Address		Mailing Address	
City, State, Zip		City, State, Zip	
		Telephone No.	Telefax No.
Sampling Location:		Number of Containers	ANALYSIS REQUESTED
Sampler:			

SAMPLE IDENTIFICATION	SAMPLE DATE	SAMPLE TIME	MATRIX	PRES.	Number of Containers	BTEX									LAB ID
MW-2	3/4/98	1430	H2O		2	✓									9803-01-01
MW-3	3/4/98	1500	H2O		2	✓									-02A
Field Blank	3/4/98	1515	H2O		1	✓									-03A

Relinquished by:	Date/Time 3/4/98 1715	Received by:	Date/Time 3/4/98 1715
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Authorized by: _____ Date _____
(Client Signature Must Accompany Request)

Rush	24-48 Hours	10 Working Days	Special Instructions:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client