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REPORTS

DATE:
1999

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.

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

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.

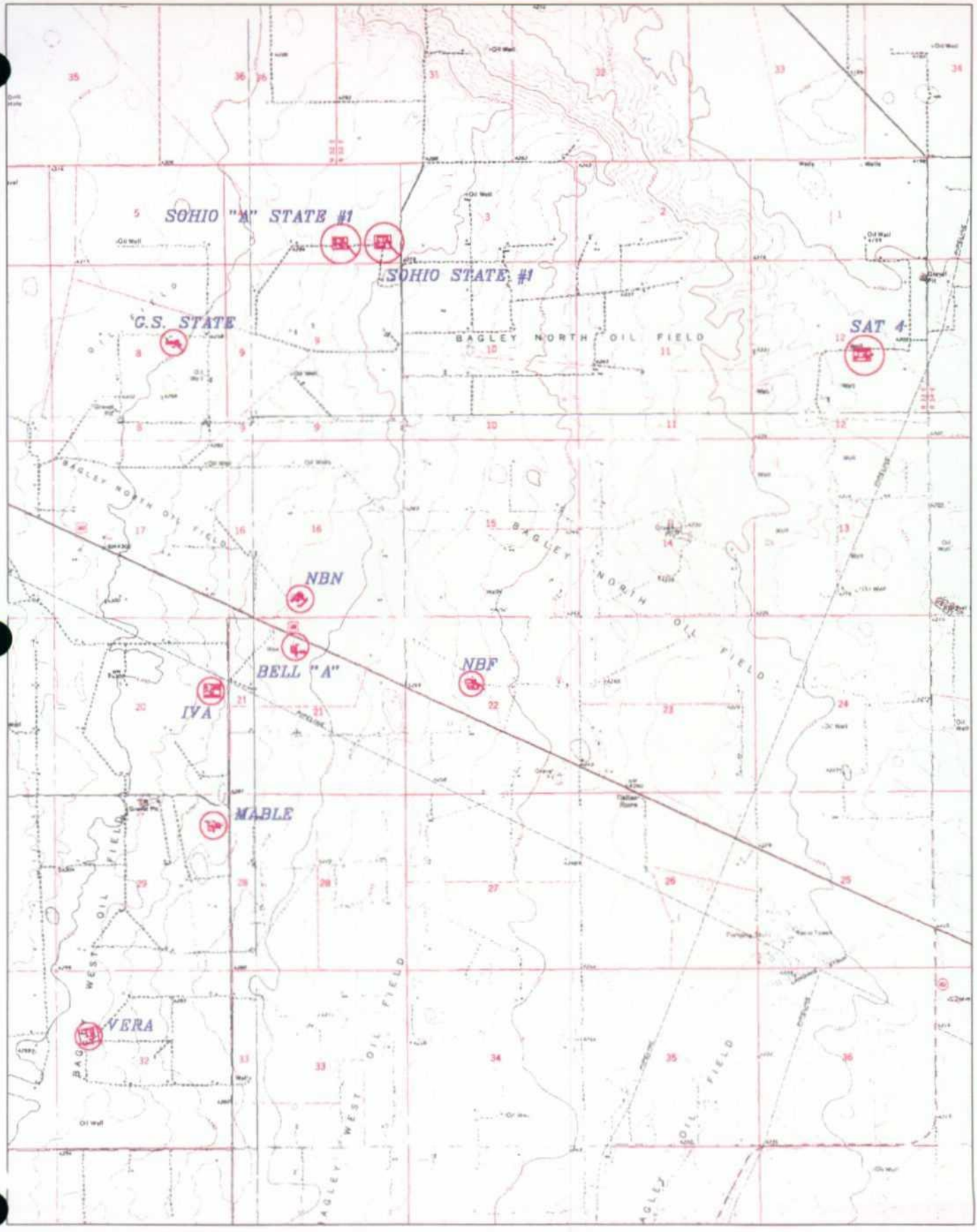
COORDINATE FILE : TIPARARY.CRD

[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

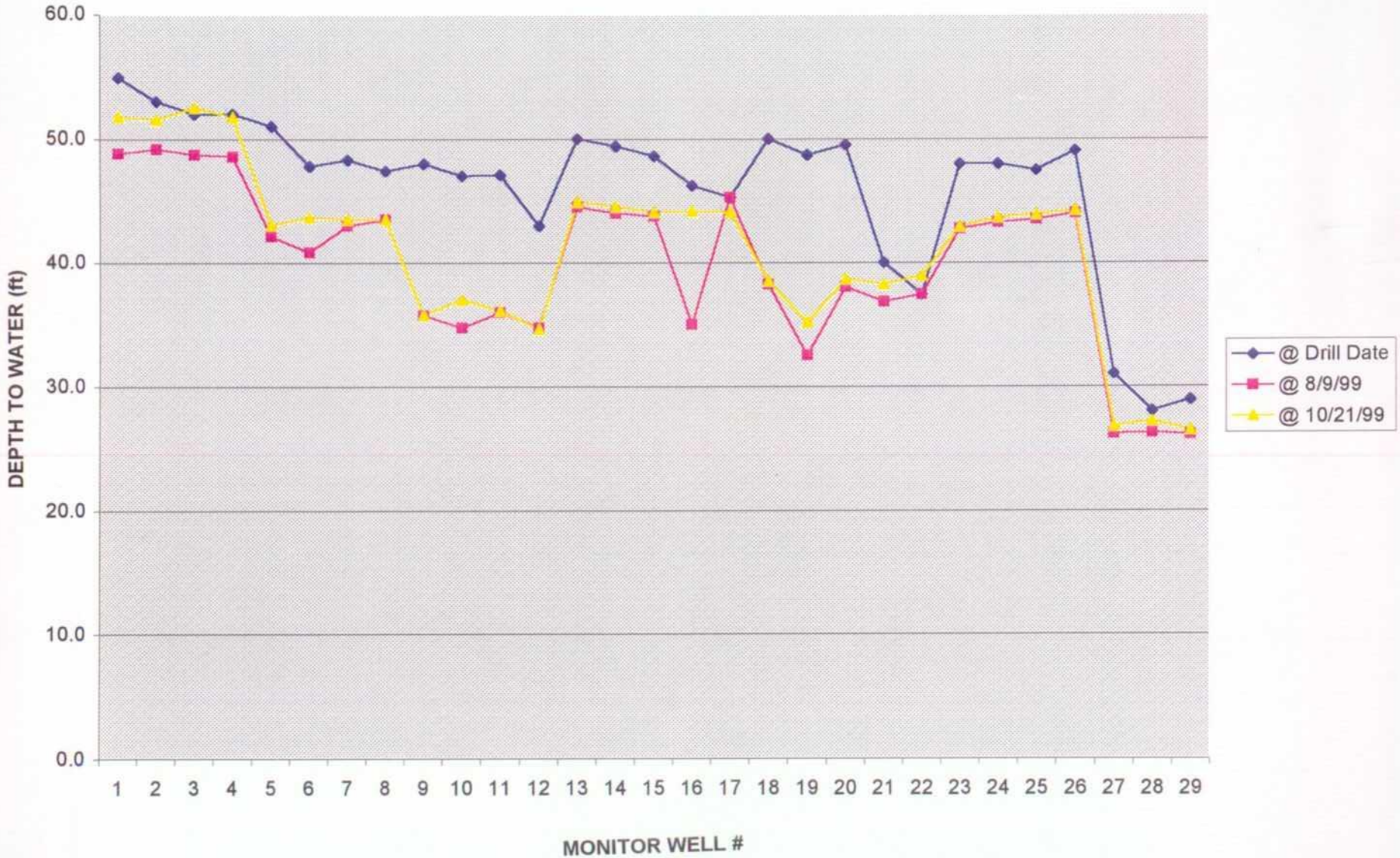
Tipperary

Tipperary Corporation
Tatum Pit Closure Project
Monitor Well Water Elevation Table

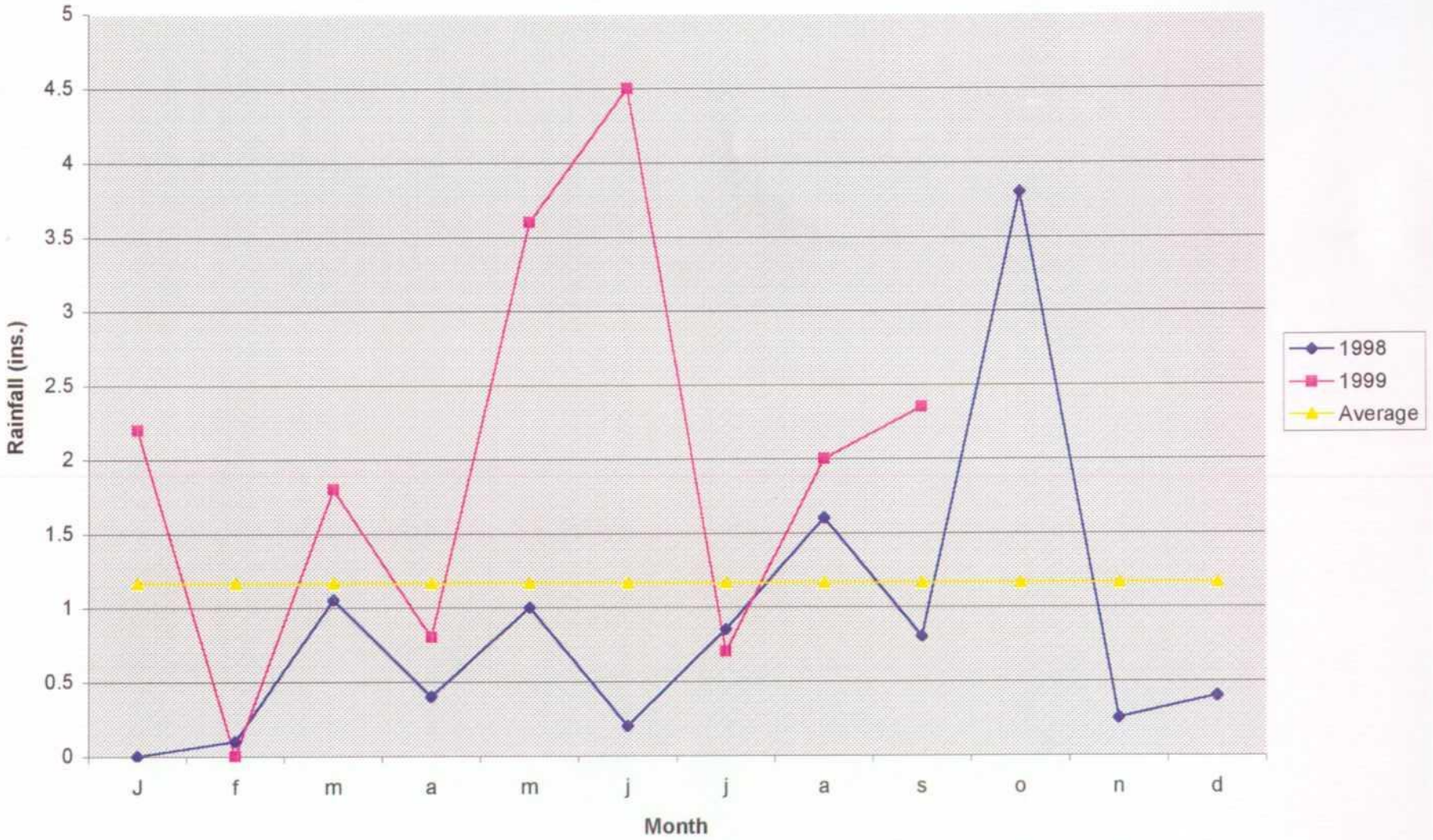
Well Name	Monitor Well No.	Surface Elevation	Date Well Drilled	Water Depth @ Drill Date	Water Elevation	Water Depth @ 8/8/89	Water Elev. @ 8/8/89	Water Depth @ 10/21/89	Water Elev. @ 10/21/89	Depth Change Aug. / Oct. '89	Distance to Pit Center (ft)	Gradient (Ft. / Ft.)	Gradient (Ft. /100 Ft.)
Ivé	Recovery Well	4,296.42	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	116	0.050174	5.02
	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	4,236.22	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
	26	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	4,282.46			4,282.46								
	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	166	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	0.008063	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	116	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	184	0.006306	0.63
	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	36.63	4,248.78	38.20	4,247.41	1.37	264	0.004659	0.47
	31	4,283.64	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	62	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	0.026203	2.62
	29	4,303.20	Mar-99	49.1	4,254.14	44.00	4,259.20	44.25	4,258.95	0.25	296	0.016476	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.

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	48	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	48	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.
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

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	5[illegible]	.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	96	64		19	84	66	F	19	93	60		19	70	40		19	73	37		19	42	25	F
20	96	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	.8"	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
W=Wind 35mph+ R=Rain
F=Fog S=Snow

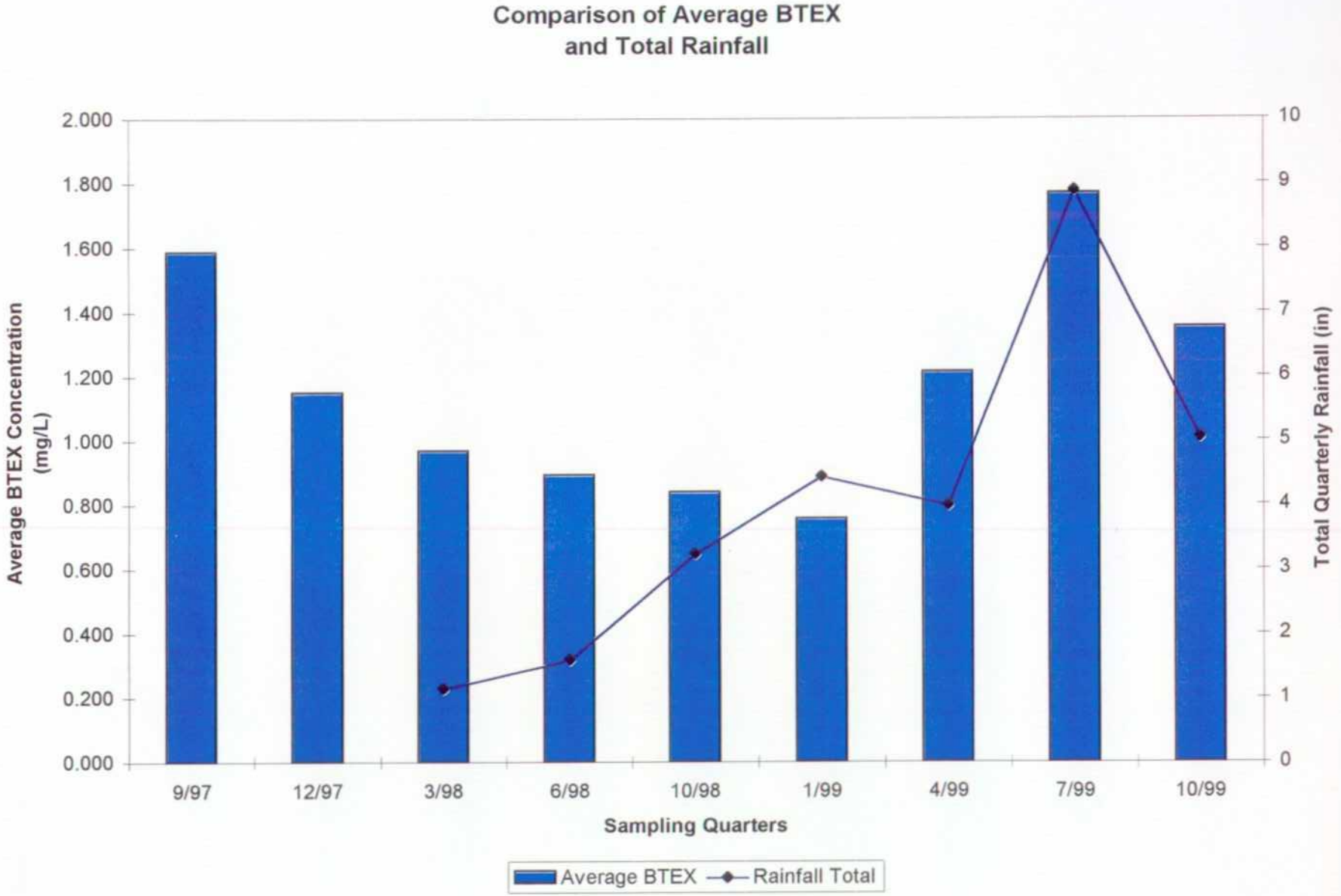
January				February				March				April				May				June			
Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth
1	57	32	F	1	60	30		1	76	37		1	72	42	W	1	71	47	0.2	1	88	56	
2	35	19		2	53	27		2	67	43		2	76	39	W	2	75	35		2	90	62	0.7 L,R
3	31	10		3	67	32	W	3	60	20		3	59	32	W	3	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	3.6	H/L	103	50	4.5

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

Weather Report 1999

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

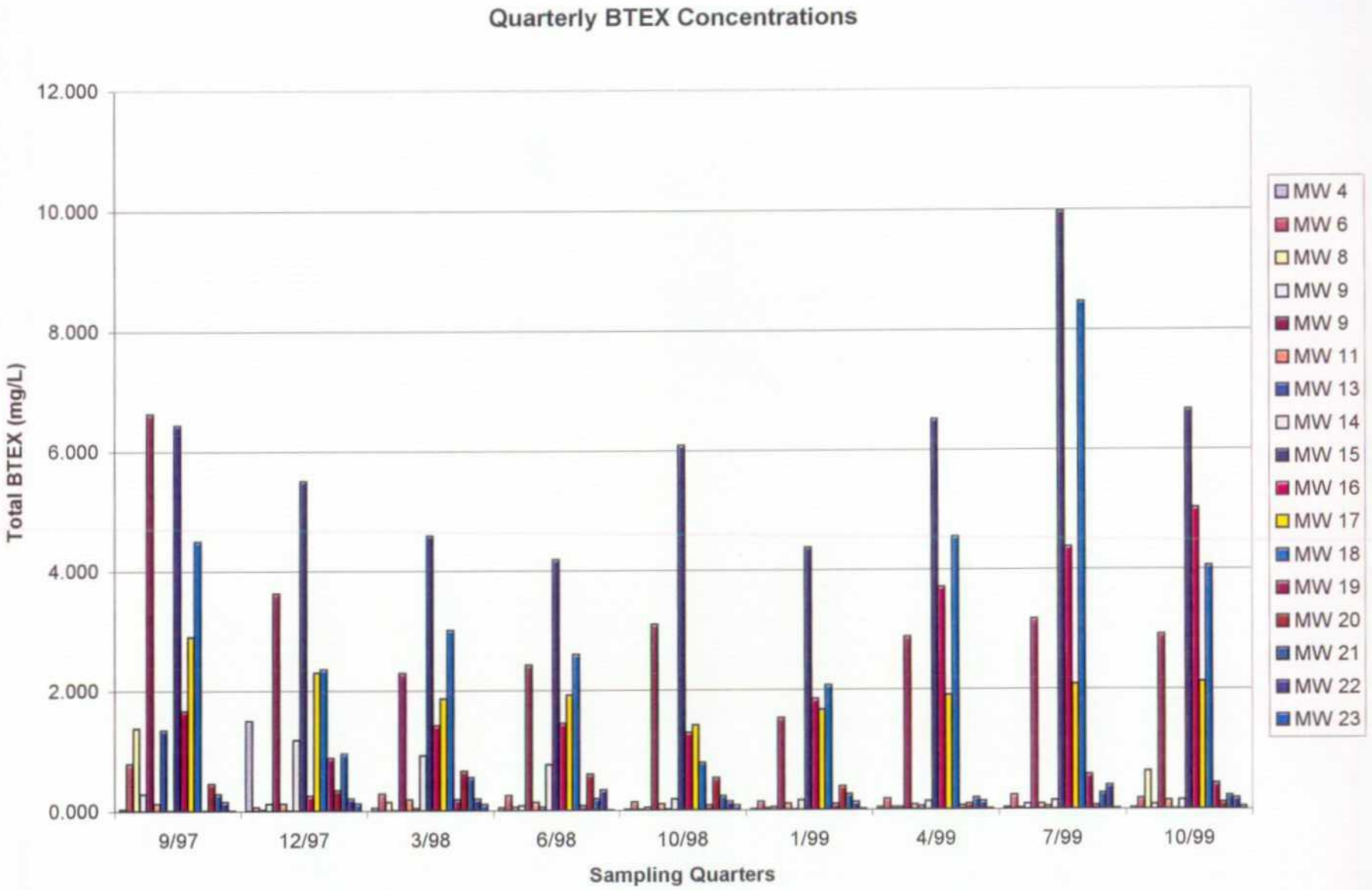
July				August				September				October				November				December			
Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth
1	99	66		1	89	62		1	92	62		1	86	46		1				1			
2	96	71		2	80	62	.3"R	2	89	60	.1"R L	2	72	42		2				2			
3	92	68		3	84	66	.5"R	3	89	61		3	91	44		3				3			
4	87	64		4	85	62		4	92	58	.9"R L	4	72	43		4				4			
5	86	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	86	67		15	95	61		15	78	57	.2"R L	15		50		15				15			
16	88	65		16	96	58		16	70	54	.8"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	81	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
Average BTEX Concentration (mg/L)
2.000
1.800
1.600
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
Total Quarterly Rainfall (in)
10
9
8
7
6
5
4
3
2
1
0
9/97
12/97
3/98
6/98
10/98
1/99
4/99
7/99
10/99
Sampling Quarters
Average BTEX
Rainfall Total

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
12.000
10.000
8.000
6.000
4.000
2.000
0.000
Total BTEX (mg/L)
9/97
12/97
3/98
6/98
10/98
1/99
4/99
7/99
10/99
Sampling Quarters
MW 4
MW 6
MW 8
MW 9
MW 9
MW 11
MW 13
MW 14
MW 15
MW 16
MW 17
MW 18
MW 19
MW 20
MW 21
MW 22
MW 23

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	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 , 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)
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	0.382	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 @ Rapid 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	TOS	PCI
0597	Iva Com #1 #2 S/W	2									X			10/5/99		✓							
0598	Mablecom #3 #4 #Source W	2									X					✓							
0599	Bell-A-M/W #6 #13 #14 #25	2									X					✓							
0600	NBF-M/W #8 #15 #16 #26	2									X					✓							
0601	Schlo ST #1-M/W #10 #19 #28 #30	2									X					✓							
0602	Schlo ST A-M/W #11 #19 #20 #29 #31	2									X					✓							
0603	GS State #M/W #21 #22 #29 #28	2									X					✓							
0604	Satellite #9 #25 #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

252.

Envi[illegible]nental Lab of Texas, Inc.

12600 West I-20 E[illegible]lessa, 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 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
206006	Iva Com #2	2		✓							✓			10/5		✓							
206007	Mable com #4			✓												✓							
206008	Mable Com #Source Well			✓												✓							
206009	Bell A MW #13			✓												✓							
206010	" " #14			✓												✓							
206011	" " #25			✓												✓							
206012	NBF mw # 15			✓												✓							
206013	" " # 16			✓												✓							
206014	" " # 26			✓												✓							
206015	Sohio ST #1 mw # [illegible]			✓												✓							
206016	" " 18			✓							✓			✓		✓							

Relinquished by:	Date:	Times:	Received by:
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: V. A. Vick

Phone #:

FAX #:

Company Name & Address: Tipperary Oil & Gas

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
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	Satilite # 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

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	TOS	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	0.908
18592	Mable Com #4 MW	0.008	0.006	0.002	0.012	0.006
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	0.436	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	0.009
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

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 #: 505-398-6509 — FAX #: — Mike Bullock

Company Name & Address:

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	TOS	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	Solio ST #1 #10 #17 #18 #28	2	EA	X							X			4-1		X							
17434	Solio 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 #9 #23															X							

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

REMARKS

Env[illegible] mental Lab of Texas, Inc.

12600 West I-20 [illegible] 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:

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

Env[illegible]mental Lab of Texas, Inc.

12600 West I-20 [illegible] 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:

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
17442	SonicSt. #A	#19																					
17443	↓	#20																					
17444	↓	#27																					
17445	G.S State	#21																					
74 46	↓	#22																					
74 47	↓	#29																					
17448	Satellite #4	#9																					
74 49	↓	#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: 281-646-899 (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

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 OGC

Address: Denver, CO 80202

Tele #:

Fax #:

Reports Sent To: Whole Earth

P O #:

Project #:

Project Name: Tatum Dineation

Project Location: Tatum, NM

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

Courier:

	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 GS 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 Hall — Date: 3-17-99 — Time: 1345

Relinquished by: (Signature) — Date — Time

Received by: (Signature) — Date — Time

Relinquished by: (Signature) — Date — Time

Received by Laboratory: (Signature) — Date — Time

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: 281-648-8998

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	0.056	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	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	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	0.008	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	0.182	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 To Whole Earth

Project Manager: Tiffany Bill EOAS

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. 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	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																							
16597	Mable Com. #3 #4	2												1/6/99									
16598																							
16599	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	Satellite 4-M/W #9	2												1/6/99									
16604	Soho St #1 - M/W #10	2												1/7/99									
16605	Soho St A - M/W #11	2												1/7/99									
16606																							
16607	Bell A M/W #13 #14	2												1/6/99									
16608																							
16609	NBF M/W #15-16	2												1/6/99									

Relinquished by:	Date:	Time:	Received by:
	01-08-99	0855	
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 - 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															
16989	Sohio STA M/O #19-20	2												1/1/99	
16990															
16991	GS State M/O #21-22	2												1/1/99	
16992															
16993	SaTel Ste #4 M/O #23 #24	2												1/6/99	
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

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

Bell State "A"
1999 Activity Summary

Monitor Well # 6
This well also reflected the "summer spike" in BTEX concentrations and is now reflecting declining values as the water table subsides.

Monitor Well # 13
This well also reflected the "summer spike" in BTEX concentrations and is now showing declining values as the water table subsides.

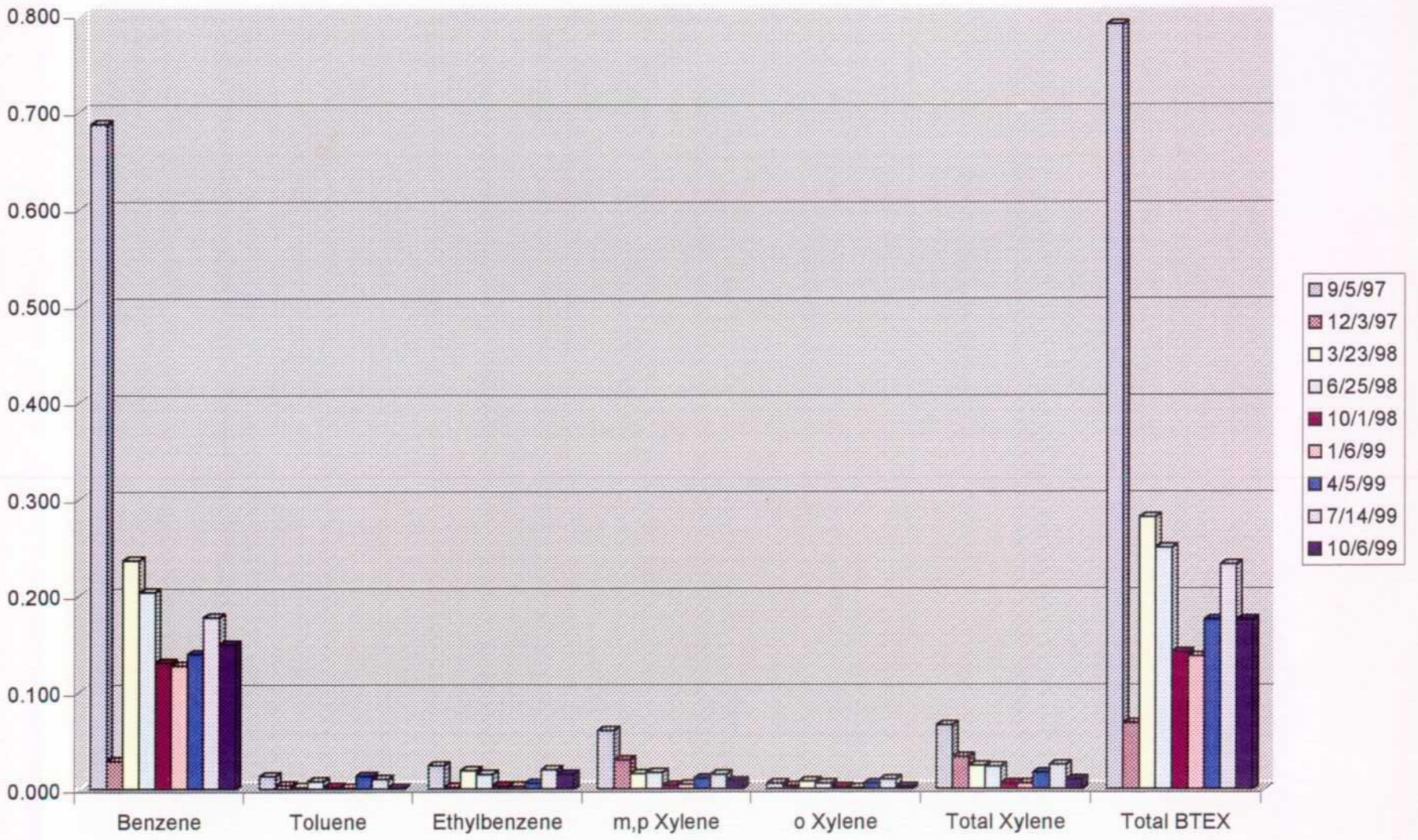
Monitor Well # 14
This well also reflected the "summer spike" in BTEX concentrations and is now showing declining values as the water table subsides.

Monitor Well # 25
This lateral delineation well was drilled and completed in March 1999. It also reflected the "summer spike" in BTEX concentrations and is now showing declining values as the water table subsides.

Monitor Well # 6
Bell State "A"
Sampling Results

Benzene	0.687	0.029	0.236	0.203	0.130	0.127	0.139	0.177	0.149
Toluene	0.013	0.004	0.002	0.008	0.002	0.001	0.013	0.010	0.001
Ethylbenzene	0.024	0.002	0.019	0.015	0.003	0.003	0.006	0.020	0.015
m,p Xylene	0.060	0.03	0.016	0.017	0.004	0.005	0.011	0.015	0.008
o Xylene	0.006	0.003	0.008	0.006	0.002	0.001	0.006	0.010	0.002
Total Xylene	0.066	0.033	0.024	0.023	0.006	0.006	0.017	0.025	0.010
Total BTEX	0.790	0.068	0.281	0.249	0.141	0.137	0.175	0.232	0.175

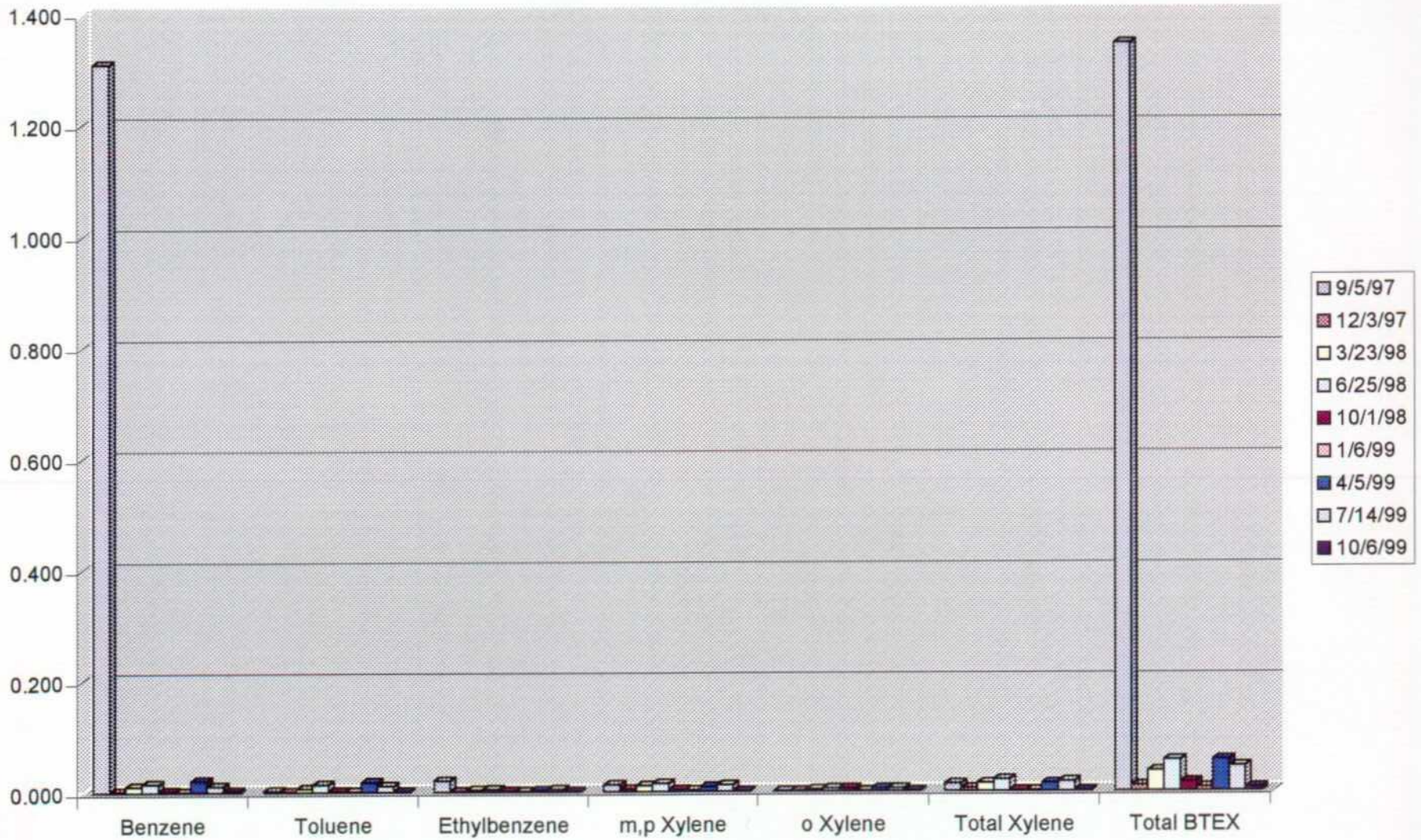
Bell State "A" MW # 6



Monitor Well # 13
Bell State "A"
Sampling Results

Benzene	1.309	0.002	0.011	0.016	0.003	0.001	0.021	0.011	0.003
Toluene	0.003	0.001	0.007	0.014	0.002	0.001	0.018	0.011	0.001
Ethylbenzene	0.02	0.001	0.004	0.005	0.002	0.001	0.003	0.005	0.001
m,p Xylene	0.013	0.005	0.011	0.015	0.004	0.003	0.009	0.012	0.001
o Xylene	0.001	0.001	0.004	0.006	0.006	0.001	0.006	0.006	0.001
Total Xylene	0.014	0.006	0.015	0.021	0.002	0.002	0.015	0.018	0.002
Total BTEX	1.346	0.010	0.037	0.056	0.017	0.007	0.057	0.045	0.007

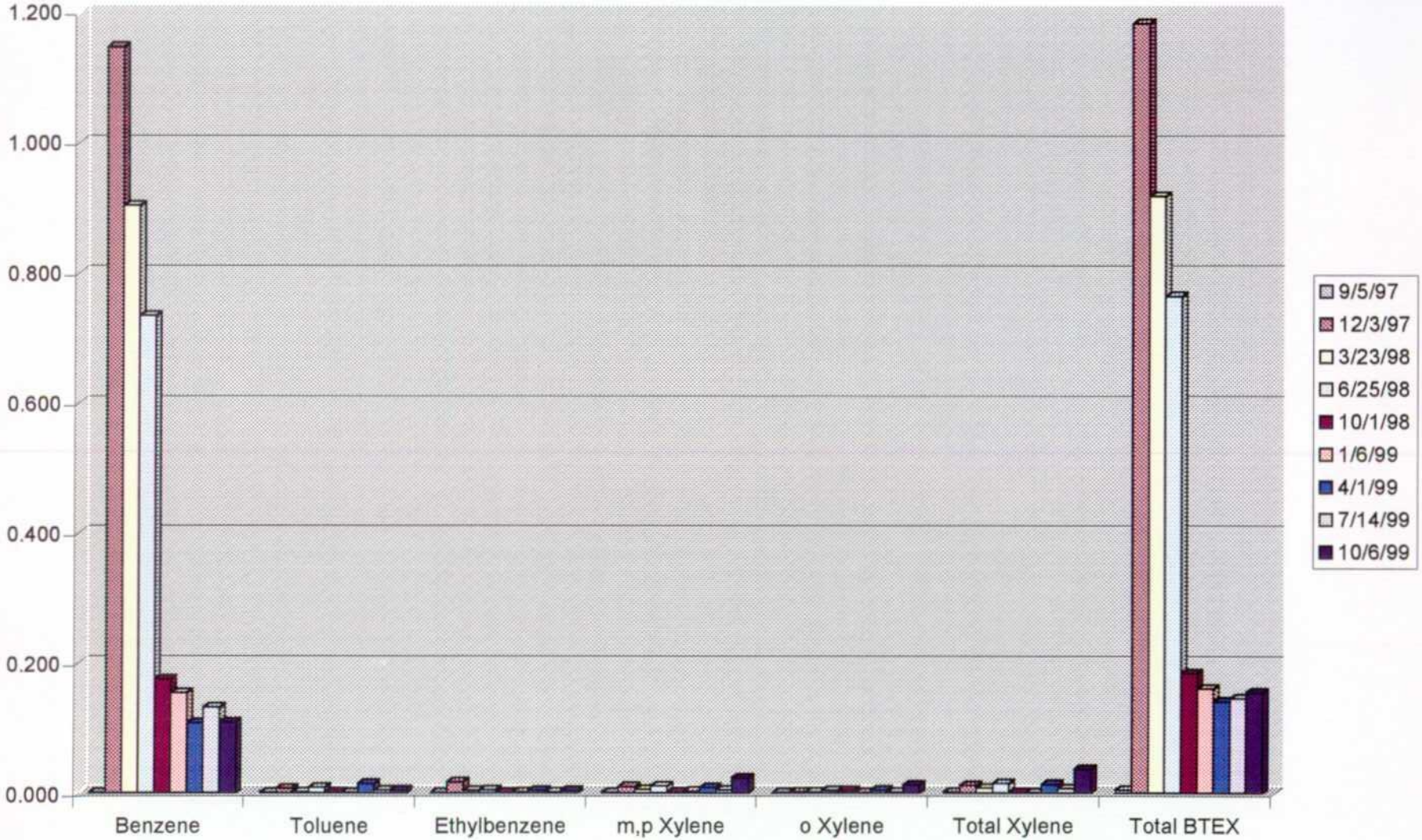
Bell State "A" MW # 13



Monitor Well # 14
Bell State "A"
Sampling Results

Benzene	0.001	1.147	0.904	0.735	0.175	0.154	0.108	0.132	0.109
Toluene	0.001	0.007	0.002	0.009	0.002	0.001	0.015	0.005	0.005
Ethylbenzene	0.001	0.017	0.004	0.005	0.001	0.002	0.004	0.002	0.004
m,p Xylene	0.001	0.010	0.006	0.011	0.002	0.003	0.009	0.005	0.024
o Xylene	0.001	0.002	0.002	0.004	0.004	0.001	0.005	0.002	0.013
Total Xylene	0.002	0.012	0.008	0.015	0.001	0.001	0.014	0.007	0.037
Total BTEX	0.005	1.183	0.918	0.764	0.184	0.161	0.141	0.146	0.155

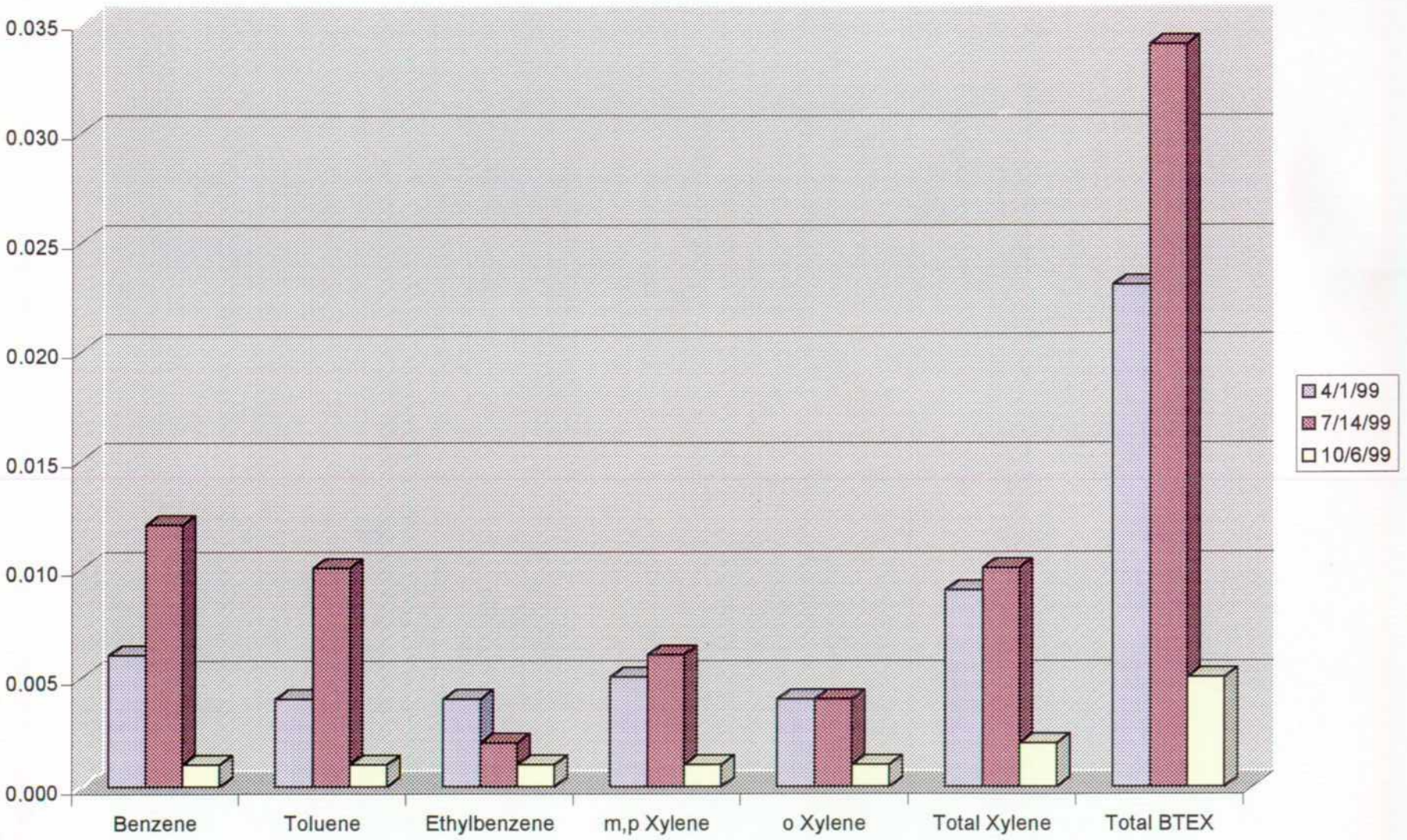
Bell State "A" MW # 14



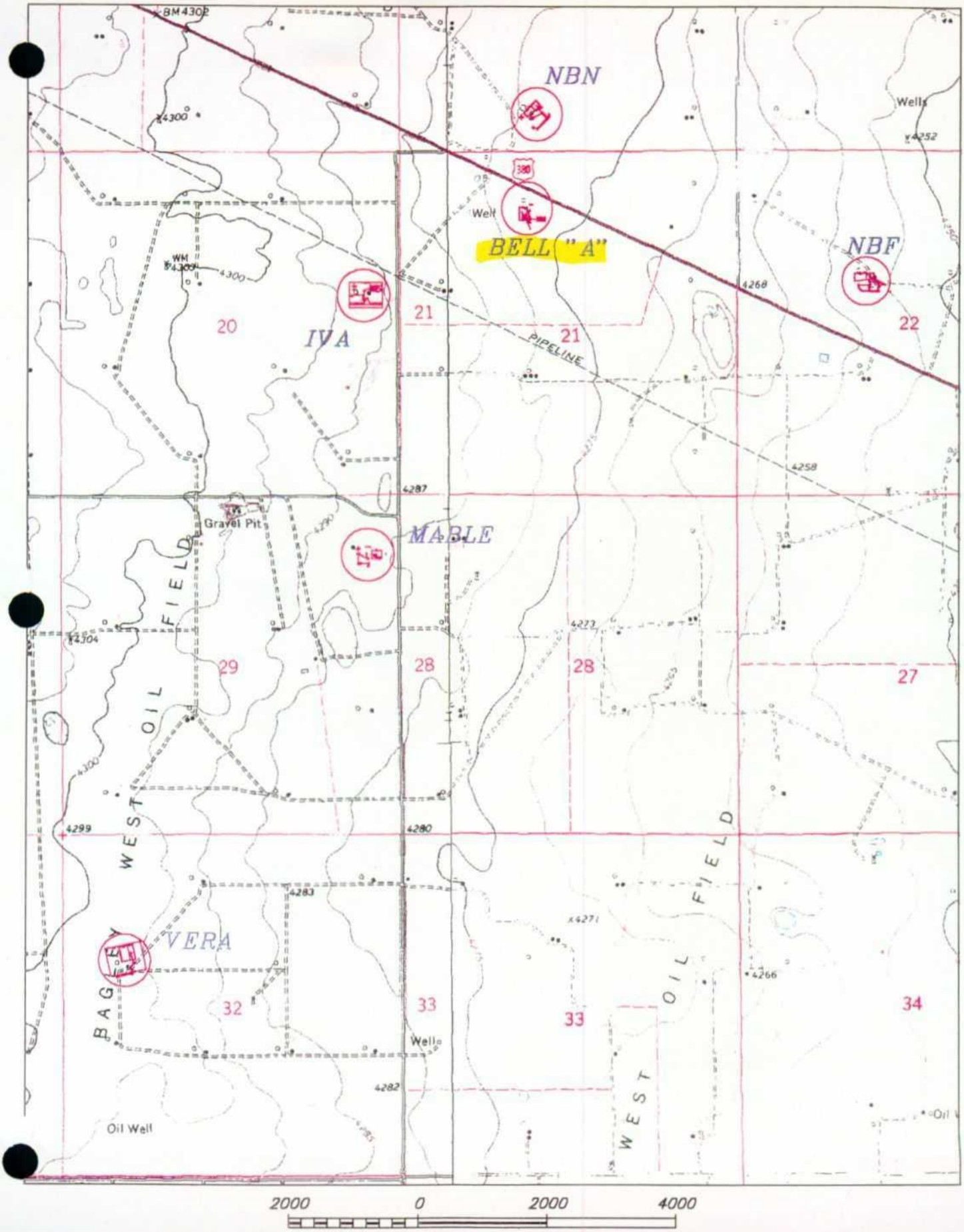
Monitor Well # 25
Bell State "A"
Sampling Results

Lab. #	17285	18601	20611
Sample Date	4/1/99	7/14/99	10/6/99
Benzene	0.006	0.012	0.001
Toluene	0.004	0.010	0.001
thylbenzen	0.004	0.002	0.001
m,p Xylene	0.005	0.006	0.001
o Xylene	0.004	0.004	0.001
Total Xylene	0.009	0.010	0.002
Total BTEX	0.023	0.034	0.005

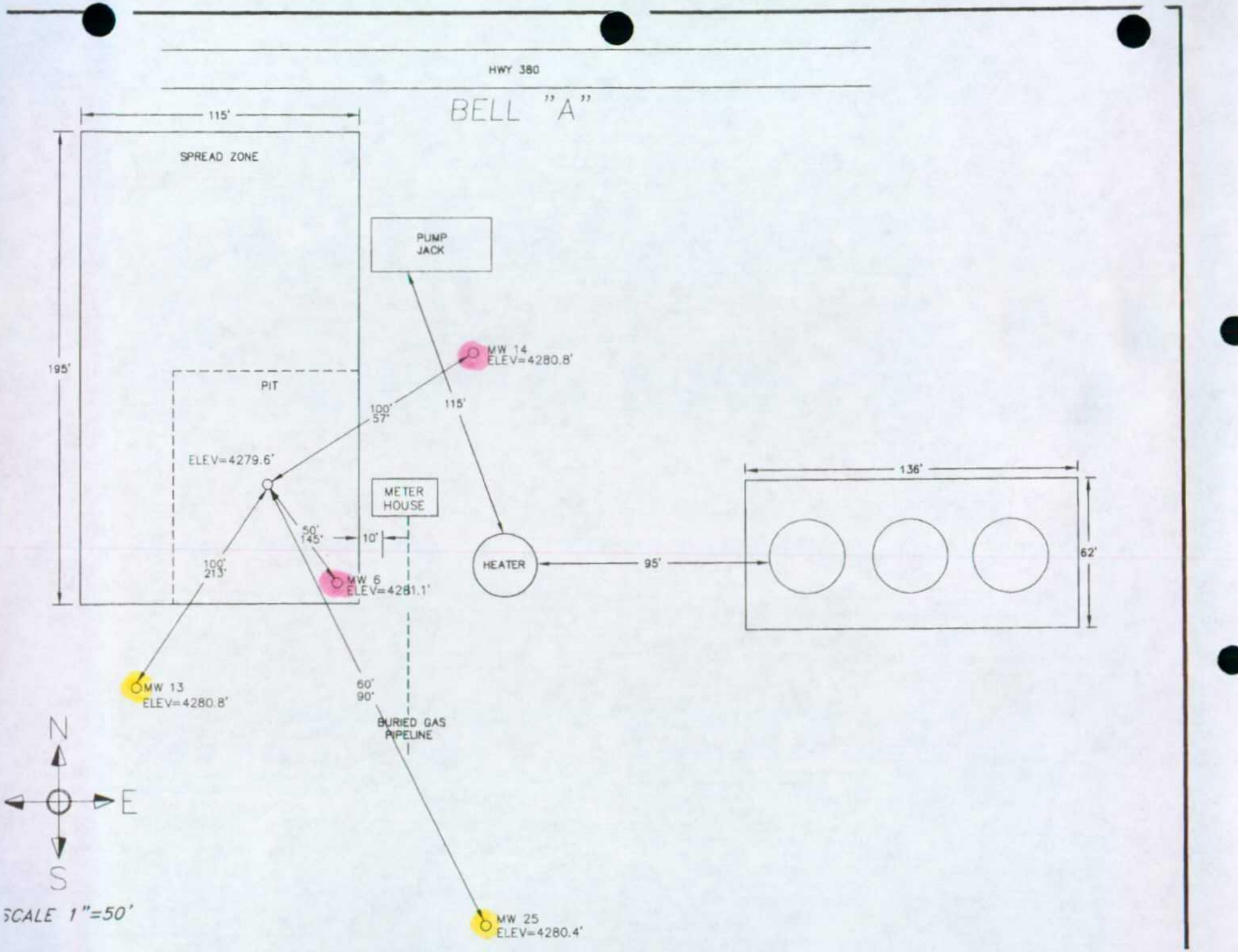
Bell State "A" MW # 25

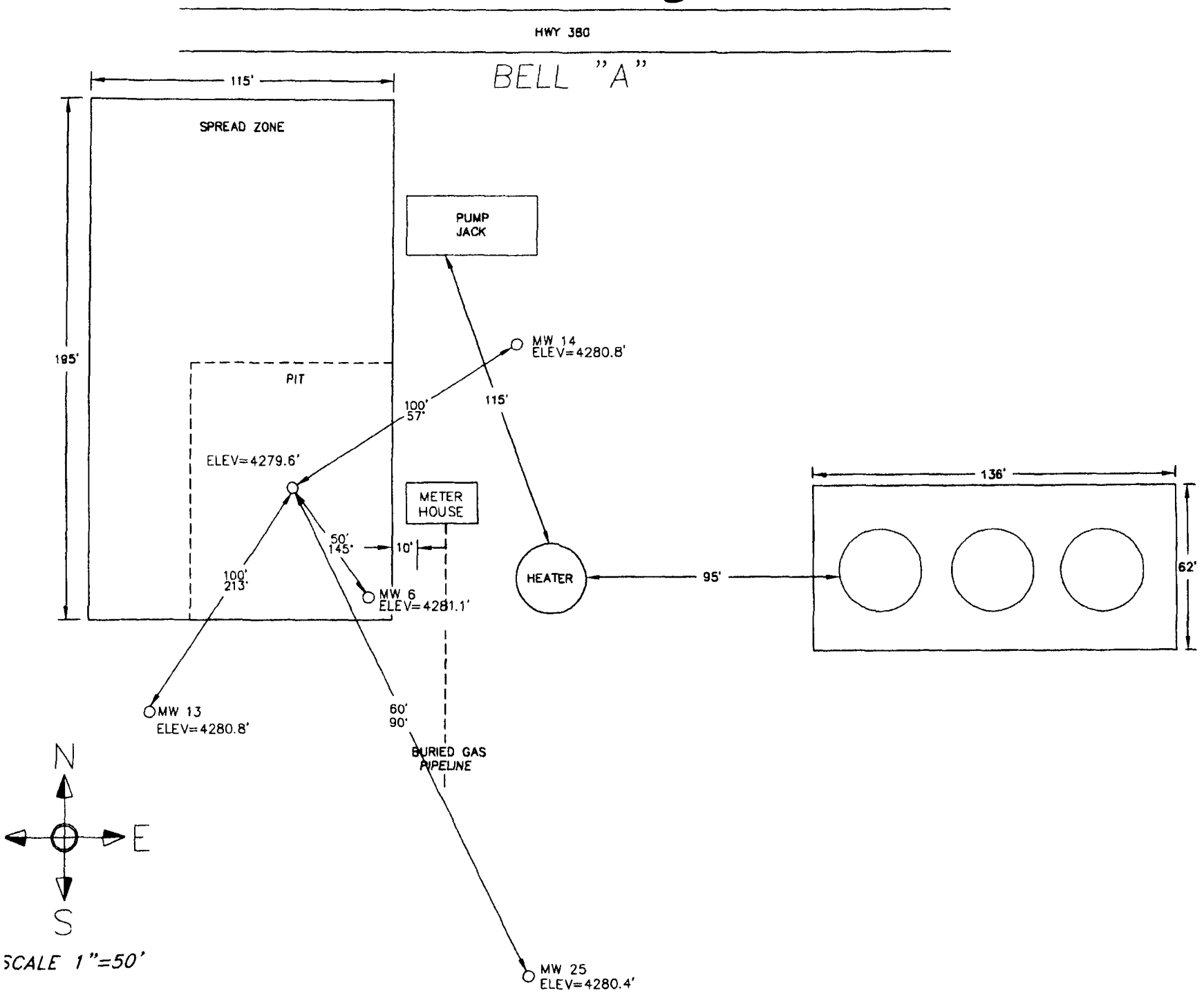


WHOLE EARTH ENVIROMENTAL, INC.



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


HWY 380
BELL "A"
115'
SPREAD ZONE
195'
PUMP JACK
MW 14
ELEV=4280.8'
PIT
100'
57°
115'
ELEV=4279.6'
METER HOUSE
50'
145°
10'
100'
213°
MW 6
ELEV=4281.1'
HEATER
95'
136'
62'
MW 13
ELEV=4280.8'
60'
90°
BURIED GAS PIPELINE
N
E
S
SCALE 1"=50'
MW 25
ELEV=4280.4'


HWY 380
BELL "A"
115'
SPREAD ZONE
195'
PIT
PUMP JACK
MW 14
ELEV=4280.8'
100'
57'
115'
ELEV=4279.6'
METER HOUSE
50'
145°
10'
100'
213°
MW 6
ELEV=4281.1'
HEATER
95'
136'
62'
MW 13
ELEV=4280.8'
60'
90'
BURIED GAS PIPELINE
N
E
S
SCALE 1"=50'
MW 25
ELEV=4280.4'

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 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 99			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	4 285 39			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	4 212 00			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

1R - 260

REPORTS

DATE:

1999

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 #: 505-398-6509 — FAX #: — Mike Griffin

Company Name & Address:

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	NBF #8 #15 #16	2	EA	X							X			4-1		X							
17433	Sohio ST #1 - #10 #17 #18 #28	2	EA	X							X			4-1		X							
17434	Sohio ST #A #11 #19 #20 #27	2	EA	X							X			4-1		X							
17435	GS. State #21 #22 #29	2	EA	X							X			4-1		X							
17436	Satellite #4 - #11 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

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: 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
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:
	04-02-99	1010	
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: | **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																						
17443																							
17444																							
17445	G.S. State																						
17446																							
17447																							
17448	Satellite #4																						
17449																							

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: 281-646-8996 (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

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

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

CORE LAB

GULF STATES ANALYTICAL

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

Company: ❶ Tippenany O&G
Address: Denver, CO 80202
633 17th
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:

❷ Field Sample ID	❸ Sampling Date	Sampling Time	❹ Matrix: Water	Soil	Sludge	Oil	Other	# of Containers	Haz. Sample (Y/N)	❺ Request for Analysis: 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.																

Relinquished by: (Signature) ❼ M. Griffin — Date 3-17-99 — Time 1345
Relinquished by Sampler: (Signature)
Received by: (Signature) Rebecca Hall — Date 3-17-99 — Time 1345
Received by Laboratory: (Signature)

❻ Remarks:

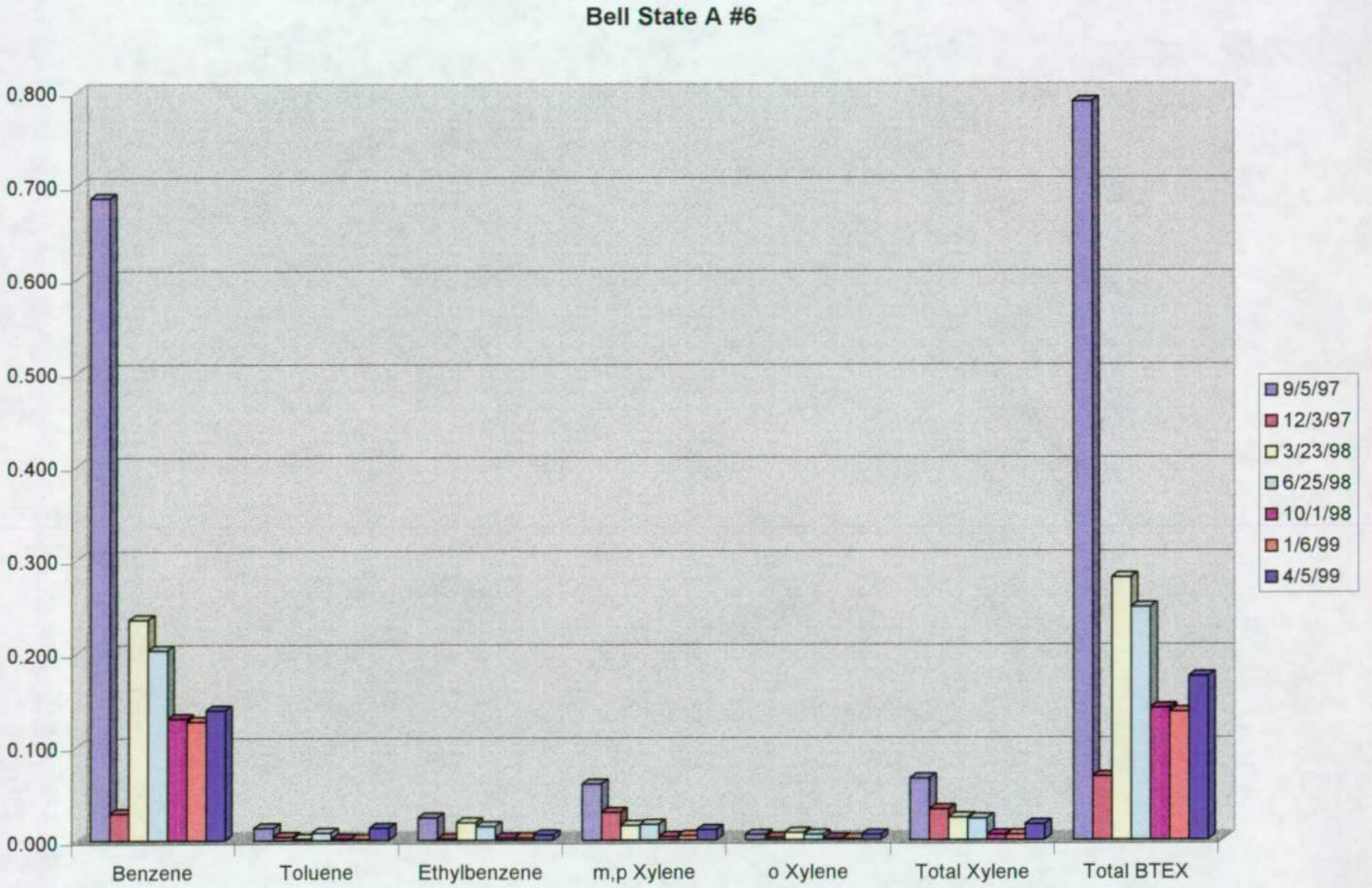
Requested Turnaround: Minutes?
GSAI Group:

Special Detection Limits

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

Monitor Well # 6
Bell State "A"
Sampling Results

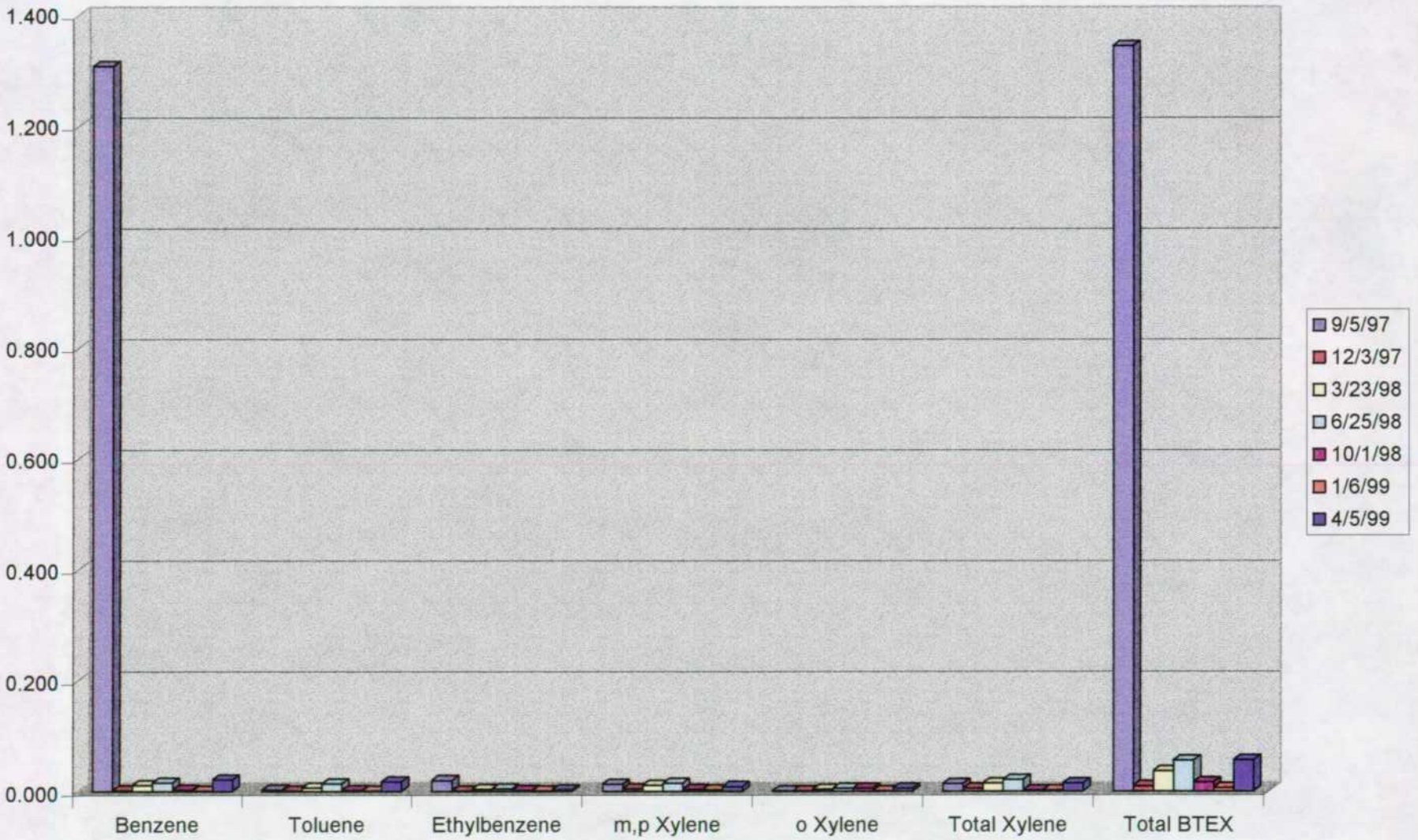
Lab. #	12481	13179	14062	14661	15593	16600	17431
Sample Date	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	4/5/99
Benzene	0.687	0.029	0.236	0.203	0.130	0.127	0.139
Toluene	0.013	0.004	0.002	0.008	0.002	0.001	0.013
Ethylbenzene	0.024	0.002	0.019	0.015	0.003	0.003	0.006
m,p Xylene	0.060	0.03	0.016	0.017	0.004	0.005	0.011
o Xylene	0.006	0.003	0.008	0.006	0.002	0.001	0.006
Total Xylene	0.066	0.033	0.024	0.023	0.006	0.006	0.017
Total BTEX	0.790	0.068	0.281	0.249	0.141	0.137	0.175


Bell State A #6
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
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
4/5/99

Monitor Well # 13
Bell State "A"
Sampling Results

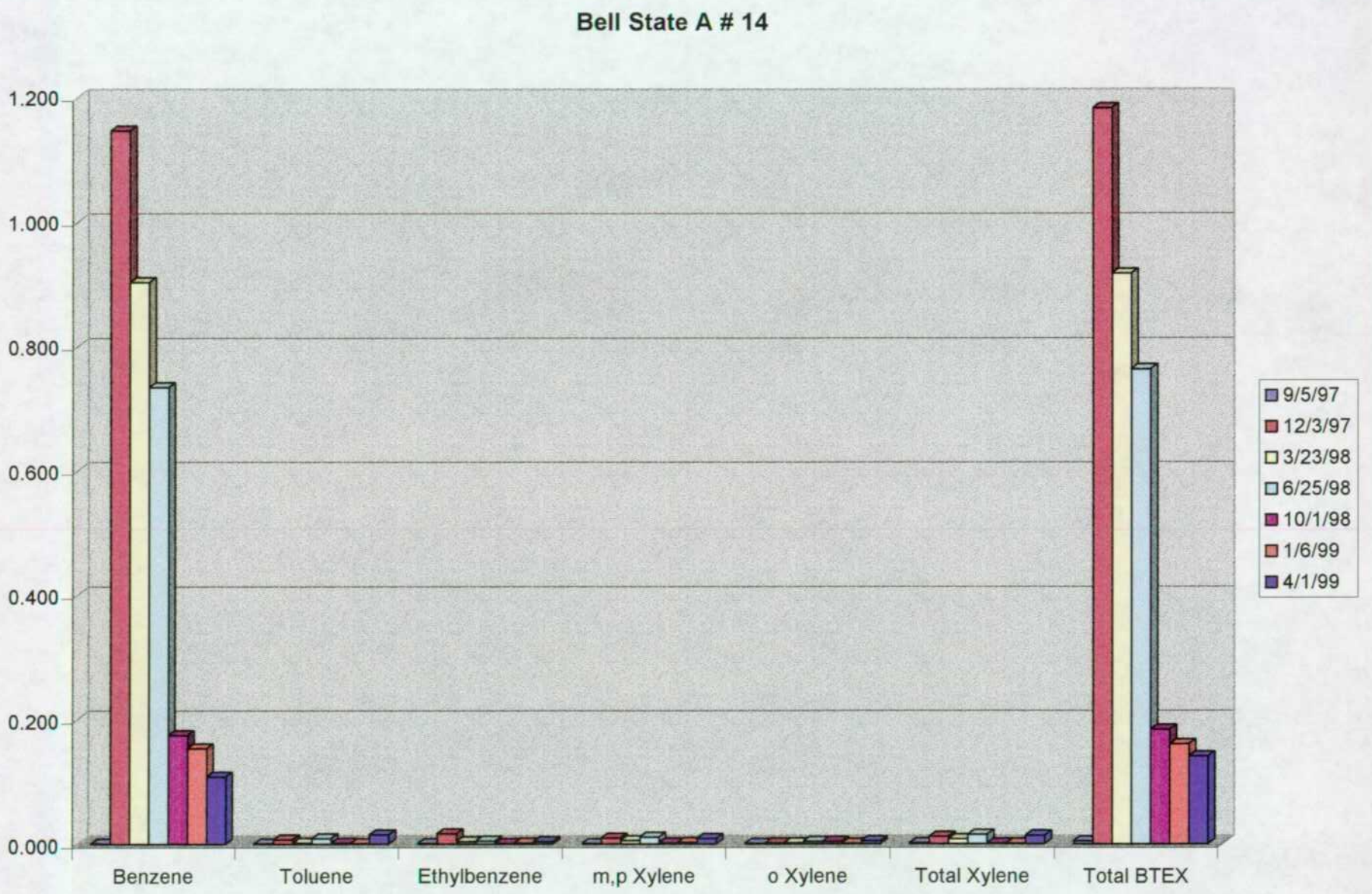
Lab. #	12731	13180	13180	14667	15599	16606	17432
Sample Date	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	4/5/99
Benzene	1.309	0.002	0.011	0.016	0.003	0.001	0.021
Toluene	0.003	0.001	0.007	0.014	0.002	0.001	0.018
Ethylbenzene	0.02	0.001	0.004	0.005	0.002	0.001	0.003
m,p Xylene	0.013	0.005	0.011	0.015	0.004	0.003	0.009
o Xylene	0.001	0.001	0.004	0.006	0.006	0.001	0.006
Total Xylene	0.014	0.006	0.015	0.021	0.002	0.002	0.015
Total BTEX	1.346	0.010	0.037	0.056	0.017	0.007	0.057

Bell State A # 13



Monitor Well # 14
Bell State "A"
Sampling Results

Lab. #	12732	13181	14048	14668	15607	16607	17433
Sample Date	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	4/1/99
Benzene	0.001	1.147	0.904	0.735	0.175	0.154	0.108
Toluene	0.001	0.007	0.002	0.009	0.002	0.001	0.015
Ethylbenzene	0.001	0.017	0.004	0.005	0.001	0.002	0.004
m,p Xylene	0.001	0.010	0.006	0.011	0.002	0.003	0.009
o Xylene	0.001	0.002	0.002	0.004	0.004	0.001	0.005
Total Xylene	0.002	0.012	0.008	0.015	0.001	0.001	0.014
Total BTEX	0.005	1.183	0.918	0.764	0.184	0.161	0.141


Bell State A # 14
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

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

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

Atkins Engineering Associates, Inc.
P.O. Box 3156
Roswell, New Mexico 88202

LOG OF BORING Bell-A MW-25

(Page 1 of 2)

Tipperary Corporation
633 17th Street, Suite 1550
Denver, CO 80202

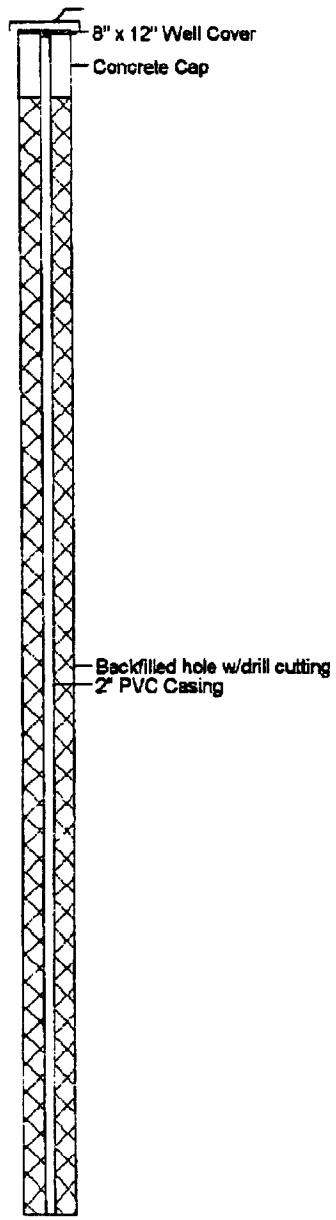
Contact: Mike Griffin

Job #99174.00

Date	: 3-15-99	Site Location	: Lea County, NM
Drill Start	: 8:00 A.M.	Auger Type	: Hollow Stem
Drill End	: 1:00 P.M.	Logged By	: Mort Bates
Boring Location	: 200 ft. SE of MW #6		

Depth in feet	GRAPHIC	USCS	Samples	DESCRIPTION
0		CL		Silty Clay, Brown, Soft, Dry
5		CL		Silty Clay w/Caliche, Tan, Firm, Dry
10				
15				
20				
25		CL		Silty Clay w/Caliche, Chalky, Firm, Dry
30		SC		Clayey Sand, Tan, Firm, Dry
35				

Well: MW-25
Elev.:



03-17-1999 C:\mtech\Bd\tipper\mw-25.bor

Atkins Engineering Associates, Inc.
P.O. Box 3156
Roswell, New Mexico 88202

LOG OF BORING Bell-A MW-25

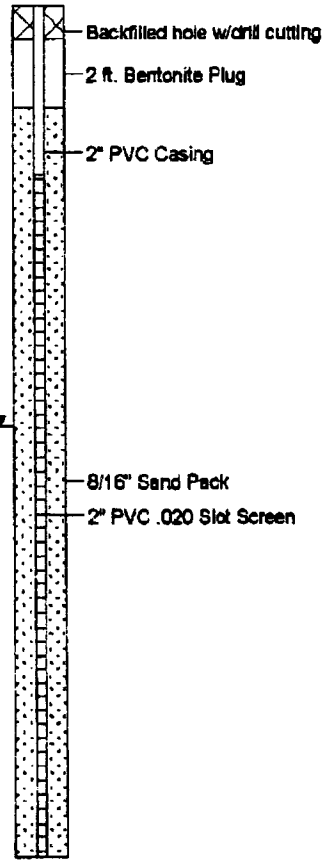
(Page 2 of 2)

Tipperary Corporation
633 17th Street, Suite 1550
Denver, CO 80202
Contact: Mike Griffin
Job #99174.00

Date	: 3-15-99	Site Location	: Lee County, NM
Drill Start	: 8:00 A.M.	Auger Type	: Hollow Stem
Drill End	: 1:00 P.M.	Logged By	: Mort Bates
Boring Location	: 200 ft. SE of MW #6		

Depth in feet	GRAPHIC	USCS	Samples	DESCRIPTION
35		SC		
				Silty Clayey Sand w/Gravel, Tan, Firm, Damp
40		SC		
				Sand, Tan, Firm, Damp
		SP		
45				
				Sand, Tan, Firm to Loose, Moist
				WL @ 47.44 ft.
50		SP		
				Sand, Tan, Loose, Saturated
55		SP		
60				TD = 60 ft.
65				
70				

Well: MW-25
Elev.:



03-17-1999 C:\mtech\99\tipper\smw-25.bor

Tipperary
CORPORATION

633 Seventeenth Street
Suite 1550
Denver, Colorado 80202

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.

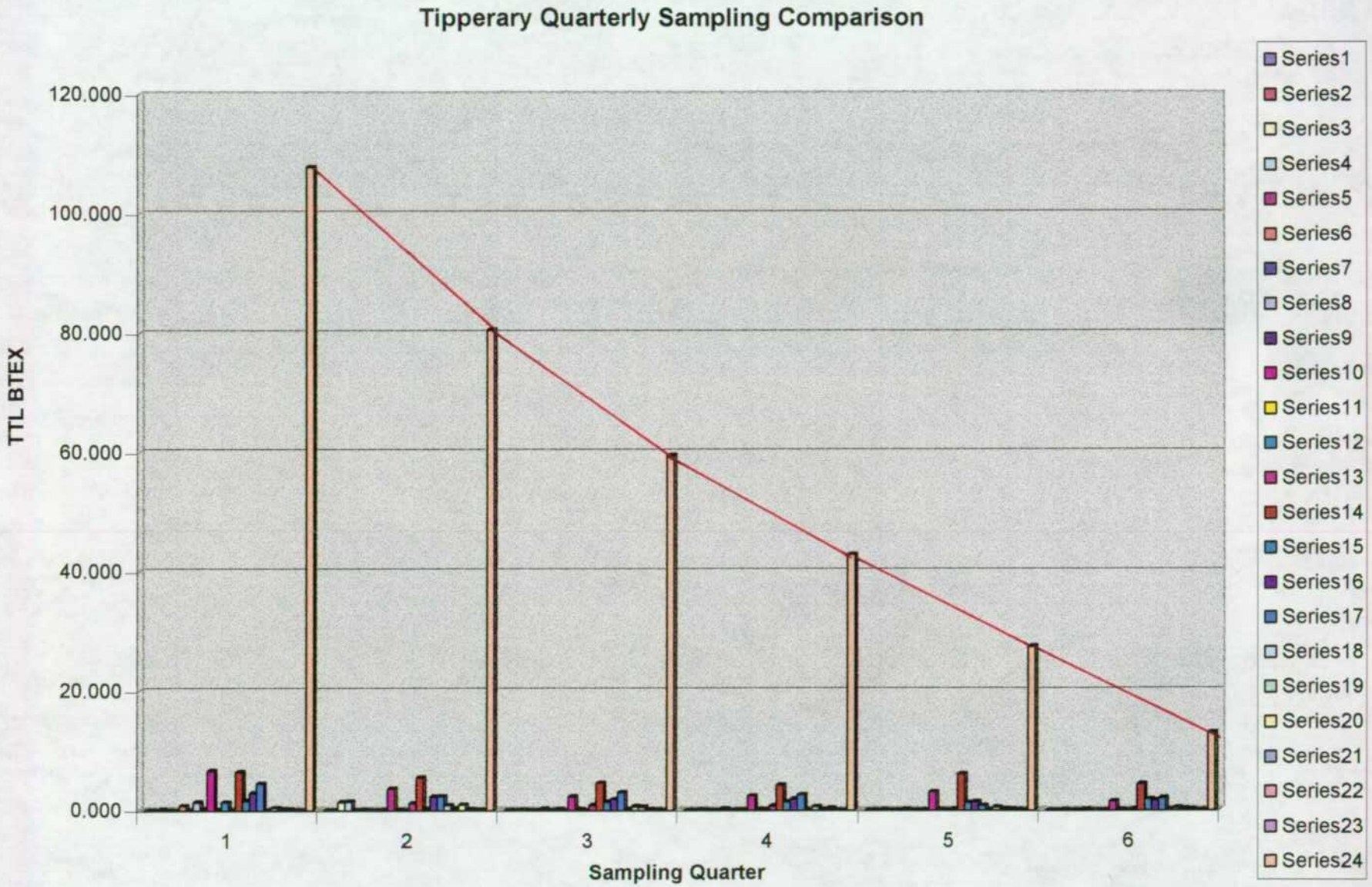
GS State # 1
Monitor Wells # 12, 21, 22
Monitor well # 12 continues to contain free product. BTEX concentrations in wells 21 & 22 are trending downward though not as sharply as similar sites. Well # 12 should be evaluated for potential as a source well. A delineation well is required for this site.

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: 281-646-8986

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	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	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	1.63	1.49	0.182	0.728	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

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

V. A. Vice 7. Whole Earth

Project Manager: Tipperary Oil & Gas

Phone #: 1-800-854-4358
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. 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	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
16595	IVA Com. M/W #1 #2	2												1/6/99									
16596																							
16597	Mable Com. " #3 #4	2												1/6/99									
16598																							
16599	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	Satellite 4 - M/W #9	2												1/6/99									
16604	Solio ST #1 - M/W #10	2												1/7/99									
16605	Solio ST A - M/W #11	2												1/7/99									
16606	Bell A M/W #13 #14	2												1/6/99									
16607																							
16608																							
16609	NBF M/W #15-16	2												1/6/99									

Relinquished by:	Date:	Times:	Received by:
	01-08-99	0855	J McMurray
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	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
16587	Sohio ST "17" #17-18	2												1/1/99	
16588	Sohio STA M/U #19-20	2												1/1/99	
16589	GS STATE M/U #21-22	2												1/1/99	
16590	Satellite #4 M/U 23 #24	2												1/6/99	
16591															
16592															
16593															
16594															

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
X							
	X						
		X					
			X				
				X			
					X		
						X	
							X

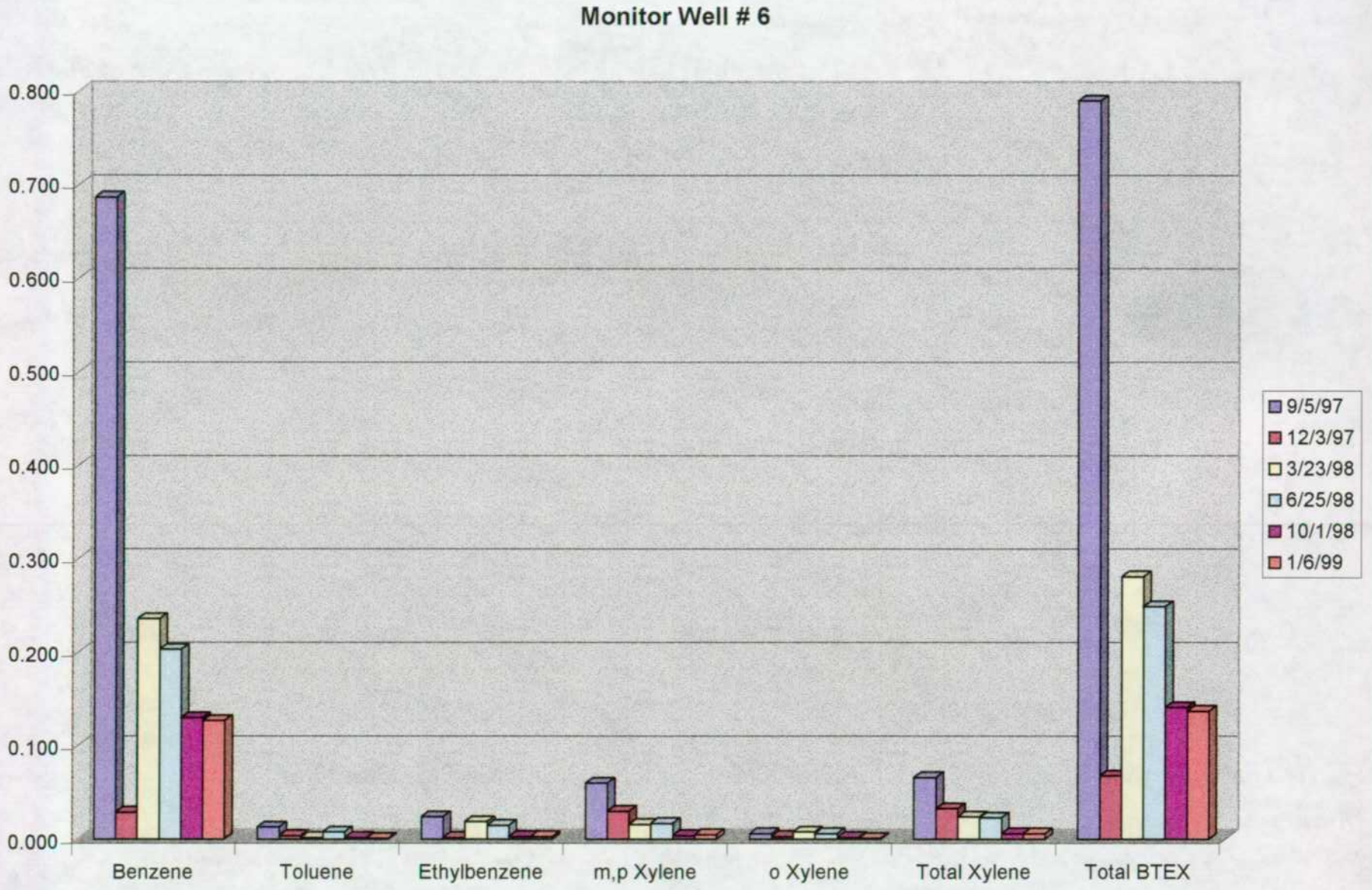
Relinquished by:	Date:	Time:	Received by:
Victor A. Vice	01-08-99	0855	[illegible]
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS

P. 02

Monitor Well # 6
Bell State "A"
Sampling Results

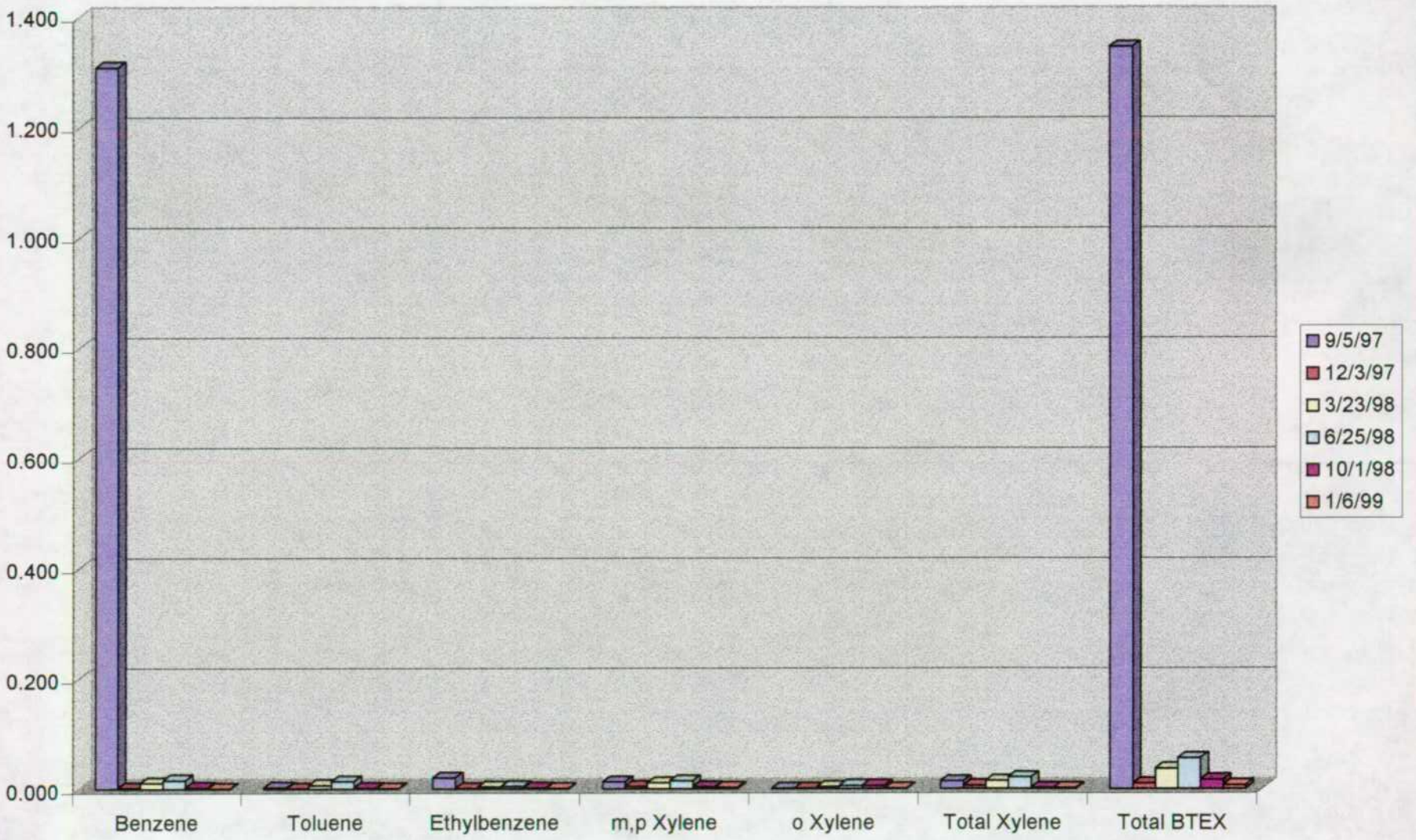
Lab. #	12481	13179	14062	14661	15593	16600
Sample Date	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99
Benzene	0.687	0.029	0.236	0.203	0.130	0.127
Toluene	0.013	0.004	0.002	0.008	0.002	0.001
Ethylbenzene	0.024	0.002	0.019	0.015	0.003	0.003
m,p Xylene	0.060	0.03	0.016	0.017	0.004	0.005
o Xylene	0.006	0.003	0.008	0.006	0.002	0.001
Total Xylene	0.066	0.033	0.024	0.023	0.006	0.006
Total BTEX	0.790	0.068	0.281	0.249	0.141	0.137


Monitor Well # 6
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
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

Monitor Well # 13
Bell State "A"
Sampling Results

Lab. #	12731	13180	13180	14667	15599	16606
Sample Date	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99
Benzene	1.309	0.002	0.011	0.016	0.003	0.001
Toluene	0.003	0.001	0.007	0.014	0.002	0.001
Ethylbenzene	0.02	0.001	0.004	0.005	0.002	0.001
m,p Xylene	0.013	0.005	0.011	0.015	0.004	0.003
o Xylene	0.001	0.001	0.004	0.006	0.006	0.001
Total Xylene	0.014	0.006	0.015	0.021	0.002	0.002
Total BTEX	1.346	0.010	0.037	0.056	0.017	0.007

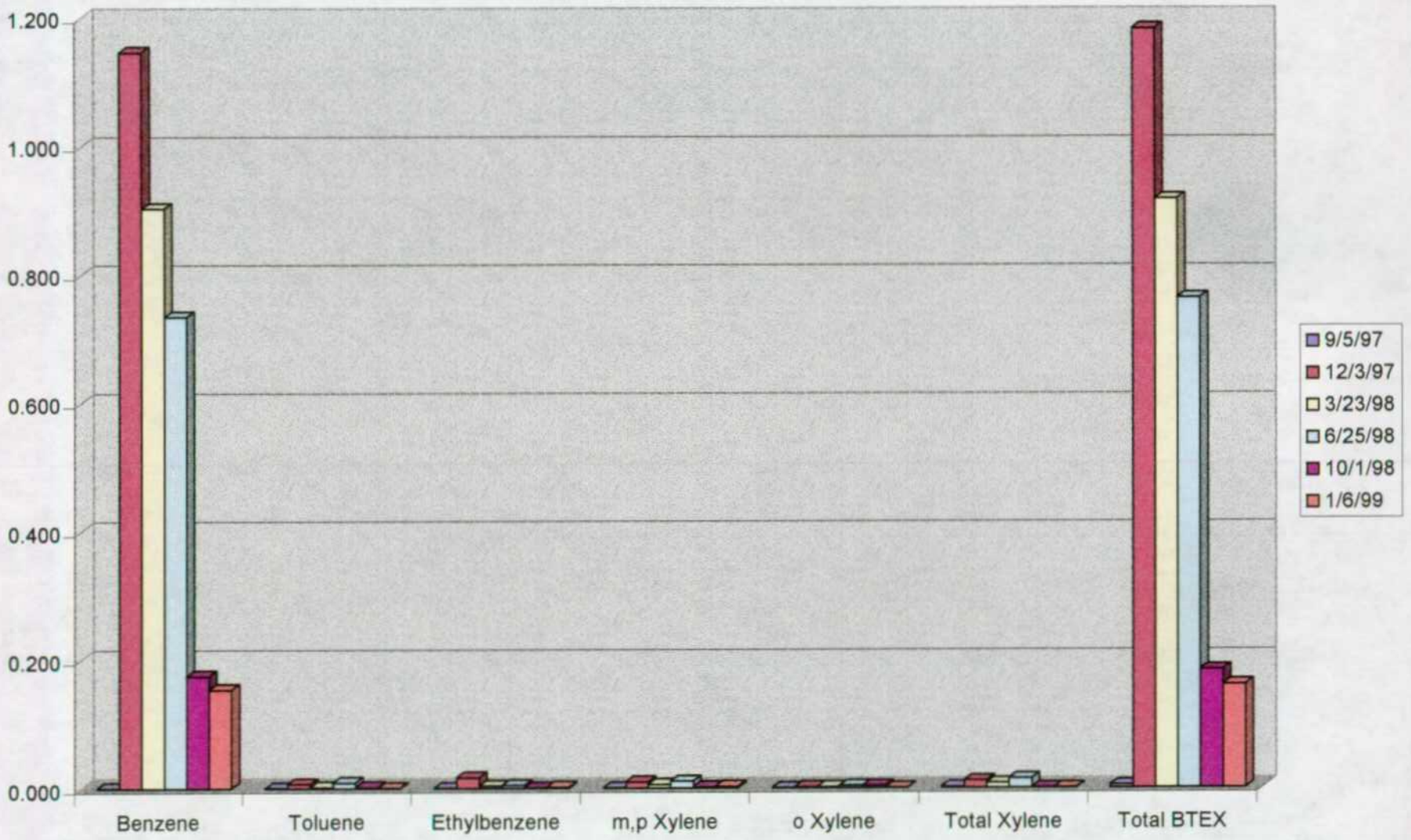
Monitor Well # 13



Monitor Well # 14
Bell State "A"
Sampling Results

Lab. #	12732	13181	14048	14668	15607	16607
Sample Date	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99
Benzene	0.001	1.147	0.904	0.735	0.175	0.154
Toluene	0.001	0.007	0.002	0.009	0.002	0.001
Ethylbenzene	0.001	0.017	0.004	0.005	0.001	0.002
m,p Xylene	0.001	0.010	0.006	0.011	0.002	0.003
o Xylene	0.001	0.002	0.002	0.004	0.004	0.001
Total Xylene	0.002	0.012	0.008	0.015	0.001	0.001
Total BTEX	0.005	1.183	0.918	0.764	0.184	0.161

Monitor Well # 14



1R - 260

GENERAL CORRESPONDENCE

YEAR(S):

2004 - 2003

IR260

Olson, William

From: Olson, William
Sent: Monday, April 19, 2004 9:58 AM
To: 'Mike Griffin'; Olson, William
Cc: Larry Sugano; Darrell Glueck
Subject: RE: Tipperary 2nd Qrtr. Bagley Field Sampling Relief

Dear Mr. Griffin:

This correspondence is sent to you in response to Tipperary Corporation's (TC) below April 2, 2004 request to modify the water quality monitoring program for ground water remediation sites in the Bagley Field west of Tatum, New Mexico. Due to the stability of contamination at the sites over time, the New Mexico Oil Conservation Division (NMOCD) agrees to modify the ground water monitoring program for the Bagley Field sites as set out below:

1. Ground water from **all** site monitoring wells at each site shall be sampled on an annual basis.

2. All ground water samples shall be obtained and analyzed for concentrations of benzene, toluene, ethylbenzene and xylene (BTEX) and major cations and anions using EPA approved methods and quality assurance/quality control procedures.

3. TC shall notify the NMOCD at least 1 week prior to the sampling events such that the NMOCD has the opportunity to witness the events and split samples.

Please be advised that NMOCD approval does not relieve TC of responsibility if the program fails to adequately monitor contamination at the sites, or if contamination outside the scope of the monitoring program is found to exist. In addition, NMOCD approval does not relieve TC of responsibility for compliance with any other federal, state, or local laws and regulations.

If you have any questions, please contact me.

Sincerely,

William C. Olson
Hydrologist
New Mexico Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505
(505) 476-3491

==========

-----Original Message-----
From: Mike Griffin [mailto:whearth@msn.com]
Sent: Friday, April 02, 2004 11:27 AM
To: Bill Olson
Cc: Larry Sugano; Darrell Glueck

Subject: Tipperary 2nd Qrtr. Bagley Field Sampling Relief

Good Morning, Bill:

On March 23rd, Tipperary sent you the results of last years results from monitoring fifty-one individual wells within the Bagley Field. What started six years ago as a series of single delineation wells at each pit site has grown in scope and size to a very significant quarterly expense. Part of this expense is the collection of data from wells that have either always had BTEX concentrations within the acceptance parameters of NMWQCC standards or wells whose concentrations have diminished over time to meet the standards for at least four consecutive quarters.

We've ten such wells we would like you to consider for omission within the 2nd quarter Tipperary sampling round described as follows:

Iva COM
MW-1 Twenty-three consecutive quarters of acceptable concentrations.
MW-2 Twenty-one consecutive quarters of acceptable concentrations.

Bell
MW-2 Ten consecutive quarters of acceptable results.
MW-4 Twelve consecutive quarters of acceptable concentrations.

Mable
MW-2 Nine consecutive quarters of acceptable results.
MW-3 Seven consecutive quarters of acceptable concentrations.

NBF
MW-4 Five consecutive quarters of acceptable results.
MW-5 Seven consecutive quarters of acceptable concentrations.

Sohio 1
MW-6 Five consecutive quarters of acceptable results.
MW-7 Five consecutive quarters of acceptable results.

All but the Iva wells have shown higher concentrations in the past. We request that we may be allowed to test them only once per year for BTEX only. If the analytical result for this annual sampling event comes back above the WQCC standards, the well will be immediately reverted to a quarterly sampling schedule.

At time of requested final closure, we propose that all wells within a pit group be tested for BTEX volatile & semi-volatile compounds, PAH's, cat and anions, hardness, etc. If ANY well from within the pit group exhibits concentrations in excess of NMWQCC standards, that well will be tested quarterly for the specific C of C in question. After four quarters of acceptable concentrations, each well within the group will again be subject to the full suite of tests. Closure would be granted ONLY when all wells show four quarters of acceptable concentrations for ALL C of C's.

Bill, I think this a reasonable and certainly more cost effective method of conducting our sampling program. We anticipate being out in Tatum within the next couple of weeks and

look forward to your earliest response.

Warmest regards,
Mike Griffin
Whole Earth Environmental, Inc.
Phone: 281.394.2050
FAX: 281.394.2051

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

May 21, 2003

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

RE: [redacted]TATE "A" PIT – CASE # 1R260
SOHIO STATE #1 PIT – CASE #1R267
SOHIO STATE "A" PIT – CASE #1R268
STATE NBF #1 PIT – CASE #1R269
LEA COUNTY, NEW MEXICO

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) May 6, 2003 "TATUM PIT CLOSURE PROJECT YOUR LETTER OF 4-21-03" which was submitted on behalf of TC by their consultant Whole Earth Environmental. This document contains TC's response to the OCD's April 21, 2003 correspondence and TC's work plan for installation of additional ground water monitoring wells to further delineate the extent of contamination related to the closure of unlined pits at the above listed sites west of Tatum, New Mexico.

The above-referenced work plan is approved with the following conditions:

1. At the Sohio State #1 site, proposed monitor well MW-43 shall be relocated and an additional ground water monitoring well shall be installed at the locations shown on the attached figure #1.

2. At the Sohio State "A" site, an additional ground water monitoring well shall be installed at the location shown on the attached figure #2.

3. All monitor wells shall be constructed and completed as follows:

   a. A minimum of 15 feet of well screen shall be installed with 5 feet of well screen placed above the water table and 10 feet of well screen placed below the water table.

   b. An appropriately sized gravel pack shall be set in the annulus around the well screen from the bottom of the hole to 2-3 feet above the top of the well screen.

c. A 2-3 foot bentonite plug shall be placed above the gravel pack.

d. The remainder of the hole shall be grouted to the surface with cement containing 3-5% bentonite.

e. A concrete pad and locking well cover shall be placed at the surface.

f. The well shall be developed after construction using EPA approved procedures.

4. No less than 24 hours after the wells are developed, ground water from all site monitor wells at each site shall be purged, sampled and analyzed for concentrations of benzene, toluene, ethylbenzene, xylene (BTEX) using EPA approved methods and quality assurance/quality control procedures (QA/QC).

5. All monitor wells shall be surveyed to determine their locations in reference to the former pits, tanks, other site monitor and recovery wells and any other pertinent site features.

6. In order to resolve the issue of chloride and total dissolved solids (TDS) contamination at TC's remaining pit closure sites, during one of the 2003 sampling events TC shall sample and analyze ground water from all monitor wells at the Bell State "A", Gulf State #1 (Case #1R262), Iva Com #1 (Case #1R263), Mabel Com #1 (Case #1R264), Sohio State #1, Sohio State "A", and State NBF #1 sites for concentrations of TDS and major cations and anions using EPA approved methods and QA/QC.

7. All wastes generated during the investigation shall be disposed of at an OCD approved facility.

8. TC will submit the results the investigation and sampling activities to the OCD in the subsequent annual report for each site which is due on April 1, 2004. The report will present the investigation and sampling work for each site as a separate case report. Each case report will contain the following information:

a. A description of the investigation activities which occurred including conclusions and recommendations.

b. A geologic/lithologic log and well completion diagram for each newly installed monitor well.

c. A contoured ground water potentiometric map of each site, for each sampling event, showing the direction and magnitude of the hydraulic gradient, the location of the pits, tanks, monitor wells, recovery wells and any other pertinent site features.

d. Summary tables of all past and present ground water quality sampling results and copies of all recent laboratory analytical data sheets and associated QA/QC data.

e. If ground water recovery is occurring at the site, the volume of ground water and volume of product recovered to date.

f. The disposition of all wastes generated.

Please be advised that OCD approval does not limit TC to the proposed work plan if the plan fails to adequately determine the extent of contamination or if contamination exists which is outside the scope of the plan. In addition, OCD approval does not relieve TC of responsibility for compliance with any other federal, state or local laws and regulations.

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
Cody Morrow, NM State Land Office
Mike Griffin, Whole Earth Environmental, Inc.

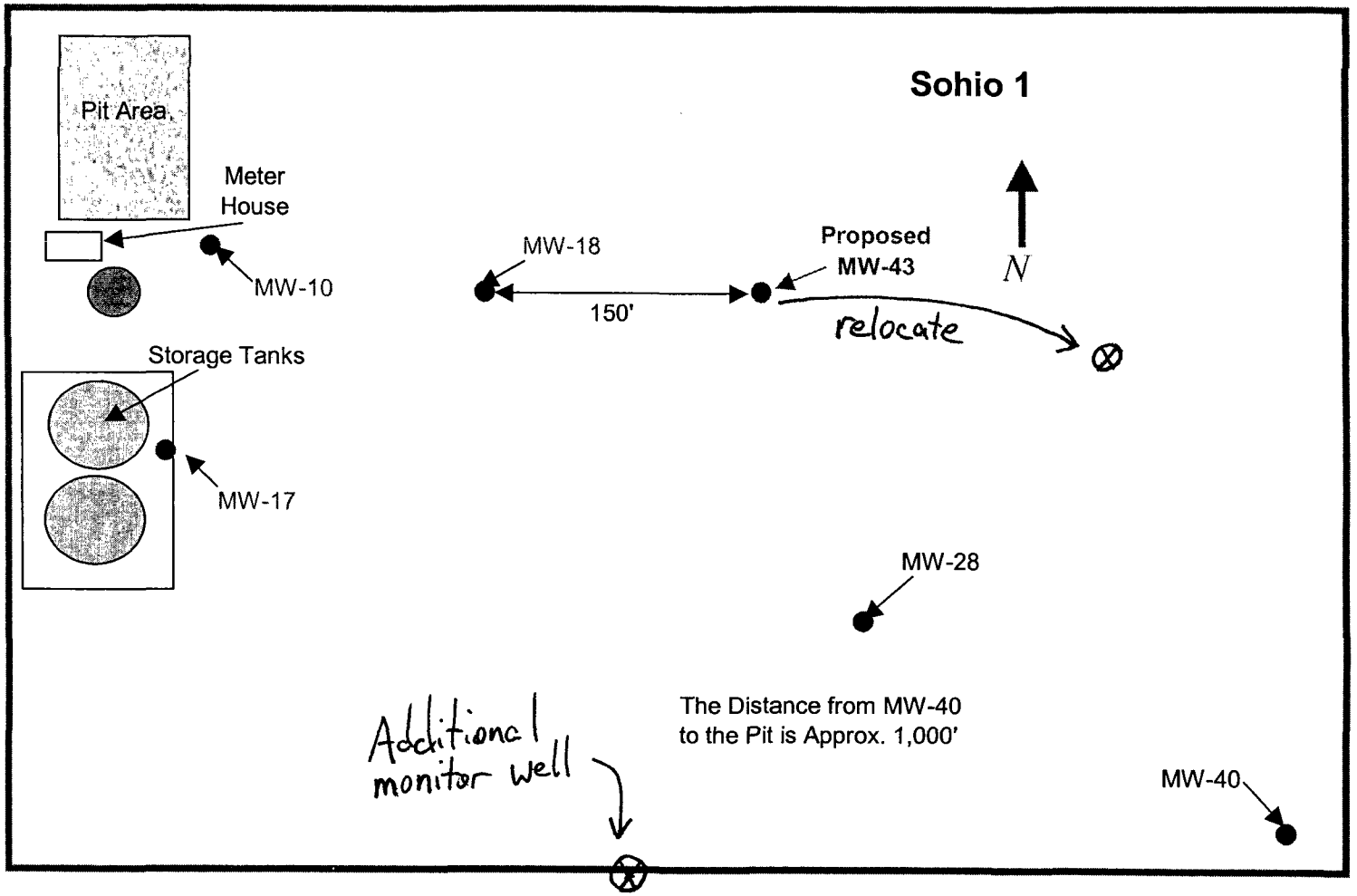

Sohio 1
Pit Area
Meter House
MW-10
MW-18
Proposed MW-43
N
150'
relocate
Storage Tanks
MW-17
MW-28
Additional monitor well
The Distance from MW-40 to the Pit is Approx. 1,000'
MW-40

Figure #1

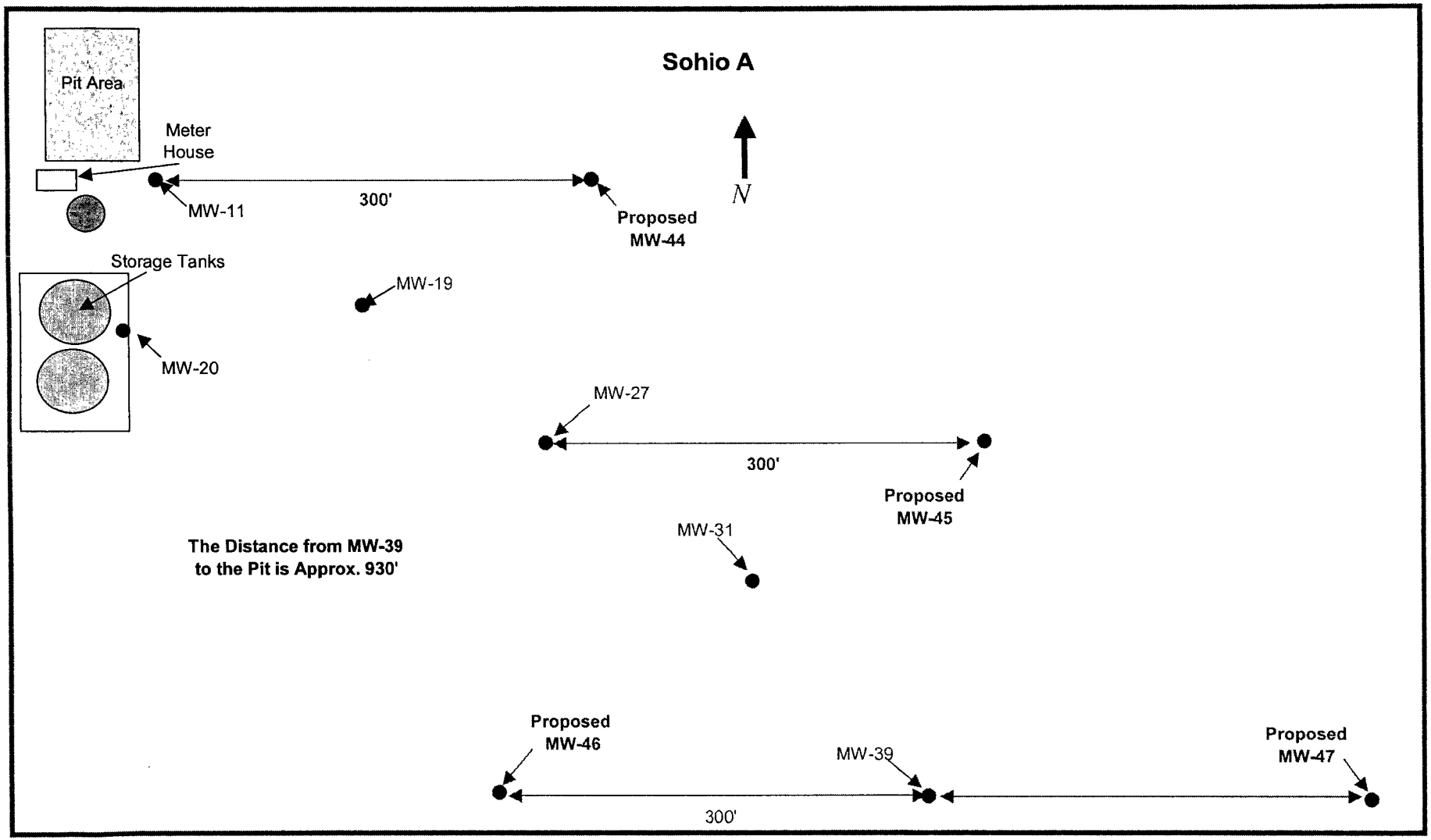


Figure #2

Additional monitor well

Olson, William

From: Mike Griffin [whearth@iamerica.net]
Sent: Tuesday, May 06, 2003 9:27 PM
To: Bill Olson
Cc: Larry Sugano
Subject: Tatum Pit Closure Project Your Letter of 4-21-03


Site Locations.jpg


Plat Map - Bell State A.xls


Plat Map - NBF.xls


Plat Map - Sohio 1.xls


Plat Map - Sohio A.xls

Good Morning, Bill:

I'm in receipt of your above letter and have a few questions or comments. It would probably be easiest for all concerned to go down your list in order.

1. You requested that future filings have a contoured ground water potentiometric map. We've included the map within this submittal.

2. You requested that we analyze each well - each quarter for TDS and major cat and anions. These analyses were performed at the time each well was drilled and we've a good baseline of their concentrations. With the sole exception of the Collier site, the non-organics were found to be within limits. In order to receive closure for each site, we will be required to pass the full NMWQCC spectrum of contaminants of concern including these minerals. At the present time, our main concern in each Tatum site location is benzene, (indeed all of the other BTEX constituents are within limits in all wells).

I would ask that you consider allowing us to continue our existing program for BTEX only until time of final closure. (Though I'll willingly concede the prudence of testing Collier at least annually and even quarterly if the concentrations show any significant increase over the original baselines).

3. You requested that we measure the phase-separated hydrocarbons where present. We can do so on all but the recovery wells.

4. You requested that we conduct further delineation on Bell, Sohio A, Sohio 1 and NBF. We propose to comply as follows:

a. Attached, please find copies of the plat map for each well site in question marked up to include our proposed new well locations. The existing well locations are all shown along with the locations of the major equipment. Existing wells with acceptable concentrations are shown in blue, and the wells with benzene concentrations exceeding NMWQCC standards are in red.

b. The wells will be constructed as are all others within the field. Drilled 2" dia. with a minimum of 10' of screen into the table and 5" of screen above the table. The surface will be flush mounted with a bolted steel cap. No cuttings will be allowed into the hole.

c. We propose to sample each well - each quarter in accordance with the existing sampling plan. The initial testing will include BTEX, major cat and anions, and TDS. Assuming that the minerals are within acceptable limits, subsequent tests will be for BTEX only.

d. We propose to begin drilling on or about May 15th. And will submit a report within two weeks of the receipt of the laboratory analytical results.

Thank you in advance for what I know will be prompt response.

WHOLE EARTH ENVIROMENTAL, INC.

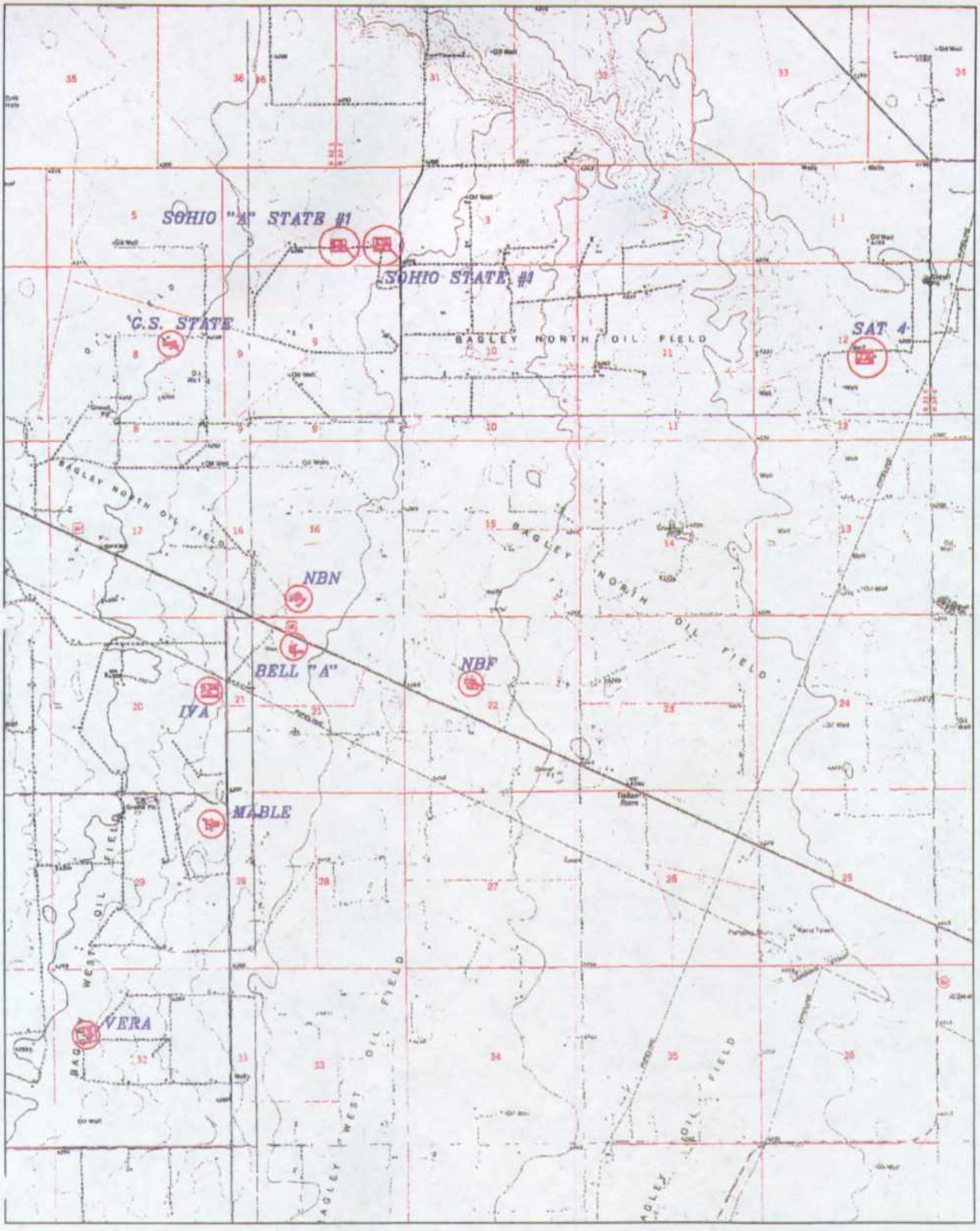
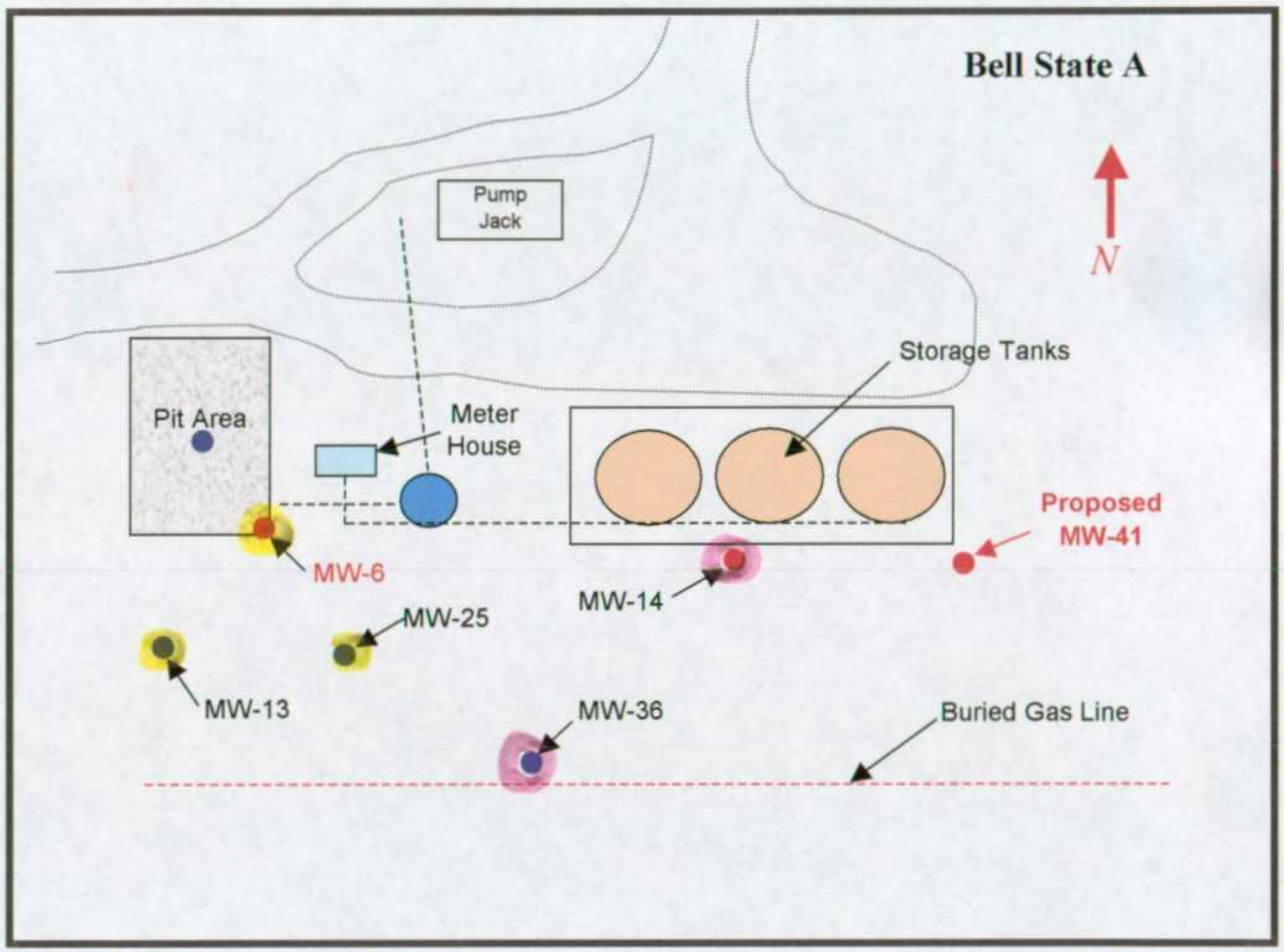


EXHIBIT 9

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


Bell State A
Pump Jack
N
Storage Tanks
Pit Area
Meter House
Proposed MW-41
MW-6
MW-14
MW-25
MW-13
MW-36
Buried Gas Line

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

April 21, 2003

Mr. Larry G. 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) February 12, 2003 "PROGRESS REPORT FOR YEAR 2002, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO". This document contains the results of TC's 2002 ground water quality monitoring and additional investigations of the extent of ground water contamination at the Bell State "A" (Case #1R260), Gulf State #1 (Case #1R262), Iva Com #1 (Case #1R263), Mabel Com #1 (Case #1R264), Sohio State #1 (Case # 1R267), Sohio State "A" (Case #1R268), State NBF #1 (Case #1R269) and Collier #1 (Case # AP-32) sites west of Tatum, New Mexico.

The OCD has the following comments and requirements concerning the above referenced documents:

1. The reports do not include a contoured ground water potentiometric map of each site, for each sampling event, showing the direction and magnitude of the hydraulic gradient. The OCD has required this information for all monitoring reports as a condition of approval of previous work plans. Please provide such a map for each site from the last monitoring event in calendar year 2002. In future reports, for each sampling event, TC shall include a contoured ground water potentiometric map of each site showing the direction and magnitude of the hydraulic gradient.

2. A review of site data shows that, at most of the sites, chloride and total dissolved solids (TDS) have been observed in ground water downgradient of the pits in concentrations in excess of New Mexico Water Quality Control Commission (WQCC) standards. Therefore, the OCD requires that all future ground water samples from each monitor well, during each sampling event, also be analyzed for concentrations of TDS and major cations and anions using EPA approved methods and quality assurance/quality control procedures.

3. The reports note that phase-separated hydrocarbons (PSH) are present in some monitor wells, however, the OCD cannot evaluate the effectiveness of the recovery systems since the amount of PSH in each monitor or recovery well is not reported. In future reports please include tables showing the thickness of PSH, measured to the nearest 0.01 of a foot, in each monitor and recovery well during all past and present monitoring events.

4. A review of the analytical data shows that the lateral and/or downgradient extent of ground water contamination in excess of WQCC standards has still not been completely defined at the Bell State "A", Sohio State #1, Sohio State "A", and State NBF #1 sites. The OCD requires that TC submit work plans to complete the investigation of the extent of ground water contamination at these sites. The work plans shall include:

   a. A map of each site showing proposed monitor well locations to accomplish the above task.
   b. Proposed monitor well construction details.
   c. A proposed ground water sampling plan.
   d. A schedule for implementation of the plan and submission of an investigation report.

Please submit the information and work plans required in above items 1 and 4 to the OCD Santa Fe Office by June 21, 2003 with a copy provided to the OCD Hobbs District Office.

The investigation actions at the Collier #1 site are being conducted under an abatement plan pursuant to OCD Rule 19. The Stage 1 investigation proposal for the site is currently within a public comment period. The OCD reserves comment on the Collier #1 site until the public comment period for the Stage 1 investigation proposal has been completed.

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 80202-3622

February 12, 2003

VIA OVERNIGHT MAIL

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

RE: Progress Report for Year 2002
Tatum Pit Closure Project
Lea County, NM

Dear Mr. Olson:

Please find enclosed the 2002 results from our monitor wells in the subject project area. This report summarizes the results from water samples taken on February 16, April 3, June 7 and October 19, 2002. These results represent 21 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:

- Discussion of results by location.
- Map of pit reclamation locations.
- Chart of monitor well gradients.
- Monitor well location maps.
- Wellbore logs of recently drilled monitor wells.

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. The Exhibits Section contains the quarterly lab results and all associated quality control information. 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: Mr. Paul Sheeley, NMOCD Hobbs Office

Enclosure