1R - 386

REPORTS

DATE:

2004

LinkEnergy

ANNUAL MONITORING REPORT

JUNCTION 34 TO LEA

LINK REF: 2002-10286

NW¼ OF THE SW¼ OF SECTION 21, TOWNSHIP 20 SOUTH, RANGE 37 EAST
LEA COUNTY, NEW MEXICO

~9.8 MILES NORTHWEST (314°) OF
EUNICE, LEA COUNTY, NEW MEXICO
LATITUDE: N32° 33' 18.8" LONGITUDE: W103° 15' 39.7"

APRIL 29, 2004

PREPARED BY:

Environmental Plus, Inc.
2100 Avenue O
P.O. Box 1558
Eunice, NM 88231
Phone: (505)394-3481
FAX: (505)394-2601

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APPENDIX

I. Background

The "Junction 34 to Lea" (2002-10286) release site is located approximately 9.79 miles northwest of Eunice in Lea County, New Mexico, at an elevation of approximately 3,505 feet above mean sea level (reference Figures 1 and 2). The site is located in the northwest quarter of the southwest quarter of section 21, range 37 east, township 20 south. There are no residences or surface water bodies within a 1,000-foot radius of the leak site.

The initial New Mexico Oil Conservation Division (NMOCD) notification form C-141 submitted by EOTT reported approximately 300 barrels of crude oil released with 190 barrels recovered. The release is believed to have been due to internal corrosion of the pipeline. The release covered approximately 10,769 square feet of pipeline right-of-way, caliche road and land owned by the Deck Estate.

II. Field Activities

Upon discovery of the release on November 6, 2002, Environmental Plus, Inc. (EPI) and EOTT personnel mobilized to the site and excavated down to the pipeline and installed a pipe repair clamp. In addition, the surficial saturated soil was excavated and hauled to an approved land farm. Following the removal of the surficial saturated soil, approximately 50 cubic yards of impacted soil in the vicinity of the release source were excavated and hauled to an approved land farm.

During initial investigative activities conducted from February 6-11, 2003, which included the advancement of nine soil borings, it was determined that groundwater was situated approximately 20 feet below ground surface (bgs) and that groundwater had been impacted. Three of the soil borings were completed as groundwater monitoring wells to monitor contaminant levels and/or recover phase separated hydrocarbons (PSH) (reference Figure 3). Upon completion of the soil borings and installation of the three groundwater monitoring wells, mitigation activities commenced, specifically, the excavation of impacted soil to a depth of approximately 25 feet bgs. This soil was stockpiled within a fenced area.

Due to fact that soil and groundwater had been impacted above NMOCD remedial thresholds, a *Groundwater and Soil Remediation Proposal* was submitted in June 2003. This plan recommended to a) treat hydrocarbons in groundwater with *in-situ* activated carbon; b) backfill the excavation with blended soil; c) cap the excavation with a compacted clay barrier; d) backfill with three feet of native topsoil; and e) re-vegetated to landowner specifications.

On June 13, 2003, the NMOCD approved the *Soil Groundwater and Soil Remediation Proposal.*

The groundwater monitoring well network was sampled on February 27, 2003 and the samples submitted to an independent laboratory for the quantification of benzene, toluene, ethylbenzene and total xylenes (BTEX).

In addition to the sampling event, site visits were made periodically to manually recover PSH from groundwater monitoring well MW-3.

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III. Groundwater Gradient and PSH Thickness

Monitoring wells were gauged prior to bailing to determine the depth to groundwater and the thickness of any PSH. Measurements of groundwater levels during the past year indicate that water levels fluctuated approximately 0.5 feet during the past year. PSH levels in the impacted monitoring well (MW-3) fluctuated during the year, with thicknesses ranging from 0.03 to 2.87 feet and average PSH thickness of 1.05 feet. A summary of groundwater elevations and PSH thickness is included in Table 1.

IV. PSH Recovery

Recovery of PSH has been accomplished via hand bailing. Approximately 104 gallons of PSH have been recovered through December 31, 2003. In addition, absorbent booms have been placed around the perimeter of the exposed groundwater in the excavation basin to recover PSH on the water surface and are changed semi-monthly. By the end of 2003, only a product sheen was present of on the water surface. The site is fenced and the exposed groundwater covered with netting to prevent wildlife and livestock from utilizing the water.

V. Groundwater Sampling

The groundwater monitoring well network was sampled on February 27, 2003 and the samples submitted for quantification of BTEX using EPA Method 8260b. Groundwater monitoring well MW-3 was not sampled due to the presence of phase separated hydrocarbons (PSH). The wells were purged a minimum of three well volumes or dry and samples collected utilizing dedicated or disposable sample bailers. Samples were then placed on ice and shipped to an independent laboratory under chain-of-custody for analyses.

VI. Groundwater Analytical Results

Analytical results for the samples collected on February 27, 2003 from groundwater monitoring well MW-1 indicated benzene concentrations of 1,790 micrograms per liter (µg/L), toluene concentrations of 110 µg/L, ethylbenzene concentrations of 876 µg/L and total xylene concentrations of 756 µg/L. The reported benzene, toluene and total xylene concentrations were above the New Mexico Water Quality Control Commission (NMWQCC) Groundwater Standards of 10 µg/L, 750 µg/L and 620 µg/L, respectively.

Analytical results for the samples collected on February 27, 2003 from groundwater monitoring well MW-2 indicated benzene concentrations of 2,390 µg/L, toluene concentrations of 474 µg/L, ethylbenzene concentrations of 807 µg/L and total xylene concentrations of 876 µg/L. The reported benzene, toluene and total xylene concentrations were above the NMWQCC Groundwater Standards of 10 µg/L, 750 µg/L and 620 µg/L, respectively.

A summary of groundwater analytical results is included as Table 2 and copies of the analytical results for samples collected on February 27, 2003 are included as Appendix A.

VII. Recommendations

Based on field monitoring and analytical results collected during the past year, the following recommendations are made:

1) Continue to collect PSH on a semi-monthly basis. In addition, collect groundwater level data from the monitoring well network on a semi-monthly basis.

2) The approved *Groundwater and Soil Remediation Proposal* should be implemented in order to enhance remediation of the site.

3) Conduct quarterly sampling activities of the groundwater monitoring well network and submit the samples for quantification of BTEX.

4) The samples should be analyzed for the presence of poly-aromatic hydrocarbons (PAHs), total petroleum hydrocarbons as gasoline (TPH-gasoline), total petroleum hydrocarbons as diesel (TPH-diesel) and chlorides during the next sampling event to obtain baseline concentrations at the site.

FIGURES

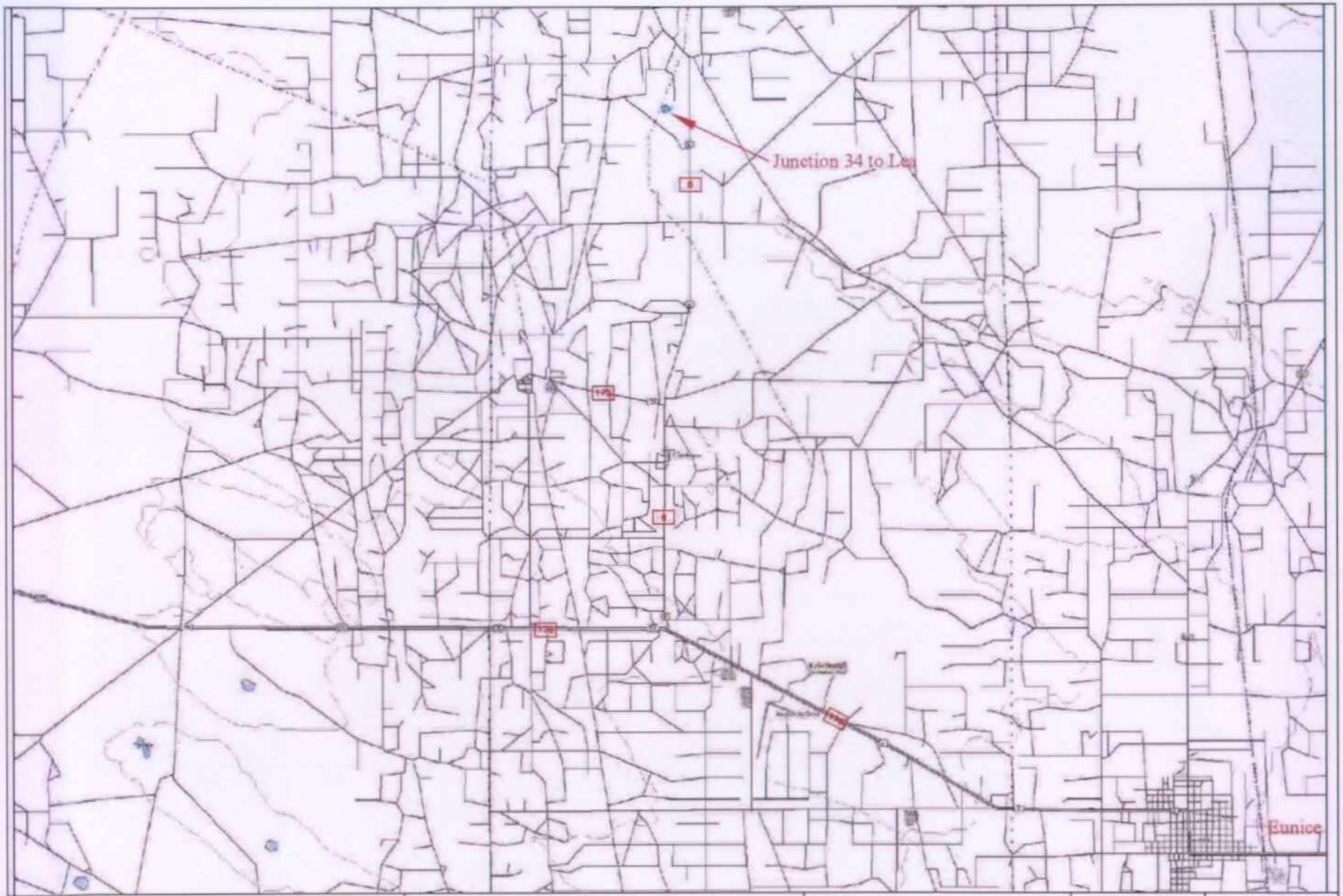

Figure 1 Area Map Link Energy, LLC Junction 34 to Lea	Lea County, New Mexico NW 1/4 of the SW 1/4, Sec. 21, T20S, R37E N 32° 33' 18.8" W 103° 15' 39.7" Elevation: 3,505 feet amsl	DWG By: Iain Olness April 2004	REVISED:
		0 8,000 16,000 Feet	SHEET 1 of 1
			N

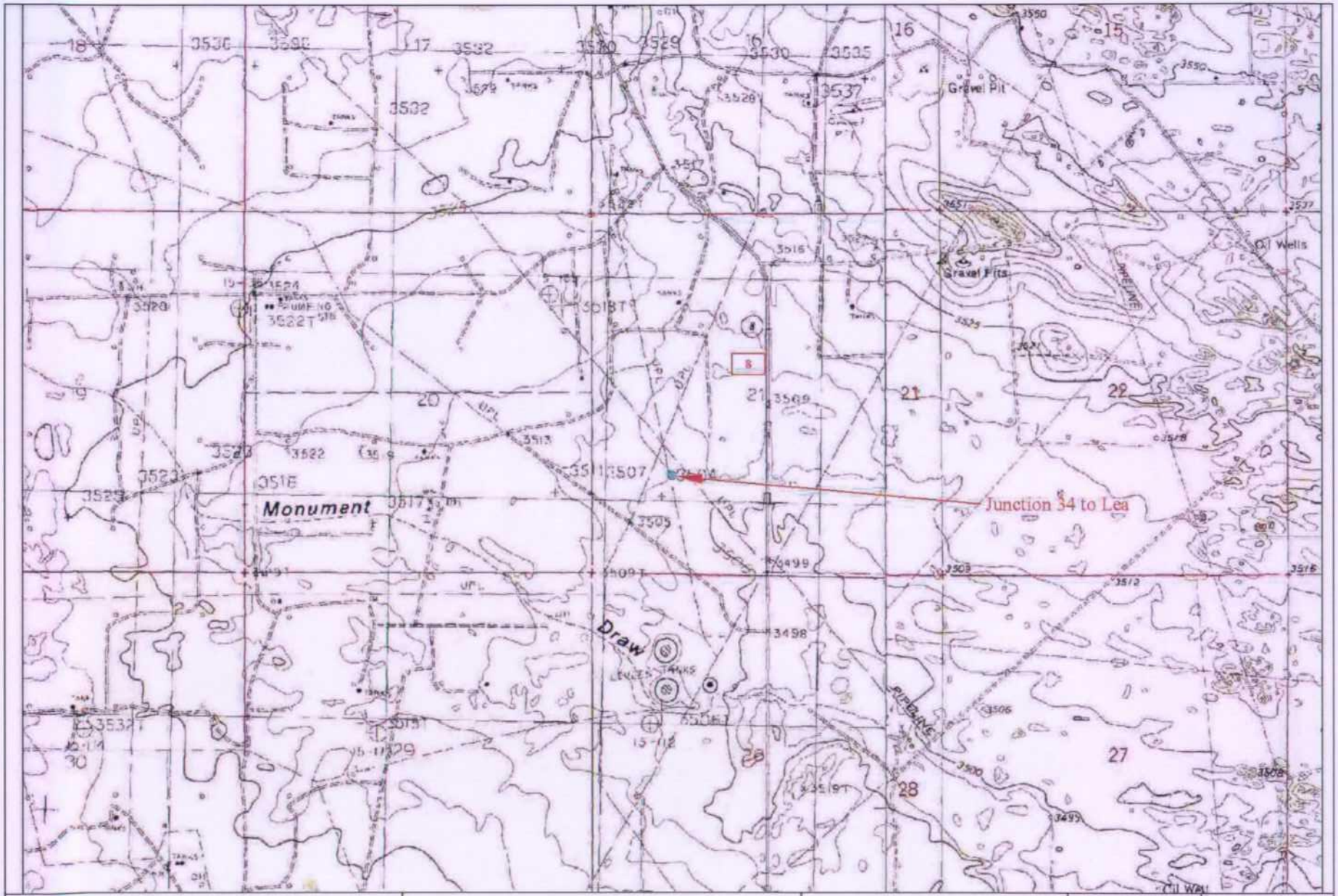

Figure 2 Site Location Map Link Energy, LLC Junction 34 to Lea	Lea County, New Mexico NW 1/4 of the SW 1/4, Sec. 21, T20S, R37E N 32° 33' 18.8" W 103° 15' 39.7" Elevation: 3,505 feet amsl	DWG By: Iain Olness April 2004 0 2,000 4,000 Feet	REVISED: SHEET 1 of 1

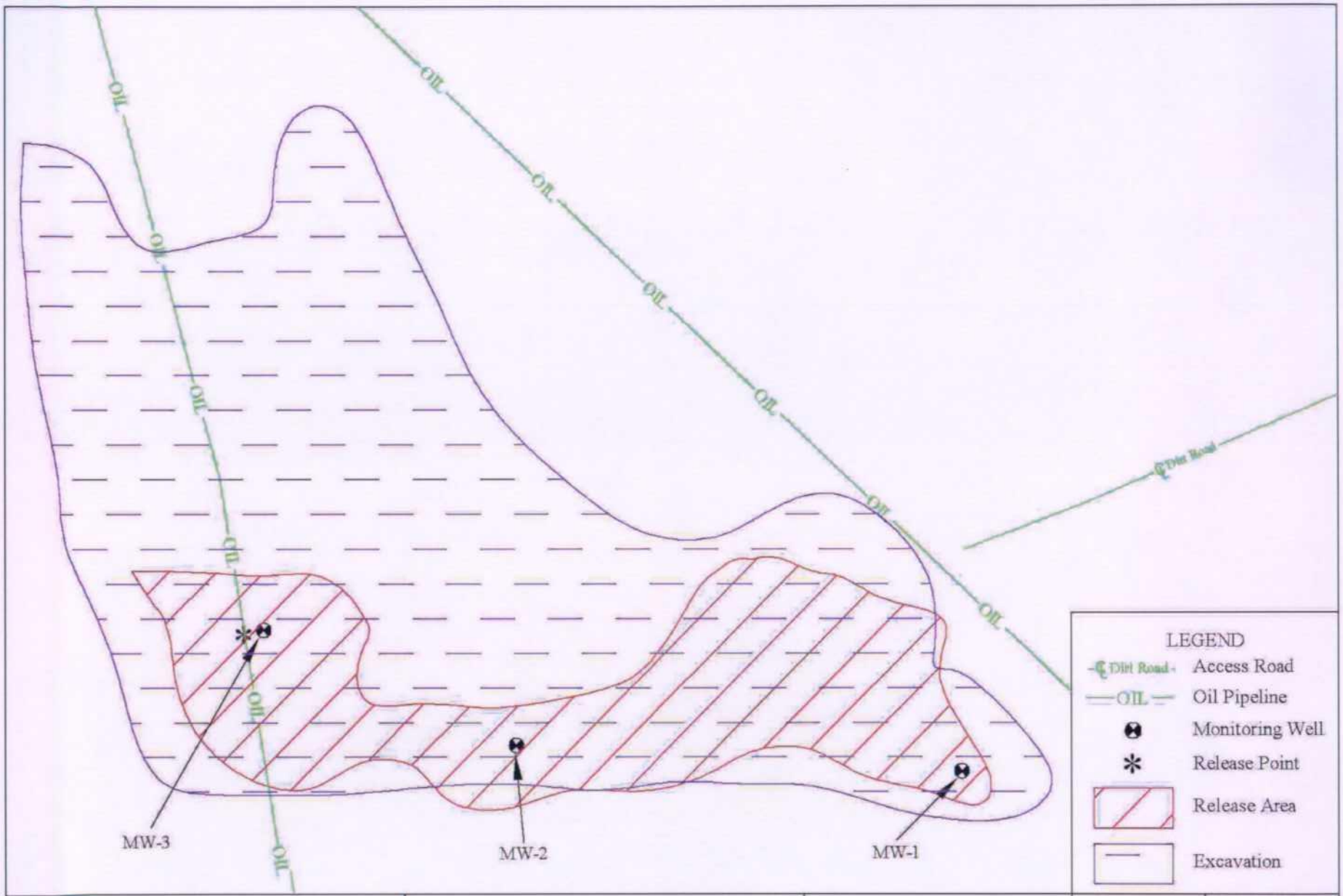

Figure 3 Site Map Link Energy, LLC Junction 34 to Lea	Lea County, New Mexico NW 1/4 of the SW 1/4, Sec. 21, T20S, R37E N 32° 33' 18.8" W 103 °15' 39.7" Elevation: 3,505 feet amsl	DWG By: Iain Olness April 2004	REVISED:	N
		0 36 72 Feet	SHEET 1 of 1	

Figure 4: BTEX Concentrations in Groundwater Monitoring Well MW-1 from 02/27/03, Link Energy Junction 34 to Lea, Lea County, New Mexico.

Figure 5: BTEX Concentrations in Groundwater Monitoring Well MW-2 from 02/27/03, Link Energy Junction 34 to Lea, Lea County, New Mexico.

Figure 6: BTEX Concentrations in Groundwater Monitoring Well MW-3 from 02/27/03, Link Energy Junction 34 to Lea, Lea County, New Mexico.

Figure 7: Hydrograph for the Groundwater Monitoring Well Network, Link Energy Junction 34 to Lea, Lea County, New Mexcio from 02/11/03 through 12/10/03.

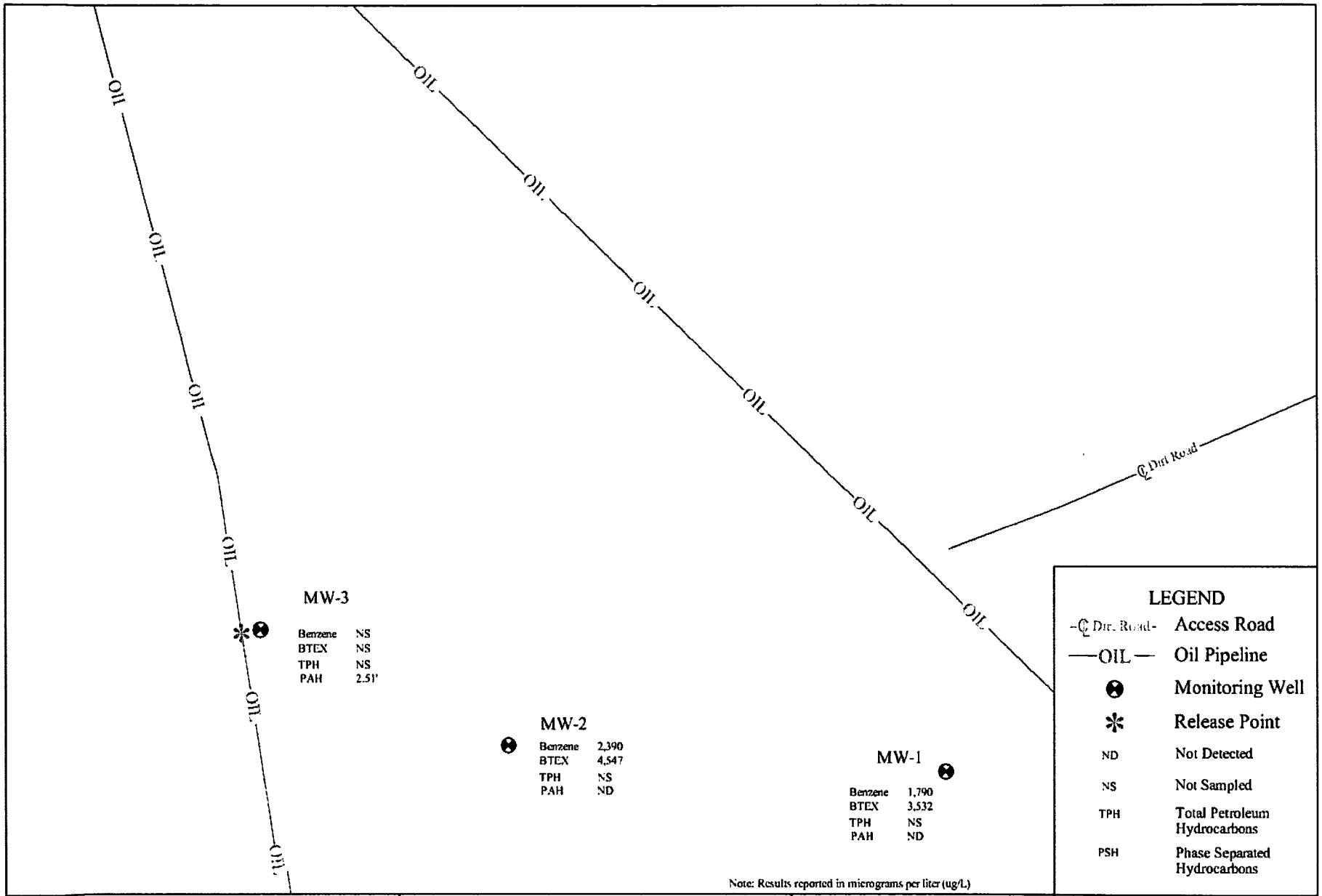

Figure 8 Contaminant Concentration Map - 02/27/03 Link Energy, LLC Junction 34 to Lea	Lea County, New Mexico NW 1/4 of the SW 1/4, Sec. 21, T20S, R37E N 32° 33' 18.8" W 103° 15' 39.7" Elevation: 3,505 feet amsl	DWG By: Iain Olness April 2004 0 36 72 Feet	REVISED: SHEET 1 of 1	N

TABLES

TABLE 1

RELATIVE GROUNDWATER ELEVATIONS AND PHASE SEPARATED HYDROCARBON THICKNESSES

Junction 34 to Lea - Ref #2002-10286

Monitor Well	Date Gauged	Relative Top of Casing Elevation (feet)	Depth to PSH Below Top of Casing (feet)	Depth to Water Below Top of Casing (feet)	Corrected Relative Groundwater Elevation (feet)*	Phase Separated Hydrocarbon Thickness (feet)
MW-1	11-Feb-03	100.00	--	20.13	79.87	--
	27-Feb-03		--	19.87	80.13	--
	14-Mar-03					
	19-Mar-03					
	3-Apr-03					
	11-Apr-03					
	21-Apr-03					
	30-Apr-03					
	5-May-03					
	18-Jun-03					
	7-Jul-03					
	8-Jul-03					
	9-Jul-03					
	21-Jul-03					
	12-Aug-03					
	18-Aug-03					
	3-Sep-03					
	19-Sep-03					
	2-Oct-03					
	3-Nov-03					
	4-Nov-03					
	13-Nov-03					
	25-Nov-03					
	2-Dec-03					
	10-Dec-03					
MW-2	11-Feb-03		--	17.25		--
	27-Feb-03		--	19.75		--
	14-Mar-03					
	19-Mar-03					
	3-Apr-03					
	11-Apr-03					
	21-Apr-03					
	30-Apr-03	93.28				
	5-May-03					
	18-Jun-03					
	7-Jul-03					
	8-Jul-03					
	9-Jul-03					
	21-Jul-03					
	12-Aug-03					
	18-Aug-03					
	3-Sep-03					
	19-Sep-03					
	2-Oct-03					
	3-Nov-03					

TABLE 1

RELATIVE GROUNDWATER ELEVATIONS AND PHASE SEPARATED HYDROCARBON THICKNESSES

Junction 34 to Lea - Ref #2002-10286

Monitor Well	Date Gauged	Relative Top of Casing Elevation (feet)	Depth to PSH Below Top of Casing (feet)	Depth to Water Below Top of Casing (feet)	Corrected Relative Groundwater Elevation (feet)*	Phase Separated Hydrocarbon Thickness (feet)
MW-2 (cont.)	4-Nov-03					
	13-Nov-03					
	25-Nov-03					
	2-Dec-03					
	10-Dec-03					
MW-3	11-Feb-03		17.10	17.77		0.67
	27-Feb-03		16.64	19.15		2.51
	14-Mar-03		18.11	18.88		0.77
	19-Mar-03		16.63	19.50		2.87
	3-Apr-03		16.65	19.47		2.82
	11-Apr-03		16.65	19.48		2.83
	21-Apr-03		16.62	18.98		2.36
	30-Apr-03	87.80	6.98	8.67	79.73	1.69
	5-May-03		6.93	8.63	79.77	1.70
	18-Jun-03		7.24	8.15	80.25	0.91
	7-Jul-03		7.50	8.17	80.23	0.67
	8-Jul-03		7.48	8.17	80.23	0.69
	9-Jul-03		7.49	8.18	80.22	0.69
	21-Jul-03		7.49	8.19	80.21	0.70
	12-Aug-03		7.50	8.20	80.20	0.70
	18-Aug-03		7.47	8.19	80.21	0.72
	3-Sep-03		7.96	8.52	79.88	0.56
	19-Sep-03		7.97	8.51	79.89	0.54
	2-Oct-03		7.95	8.50	79.90	0.55
	3-Nov-03		8.15	8.65	79.75	0.50
	4-Nov-03		8.19	8.21	80.19	0.02
	13-Nov-03		8.14	8.51	79.89	0.37
	25-Nov-03		8.15	8.50	79.90	0.35
	2-Dec-03		8.15	8.20	80.20	0.05
	10-Dec-03		8.13	8.16	80.24	0.03

* Corrected Groundwater Elevation = Top of Casing Elevation - (Depth to Water Below Top of Casing - (SG)(PSH Thickness).

-- = Not Detected

If the cell is blank, the well was not gauged.

TABLE 2

Summary of Groundwater Analytical Results

Junction 34 to Lea - Ref #2002-10286

Monitor Well Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	m,p-Xylenes (µg/L)	o-Xylene (µg/L)	Total Xylenes (µg/L)	Chloride (mg/L)	Total Dissolved Solids (mg/L)	TPH as Gasoline (mg/L)	TPH as Diesel (mg/L)	Total TPH (mg/L)
MW-1	27-Feb-03	**1,790**	110	**876**	639	117	**756**					
MW-2	27-Feb-03	**2,390**	474	**807**	655	221	**876**					
MW-3	27-Feb-03	**Not Sampled Due to the Presence of PSH**										
NMOCD Remedial Thresholds		10	750	750			620	250	1,000			

Bolded values are in excess of the NMOCD Remediation Thresholds or Other Standards for Domestic Water Supply.

If cell is blank, that parameter was not analyzed

APPENDICES

APPENDIX A

GROUNDWATER ANALYTICAL RESULTS

AND

CHAIN-OF-CUSTODY FORMS

ANALYSYS INC.

3512 Montopolis Drive, Austin, TX 78744 &
2209 N. Padre Island Dr., Corpus Christi, TX 78408
(512) 385-5886 • FAX (512) 385-7411

Client: Environmental Plus, Inc.
Attn: Pat McCasland
Address: 2100 Ave. O
Eunice NM 88231

Phone: (505) 394-3481 **FAX:** (505) 394-2601

Report#/Lab ID#: 140171 **Report Date:** 03/12/03
Project ID: 2002-10286
Sample Name: WEJ34LL22703BHMW1
Sample Matrix: water
Date Received: 03/05/2003 **Time:** 10:15
Date Sampled: 02/27/2003 **Time:** 11:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA[1]

Parameter	Result	Units	RQL[5]	Blank	Date	Method[6]	Data Qual[7]	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Volatile organics-8260b/BTEX	---		---		03/11/03	8260b	---	---	---	---	---
Benzene	**1790**	µg/L	100	<100	03/11/03	8260b	---	8	104.7	100.8	102.5
Ethylbenzene	**876**	µg/L	100	<100	03/11/03	8260b	---	15.5	112.6	93.9	103.5
m,p-Xylenes	**639**	µg/L	100	<100	03/11/03	8260b	---	15.2	104.3	85.6	96.6
o-Xylene	**117**	µg/L	100	<100	03/11/03	8260b	---	15.2	116.8	96	108
Toluene	**110**	µg/L	100	<100	03/11/03	8260b	---	11.7	101.9	98.5	101.1

This analytical report is respectfully submitted by AnalySys, Inc. The enclosed results have been carefully reviewed and, to the best of my knowledge, the analytical results are consistent with AnalySys, Inc.'s Quality Assurance/Quality Control Program.

Respectfully Submitted,

Richard Laster

Richard Laster

1. Quality assurance data is for the sample batch which included this sample. 2. Precision (PREC) is the absolute value of the relative percent (%) difference between duplicate measurements. 3. Recovery (Recov.) is the percent (%) of analyte recovered from a spiked sample. 4. Calibration Verification (CCV) and Laboratory Control Sample (LCS) results are expressed as the percent (%) recovery of analyte from a known standard or matrix. 5. Reporting Quantitation Limits (RQL), typically at or above the Practical Quantitation Limit (PQL) of the analytical method. 6. Method numbers typically denote USEPA procedures. Less than ("<") values reflect nominal quantitation limits adjusted for any required dilutions. 7. Data Qualifiers are J = analyte potentially present between the PQL and the MDL. B =Analyte detected in associated method blank(s). S1 =MS and/or MSD recovery exceed advisory limits. S2 =Post digestion spike (PDS) recovery exceeds advisory limit. S3 =MS and/or MSD and PDS recoveries exceed advisory limits. P =Precision higher than advisory limit. M = Matrix interference.

ANALYSYS INC.
3512 Montopolis Drive, Austin, TX 78744 &
2209 N. Padre Island Dr., Corpus Christi, TX 78408
(512) 385-5886 • FAX (512) 385-7411

Client: Environmental Plus, Inc.	**Project ID:** 2002-10286	**Report#/Lab ID#:** 140171
Attn: Pat McCasland	**Sample Name:** WEJ34LL22703BHMW1	**Sample Matrix:** water

REPORT OF SURROGATE RECOVERY

Surrogate Compound	Method	Recovery	Recovery Limit	Data Qualifiers
1,2-Dichloroethane-d4	8260b	119	80-120	---
Toluene-d8	8260b	108	88-110	---

Data Qualifiers: D= Surrogates diluted and X= Surrogates outside advisory recovery limits.

ANALYSYS INC.

3512 Montopolis Drive, Austin, TX 78744 &
2209 N. Padre Island Dr., Corpus Christi, TX 78408
(512) 385-5886 • FAX (512) 385-7411

Client: Environmental Plus, Inc.
Attn: Pat McCasland
Address: 2100 Ave. O
Eunice NM 88231

Phone: (505) 394-3481 **FAX:** (505) 394-2601

Report#/Lab ID#: 140172 **Report Date:** 03/12/03
Project ID: 2002-10286
Sample Name: WEJ34LL22703BHMW5
Sample Matrix: water
Date Received: 03/05/2003 **Time:** 10:15
Date Sampled: 02/27/2003 **Time:** 12:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA[1]

Parameter	Result	Units	RQL[5]	Blank	Date	Method[6]	Data Qual[7]	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Volatile organics-8260b/BTEX	---		---		03/11/03	8260b	---	---	---	---	---
Benzene	**2390**	µg/L	100	<100	03/11/03	8260b	---	8	104.7	100.8	102.5
Ethylbenzene	**807**	µg/L	100	<100	03/11/03	8260b	---	15.5	112.6	93.9	103.5
m,p-Xylenes	**655**	µg/L	100	<100	03/11/03	8260b	---	15.2	104.3	85.6	96.6
o-Xylene	**221**	µg/L	100	<100	03/11/03	8260b	---	15.2	116.8	96	108
Toluene	**474**	µg/L	100	<100	03/11/03	8260b	---	11.7	101.9	98.5	101.1

This analytical report is respectfully submitted by AnalySys, Inc. The enclosed results have been carefully reviewed and, to the best of my knowledge, the analytical results are consistent with AnalySys, Inc.'s Quality Assurance/Quality Control Program.

Respectfully Submitted,

Richard Laster

Richard Laster

1. Quality assurance data is for the sample batch which included this sample. 2. Precision (PREC) is the absolute value of the relative percent (%) difference between duplicate measurements. 3. Recovery (Recov.) is the percent (%) of analyte recovered from a spiked sample. 4. Calibration Verification (CCV) and Laboratory Control Sample (LCS) results are expressed as the percent (%) recovery of analyte from a known standard or matrix. 5. Reporting Quantitation Limits (RQL), typically at or above the Practical Quantitation Limit (PQL) of the analytical method. 6. Method numbers typically denote USEPA procedures. Less than ("<") values reflect nominal quantitation limits adjusted for any required dilutions. 7. Data Qualifiers are J = analyte potentially present between the PQL and the MDL. B =Analyte detected in associated method blank(s). S1 =MS and/or MSD recovery exceed advisory limits. S2 =Post digestion spike (PDS) recovery exceeds advisory limit. S3 =MS and/or MSD and PDS recoveries exceed advisory limits. P =Precision higher than advisory limit. M =Matrix interference.

ANALYSYS INC.
3512 Montopolis Drive, Austin, TX 78744 &
2209 N. Padre Island Dr., Corpus Christi, TX 78408
(512) 385-5886 • FAX (512) 385-7411

Client: Environmental Plus, Inc.	**Project ID:** 2002-10286	**Report#/Lab ID#:** 140172
Attn: Pat McCasland	**Sample Name:** WEJ34LL22703BHMW5	**Sample Matrix:** water

REPORT OF SURROGATE RECOVERY

Surrogate Compound	Method	Recovery	Recovery Limit	Data Qualifiers
1,2-Dichloroethane-d4	8260b	114	80-120	---
Toluene-d8	8260b	110	88-110	---

Data Qualifiers: D= Surrogates diluted and X= Surrogates outside advisory recovery limits.

AIN-OF-CUSTODY

ANALYSIS 5397
4221 Freidrich Lane, Suite 190, Austin, TX 78744
(512) 444-5896

l Reports To:
pany Name Environmental Plus
ress 200 Ave O
Eunice State N.M Zip 88231
N: Pat McCasland
ne 505-394-3481 Fax 505-394-2601
ı Status (must be confirmed with lab mgr.):
ect Name/PO#: 2002-10286 Sampler: Bradley Blair

Bill to (if different):
Company Name Eott Energy
Address 5805 Hwy 80
City Midland State Tx Zip 79701
ATTN: Frank Hernandez
Phone 915-638-3799 Fax

Analyses Requested (1)
Please attach explanatory information as required

Client Sample No. escription/Identification	Date Sampled	Time Sampled	No. of Containers	Soil	Water	Waste	Lab I.D. # (Lab only)	Hex 4001b								Comments
WEJ34CL22703BHWL4	2-27-03	11:00	2		X		140171	X								
WEJ34CL22703BHWL5	2-27-03	12:00	2		X		140172	X								

ss specifically requested otherwise on this Chain-of-custody and/or attached documentation, all analyses will be conducted using ASI's method of choice and all data will be reported to ASI's normal reporting MDL/PQL). For GC/MS volatiles and extractables, unless specific analytical parameter lists are specified on this chain-of-custody or attached to this chain-of-custody, ASI will default to Priority Pollutants or ISL list at ASI's option. Specific compound lists must be supplied for all GC procedures.

T=5.9°C

Sample Relinquished By				Sample Received By			
Name	Affiliation	Date	Time	Name	Affiliation	Date	Time
[illegible]	Environmental Plus			Melanie Humphrey	ASI	3/5/03	10:15

dering of above described samples to AnalySys, Inc. for analytical testing constitutes agreement by buyer/sampler to AnalySys, Inc.'s standard terms.]

Site Name: Junction 34 to Lea
Remediation Plan: 1R-386
Company: EOTT (Co. rep. – Frank Hernandez)
Contractor: Environmental Plus, Inc. (Pat McCasland)
Date Inspected: September 23, 2003 by Ed Martin, Larry Johnson and Paul Sheeley

Bench test with activated carbon. Product depth at 0.4′. Water sampling needed. Soil delineation complete. Stockpile of soil reads 3,500 – 4,000 ppm TPH. This stockpile is to be returned as backfill with activated carbon added.

Site Name: Junction 34 to Lea
Remediation Plan: 1R-386
Company: EOTT (Co. rep. – Frank Hernandez)
Contractor: Environmental Plus, Inc. (Pat McCasland)
Date Inspected: September 23, 2003 by Ed Martin, Larry Johnson and Paul Sheeley

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

IR 386

June 13, 2003

Mr. Frank Hernandez
EOTT Energy LLC
P.O. Box 1660
Midland, Texas 79703

Ground Water and Soil Remediation Proposal, Junction 34 to Lea

Dear Mr. Hernandez:

The New Mexico Oil Conservation Division (OCD) has reviewed Environmental Plus, Inc.'s (EPI) "GROUND WATER AND SOIL REMEDIAITON PROPOSAL, JUNCTION 34 TO LEA" EOTT REF: #2002-10286 L 21 20 37 about 5 miles South of Monument in Lea Country, New Mexico received on June 13, 2003 and submitted on your (EOTT) behalf. This document describes previous oily soil removal work and proposes to a) treat hydrocarbons in ground water with *in-situ* activated carbon b) backfill the excavation with blended soil c) which would be capped with a compacted clay barrier d) backfilled with three feet of native topsoil and e) re-vegetated to landowner specs.

OCD approves this plan with the following conditions.

1. EOTT shall notify the OCD Hobbs District Office at least four working days of any other major events such as initiation of work at a site and sampling events so that the OCD has the opportunity to witness the events.

2. If treatability studies show that activated carbon will not effectively adsorb the dissolved and suspended hydrocarbons as indicated by TOC or color testing, EOTT shall notify OCD and submit modifications to the work plan to address remediation by other methods.

3. OCD suggests a safety factor in the amount of activated carbon used to account for future ground water flows, inefficiency, and other unknown factors. OCD suggests that at least three times the amount of activated carbon be used as indicated by the treatability study.

4. EOTT shall install a new monitor well after backfill in an area where the highest ground water contamination would be anticipated, as follows.
   a. At least 15 feet of well screen shall be placed across the water table interface with 5 feet of well screen above the water table and 10 feet of the well screen 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 to 3 feet above the top of the well screen.
   c. A 2 to 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 to 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.

3. All wastes taken for offsite disposal shall be disposed of at an OCD approved facility.

4. EOTT shall submit a report on all investigation and recovery activities to the OCD Santa Fe Office within 60 days of completion of the proposed monitoring work with a copy provided to the OCD Hobbs District Office. OCD encourages submittal of reports and photographs using electronic means. The report shall contain the following.

a. A description of all monitoring and remediation activities that occurred.
b. Results of treatability testing to determine the optimum activated carbon dose.
c. A geologic lithologic log and well completion diagram for each monitor well.
d. Maps showing the location of the spills, excavated areas, monitor wells, recovery wells and other pertinent site features as well as direction and magnitude of the hydraulic gradient created using the water table elevation from each monitor well.
e. A typical cross section diagram showing the depth and thickness of activated carbon, blended soil, clay barrier, and topsoil layers.
f. Isopleth maps for contaminants observed during the investigations.
g. Summary tables of the results of all field testing for compaction and analytical sampling results as well as copies of laboratory and associated QA/QC data.
h. The disposition and volume of all wastes generated, recovered, and disposed of.
i. Photographic documentation of monitoring and remediation activities.

Please be advised that OCD approval does not relieve EOTT of responsibility if the proposed work plan fails to adequately remediate contamination related to EOTT's activities. In addition, OCD approval does not relieve EOTT of responsibility for compliance with any other federal, state or local laws and regulations. Please provide our Hobbs District Office and Ed Martin of the Santa Fe OCD office with copies of all correspondence. If you have any questions, please contact OCD at 505-476-3492.

Sincerely,

Randolph Bayliss, P.E.
Hydrologist,
Environmental Bureau

eott energy

GROUND WATER AND SOIL REMEDIATION PROPOSAL

JUNCTION 34 TO LEA
Ref. # 2002-10286

UL L, NW¼ of the SW¼ of Section 21 T20S R37E
Latitude 32 32' 20.828"N and Longitude 103 15' 38.480"W

~5 mile South of Monument
Lea County, New Mexico

June 11, 2003

Prepared by

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Table of Contents

1.0 INTRODUCTION

This site is located in UL L, NW¼ of the SW¼ of Section 21 T20S R37E at Latitude 32 32' 20.828"N and Longitude 103 15' 38.480"W approximately 5 mile South of Monument Lea County, New Mexico on property owned by the Millard Deck Estate. A topographical map is included in Attachment I. The estimated 300 barrel (bbl) leak, attributed to internal corrosion, occurred on November 6, 2002 in the EOTT Energy LLC (EOTT) Junction 34 to Lea steel pipeline with 190 bbls recovered and reintroduced to the system. Approximately 10,769 ft^2 of pasture land was affected. During this investigation, ground water was measured at ~18'below ground surface ('bgs) giving the site a 20 point New Mexico Oil Conservation Division (NMOCD) ranking score that applies the following remedial guidelines;

- Benzene= 10 mg/Kg
- BTEX= 50 mg/Kg

(BTEX is the mass sum of Benzene, Toluene, Ethyl Benzene, and Xylenes)

- Total Petroleum Hydrocarbon 8015m(TPH^{8015m})= 100 mg/Kg

It was also determined that crude oil has impacted the ground water at the site. EOTT, the NMOCD, and the land owner were notified. After discussions with the NMOCD and land owner, the decision was made to remove a portion of the soil contaminated above the regulatory thresholds and dispose of in the nearest NMOCD permitted facility. Approximately 8,300 yd^3 had been disposed of in the NMOCD approved and permitted South Monument Surface Waste Management Facility NM-01-0032.

During site delineation, three observation wells were installed to determine the extent of the ground water impact. Weekly product recovery from the leak origin well began immediately. Contaminated soil down to the ground water interface has been excavated and stockpiled on the surface. Adsorbent booms and netting have been deployed to contain residual crude oil coming into the excavation and to exclude wildlife.

2.0 ENVIRONMENTAL MEDIA CHARACTERIZATION

Chemical parameters of the soil and ground water were characterized consistent with the characterization and remediation/abatement goals and objectives set forth in the New Mexico Oil Conservation Division (NMOCD) approved **"General Work Plan for Remediation of E.O.T.T. Pipeline Spills, Leaks and Releases in New Mexico, July 2000"** and the NMOCD guidelines published in the following documents;

- Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993)
- Unlined Surface Impoundment Closure Guidelines (February 1993)

Acceptable thresholds for **contaminants/constituents of concern** (CoCs), i.e., TPH, Benzene, and the mass sum of Benzene, Toluene, Ethyl Benzene, and total Xylene (BTEX), will be determined based on the NMOCD Ranking Criteria as follows;

- Depth to Ground water, i.e., distance from the lower most acceptable concentration to the ground water.
- Wellhead Protection Area, i.e., distance from fresh water supply wells.
- Distance to Surface Water Body, i.e., horizontal distance to all down gradient surface water bodies.

2.1 Geological Description

The United States Geological Survey (USGS) Ground-Water Report 6, "Geology and Ground-Water Conditions in Southern Lea County, New Mexico," A. Nicholson and A. Clebsch, 1961, describes the near surface geology of southern Lea County as an intergrade of the Quaternary Alluvium (QA) sediments, i.e., fine to medium sand, with the mostly eroded Cenozoic Ogallala (CO) formation. Typically, the QA and CO formations in the area are capped by a thick interbed of caliche and was encountered at 1.5'bgs.

2.2 Ecological Description

The area is typical of the Upper Chihuahuan Desert Biome consisting primarily of hummocky sand hills covered with Harvard Shin Oak (Querqus harvardi) interspersed with Honey Mesquite (Prosopis glandulosa) along with typical desert grasses and weeds. Mammals represented, include Orrd's and Merriam's Kangaroo Rat, Deer Mouse, White Throated Wood Rat, Cottontail Rabbit, Black Tailed Jackrabbit, and the Mule Deer. Reptiles, Amphibians, and Birds are numerous and typical of area. A survey of Listed, Threatened, or Endangered species was not conducted.

2.3 Area Ground Water

Ground water was encountered at ~18'bgs during the preliminary site investigation and is consistent with the New Mexico Office of the State Engineer. According to the USGS, the ground water elevation decreases generally to the southeast.

2.4 Area Water Wells

The New Mexico Office of the State Engineer records an abandoned water well in Section 28 and two in Section 33 adjacent to the southwest of Section 28 but none located in Section 20 T20S R37E.

2.5 Area Surface Water Bodies

There are no permanent or intermittent surface water bodies within 1000 horizontal feet of the site.

3.0 NMOCD Site Ranking

Based on the proximity of the site to protectable area water wells, surface water bodies, and depth to ground water, the site has an NMOCD ranking score of 20 points with the soil remedial goals highlighted below in the Site Ranking Matrix.

1. Ground Water	2. Wellhead Protection Area	3. Distance to Surface Water Body
If Depth to GW <50 feet: *20 points*	If <1000' from water source, or;<200' from private domestic water source: *20 points*	<200 horizontal feet: *20 points*
If Depth to GW 50 to 99 feet: *10 points*		200-100 horizontal feet: *10 points*
If Depth to GW >100 feet: *0 points*	If >1000' from water source, or; >200' from private domestic water source: *0 points*	>1000 horizontal feet: *0 points*
Ground water Score = 20	*Wellhead Protection Area Score= 0*	*Surface Water Score= 0*
Site Rank (1+2+3) = 20 + 0 + 0 = 20 points		

Total Site Ranking Score and Acceptable Remedial Goal Concentrations			
Parameter	**>19**		
Benzene[1]	**10 ppm**		
BTEX[1]	**50 ppm**		
TPH	**100 ppm**		

4.0 Subsurface Soil Investigation

The preliminary investigation advanced a series of strategically located soil borings in the area of the leak origin and inside the flow path. The vertical extent of CoC impact was to the ground water in a 30' diameter area centered around the leak origin with the horizontal extent to the current excavation perimeter. The site map showing affected area is included in Attachment I.

5.0 Ground Water Investigation

The preliminary investigation identified ground water impact in excess of the WQCC standards.

6.0 Soil and Ground Remediation Proposal

This proposal is being submitted with the goals of achieving remediation of the ground water within one year in accordance with NMOCD Rule 19, effectively remediating or isolating the remaining contaminated soil and restoring the surface to agricultural productivity. This proposal utilizes activated carbon placed in the water pool to capture organic contaminants currently present in the ground water and provide a "gettering" substrate for future encroachments by petroleum hydrocarbon. It is further proposed to overlay the activated carbon bed up with the remaining contaminated soil to 6'bgs from the surface and isolate it with an installed engineered and tested barrier. The viability of this proposal will be supported by a conservative risk assessment using the VADSAT computer model.

6.6 Activated Carbon Gettering Cell

The activated carbon will be granulated. The total mass required to adsorb the organic source term present in the ground water will be based on a ratio of 1:2, i.e., organic mass to activated carbon mass. The organic source term mass will be calculated from analyses of samples from the water pool and the impacted water volume will be based on the known areal distribution assuming homogeneity in the top three feet of the saturated zone. The analytical suite will include Total Organic Carbon (TOC) and Benzene, Toluene, Ethyl Benzene, and m,p,o-Xylenes (BTEX).

6.7 Treatability Study

This study will be designed to demonstrate the treatability of the contaminated ground water and the effectiveness of the activated carbon. The plan is to collect six 1 gallon samples in clear glass containers and treat with varying amounts of activated carbon. The treatment increments will range from zero to 25% more than that initially calculated. Two hours after the activated carbon has been added, photographs will document reduction in turbidity and samples will be collected and analyzed for TOC and BTEX.

6.8 Monitoring and Reporting

Ground water monitoring will occur monthly for 3 months and quarterly there after. An annual report summarizing activities and data will be submitted to the NMOCD.

6.9 Soil Bio-Cell

It is proposed to backfill the excavation up to 6'bgs with contaminated soil.

6.10 Engineered Barrier

The perimeter of the barrier will be at least 5' beyond the contaminated soil and be at least 2 feet thick after compaction and installed between the 4'bgs and 6'bgs intervals on top of the tested backfill. The barrier will be constructed of red clay and compacted to 95% of the Proctor Density as determined by ASTM-D-698. The clay will be installed in 1 foot thick lifts with each lift tested by an engineering firm to certify and verify acceptable compaction and moisture content. Each 1' lift will be tested in two locations at points central to each lateral half of the barrier. The clay barrier will be contoured so as to shed water.

6.11 Root Zone Restoration

After the barrier is installed and deemed acceptable, clean native soil will be used to fill the excavation and contoured to the natural grade. At a time acceptable to the landowner, the site will be reseeded with a seed mix preferred by the landowner.

6.11.1 Data Objectives

Contaminated soil that is monitored to have a VOC headspace reading of <100.0 ppm and/or soil determined by laboratory testing to be <4,000 mg/Kg TPH^{8015m}, <10.00 mg/Kg Benzene, and <50.00 mg/Kg BTEX will be deemed acceptable and placed in the excavation on top of the activated carbon gettering cell.

6.11.2 Soil Lift Sampling

Prior to testing, approximately 1,000 yd^2 of contaminated soil will be spread into a 6" lift and a VOC headspace survey conducted at 5 points within the lift, i.e., the 4 quadrants and the center. If the VOC headspace of all samples from a lift are <100.0 ppm, the soil will be deemed acceptable for emplacement and emplaced in the excavation, if >100.0 ppm, then the two sites with the highest headspace reading will be grab sampled, refrigerated and sent to the laboratory for TPH^{8015m} and BTEX analysis. Soil that exceeds the Data Objectives will be managed separately.

6.11.3 Emplacement and Compaction

The soil will be emplaced in 2 yd^3 increments with a front-end loader and spread. Compaction will occur during the backfilling process as the loader motors back and forth.

6.12 Quality Assurance/Quality Control

To ensure viable unperturbed samples and credibility of the laboratory results the following quality parameters must be achieved to warrant acceptability and usability of data.

6.12.1 Sample Handling

Soil and water samples will be collected and prepared in accordance with accepted ASTM and EPA SW846 methods.

6.12.2 Sampling Protocols

1. Decontaminate sampling equipment and area with Alconox distilled water after each sample.
2. Prepare samples and refrigerate as soon as practicable.

Duplicates or blanks may be submitted to the laboratory to establish reproducibility and identify laboratory contamination, respectively.

6.12.3 Sample Containers

Laboratory and field analyses of soil and water require specific containers and are listed in the matrix below.

	TPH	BTEX	VOC Headspace	Metals	PAH	General Chemistry
Soil	4 oz. Jars with Teflon seal	4 oz. Jars with Teflon seal	1-gallon Ziplock® bags			
Water	1 liter amber glass w/HCL	2-40 ml VOA vials w/ HCL		16 oz. Plastic w/ 1ml HNO_3	1 liter Amber Glass	1 liter Plastic

6.12.4 Sample Custody

All analytical request forms will be completed and signatured by EPI as sampler. EPI personnel will ascension the samples to the laboratory sample-receiving personnel under chain-of-custody signature.

6.12.5 Quality Control Samples

Quality control samples will be analyzed to ensure data quality.

6.12.5.1 Field Blank

A field blank for soil or water is not deemed necessary.

6.12.5.2 Equipment Blank

None will be collected.

6.12.5.3 Field Duplicate or Co-located Samples

For water and soil samples, one random duplicate or co-located sample will be collected for analysis for every 1-10 samples or each day a sampling event occurs.

6.12.5.4 Laboratory Duplicate

The laboratory will be asked to use one of the soil samples as part of the lab's internal Quality Control analyses and report the results for reproducibility of reported results, i.e., to verify duplicate preparation and analysis.

6.12.5.5 Trip Blank

A laboratory prepared trip blank will accompany each water sample batch.

6.13 Field Measurements

The VOC Headspace concentration for each soil sample will be measured. The instrument used will be the Ultra-Rae PID manufactured by Rae Systems. The calibration gas will be 100.0 ppm isobutylene standard from Scott Specialty Gases, Freemont, Colorado.

6.13.1 Equipment Calibration and Quality Control

The PID will be calibrated at least 3 times daily and checked with the calibration gas hourly. When a check with the calibration gas indicates the instrument reading is 10 ppm too high or low it will be calibrated. Variation in the daytime ambient temperature will cause the variation.

6.13.2 Equipment Maintenance and Decontamination

All sampling and survey equipment will be routinely decontaminated between samples. Nitrile gloves will be worn and changed with each sampling iteration.

6.14 Ground Water Level Measurements

Ground water levels will be taken with an accurate water level meter at each borehole where ground water is encountered and may require the use of an interface meter. Levels will be recorded as "feet below ground surface" to the nearest ".01 ft." and will be recorded as "TOC," i.e., top of north side of casing.

6.15 ANALYSES

Soil and ground water will be analyzed in accordance with the following EPA Methods.

The analytical suite for soil samples will include;

- TPH (EPA method 8015M)
- BTEX (EPA method 8020 or equivalent)

The analytical suite for water samples may include:

- Total Organic Carbon SW846-9056
- Metals (EPA method 600/4-79-020) New Mexico WQCC and EPA RCRA as listed
- BTEX (EPA method 8021B)
- Total Dissolved Solids (EPA method 150.1)
- Polynuclear Aromatic Hydrocarbon (PAH) (EPA method 8270)

6.16 SAMPLE IDENTIFICATION

An example of the sample identification scheme is as follows

Medium-Soil or Water	Company-EOTT	Site: Junction 34 to Lea	Date 6-3-2003	Location: Lift#-Quad	Designation: Duplicate
S	E	J34	60303	L2-SW	D

Example: SEJ3460303L2-SWD

6.17 DATA QUALITY OBJECTIVES

All data will be reviewed within the context of documented and verified analytical information derived from quality control samples. If data is within the specifications it will be deemed quantitative and acceptable for use in making environmental management decisions.

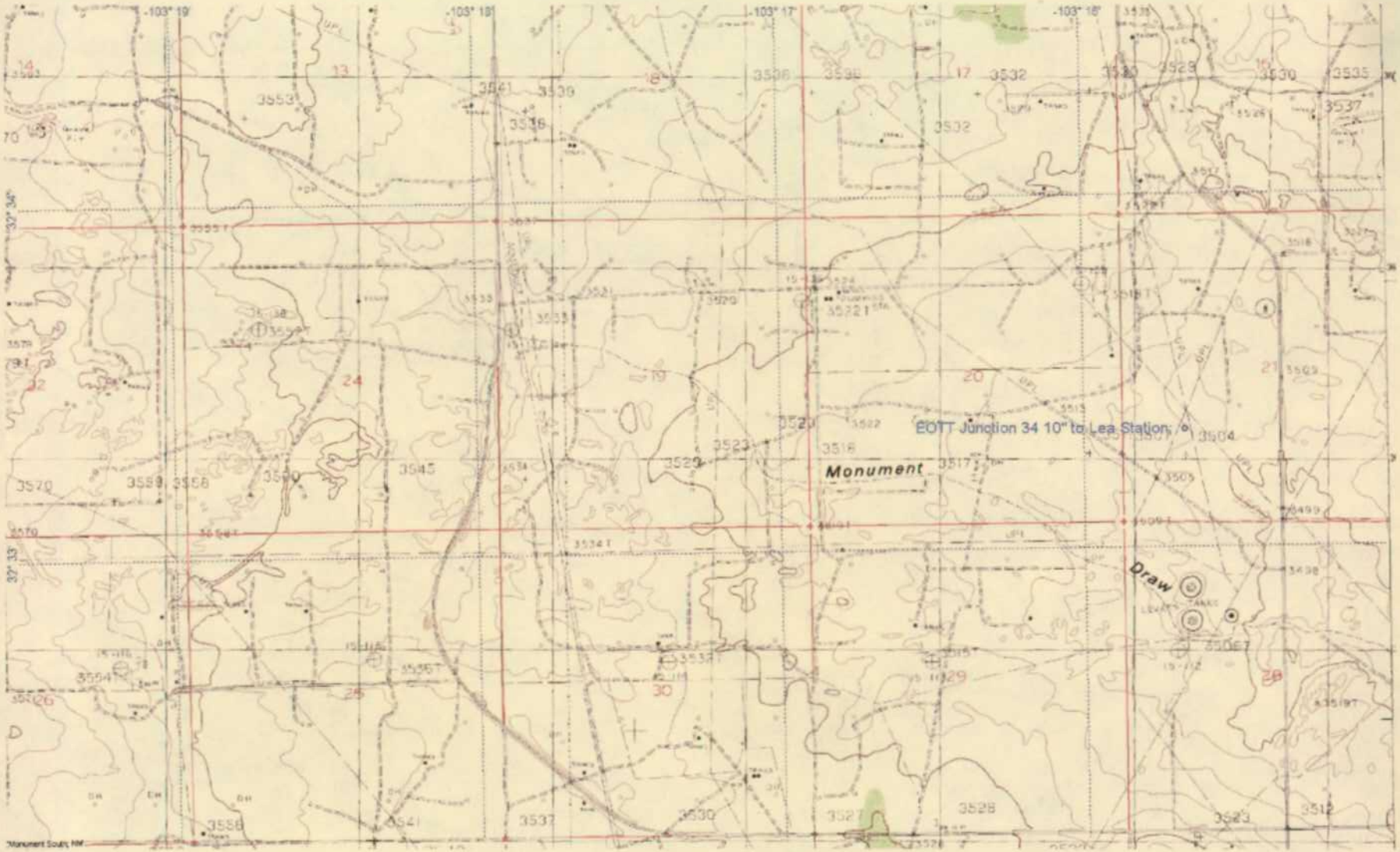
- Laboratory data must have extraction recovery for TPH, BTEX and general chemistry parameters ≤25.0%. Or a "%Extraction Accuracy " between 75 and 125%.
- Laboratory data must have <25% Relative Percent Difference or a "%Instrument Accuracy" between 75 and 125% for field or laboratory duplicates.
- Field headspace analyses must be supported with instrument calibration data and calibration gas certification.

7.0 CONCLUDING COMMENTS

This proposal includes a ground water treatability study that will be implemented upon approval of the proposal. The results of the study will be submitted to the NMOCD for review along with a comprehensive report detailing site delineation

and remediation activities to date. The NMOCD will be notified of sampling events and barrier testing at least 48 hours prior to the event. Approval of this plan will minimize safety hazards associated with an open excavation and environmental concerns for wildlife.

Attachment I: Site Maps


EOTT Junction 34 10" to Lea Station
Monument
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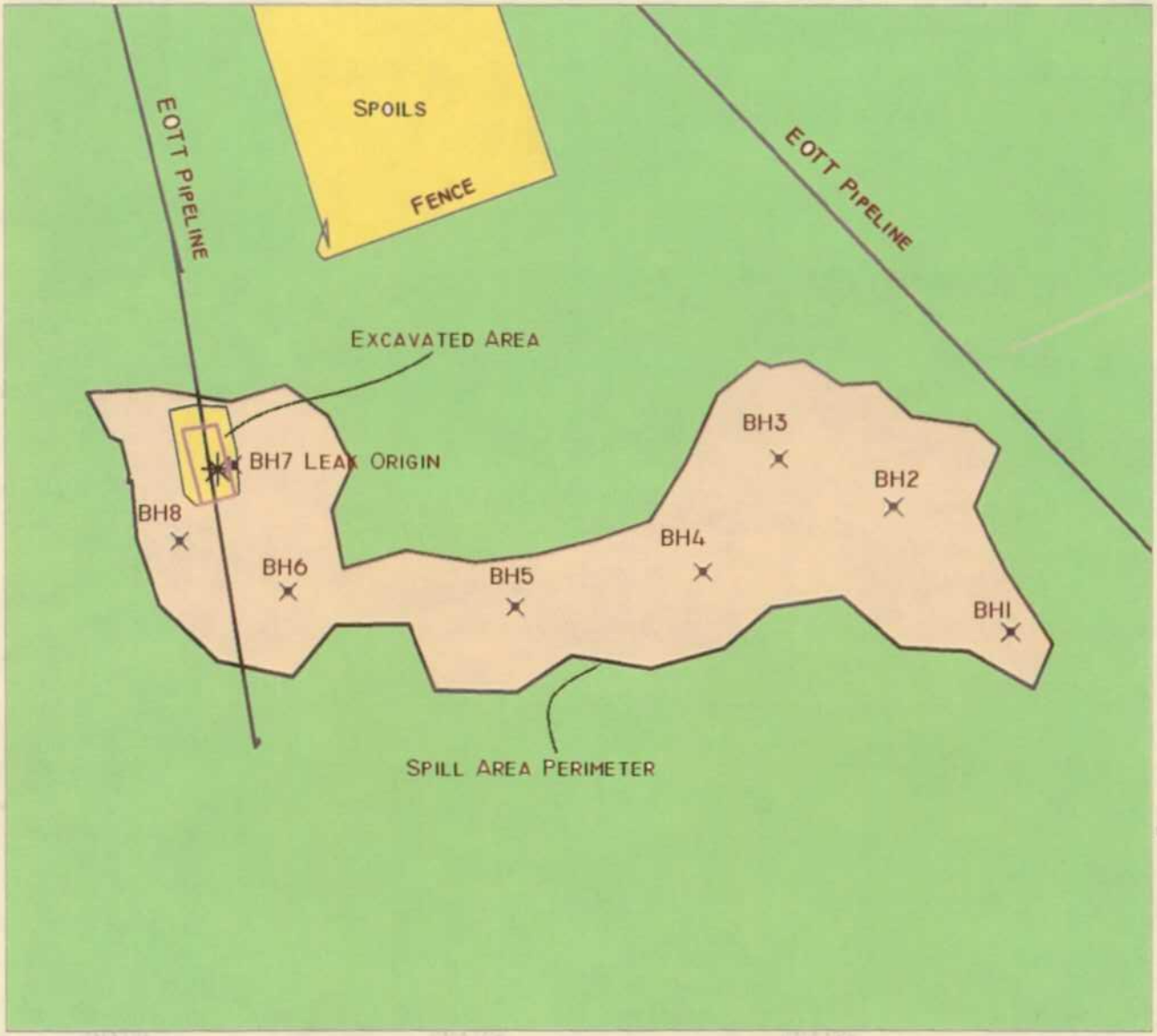
-103° 18'
-103° 17'
-103° 16'
32° 34'
32° 33'
Monument South, NM



EOTT ENERGY
JUNCTION JCT 34 LINE TO LEA #2002-10286
UL-L SEC 21 T20S R37E
AFFECTED AREA 10,769 SQFT
BOREHOLE MAP

N

SCALE 1:500

0 50.00

FEET

UNIVERSAL TRANSVERSE MERCATOR
13 NORTH
NAD 1983 HPGN (NEW MEXICO)

JCT34.SSF

2/5/2003