1R - 264

REPORTS

DATE:

11/14/2001

Tipperary
CORPORATION

633 Seventeenth Street
Suite 1550
Denver, Colorado 80202

November 14, 2001

VIA OVERNIGHT MAIL

Mr. William C. Olson
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Progress Report for Year 2001
Tatum Pit Closure Project
Lea County, NM

Dear Mr. Olson:

Please find enclosed additional results from our monitor wells in the subject project area. This report summarizes the results from water samples taken on January 10, April 5, July 7, and September 26, 2001. These results represent the 17 quarters of monitoring. In general, we are continuing to observe decreasing levels of BTEX in the monitor wells.

The Executive Summary section contains the following:

- Summary of results by location.
- Procedure for obtaining water samples.
- Summary of water depths in each monitor well.
- Monitor well gradient chart.
- LNAPL depth chart.
- Maps of pit reclamation locations.
- Chain of custody records and lab results of the water samples by quarter.

Detailed results are presented in tabular and graphical format for each monitor well. The monitor well data is grouped by site location in the report. We will continue to sample the project quarterly and report the results to your office on an annual basis. If you have any questions, please call me at (303) 293-9379.

Very truly yours,

Larry G. Sugano

Larry G. Sugano
Vice President - Engineering

cc: NMOCD Hobbs Office

Enclosures

Tipperary CORPORATION

Tipperary Corporation
September 2001
Sampling Results
Annual Report

Whole Earth Environmental
19606 San Gabriel
Houston, Tx. 77084

Executive Summary
Tipperary Corporation
Water Monitoring Program

Site History

In response to a request by a 1996 request by the NMOCD, Tipperary Corporation began a program to close a series of ten surface impoundments located within their Bagley Field west of Tatum, New Mexico. The closure program consisted of excavating the impoundments and encapsulating the contaminant plume within high-density polyethylene. As part of the closure program, a groundwater investigation was conducted at each site. The investigation concluded that due to the relatively shallow depth to the surface of the aquifer, each site impacted the Ogallala Aquifer to varying degrees.

The remediation plan included passive monitoring of those sites showing no free product on the water table and active fluid removal by means of the erection of windmills at three sites found to have more significant concentrations. A series of water monitoring wells were placed down gradient of each location. Each such well has been sampled and tested on a quarterly basis with the results of each laboratory analyses provided to the NMOCD on an annual basis. To date, two sites have been remediated to closure and a third is pending final approval.

Individual Site Descriptions

Iva COM

The Iva site includes a recovery well. Criteria contaminant concentrations within the well have shown a 94% reduction since installation and a 48% reduction over the past year. A review of the test results over the past three years indicates that the contaminant concentrations appear to be reduced at the rate of approximately 50% per year. If the trend continues, the concentrations will be within NMWQCC standards within the next two years. Two down gradient monitor wells at the site have never shown concentrations in excess of standards.

Mable COM

The Mable site includes a recovery well. Criteria contaminant concentrations within the well have shown a 73% reduction since installation and a 50% reduction over the past year. The primary contaminant compounds within this well are benzene and xylene. Only the xylene and ethylbenzene fractions have shown any significant improvement over previous sampling periods within the source well. Both down-gradient monitor wells generally fall within NMWQCC standards but are subject to periodic spikes in all tested fractions. LNAPL's are present within both monitor wells but appear to have

the viscous appearance and odor characteristics of fatty acids resulting from the aerobic degradation of hydrocarbons.

Bell State "A"
This site has no active recovery well but does contain a series of four monitor wells. The criteria contaminant concentrations within these wells have collectively dropped 92% from the initial concentrations however have shown no significant improvement over the past year. Benzene is the only fraction falling outside of NMWQCC standards.

NBF
This site has no active recovery well but does contain a series of four monitor wells. The criteria contaminant concentrations within these wells have collectively dropped 16% from the initial concentrations however have shown no significant improvement over the past year. Monitor wells nos. 15 and 16 continue to show elevated benzene concentrations and occasional spikes of xylene.

G.S. State
The G.S. site has an active recovery well and four down gradient monitor wells. The contaminant concentrations within the recovery well have been reduced by 78% over the life of the installation however the concentrations within the monitor wells have remained somewhat static. We introduced a program last year of installing absorbent socks within those wells having LNAPL's. The program did show significant reductions within those bores in which they were used however the BTEX concentrations came back to previous levels when their use was discontinued.

Sohio # 1
This site has no active recovery well but does contain a series of five monitor wells. The general trend within these wells is for an overall reduction in BTEX values-especially if the most recent results within Monitor Well # 18 are ignored due to our inability to bail a sufficient volume of fluids as a result of silting. Once again the absorbent sock program introduced last year proved effective until discontinued.

Sohio "A"
This site has no active recovery well but does contain a series of five monitor wells. The site has a gradient of .58' per 100' distance and may be considered quite static hydrologically. The BTEX concentrations have once again increased with the cessation of the absorbent sock program.

QP-78

WHOLE EARTH ENVIRONMENTAL
QUALITY PROCEDURE

Procedure for Obtaining Water Samples (Cased Wells) Using Enviro-Tech ES-60 Pump

Completed By: Approved By: Effective Date: / /

1.0 Purpose

This procedure outlines the methods to be employed in obtaining water samples from cased monitoring wells.

2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

3.0 Preliminary

3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the water. The shipment should include a Certificate of Compliance from the manufacturer of the collection bottle or vial and a Serial Number for the lot of containers. Retain this Certificate for future documentation purposes.

3.2 The following table shall be used to select the appropriate sampling container, preservative method and holding times for the various elements and compounds to be analyzed.

Compound to be Analyzed	Sample Container Size	Sample Container Description	Cap Requirements	Preservative	Maximum Hold Time
BTEX	40 ml.	VOA Container	Teflon Lined	HCl	7 days
TPH	1 liter	clear glass	Teflon Lined	HCl	28 days
PAH	1 liter	clear glass	Teflon Lined	Ice	7 days
Cation / Anion	1 liter	clear glass	Teflon Lined	None	48 Hrs.
Metals	1 liter	HD polyethylene	Any Plastic	Ice / HNO_3	28 Days
TDS	300 ml.	clear glass	Any Plastic	Ice	7 Days

4.0 Chain of Custody

4.1 Prepare a Sample Plan. The plan will list the well identification and the individual tests to be performed at that location. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.

4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.

4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label). Affix the labels to the jars.

5.0 Bailing Procedure

5.1 Identify the well from the site schematics. Place pre-labeled jar(s) next to the well. Remove the bolts from the well cover and place the cover with the bolts nearby. Remove the plastic cap from the well bore by first lifting the metal lever and then unscrewing the entire assembly.

5.2 Lower the ES-60 pump into the monitor well bore taking care to insure that the pump and first 10' of hose and cable does not touch the ground or become cross-contaminated by contact with anything containing hydrocarbon residues. When the pump reaches the bottom of the well bore you will feel the hose and cable assembly go slack. Lift the pump a minimum distance of 18" above the bottom of the well bore and clamp the hose assembly to the top of the well bore by means of vice grips. (Take care to insure that the vice grips are adjusted so as not to "choke" the hose.

5.3 Attach the electrical cable leads to an automobile battery and begin pumping the well bore. If the pump does not bring fluid to the surface within one minute, disconnect the electrical leads, and re-connect for four seconds three times to remove air cavitation.

5.4 The pump has a minimum volume of 2.8 gallons per minute at 60'. Purge the well by pumping for a minimum of 10 minutes before taking a sample.

6.0 Sampling Procedure

6.1 Once the well has been bailed in accordance with 5.2 of this procedure, a sample may be decanted into the appropriate sample collection jar directly from the bailer. The collection jar should be filled to the brim. Once the jar is sealed, turn the jar over to detect any bubbles that may be present. Add additional water to remove all bubbles from the sample container.

6.2 Note the time of collection on the sample collection jar with a fine Sharpie.

6.3 Place the sample directly on ice for transport to the laboratory. The preceding table shows the maximum hold times between collection and testing for the various analyses.

6.4 Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

7.0 Decontamination

7.1 After removing the pump from the well, use an aerosol spray pump bottle filled with denatured isopropyl alcohol to clean the pump and first 10' of the cable and hose assembly. Rinse the sprayed portion with distilled water to remove the alcohol and dry with a clean rag. Discard the rag after each use. During transport, the pump assembly should be carried in a 2" PVC protective sleeve.

8.0 Documentation

8.1 The testing laboratory shall provide the following minimum information:

A. Client, Project and sample name.
B. Signed copy of the original Chain of Custody Form including data on the time the sample was received by the lab.
C. Results of the requested analyses
D. Test Methods employed
E. Quality Control methods and results

Tipperary Corporation

Tatum Bagley Field

Monitor Well Depth to Water Chart

Well Name	Well No.	Water Depth 8/9/99	Water Depth 10/21/99	Water Depth 1/8/00	Water Depth 4/13/00	Water Depth 7/20/00	Water Depth 9/26/00	Water Depth 1/5/01	Water Depth 4/5/01	Water Depth 7/5/01	Water Depth 9/26/01
Iva COM	Source Well										
	1	48.8	51.8	51.7	51.6	51.7	51.8	51.8	51.7	51.8	51.7
	2	49.2	51.5	51.4	51.5	51.6	51.7	51.8	51.7	51.8	51.8
Mable COM	Source Well										
	3	48.8	52.5	52.4	53.7	53.7	53.7	51.6	51.7	51.8	51.9
	4	48.6	51.8	51.6	52.8	51.8	51.8	51.8	51.7	51.6	51.6
Bell State	6	42.1	43.0	51.6	44.3	44.4	44.5	44.6	44.5	44.4	44.3
	13	40.8	43.7	43.7	44.0	43.9	44.0	44.1	44.0	44.0	43.9
	14	43.0	43.5	44.2	44.2	44.3	44.2	44.3	44.2	44.1	44.1
	25	43.5	43.5	43.9	44.0	44.0	44.0	44.2	44.0	43.9	43.8
NBF	8	35.8	35.8	36.1	37.1	35.6	35.9	36.1	36.1	36.1	36.0
	15	34.8	37.0	37.1	37.9	37.5	36.3	36.3	36.1	36.2	36.0
	16	36.0	36.1	36.2	36.2	36.2	36.2	36.2	36.1	36.2	36.0
	26	34.8	34.6	34.9	35.9	35.1	35.2	35.2	35.4	35.6	35.8
Sohio A	11	38.3	38.5	37.8	38.3	38.3	38.8	38.7	37.5	36.8	35.6
	19	32.5	35.2	37.9	38.2	38.3	38.4	38.4	38.4	38.4	38.3
	20	38.0	38.7	38.0	38.4	38.5	38.4	38.5	38.5	38.6	38.6
	27	36.8	38.2	37.9	38.2	38.1	38.6	38.7	38.5	38.3	38.1
	31	37.5	38.9	39.7	38.5	38.5	38.1	38.4	38.6	38.6	38.8
Sohio # 1	10	44.5	44.9	43.9	44.2	45.0	44.9	45.1	45.0	45.0	44.9
	17	44.0	44.5	44.4	44.7	44.5	44.7	44.8	44.6	44.5	44.4
	18	43.8	44.1	45.4	46.4	45.7	45.4	45.8	46.0	45.9	46.6
	28	35.0	44.2	45.8	44.9	44.9	45.1	45.1	45.1	45.2	45.0
	30	45.3	44.1	44.2	44.8	44.3	44.3	44.3	44.2	44.3	44.2
G.S. State	Source Well										
	12	42.8	42.9	44.1	43.2	44.7	44.2	44.2	44.6	44.8	45.1
	21	43.3	43.7	43.9	44.0	44.2	44.3	44.3	44.2	44.3	44.2
	22	43.5	43.9	44.0	44.0	44.0	44.1	44.2	44.2	44.2	44.1
	29	44.0	44.3	44.2	44.3	44.7	44.7	44.7	44.5	44.6	44.4

Tipperary Corporation

Tatum Bagley Field

Monitor Well Gradient Chart

Well Name	Well No.	Surface Elevation	Water Elevation	Distance to Pit Center	Gradient (Ft. / Ft.)	Gradient (Ft. / 100Ft.)
Iva COM	Source Well	4,298.42	4,246.42			
	1	4,292.10	4,237.20	115.00	0.080174	8.02
	2	4,291.93	4,238.93	140.00	0.053500	5.35
Mable COM	Source Well	4,290.55	4,238.55			
	3	4,287.22	4,235.22	148.00	0.022500	2.25
	4	4,287.86	4,235.46	160.00	0.019313	1.93
Bell State	6	4,281.12	4,230.12	93.00	0.021183	2.12
	13	4,280.84	4,233.04	51.00	0.044118	4.41
	14	4,280.80	4,232.50	47.00	0.048723	4.87
	25	4,280.37	4,232.97	154.00	0.017662	1.77
NBF	8	4,259.41	4,211.41	165.00	0.045152	4.52
	15	4,259.68	4,212.68	198.00	0.036263	3.63
	16	4,259.06	4,211.96	247.00	0.031579	3.16
	26	4,258.04	4,215.04	387.00	0.022791	2.28
Sohio A	11	4,285.88	4,235.88	115.00	0.011835	0.83
	19	4,285.97	4,237.27	164.00	0.005305	0.53
	20	4,285.96	4,236.46	151.00	0.005822	0.58
	27	4,285.61	4,245.61	264.00	0.004659	0.47
	31	4,283.54	4,246.09	624.00	0.005288	0.53
Sohio # 1	10	4,283.63	4,233.63	110.00	0.016273	1.63
	17	4,283.31	4,233.91	262.00	0.000805	0.81
	18	4,283.59	4,234.99	176.00	0.010398	1.04
	28	4,283.21	4,236.96	552.00	0.004004	0.40
	30	4,281.13	4,235.82	776.00	0.005528	0.55
G.S. State	Source Well	4,307.00	4,259.00			
	12	4,303.27	4,255.27	52.00	0.071731	7.17
	21	4,303.08	4,255.08	151.00	0.025960	2.60
	22	4,302.77	4,255.27	148.00	0.025203	2.52
	29	4,303.20	4,254.14	295.00	0.016475	1.65

Calculation for Determining the Minimum Bailing Volume for Monitor Wells
Formula $V = (\pi r^2 h)$

V= volume
π= pi
r= inside radius of the well bore
h= maximum height of well bore in water table

π	r^2	h (in)	V (cu. in)	V (gal)	X 3 Volumes	Actual
3.1416	1	180	565.488	2.448	7.344	>10

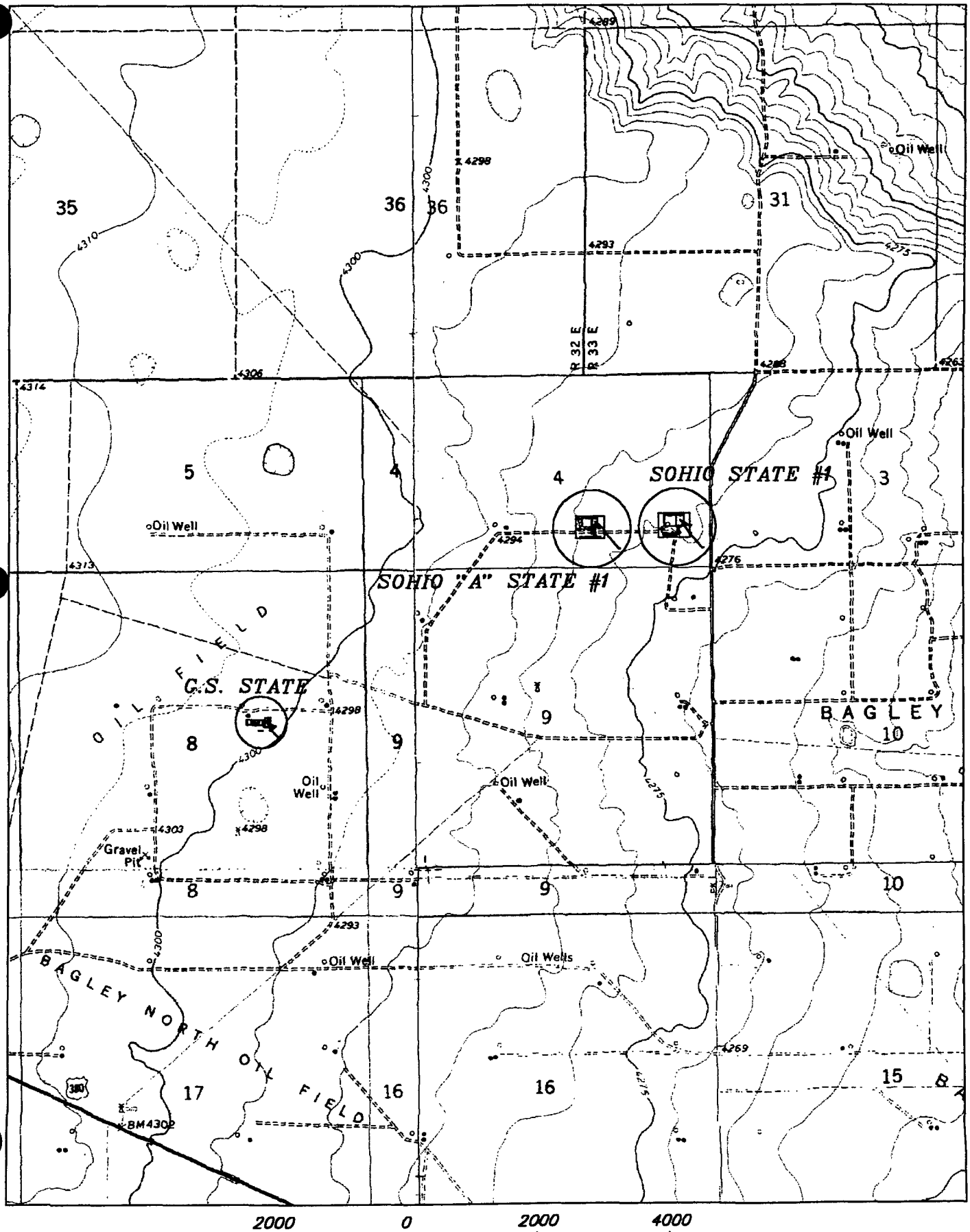
Tipperary Corporation

Tatum Bagley Field

LPNAL / DNAPL Depth Chart

Well Name	Well No.	LNAPL Top	LNAPL Bottom	LNAPL Thickness	DNAPL Top	DNAPL Bottom
Iva COM	Source Well					
	1	N / A	N / A	N / A	N / A	N / A
	2	N / A	N / A	N / A	N / A	N / A
Mable COM	Source Well					
	3	51.90	52.60	0.70	N / A	N / A
	4	51.60	51.90	0.30	N / A	N / A
Bell State	6	N / A	N / A	N / A	N / A	N / A
	13	N / A	N / A	N / A	N / A	N / A
	14	N / A	N / A	N / A	N / A	N / A
	25	N / A	N / A	N / A	N / A	N / A
NBF	8	N / A	N / A	N / A	N / A	N / A
	15	36.00	36.15	0.15	N / A	N / A
	16	36.00	36.15	0.15	N / A	N / A
	26	N / A	N / A	N / A	N / A	N / A
Sohio A	11	35.60	36.20	0.60	N / A	N / A
	19	38.30	38.70	0.40	N / A	N / A
	20	38.60	38.70	0.10	N / A	N / A
	27	N / A	N / A	N / A	N / A	N / A
	31	N / A	N / A	N / A	N / A	N / A
Sohio # 1	10	44.90	45.00	0.10	N / A	N / A
	17	44.40	44.55	0.15	N / A	N / A
	18	46.60	46.70	0.10	N / A	N / A
	28	N / A	N / A	N / A	N / A	N / A
	30	N / A	N / A	N / A	N / A	N / A
G.S. State	Source Well					
	12	45.10	46.20	1.10	N / A	N / A
	21	44.20	45.10	0.90	N / A	N / A
	22	44.10	44.90	0.80	N / A	N / A
	29	44.40	44.55	0.15	N / A	N / A

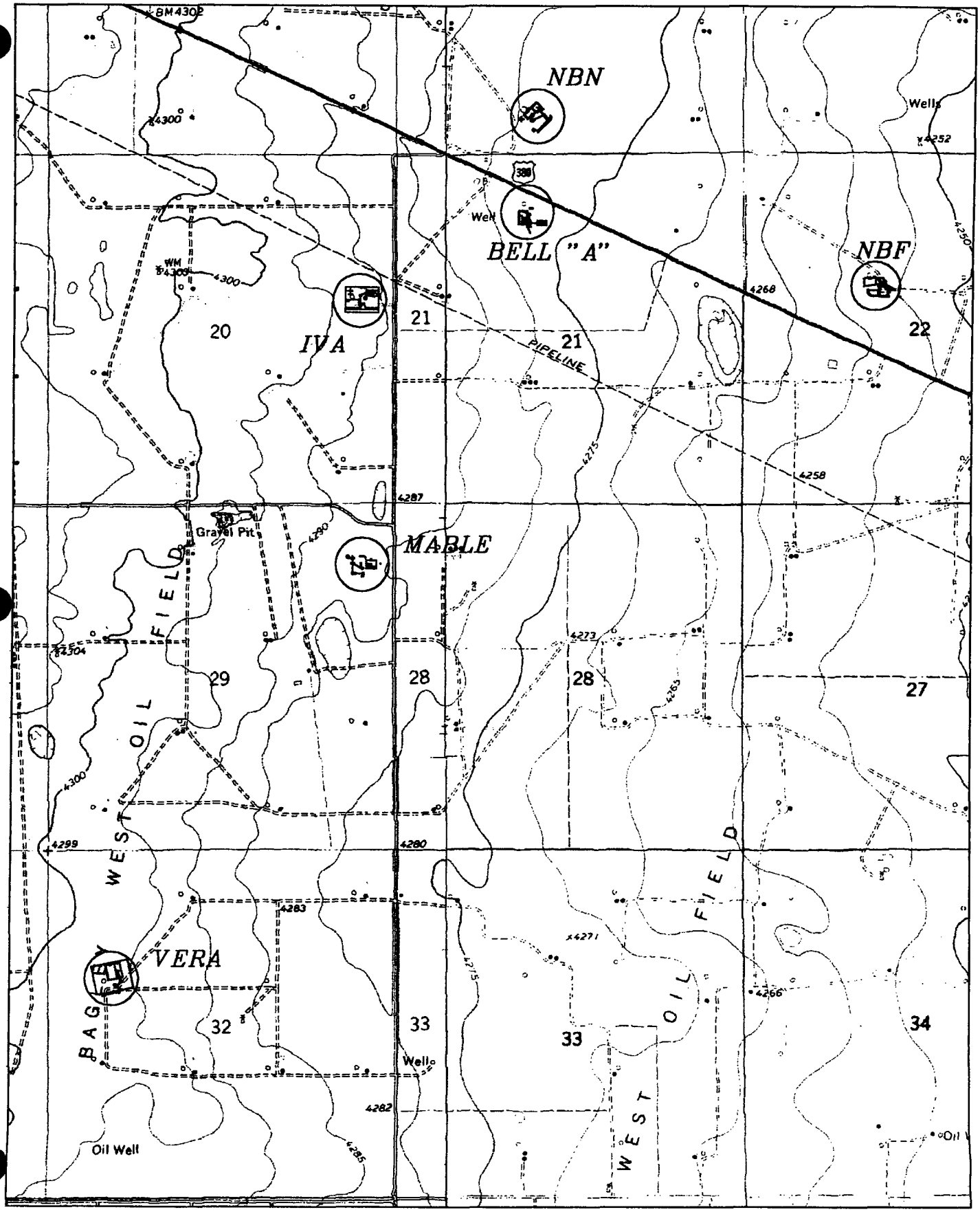
WHOLE EARTH ENVIROMENTAL, INC.



BASIN SURVEYS P.O. BOX 1786 – HOBBS, NEW MEXICO

W.O. Number: 9352	Drawn By: K. GOAD
Date: 10-21-99	Disk: KJG #122 – WE9352.DWG

WHOLE EARTH ENVIROMENTAL, INC.



2000 0 2000 4000

BASIN SURVEYS P.O. BOX 1786 – HOBBS, NEW MEXICO	W.O. Number: 9352	Drawn By: K. GOAD
	Date: 10–21–99	Disk: KJG #122 – WE9352.DWG

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Elliot Werner
Company Name: Whole Earth
Company Address:
City/State/Zip:
Telephone No: (800) 854-4358
Fax No:
Sampler Signature:

Project Name: Tipperary
Project #: Quarterly Sampling
Project Loc:
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify)	Analyze For: TCLP:	Analyze For: TOTAL: TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)
36195	IUA Com. Source Well	1-10-01	4:PM	2	X		X					X												X	

Special Instructions:

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 4.0°C
Laboratory Comments:

Relinquished by:	Date	Time	Received by:	Date	Time
Elliot Werner	1/11/01	9:45AM			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Jeanne McMurrey	01-11-01	0945

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: ELLIOT WERNER
Company Name: Whole Earth Env
Company Address:
City/State/Zip:
Telephone No:
Fax No:
Sampler Signature:

Project Name: TIPPERARY
Project #:
Project Loc:
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TCLP: / TOTAL: TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)
36132	MW 3	1/5	8:25	2	✓		✓					✓											✓	
36133	MW 1	1/5	9:00am	2	✓		✓					✓											✓	
36134	MW 2	1/5	9:00am	2	✓		✓					✓											✓	
36135	MW 4	1/5	8:45am	2	✓		✓					✓											✓	
36136	MW 6	1/5	10:10am	2	✓		✓					✓											✓	
36137	Mable Source	1/5	9:00am	2	✓		✓					✓											✓	
36138	MW 9	1/5	3:00pm	2	✓		✓					✓											✓	
36139	MW 12	1/5	11:25am	2	✓		✓					✓											✓	
36140	MW 13	1/5	9:50am	2	✓		✓					✓											✓	
36141	MW 14	1/5	10:00am	2	✓		✓					✓											✓	

Special Instructions:

Sample Containers Intact? Y / N
Temperature Upon Receipt: 2.5 °C
Laboratory Comments:

Relinquished by:	Date	Time	Received by:	Date	Time
	1/10/01	11:00am			
Relinquished by:	**Date**	**Time**	**Received by ELOT:**	**Date**	**Time**
			Jeanne McMurrey	01-10-01	1120

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: ELLIOT WERNER
Company Name: Whole Earth Environmental
Company Address:
City/State/Zip:
Telephone No:
Fax No:
Sampler Signature:

Project Name: TIPPERARY
Project #:
Project Loc:
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TCLP: / TOTAL: TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)
36142	MW 11	1/5	12:40	2	✓		✓					✓											✓	
36143	MW 10	1/5	1:30	2	✓		✓					✓											✓	
36144	MW 24	1/5	2:10	2	✓		✓					✓											✓	
36145	MW 15	1/5	10:30	2	✓		✓					✓											✓	
36146	MW 24	1/5	10:45	2	✓		✓					✓											✓	
36147	MW 8	1/5	10:20	2	✓		✓					✓											✓	
36148	MW 20	1/5	12:30	2	✓		✓					✓											✓	
36149	MW 16	1/5	2:00	2	✓		✓					✓											✓	
36150	MW 21	1/5	11:55	2	✓		✓					✓											✓	
36151	MW 23	1/5	3:10	2	✓		✓					✓											✓	

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
	1/10/01	11:20am			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Jana McManus	01-10-01	1120

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 2.5°C
Laboratory Comments:

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: ELLIOT WERNER
Company Name: Whole Earth ENV
Company Address:
City/State/Zip:
Telephone No:
Fax No:
Sampler Signature:

Project Name: TIPPERARY
Project #:
Project Loc:
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TCLP: / TOTAL: TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)
36152	MW 25	1/5/01	9:40	2	✓		✓					✓											✓	
36153	MW 27	1/5	1:00	2	✓		✓					✓											✓	
36154	MW 19	1/5	12:50	2	✓		✓					✓											✓	
36155	MW 17	1/5	1:45	2	✓		✓					✓											✓	
36156	MW 16	1/5	10:35	2	✓		✓					✓											✓	
36157	MW 24	1/5	9:15	2	✓		✓					✓											✓	
36158	MW 22	1/5	11:30	2	✓		✓					✓											✓	
36159	MW 29	1/5	11:45	2	✓		✓					✓											✓	
36160	GS SOURLE	1/5	11:15	2	✓		✓					✓											✓	
36161	MW 30	1/5	2:20	✓	✓		✓					✓											✓	

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
	01/10/01	11:20			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Jaime McManus	01-10-01	1120

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 2.5 °C
Laboratory Comments:

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: ELLIOT WERNER
Company Name: WHOLE EARTH ENV.
Company Address:
City/State/Zip:
Telephone No:
Fax No:
Sampler Signature:

Project Name: TIPPERARY
Project #:
Project Loc:
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO3	Preservative: HCl	Preservative: NaOH	Preservative: H2SO4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify)	Analyze For: TCLP: / TOTAL: TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)	Standard TAT
36162	MW31	1/5	1:15	2	✓		✓					✓											✓		

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
	1/10	11:35			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
				01-10-01	1135

Sample Containers Intact? Y N
Temperature Upon Receipt: 2.5 °C
Laboratory Comments:

LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, N.M. 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 4.0 deg. C
Project #: Quarterly Sampling
Project Name: Tipperary
Project Location: None Given

Sampling Date: 01/10/01
Receiving Date: 01/11/01
Analysis Date: 01/11/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
36195	IUA Com. Source Well	0.533	0.168	0.015	0.067	0.044
%IA		87	87	86	91	88
%EA		86	87	87	93	91
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: EPA SW 846-8021B ,5030

Raland K. Tuttle

1-11-01
Date

LAB OF TEXAS, INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, N.M. 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 2.5 deg. C
Project #: None Given
Project Name: Tipperary
Project Location: None Given

Sampling Date: 01/05/01
Receiving Date: 01/10/01
Analysis Date: 01/11/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
36132	MW 3	<0.010	1.21	1.21	5.50	0.894
%IA		87	87	86	91	88
%EA		86	87	87	93	91
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: EPA SW 846-8021B ,5030

Armando O. Gomez

Armando O. Gomez

1-16-01
Date

LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, N.M. 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 2.5 deg. C
Project #: None Given
Project Name: Tipperary
Project Location: None Given

Sampling Date: 01/05/01
Receiving Date: 01/10/01
Analysis Date: 01/12/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
36133	MW 1	<0.001	0.004	0.006	0.014	0.007
36134	MW 2	<0.001	0.003	0.005	0.011	0.005
36135	MW 4	<0.010	0.038	0.020	0.063	0.021
36136	MW 6	0.014	<0.001	0.005	0.007	0.003
36137	Mable Source	0.590	0.475	0.127	0.927	0.768
36138	MW 9	0.037	0.032	0.014	0.051	0.037
36139	MW 12	1.07	1.71	0.945	5.66	1.58
36140	MW 13	<0.001	0.002	0.004	0.009	0.004
36141	MW 14	0.024	<0.001	0.004	0.007	0.003
36142	MW 11	0.043	0.005	0.004	0.013	0.008
36143	MW 10	2.43	0.011	0.153	0.251	0.089
36144	MW 28	0.156	0.115	0.034	0.175	0.120
36145	MW 15	2.79	1.36	0.249	0.612	0.493
36146	MW 26	0.044	0.016	0.006	0.012	0.009
36147	MW 8	0.001	0.001	0.002	0.005	0.002
36148	MW 20	0.009	0.006	0.005	0.016	0.008
36149	MW 18	2.95	1.84	0.364	1.54	1.22
36150	MW 21	0.019	0.010	0.019	0.027	0.013
36151	MW 23	0.031	0.032	0.013	0.050	0.034
36152	MW 25	<0.001	<0.001	<0.001	<0.001	<0.001
	%IA	103	100	101	96	101
	%EA	105	98	100	97	103
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: EPA SW 846-8021B ,5030

Armando O. Gomez

1-16-01
Date

LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, N.M. 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 2.5 deg. C
Project #: None Given
Project Name: Tipperary
Project Location: None Given

Sampling Date: 01/05/01
Receiving Date: 01/10/01
Analysis Date: 01/13/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
36153	MW 27	0.355	0.004	0.003	0.020	0.009
36154	MW 19	0.248	0.002	0.002	0.006	0.003
36155	MW 17	1.42	0.036	0.140	0.428	0.287
36156	MW 16	1.32	0.023	0.083	0.110	0.055
36157	MW 24	0.004	0.004	0.002	0.008	0.005
36158	MW 22	0.140	0.036	0.057	0.092	0.085
36159	MW 29	0.019	0.010	0.010	0.034	0.014
36160	GS Source	0.805	0.292	0.136	0.692	0.414
36161	MW 30	0.036	0.030	0.009	0.036	0.026
36162	MW 31	0.130	0.004	0.003	0.010	0.005
%IA		93	90	89	86	90
%EA		100	98	98	95	100
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: EPA SW 846-8021B ,5030

Armando O. Gomez

1-16-01
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: _____ Project Name: Quarterly Sampling

Company Name: Whole Earth Environmental, Inc. Project #: _____

Company Address: 19606 San Gabriel Project Loc: Tatum, New Mexico

City/State/Zip: Houston, Tx. 77084 PO #: _____

Telephone No: (600) 864-4358 Fax No: (281) 846-8996

Sampler Signature: _____

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TCLP: / TOTAL: TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)	Standard TAT
38917	Iva Source Well	4-5	10:40		X		X					X											X		
38918	Iva MW 1		10:45		X		X					X											X		
38919	Iva MW 2		11:09		X		X					X											X		
38920	Mable Source Well		11:12		X		X					X											X		
38921	Mable MW 3		11:15		X		X					X											X		
38922	Mable MW 4		11:26		X		X					X											X		
38923	Bell MW 6		10:20		X		X					X											X		
38924	Bell MW 13		9:59		X		X					X											X		
38925	Bell MW 14		10:10		X		X					X											X		
38926	Bell MW 25	↓	9:44		X		X					X											X		

Special Instructions:

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 2.5 °C
Laboratory Comments: INV. Tipperary

Relinquished by:	Date	Time	Received by:	Date	Time
M. Gallegos	4-6-01	9:23			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Jessica Mooney	4-6-01	0925

PG 2 of 4

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763

Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Company Name Whole Earth Environmental, Inc.

Company Address: 19606 San Gabriel

City/State/Zip: Houston, Tx. 77084

Telephone No: (800) 854-4358   Fax No: (281) 646-8996

Sampler Signature:

Project Name: Quarterly Sampling

Project #:

Project Loc: Tatum, New Mexico

PO #:

Analyze For: TCLP: / TOTAL:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)	Standard TAT
38927	NBF MW 8	4-5	11:58		X		X					X											X		
38928	NBF MW 15	↓	12:20		X		X					X											X		
38929	NBF MW 16		12:12		X		X					X											X		
38930	NBF MW 26		11:45		X		X					X											X		
38931	Sohio #1 MW 10		1:50		X		X					X											X		
38932	Sohio #1 MW 17		1:37		X		X					X											X		
38933	Sohio # 1 MW 18		1:22		X		X					X											X		
38934	Sohio # 1 MW 28		1:10		X		X					X											X		
38935	Sohio # 1 MW 30		12:55		X		X					X											X		
[illegible]	Sohio "A" MW 11		2:20		X		X					X											X		

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
M. [signature]	4-6-01	9:25			
Relinquished by:	Date	Time	Received by ELOT: [signature]	4-6-01	0925

Sample Containers Intact? (Y) N
Temperature Upon Receipt: [illegible]
Laboratory Comments: JNV Tipperary

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: _____
Company Name: Whole Earth Environmental, Inc.
Company Address: 19606 San Gabriel
City/State/Zip: Houston, Tx. 77084
Telephone No: (800) 864-4358 Fax No: (281) 648-8996
Sampler Signature: _____

Project Name: Quarterly Sampling - Tippetary
Project #: _____
Project Loc: Tatum, New Mexico
PO #: _____

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For: TCLP: / TOTAL: TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Scheduled)	Standard TAT
38937	Sohio "A" MW 19	4-5	2:30		X		X					X											X		
38938	Sohio "A" MW 20		2:20		X		X					X											X		
38939	Sohio "A" MW 27		2:10		X		X					X											X		
38940	Sohio "A" MW 31		2:00		X		X					X											X		
38941	GS Source Well		2:40		X		X					X											X		
38942	GS MW 12		2:57		X		X					X											X		
38943	GS MW 21		3:10		X		X					X											X		
38944	GS MW 22		3:25		X		X					X											X		
38945	GS MW 29		3:45		X		X					X											X		
38946	Sat. 4 MW 9	✓	9:55		X		X					X											X		

Special Instructions:

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 2.5°C
Laboratory Comments: INV: Tippetary

Relinquished by:	Date	Time	Received by:	Date	Time
Mark Hall	4-6-01	9:25			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
				4-6-01	09:25

P. 7

PG 4 of 1

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763

Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Company Name: Whole Earth Environmental

Company Address: 19606 San Gabriel

City/State/Zip: Houston, Tx. 77084

Telephone No: (800) 854-4358

Fax No: (281) 646-8996

Sampler Signature:

Project Name: Quarterly Sampling

Project #:

Project Loc: Tatum, NM

PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For (TCLP / TOTAL): TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030							RUSH TAT (Pre-Schedule)	Standard TAT
38947	23	4-5	9:10	2	✓		✓																✓								
38948	24	4-5	9:20	2	✓		✓																✓								

Special Instructions:

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 2.5°C
Laboratory Comments:

Relinquished by:	Date	Time	Received by:	Date	Time
M. [signature]	4-6-01	9:25			

Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Jeanne McMurry	4-6-01	0925

Apr 11 01 08:09a

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

WHOLE EARTH ENVIRONMENTAL INC.
ATTN: MR. MIKE GRIFFIN
19606 SAN GABRIEL
HOUSTON, TEXAS 77084
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 2.5 deg. C
Project #: None Given
Project Name: Quarterly Sampling
Project Location: Tatum, New Mexico

Sampling Date: 04/05/01
Receiving Date: 04/06/01
Analysis Date: 04/06/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
38917	Iva Source Well	0.666	0.599	0.141	1.05	0.824
38918	Iva MW 1	<0.001	<0.001	<0.001	<0.001	<0.001
38919	Iva MW 2	<0.001	<0.001	<0.001	<0.001	<0.001
38920	Mable Source Well	0.509	0.435	0.128	1.09	0.816
38921	Mable MW 3	<0.010	0.047	0.088	0.270	0.049
38922	Mable MW 4	<0.001	<0.001	0.006	0.015	0.004
38923	Bell MW 6	0.024	<0.001	0.002	0.001	<0.001
38924	Bell MW 13	<0.001	<0.001	<0.001	<0.001	<0.001
38925	Bell MW 14	0.047	<0.001	0.006	0.001	<0.001
38926	Bell MW 25	<0.001	<0.001	<0.001	<0.001	<0.001
38927	NBF MW 8	<0.001	<0.001	0.003	0.007	0.002
	%IA	99	102	102	100	101
	%EA	88	93	97	95	97
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: EPA SW 846-8021B ,5030

Raland K. Tuttle

4-10-01
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

WHOLE EARTH ENVIRONMENTAL INC.
ATTN: MR. MIKE GRIFFIN
19606 SAN GABRIEL
HOUSTON, TEXAS 77084
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 2.5 deg. C
Project #: None Given
Project Name: Quarterly Sampling
Project Location: Tatum, New Mexico

Sampling Date: 04/05/01
Receiving Date: 04/06/01
Analysis Date: 04/08/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
38928	NBF MW 15	2.57	1.46	0.308	0.821	0.481
38929	NBF MW 16	1.55	<0.005	0.101	0.104	0.039
38930	NBF MW 26	<0.001	<0.001	0.003	0.009	0.003
38931	Sohio #1 MW 10	2.08	0.031	0.179	0.342	0.074
38932	Sohio #1 MW 17	1.49	0.038	0.199	0.606	0.348
38933	Sohio #1 MW 18	1.41	0.179	0.095	0.449	0.306
38934	Sohio #1 MW 28	0.014	0.010	0.007	0.016	0.006
38935	Sohio #1 MW 30	0.007	0.008	0.005	0.010	0.004
38936	Sohio "A" MW 11	0.033	0.006	0.007	0.024	0.013
38937	Sohio "A" MW 19	0.325	0.007	0.009	0.030	0.016
38938	Sohio "A" MW 20	0.020	0.006	0.009	0.029	0.016
38939	Sohio "A" MW 27	0.324	0.012	0.016	0.069	0.035
%IA		90	93	94	93	93
%EA		88	92	91	89	94
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: EPA SW 846-8021B ,5030

Raland K. Tuttle

4-11-01
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

WHOLE EARTH ENVIRONMENTAL INC.
ATTN: MR. MIKE GRIFFIN
19606 SAN GABRIEL
HOUSTON, TEXAS 77084
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 2.5 deg. C
Project #: None Given
Project Name: Quarterly Sampling
Project Location: Tatum, New Mexico

Sampling Date: 04/05/01
Receiving Date: 04/06/01
Analysis Date: 04/09/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
38940	Sohio "A" MW 31	0.105	0.008	0.013	0.042	0.023
38941	GS Source Well	0.417	0.148	0.091	0.582	0.254
38942	GS MW 12	0.394	0.022	0.180	0.767	0.200
38943	GS MW 21	0.014	0.011	0.012	0.021	0.009
38944	GS MW 22	0.085	0.038	0.060	0.076	0.099
38945	GS MW 29	0.009	0.007	0.007	0.022	0.011
38946	Sat 4 MW 9	<0.001	<0.001	<0.001	<0.001	<0.001
38947	23	<0.001	<0.001	<0.001	<0.001	<0.001
38948	24	<0.001	<0.001	<0.001	<0.001	<0.001
%IA		93	98	100	99	100
%EA		102	106	106	104	105
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: EPA SW 846-8021B ,5030

Raland K. Tuttle

4-11-01
Date

...viro...ental Lab of Texas, Inc.

...) West I-20 East
...sa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Company Name Whole Earth Environmental, Inc.

Company Address: 19606 San Gabriel

City/State/Zip: Houston, Tx. 77084

Telephone No: (800) 854-4358

Fax No: (281) 646-8996

Sampler Signature: [signature]

Project Name: Quarterly Sampling

Project #:

Project Loc: Tatum, New Mexico

PO #:

				Preservative							Matrix				Analyze For: (TCLP: / TOTAL:)															
FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Water	Sludge	Soil	Other (specify):	TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030							RUSH TAT (Pre-Schedule	Standard TAT
Iva Source Well	6/6/01		2	X		X					X											X								
Iva MW 1	6/5/01		2	X		X					X											X								
Iva MW 2	6/5/01		2	X		X					X											X								
Mable Source Well	6/5/01		2	X		X					X											X								
Mable MW 3	6/5/01		2	X		X					X											X								
Mable MW 4	6/5/01		2	X		X					X											X								
Bell MW 6	6/5/01		2	X		X					X											X								
Bell MW 13	6/5/01		2	X		X					X											X								
Bell MW 14	6/5/01		2	X		X					X											X								
Bell MW 25	6/5/01		2	X		X					X											X								

...l Instructions:

...ished by:	Date	Time	Received by:	Date	Time
[signature]	7-7-01	11:30			
...shed by:	Date	Time			

...viro...ental Lab of Texas, Inc.

West I-20 East
...a, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Company Name: Whole Earth Environmental, Inc.

Company Address: 19606 San Gabriel

City/State/Zip: Houston, Tx. 77084

Telephone No: (800) 854-4358

Fax No: (281) 646-8996

Sampler Signature: M. [signature]

Project Name: Quarterly Sampling

Project #:

Project Loc: Tatum, New Mexico

PO #:

FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For (TCLP: / TOTAL:): TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)	Standard TAT
NBF MW 8	6/5/01			X		X					X											X		
NBF MW 15	6/5/01			X		X					X											X		
NBF MW 16	6/5/01			X		X					X											X		
NBF MW 26	6/5/01			X		X					X											X		
Sohio #1 MW 10	6/6/01			X		X					X											X		
Sohio #1 MW 17	6/6/01			X		X					X											X		
Sohio # 1 MW 18	6/6/01			X		X					X											X		
Sohio # 1 MW 28	6/6/01			X		X					X											X		
Sohio # 1 MW 30	6/6/01			X		X					X											X		
Sohio "A" MW 11	6/6/01			X		X					X											X		

...l Instructions:

...ished by:	Date	Time	Received by:	Date	Time
[signature]	7-7-01	11:30			
...ished by:	Date	Time	Received by ELOT: [signature]	Date	Time

Sample Containers Intact?
Temperature Upon Receipt:
Laboratory Comments:

viro... ntal Lab of Texas, Inc.

West I-20 East
a, Texas 79763

Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Company Name: Whole Earth Environmental, Inc.

Company Address: 19606 San Gabriel

City/State/Zip: Houston, Tx. 77084

Telephone No: (800) 854-4358

Fax No: (281) 646-8996

Sampler Signature:

Project Name: Quarterly Sampling

Project #:

Project Loc: Tatum, New Mexico

PO #:

FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For (TCLP: / TOTAL:): TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)	Standard TAT
Sohio "A" MW 19	6/6/01			X		X					X											X		
Sohio "A" MW 20	6/6/01			X		X					X											X		
Sohio "A" MW 27	6/6/01			X		X					X											X		
Sohio "A" MW 31	6/6/01			X		X					X											X		
GS Source Well	6/6/01			X		X					X											X		
GS MW 12	6/6/01			X		X					X											X		
GS MW 21	6/6/01			X		X					X											X		
GS MW 22	6/6/01			X		X					X											X		
GS MW 29	6/6/01			X		X					X											X		
Sat. 4 MW 9	6/6/01			X		X					X											X		

...l Instructions:

...lished by:	Date	Time	Received by:	Date	Time
	7-7-01	11:30			
...lished by:	Date	Time	Received by ELOT:	Date	Time

Sample Containers Intact?
Temperature Upon Receipt:
Laboratory Comments:

nvironmental Lab of Texas, Inc.

0 West I-20 East
ssa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: _____

Company Name: Whole Earth Environmental, Inc.

Company Address: 19606 San Gabriel

City/State/Zip: Houston, Tx. 77084

Telephone No: (800) 864-4358 Fax No: (281) 646-8996

Sampler Signature:

Project Name: Quarterly Sampling

Project #: _____

Project Loc: Tatum, New Mexico

PO #: _____

Lab I.D.	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TCLP: TDS / Cl. / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	Cations / Anions	RUSH TAT (Pre-Schedule)	Standard TAT
	Satellite # 4 MW 23	6/6/01		2	X		X					X											X			
	Satellite # 4 MW24	6/6/01		2	X		X					X											X			
	Collier MW 32	6/6/01		4	X		X					X				X							X	X		
	CollierMW 33	6/6/01		4	X		X					X				X							X	X		

Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
	7-7-01	11:30			
Relinquished by:	Date	Time	Received by:	Date	Time

Laboratory Comments:

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

WHOLE EARTH ENVIRONMENTAL
ATTN: MR. MIKE GRIFFIN
19606 SAN GABRIEL
HOUSTON, TEXAS 77084
FAX: 281-646-8996
FAX: 505-397-3591 (motel)

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl 2 deg C
Project #: None Given
Project Name: Quarterly Sampling
Project Location: Tatum, N.M.

Sampling Date:See Below
Receiving Date: 07/07/01
Analysis Date: 07/07/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L	SAMPLE DATE
0101098-01	Iva Source Well	0.371	0.252	0.075	0.574	0.474	07/06/01
0101098-02	Iva MW 1	<0.001	<0.001	0.003	0.008	0.002	07/05/01
0101098-03	Iva MW 2	<0.001	<0.001	0.002	0.006	<0.001	07/05/01
0101098-04	Mable Source Well	0.459	0.343	0.118	0.928	0.735	07/05/01
0101098-05	Mable MW 3	0.003	0.007	0.025	0.057	0.021	07/05/01
0101098-06	Mable MW 4	0.004	0.014	0.006	0.014	0.005	07/05/01
0101098-07	Bell MW 6	0.056	<0.001	0.002	0.005	<0.001	07/05/01
0101098-08	Bell MW 13	0.001	<0.001	0.002	0.005	0.002	07/05/01
0101098-09	Bell MW 14	0.034	0.001	0.005	0.007	0.002	07/05/01
0101098-10	Bell MW 25	<0.001	<0.001	0.003	0.006	0.002	07/05/01
0101098-11	NBF MW 8	<0.001	<0.001	0.001	0.004	0.001	07/05/01
0101098-12	NBF MW 15	1.80	0.948	0.250	0.598	0.409	07/05/01
0101098-13	NBF MW 16	1.65	0.026	0.097	0.159	0.069	07/05/01
0101098-14	NBF MW 26	<0.001	<0.001	0.002	0.004	<0.001	07/05/01
0101098-15	Sohio #1 MW 10	2.20	<0.010	0.190	0.455	0.052	07/06/01
0101098-16	Sohio #1 MW 17	1.22	0.017	0.166	0.583	0.303	07/06/01
0101098-17	Sohio #1 MW 18	1.10	0.077	0.082	0.364	0.257	07/06/01
	QUALITY CONTROL	0.110	0.108	0.112	0.224	0.114	
	TRUE VALUE	0.100	0.100	0.100	0.200	0.100	
	% INSTRUMENT ACCURACY	110	108	112	112	114	
	SPIKED AMOUNT	0.100	0.100	0.100	0.200	0.100	
	ORIGINAL SAMPLE	<0.001	<0.001	<0.001	<0.001	<0.001	
	SPIKE	0.092	0.088	0.087	0.171	0.089	
	SPIKE DUP	0.088	0.084	0.085	0.167	0.086	
	% EXTRACTION ACCURACY	92	88	87	86	89	
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001	
	RPD	4	4	2	2	3	

METHODS: EPA SW 846-8021B ,5030

Raland K. Tuttle

7-13-01
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

WHOLE EARTH ENVIRONMENTAL
ATTN: MR. MIKE GRIFFIN
19606 SAN GABRIEL
HOUSTON, TEXAS 77084
FAX: 281-646-8996
FAX: 505-397-3591 (motel)

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl 2 deg C
Project #: None Given
Project Name: Quarterly Sampling
Project Location: Tatum, N.M.

Sampling Date: 07/06/01
Receiving Date: 07/07/01
Analysis Date: 07/09/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
0101098-18	Sohio #1 MW 28	0.009	0.002	0.006	0.025	0.007
0101098-19	Sohio #1 MW 30	0.005	0.001	0.004	0.017	0.005
0101098-20	Sohio "A" MW 11	0.035	0.002	0.005	0.018	0.007
0101098-21	Sohio "A" MW 19	0.307	0.001	0.004	0.017	0.005
0101098-22	Sohio "A" MW 20	0.005	<0.001	0.004	0.014	0.004
0101098-23	Sohio "A" MW 27	0.073	<0.001	0.004	0.012	0.004
0101098-24	Sohio "A" MW 31	0.275	0.003	0.007	0.039	0.014
0101098-25	GS Source Well	0.318	0.180	0.133	0.722	0.368
0101098-26	GS MW 12	0.350	0.026	0.150	0.483	0.150
0101098-27	GS MW 21	0.009	0.002	0.007	0.004	0.002
0101098-28	GS MW 22	0.062	0.020	0.046	0.047	0.069
0101098-29	GS MW 29	0.005	0.002	0.004	0.005	0.004
0101098-30	Sat. 4 MW 9	<0.001	<0.001	0.001	0.003	<0.001
0101098-31	Satellite #4 MW 23	<0.001	<0.001	<0.001	<0.001	<0.001
0101098-32	Satellite #4 MW 24	<0.001	<0.001	<0.001	<0.001	<0.001
0101098-33	Collier MW 32	0.537	0.054	0.073	0.077	0.078
0101098-34	Collier MW 33	0.043	0.003	0.005	0.007	0.005
	QUALITY CONTROL	0.092	0.098	0.095	0.186	0.097
	TRUE VALUE	0.100	0.100	0.100	0.200	0.100
	% INSTRUMENT ACCURACY	92	90	95	93	97
	SPIKED AMOUNT	0.100	0.100	0.100	0.200	0.100
	ORIGINAL SAMPLE	0.005	0.001	0.004	0.017	0.005
	SPIKE	0.097	0.090	0.098	0.202	0.101
	SPIKE DUP	0.097	0.091	0.090	0.185	0.090
	% EXTRACTION ACCURACY	92	89	94	93	96
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001
	RPD	0	1	8	9	11

METHODS: EPA SW 846-8021B ,5030

Raland K. Tuttle

7-13-01
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: _____

Company Name: Whole Earth Environmental, Inc.

Company Address: 19606 San Gabriel

City/State/Zip: Houston, Tx. 77084

Telephone No: (800) 864-4356 Fax No: (281) 646-8998

Sampler Signature: _____

Project Name: Quarterly Sampling

Project #: _____

Project Loc: Tatum, New Mexico

PO #: _____

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl as per M. Griffin 9/24	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TCLP: / TOTAL: TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)	Standard TAT
01	Iva Source Well	9/24/01		2	X	X	X					X											X		
02	Iva MW 1	9/24/01		2	X	X	X					X											X		
03	Iva MW 2	9/24/01		2	X	X	X					X											X		
04	Mable Source Well	9/24/01		2	X	X	X					X											X		
05	Mable MW 3	9/24/01		2	X	X	X					X											X		
06	Mable MW 4	9/24/01		2	X	X	X					X											X		
07	Bell MW 8	9/24/01		2	X	X	X					X											X		
08	Bell MW 13	9/24/01		2	X	X	X					X											X		
09	Bell MW 14	9/24/01		2	X	X	X					X											X		
10	Bell MW 25	9/24/01		2	X	X	X					X											X		

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
M. Griffin	9-26	8:18			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			[illegible]	9/26/01	1618

Sample Containers Intact?
Temperature Upon Receipt
Laboratory Comments

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Company Name: Whole Earth Environmental, Inc.

Company Address: 19606 San Gabriel

City/State/Zip: Houston, Tx. 77084

Telephone No: (800) 854-4358

Fax No: (281) 646-8996

Sampler Signature:

Project Name: Quarterly Sampling

Project #:

Project Loc: Tatum, New Mexico

PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3 (Green)	Preservative: HCl as per M. Griffin 9/26	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	TDS / Cl / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)	Standard TAT
	NBF MW 8	9/24/01		2	X	X	X					X											X		
	NBF MW 15	9/24/01		2	X	X	X					X											X		
	NBF MW 16	9/24/01		2	X	X	X					X											X		
	NBF MW 26	9/24/01		2	X	X	X					X											X		
	Sohio #1 MW 10	9/24/01		2	X	X	X					X											X		
	Sohio #1 MW 17	9/24/01		2	X	X	X					X											X		
	Sohio # 1 MW 18	9/24/01		2	X	X	X					X											X		
	Sohio # 1 MW 28	9/24/01		2	X	X	X					X											X		
	Sohio # 1 MW 30	9/24/01		2	X	X	X					X											X		
	Sohio "A" MW 11	9/24/01		2	X	X	X					X											X		

Special Instructions:

Sample Containers Intact? (Y) N
Temperature Upon Receipt:
Laboratory Comments:

Relinquished by:	Date	Time	Received by:	Date	Time
M. Griffin	9-26-01	8:18			
Relinquished by:	Date	Time	Received by ELOT: [illegible]	Date: [illegible]	Time: [illegible]

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763

Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Company Name: Whole Earth Environmental, Inc.

Company Address: 19606 San Gabriel

City/State/Zip: Houston, Tx. 77084

Telephone No: (800) 664-4358

Fax No: (281) 646-8996

Sampler Signature:

Project Name: Quarterly Sampling

Project #:

Project Loc: Tatum, New Mexico

PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3 JAM	HCl (per M. Griffin 9/26)	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For (TCLP: / TOTAL:): TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)	Standard TAT
	Sohio "A" MW 19	9/24/01		2	X	X	/					X											X		
	Sohio "A" MW 20	9/24/01		2	X	X	X					X											X		
	Sohio "A" MW 27	9/24/01		2	X	X	X					X											X		
	Sohio "A" MW 31	9/24/01		2	X	X	X					X											X		
	GS Source Well	9/24/01		2	X	X	X					X											X		
	GS MW 12	9/24/01		2	X	X	X					X											X		
	GS MW 21	9/24/01		2	X	X	X					X											X		
	GS MW 22	9/24/01		2	X	X	X					X											X		
	GS MW 29	9/24/01		2	X	X	X					X											X		
	~~Collier MW-32~~	~~9/24/01~~		~~2~~	~~X~~	~~X~~	~~X~~					~~X~~											~~X~~		

Special Instructions: [illegible] on Tipperary Begley Field COC 9/26

Relinquished by:	Date	Time	Received by:	Date	Time
M Griff	9-26-01	8:18			
Relinquished by:	Date	Time	Received by ELOT: [illegible signature]	9-26-01	[illegible]

Sample Containers Intact?
Temperature Upon Receipt:
Laboratory Comments:

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

WHOLE EARTH ENVIRONMENATL
ATTN: MR. MIKE GRIFFIN
19606 SAN GABRIEL
HOUSTON, TEXAS 77084
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 0.0 deg C
Project Name: Quarterly Sampling
Project #: None Given
Project Location: Tatum, NM

Sampling Date: 09/24/01
Receiving Date: 09/26/01
Analysis Date: 10/04/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
0101642-01	Iva Source Well	0.430	0.204	0.048	0.486	0.359
0101642-02	Iva MW 1	<0.001	<0.001	<0.001	0.003	<0.001
0101642-03	Iva MW 2	0.004	0.003	0.001	0.006	0.004
0101642-04	Mable Source Well	0.550	0.425	0.148	1.36	0.904
0101642-05	Mable MW 3	0.053	0.163	0.173	0.826	0.154
0101642-06	Mable MW 4	0.039	0.038	0.102	0.273	0.091
0101642-07	Bell MW 6	0.038	<0.001	<0.001	<0.001	<0.001
0101642-08	Bell MW 13	0.002	0.002	0.003	0.009	0.003
0101642-09	Bell MW 14	0.054	0.001	0.005	0.011	0.004

QUALITY CONTROL	0.091	0.090	0.088	0.170	0.087
TRUE VALUE	0.100	0.100	0.100	0.200	0.100
% IA	91	90	88	85	87
SPIKED AMOUNT	0.100	0.100	0.100	0.200	0.100
ORIGINAL SAMPLE	<0.001	<0.001	<0.001	<0.001	<0.001
SPIKE	0.093	0.089	0.082	0.160	0.077
SPIKE DUP	0.086	0.104	0.090	0.171	0.087
%EA	86	104	90	86	87
BLANK	<0.001	<0.001	<0.001	<0.001	<0.001
RPD	4.51	0.79	2.97	1.26	1.69

METHODS: SW 846-8021B, 5030

Raland K. Tuttle

10-05-01
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

WHOLE EARTH ENVIRONMENATL
ATTN: MR. MIKE GRIFFIN
19606 SAN GABRIEL
HOUSTON, TEXAS 77084
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 0.0 deg C
Project Name: Quarterly Sampling
Project #: None Given
Project Location: Tatum, NM

Sampling Date: 09/24/01
Receiving Date: 09/26/01
Analysis Date: 10/04/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
0101642-10	Bell MW 25	<0.001	<0.001	0.005	0.016	0.006
0101642-11	NBF MW 8	0.041	0.044	0.018	0.040	0.026
0101642-12	NBF MW 15	2.52	1.34	0.331	0.960	0.562
0101642-13	NBF MW 16	1.39	0.001	0.058	0.041	0.005
0101642-14	NBF MW 26	0.027	0.002	0.003	0.008	0.003
0101642-15	Sohio #1 MW 10	2.15	0.131	0.189	0.510	0.137
0101642-16	Sohio #1 MW 17	1.03	0.035	0.035	0.381	0.108
0101642-17	Sohio #1 MW 18	2.81	2.22	0.554	3.15	1.65
0101642-18	Sohio #1 MW 28	<0.005	0.031	0.010	0.020	0.014

QUALITY CONTROL	0.099	0.099	0.092	0.179	0.086
TRUE VALUE	0.100	0.100	0.100	0.200	0.100
% IA	99	99	92	90	86
SPIKED AMOUNT	0.100	0.100	0.100	0.200	0.100
ORIGINAL SAMPLE	<0.001	<0.001	0.005	0.016	0.006
SPIKE	0.093	0.092	0.089	0.181	0.087
SPIKE DUP	0.090	0.089	0.086	0.173	0.083
%EA	93	90	84	83	81
BLANK	<0.001	<0.001	<0.001	<0.001	<0.001
RPD	4	4	4	5	5

METHODS: SW 846-8021B, 5030

Raland K. Tuttle

10-5-01
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

WHOLE EARTH ENVIRONMENATL
ATTN: MR. MIKE GRIFFIN
19606 SAN GABRIEL
HOUSTON, TEXAS 77084
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 0.0 deg C
Project Name: Quarterly Sampling
Project #: None Given
Project Location: Tatum, NM

Sampling Date: 09/24/01
Receiving Date: 09/26/01
Analysis Date: 10/04/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
0101642-19	Sohio #1 MW 30	0.040	0.033	0.007	0.045	0.010
0101642-20	Sohio "A" MW 11	0.045	0.015	0.007	0.034	0.020
0101642-21	Sohio "A" MW 19	0.250	0.013	0.006	0.032	0.016
0101647-22	Sohio "A" MW 20	0.037	0.025	0.011	0.052	0.026
0101642-23	Sohio "A" MW 27	0.123	0.036	0.018	0.082	0.039
0101642-24	Sohio "A" MW 31	0.406	0.038	0.014	0.083	0.040
0101642-25	GS Source Well	0.350	0.141	0.097	0.430	0.226
0101642-26	GS MW 12	0.533	0.078	0.267	1.12	0.309
0101642-27	GS MW 21	0.016	0.009	0.012	0.015	0.006
0101642-28	GS MW 22	0.041	0.019	0.038	0.032	0.042
0101642-29	GS MW 29	0.016	0.007	0.007	0.015	0.007
QUALITY CONTROL		0.104	0.100	0.092	0.185	0.088
TRUE VALUE		0.100	0.100	0.100	0.200	0.100
% IA		104	100	92	92	88
SPIKED AMOUNT		0.100	0.100	0.100	0.200	0.100
ORIGINAL SAMPLE		0.037	0.025	0.011	0.052	0.026
SPIKE		0.155	0.130	0.111	0.270	0.126
SPIKE DUP		0.129	0.114	0.098	0.236	0.113
%EA		92	89	87	92	86
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001
RPD		25	16	14	17	15

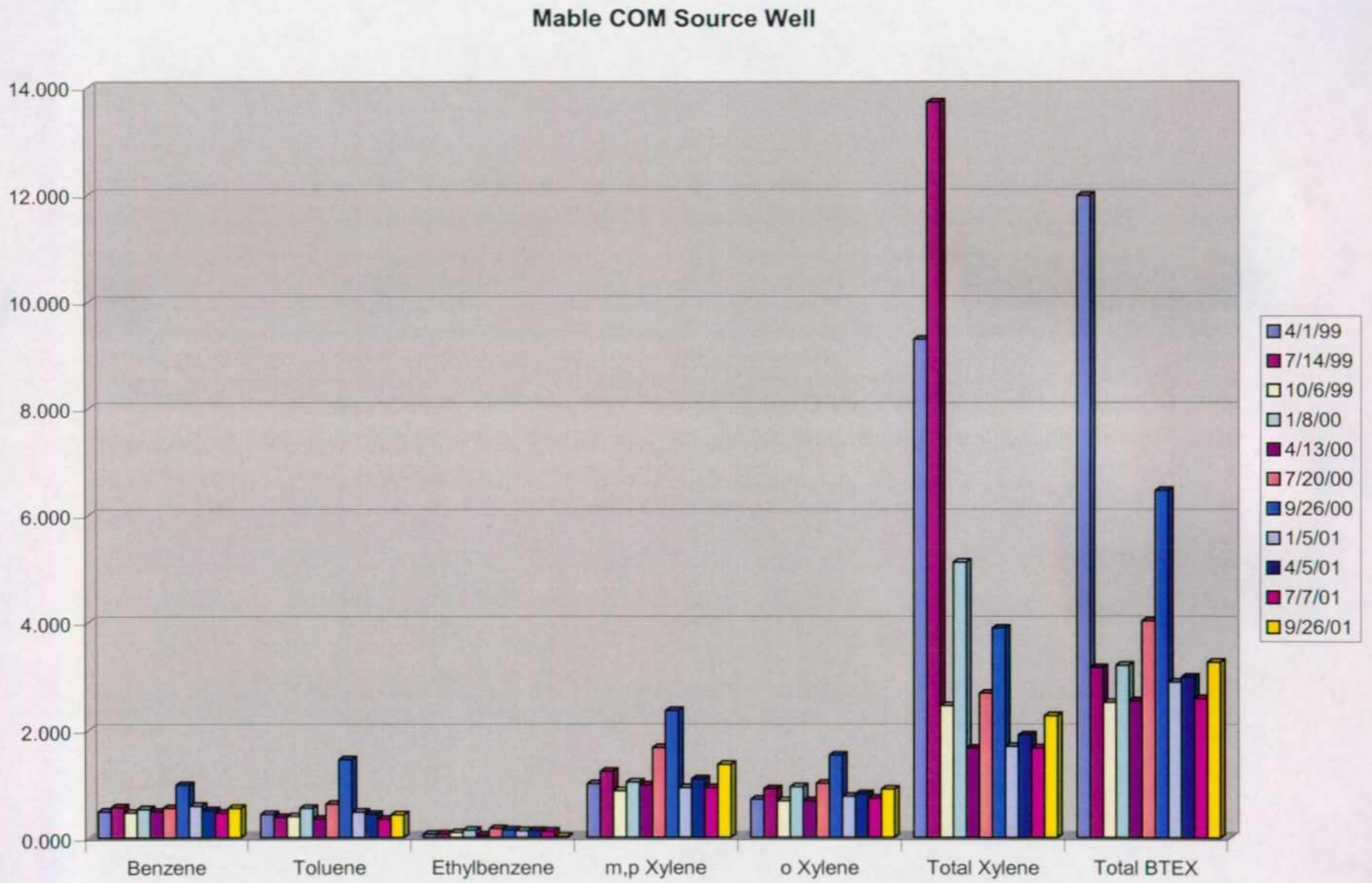
METHODS: SW 846-8021B, 5030

Raland K. Tuttle

10-5-01
Date

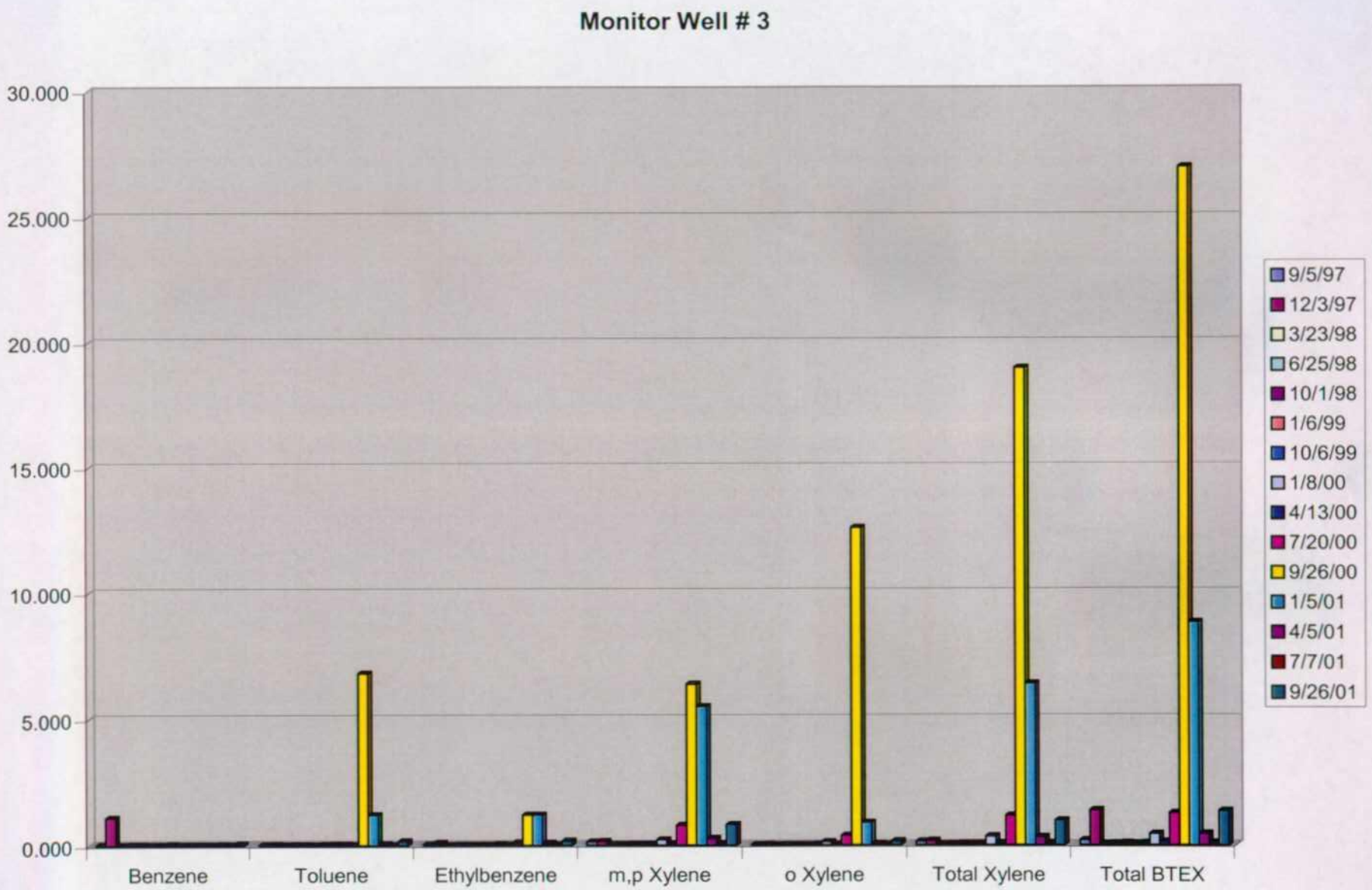
Mable COM Source Well

Lab. #	17429	18591	20608	22775	25161	28465	31495	36137	38920	0101098-04	0101642-04
Sample Date	4/1/99	7/14/99	10/6/99	1/8/00	4/13/00	7/20/00	9/26/00	1/5/01	4/5/01	7/7/01	9/26/01
Benzene	0.486	0.568	0.467	0.534	0.485	0.552	0.980	0.590	0.509	0.459	0.550
Toluene	0.432	0.378	0.395	0.548	0.342	0.622	1.450	0.475	0.435	0.343	0.425
Ethylbenzene	0.066	0.068	0.094	0.136	0.048	0.166	0.141	0.127	0.128	0.118	0.018
m,p Xylene	1.000	1.230	0.868	1.030	0.978	1.670	2.360	0.927	1.090	0.929	1.360
o Xylene	0.713	0.908	0.685	0.946	0.685	1.010	1.530	0.768	0.816	0.735	0.904
Total Xylene	9.300	13.730	2.450	5.120	1.663	2.680	3.890	1.695	1.906	1.664	2.264
Total BTEX	11.997	3.152	2.509	3.194	2.538	4.020	6.461	2.887	2.978	2.584	3.257


Mable COM Source Well
14.000
12.000
10.000
8.000
6.000
4.000
2.000
0.000
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
4/1/99
7/14/99
10/6/99
1/8/00
4/13/00
7/20/00
9/26/00
1/5/01
4/5/01
7/7/01
9/26/01

Monitor Well # 3
Mable COM
Sampling Results

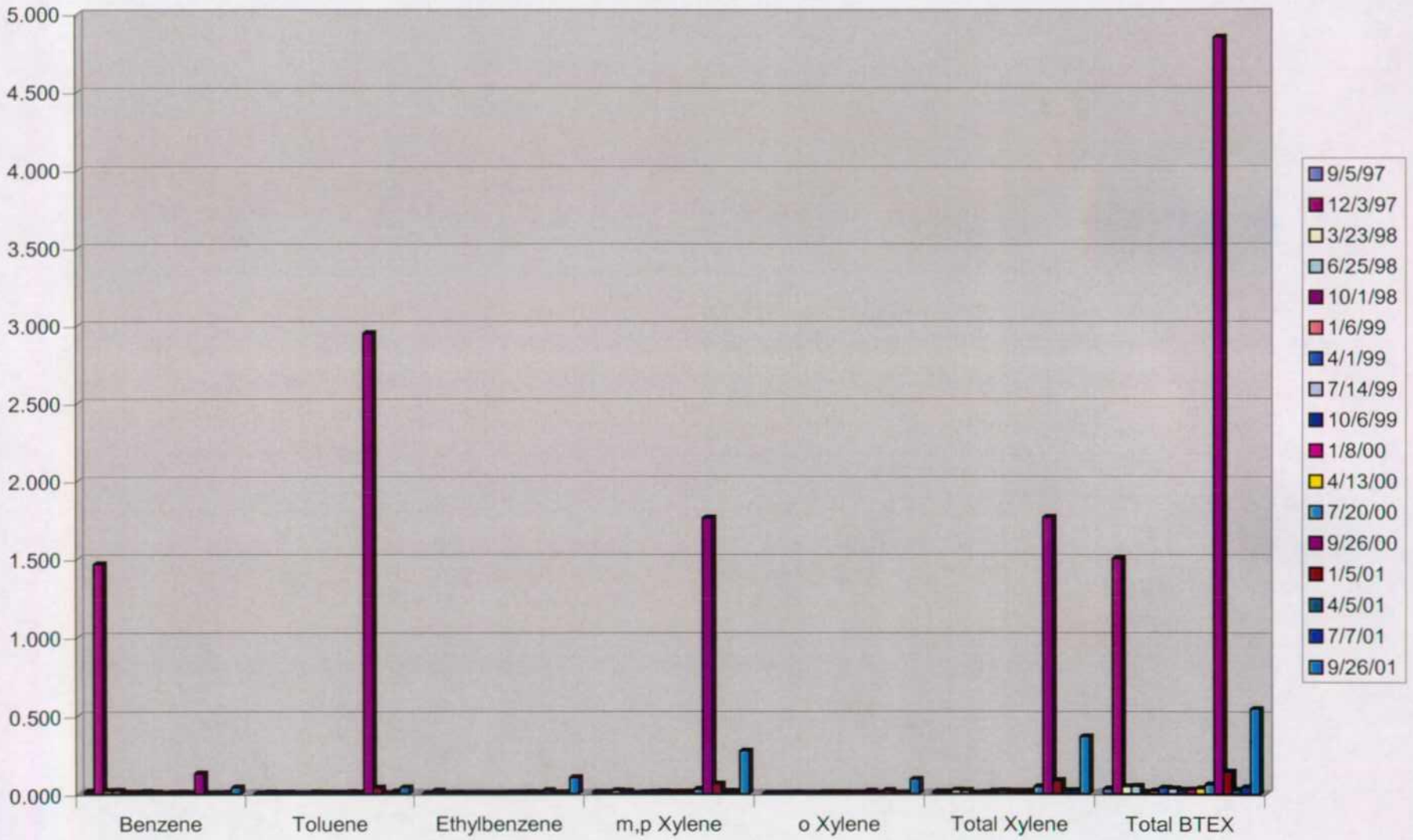
Lab. #	12488	13177	14059	14658	15591	16597	20598	22766	25162	28438	31505	36132	38921	0101098-05	0101642-05
Sample Date	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	10/6/99	1/8/00	4/13/00	7/20/00	9/26/00	1/5/01	4/5/01	7/7/01	9/26/01
Benzene	0.010	1.093	0.006	0.009	0.010	0.001	0.003	0.022	0.001	0.001	0.001	0.001	0.009	0.003	0.053
Toluene	0.008	0.024	0.006	0.011	0.015	0.002	0.021	0.032	0.030	0.001	6.810	1.210	0.047	0.007	0.163
Ethylbenzene	0.031	0.097	0.007	0.009	0.010	0.012	0.010	0.046	0.022	0.107	1.210	1.210	0.088	0.025	0.173
m,p Xylene	0.139	0.153	0.029	0.033	0.041	0.042	0.038	0.215	0.062	0.790	6.380	5.500	0.270	0.057	0.826
o Xylene	0.012	0.020	0.006	0.009	0.017	0.016	0.020	0.131	0.023	0.380	12.600	0.894	0.049	0.021	0.154
Total Xylene	0.151	0.173	0.035	0.042	0.058	0.058	0.058	0.346	0.085	1.170	18.980	6.394	0.319	0.078	0.980
Total BTEX	0.200	1.387	0.054	0.071	0.093	0.073	0.092	0.446	0.138	1.279	27.001	8.815	0.463	0.113	1.369


Monitor Well # 3
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
9/5/97
12/3/97
3/23/98
6/25/98
10/1/98
1/6/99
10/6/99
1/8/00
4/13/00
7/20/00
9/26/00
1/5/01
4/5/01
7/7/01
9/26/01

Monitor Well # 4
Mable COM
Sampling Results

Lab. #	12489	13178	14060	14659	15606	16598	17430	18592	20607	22768	25163	28435	31506	36135	38922	0101098-06	0101642-06
Sample Date	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	4/1/99	7/14/99	10/6/99	1/8/00	4/13/00	7/20/00	9/26/00	1/5/01	4/5/01	7/7/01	9/26/01
Benzene	0.015	1.465	0.019	0.020	0.007	0.007	0.012	0.008	0.002	0.004	0.006	0.002	0.129	0.001	0.001	0.004	0.039
Toluene	0.002	0.007	0.004	0.006	0.002	0.002	0.008	0.006	0.005	0.004	0.009	0.006	2.950	0.038	0.001	0.014	0.038
Ethylbenzene	0.002	0.017	0.002	0.003	0.001	0.002	0.002	0.002	0.002	0.004	0.004	0.008	0.005	0.020	0.006	0.006	0.102
m,p Xylene	0.010	0.010	0.019	0.015	0.002	0.006	0.010	0.012	0.010	0.011	0.011	0.028	1.760	0.063	0.015	0.014	0.273
o Xylene	0.002	0.002	0.003	0.005	0.001	0.002	0.006	0.006	0.006	0.004	0.005	0.016	0.005	0.021	0.004	0.005	0.091
Total Xylene	0.012	0.012	0.022	0.020	0.003	0.008	0.016	0.018	0.016	0.015	0.016	0.044	1.765	0.084	0.019	0.019	0.364
Total BTEX	0.031	1.501	0.047	0.049	0.013	0.019	0.038	0.034	0.025	0.027	0.035	0.060	4.849	0.143	0.027	0.043	0.543

Monitor Well # 4



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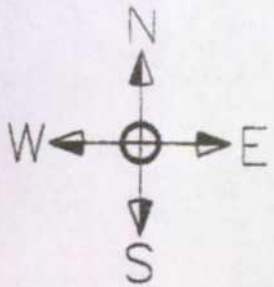

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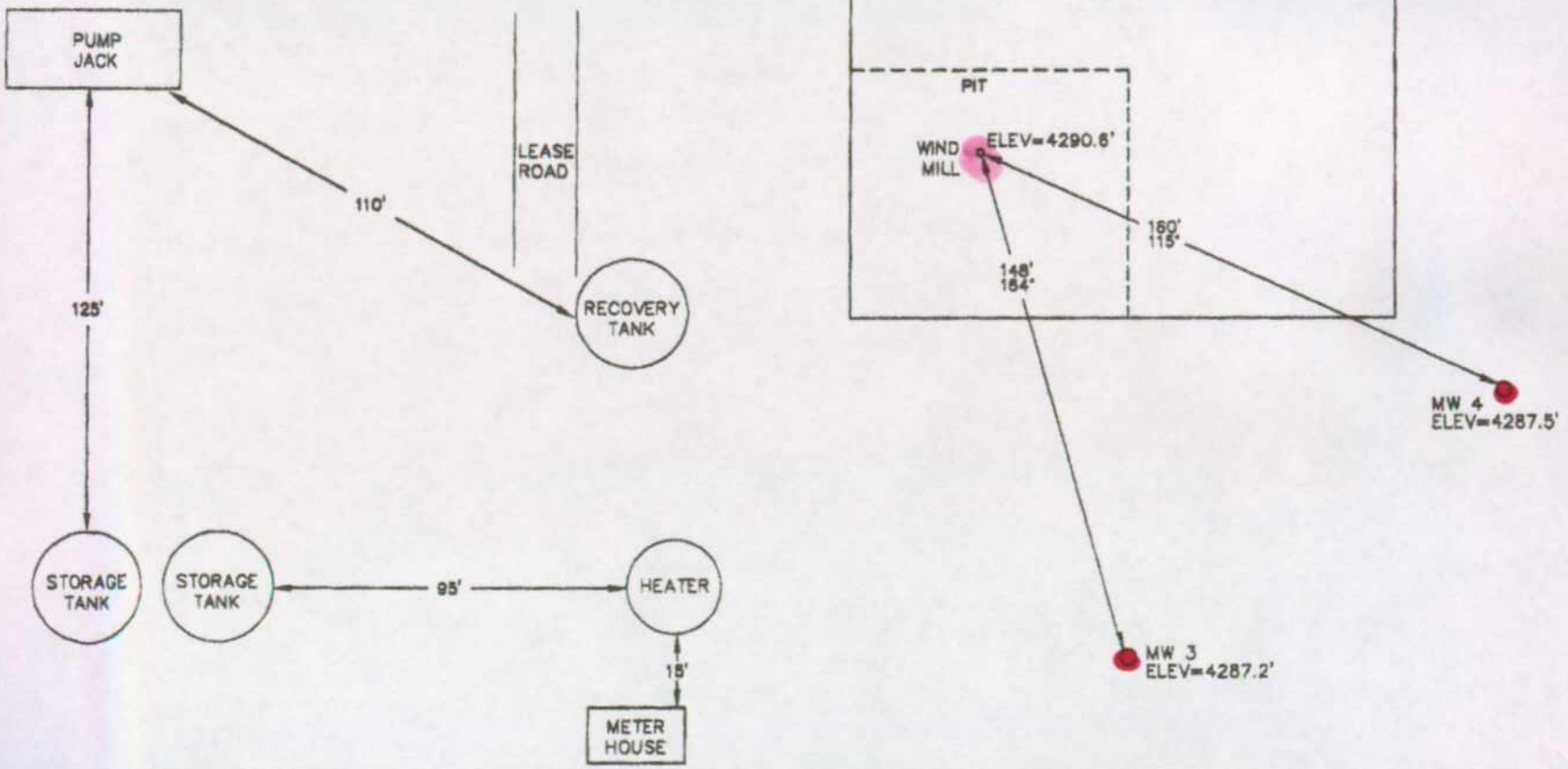


NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Jennifer A. Salisbury
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

November 2, 2001

CERTIFIED MAIL
RETURN RECEIPT NO. 5357-8024

Mr. Larry Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

RE: TATUM PIT CLOSURE PROJECT
LEA COUNTY, NEW MEXICO

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has completed a review of Tipperary Corporation's (TC) April 19, 2001 correspondence, December 7, 2000 "PROGRESS REPORT FOR YEAR 2000, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO" and November 29, 1999 "JULY 1999 PROGRESS REPORT, OCTOBER 1999 PROGRESS REPORT, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO". These documents contains the results of monitoring of ground water contamination related to the closure of unlined pits west of Tatum, New Mexico during the prior 2 years.

The remediation and monitoring actions conducted to date are satisfactory. However, a review of the monitoring data shows that the downgradient extent of ground water contamination at the following sites has not been determined:

- Bell State "A" (Case #1R260)
- Gulf State #1 (Case #1R262)
- Iva Com #1 (Case #1R263)
- Mabel Com #1 (Case #1R264)
- Satellite #4 (Case #1R266)
- Sohio State #1 (Case # 1R267)
- Sohio State "A" (Case #1R268)
- State NBF #1 (Case #1R269)

Therefore, the OCD requires that TC submit a work plan to complete the investigation of the extent of contamination at these sites. The work plan shall be submitted to the OCD Santa Fe Office by December 7, 2001 with copy provided to the OCD Hobbs District Office and shall include:

1. A contoured ground water potentiometric map of each site showing proposed monitor well locations and the location of the former pit, excavated areas, existing monitor wells and other relevant site information.

2. Proposed monitor well construction details.

3. A proposed ground water sampling plan.

4. A schedule for implementation of the plan and submission of an investigation report.

If you have any questions, please call me at (505) 476-3491.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Griffin, Whole Earth Environmental, Inc.

WHOLE EARTH

Whole Earth Environmental, Inc.
19606 San Gabriel, Houston, Texas 77084
281/492-7077 • Fax: 281/646-8996

April 19, 2001

New Mexico Oil Conservation Division
1220 South St. Francis Drive
Sante Fe, NM 87505

Attn: Bill Olson

Dear Bill:
We are in receipt of your letter dated March 15, 2001 concerning the Tatum pit closure project and have prepared the following response:

Request # 1
A review of the OCD's files shows that TC has never responded to the OCD's August 6, 1999 correspondence requiring information related to the remediation and monitoring of contaminated ground water at TC's Tatum Pit closure sites.

Response
Tipperary Corporation did indeed respond to your request and sent copies to both Sante Fe and Hobbs in October, 1999. We duplicated the Hobbs office copy yesterday and re-sent it to you via UPS.

Request # 2
The report does not contain a water potentiometric map for each sampling event at each site which shows the location of the pit and excavated areas, the surveyed locations of all monitor wells and recovery wells and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation in each monitoring well.

Response
Though the requested information is contained within the afore mentioned report, we are including it once again in this transmittal.

Request # 3
The report does not contain information on the quarterly volume of ground water and product recovered at each site nor the total volume recovered at each site to date.

Response
As stated in our October 1999 response, our collection and disposal system does not allow us to accurately measure either the total volume of water produced by the windmills or the oil / water ratio. We propose to install flow meters between the collection tanks and the downstream check valves leading into the Burro Pipeline disposal system at each location so as to capture total fluid volumes. We

further propose to collect samples directly from the lines coming from the windmills into a large graduated cylinder in order to determine the oil / water ratios. These results will be collected quarterly and reported annually.

Request # 4
The report does not contain information on the free product thickness in all wells containing products.

Response
We've not been asked to provide such information in the past. We do however plan to provide you with the information in the future and have resultantly purchased a new Waterra ultrasonic oil / water LNAPL / DNAPL interface meter expressly for this purpose.

Thank you again for your interest in this project. We will continue to strive to provide you with accurate information for your future evaluations.

Warmest regards,

Mike Griffin
President
Whole Earth Environmental, Inc.

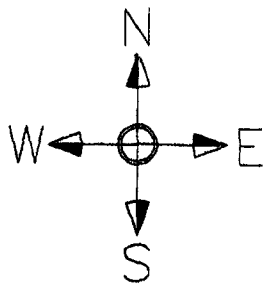
COORDINATE FILE : TIPARARY.CRD

r COORDINATES

	PT#	NORTH	EAST	ELEV
SOHIO A STATE 1 PIT	253	870084.293	760084.206	4286.84
SOHIO A STATE 1 MW11	254	869981.125	760134.902	4285.88
SOHIO A STATE 1 MW19	255	869974.033	760205.397	4285.97
SOHIO A STATE 1 MW28	256	869892.771	760255.240	4285.61
SOHIO A STATE 1 MW31	257	869667.200	760452.460	4283.54
SOHIO STATE 1 PIT	258	870105.632	761381.498	4285.42
SOHIO STATE 1 MW10	259	870027.049	761459.334	4283.63
SOHIO STATE 1 MW17	260	869969.168	761443.837	4283.31
SOHIO STATE 1 MW18	261	870017.865	761533.683	4283.59
SOHIO STATE 1 MW28	262	869892.594	761534.416	4283.21
SOHIO STATE 1 MW30	263	869677.360	761728.469	4281.13
VERA 1 PIT	264	846366.089	752525.766	4289.49
VERA #1 MW5	265	846217.026	752582.067	4298.90
STATE NBF 1 PIT	266	856893.939	764024.682	4266.86
STATE NBF 1 MW8	267	856806.388	764165.403	4259.41
STATE NBF 1 MW15	268	856747.667	764157.788	4259.68
STATE NBF 1 MW16	269	856774.041	764241.604	4259.06
STATE NBF 1 MW26	270	856658.728	764331.675	4258.04
BELL A 1 PIT	271	857796.692	758625.535	4279.64
BELL A 1 MW6	272	857857.556	758583.503	4281.12
BELL A 1 MW13	273	857754.617	758597.054	4280.84
BELL A 1 MW14	274	857821.944	758664.690	4280.80
BELL A 1 MW25	275	857614.080	758714.518	4280.37
GS STATE 1 SOURCE	276	867037.530	755087.975	4307.00
GS STATE 1 MW21	277	866953.249	755213.712	4303.08
GS STATE 1 MW22	278	866905.186	755154.733	4302.77
GS STATE 1 MW29	279	866798.038	755260.271	4303.20
GS STATE 1 MW?	280	867001.862	755131.639	4303.27
MABEL COM 1 SOURCE	281	852659.555	756329.277	4290.55
MABEL COM 1 MW3	282	852517.536	756370.356	4287.22
MABEL COM 1 MW4	283	852592.288	756473.774	4287.46
STATE NBN 1 PIT	284	859499.318	758793.854	4282.45
STATE NBN 1 MW7	285	859397.517	758825.203	4281.59
SATELLITE 4 MW9	286	866587.512	775890.421	4208.66
SATELLITE 4 MW23	287	866507.846	775901.105	4209.03
SATELLITE 4 MW24	288	866562.481	775964.699	4208.64
IVA COM 1 SOURCE	289	856721.216	756252.189	4298.42
IVA COM 1 MW1	290	856654.035	756344.507	4292.10
IVA COM 1 MW2	291	856695.146	756388.036	4291.93

HORIZONTAL DATUM NAD 83
VERTICAL DATUM NAVD 88

MABLE COM.



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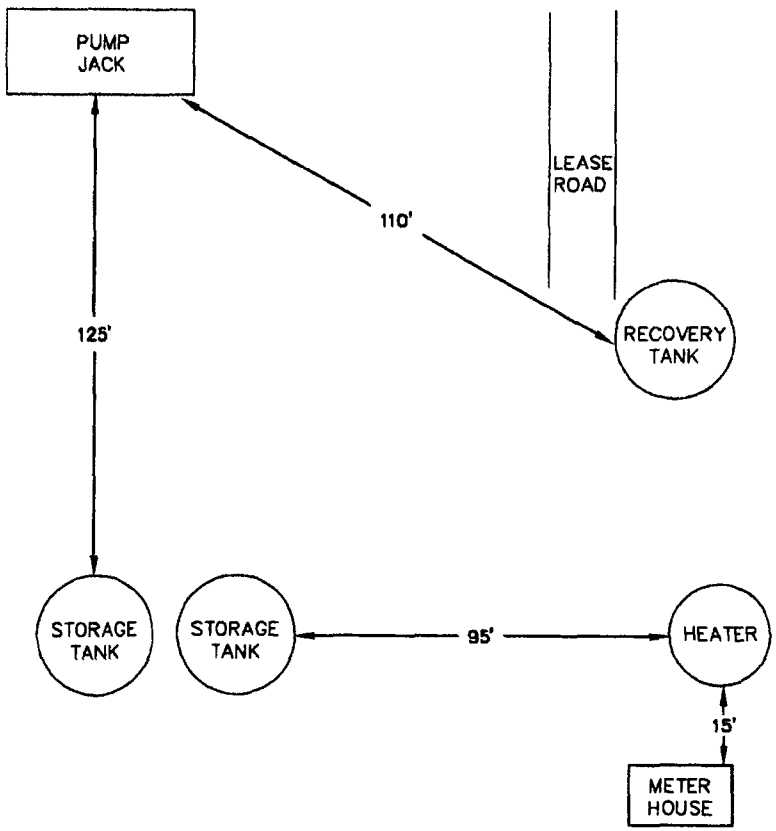
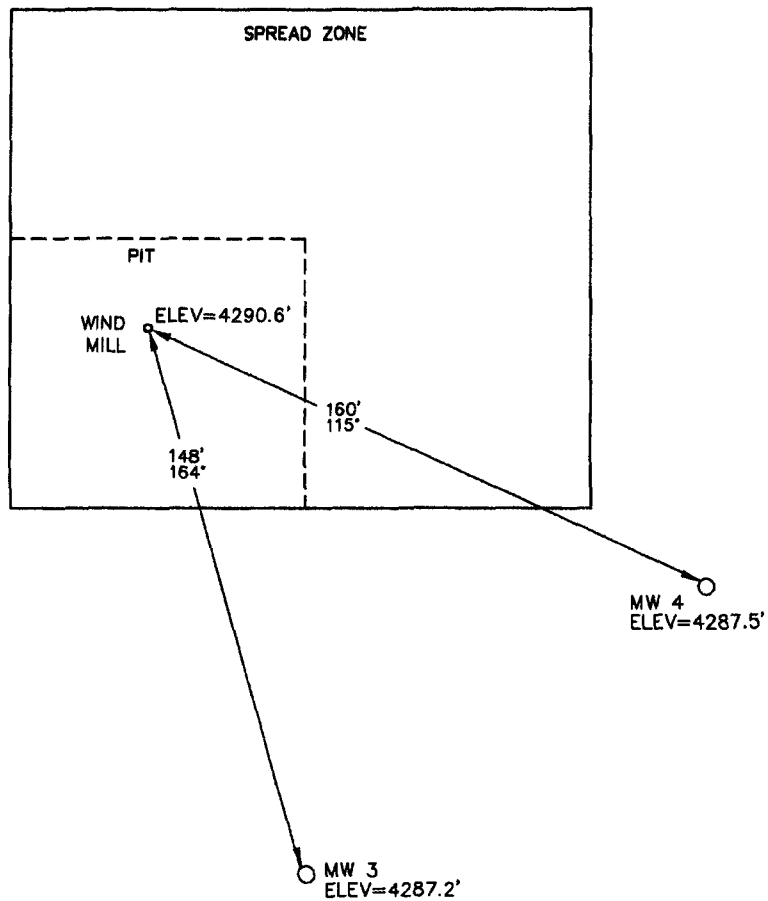




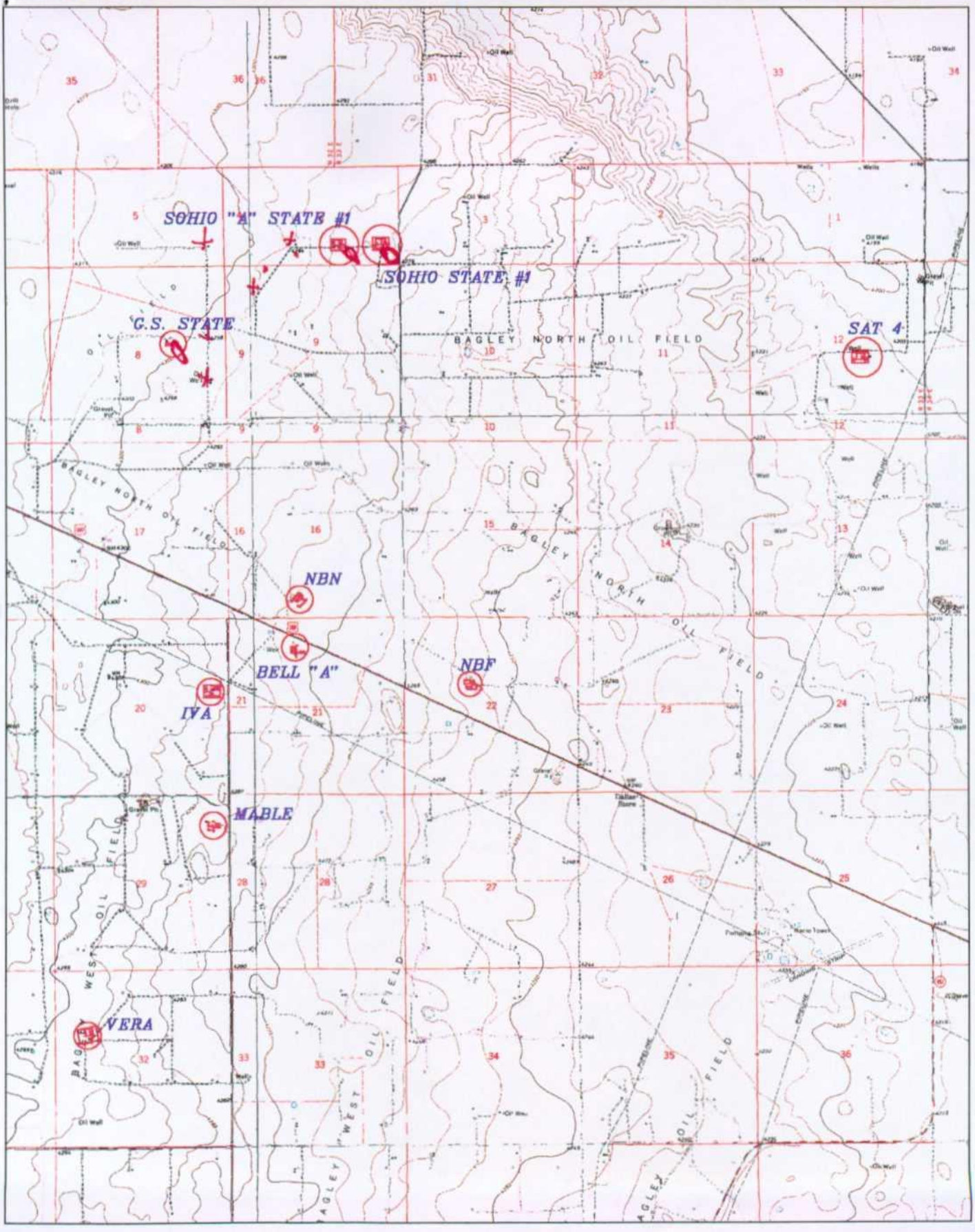
Tipperary

Tipperary Corporation
Tatum Pit Closure Project
Monitor Well Water Elevation Table

Well Name	Monitor Well No.	Surface Elevation	Date Well Drilled	Water Depth @ Drill Date	Water Elevation	Water Depth @ 8/9/99	Water Elev. @ 8/9/99	Water Depth @ 10/21/99	Water Elev. @ 10/21/99	Depth Change Aug. / Oct. '99	Distance to Pit Center (ft)	Gradient (Ft. / Ft.)	Gradient (Ft. /100 Ft.)
Iva	Recovery Well	4,298.42	Aug-97	52.0	4,246.42								
	1	4,292.10	Aug-97	54.9	4,237.20	48.83	4,243.27	51.75	4,240.35	2.92	115	0.080174	8.02
	2	4,291.93	Aug-97	53.0	4,238.93	49.17	4,242.76	51.50	4,240.43	2.33	140	0.053600	5.35
Mabie	Recovery Well	4,290.55	Aug-97	52.0	4,238.55								
	3	4,287.22	Aug-97	52.0	4,235.22	48.75	4,238.47	52.50	4,234.72	3.75	148	0.022500	2.25
	4	4,287.46	Aug-97	52.0	4,235.46	48.58	4,238.88	51.75	4,235.71	3.17	160	0.019313	1.93
Vera	Pit Center	4,292.98			4,289.50								
	5	4,298.90	Aug-97	63.0	4,235.90	61.50	4,237.40				159	-0.037233	-3.72
Bell	Pit Center	4,283.09			4,279.60								
	6	4,281.12	Aug-97	51.0	4,230.12	42.13	4,238.99	43.01	4,238.11	0.88	93	0.021183	2.12
	13	4,280.84	Oct-97	47.8	4,233.04	40.83	4,240.01	43.66	4,237.18	2.83	51	0.044118	4.41
	14	4,280.80	Oct-97	48.3	4,232.50	43.00	4,237.80	43.50	4,237.30	0.50	47	0.048723	4.87
	25	4,280.37	Mar-99	47.4	4,232.97	43.50	4,236.87	43.50	4,236.87	0.00	154	0.017662	1.77
NBN	Pit Center	4,282.45			4,282.45								
	7	4,281.59	Aug-97	50.0	4,231.59	43.50	4,238.09				107	0.008037	0.80
NBF	Pit Center	4,266.86			4,266.86								
	8	4,259.41	Aug-97	48.0	4,211.41	35.75	4,223.66	35.75	4,223.66	0.00	165	0.045152	4.52
	15	4,259.68	Oct-97	47.0	4,212.68	34.75	4,224.93	37.00	4,222.68	2.25	198	0.036263	3.63
	16	4,259.06	Oct-97	47.1	4,211.96	36.00	4,223.06	36.10	4,222.96	0.10	247	0.031579	3.16
	26	4,258.04	Mar-99	43.0	4,215.04	34.75	4,223.29	34.60	4,223.44	-0.15	387	0.022791	2.28
Sohio # 1	Pit Center	4,285.42			4,285.42								
	10	4,283.63	Aug-97	50.0	4,233.63	44.50	4,239.13	44.90	4,238.73	0.40	110	0.016273	1.63
	17	4,283.31	Oct-97	49.4	4,233.91	44.00	4,239.31	44.50	4,238.81	0.50	262	0.008053	0.81
	18	4,283.59	Oct-97	48.6	4,234.99	43.75	4,239.84	44.10	4,239.49	0.35	176	0.010398	1.04
	28	4,283.21	Mar-99	46.3	4,236.96	35.00	4,248.21	44.15	4,239.06	9.15	552	0.004004	0.40
	30	4,281.13	Aug-99	45.3	4,235.82	45.31	4,235.82	44.10	4,237.03	-1.21	776	0.005528	0.55
Sohio "A"	Pit Center	4,286.84			4,286.84								
	11	4,285.88	Aug-97	50.0	4,235.88	38.25	4,247.63	38.50	4,247.38	0.25	115	0.008348	0.83
	19	4,285.97	Sep-97	48.7	4,237.27	32.50	4,253.47	35.15	4,250.82	2.65	164	0.005305	0.53
	20	4,285.96	Sep-97	49.5	4,236.46	38.00	4,247.96	38.66	4,247.30	0.66	151	0.005828	0.58
	27	4,285.61	Mar-99	40.0	4,245.61	36.83	4,248.78	38.20	4,247.41	1.37	264	0.004659	0.47
	31	4,283.54	Aug-99	37.5	4,246.09	37.45	4,246.09	38.90	4,244.64	1.45	624	0.005288	0.53
G.S. State	Source Well	4,307.00	Sep-97	48.0	4,259.00								
	12	4,303.27	Aug-97	48.0	4,255.27	42.75	4,260.52	42.90	4,260.37	0.15	52	0.071731	7.17
	21	4,303.08	Oct-97	48.0	4,255.08	43.25	4,259.83	43.66	4,259.42	0.41	151	0.025960	2.60
	22	4,302.77	Oct-97	47.5	4,255.27	43.50	4,259.27	43.90	4,258.87	0.40	148	0.025203	2.52
	29	4,303.20	Mar-99	49.1	4,254.14	44.00	4,259.20	44.25	4,258.95	0.25	295	0.016475	1.65
Sat. # 4	Pit Center	4,211.49			4,208.00								
	9	4,208.66	Aug-97	31.0	4,177.66	26.17	4,182.49	26.75	4,181.91	0.58	80	0.035375	3.54
	23	4,209.03	Oct-97	28.0	4,181.03	26.25	4,182.78	27.15	4,181.88	0.90	158	0.015570	1.56
	24	4,208.64	Oct-97	28.9	4,179.74	26.08	4,182.56	26.45	4,182.19	0.37	150	0.019000	1.90

Note: Vera, Bell and Satellite 4 had significant subsidance within the pit area.
The red elevations include an added 3.49' (Ave. of seven other sites)
Correct elevations noted in column 6.

WHOLE EARTH ENVIROMENTAL, INC.



BASIN SURVEYS P.O. BOX 1786 – HOBBS, NEW MEXICO	W.O. Number: 9352	Drawn By: K. GOAD
	Date: 10–21–99	Disk: KJG #122 – WE9352.DWG

Tipperary
CORPORATION

Tipperary Corporation
Tatum Pit Closure Project
Annual Sampling Summary

RECEIVED
APR 3 0 2001
ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Whole Earth Environmental
19606 San Gabriel
Houston, Tx. 77084

Tipperary
CORPORATION

633 Seventeenth Street
Suite 1550
Denver, Colorado 80202

November 29, 1999

CERTIFIED MAIL

Mr. William C. Olson
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

RE: July 1999 Progress Report
October 1999 Progress Report
Tatum Pit Closure Project
Lea County, NM

Dear Mr. Olson:

Please find enclosed additional monitor well results from the subject project area. This data represents results from our eighth and ninth quarters of monitoring. We would like to request permission to submit our monitoring results annually to your office. Of course, we will continue to sample and monitor the project quarterly.

We have also addressed the requests and issues in your letter of August 6, 1999 correspondence (copy attached). Our responses are found in the Executive Summary section. Additional data included in the Executive Summary section is summarized below:

- Surveyed locations of each pit center and all recovery and monitor wells including surface elevations. The above information is plotted on a topographic base map. Individual site plat maps are included within each well/pit section.
- A table of monitor well water elevations. This table includes a calculation of the hydraulic gradient for each well/pit site.
- A graph of the depths to water in each monitor well. The data covers the last two sampling quarters and the depth of water when the monitor wells were drilled.
- A graph of the monthly rainfall totals as measured in Lovington, NM. Also included is a table of weather data recorded by Lea County Electric Co-Op.
- A graph comparing the average BTEX concentrations measured each quarter with the quarterly rainfall to establish a direct relationship with the amount of precipitation.
- A summary table of results from BTEX sampling with a plot of results.
- Copies of the BTEX analyses from Environmental Lab of Texas, Inc.
- A procedure for developing cased water monitoring wells.

Data for each well/pit is summarized in its own section. The following data is included under each well/pit section.

- A summary of monitoring activity for each monitor well.
- A summary of BTEX results for each recovery and monitor well. A bar graph of this data is presented.
- A topographic map for each well/pit.
- A site map with the location of the pit and monitor wells including the surface elevations.
- A table of water elevations from the monitor wells along with a calculation of the hydraulic gradient for each well/pit.

We have also submitted formal closure reports for the Vera #1 and State NBN #1 sites under separate cover. If you have any questions, please call me at (303) 293-9379.

Very truly yours,

Larry G. Sugano

Larry G. Sugano
Vice President - Engineering

cc: NMOCD Hobbs Office
Enclosures

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

August 6, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z-274-520-689

Mr. Larry G. Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

RE: TATUM PIT CLOSURES

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) April 27, 1999 "APRIL 1999 PROGRESS REPORT, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO". This document contains the results of TC's monitoring of ground water contamination related to the closure of 10 unlined pits west of Tatum, New Mexico. The document also requests final closure of the remedial actions related to unlined pits at the State NBN #1 and Vera #1 sites and proposes modifications to the ground water sampling program.

In order to complete a review of the above referenced closure requests and sampling modifications, the OCD requires that TC submit the following information, with all maps, tables and data segregated into separate case files for each site:

1. A water table potentiometric map for each site which shows the location of the pit and excavated areas, the surveyed locations of all monitor wells and recovery wells and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation in each monitor well On March 29, 1999, the OCD required that TC submit this information. The above referenced document states that TC was preparing the maps. To date the OCD has not received this required information.

2. Tables of water table elevations in each monitor well during each sampling event. The document discusses seasonal fluctuations in the water table as responsible for increases in contaminant concentrations in ground water. However, the supporting water table elevation vs. time data for each monitor well is not provided.

3. Tables of all past and present water quality sampling results for each ground water monitoring and recovery well as required in the OCD's January 15, 1999 conditions of approval. The document only contains analytical data for ground water monitoring wells that are currently being sampled.

4. An explanation of the use of drill cuttings as backfill in the annular space above the bentonite plug in each newly constructed monitor well . This is a direct violation of the OCD's January 15, 1999 conditions of approval which required that the remainder of the annular space be grouted to the surface with cement containing 3-5% bentonite. As a result the monitor wells as constructed by TC are potentially direct conduits to ground water.

5. The monitor well development procedures and volumes for each monitor well.

6. The volume of ground water and product recovered to date at all sites with fluid recovery as required in the OCD's January 15, 1999 conditions of approval.

7. A completed OCD pit closure and remediation report form for each site requested for closure. Each form will contain a discussion and the results of all soil and ground water site closure activities including all soil analytical data from the excavations and the backfilled materials as well as figures showing all sample locations.

The above required information shall be submitted to the OCD Santa Fe Office by October 4, 1999 with a copy provided to the OCD Hobbs District Office. Submission of this information will allow the OCD to complete a review of TC's closure requests and proposed ground water sampling plan modifications.

If you have any questions or comments, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Matush, NM State Land Office
Mike Griffin, Whole Earth Environmental, Inc.

OCD 8/6/99 Request for Additional Data

Scope
This report addresses the August 6th request from Mr. Olson (enclosed) requesting additional information.

Request # 1
A water table potentiometric map for each site which shows the location of the pit and excavated areas, the surveyed locations of all monitoring wells and recovery wells and any other pertinent features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation in each monitoring well.

Response
The locations of each pit center, and of all recovery and monitor wells was surveyed by Adkins Engineering on August 18, 1999 (see *Coordinate File: Tipperary.CRD* within this section). The data was incorporated into previously rendered plat AutoCad maps and overlaid atop USGS 7.5' maps by Basin Surveying. A copy of each site's plat map is enclosed within the appropriate section of this report. Similar maps are included within a final closure report for Vera and State NBN submitted under separate cover.

Request # 2
Tables of water table elevations in each monitor well during each sampling event. The document discusses seasonal fluctuations in the water table as responsible for increases in contaminant concentrations in ground water. However the supporting water table elevation vs. time data for each monitor well is not provided.

Response
We've only three data points for the water table elevations within the monitoring wells. The first is from the original drilling report when the well was first installed; the second, was measured on 8/9/99; the third, on 10/21/99. In the future, the elevations for each monitor well will be measured at the time of sampling and included within the annual report.

Included within this Executive Summary section are the following charts and graphs:

A. Chart titled *"Tipperary Corporation Tatum Pit Closure Project Monitor Well Water Elevation Table"*. This table summarizes the results of the original drillers log and the two sampling events. the chart also provides the calculated gradient for each monitor well.

B. Line Graph titled *"Tipperary Corporation Monitor Well Depths"*. This graph compares the depth to water during each sampling event.

C. Chart titled *"Lea County Electrical Coop Weather Report 1998, 1999"*. These are detailed daily measurements of the precipitation received at the LEACO Lovington, New Mexico plant located approximately twenty-five miles southeast of the Tatum Field.

D. Line Graph titled *"Monthly Rainfall Totals"*. This graph takes the detailed monthly total rainfall figures from the LEACO chart and plots the information into line form for comparison purposes. Included within the map is a line showing the average monthly rainfall for the Tatum area. This number was calculated by taking the average annual rainfall for Tatum and dividing by 12.

Request # 3
Tables of all past and present water quality sampling results for each ground water monitoring and recovery well as required in the OCD's January 15, 1999 conditions of approval.

Response
Each monitor well was generally sampled each quarter and the results of each test are summarized within the Sampling Results charts and graphs for each well. The only exceptions to this are Monitor Well #1 in which we had five consecutive quarters of acceptable concentrations, Monitor Well # 3 in which we encountered mechanical problems in removing a bailer, NBN and Vera in which we've requested final closure and the three recovery wells.

Each recovery and monitor well will be sampled each quarter and the results provided to the OCD on an annual basis.

Request # 4
An explanation of the use of drill cuttings in the annular space above the bentonite plug in each newly constructed monitor well.

Response
The error is a result of a lack of oversight of the completion of the wells by Whole Earth Environmental. We believed that the instructions were correctly conveyed to the driller. We did not directly supervise the final completion of the wells.

Request # 5
The monitor well development procedures and volumes for each monitoring well.

Response
Enclosed within this Executive Summary section is *"WEQP-28, Procedure for Developing Cased Water Monitoring Wells"*. The procedure calls for the removal of three well casing volumes. The formula for determining casing volume is attached as a supplement to WEQP-28 and shows that with a water column height of 15', a total of 7.344 gallons of water must be bailed to achieve the minimum volume. In fact at least fifteen gallons of fluid were removed from each well in order to minimize turbidity. Neither Whole Earth nor Adkins Engineering maintained a log of the volumes of water removed however the procedure has been amended to insure that such information will be recorded and transmitted to the OCD in the future.

Request # 6
The volume of ground water and product recovered to date at all sites with fluid recovery as required in the OCD's January 15, 1999 conditions of approval.

Response
The fluids removed from each recovery well are pumped directly from the windmills into an open top fiberglass tank. Each tank is equipped with a liquid level controller which, when activated, engages an electric pump that sends the fluids to a steel water storage tank used in conjunction with the normal operations of the oil wells at each location. The water is subsequently pumped into the Burro Pipeline disposal system to the Satellite 5 facility. Satellite 5 is equipped with separation equipment that strips the hydrocarbons from the water through gravity separation. The eventual fate of the hydrocarbon fractions is to the sales line, and the water into a Burro Pipeline disposal well.

The fluid volumes are so low that they cannot be accurately measured by comparing "before" and "after" process volumes. However, each windmill has the capacity to produce up to 1,375 gallons per day. The approximate ratio of recovered oil to water is 1:100. The windmills are shut in during freezing weather, and otherwise operate at an estimated efficiency of between 25-75% of capacity. We therefore estimate that a liberal estimate of the total fluid removal would be in the range of 50% of the windmill's capacity or 687 gallons per day with a hydrocarbon fraction of up to 6.9 g/d.

Using these figures, we calculate that each windmill has produced a water volume of approximately 17,862 gallons and a hydrocarbon volume of 179 gallons in the time period between September, 1997, (the date of their erection), and October, 1999.

Request # 7
A completed pit closure and remediation report for each site requested for closure. Each form will contain a discussion of the results of all soil and ground water site closure activities including all soil analytical data from the excavations and the backfilled materials as well as figures showing all sample locations.

Response
As requested, the information is provided to you under separate cover.

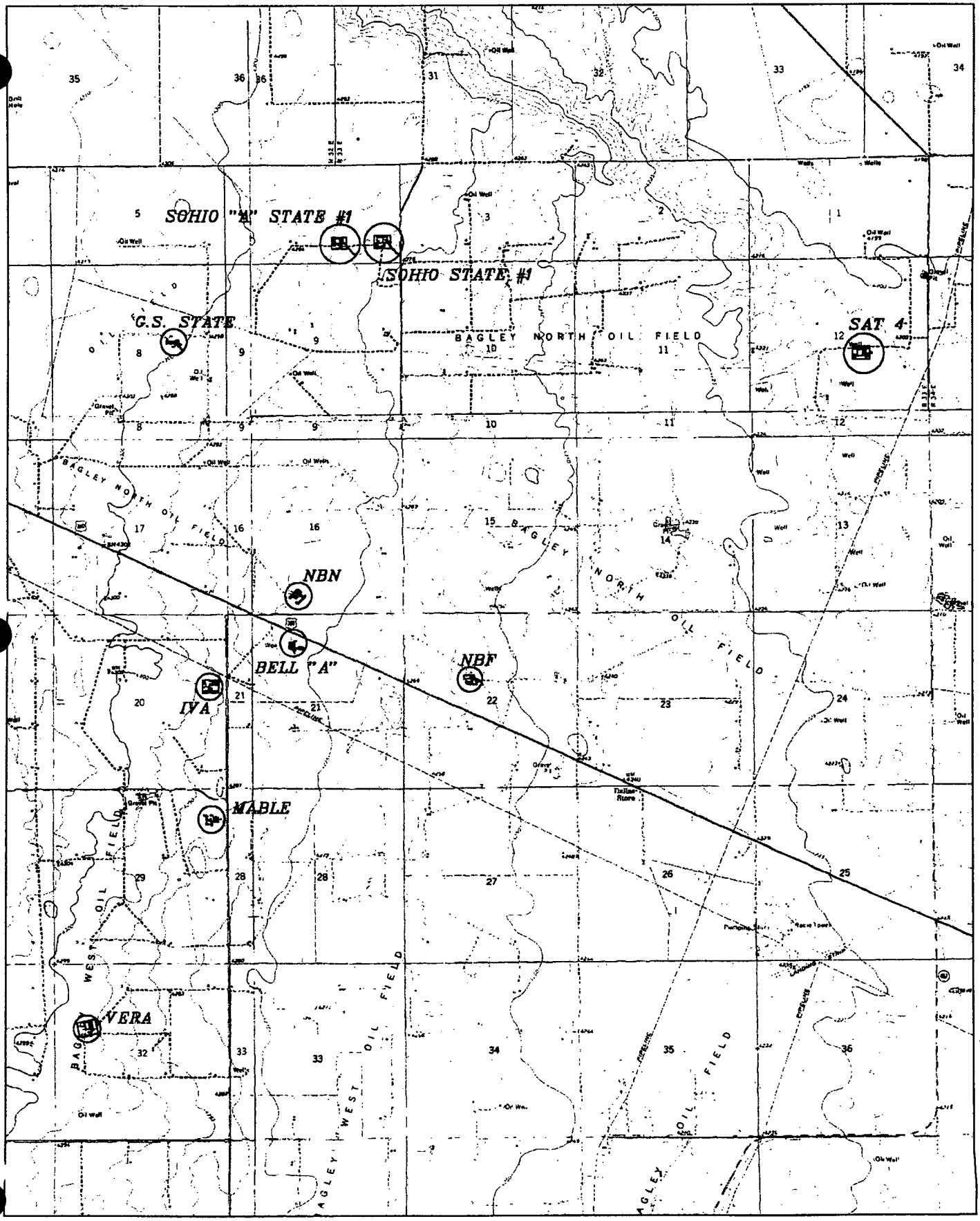
COORDINATE FILE : TIPARARY.CRD

ST COORDINATES

	PT#	NORTH	EAST	ELEV
SOHIO A STATE 1 PIT	253	870084.293	760084.206	4286.84
SOHIO A STATE 1 MW11	254	869981.125	760134.902	4285.88
SOHIO A STATE 1 MW19	255	869974.033	760205.397	4285.97
SOHIO A STATE 1 MW28	256	869892.771	760255.240	4285.61
SOHIO A STATE 1 MW31	257	869667.200	760452.460	4283.54
SOHIO STATE 1 PIT	258	870105.632	761381.498	4285.42
SOHIO STATE 1 MW10	259	870027.049	761459.334	4283.63
SOHIO STATE 1 MW17	260	869969.168	761443.837	4283.31
SOHIO STATE 1 MW18	261	870017.865	761533.683	4283.59
SOHIO STATE 1 MW28	262	869892.594	761534.416	4283.21
SOHIO STATE 1 MW30	263	869677.360	761728.469	4281.13
VERA 1 PIT	264	846366.089	752525.766	4289.49
VERA #1 MW5	265	846217.026	752582.067	4298.90
STATE NBF 1 PIT	266	856893.939	764024.682	4266.86
STATE NBF 1 MW8	267	856806.388	764165.403	4259.41
STATE NBF 1 MW15	268	856747.667	764157.788	4259.68
STATE NBF 1 MW16	269	856774.041	764241.604	4259.06
STATE NBF 1 MW26	270	856658.728	764331.675	4258.04
BELL A 1 PIT	271	857796.692	758625.535	4279.64
BELL A 1 MW6	272	857857.556	758583.503	4281.12
BELL A 1 MW13	273	857754.617	758597.054	4280.84
BELL A 1 MW14	274	857821.944	758664.690	4280.80
BELL A 1 MW25	275	857614.080	758714.518	4280.37
GS STATE 1 SOURCE	276	867037.530	755087.975	4307.00
GS STATE 1 MW21	277	866953.249	755213.712	4303.08
GS STATE 1 MW22	278	866905.186	755154.733	4302.77
GS STATE 1 MW29	279	866798.038	755260.271	4303.20
GS STATE 1 MW?	280	867001.862	755131.639	4303.27
MABEL COM 1 SOURCE	281	852659.555	756329.277	4290.55
MABEL COM 1 MW3	282	852517.536	756370.356	4287.22
MABEL COM 1 MW4	283	852592.288	756473.774	4287.46
STATE NBN 1 PIT	284	859499.318	758793.854	4282.45
STATE NBN 1 MW7	285	859397.517	758825.203	4281.59
SATELLITE 4 MW9	286	866587.512	775890.421	4208.66
SATELLITE 4 MW23	287	866507.846	775901.105	4209.03
SATELLITE 4 MW24	288	866562.481	775964.699	4208.64
IVA COM 1 SOURCE	289	856721.216	756252.189	4298.42
IVA COM 1 MW1	290	856654.035	756344.507	4292.10
IVA COM 1 MW2	291	856695.146	756388.036	4291.93

HORIZONTAL DATUM NAD 83
VERTICAL DATUM NAVD 88

WHOLE EARTH ENVIROMENTAL, INC.



BASIN SURVEYS P.O. BOX 1786 – HOBBS, NEW MEXICO	W.O. Number: 9352	Drawn By: K. GOAD
	Date: 10-21-99	Disk: KJG #122 – WE9352.DWG

Tipperary

Tipperary Corporation
Tatum Pit Closure Project
Monitor Well Water Elevation Table

Well Name	Monitor Well No.	Surface Elevation	Date Well Drilled	Water Depth @ Drill Date	Water Elevation	Water Depth @ 8/6/99	Water Elev. @ 8/6/99	Water Depth @ 10/21/99	Water Elev. @ 10/21/99	Depth Change Aug. / Oct. '99	Distance to Pit Center (ft)	Gradient (Ft. / Ft.)	Gradient (Ft. /100 Ft.)
Ivd	Recovery Well	4,298.42	Aug-97	52.0	4,246.42								
	1	4,292.10	Aug-97	54.9	4,237.20	48.83	4,243.27	51.75	4,240.35	2.92	115	0.080174	8.02
	2	4,291.93	Aug-97	53.0	4,238.93	49.17	4,242.76	51.50	4,240.43	2.33	140	0.053500	5.35
Mable	Recovery Well	4,290.56	Aug-97	52.0	4,238.56								
	3	4,287.22	Aug-97	52.0	4,235.22	48.75	4,238.47	52.50	4,234.72	3.75	148	0.022500	2.25
	4	4,287.46	Aug-97	52.0	4,235.46	48.58	4,238.88	51.75	4,235.71	3.17	160	0.019313	1.93
Vera	Pit Center	4,292.98			4,289.50								
	5	4,298.90	Aug-97	53.0	4,235.90	51.50	4,237.40				159	-0.037233	-3.72
Bell	Pit Center	4,283.09			4,279.60								
	6	4,281.12	Aug-97	51.0	4,230.12	42.13	4,238.99	43.01	4,238.11	0.88	93	0.021183	2.12
	13	4,280.84	Oct-97	47.8	4,233.04	40.83	4,240.01	43.66	4,237.18	2.83	61	0.044118	4.41
	14	4,280.80	Oct-97	48.3	4,232.50	43.00	4,237.80	43.50	4,237.30	0.50	47	0.048723	4.87
	25	4,280.37	Mar-99	47.4	4,232.97	43.50	4,236.87	43.50	4,236.87	0.00	154	0.017662	1.77
NBN	Pit Center	4,282.45			4,282.45								
	7	4,281.59	Aug-97	50.0	4,231.59	43.50	4,238.09				107	0.008037	0.80
NBF	Pit Center	4,266.86			4,266.86								
	8	4,259.41	Aug-97	48.0	4,211.41	35.75	4,223.66	35.75	4,223.66	0.00	165	0.045152	4.52
	15	4,259.68	Oct-97	47.0	4,212.68	34.75	4,224.93	37.00	4,222.68	2.25	198	0.036263	3.63
	16	4,259.06	Oct-97	47.1	4,211.96	36.00	4,223.06	36.10	4,222.96	0.10	247	0.031579	3.16
	26	4,258.04	Mar-99	43.0	4,215.04	34.75	4,223.29	34.60	4,223.44	-0.15	357	0.022791	2.28
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	21	4,303.08	Oct-97	48.0	4,255.08	43.25	4,259.83	43.66	4,259.42	0.41	151	0.025960	2.60
	22	4,302.77	Oct-97	47.5	4,255.27	43.50	4,259.27	43.90	4,258.87	0.40	148	0.026203	2.62
	29	4,303.20	Mar-99	49.1	4,254.14	44.00	4,259.20	44.26	4,258.95	0.25	296	0.016475	1.65
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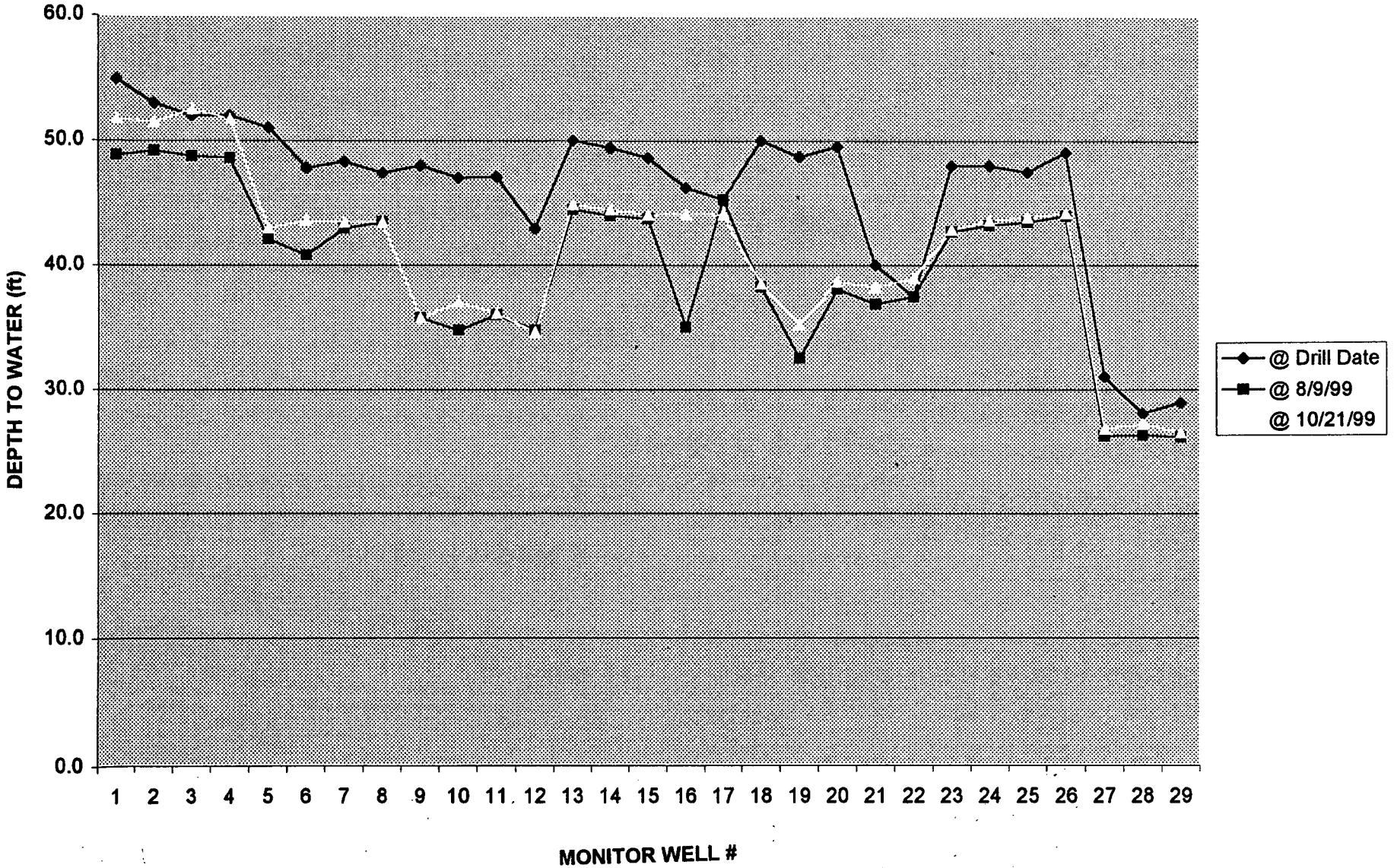
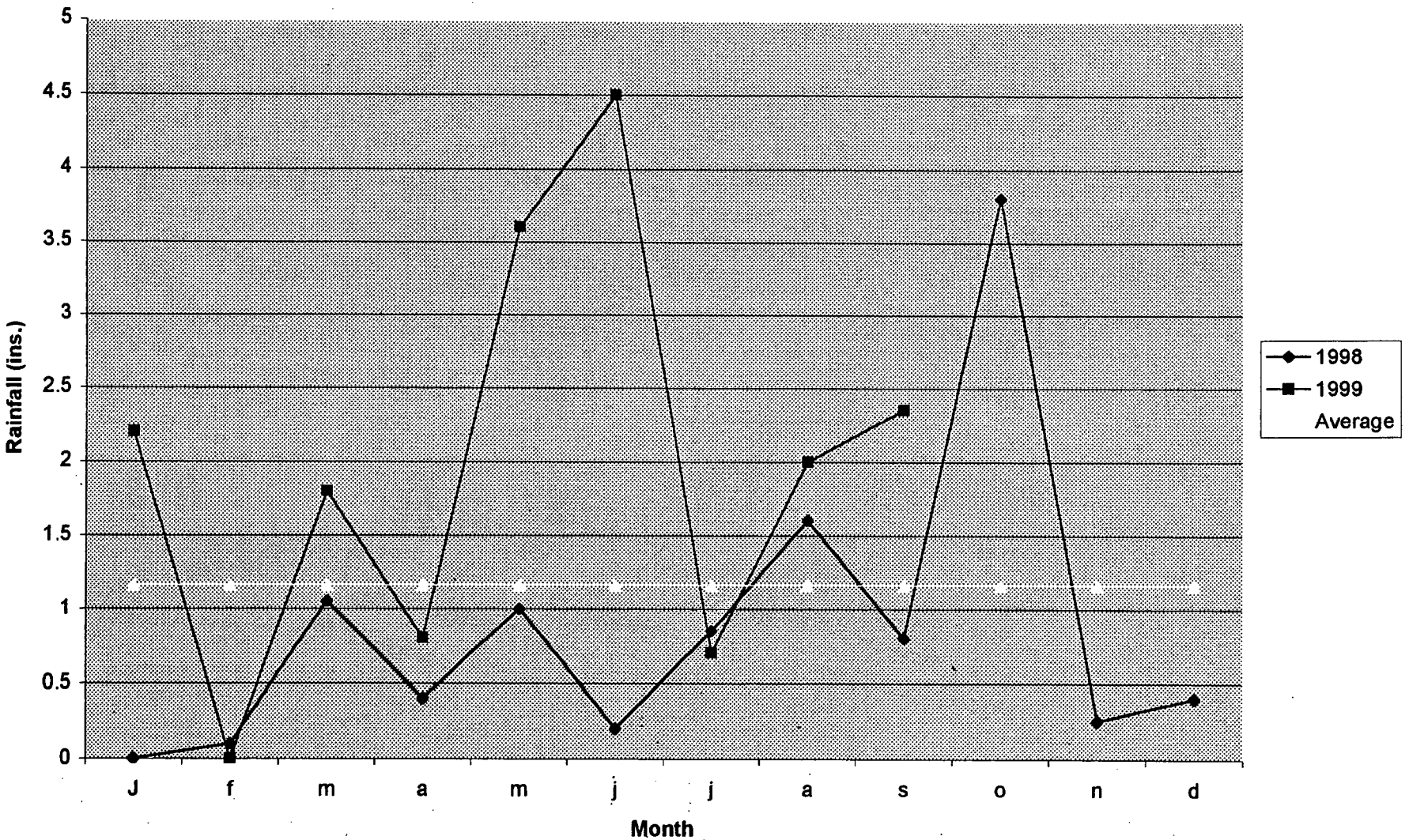
	9	4,208.66	Aug-97	31.0	4,177.66	26.17	4,182.49	26.75	4,181.91	0.58	80	0.035375	3.54
	23	4,209.03	Oct-97	28.0	4,181.03	26.25	4,182.78	27.15	4,181.88	0.90	158	0.016570	1.66
	24	4,208.64	Oct-97	28.9	4,179.74	26.08	4,182.56	26.45	4,182.19	0.37	150	0.019000	1.90

Note: Vera, Bell and Satellite 4 had significant subsidence within the pit area.
The red elevations include an added 3.49' (Ave. of seven other sites)
Correct elevations noted in column 6.

Tipperary Corporation Monitor Well Depths



Monthly Rainfall Totals



Le[illegible]ounty Electric Co-Op Inc.
18 W. Washington; P.O. Dr. 1447
Lovington, N.M. 88260

Weather Report 1998

L=Lightning I=Ice
W=Wind 35mph+ R=Rain
F=Fog S=Snow

January				February				March				April				May				June			
Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth
1	59	26		1	57	20		1	51	12		1	74	21	W	1	87	48		1	103	52	
2	74	26		2	64	15		2	53	10		2	61	44	W	2	89	46		2	106	56	
3	64	31		3	59	28		3	68	23		3	69	34		3	83	47		3	104	62	
4	57	36		4	33	25	F	4	78	33		4	73	30		4	90	47		4	92	65	
5	56	29		5	45	31		5	62	29		5	78	32		5	87	50		5	83	54	
6	50	24		6	52	28		6	61	32	.05L	6	70	37	W	6	87	52		6	76	48	
7	46	26		7	61	23		7	58	33	S&W	7	68	32	W	7	84	46		7	79	56	
8	56	22		8	67	33		8	41	16	W	8	66	36		8	86	47	W	8	91	62	
9	59	22		9	63	31		9	47	10		9	72	24		9	83	45		9	95	54	
10	59	17	F	10	55	27	W	10	48	13		10	78	27		10	86	41		10	82	64	.2R
11	61	26		11	55	17		11	44	15		11	79	38	W	11	89	51	W	11	86	51	
12	64	22		12	52	21	W	12	49	14		12	78	42	W	12	89	51		12	94	58	
13	50	25		13	61	15		13	67	22	F	13	76	35		13	93	48		13	97	65	
14	53	28		14	64	36		14	67	36		14	79	47		14	87	57	W	14	94	56	
15	57	15		15	64	42	L&W.1	15	61	44	.5R&W	15	74	33		15	81	46	W	15	88	54	
16	58	32		16	56	30	W	16	40	36		16	65	26		16	91	38		16	99	64	
17	68	29		17	56	24		17	56	32	.5L	17	56	28	.4R	17	97	60		17	99	64	
18	61	30		18	54	31	W	18	68	34	W	18	66	26		18	94	62	W	18	98	58	
19	64	27		19	56	29		19	54	26	W	19	70	27		19	97	63	RLW	19	102	53	
20	68	36		20	58	25		20	78	20		20	69	39		20	99	55		20	104	65	
21	46	31		21	53	37		21	76	40		21	69	27		21	92	59		21	104	59	
22	52	15		22	67	26		22	70	42		22	75	31		22	85	68		22	103	67	
23	55	26		23	71	28		23	66	38		23	86	38		23	91	61		23	102	66	
24	60	23		24	77	30	W	24	64	44		24	88	53	W	24	93	48		24	104	70	
25	64	24		25	61	39	W	25	75	39		25	81	48		25	89	53		25	106	70	
26	61	20		26	50	28	W	26	70	42	W	26	72	42	W	26	86	51	1RL	26	107	68	
27	70	21		27	50	20		27	73	44	W	27	59	38		27	91	54		27	109	68	
28	69	30		28	55	25		28	77	39	W	28	65	32		28	97	59		28	107	68	
29	62	17		29				29	78	40	W	29	73	31		29	98	58		29	99	68	
30	68	28		30				30	57	33	W	30	82	36		30	99	62		30	96	67	
31	63	27		31				31	63	30		31				31	99	60		31			
H/L	74	15		H/L	77	15	.1"	H/L	78	10	1.05"	H/L	88	21	.4"	H/L	99	38	1	H/L	109	48	.2"

Le[illegible]ounty Electric Co-Op Inc.
16 W. Washington; P.O. Dr. 1447
Lovington, N.M. 88260

Weather Report 1998

L=Lightning I=Ice
W=Wind 35mph+ R=Rain
F=Fog S=Snow

July				August				September				October				November				December			
Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth
1	94	67		1	96	65	L	1	90	58		1	94	54		1	55	36		1	65	29	
2	91	68		2	98	69		2	90	57		2	86	60	.1 L	2	60	34		2	70	40	
3	93	58		3	95	69		3	91	59		3	87	46		3	45	36	F	3	56	44	.4L
4	96	66		4	82	59	W	4	92	59		4	86	61	W	4	42	37	F	4	70	34	
5	100	68	L	5	77	61	.1 L&W	5	92	62		5	72	52		5	39	36	F	5	70	36	
6	101	68	.15L	6	86	56		6	90	60		6	70	32		6	42	35	F	6	70	36	
7	100	68		7	92	55		7	88	62		7	72	32		7	63	36	F	7	52	26	
8	100	67		8	95	64		8	92	59		8	76	46		8	69	37		8	44	12	
9	97	63		9	95	68		9	90	58	.5 L	9	86	44		9	71	39	F & W	9	44	20	
10	100	63		10	95	65		10	82	61	.3 L	10	89	44		10	53	27	W	10	48	30	S
11	104	69		11	96	65		11	92	54		11	92	44		11	65	24		11	44	26	
12	108	70		12	88	66	.1 L	12	84	56		12	78	49		12	56	31		12	54	14	
13	100	63	L	13	79	60	.75 L	13	91	56		13	87	44		13	56	38		13	60	20	
14	102	62	L	14	85	58		14	90	60		14	85	52		14	71	32		14	60	17	
15	99	64	L	15	90	57		15	83	61		15	86	52		15	70	29		15	54	17	
16	92	64	L	16	91	62		16	83	56		16	84	57		16	72	35		16	65	18	
17	94	62	L	17	89	59	F	17	84	54		17	74	42		17	71	29		17	52	20	
18	95	61	.6RL	18	88	62	F	18	86	57		18	68	32		18	79	43		18	64	36	RFW
19	98	64		19	84	66	F	19	93	60		19	70	40		19	73	37		19	42	25	F
20	98	71		20	82	65		20	98	61		20	44	43	0.3	20	45	30		20	62	33	F
21	94	68	.1RL	21	88	62	F	21	94	64		21	50	42	0.6	21	64	30		21	49	34	
22	95	60		22	89	59		22	84	57		22	57	45		22	75	33		22	20	2	
23	93	62		23	89	59		23	84	52		23	59	46		23	69	38		23	28	6	
24	95	63	L	24	91	58		24	92	63		24	70	41		24	74	25		24	36	12	
25	96	82		25	86	63		25	68	63		25	76	44		25	68	34		25	56	14	
26	96	65	L	26	89	65		26	94	62		26	74	55		26	74	28		26	62	18	
27	92	66	L	27	93	66		27	94	65		27	63	57	.9 L	27	75	35		27	59	40	W
28	95	63		28	81	63	.65" L	28	87	57		28	70	46		28	77	42		28	53	24	W
29	99	67		29	86	62		29	90	56		29	74	38		29	62	40		29	51	27	
30	102	68	L	30	90	56		30	92	58		30	73	53	1.8 LW	30	62	36	0.25	30	68	26	
31	95	61	L	31	90	57		31				31	60	48	.1 L	31				31	45	27	
H/L	108	58	.85"	H/L	98	55	1.6"	H/L	98	52	.6"	H/L	94	32	3.8"	H/L	79	24	.25"	H/L	70	2	.4

Lea County Electric Co-Op Inc.
18[illegible] Washington; P.O. Dr. 1447
Lovington, N.M. 88260

Weather Report 1999

L=Lightning I=Ice
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F=Fog S=Snow

January				February				March				April				May				June			
Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth
1	57	32	F	1	60	30		1	76	37		1	72	42	W	1	71	47	0.2	1	88	56	
2	35	19		2	53	27		2	67	43		2	76	39	W	2	75	35		2	90	62	0.7 L,R
3	31	10		3	67	32	W	3	60	20		3	59	32	W	3	78	45		3	88	65	F
4	43	5		4	60	26	W	4	75	34		4	74	34	W	4	73	45		4	89	54	
5	66	22		5	74	38		5	72	44		5	67	34	W	5	66	43		5	84	57	
6	64	25		6	63	35		6	53	32		6	78	47	W	6	66	31		6	89	50	
7	68	23		7	70	31		7	39	34	.2" F,L	7	84	54		7	80	32		7	90	56	
8	68	27	W	8	73	39		8	62	33		8	75	55		8	90	52		8	91	68	
9	67	28		9	73	40		9	68	29		9	79	43		9	88	55		9	88	58	
10	65	28		10	78	34	W	10	77	34		10	73	37		10	85	52		10	93	56	
11	66	33		11	47	15	W	11	40	32	F	11	67	36		11	78	43		11	87	59	
12	69	35	W	12	40	10		12	52	31	F	12	72	44		12	76	42		12	79	52	
13	70	36		13	60	14		13	47	19	W	13	79	55	W	13	90	49		13	63	51	1.3R,L
14	69	34		14	53	22		14	63	23		14	76	46	W	14	93	52		14	72	55	0.1
15	70	29		15	73	31	W	15	79	40		15	64	30		15	91	53		15	78	50	
16	63	30		16	57	23		16	62	39	.8"	16	83	31		16	91	59		16	81	54	
17	68	28		17	67	30		17	70	31		17	87	51		17	78	53		17	76	51	
18	66	23		18	62	26		18	35	33		18	90	52		18	81	45		18	82	60	
19	74	35		19	70	27		19	48	28		19	96	54		19	85	48		19	83	60	L
20	73	33	W	20	57	30		20	64	25		20	96	54		20	91	52		20	79	56	1.6L
21	61	35	LW	21	69	23		21	70	33		21	91	55		21	86	53	L	21	80	62	
22	43	25	.1R.1SW	22	65	36		22	74	29		22	92	59		22	87	51	L,W	22	85	58	.6L
23	63	23		23	65	23		23	78	33		23	64	49		23	86	53	.3RLW	23	91	59	
24	78	41		24	75	27		24	73	31		24	44	37		24	82	55	.9RLW	24	84	62	.2L
25	72	35		25	76	30		25	60	41		25	73	41	0.2	25	66	52	LW	25	86	55	
26	68	31	W	26	74	45		26	52	46	.8" F L	26	76	35		26	68	50	F	26	96	64	
27	67	29		27	64	31		27	62	37	F L	27	83	45		27	72	50	F	27	99	65	
28	43	27	1RFLISW	28	75	36		28	59	47	F	28	86	43	W	28	86	51	.5RL	28	100	69	
29	48	24	1SFLIW	29				29	56	42	F	29	60	52	W	29	90	60	1.7RL	29	93	66	
30	42	23		30				30	66	43	F	30	63	56	.6 L,W	30	88	58		30	103	67	
31	55	24		31				31	77	46		31				31	87	52		31			
H/L	78	5	1.1S1.1R	H/L	78	10		H/L	79	19	1.8	H/L	96	30	0.8	H/L	93	31	3.8	H/L	103	50	4.5

Lea County Electric Co-Op Inc.
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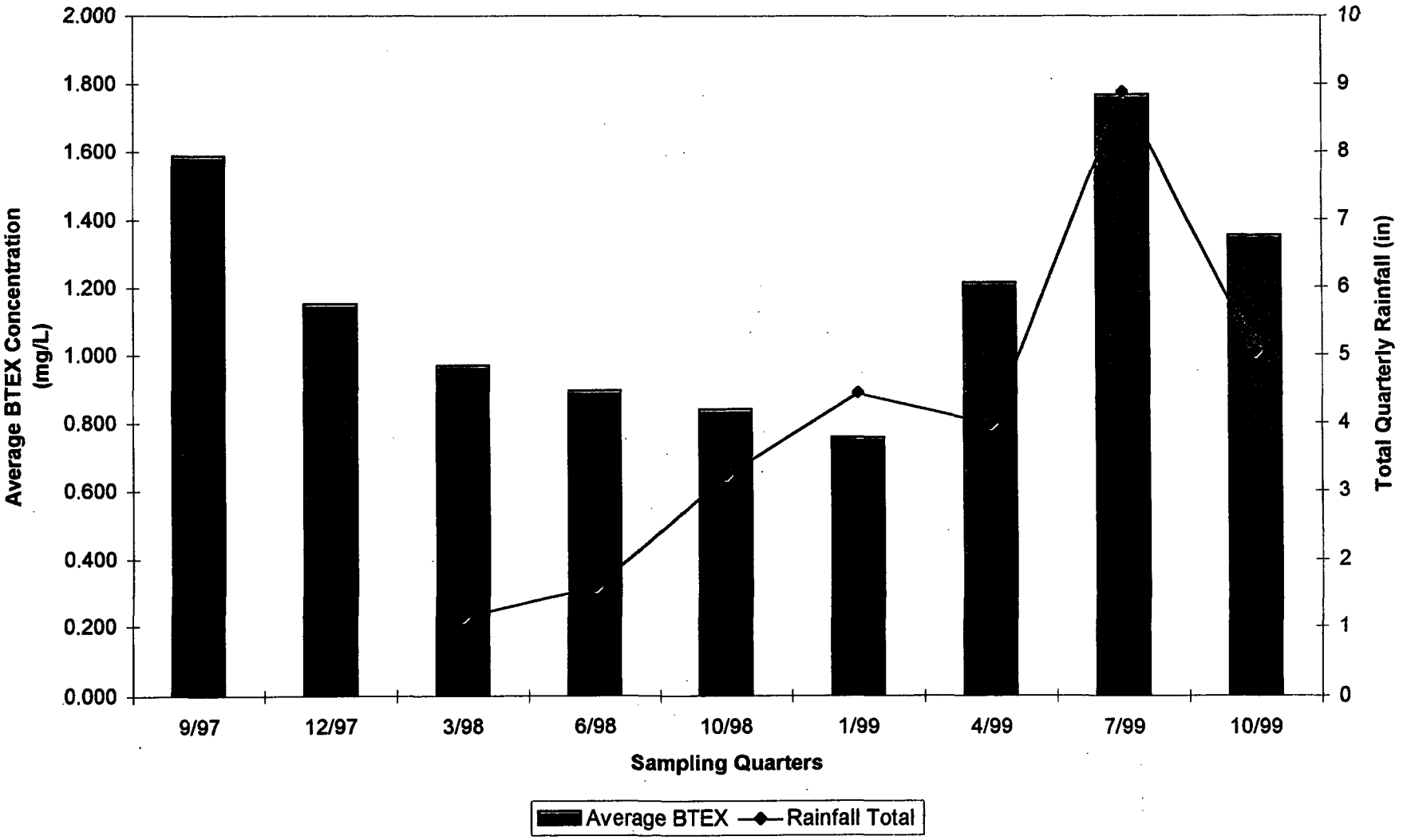
July				August				September				October				November				December			
Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth
1	99	66		1	89	62		1	92	62		1	66	46		1				1			
2	96	71		2	80	62	.3"R	2	89	60	.1"R L	2	72	42		2				2			
3	92	68		3	84	65	.5"R	3	89	61		3	91	44		3				3			
4	87	64		4	85	62		4	92	58	.9"R L	4	72	43		4				4			
5	88	61		5	83	60	1.1"R	5	80	59		5	86	40		5				5			
6	89	63		6	88	62		6	83	56		6	84	51		6				6			
7	91	58		7	92	62		7	88	59	.2"R L	7	84	58		7				7			
8	95	63		8	92	65		8	82	63		8	67	44		8				8			
9	95	68	L	9	92	60		9	82	56		9	77	38		9				9			
10	66	60	.5" R	10	96	66		10	90	56		10	84	36		10				10			
11	76	53		11	96	65		11	96	59		11	80	37		11				11			
12	82	50		12	97	60		12	82	58		12	83	40		12				12			
13	89	53		13	98	60		13	74	52		13	86	41		13				13			
14	93	52	.2" L&W	14	95	64		14	82	53		14	82	39		14				14			
15	88	67		15	95	61		15	78	57	.2"R L	15		50		15				15			
16	88	65		16	96	58		16	70	54	.6"R L	16				16				16			
17	87	64		17	96	61		17	76	53	.15"R L	17				17				17			
18	89	60		18	93	61		18	81	52		18				18				18			
19	88	59		19	93	57		19	89	52		19				19				19			
20	90	60		20	95	64		20	74	52	F	20				20				20			
21	91	61		21	99	61		21	66	48		21				21				21			
22	93	63		22	97	60		22	76	42		22				22				22			
23	95	61		23	93	62	.1"R	23	84	49		23				23				23			
24	99	66		24	85	61		24	89	54		24				24				24			
25	98	66		25	88	60		25	90	52		25				25				25			
26	94	60		26	91	60		26	93	56		26				26				26			
27	92	63		27	93	60		27	78	50		27				27				27			
28	94	60		28	97	59		28	58	41		28				28				28			
29	98	66		29	95	59		29	65	29		29				29				29			
30	97	66		30	95	56		30	61	39		30				30				30			
31	89	70	L	31	94	55		31				31				31				31			
H/L	99	50		H/L	99	55		H/L	96	29		H/L	91	36		H/L	0	0		H/L	0	0	

Comparison of Average BTEX and Total Rainfall

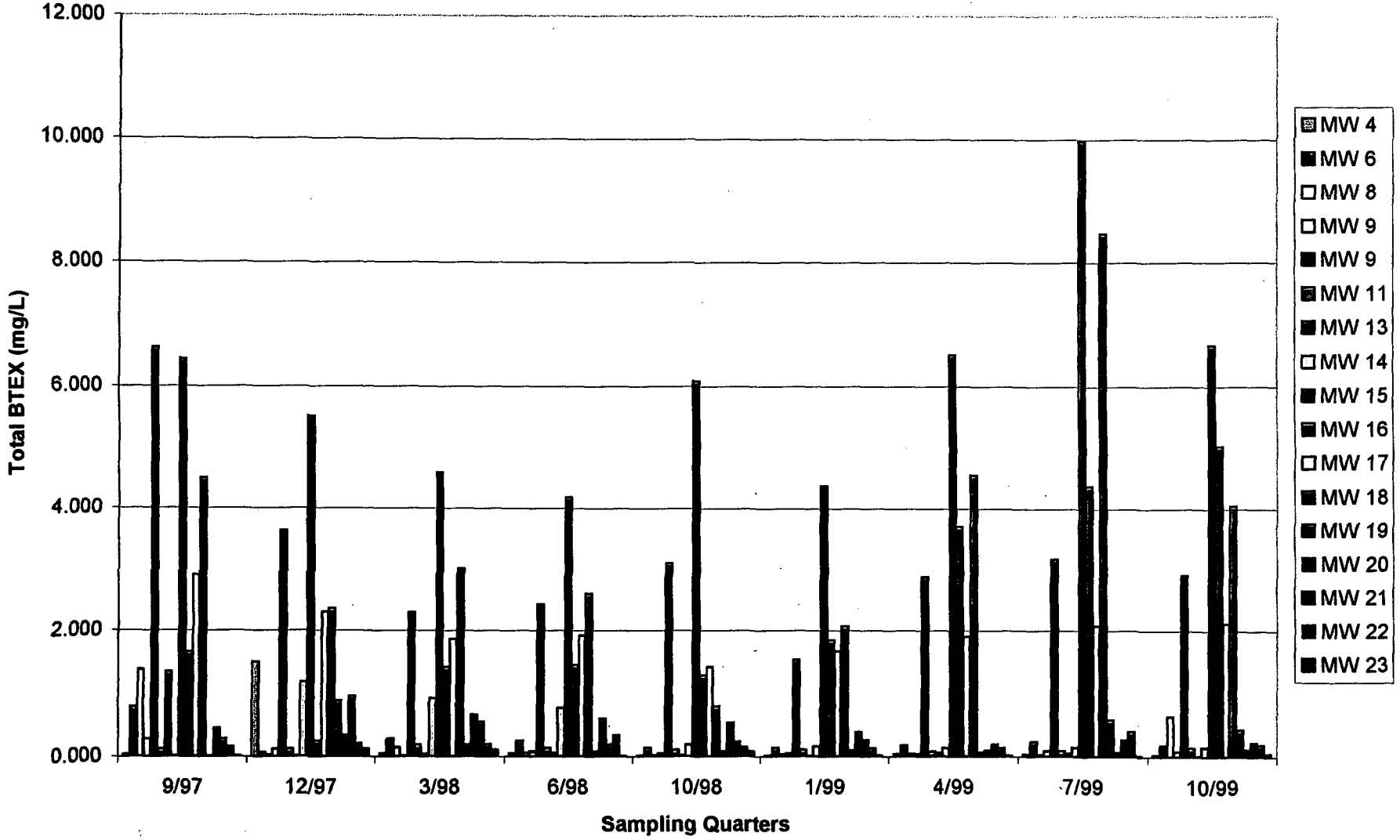


Tipperary CORPORATION

Tipperary Corporation
Tatum Pit Closure Project
Quarterly Sampling Comparison

Well #	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	4/1/99	7/14/99	10/5/99
4	0.031	1.501	0.047	0.049	0.013	0.019	0.038	0.034	0.025
6	0.790	0.068	0.281	0.249	0.141	0.137	0.175	0.232	0.175
8	1.377	0.023	0.146	0.058	0.018	0.036	0.042	0.028	0.634
9	0.285	0.123	0.007	0.081	0.050	0.049	0.042	0.090	0.080
10	6.626	3.626	2.292	2.423	3.096	1.532	2.878	3.172	2.913
11	0.122	0.124	0.184	0.141	0.108	0.105	0.084	0.091	0.143
13	1.346	0.010	0.037	0.056	0.017	0.007	0.057	0.045	0.007
14	0.005	1.183	0.918	0.764	0.184	0.161	0.141	0.146	0.155
15	6.432	5.499	4.588	4.189	6.086	4.380	6.506	9.972	6.665
16	1.662	0.256	1.419	1.446	1.287	1.845	3.709	4.379	5.016
17	2.908	2.305	1.863	1.920	1.419	1.665	1.907	2.083	2.125
18	4.498	2.361	3.013	2.601	0.786	2.072	4.544	8.472	4.060
19	0.011	0.875	0.184	0.079	0.082	0.094	0.068	0.579	0.432
20	0.454	0.345	0.658	0.604	0.539	0.390	0.100	0.065	0.110
21	0.287	0.953	0.554	0.198	0.238	0.259	0.193	0.272	0.227
22	0.152	0.200	0.195	0.344	0.144	0.134	0.141	0.396	0.184
23	0.009	0.122	0.106	0.008	0.078	0.014	0.014	0.018	0.051
	26.995	19.574	16.492	15.210	14.286	12.899	20.639	30.074	23.002

Quarterly BTEX Concentrations



ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced
Project #: None Given
Project Name: None Given
Project Location: None Given

Sampling Date: 10/05/99
Receiving Date: 10/06/99
Analysis Date: 10/6-10/8/99

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
20597	Iva Com #1 S/W	0.001	<0.001	<0.001	<0.001	0.001
20598	Mable Com #3 S/W	0.003	0.021	0.010	0.038	0.020
20599	Bell A M/W #6	0.149	<0.001	0.015	0.008	0.002
20600	NBF M/W #8	0.160	0.214	0.036	0.143	0.081
20601	Sohio St #1 M/W	2.04	0.255	0.157	0.261	0.200
20602	Sohio Sta M/W #11	0.056	0.022	0.008	0.035	0.022
20603	GS State #M/W #21	0.116	0.016	0.053	0.027	0.015
20604	Satellite #9	0.034	0.008	0.009	0.019	0.010
20605	Iva Com S/W	1.67	1.80	0.126	1.42	1.03
20606	Iva Com #2	0.001	<0.001	<0.001	<0.001	<0.001
20607	Mable Com #4	0.002	0.005	0.002	0.010	0.006
20608	Mable Com # S/W	0.467	0.395	0.094	0.868	0.685
20609	Bell A M/W #13	0.003	<0.001	<0.001	0.001	<0.001
20610	Bell A M/W #14	0.109	0.005	0.004	0.024	0.013
20611	Bell A M/W#25	0.001	<0.001	<0.001	<0.001	<0.001
20612	NBF M/W #15	2.85	1.85	0.303	1.05	0.612
20613	NBF M/W #16	3.22	0.776	0.179	0.576	0.265
20614	NBF M/W #26	0.066	0.059	0.016	0.057	0.031
20615	Sohio St #1 M/W #17	1.150	0.206	0.289	0.304	0.176
20616	Sohio St #1 M/W #18	2.47	0.486	0.066	0.594	0.444
20617	Sohio St #1 M/W #28	0.192	0.042	0.070	<0.001	0.034
20618	Sohio St #1 M/W #30	0.188	0.087	0.023	0.081	0.050
	% IA	98	92	94	96	95
	% EA	91	90	87	86	88
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

10-12-99
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced
Project #: None Given
Project Name: None Given
Project Location: None Given

Sampling Date: 10/05/99
Receiving Date: 10/06/99
Analysis Date: 10/8-10/8/99

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
20619	Sohio Sta M/W #19	0.346	0.020	0.008	0.038	0.020
20620	Sohio Sta M/W #20	0.023	0.023	0.008	0.035	0.021
20621	Sohio Sta M/W #27	0.265	0.014	0.006	0.029	0.017
20622	Sohio Sta M/W #31	0.362	0.015	0.006	0.039	0.022
20623	GS State M/W #22	0.070	0.015	0.047	0.032	0.020
20624	GS State M/W #29	0.022	0.017	0.006	0.035	0.038
20625	GS State M/W #12	0.008	0.007	0.006	0.024	0.007
20626	Satelite #23	0.007	0.009	0.006	0.019	0.010
20627	Satelite #24	0.011	0.011	0.006	0.021	0.012
	% IA	99	92	93	92	91
	% EA	91	90	87	86	86
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

10-12-99
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: V. A. Vice

Phone #: 505-398-6509

FAX #: 505-398-6510

Company Name & Address: TIPPERARY OIL & GAS CORP

Mike@Griffin 1-800-854-4358

Whole Earth

Project #:

Project Name:

Project Location:

Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
0597	Iva Com #1 #2 S/W	2									X			10/5/99		✓							
0598	Mable Com #3 #4 #5 Source Water	2									X					✓							
0599	Bell-A-M/W #6 #13 #14 #25	2									X					✓							
0600	NBF-M/W #8 #15 #16 #26	2									X					✓							
0601	Sohio ST #1-M/W #10 #17 #18 #28 #30	2									X					✓							
0602	Sohio STA-M/W #11 #19 #20 #29 #31	2									X					✓							
0603	GS State #M/W #21 #22 #29 #32	2									X					✓							
0604	Satellite #9 #23 #24	2									X			↓		✓							
0605	Iva Com Source Water	2												↓		✓							

Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date: 10/6/99	Time: 10:45	Received by Laboratory:

REMARKS

2 of 2.

Environmental Lab of Texas, Inc.

12600 West I-20 E[illegible] [illegible]esa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS R[illegible]

Project Manager: V.A Vice
Phone #:
FAX #:

Company Name & Address: Tipperary Oil & Gas Corp

Project #:
Project Name:

Project Location:
Sampler Signature:

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
206006	Iva Com #2	2		✓							✓			10/5		✓							
206007	Mable Com #4			✓												✓							
206008	Mable Com #, Source Well			✓												✓							
206009	Bell A MW #13			1												✓							
206010	" " #14			✓												✓							
206011	" " #25			✓												✓							
206012	NBF MW # 15			✓												✓							
206013	" " # 16			✓												✓							
206014	" " # 26			✓												✓							
206015	Sohlo ST #1 MW #17			✓												✓							
206016	" " 18										✓			✓		✓							

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

REMARKS

Environmental Lab of Texas, Inc.

12600 West I-20 East, Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: V. A. Vice
Company Name & Address: Tipperary Oil & Gas
Project #:
Project Name:
Project Location:
Phone #:
FAX #:
Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
20617	Sohio ST #1 MW-28	2		✓							✓			10/5/94		✓							
20618	Sohio ST #1 MW-30															✓							
20619	Sohio Sta MW-19															✓							
20620	" " 20															✓							
20621	" " 27															✓							
20622	" " 31															✓							
20623	GS State MW #22															✓							
20624	" " 29															✓							
20625	" " 12															✓							
20626	Satellite #23															✓							
20627	" #24	↓		↓							↓			↓		✓							

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

REMARKS

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

WHOLE EARTH ENVIRONMENTAL
ATTN: MR. MIKE GRIFFIN
19606 SAN GABRIEL
HOUSTON, TEXAS 77084
FAX: 1-281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl
Project #: Tatum Step-Out
Project Name: None Given
Project Location: 13 Miles West Tatum, N.M.

Sampling Date: 08/11/99
Receiving Date: 08/13/99
Analysis Date: 08/13/99

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
19165	MW-30	<0.001	<0.001	<0.001	0.001	<0.001
19166	MW-31	0.396	0.004	0.001	0.017	0.012
	% IA	96	88	85	86	89
	% EA	94	91	91	90	92
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

8-16-99
Date

Environmental Lab of Texas, Inc.

12600 West I-20 [illegible] Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: M. Griffin
Phone #: (800) 854-4358
FAX #: (281) 646-8996
Company Name & Address: Whole Earth Environmental
Project #: Tatum Step-out
Project Name:
Project Location: 13 miles west, Tatum NM.
Sampler Signature: M. Griffin

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
7165	MW-30	2		✓					✓		✓			8-11		✓							
7166	MW-31	2		✓					✓		✓			8-11		✓							

Relinquished by:	Date:	Time:	Received by:
M. Griffin	8-13-99	1050	[signature]
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-846-8996 Mike Griffin

Sample Type: Water
Sample Condition: Intact/Iced
Project #: None Given
Project Name: None Given
Project Location: Tatum, New Mexico

Sampling Date: 07/14/99
Receiving Date: 07/15/99
Analysis Date: 07/16/99

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
18590	Iva Com Source Well	4.46	6.85	1.24	8.16	5.57
18591	Mable Com Source Well	0.568	0.376	0.068	1.23	0.906
18592	Mable Com #4 MW	0.008	0.006	0.002	0.012	0.008
18593	Bell A #6	0.177	0.010	0.020	0.015	0.010
18594	NBF #8	0.023	0.001	0.001	0.002	0.001
18595	Sohio St #1 - #10	2.34	0.110	0.243	0.343	0.136
18596	Sohio St #A #11	0.060	0.008	0.003	0.011	0.009
18597	GS St #21	0.140	0.010	0.044	0.062	0.016
18598	Satellite #4 - MW #9	0.010	0.004	0.009	0.020	0.007
18599	Bell A #13	0.011	0.011	0.005	0.012	0.006
18600	Bell A #14	0.132	0.005	0.002	0.005	0.002
18601	Bell A #25	0.012	0.010	0.002	0.006	0.004
18602	NBF #15	3.97	3.07	0.438	1.61	0.886
18603	NBF #16	3.64	0.116	0.151	0.343	0.129
18604	NBF #26	0.030	0.027	0.006	0.019	0.011
18605	Sohio St. #1 - #17	1.01	0.205	0.146	0.482	0.240
18606	Sohio St. #1 - #18	3.54	0.553	0.288	0.967	0.532
18607	Sohio St. #1 - #28	0.019	0.003	0.004	0.008	0.005
18608	Sohio St. A - #19	0.532	0.009	0.004	0.026	0.006
18609	Sohio St. A #20	0.023	0.010	0.006	0.016	0.010
18610	Sohio St. A #27	0.268	0.024	0.006	0.030	0.024
18611	GS St. #22	0.109	0.017	0.085	0.144	0.041
18612	GS St. #29	0.014	0.007	0.019	0.125	0.062
18613	Satellite #4 MW #23	0.003	0.002	0.002	0.008	0.003
	% IA	98	93	91	91	93
	% EA	98	93	91	90	93
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

07-16-99
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Receiving Date: 04/02/99
Sample Type: Water
Project : None Given
Project Location: None Given

Analysis Date: 4/05 & 4/06/99
Sampling Date: 04/01/99
Sample Condition: Intact/Iced

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
17428	Iva Com Source Well	2.05	4.15	0.902	5.50	3.80
17429	Mable Com Source Well	0.486	0.432	0.066	1.00	0.713
17430	Mable Com #4	0.012	0.008	0.002	0.010	0.006
17431	Bell A #6	0.139	0.013	0.006	0.011	0.006
17432	Bell A #13	0.021	0.018	0.003	0.009	0.006
17433	Bell A #14	0.108	0.015	0.004	0.009	0.005
17434	NBF #8	0.032	0.002	0.004	0.003	0.001
17435	NBF #15	3.11	1.98	0.214	0.767	0.435
17436	NBF #16	3.15	0.164	0.078	0.219	0.098
17437	Sohio St. #1- #10	2.34	0.067	0.168	0.203	0.100
17438	Sohio St. #1- #17	1.35	0.092	0.079	0.248	0.138
17439	Sohio St. #1- #18	3.35	0.331	0.114	0.469	0.280
17440	Sohio St. #1- #28	0.446	0.065	0.011	0.041	0.058
17441	Sohio St. A - #11	0.048	0.008	0.004	0.014	0.010
17442	Sohio St. A - #19	0.026	0.010	0.006	0.016	0.010
17443	Sohio St. A - #20	0.547	0.011	0.005	0.030	0.008
17444	Sohio St. A - #27	0.056	0.007	0.006	0.007	0.013
17445	G.S. State #21	0.124	0.008	0.042	0.012	0.007
17446	G.S. State #22	0.059	0.010	0.036	0.022	0.014
17447	G.S. State #29	0.004	<0.001	<0.001	0.035	<0.001
17448	Satellite #4 - #9	0.027	0.005	0.004	0.004	0.002
17449	Satellite #4 - #23	0.004	0.004	0.001	0.003	0.002
	% IA	102	99	97	97	99
	% EA	100	97	97	91	95
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

4-7-99
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: TIPPERARY OIL & GAS
Phone #: 505-396-6509
Company Name & Address: Mike Griffin
FAX #:
Project #:
Project Name:
Project Location:
Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
17428	EVA Com Source Well	2		X							X			4-1		X							
17429	Mable Com Source well	2		X							X			4-1		X							
17430	Mable Com # 4	2		X							X			4-1		X							
17431	Bell A #6 #13 #14	2	EA	X							X			4-1		X							
17432	BF #8 #15 #16	2	EA	X							X			4-1		X							
17433	Solo ST #1 #10 #17 #18 #28	2	EA	X							X			4-1		X							
17434	Solo ST #A #11 #19 #20 #27	2	EA	X							X			4-1		X							
17435	GS STAR #21 #22 #29	2	EA	X							X			4-1		X							
17436	SATELLITE #4 - 19 well #9 #23															X							

Relinquished by:	Date:	Time:	Received by:
J. A. Vera	4-2-99	1010	Rebecca Ford
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS

Environmental Lab of Texas, Inc.

12600 West I-20 Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: | Phone #: | FAX #:

Company Name & Address: Tipperary

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

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
7431	BELA #6																						
7432	#13																						
7433	#14																						
7434	NBF #8																						
7435	#15																						
7436	#16																						
7437	Sohio St.#1 #10																						
7438	#17																						
7439	#18																						
7440	#28																						
7441	Sohio St. #A #11																						

Relinquished by:	Date:	Time:	Received by:	REMARKS
	04-02-99	1010		
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by Laboratory:	

Environmental Lab of Texas, Inc.

12600 West I-20 ... dessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Phone #:

FAX #:

Company Name & Address:
Tipperary

Project #:

Project Name :

Project Location:

Sampler Signature:

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
17442	SonicSt. #A #19																						
17443	↓ #20																						
17444	↓ #27																						
17445	G.S.State #21																						
7446	↓ #22																						
7447	↓ #29																						
17448	Satellite #4 #9																						
7449	↓ #23																						

Relinquished by:	Date:	Times:	Received by:	REMARKS
Relinquished by:	Date: 04-02-99	Times: 1010	Received by:	
Relinquished by:	Date:	Times:	Received by Laboratory:	

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER, COLORADO 80202
FAX: 281-646-8998(Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, N.M.

Analysis Date: See below
Sampling Date: 3/17/99
Sample Condition: Intact/Iced

ELT#	Field Code	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	CO3 (mg/L)	HCO3 (mg/L)
17265	#25 Bell	189	46	281	8.7	851	300	0	159
17266	#26 NBF	31.4	16	65	6.4	53	175	0	159
17267	#27 Sohio A	144	78	377	16.2	1028	195	0	329
17268	#28 Sohio #1	715	140	4680	20.8	8685	195	0	329
17269	#29 G.S. State	178	44	102	8.1	487	150	0	281
	ANALYSIS DATE	3/24/99	3/24/99	3/24/99	3/24/99	3/18/99	3/18/99	3/18/99	3/18/99
	QUALITY CONTROL	53.9	5.1	55.9	5.2	5140	48	*	*
	TRUE VALUE	50.0	5.0	50.0	5.0	5000	50	*	*
	% PRECISION	108	102	111	104	103	96	*	*

METHODS: EPA 4.1.1, 215.1,242.1, 273.1, 258.1,325.3, 375.4, 310.2.

Raland K. Tuttle

Raland K. Tuttle

3-26-99

Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER, COLORADO 80202
FAX: 281-646-8996(Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, N.M.

Analysis Date: Hg 3/23/99
Analysis Date: 3/25/99
Sampling Date: 3/17/99
Sample Condition: Intact/Iced

TOTAL METALS (mg/L)

ELT#	Field Code	Ag	As	Ba	Cd	Cr	Hg	Pb	Se
17265	#25 Bell	ND	ND	0.250	ND	0.0110	ND	ND	ND
17266	#26 NBF	ND	ND	0.201	ND	0.0060	ND	ND	ND
17267	#27 Sohio A	ND	ND	0.276	ND	0.0110	ND	ND	ND
17268	#28 Sohio #1	ND	0.028	0.709	ND	0.0220	ND	0.0090	ND
17269	#29 G.S. State	ND	ND	0.369	ND	0.0080	ND	ND	ND
	REPORTING LIMIT	0.0050	0.005	0.010	0.0010	0.0050	0.00020	0.0030	0.0050
	% INSTRUMENT ACCURACY	100	106	95	100	94	103	98	112
	% EXTRACTION ACCURACY	96	104	97	100	96	96	99	102

ND = Not detected at the reporting limit.

METHODS: EPA 200.7, 245.2

Raland K. Tuttle

3-26-99
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER, COLORADO 80202
FAX: 281-646-8996 (Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, New Mexico

Analysis Date: 03/17/99
Sampling Date: 03/17/99
Sample Condition: Intact/Iced

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
17265	#25 Bell	0.006	0.004	0.004	0.005	0.004
17266	#26 NBF	0.002	0.003	0.001	0.002	0.001
17267	#27 Sohio A	0.118	0.019	0.005	0.004	0.008
17268	#28 Sohio #1	0.156	0.008	0.003	0.010	0.005
17269	#29 G.S. State	0.012	0.012	0.004	0.021	0.041
	% IA	104	100	99	98	99
	% EA	108	104	101	102	103
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

3-26-99
Date

CORE LAB

GULF STATES ANALYTICAL

6310 Rothway, Houston, Texas 77040
(713) 690-4444, Fax (713) 690-5646

Company: Tipperary Oil & Gas | Address: 633 17th Denver, CO 80202 | Tele #: | Fax #:

Reports Sent To: Whole Earth | P O #: | Project #:

Project Name: Tatum Dimension | Project Location: Tatum, NM

Sampler(s) Name: (Signature) M. Griffin

Courier:

Relinquished by Sampler: (Signature) M. Griffin — Date 3-17-99 — Time 1345

Relinquished by: (Signature) — Date — Time

Received by: (Signature) Rebecca Hall — Date 3-17-99 — Time 1345

Relinquished by: (Signature) — Date — Time

Received by Laboratory: (Signature) — Date — Time

	Date	Time	Water	Soil	Sludge	Oil	Other	# of Containers	Haz. Sample (Y/N)	BTEX	RCRA 8 Metals	Major cat & anions: Chlorides	carb/bicarb	SO_4^{2-}	Ca, Mg, K, Na
1. #25 Bell (17265)	3-17	8:10	✓					3	N	/	/	-			
2. #26 NBE (17266)	3-17	8:26	✓					3	N	/	/	/			
3. #27 Sohio A (17267)	3-17	8:44	✓					3	N	/	/	/			
4. #28 Sohio #1 (17268)	3-17	9:05	✓					3	N	/	/	/			
5. #29 G.S. State (17269)	3-17	9:25	✓					3	N	/	/	/			
6.															
7.															
8.															
9.															
10.															
11.															
12.															
13.															

Remarks:

Requested Turnaround: Minutes?

GSAI Group:

Special Detection Limits

QC Package: (check one)
☐ CLP ☐ Site Specific
☐ Tier 1 ☐ Tier 2 ☐ QC Summary

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8998

Receiving Date: 01/08/99
Sample Type: Water
Project : None Given
Project Location: Tatum, New Mexico 88237

Analysis Date: 01/08/99
Sampling Date: 01/06 & 01/07/99
Sample Condition: Intact/Iced/HCl

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
16587	Sohio St. #1 - #17	0.676	0.136	0.094	0.339	0.163
16588	Sohio St. #1 - #18	1.10	0.247	0.107	0.415	0.203
16589	Sohio Sta. M/W #19	0.040	0.014	0.006	0.021	0.013
16590	Sohio Sat. M/W #20	0.341	0.010	0.005	0.026	0.008
16591	GS State M/W #21	0.133	0.010	0.054	0.058	0.006
16592	GS State M/W #22	0.039	0.010	0.020	0.048	0.017
16593	Sat. #4 M/W #23	0.004	0.003	0.001	0.004	0.002
16594	Sat. #4 M/W #24	0.004	0.003	<0.001	0.002	<0.001
16595	Ivs Com. M/W #1	0.003	0.001	<0.001	0.002	0.004
16596	Ivs Com. M/W #2	0.004	0.001	<0.001	0.003	0.001
16597	Mabie Com. M/W #3	<0.001	0.002	0.012	0.042	0.016
16598	Mabie Com. M/W #4	0.007	0.002	0.002	0.006	0.002
16599	Vera M/W #5	0.002	0.002	0.001	0.004	0.002
16600	Bell A M/W #6	0.127	0.001	0.003	0.006	0.001
16601	NBN M/W #7	0.003	<0.001	<0.001	0.002	<0.001
16602	NBF M/W #8	0.026	0.001	0.003	0.003	<0.001
16603	Sat. 4 M/W #9	0.034	0.003	0.006	0.005	0.001
16604	Sohio St. #1 M/W #10	1.00	0.067	0.156	0.214	0.095
16605	Sohio Sta. M/W #11	0.061	0.011	0.005	0.016	0.012
16606	Bell A M/W #13	0.001	<0.001	<0.001	0.003	0.001
16607	Bell A M/W #14	0.154	<0.001	0.002	0.003	0.001
16608	NBF M/W #15	1.63	1.49	0.162	0.728	0.350
16609	NBF M/W #16	1.47	0.122	0.047	0.144	0.062
	% IA	86	86	87	85	87
	% EA	90	90	89	88	90
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Roland K. Tuttle

Roland K. Tuttle

1-11-99

Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

V. A. VICE 7. Whole Earth

Project Manager: TIPPERARY OIL & GAS

Phone #: 1-800-864-4358
FAX #: 505-398-6509

Company Name & Address: TATUM, N. MEX #88267

Project #: M/W

Project Name:

Project Location: TATUM, N. MEX

Sampler Signature: D. A. [signature]

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
16595	IVA Com. M/W #1 #2	2												1/6/99									
16596	Mable Com. " #3 #4	2												1/6/99									
16597	VERA #M/W #5	2												1/6/99									
16600	Bell A M/W #6	2												1/6/99									
16601	NBN M/W #7	2												1/6/99									
16602	NBF M/W #8	2												1/6/99									
16603	SATELITE 4-M/W #9	2												1/6/99									
16604	SOLID ST #1 — M/W #10	2												1/7/99									
16605	SOLID ST A - M/W #11	2												1/7/99									
16606	Bell A M/W #13 #14	2												1/6/99									
16608	NBF M/W #15-16	2												1/6/99									

Relinquished by:	Date:	Time:	Received by:
[signature]	01-08-99	0855	[signature]
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS

P.03

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: V.A. Vice - Whole Earth
"505"-398-6509 Off
Phone #: 1-800-854-4358
Company Name & Address: Tipperary Oil & Gas
FAX #:
Tatum, New Mexico 88267
Project #:
Project Name:
Project Location:
Sampler Signature: Victor A. Vice

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME
16987	Sohio STATE #17-18	2												1/1/99	
16988	Sohio STATE M/D #19-20	2												1/1/99	
16989	Sohio STATE M/D #21-22	2												1/1/99	
16990	GS STATE M/D #23-24	2												1/1/99	
16991	SATELLITE #4 M/D #3 #24	2												1/6/99	
16992															
16993															
16994															

ANALYSIS REQUEST

BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI

Relinquished by:	Date:	Time:	Received by:
	01-08-99	0855	
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS

P.02

QP-28

WHOLE EARTH ENVIRONMENTAL
QUALITY PROCEDURE

Procedure for Developing Cased Water Monitoring Wells

Completed By:	Approved By:	Effective Date: / /

1.0 Purpose

This procedure outlines the methods to be employed to develop cased monitoring wells.

2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

3.0 Preliminary

3.1 Prior to development, the static water level and height of the water column within the well casing will be measured with the use of an electric D.C. probe or a steel engineer's tape and water sensitive paste.

3.2 All measurements will be recorded within a field log notebook and subsequently reported within the driller's boring log report.

3.3 All equipment used to measure the static water level will be decontaminated after each use by means of Alconox, a phosphate free laboratory detergent, and water to reduce the possibility of cross-contamination. The volume of water in each well casing will be calculated.

4.0 Purging

4.1 Wells will be purged by removing a minimum of three well casing volumes by using a 2" decontaminated submersible pump or dedicated one liter Teflon bailer.

4.2 If a submersible is used the pump will be decontaminated prior to use by scrubbing the outside surface of tubing and wiring with an Alconox-water mixture, pumping an Alconox-water mixture through the pump, and a final flush with fresh water.

5.0 Water Disposal

5.1 All purge and decontamination water will be temporarily stored within a 60 gallon portable tank and then pumped into a permanent storage tank to be later disposed of in an appropriate manner.

6.0 Records

6.1 Whole Earth will record the amount of water removed from the well during development procedures. The purge volume will be reported to the appropriate regulatory authority when filing the closure report.

Calculation for Determining the Minimum Bailing Volume for Monitor Wells

Formula $V = (\pi r^2 h)$

V= volume
π= pi
r= inside radius of the well bore
h= maximum height of well bore in water table

π	r^2	h (in)	V (cu. in)	V (gal)	X 3 Volumes	Actual
3.1416	1	180	565.488	2.448	7.344	>10

Mable COM
1999 Activity Summary

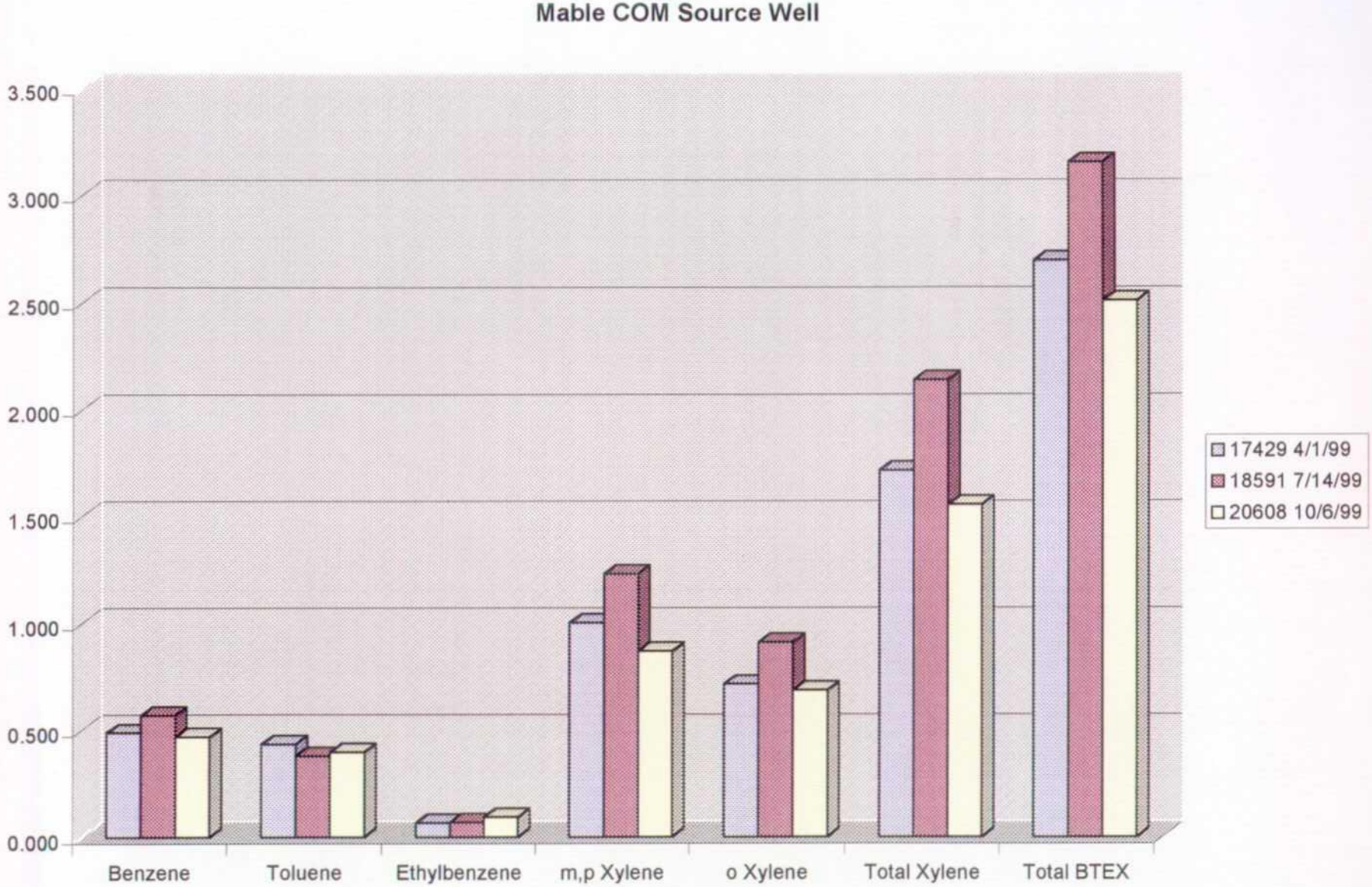
Source Well
We began a quarterly sampling routine of the source well beginning in the second quarter of the year as it became clear that the contaminant concentrations within the down-gradient wells were within NMWQCC guidelines. The third quarter sampling results showed a marked increase in BTEX concentrations. We believe that this resulted from an increase in the height of the water table due to exceptionally heavy spring and summer rainfall amounts in the area.

Monitor Well # 3
This well has recorded five consecutive sampling events with the BTEX concentrations within NMWQCC standards.

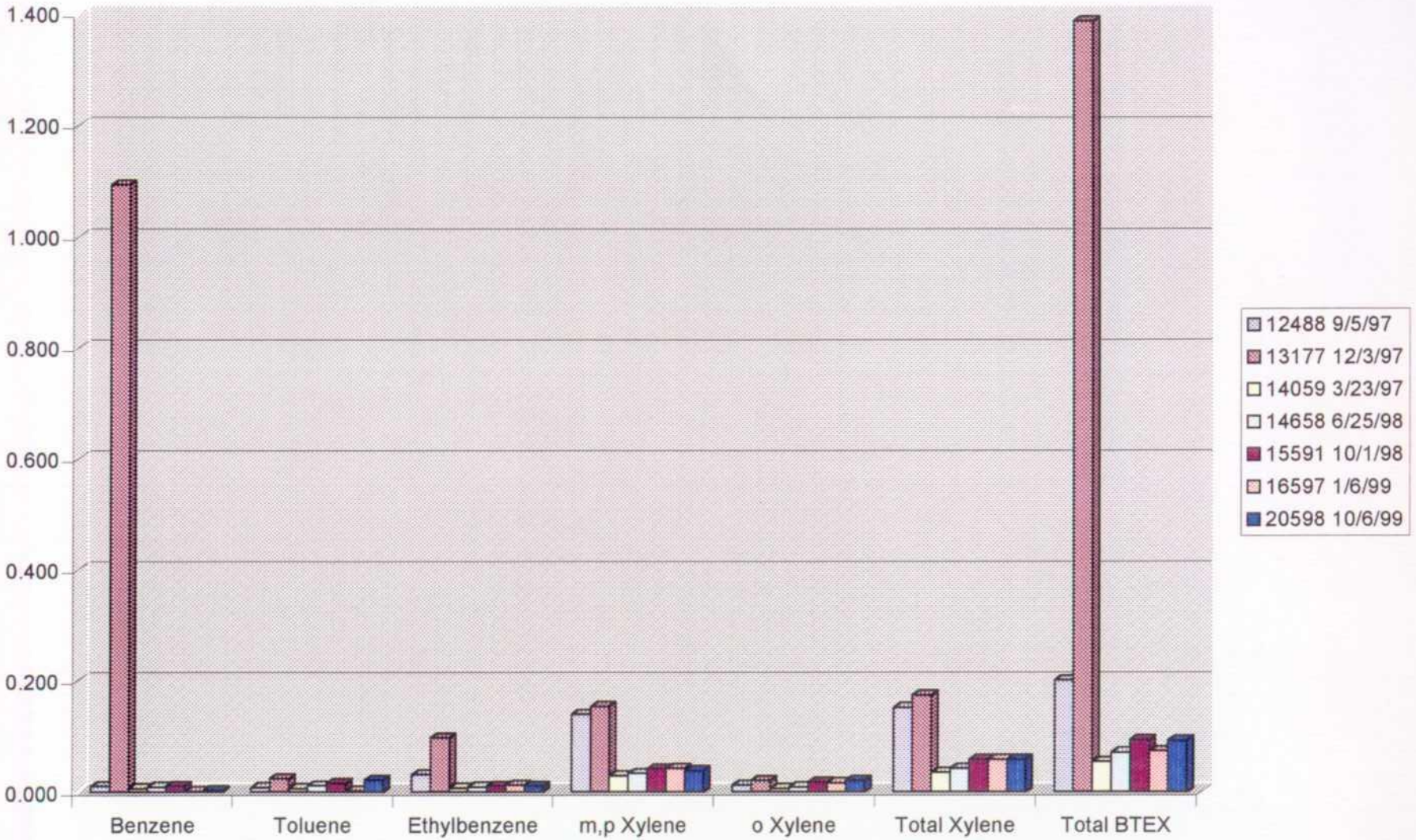
Monitor Well # 4
This well has recorded two consecutive sampling events with the BTEX concentrations within NMWQCC standards. The well took a spike in the second quarter due to an increase in the height of the water table.

Mable COM
Source Well

Benzene	0.486	0.568	0.467
Toluene	0.432	0.378	0.395
Ethylbenzene	0.066	0.068	0.094
m,p Xylene	1.000	1.230	0.868
o Xylene	0.713	0.908	0.685
Total Xylene	1.713	2.138	1.553
Total BTEX	2.697	3.152	2.509


Mable COM Source Well
3.500
3.000
2.500
2.000
1.500
1.000
0.500
0.000
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
17429 4/1/99
18591 7/14/99
20608 10/6/99

Mable COM MW # 3



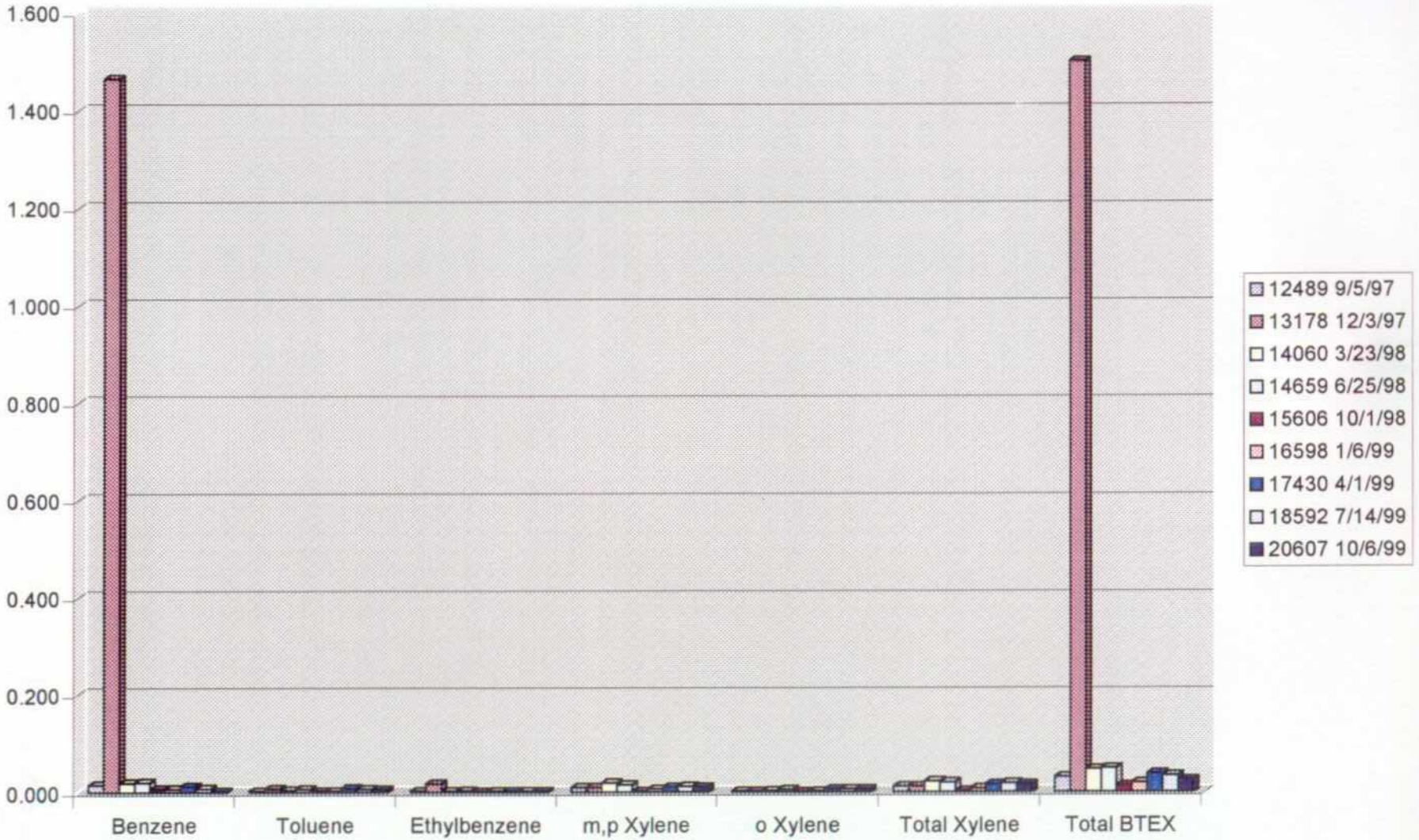
Monitor Well # 3
Mable COM
Sampling Results

Benzene	0.010	1.093	0.006	0.009	0.010	0.001	0.003
Toluene	0.008	0.024	0.006	0.011	0.015	0.002	0.021
Ethylbenzene	0.031	0.097	0.007	0.009	0.010	0.012	0.010
m,p Xylene	0.139	0.153	0.029	0.033	0.041	0.042	0.038
o Xylene	0.012	0.02	0.006	0.009	0.017	0.016	0.020
Total Xylene	0.151	0.173	0.035	0.042	0.058	0.058	0.058
Total BTEX	0.200	1.387	0.054	0.071	0.093	0.073	0.092

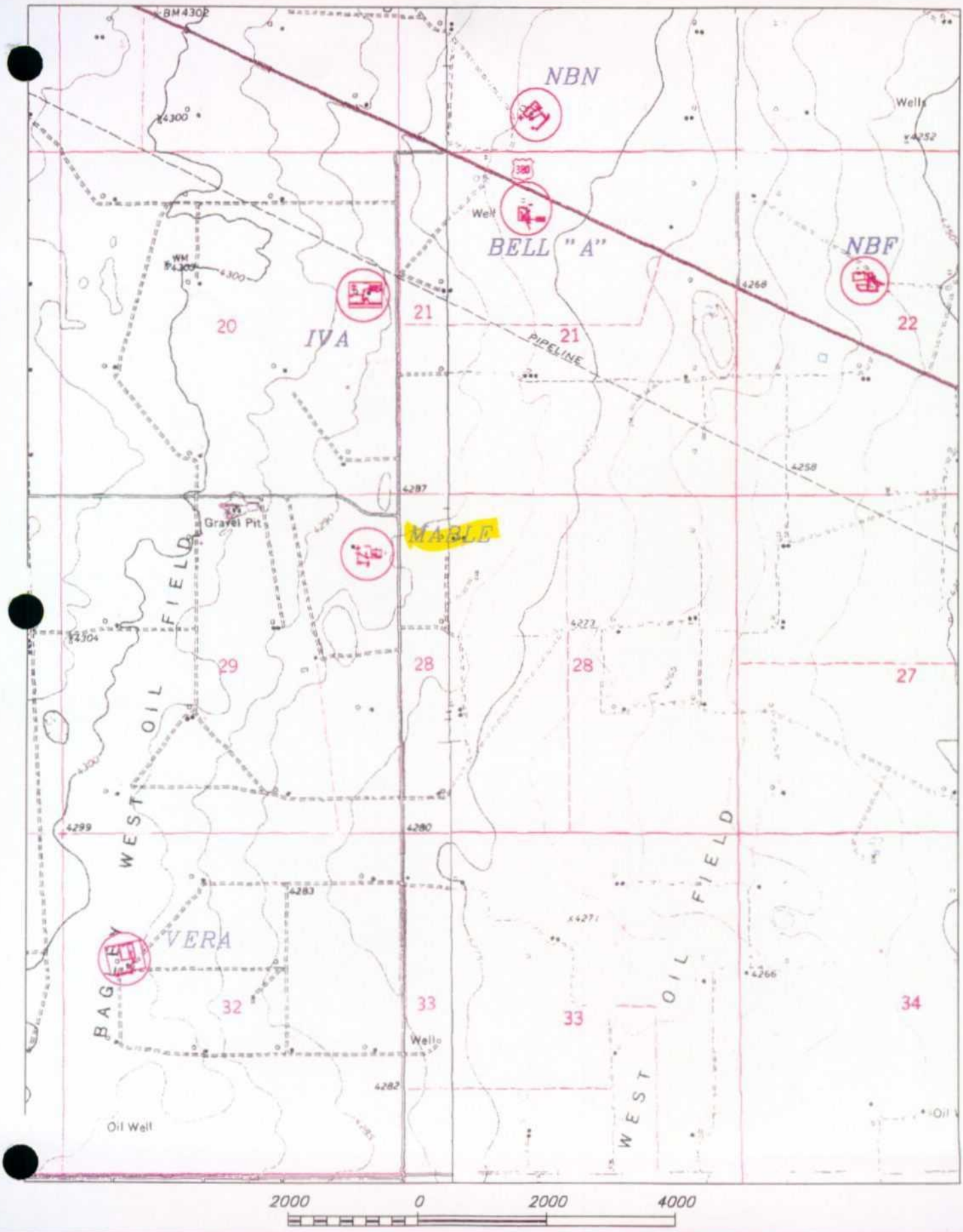
Monitor Well # 4
Mable COM
Sampling Results

Benzene	0.015	1.465	0.019	0.020	0.007	0.007	0.012	0.008	0.002
Toluene	0.002	0.007	0.004	0.006	0.002	0.002	0.008	0.006	0.005
Ethylbenzene	0.002	0.017	0.002	0.003	0.001	0.002	0.002	0.002	0.002
m,p Xylene	0.010	0.01	0.019	0.015	0.002	0.006	0.010	0.012	0.010
o Xylene	0.002	0.002	0.003	0.005	0.001	0.002	0.006	0.006	0.006
Total Xylene	0.012	0.012	0.022	0.02	0.003	0.008	0.016	0.018	0.016
Total BTEX	0.031	1.501	0.047	0.049	0.013	0.019	0.038	0.034	0.025

Mable COM MW # 4

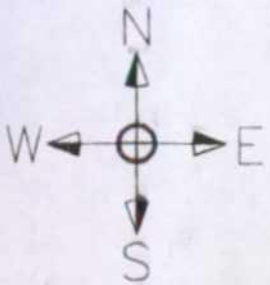


WHOLE EARTH ENVIROMENTAL, INC.

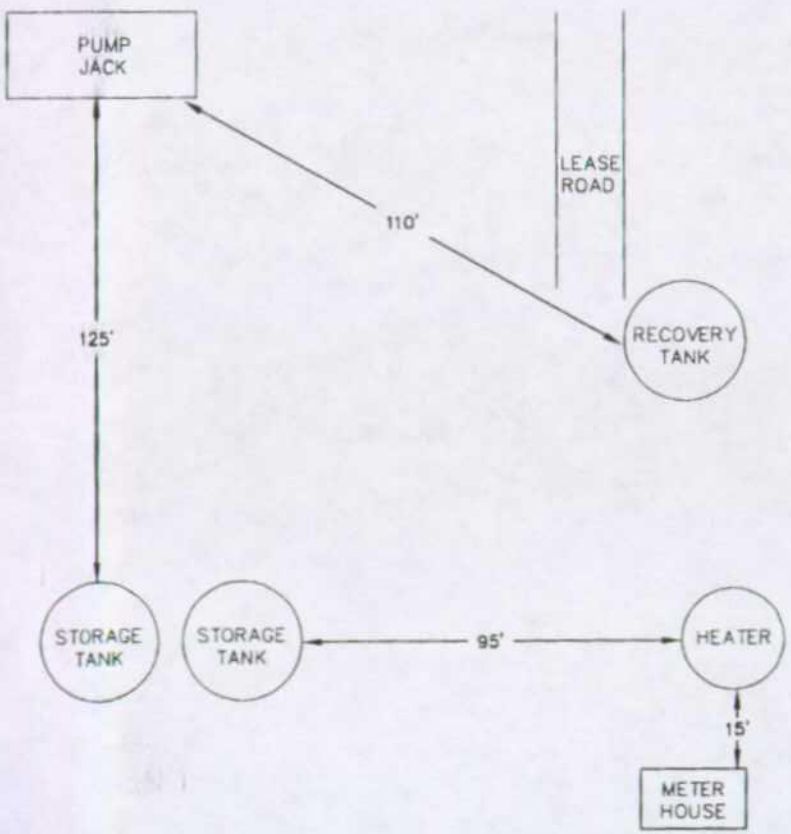


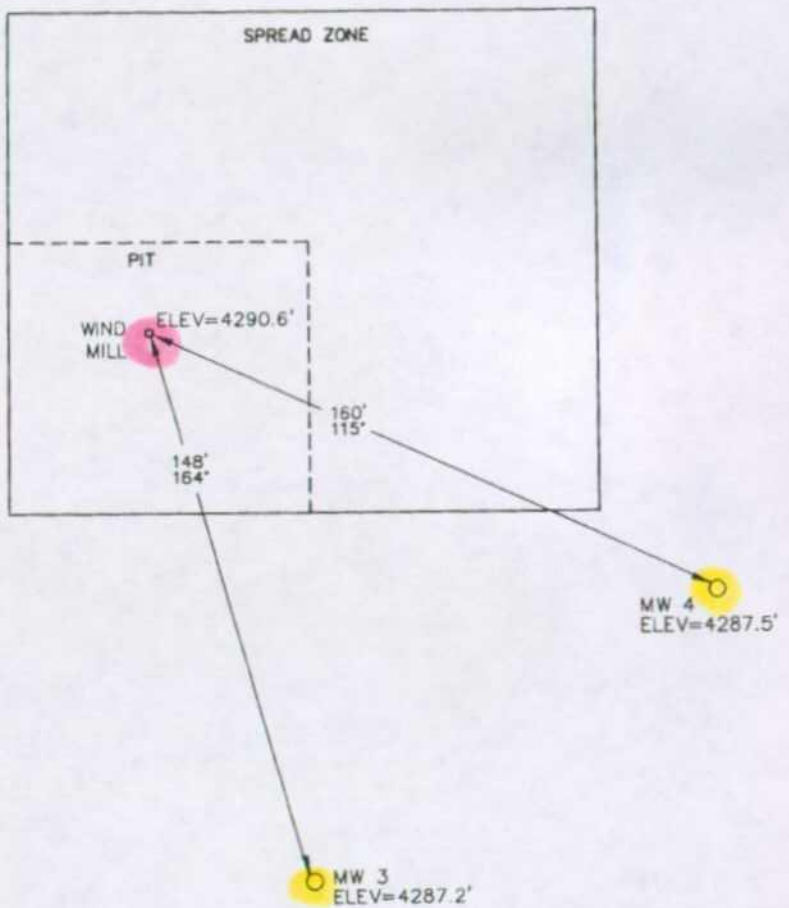
BASIN SURVEYS P.O. BOX 1786 – HOBBS, NEW MEXICO	W.O. Number: 9352	Drawn By: K. GOAD
	Date: 10-21-99	Disk: KJG #122 – WE9352.DWG

MABLE COM.



SCALE 1"=50'





Tipperary

Tipperary Corporation
Tatum Plt Closure Project
Monitor Well Water Elevation Table

Well Name	Monitor Well No.	Surface Elevation	Date Well Drilled	Water Depth @ Drill Date	Water Elevation	Water Depth @ 8/9/99	Water Elev. @ 8/9/99	Water Depth @ 10/21/99	Water Elev. @ 10/21/99	Depth Change Aug. / Oct. '99	Distance to Plt Center (ft)	Gradient (Ft. / Ft.)	Gradient (Ft. /100 Ft.)
Iva	Recovery Well	4 298 42	Aug-97	52 0	4,246 42								
	1	4,292 10	Aug-97	54 9	4,237 20	48 83	4,243 27	51 75	4,240 35	2 92	115	0 080174	8 02
	2	4 291 93	Aug-97	53 0	4,238 93	49 17	4,242 76	51 50	4,240 43	2 33	140	*0 053500*	5 35
Mable	Recovery Well	4,290 55	Aug-97	52 0	4,238 55								
	3	4 287 22	Aug-97	52 0	4,235 22	48 75	4,238 47	52 50	4,234 72	3 75	148	0 022500	2 25
	4	4 287 46	Aug-97	52 0	4,235 46	48 58	4,238 88	51 75	4,235 71	3 17	160	0 019313	1 93
Vera	Pit Center	4 292 98			4,289 50								
	5	4,298 90	Aug-97	63 0	4,235 90	61 50	4,237 40				159	-0 037233	-3 72
Bell	Pit Center	4 283 00			4,279 60								
	6	4 281 12	Aug-97	51 0	4,230 12	42 13	4,238 99	43 01	4,238 11	0 88	93	0 021183	2 12
	13	4 280 84	Oct-97	47 8	4,233 04	40 83	4,240 01	43 66	4,237 18	2 83	51	0 044118	4 41
	14	4 280 80	Oct-97	48 3	4,232 50	43 00	4,237 80	43 50	4,237 30	0 50	47	0 048723	4 87
	25	4,280 37	Mar-99	47 4	4,232 97	43 50	4,236 87	43 50	4,236 87	0 00	154	0 017662	1 77
NBN	Pit Center	4,282 45			4,282 45								
	7	4 281 59	Aug-97	50 0	4 231 59	43 50	4,238 09				107	0 008037	0 80
NBF	Pit Center	4 266 86			4,266 86								
	8	4,259 41	Aug-97	48 0	4,211 41	35 75	4,223 66	35 75	4,223 66	0 00	165	0 045152	4 52
	15	4,259 68	Oct-97	47 0	4,212 68	34 75	4,224 93	37 00	4,222 68	2 25	198	0 036263	3 63
	16	4,259 06	Oct-97	47 1	4,211 96	36 00	4,223 06	36 10	4,222 96	0 10	247	0 031579	3 16
	26	4,258 04	Mar-99	43 0	4,215 04	34 75	4,223 29	34 60	4,223 44	-0 15	387	0 022791	2 28
Sohio # 1	Pit Center	4 285 42			4,285 42								
	10	4 283 63	Aug-97	50 0	4,233 63	44 50	4,239 13	44 90	4,238 73	0 40	110	0 016273	1 63
	17	4,283 31	Oct-97	49 4	4,233 91	44 00	4,239 31	44 50	4,238 81	0 50	262	0 008053	0 81
	18	4 283 59	Oct-97	48 6	4,234 99	43 75	4,239 84	44 10	4,239 49	0 35	176	0 010398	1 04
	28	4 283 21	Mar-99	46 3	4,236 96	35 00	4,248 21	44 15	4,239 06	9 15	552	0 004004	0 40
	30	4,281 13	Aug-99	45 3	4,235 82	45 31	4,235 82	44 10	4,237 03	-1 21	776	0 005528	0 55
Sohio "A"	Pit Center	4 286 84			4,286 84								
	11	4 285 88	Aug-97	50 0	4,235 88	38 25	4,247 63	38 50	4,247 38	0 25	115	0 008348	0 83
	19	4,285 97	Sep-97	48 7	4,237 27	32 50	4,253 47	35 15	4,250 82	2 65	164	0 005305	0 53
	20	4 285 96	Sep-97	49 5	4,236 46	38 00	4,247 96	38 66	4,247 30	0 66	151	0 005828	0 58
	27	4 285 61	Mar-99	40 0	4,245 61	36 83	4,248 78	38 20	4,247 41	1 37	264	0 004659	0 47
	31	4,283 54	Aug-99	37 5	4,246 09	37 45	4,246 09	38 90	4,244 64	1 45	624	0 005288	0 53
G.S. State	Source Well	4 307 00	Sep-97	48 0	4,259 00								
	12	4 303 27	Aug-97	48 0	4,255 27	42 75	4,260 52	42 90	4,260 37	0 15	52	0 071731	7 17
	21	4,303 08	Oct-97	48 0	4,255 08	43 25	4,259 83	43 66	4,259 42	0 41	151	0 025960	2 60
	22	4,302 77	Oct-97	47 5	4,255 27	43 50	4,259 27	43 90	4,258 87	0 40	148	0 025203	2 52
	29	4 303 20	Mar-99	49 1	4,254 14	44 00	4,259 20	44 25	4,258 95	0 25	295	0 016475	1 65
Sat. # 4	Pit Center	4 211 49			4,208 00								
	9	4 208 66	Aug-97	31 0	4,177 66	26 17	4,182 49	26 75	4,181 91	0 58	80	0 035375	3 54
	23	4 209 03	Oct-97	28 0	4,181 03	26 25	4,182 78	27 15	4,181 88	0 90	158	0 015570	1 56
	24	4 208 64	Oct-97	28 9	4,179 74	26 08	4,182 56	26 45	4,182 19	0 37	150	0 019000	1 90

Note Vera, Bell and Satelite 4 had significant subsidance within the pit area
The red elevations include an added 3 49' (Ave of seven other sites)
Correct elevations noted in column 6

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Jennifer A. Salisbury
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

March 15, 2001

CERTIFIED MAIL
RETURN RECEIPT NO. 5051-4218

Mr. Larry Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

RE: TATUM PIT CLOSURE PROJECT
LEA COUNTY, NEW MEXICO

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) December 7, 2000 "PROGRESS REPORT FOR YEAR 2000, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO". This document contains TC's annual report on the results of monitoring of ground water contamination related to the closure of 8 unlined pits west of Tatum, New Mexico.

The OCD has the following comments and requests for information regarding the above-referenced document:

1. A review of the OCD's files shows that TC has never responded to the OCD's August 6, 1999 correspondence requiring information related to the remediation and monitoring of contaminated ground water at TC's Tatum Pit closure sites. Please provide this information.

2. The report does not contain a water table potentiometric map for each sampling event at each site which shows the location of the pit and excavated areas, the surveyed locations of all monitor wells and recovery wells and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation in each monitor well. This information has been required in prior correspondence and must be submitted with the annual reports in order to be able to evaluate the effectiveness of the monitoring system. Please provide this information.

3. The report does not contain information on the quarterly volume of ground water and product recovered at each site nor the total volume recovered at each site to date. This information has been required in prior correspondence and must be included in the annual reports in order to evaluate the effectiveness of the remediation system. Please provide this information.

4. The report does not contain information on the free product thickness in all wells containing products. Please provide this information such that the OCD can evaluate the effectiveness of the remediation system. In addition please provide this information in all future annual reports.

The above required information shall be submitted to the OCD Santa Fe Office by April 15, 2001 with a copy provided to the OCD Hobbs District Office.

If you have any questions, please call me at (505) 476-3491.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Griffin, Whole Earth Environmental, Inc.

Tipperary
CORPORATION

633 Seventeenth Street
Suite 1550
Denver, Colorado 80202

December 7, 2000

VIA FEDERAL EXPRESS

Mr. William C. Olson
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

RE: Progress Report for Year 2000
Tatum Pit Closure Project
Lea County, NM

Dear Mr. Olson:

Please find enclosed additional results from our monitor wells in the subject project area. This report summarizes the results from water samples taken on January 8, April 13, July 20, and September 26, 2000. These results represent the tenth through thirteenth quarters of monitoring. In general, we are continuing to observe decreasing levels of BTEX in the monitor wells.

The Executive Summary section contains the following:

- Observations by well of sampling results.
- Summary of water depths in each monitor well.
- Lab results and chain of custody records for the water samples.

Detailed results are presented in tabular and graphical format for each monitor well. The monitor well data is grouped by site location in the report.

We will continue to sample the project quarterly and report the results to your office on an annual basis. If you have any questions, please call me at (303) 293-9379.

Very truly yours,

Larry G. Sugano
Vice President - Engineering

cc: NMOCD Hobbs Office

Enclosures

Tipperary CORPORATION

Tipperary Corporation
Tatum Pit Closure Project
Monitor Wells
Sampling Results
For Year 2000

Whole Earth Environmental
19606 San Gabriel
Houston, Tx. 77084

Bagley Field
Water Sampling Results Summary

Iva COM
Monitor Wells # 1, 2
BTEX concentrations within the source well remain on a decline curve. They are approximately one half of the initial concentrations and one fifth of the peak concentrations. Monitor Well # 1 continues to show no criteria contaminant concentration exceeding NMWQCC standards however Monitor Well # 2 presented us with an unusual spike in the toluene and xylene concentrations. I'm certain that this is the result of cross contamination within the pump and tubing from Monitor Well # 3.

Mable COM
Monitor Wells # 3, 4
The BTEX concentrations within the source well continue to climb indicating that we are drawing free product. Monitor well # 3 pumped approximately 40% free product. We need to install a sock in the well bore to remove as much free oil as possible. Monitor Well # 4 shows the result of cross contamination from the Iva well # 3.

Bell
Monitor Wells # 6, 13, 14, 25
All wells within the Bell sample matrix continue to show a decline in BTEX concentrations. Two of the four wells are presently at acceptable levels and the other two very near. If this trend continues, we should show all four wells being at acceptable concentrations next year.

NBF
Monitor Wells # 8, 15, 16, 26
Well no. 8 (immediately adjacent to the pit site) continues to show acceptable concentrations. Wells # 15 & 26 have absorbent socks within the bores and resultantly showed a decline in BTEX concentrations of 58% over the last sampling round. Well # 16 shows large amounts of iron sulfide. I recommend that all three outlying wells be equipped with new absorbent socks.

Sohio State # 1
Monitor Wells # 10, 17, 18, 28, 30
Well # 10 continues to show modest declines over the last three sampling periods. Wells # 17 & 18 both have absorbent socks but still contain free product within the samples. I believe that the socks are now saturated beyond their useful lives and should be replaced. The two outermost wells both showed very significant reductions in concentrations. I hope that this is due to the upstream placement of the socks.

Sohio State "A"
Monitor Well # 11, 19, 20, 27, 31
The four nearest monitor wells show a 63% reduction in BTEX concentrations over the last sampling period. These four wells also showed the largest drop in the level of the water table. Only Well # 20 contains an absorbent sock but it registered an 87% reduction in BTEX concentrations. The outermost well, # 31 showed an increase in all BTEX concentrations.

GS State # 1
Monitor Wells # 12, 21, 22, 29
Wells # 12, 21, & 22 all contain absorbent socks and all showed a dramatic reduction in BTEX. Each well continues to contain free product and iron sulfide within the sample fluids. The outermost well, No. 29, also show a significant decline in concentrations over the previous sampling round.

Satellite # 4
Monitor Wells # 9, 23, 24
The Benzene concentrations within each of the three wells remain close to but above the water quality standards. Like Bell, we should have acceptable results next year.

Tipperary Corporation
Tatum Pit Closure Project
Depth to Water

Well Name	Monitor Well No.	Water Depth @ Drill Date	Water Depth 8/9/99	Water Depth 10/21/99	Water Depth 1/8/00	Water Depth 4/13/00	Water Depth 7/20/00	Water Depth 9/26/00
Iva	1	54.9	48.8	51.8	51.7	51.6	51.7	51.8
	2	53.0	49.2	51.5	51.4	51.5	51.6	51.7
Mable	3	52.0	48.8	52.5	52.4	53.7	53.7	53.7
	4	52.0	48.6	51.8	51.6	52.8	51.8	51.8
Bell	6	51.0	42.1	43.0	43.7	44.3	44.4	44.5
	13	47.8	40.8	43.7	44.2	44.0	43.9	44.0
	14	48.3	43.0	43.5	43.9	44.2	44.3	44.2
	25	47.4	43.5	43.5	43.9	44.0	44.0	44.0
NBF	8	48.0	35.8	35.8	36.1	37.1	35.6	35.9
	15	47.0	34.8	37.0	37.1	37.9	37.5	36.3
	16	47.1	36.0	36.1	36.2	36.2	36.2	36.2
	26	43.0	34.8	34.6	34.9	35.9	35.1	35.2
Sohio 1	10	50.0	44.5	44.9	43.9	44.2	45.0	44.9
	17	49.4	44.0	44.5	44.4	44.7	44.5	44.7
	18	48.6	43.8	44.1	45.4	46.4	45.7	45.4
	28	46.3	35.0	44.2	45.8	44.9	44.9	45.1
	30	45.3	45.3	44.1	44.2	44.8	44.3	44.3
Sohio A	11	50.0	38.3	38.5	37.8	38.3	38.3	38.8
	19	48.7	32.5	35.2	37.9	38.2	38.3	38.4
	20	49.5	38.0	38.7	38.0	38.4	38.5	38.4
	27	40.0	36.8	38.2	37.9	38.2	38.1	38.6
	31	37.5	37.5	38.9	39.7	38.5	38.5	38.1
G.S. State	12	48.0	42.8	42.9	44.1	43.2	44.7	44.2
	21	48.0	43.3	43.7	43.9	44.0	44.2	44.3
	22	47.5	43.5	43.9	44.0	44.0	44.0	44.1
	29	49.1	44.0	44.3	44.2	44.3	44.7	44.7
Sat. 4	9	31.0	26.2	26.8	26.8	27.1	27.0	27.0
	23	28.0	26.3	27.2	27.4	27.2	27.2	27.3
	24	28.9	26.1	26.5	26.8	26.9	26.8	26.8

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: VICTOR A. VICE
P.O. BOX 857
TATUM, N.M. 88267
FAX: 505-398-6510
FAX: 281-646-8996

SampleType: Water
Sample Condition: Intact/ Iced/ HCl/ -2 deg. C
Project #: None Given
Project Name: None Given
Project Location: Tatum, N.M.

Sampling Date: 09/26/00
Receiving Date: 09/28/00
Analysis Date: 10/06/00

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
31487	MW 13	0.003	0.004	0.003	0.011	0.004
31488	MW 14	0.024	<0.001	0.006	0.011	0.004
31489	MW 25	0.001	<0.001	0.003	0.010	0.004
31490	MW 8	<0.001	<0.001	0.002	0.008	0.003
31491	MW 15	2.89	1.55	0.239	0.750	2.42
31492	MW 16	2.12	0.092	0.099	0.143	0.063
31493	MW 26	0.053	0.022	0.008	0.019	0.010
31494	Iva Source	0.865	0.495	0.080	0.833	0.636
31495	Mable Source	0.980	1.45	0.141	2.36	1.53
31496	G. S. Source	0.415	0.136	0.070	0.391	0.185
31497	MW 21	0.017	0.011	0.014	0.026	0.013
31498	MW 22	0.171	0.022	0.062	0.051	0.099
31499	MW 29	0.016	0.008	0.006	0.020	0.011
31500	MW 9	0.017	0.008	0.004	0.017	0.010
31501	MW 23	0.014	0.007	0.003	0.014	0.008
31502	MW 24	0.009	0.005	0.003	0.012	0.007
	% IA	95	95	96	100	92
	% EA	92	90	89	95	85
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

10-13-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: VICTOR A. VICE
P.O. BOX 857
TATUM, N.M. 88267
FAX: 505-398-6510
FAX: 281-646-8996

SampleType: Water
Sample Condition: Intact/ Iced/ HCl/ -2 deg. C
Project #: None Given
Project Name: None Given
Project Location: Tatum, N.M.

Sampling Date: 09/26/00
Receiving Date: 09/28/00
Analysis Date: 10/06/00

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
31503	MW 1	<0.001	0.003	0.006	0.020	0.008
31504	MW 2	<0.010	0.088	<0.010	0.072	0.019
31505	MW 3	<0.200	6.81	1.21	6.38	12.6
31506	MW 4	0.129	2.95	<0.005	1.76	<0.005
31507	MW 6	0.016	<0.001	0.010	0.006	0.002
31508	MW 10	1.62	0.036	0.127	0.308	0.109
31509	MW 17	1.30	0.291	0.165	0.610	0.324
31510	MW 18	2.46	0.432	0.201	0.920	0.544
31511	MW 28	0.076	0.041	0.014	0.186	0.111
31512	MW 30	0.026	0.016	0.010	0.025	0.019
31513	MW 11	0.043	0.009	0.007	0.013	0.008
	% IA	109	110	110	111	111
	% FA	103	94	99	94	93
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

10-13-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: VICTOR A. VICE
P.O. BOX 857
TATUM, N.M. 88267
FAX: 505-398-6510
FAX: 281-646-8996

SampleType: Water
Sample Condition: Intact/ Iced/ HCl/ -2 deg. C
Project #: None Given
Project Name: None Given
Project Location: Tatum, N.M.

Sampling Date: 09/26/00
Receiving Date: 09/28/00
Analysis Date: 10/06/00

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
31514	MW 19	0.229	0.005	0.003	0.011	0.004
31515	MW 20	0.008	0.005	0.004	0.012	0.007
31516	MW 27	0.249	0.004	0.003	0.023	0.010
31517	MW 31	0.118	0.004	0.004	0.010	0.004
31518	MW 12	0.820	0.066	0.354	1.48	0.365
	% IA	109	110	110	111	111
	% EA	102	101	104	103	102
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

10-13-00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Phone #:

FAX #:

Company Name & Address: Whole Earth Env.

Project #: Jeffrey

Project Name: Quarterly Sampling

Project Location:

Sampler Signature: M. Griffin

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	HONE	OTHER	SAMPLING: DATE	TIME	BTEX 8021B/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	TCL
31508	MW 10	2		✓					✓		✓			9-26		✓							
31509	" 17																						
31510	" 18																						
31511	" 28																						
31512	" 30																						
31513	MW 11																						
31514	19																						
31515	20																						
31516	27																						
31517	31																						
31518	12																						

Relinquished by:	Date:	Time:	Received by:	REMARKS
M. Griffin	9-28	0910	J McMurry	Rec. -2°C
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by Laboratory:	

Environmental Lab of Texas, Inc. 12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:
Phone #:
FAX #:

Company Name & Address: Whole Earth Env.

Project #: Tippary Custody

Project Name: Sampling

Project Location:

Sampler Signature: M. G. [signature]

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCl	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
31497	MW 21	2		✓					✓		✓			9-26		✓							
31498	22	↓		↓					↓		↓			↓		↓							
31499	29	↓		↓					↓		↓			↓		↓							
31500	9	↓		↓					↓		↓			↓		↓							
31501	23	↓		↓					↓		↓			↓		↓							
31502	24	↓		↓					↓		↓			↓		↓							
31503	1	↓		↓					↓		↓			↓		↓							
31504	2	↓		↓					↓		↓			↓		↓							
31505	3	↓		↓					↓		↓			↓		↓							
31506	4	↓		↓					↓		↓			↓		↓							
31507	6	↓		↓					↓		↓			↓		↓							

Relinquished by:	Date:	Time:	Received by:
M. G. [signature]	9-28	0910	g mcmurry
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS: Rec.-2°C

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: M. Griffin
Phone #: (800) 964-4358
FAX #:
Company Name & Address: Whole Earth Environ.
Project #:
Project Name:
Project Location: Tatum NM
Sampler Signature: M. Griffin

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	TCLP Herbicides
31487	MW 13	2		✓						✓	✓			9-26		✓							
31488	14																						
31489	25																						
31490	8																						
31491	15																						
31492	16																						
31493	26																						
31494	Iva Source																						
31495	Mable Source																						
31496	GS Source																						

Relinquished by:	Date:	Time:	Received by:	REMARKS
M. Griffin	9-28	0910	[signature]	Rec. -2°C
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by Laboratory:	

Oct 13 00 09:36a

p.4

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 34 deg. F
Project #: Monitoring Well Quarterly Sampling
Project Name: None Given
Project Location: Tatum

Sampling Date: 07/20/00
Receiving Date: 07/21/00
Analysis Date: 07/24/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
28434	MW-9	0.047	0.081	0.026	0.126	0.061
28435	MW-4	0.002	0.006	0.008	0.028	0.016
28436	MW-2	<0.001	0.003	0.002	0.006	0.003
28437	MW-16	2.62	0.278	0.149	0.424	0.178
28438	MW-3	<0.001	<0.001	0.107	0.790	0.380
28439	MW-1	<0.001	<0.001	0.004	0.018	0.008
28440	MW-6	0.048	0.002	0.015	0.006	0.002
28441	MW-10	1.86	0.099	0.132	0.391	0.186
28442	MW-11	0.070	0.075	0.026	0.144	0.055
28443	MW-13	0.002	0.002	0.001	0.004	0.002
28444	MW-14	0.038	0.002	0.003	0.005	0.002
28445	MW-15	2.63	4.32	0.655	3.86	6.66
28446	MW-17	1.28	0.203	0.150	0.546	0.294
28447	MW-18	2.18	0.643	0.204	1.10	0.683
28448	MW-19	0.377	0.052	0.017	0.076	0.031
28449	MW-20	0.038	0.074	0.023	0.106	0.042
28450	MW-21	0.084	0.122	0.067	0.236	0.076
28451	MW-22	0.275	0.122	0.088	0.292	0.103
28452	MW-23	0.031	0.058	0.020	0.097	0.048
	% IA	94	94	94	104	96
	% EA	92	99	89	110	92
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

7-26-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 34 deg. F
Project #: Monitoring Well Quarterly Sampling
Project Name: None Given
Project Location: Tatum

Sampling Date: 07/20/00
Receiving Date: 07/21/00
Analysis Date: 07/25/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
28453	MW-24	0.021	0.046	0.018	0.083	0.041
28454	MW-25	<0.001	0.001	0.002	0.005	0.002
28455	MW-26	0.177	0.230	0.036	0.128	0.075
28456	MW-27	0.385	0.048	0.017	0.092	0.038
28457	WM-28	0.219	0.180	0.042	0.233	0.128
28458	MW-29	0.045	0.080	0.027	0.121	0.053
28459	MW-30	0.080	0.100	0.028	0.133	0.075
28460	MW-31	0.137	0.046	0.017	0.078	0.032
28461	GS Source	0.481	0.153	0.083	0.378	0.188
28462	MW-12	1.09	<0.025	1.37	10.5	2.28
28463	MW-8	0.002	0.003	0.002	0.008	0.003
28464	IVA Source	1.00	0.815	0.104	0.866	0.676
28465	Mabel Source	0.552	0.622	0.166	1.67	1.01
	% IA	94	94	94	104	96
	% EA	92	99	89	110	92
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

7-26-00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Elliot Werner
Phone #: (600) 854-4358
FAX #:
Company Name & Address: Whole Earth / Tipperary
Project #: Monitor well Quarterly
Project Name: Sampeling
Project Location: Tatum
Sampler Signature:

ANALYSIS REQUEST — PG 1 of 3

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
28434	MW-9	1		X					X		X			7/20	AM 4:35	✓							
28435	MW-4	1													AM 10:50	✓							
28436	MW-2	1													AM 11:20	✓							
28437	MW-16	1													PM 12:20	✓							
28438	MW-3	1													AM 10:30	✓							
28439	MW-1	1													AM 11:30	✓							
28440	MW-6	1													PM 12:45	✓							
28441	MW-10	1													PM 2:30	✓							
28442	MW-11	1													PM 2:00	✓							
28443	MW-13	1													PM 12:10	✓							
28444	MW-14	1		↓					↓		↓			↓	AM 12:15	✓							

Relinquished by:	Date:	Time:	Received by:
Elliot Werner	7-21-00	1100	D McNurney
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS: Rec 34° F

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Elliot Werner

Phone #: (806) 854-4357

Company Name & Address: Whole Earth / Tipperary

Project #: Monitor Well Quarterly Sampling

Project Name:

Project Location: Tatum

Sampler Signature:

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX #8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
28445	MW-15	1		X					X		X			7/20	AM 11:05	X							
28446	MW-17	1													PM 3:40								
28447	MW-18	1													PM 1:45								
28448	MW-19	1													PM 2:45								
28449	MW-20	1													PM 2:55								
28450	MW-21	1													PM 2:00								
28451	MW-22	1													PM 1:58								
28452	MW-23	1													PM 4:45								
28453	MW-24	1													PM 5:00								
28454	MW-25	1													PM 12:05								
28455	MW-26	1													PM 1:20								

Relinquished by:	Date:	Time:	Received by:
Elliot Werner	7-21-00	1100	mcmurray
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS: Rec 34°F

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Elliot Werner

Phone #:

FAX #: (800) 854-435X

ANALYSIS REQUEST

3 of 3

Company Name & Address: Whole Earth / Tipparary

Project #: Moniter Well Quarterly Sampling

Project Name:

Project Location: Jatum

Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX #1120/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	NCI
28456	MW-27	1		X					X		X			7/20	PM 3:00	X							
28457	MW-28	1													PM 3:50								
28458	MW-29	1													PM 3:45								
28459	MW-30	1													PM 3:55								
28460	MW-31	1													PM 2:50								
28461	GS Source	1													PM 2:10								
28462	MW-12	1													PM 1:53								
28463	MW-8	1													PM 1:00								
28464	IUA Source	1													AM 11:20								
28465	Mabel Source	1		↓					↓		↓			↓	11:AM ↓	↓							

Relinquished by:	Date:	Time:	Received by:
[signature]	7-21-00	11:10 AM	
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced/HCl
Project #: Tatum Water Samples
Project Name: None Given
Project Location: None Given

Sampling Date: See Below
Receiving Date: 04/19/00
Analysis Date: 04/25/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)	Sample Date
25151	MW # 11	0.087	0.039	0.014	0.070	0.043	04/18/00
25152	MW #19	0.408	0.041	0.014	0.070	0.040	04/18/00
25153	MW #31	0.602	0.067	0.020	0.121	0.070	04/18/00
25154	MW #10	2.36	0.263	0.195	0.421	0.216	04/18/00
25155	MW #17	1.77	0.209	0.176	0.616	0.344	04/18/00
25156	MW #18 Fate Pad	3.10	3.11	0.723	4.82	2.95	04/18/00
25157	MW #28	0.055	0.026	<0.010	0.033	0.011	04/18/00
25158	MW #30	0.003	0.005	0.003	0.010	0.004	04/18/00
25159	MW #2A	<0.001	0.011	0.005	0.014	0.006	04/13/00
25160	MW #20	0.025	0.030	0.012	0.057	0.033	04/18/00
25161	Mable Source	0.485	0.342	0.048	0.978	0.685	04/13/00
25162	MW #3	<0.001	0.030	0.022	0.062	0.023	04/13/00
25163	MW #4	0.006	0.009	0.004	0.011	0.005	04/13/00

% IA	99	96	96	103	96
% EA	103	94	98	112	97
BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

4-27-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced/HCl
Project #: Tatum Water Samples
Project Name: None Given
Project Location: None Given

Sampling Date: See Below
Receiving Date: 04/19/00
Analysis Date: 04/24/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)	Sample Date
25140	MW #15	2.40	1.78	0.254	1.08	0.540	04/13/00
25141	MW #16	3.05	0.226	0.153	0.473	0.203	04/13/00
25142	MW #26	0.092	0.108	0.024	0.090	0.048	04/13/00
25143	MW #9	0.048	0.065	0.016	0.054	0.030	04/13/00
25144	MW #23	0.030	0.056	0.014	0.051	0.027	04/13/00
25145	MW #24	0.020	0.041	0.012	0.043	0.022	04/13/00
25146	G.S. Source	0.763	0.184	0.068	0.434	0.189	04/14/00
25147	MW #12	0.871	0.162	0.246	0.932	0.261	04/14/00
25148	MW # 21	0.085	0.009	0.054	0.015	0.006	04/14/00
25149	MW #22	0.413	0.057	0.017	0.082	0.048	04/14/00
25150	MW # 29	0.006	0.008	0.003	0.016	0.018	04/18/00

% IA	96	95	95	98	93
% EA	102	98	89	88	83
BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

4-27-00
Date

ENVIRONMENTAL
LAB OF , INC.
"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced/HCl
Project #: Tatum Water Samples
Project Name: None Given
Project Location: None Given

Sampling Date: 04/13/00
Receiving Date: 04/19/00
Analysis Date: 04/26/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
25164	Iva Source	1.43	1.51	0.176	1.52	1.10
25165	MW #1	<0.001	0.006	0.005	0.015	0.007
25166	MW #2	<0.001	0.007	0.005	0.016	0.006
25167	MW #6	0.208	0.007	0.020	0.022	0.005
25168	MW #13	0.004	0.002	0.002	0.006	0.002
25169	MW #14	0.195	0.004	0.004	0.009	0.003
25170	MW #25	0.002	0.002	0.002	0.005	0.002
25171	MW #8	0.002	0.002	0.002	0.003	0.001
25172	Sohio B (Blank)	<0.001	0.001	<0.001	0.001	<0.001
% IA		100	98	100	107	99
% EA		102	97	98	106	95
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

4-27-00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: M. Gaffin
Phone #: (800) 854-4358
FAX #: (281) 646-8996
Company Name & Address: Whole Earth Environmental
Project #: Tatum Waters Sampling
Project Name:
Project Location:
Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8021B/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
25161	Mable Source	1		✓					✓		✓			4-13	9:33	✓							
25162	MW 3														9:35	✓							
25163	" 4														9:20	✓							
25164	Iva Source														9:50	✓							
25165	MW 1														10:33	✓							
25166	" 2														10:10	✓							
25167	" 6														11:15	✓							
25168	" 13														11:49	✓							
25169	" 14														11:32	✓							
25170	" 25														1:46	✓							
25171	" 8	✓		✓					✓		✓			✓	2:12	✓							

Relinquished by:	Date:	Times:	Received by:
M. Gaffin	4-19-00	6:04 Pm	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: M. Griffin
Phone #: (800)854-4358
FAX #: (281)646-8826
Company Name & Address: Whole Earth Environmental
Project #: Tatum Water Samplings
Project Name:
Project Location:
Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI	Chlorides
25151	MW 11	1		✓					✓		✓			4/18		✓								✓
25152	MW 19														11:15									
~~25153~~	MW 20T ~~X~~														11:00									
25153	MW 31														10:45									
25154	MW 10														10:30									
25155	MW 17														10:05									
25156	MW 18														9:50									
25157	MW 28														9:40									
25158	MW 30	✓		✓					✓	✓				✓	9:20	✓								✓
25159	MW-2A	✓		✓					✓	✓				4/13	10:43	✓								✓
25160	MW-20	✓		✓					✓	✓				4-18		✓								✓

Relinquished by:	Date:	Time:	Received by:
M Griff	4-19-00	6:10 pm	Rebecca Jud
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS: Can't run Chlorides on sample because of HCL preservative
MW-27 - damaged in transport as per Mike 4/24/00

* Also Fax Tipperary @ 303-291-0398 Attn: Larry Sugano

Environmental Lab of Texas, Inc. 12600 West I-20 East Odessa, Texas 79763

(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: M. Giffin

Phone #: (800) 854-4358

FAX #: (281) 646-8996

Company Name & Address: Whole Earth Environmental

Project #: Tatum Water Sampling

Project Name :

Project Location:

Sampler Signature: M. Giff

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
25140	MW # 15 ✓	1		✓					✓		✓			4-13	2:31	✓							
25141	MW # 16 ✓														2:47								
25142	" 26 ✓														3:05								
25143	" 9 ✓														3:28								
25144	" 23 ✓														3:44								
25145	" 24 ✓													4-13	4:08								
25146	GS Source ✓													4-14	8:15								
25147	MW # 12														9:15								
25148	" 21 ✓														8:40								
25149	" 22														9:48								
25150	" 29 ✓													4-18	8:15								

Relinquished by:	Date:	Times:	Received by:
M. Giffin	4-19-'00	1810	Robert Ruff
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS: ~~Missing Sample MW27 & ...~~

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: M. Griffin
Phone #: (800) 854-4358
FAX #: (281) 646-8096
Company Name & Address: Whole Earth Environ.
Project #: Tatum Water Sampling
Project Name:
Project Location:
Sampler Signature: M. Griffin

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
	~~#2A~~ *	1		✓					✓		✓			4/13	1030	✓							
25172	Solid B (Blank)	1		✓					✓		✓					✓							

Relinquished by:	Date:	Time:	Received by:
M. Griffin	4-19-00	6:15	
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS: #2A same as MW-2A as per Mike 4/24/00

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced/HCl
Project #: None Given
Project Name: None Given
Project Location: Tatum, N.M.

Sampling Date: 01/08/00
Receiving Date: 01/13/00
Analysis Date: 01/16/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
22776	#30	0.086	0.095	0.024	0.104	0.063
22777	#23	0.019	0.031	0.019	0.083	0.033
22778	#24	0.016	0.030	0.016	0.071	0.030
22779	#13	0.056	0.005	0.004	0.008	0.004
22780	#4 SOH# 9-7	0.080	0.056	0.016	0.064	0.038
22781	#28	1.32	0.954	0.227	1.04	0.822
22782	G.S. SW	0.804	0.348	0.139	0.925	0.484
22783	#22	0.204	0.058	0.108	0.294	0.083
22784	#25	0.002	0.001	0.001	0.004	0.002
22785	#21	0.069	0.041	0.091	0.131	0.046
22786	#19	0.355	0.055	0.016	0.070	0.042
22787	#31	0.383	0.044	0.013	0.072	0.040
22788	#26	0.140	0.158	0.030	0.119	0.064
22789	MW-2	0.002	0.002	0.001	0.004	0.002
22790	#17	1.87	0.353	0.221	0.782	0.429
	% IA	92	90	86	88	86
	% EA	90	86	86	94	85
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

1-19-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced/HCl
Project #: None Given
Project Name: None Given
Project Location: Tatum, N.M.

Sampling Date: 01/08/00
Receiving Date: 01/13/00
Analysis Date: 01/16/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
22759	#15	3.25	2.55	0.335	1.24	0.654
22760	#18	0.334	0.186	0.074	0.257	0.149
22761	#8	0.007	0.008	0.007	0.015	0.008
22762	#10	2.35	0.520	0.187	0.586	0.329
22763	#11	0.088	0.075	0.035	0.086	0.054
22764	#12	1.03	0.336	1.24	8.03	2.09
22765	#6	0.170	0.007	0.026	0.022	0.008
22766	MW-3	0.022	0.032	0.046	0.215	0.131
22767	MW-1	0.002	0.002	<0.001	0.003	0.002
22768	MW-4	0.004	0.004	0.004	0.011	0.004
22769	#20	0.064	0.064	0.019	0.075	0.044
22770	#14	0.003	0.002	0.002	0.006	0.002
22771	G.S. Last #29	0.032	0.034	0.024	0.104	0.043
22772	#16	1.17	0.122	0.068	0.163	0.083
22773	#9	0.030	0.036	0.021	0.088	0.036
22774	IVA Source	2.35	3.76	0.458	3.21	1.91
22775	Mable Source	0.534	0.548	0.136	1.03	0.946
	% IA	92	90	86	88	86
	% EA	90	86	86	94	85
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

1-19-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 34 deg. F
Project #: Monitoring Well Quarterly Sampling
Project Name: None Given
Project Location: Tatum

Sampling Date: 07/20/00
Receiving Date: 07/21/00
Analysis Date: 07/24/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
28434	MW-9	0.047	0.081	0.026	0.126	0.061
28435	MW-4	0.002	0.006	0.008	0.028	0.016
28436	MW-2	<0.001	0.003	0.002	0.006	0.003
28437	MW-16	2.62	0.278	0.149	0.424	0.178
28438	MW-3	<0.001	<0.001	0.107	0.790	0.380
28439	MW-1	<0.001	<0.001	0.004	0.018	0.008
28440	MW-6	0.048	0.002	0.015	0.006	0.002
28441	MW-10	1.86	0.099	0.132	0.391	0.186
28442	MW-11	0.070	0.075	0.026	0.144	0.055
28443	MW-13	0.002	0.002	0.001	0.004	0.002
28444	MW-14	0.038	0.002	0.003	0.005	0.002
28445	MW-15	2.63	4.32	0.655	3.86	6.66
28446	MW-17	1.28	0.203	0.150	0.546	0.294
28447	MW-18	2.18	0.643	0.204	1.10	0.683
28448	MW-19	0.377	0.052	0.017	0.076	0.031
28449	MW-20	0.038	0.074	0.023	0.106	0.042
28450	MW-21	0.084	0.122	0.067	0.236	0.076
28451	MW-22	0.275	0.122	0.088	0.292	0.103
28452	MW-23	0.031	0.058	0.020	0.097	0.048
	% IA	94	94	94	104	96
	% EA	92	99	89	110	92
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

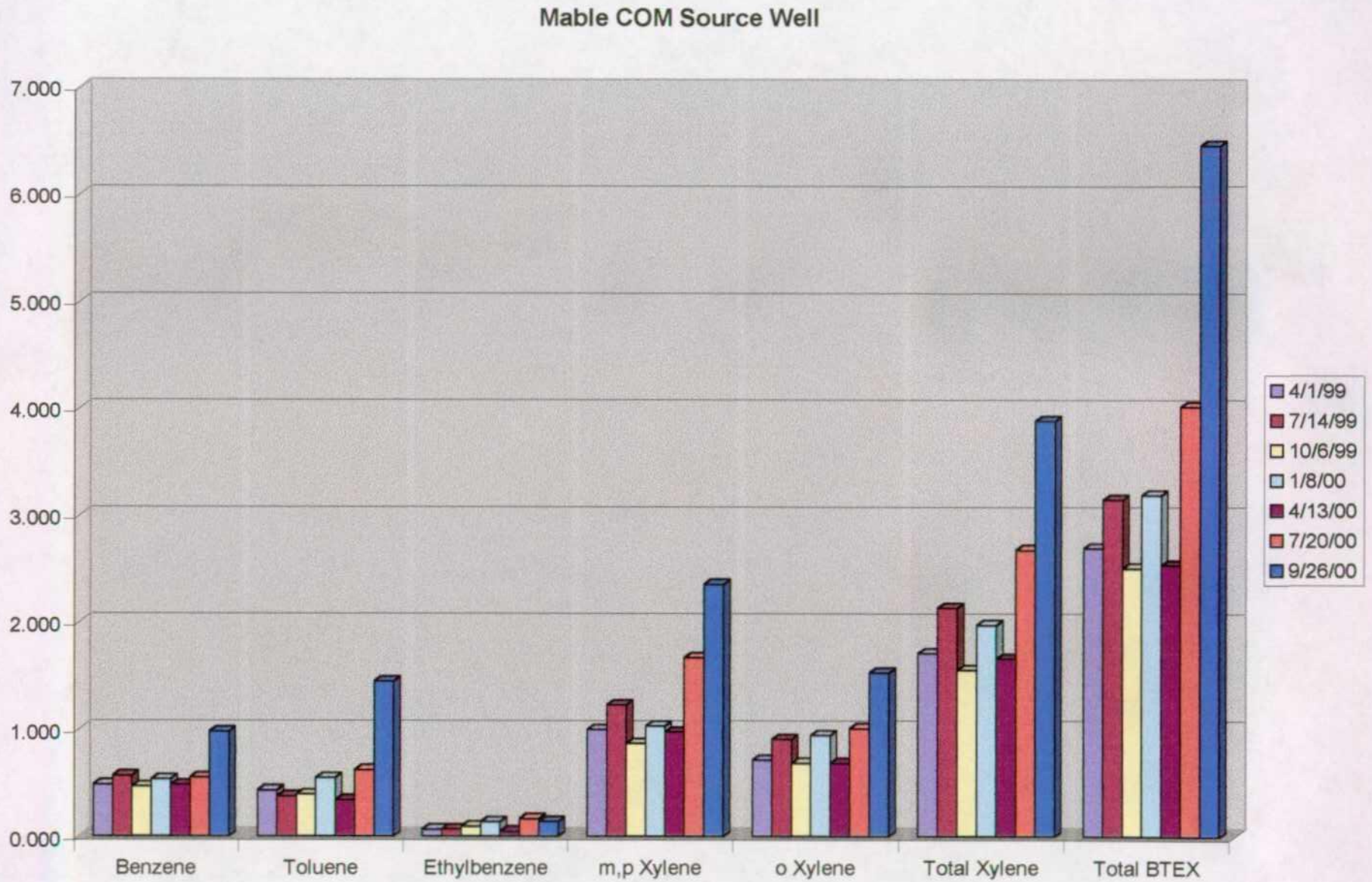
METHODS: SW 846-8021B,5030

Raland K. Tuttle

7-26-00
Date

Mable COM
Source Well

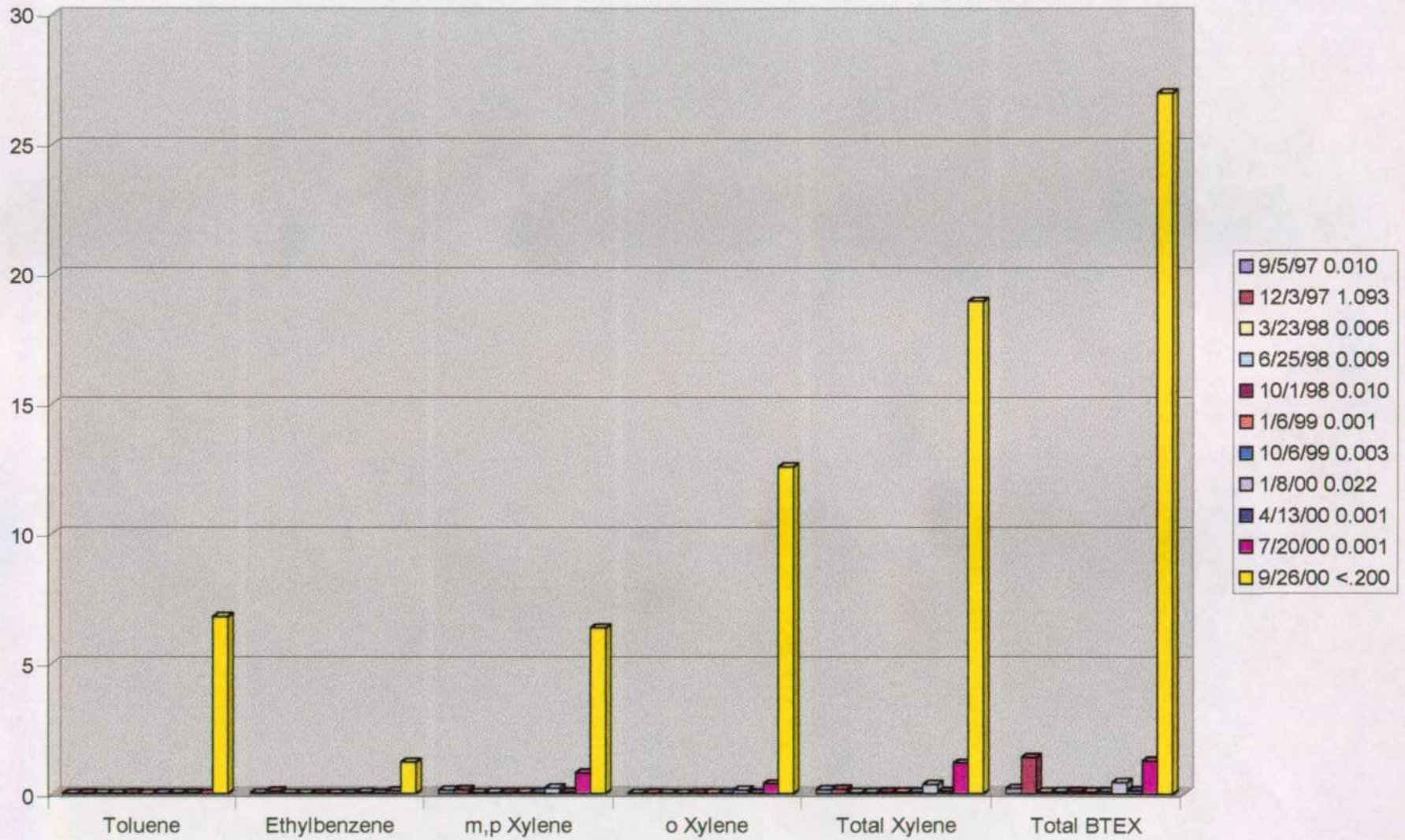
Lab. #	17429	18591	20608	22775	25161	28465	31495
Sample Date	4/1/99	7/14/99	10/6/99	1/8/00	4/13/00	7/20/00	9/26/00
Benzene	0.486	0.568	0.467	0.534	0.485	0.552	0.980
Toluene	0.432	0.378	0.395	0.548	0.342	0.622	1.450
Ethylbenzene	0.066	0.068	0.094	0.136	0.048	0.166	0.141
m,p Xylene	1.000	1.230	0.868	1.030	0.978	1.670	2.360
o Xylene	0.713	0.908	0.685	0.946	0.685	1.01	1.530
Total Xylene	1.713	2.138	1.553	1.976	1.663	2.680	3.890
Total BTEX	2.697	3.152	2.509	3.194	2.538	4.020	6.461


Mable COM Source Well
7.000
6.000
5.000
4.000
3.000
2.000
1.000
0.000
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
4/1/99
7/14/99
10/6/99
1/8/00
4/13/00
7/20/00
9/26/00

Monitor Well # 3
Mable COM
Sampling Results

Lab. #	12488	13177	14059	14658	15591	16597	20598	22766	25162	28438	31505
Sample Date	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	10/6/99	1/8/00	4/13/00	7/20/00	9/26/00
Benzene	0.010	1.093	0.006	0.009	0.010	0.001	0.003	0.022	0.001	0.001	<.200
Toluene	0.008	0.024	0.006	0.011	0.015	0.002	0.021	0.032	0.030	0.001	6.810
Ethylbenzene	0.031	0.097	0.007	0.009	0.010	0.012	0.010	0.046	0.022	0.107	1.210
m,p Xylene	0.139	0.153	0.029	0.033	0.041	0.042	0.038	0.215	0.062	0.790	6.380
o Xylene	0.012	0.02	0.006	0.009	0.017	0.016	0.020	0.131	0.023	0.380	12.600
Total Xylene	0.151	0.173	0.035	0.042	0.058	0.058	0.058	0.346	0.085	1.170	18.980
Total BTEX	0.200	1.387	0.054	0.071	0.093	0.073	0.092	0.446	0.138	1.279	27.000

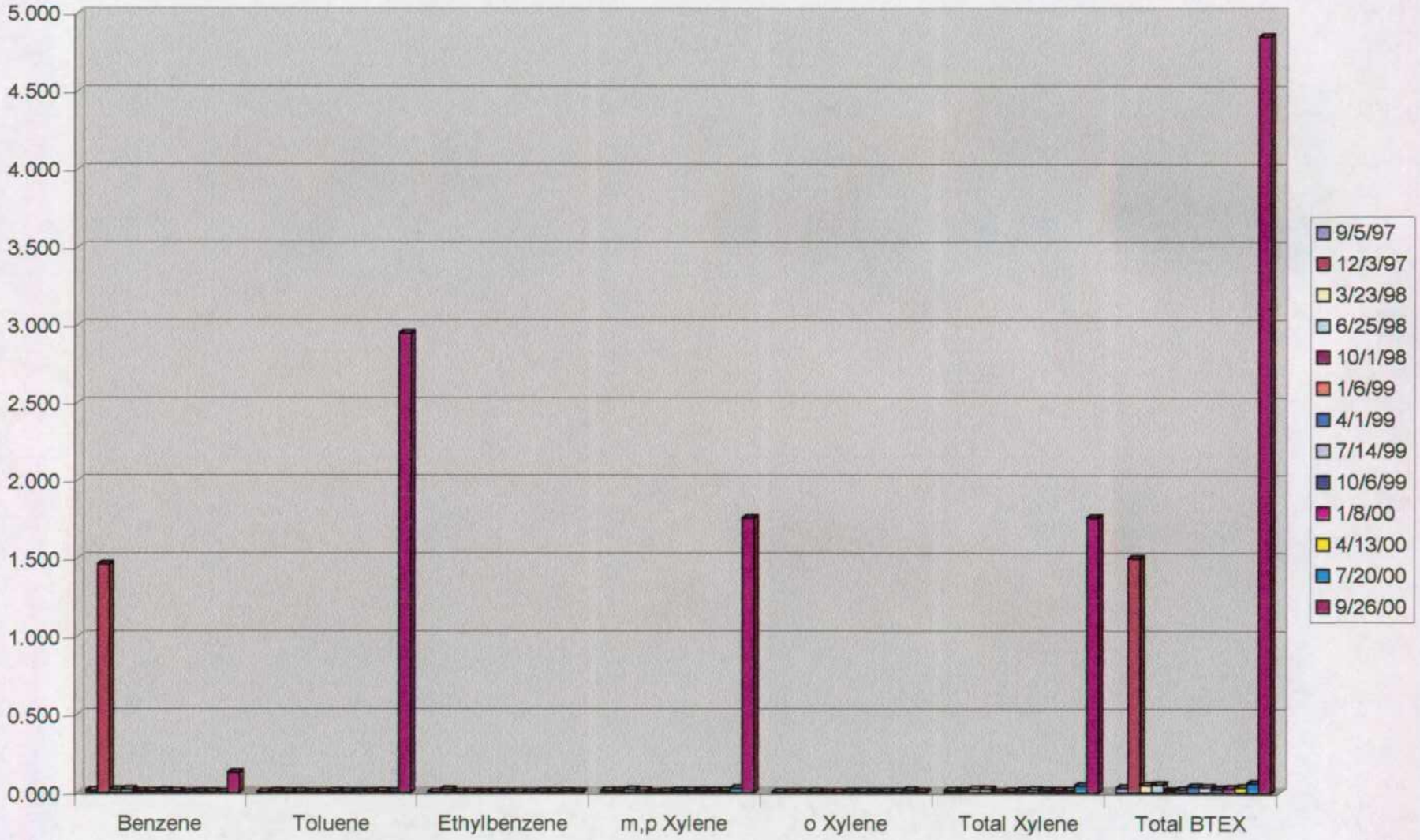
Monitor Well # 3



Monitor Well # 4
Mable COM
Sampling Results

Lab. #	12489	13178	14060	14659	15606	16598	17430	18592	20607	22768	25163	28435	31506
Sample Date	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	4/1/99	7/14/99	10/6/99	1/8/00	4/13/00	7/20/00	9/26/00
Benzene	0.015	1.465	0.019	0.020	0.007	0.007	0.012	0.008	0.002	0.004	0.006	0.002	0.129
Toluene	0.002	0.007	0.004	0.006	0.002	0.002	0.008	0.006	0.005	0.004	0.009	0.006	2.95
Ethylbenzene	0.002	0.017	0.002	0.003	0.001	0.002	0.002	0.002	0.002	0.004	0.004	0.008	0.005
m,p Xylene	0.010	0.01	0.019	0.015	0.002	0.006	0.010	0.012	0.010	0.011	0.011	0.028	1.760
o Xylene	0.002	0.002	0.003	0.005	0.001	0.002	0.006	0.006	0.006	0.004	0.005	0.016	0.005
Total Xylene	0.012	0.012	0.022	0.02	0.003	0.008	0.016	0.018	0.016	0.015	0.016	0.044	1.765
Total BTEX	0.031	1.501	0.047	0.049	0.013	0.019	0.038	0.034	0.025	0.027	0.035	0.06	4.849

Monitor Well # 4



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

August 6, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z-274-520-689

Mr. Larry G. Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

RE: TATUM PIT CLOSURES

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) April 27, 1999 "APRIL 1999 PROGRESS REPORT, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO". This document contains the results of TC's monitoring of ground water contamination related to the closure of 10 unlined pits west of Tatum, New Mexico. The document also requests final closure of the remedial actions related to unlined pits at the State NBN #1 and Vera #1 sites and proposes modifications to the ground water sampling program.

In order to complete a review of the above referenced closure requests and sampling modifications, the OCD requires that TC submit the following information, with all maps, tables and data segregated into separate case files for each site:

1. A water table potentiometric map for each site which shows the location of the pit and excavated areas, the surveyed locations of all monitor wells and recovery wells and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation in each monitor well On March 29, 1999, the OCD required that TC submit this information. The above referenced document states that TC was preparing the maps. To date the OCD has not received this required information.

2. Tables of water table elevations in each monitor well during each sampling event. The document discusses seasonal fluctuations in the water table as responsible for increases in contaminant concentrations in ground water. However, the supporting water table elevation vs. time data for each monitor well is not provided.

3. Tables of all past and present water quality sampling results for each ground water monitoring and recovery well as required in the OCD's January 15, 1999 conditions of approval. The document only contains analytical data for ground water monitoring wells that are currently being sampled.

4. An explanation of the use of drill cuttings as backfill in the annular space above the bentonite plug in each newly constructed monitor well . This is a direct violation of the OCD's January 15, 1999 conditions of approval which required that the remainder of the annular space be grouted to the surface with cement containing 3-5% bentonite. As a result the monitor wells as constructed by TC are potentially direct conduits to ground water.

5. The monitor well development procedures and volumes for each monitor well.

6. The volume of ground water and product recovered to date at all sites with fluid recovery as required in the OCD's January 15, 1999 conditions of approval.

7. A completed OCD pit closure and remediation report form for each site requested for closure. Each form will contain a discussion and the results of all soil and ground water site closure activities including all soil analytical data from the excavations and the backfilled materials as well as figures showing all sample locations.

The above required information shall be submitted to the OCD Santa Fe Office by October 4, 1999 with a copy provided to the OCD Hobbs District Office. Submission of this information will allow the OCD to complete a review of TC's closure requests and proposed ground water sampling plan modifications.

If you have any questions or comments, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Matush, NM State Land Office
Mike Griffin, Whole Earth Environmental, Inc.

Tipperary
CORPORATION

633 Seventeenth Street
Suite 1550
Denver, Colorado 80202

April 27, 1999

CERTIFIED MAIL

Mr. William C. Olson
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

RE: April 1999 Progress Report
Tatum Pit Closure Project
Lea County, NM

Dear Mr. Olson:

Please find enclosed additional results from our monitor wells in the subject project area. These results are from water samples taken on April 1, 1999. These samples represent the seventh quarter of monitoring. We will continue to analyze water samples quarterly.

In our January 1999 progress report, we requested final closure for these projects: Vera (pit and monitor well #5) and State NBN (pit and monitor well #7). In your letter dated March 29, 1999, you requested a water table potentiometric map as well as the magnitude of the hydraulic gradient at these sites to complete your review of our request. Please be advised that we are currently constructing this data and it will be forwarded to you as soon as it is completed.

Additional monitor wells were constructed March 15-16 at the following pit sites: Bell A, State NBF, Sohio 1, Sohio A, and GS State. Complete water analyses from these new monitor wells are included in this report. It appears that an additional monitor well will be necessary for the Sohio 1 and Sohio A pit sites. These will be installed accordingly.

If you have any questions, please call me at (303) 293-9379.

Very truly yours,

Larry G. Sugano

Larry G. Sugano
Vice President - Engineering

cc: NMOCD Hobbs Office

Enclosures

Tipperary
CORPORATION

TATUM PIT CLOSURE PROJECT
WATER SAMPLING RESULTS
APRIL, 1999

Executive Summary

Iva COM
Having completed six consecutive quarters of sampling monitor wells 1 & 2 with no BTEX component exceeding WQCC standards, we began a sampling program from the source well. The results are presented in this report. We do not plan to continue to sample wells 1 & 2.

Mable COM
Monitor well #3 has passed six consecutive quarters with no BTEX component exceeding WQCC standards. We do not plan to continue monitoring the location, but will provide complete analyses (RCRA 8 metals, BTEX, and major cation / anions) at the conclusion of the sampling program for the source well. Monitor well #4 showed a slight increase in BTEX concentrations reflecting a normal seasonal increase in water table levels. The source well shows moderate benzene and xylene concentrations.

Vera
The analytical results of six consecutive quarterly samplings described in our February 16th summary revealed no BTEX component concentration in excess of WQCC standards. Tipperary requests final closure of this pit.

Bell A
Monitor wells 6, 13 & 14 show normal increases in BTEX concentrations due to seasonal changes within the water table. An additional delineation well (#25) was drilled a distance of 150' southeast of the mid-point of wells 13 & 14. The drilling log is included within this report. The analytical results of water samples obtained from this new well reflect no BTEX, RCRA 8 metals or cation / anion concentrations in excess of WQCC standards. (See Environmental Labs of Texas log no. 17265).

NBF
Monitor wells 8, 15 & 16 show normal increases in BTEX concentrations due to seasonal changes within the water table. An additional delineation well (#26) was drilled at a distance of 150' southeast of the mid-point of wells 15 & 16. The drilling log is included within this report. The analytical results of water samples obtained from this new well reflect no BTEX, RCRA 8 metals or cation / anion concentrations in excess of WQCC standards. (See Environmental Labs of Texas log no. 17266).

NBN
The analytical results of six consecutive quarterly samplings described in our February 16th summary revealed no BTEX component concentration in excess of WQCC standards. Tipperary requests final closure of this pit.

Sohio State #1
Monitor wells 10, 17 & 18 show normal increases in BTEX concentrations due to seasonal changes within the water table. An additional delineation well (#28) was drilled at a distance of 150' southeast of the mid-point of wells 17 & 18. The drilling log is included within this report. The analytical results of water samples obtained from this new wells reflect acceptable RCRA 8 metals and cation / anion concentrations however the BTEX concentrations are in excess of WQCC standards. (See Environmental Labs of Texas log no. 17268). A fifth monitor well will be drilled, cased, developed and tested.

Sohio State A
Monitor wells 10, 19 & 20 show normal increases in BTEX concentrations due to seasonal changes within the water table. An additional delineation well (#27) was drilled at a distance of 150' southeast of the mid-point of wells 19 & 20. The drilling log is included within this report. The analytical results of water samples obtained from this new well reflect acceptable RCRA 8 metals and cation / anion concentrations however the BTEX concentrations are in excess of WQCC standards. (See Environmental Labs of Texas log no. 17267). A fifth monitor well will be drilled, cased, developed and tested.

G.S. State
Monitor wells 21 & 22 show normal increases in BTEX concentrations due to seasonal changes within the water table. An additional delineation well (#29) was drilled at a distance of 150' southeast of the mid-point of wells 21 & 22. The drilling log is included within this report. The analytical results of water samples obtained from this new well reflect no BTEX, RCRA 8 metals or cation / anion concentrations in excess of WQCC standards. (See Environmental Labs of Texas log no. 17269).

Satellite #4
BTEX concentrations within monitor wells 9 & 23 remain essentially unchanged from the January, 1999 sampling round.

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Receiving Date: 04/02/99
Sample Type: Water
Project : None Given
Project Location: None Given

Analysis Date: 4/05 & 4/06/99
Sampling Date: 04/01/99
Sample Condition: Intact/Iced

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
17428	Iva Com Source Well	2.05	4.15	0.902	5.50	3.80
17429	Mable Com Source Well	0.486	0.432	0.066	1.00	0.713
17430	Mable Com #4	0.012	0.008	0.002	0.010	0.006
17431	Bell A #6	0.139	0.013	0.006	0.011	0.006
17432	Bell A #13	0.021	0.018	0.003	0.009	0.006
17433	Bell A #14	0.108	0.015	0.004	0.009	0.005
17434	NBF #8	0.032	0.002	0.004	0.003	0.001
17435	NBF #15	3.11	1.98	0.214	0.767	0.435
17436	NBF #16	3.15	0.164	0.078	0.219	0.098
17437	Sohio St. #1- #10	2.34	0.067	0.168	0.203	0.100
17438	Sohio St. #1- #17	1.35	0.092	0.079	0.248	0.138
17439	Sohio St. #1- #18	3.35	0.331	0.114	0.469	0.280
17440	Sohio St. #1- #28	0.446	0.065	0.011	0.041	0.058
17441	Sohio St. A - #11	0.048	0.008	0.004	0.014	0.010
17442	Sohio St. A - #19	0.026	0.010	0.006	0.016	0.010
17443	Sohio St. A - #20	0.547	0.011	0.005	0.030	0.009
17444	Sohio St. A - #27	0.056	0.007	0.006	0.007	0.013
17445	G.S. State #21	0.124	0.008	0.042	0.012	0.007
17446	G.S. State #22	0.059	0.010	0.036	0.022	0.014
17447	G.S. State #29	0.004	<0.001	<0.001	0.035	<0.001
17448	Satellite #4 - #9	0.027	0.005	0.004	0.004	0.002
17449	Satellite #4 - #23	0.004	0.004	0.001	0.003	0.002
	% IA	102	99	97	97	99
	% EA	100	97	97	91	95
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

4-7-99
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: TIPPERARY OIL & GAS

Phone #: 505-396-6509

FAX #:

Company Name & Address: Mike Gallagher

Project #:

Project Name:

Project Location:

Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8021B/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
17428	IVA Com Source Well	2		X							X			4-1		X							
17429	Mable Com Source Well	2		X							X			4-1		X							
17430	Mable Com # 4	2		X							X			4-1		X							
17431	Bell A #6 #13 #14	2	EA	X							X			4-1		X							
17432	NBF #8 #15 #16	2	EA	X							X			4-1		X							
17433	Soho ST #1 #10 #17 #18 #28	2	EA	X							X			4-1		X							
17434	Soho ST #A #11 #19 #20 #27	2	EA	X							X			4-1		X							
17435	GS. STAR #21 #22 #29	2	EA	X							X			4-1		X							
17436	SATELLITE #4 - 19 Well #9 #23															X							

Relinquished by:	Date:	Times:	Received by:
D. A. Vera	4-2-99	1010	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS

Env onmental Lab of Texas, Inc.

12600 West I-2\ st Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: | **Phone #:** | **FAX #:**

Company Name & Address: Tipperary

Project #: | **Project Name :**

Project Location: | **Sampler Signature:**

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
17431	BELLA #6																						
17432	#13																						
17433	#14																						
17434	NBF #8																						
17435	#15																						
17436	#16																						
17437	Sohio St.#1 #10																						
17438	#17																						
17439	#18																						
17440	#28																						
17441	Sohio St. #A #11																						

Relinquished by:	Date:	Times:	Received by:	REMARKS
	04-02-99	1010		
Relinquished by:	Date:	Times:	Received by:	
Relinquished by:	Date:	Times:	Received by Laboratory:	

Env onmental Lab of Texas, Inc.

12600 West I-2(st Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: | **Phone #:** | **FAX #:**

Company Name & Address: Tipperary

Project #: | **Project Name :**

Project Location: | **Sampler Signature:**

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8021B/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
17442	SonicSt. #A #19																						
17443	↓ #20																						
17444	↓ #27																						
17445	G.S. State #21																						
17446	↓ #22																						
17447	↓ #29																						
17448	Satellite #4 #9																						
17449	↓ #23																						

Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date: 04-02-99	Times: 1010	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER, COLORADO 80202
FAX: 281-646-8996 (Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, New Mexico

Analysis Date: 03/17/99
Sampling Date: 03/17/99
Sample Condition: Intact/Iced

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
17265	#25 Bell	0.006	0.004	0.004	0.005	0.004
17266	#26 NBF	0.002	0.003	0.001	0.002	0.001
17267	#27 Sohio A	0.118	0.019	0.005	0.004	0.008
17268	#28 Sohio #1	0.156	0.008	0.003	0.010	0.005
17269	#29 G.S. State	0.012	0.012	0.004	0.021	0.041
	% IA	104	100	99	98	99
	% EA	108	104	101	102	103
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

Raland K. Tuttle

3-26-99
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER, COLORADO 80202
FAX: 281-646-8996(Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, N.M.

Analysis Date: See below
Sampling Date: 3/17/99
Sample Condition: Intact/Iced

ELT#	Field Code	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	CO3 (mg/L)	HCO3 (mg/L)
17265	#25 Bell	189	46	281	8.7	851	300	0	159
17266	#26 NBF	31.4	16	65	6.4	53	175	0	159
17267	#27 Sohio A	144	78	377	16.2	1028	195	0	329
17268	#28 Sohio #1	715	140	4660	20.8	8685	195	0	329
17269	#29 G.S. State	178	44	102	8.1	487	150	0	281
	ANALYSIS DATE	3/24/99	3/24/99	3/24/99	3/24/99	3/18/99	3/18/99	3/18/99	3/18/99
	QUALITY CONTROL	53.9	5.1	55.9	5.2	5140	48	*	*
	TRUE VALUE	50.0	5.0	50.0	5.0	5000	50	*	*
	% PRECISION	108	102	111	104	103	96	*	*

METHODS: EPA 4.1.1, 215.1,242.1, 273.1, 258.1,325.3, 375.4, 310.2.

Raland K. Tuttle

3-26-99
Date

CORE LAB — GULF STATES ANALYTICAL

6310 Rothway, Houston, Texas 77040
(713) 690-4444, Fax (713) 690-5646

Request for Analysis

Company: Tippenany O&G Address: Denver, CO 80202 Tele #:
Fax #:
Reports Sent To: Whole Earth P O #: Project #:
Project Name: Tatum Dilineation Project Location: Tatum, NM
Sampler(s) Name: (Signature) M. Griffin
Courier:

Field Sample ID	Sampling Date	Sampling Time	Matrix: Water	Soil	Sludge	Oil	Other	# of Containers	Haz. Sample (Y/N)	BTEX	RCRA 8 Metals	Major cat & anions	Chlorides	Carb/bicarb	SO_4^{2-}	Ca, Mg, K, Na
1. #25 Bell (17265)	3-17	8:10	✓					3	N	/	/	/				
2. #26 NBF (17266)	3-17	8:26	✓					3	N	/	/	/				
3. #27 Sohio A (17267)	3-17	8:44	✓					3	N	/	/	/				
4. #28 Sohio #1 (17268)	3-17	9:05	✓					3	N	/	/	/	/			
5. #29 G.S. State (17269)	3-17	9:25	✓					3	N	/	/	/				
6.																
7.																
8.																
9.																
10.																
11.																
12.																
13.																

Relinquished by: (Signature) M. Griffin — Date 3-17-99 — Time 1345
Received by: (Signature) Richard Tuttle — Date 3-17-99 — Time 1345

Remarks:

Requested Turnaround: Minutes?
GSAI Group:

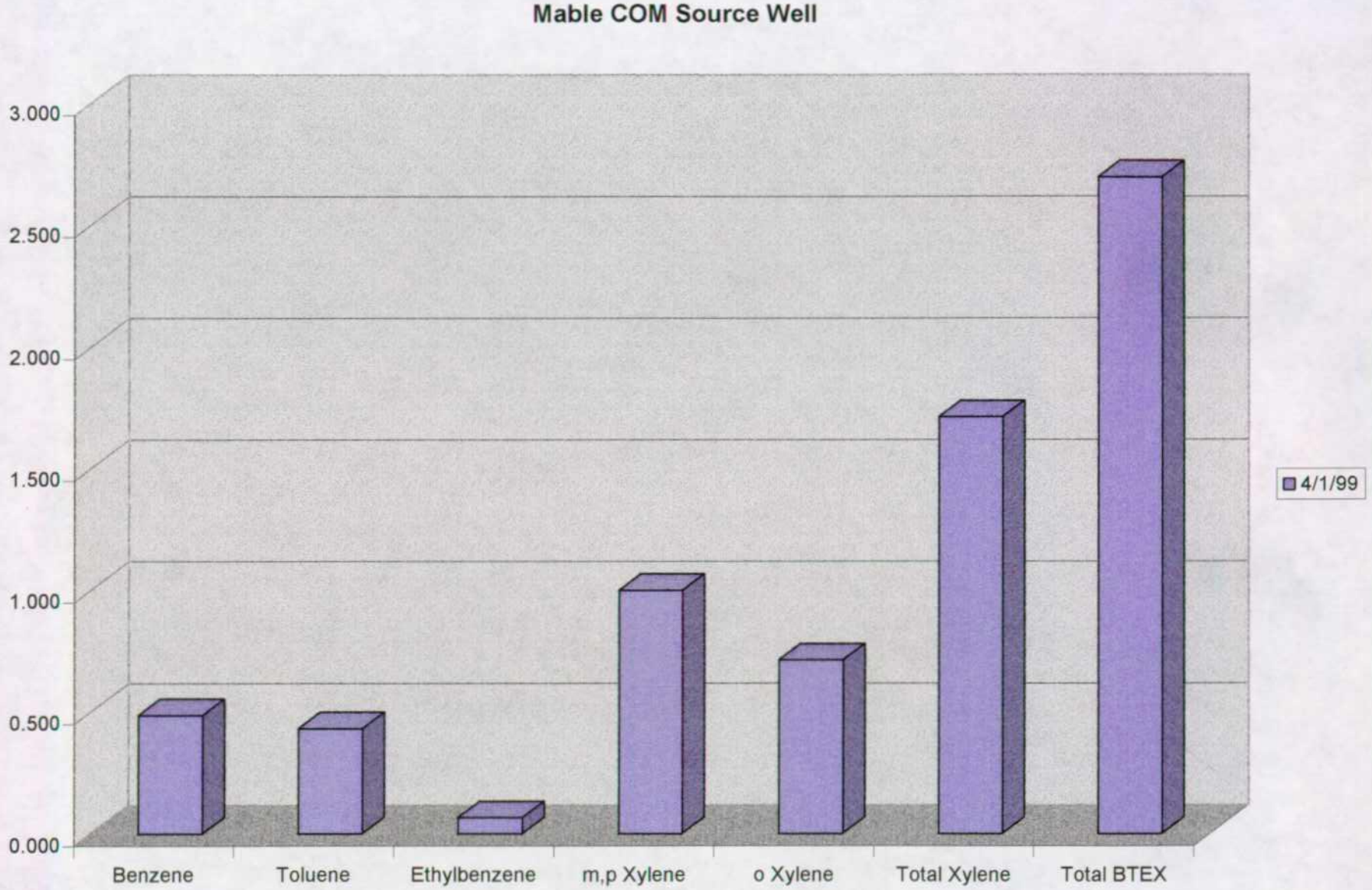
Special Detection Limits

QC Package: (check one)
☐ CLP ☐ Site Specific ☐ Tier 1 ☐ Tier 2 ☐ QC Summary

SOUTHERN LITHOGRAPH, INC. - (713) 780-0400 White Copy to Accompany Samples to Lab Yellow Copy Retained by Client Pink Copy Retained by Sampler

Mable COM Source Well

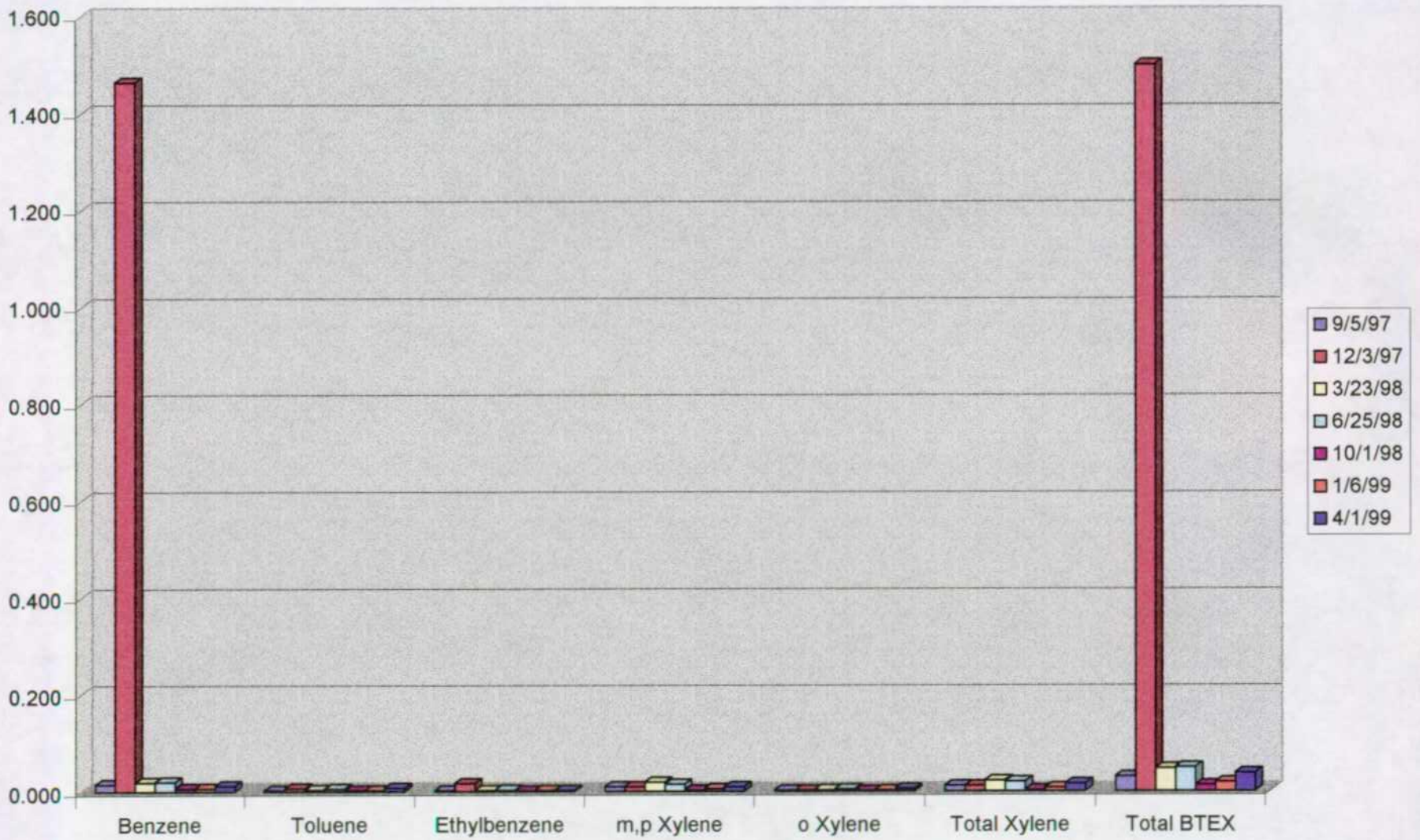
Lab. #	17429
Sample Date	4/1/99
Benzene	0.486
Toluene	0.432
Ethylbenzene	0.066
m,p Xylene	1.000
o Xylene	0.713
Total Xylene	1.713
Total BTEX	2.697


Mable COM Source Well
3.000
2.500
2.000
1.500
1.000
0.500
0.000
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
4/1/99

Monitor Well # 4
Mable COM
Sampling Results

Lab. #	12489	13178	14060	14659	15606	16598	17430
Sample Date	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	4/1/99
Benzene	0.015	1.465	0.019	0.020	0.007	0.007	0.012
Toluene	0.002	0.007	0.004	0.006	0.002	0.002	0.008
Ethylbenzene	0.002	0.017	0.002	0.003	0.001	0.002	0.002
m,p Xylene	0.010	0.01	0.019	0.015	0.002	0.006	0.010
o Xylene	0.002	0.002	0.003	0.005	0.001	0.002	0.006
Total Xylene	0.012	0.012	0.022	0.02	0.003	0.008	0.016
Total BTEX	0.031	1.501	0.047	0.049	0.013	0.019	0.038

Mable COM # 4


1.600
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
9/5/97
12/3/97
3/23/98
6/25/98
10/1/98
1/6/99
4/1/99

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

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

March 29, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z-274-520-638

Mr. Larry Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

RE: TATUM PIT CLOSURES

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) February 16, 1999 "January 1999 PROGRESS REPORT, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO". This document contains the results of TC's monitoring of ground water contamination related to the closure of 10 unlined pits west of Tatum, New Mexico and requests final closure of the remedial actions related to unlined pits at the Iva Com #1, Mable Com #1, State NBN #1 and Vera #1 sites. The document also requests an extension of the deadline for submission of a report on ground water investigations from April 1 to May 1, 1999.

:e above referenced deadline extension request is approved.

order to complete a review of the above referenced closure requests, the OCD requires that TC ›ubmit a water table potentiometric map for each of the 10 sites which shows the location of the pit and excavated areas, the surveyed locations of all monitor wells and recovery wells and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation in each monitor well.

If you have any questions, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Matush, NM State Land Office
Mike Griffin, Whole Earth Environmental, Inc.

Tipperary
CORPORATION

633 Seventeenth Street
Suite 1550
Denver, Colorado 80202

RECEIVED
FEB 22 1999

February 16, 1999

CERTIFIED MAIL

Mr. William C. Olson
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

RE: January 1999 Progress Report
Tatum Pit Closure Project
Lea County, NM

Dear Mr. Olson:

Please find enclosed additional results from our monitor wells in the subject project area. These results are from water samples taken on January 8, 1999. These samples represent the sixth quarter of monitoring. The total BTEX concentrations continue to decline. We will continue to analyze water samples quarterly from the subject project.

Because the following wells have had at least four consecutive quarters of acceptable BTEX concentrations, we formally request final closure for these projects: Vera (pit and monitor well #5), State NBN (pit and monitor well #7), Iva Com (monitor wells #1 & #2), Mable Com (monitor well #3). Please advise if this request is acceptable.

In response to your January 15, 1999 correspondence, please be advised that we are scheduling the installation of additional monitor wells in accordance with the conditions set forth in your letter. Additionally, we respectfully request an extension until May 1, 1999 to submit our next progress report rather than the April 1 deadline specified in your letter. This will allow us to stay on our current quarterly monitoring schedule. Please advise if this is not acceptable.

If you have any questions, please call me at (303) 293-9379.

Very truly yours,

Larry G. Sugano

Larry G. Sugano
Vice President - Engineering

cc: NMOCD Hobbs Office

Enclosures

Tipperary
CORPORATION

TATUM PIT CLOSURE PROJECT
WATER SAMPLING RESULTS
JANUARY, 1999

Executive Summary

Iva COM
Monitor Wells # 1, 2
No sample from either Iva COM well has ever revealed a BTEX component concentration in excess of standards. Tipperary may request closure of monitor wells nos. 1 and 2. The source well is still producing free product on occasion and has not been tested for BTEX.

Mable COM
Monitor Wells # 3, 4
Monitor well # 3 has recorded four consecutive quarters of acceptable BTEX concentrations. Tipperary may request closure of this well. Well # 4 has shown two consecutive quarters of acceptable BTEX concentrations. The source well has not been tested for BTEX.

Vera
Monitor Well # 5
Monitor well # 5 has shown six consecutive quarters of acceptable concentrations. Tipperary may request closure of the pit and monitor well.

Bell
Monitor Wells # 6, 13, 14
Monitor well # 13 has gone two quarters with acceptable concentrations. Wells # 6 & 14 continue to show benzene concentrations in excess of standards. Such concentrations are consistently trending lower. A delineation well is required for this site.

NBN
Monitor Well # 7
Monitor well # 7 has shown four consecutive quarters of acceptable concentrations. Tipperary may request closure of the pit and monitor well.

NBF
Monitor Wells # 8, 15, 16
All well BTEX concentrations exceed standards. A delineation well is required for this site.

Sohio State # 1
Monitor Wells # 10
Though trending steadily downward, all well sample concentrations exceed standard. A delineation well is required for this site.

Sohio State "A"
Monitor Well # 11, 19, 20
The benzene concentrations in all three wells are trending sharply downward. At the present rate of decline, wells 19 & 20 will become delineation wells through natural attenuation within six months.

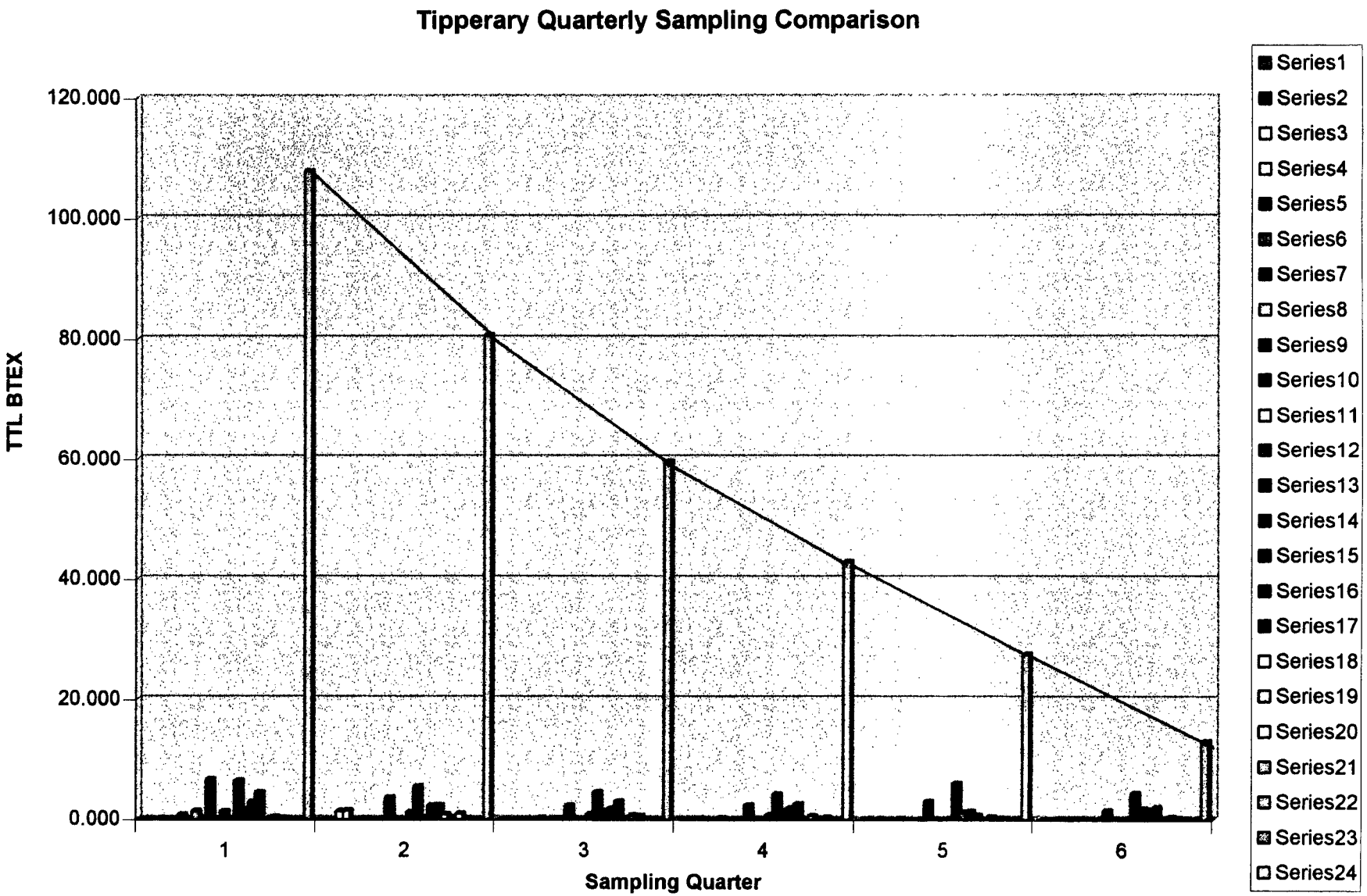
GS State # 1
Monitor Wells # 12, 21, 22
Monitor well # 12 continues to contain free product. BTEX concentrations in wells 21 & 22 are trending downward though not as sharply as similar sites. Well # 12 should be evaluated for potential as a source well. A delineation well is required for this site.

Satellite # 4
Monitor Wells # 9, 23, 24
Well # 24 has shown four quarters of acceptable concentrations. The reported benzene concentrations from Well # 23 have been quite erratic but appear to be generally trending downward. Well # 23 presently shows acceptable concentrations. Well # 9 is steadily trending lower in benzene and should fall within acceptable limits within the next few sampling rounds.

Tipperary CORPORATION

Tipperary Corporation
Tatum Pit Closure Project
Quarterly Sampling Comparison

Well #	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99
1	0.012	0.025	0.022	0.030	0.023	0.011
2	0.005	0.013	0.011	0.010	0.010	0.010
3	0.200	1.387	0.054	0.071	0.093	0.073
4	0.031	1.501	0.047	0.049	0.013	0.019
5	0.019	0.025	0.011	0.037	0.015	0.011
6	0.790	0.068	0.281	0.249	0.141	0.137
7	0.005	0.023	0.017	0.048	0.023	0.008
8	1.377	0.023	0.146	0.058	0.018	0.036
9	0.285	0.123	0.007	0.081	0.050	0.049
10	6.626	3.626	2.292	2.423	3.096	1.532
11	0.122	0.124	0.184	0.141	0.108	0.105
13	1.346	0.010	0.037	0.056	0.017	0.007
14	0.005	1.183	0.918	0.764	0.184	0.161
15	6.432	5.499	4.588	4.189	6.086	4.380
16	1.662	0.256	1.419	1.446	1.287	1.845
17	2.908	2.305	1.863	1.920	1.419	1.665
18	4.498	2.361	3.013	2.601	0.786	2.072
19	0.011	0.875	0.184	0.079	0.082	0.094
20	0.454	0.345	0.658	0.604	0.539	0.390
21	0.287	0.953	0.554	0.198	0.238	0.259
22	0.152	0.200	0.195	0.344	0.144	0.134
23	0.009	0.122	0.106	0.008	0.078	0.014
24	0.009	0.064	0.007	0.017	0.007	0.011
	107.873	80.628	59.517	42.903	27.480	13.023


Tipperary Quarterly Sampling Comparison
TTL BTEX
120.000
100.000
80.000
60.000
40.000
20.000
0.000
1
2
3
4
5
6
Sampling Quarter
Series1
Series2
Series3
Series4
Series5
Series6
Series7
Series8
Series9
Series10
Series11
Series12
Series13
Series14
Series15
Series16
Series17
Series18
Series19
Series20
Series21
Series22
Series23
Series24

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-648-8996

Receiving Date: 01/08/99
Sample Type: Water
Project : None Given
Project Location: Tatum, New Mexico 88237

Analysis Date: 01/08/99
Sampling Date: 01/06 & 01/07/99
Sample Condition: Intact/iced/HCl

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
16587	Sohio St. #1 - #17	0.876	0.136	0.094	0.339	0.163
16588	Sohio St. #1 - #18	1.10	0.247	0.107	0.415	0.203
16589	Sohio Sta. M/W #19	0.040	0.014	0.006	0.021	0.013
16590	Sohio Sat. M/W #20	0.341	0.010	0.005	0.026	0.008
16591	GS State M/W #21	0.133	0.010	0.054	0.056	0.006
16592	GS State M/W #22	0.039	0.010	0.020	0.048	0.017
16593	Sat. #4 M/W #23	0.004	0.003	0.001	0.004	0.002
16594	Sat. #4 M/W #24	0.004	0.003	<0.001	0.002	<0.001
16595	Iva Com. M/W #1	0.003	0.001	<0.001	0.002	0.004
16596	Iva Com. M/W #2	0.004	0.001	<0.001	0.003	0.001
16597	Mable Com. M/W #3	<0.001	0.002	0.012	0.042	0.016
16598	Mable Com. M/W #4	0.007	0.002	0.002	0.006	0.002
16599	Vera M/W #5	0.002	0.002	0.001	0.004	0.002
16600	Bell A M/W #6	0.127	0.001	0.003	0.005	0.001
16601	NBN M/W #7	0.003	<0.001	<0.001	0.002	<0.001
16602	NBF M/W #8	0.026	0.001	0.003	0.003	<0.001
16603	Sat. 4 M/W #9	0.034	0.003	0.006	0.005	0.001
16604	Sohio St. #1 M/W #10	1.00	0.067	0.156	0.214	0.095
16605	Sohio Sta. M/W #11	0.061	0.011	0.005	0.016	0.012
16606	Bell A M/W #13	0.001	<0.001	<0.001	0.003	0.001
16607	Bell A M/W #14	0.154	<0.001	0.002	0.003	0.001
16608	NBF M/W #15	1.83	1.49	0.182	0.726	0.350
16609	NBF M/W #16	1.47	0.122	0.047	0.144	0.062
	% IA	86	85	87	85	87
	% EA	90	90	89	88	90
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K Tuttle

1-11-99
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: V.A. Vice - Whole Earth "505"-398-6509 Off
Phone #: 1-800-854-4358
Company Name & Address: Tipperary Oil & Gas
FAX #:
Tatum, New Mexico 88267
Project #:
Project Name:
Project Location:
Sampler Signature: Victor A. Vice

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
16587	Sohio ST #1 #17-18	2												1/7/99									
16588																							
16589	Sohio STA M/W #19-20	2												1/7/99									
16590																							
16591	GS STATE M/W #21-22	2												1/7/99									
16592																							
16593	SATELITE #4 M/W 23 #24	2												1/6/99									
16594																							

Relinquished by:	Date:	Time:	Received by:
	01-08-99	0855	
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

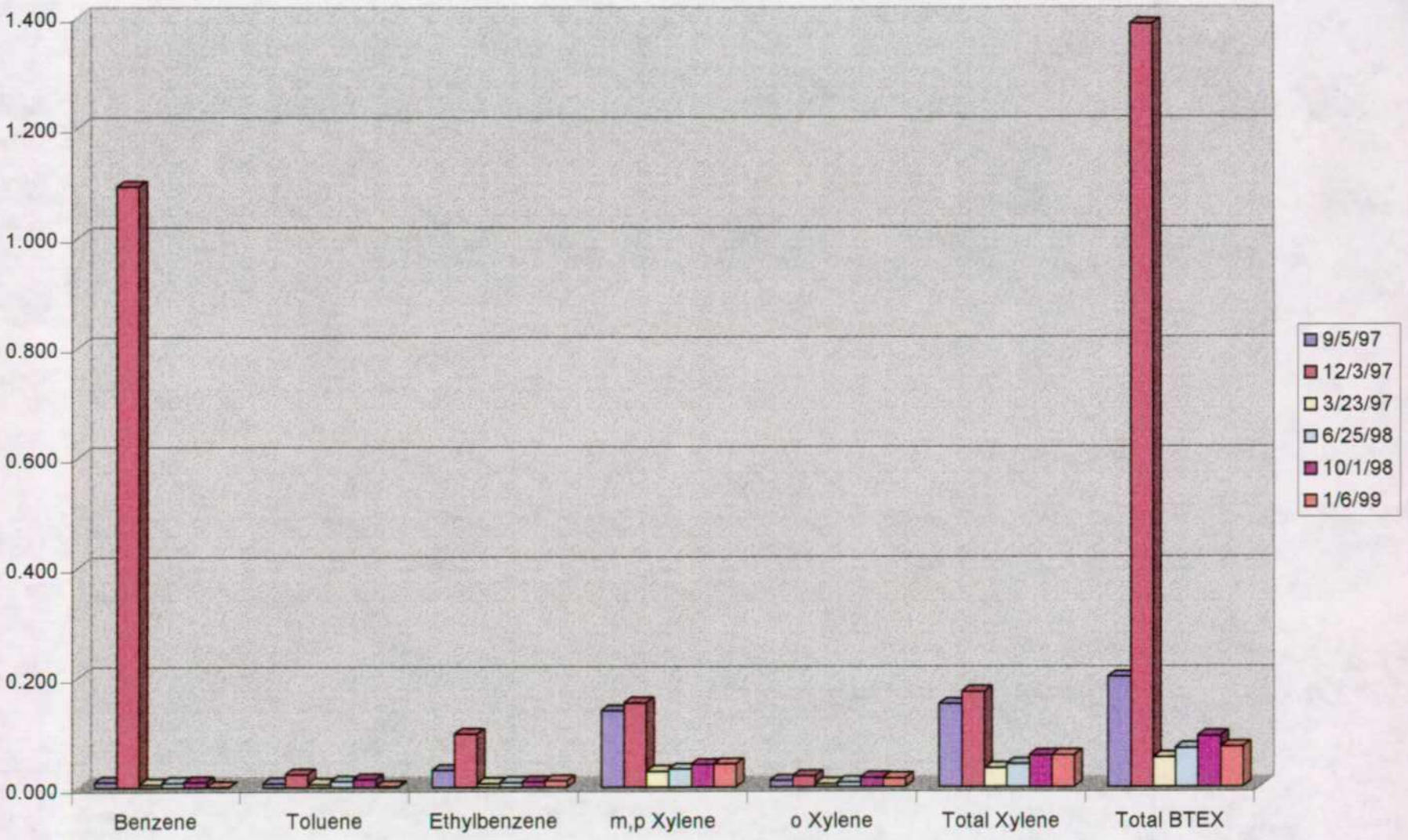
REMARKS

P.02

Monitor Well # 3
Mable COM
Sampling Results

Lab. #	12488	13177	14059	14658	15591	16597
Sample Date	9/5/97	12/3/97	3/23/97	6/25/98	10/1/98	1/6/99
Benzene	0.010	1.093	0.006	0.009	0.010	0.001
Toluene	0.008	0.024	0.006	0.011	0.015	0.002
Ethylbenzene	0.031	0.097	0.007	0.009	0.010	0.012
m,p Xylene	0.139	0.153	0.029	0.033	0.041	0.042
o Xylene	0.012	0.02	0.006	0.009	0.017	0.016
Total Xylene	0.151	0.173	0.035	0.042	0.058	0.058
Total BTEX	0.200	1.387	0.054	0.071	0.093	0.073

Monitor Well # 3



Monitor Well # 4
Mable COM
Sampling Results

Lab. #	12489	13178	14060	14659	15606	16598
Sample Date	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99
Benzene	0.015	1.465	0.019	0.020	0.007	0.007
Toluene	0.002	0.007	0.004	0.006	0.002	0.002
Ethylbenzene	0.002	0.017	0.002	0.003	0.001	0.002
m,p Xylene	0.010	0.01	0.019	0.015	0.002	0.006
o Xylene	0.002	0.002	0.003	0.005	0.001	0.002
Total Xylene	0.012	0.012	0.022	0.02	0.003	0.008
Total BTEX	0.031	1.501	0.047	0.049	0.013	0.019

Monitor Well # 4