

1R - 299

REPORTS

DATE:

3/31/2005



1RP 299

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APR 01 2005

Mr. Bill Olson
Case Coordinator
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Oil Conservation Division
Environmental Bureau

Shell Oil Products US

HSE Science & Engineering
7561 FM 1960 East #508
Humble, TX. 77346
Tel (281) 852 3720
Fax (281) 852 3721 Email Kenneth.springer@shell.com

March 31, 2005

Re: **2004 Annual Groundwater Monitoring Report**
Shell Oil Products US
Penrose Station
Lea County, New Mexico
Equilon Penrose "A" Lease

Dear Mr. Olson,

Please find enclosed the 2004 Annual Groundwater Monitoring and Product Recovery Report for the above referenced site. As indicated in the 2004 Annual Report, the PSH plume appears to be stable. Shell is proposing to install a recovery system in monitor well MW-1 in 2005.

If you have questions regarding this submittal, please contact me at 281 -852-3720 or by email at kenneth.springer@shell.com.

Sincerely,
Shell Oil Products US

K. R. Springer,
Senior Environmental Engineer

Attachment

Cc: NMOCD-Hobbs

IR 299

SHELL OIL PRODUCTS US

**2004 ANNUAL GROUNDWATER
MONITORING REPORT
PENROSE 'A' LEASE
(WINNIE KENNAN RANCH)
LEA COUNTY, NEW MEXICO
INCIDENT NUMBER 300108**

ENERCON PROJECT NO. ES-533

Prepared for:

**MR. KEN SPRINGER
SHELL OIL PRODUCTS, US
7561 FM 1960 EAST #508
HUMBLE, TEXAS 77346**

March 4, 2005

Prepared by:

**ENERCON SERVICES, INC.
ENVIRONMENTAL & INDUSTRIAL SERVICES GROUP
306 West Wall, Suite 1312
Midland, Texas 79701
(432) 570-8726
(432) 684-7587 Fax**

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March 4, 2005

Mr. Ken Springer
Shell Oil Products US
7561 FM 1960 East #508
Humble, Texas 77346

**RE: 2004 ANNUAL GROUNDWATER MONITORING REPORT
PENROSE 'A' LEASE (WINNIE KENNAN RANCH)
LEA COUNTY, NEW MEXICO
INCIDENT NUMBER 300108
ENERCON PROJECT NUMBER ES-533**

Dear Mr. Springer:

This report details the groundwater monitoring activities at the Penrose 'A' Lease (also known as the Winnie Kennan Ranch) from July 1, 2004 through December 31, 2004. The site is located approximately 7 miles southeast of Eunice, off New Mexico State Highway 18, in Lea County, New Mexico (Figure 1). The purpose of the groundwater monitoring activities was to gauge monitor wells, recover product and collect groundwater samples in an effort to follow the extent and impact of a groundwater plume apparently originating from a subsurface crude oil pipeline release.

1.0 GROUNDWATER ASSESSMENT

Enercon has completed monitoring at the referenced facility for the period from July 1, 2004 through December 31, 2004. All monitor wells were gauged during the final two quarters of 2004. Wells exhibiting PSH were bailed, and groundwater samples were collected during the last two quarters of the annual monitoring period. The five onsite monitor wells were installed in July 2004.

Quarterly hand bailing and absorbent sock change-out have been utilized as the recovery techniques for all monitor wells. To date, 5.50 gallons of PSH has been recovered manually (booms and bailing) from monitor well MW-1 since the installation of the five monitor wells in July 2004.

Phase-separated hydrocarbons were detected during each monitoring event in monitor well MW-1. Monitor well MW-1 is the only monitor well with measurable PSH, with an

average thickness of 2.47 feet. PSH thicknesses and recoveries are listed in Table 1 of Attachment B.

Depth to groundwater ranged across the site from 70.85 feet below the top of the casing (TOC) in monitor well MW-4 to 73.06 feet in monitor well MW-2. Groundwater table elevation fluctuated from a minimum of 0.05 feet in monitor wells MW-2 through MW-4 to a maximum of 0.08 feet in MW-1, with an average fluctuation of 0.058 feet across the site for the year. Groundwater at the site was determined to flow to the southwest. Figures 2 and 3 of Attachment A illustrate the groundwater gradient based on the two quarterly gauging events for the year. Relative water table elevations are summarized in Table 1 of Attachment B.

2.0 GROUNDWATER SAMPLING

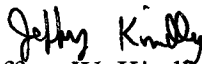
On July 26, 2004, Enercon conducted the third quarter groundwater monitoring event. Groundwater samples were collected from all monitor wells except for MW-1, which exhibited PSH. Samples were submitted to the laboratory and analyzed for BTEX (EPA Method 8021B) and PAH (EPA Method 8270C).

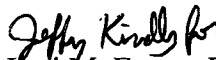
On October 14, 2004, Enercon conducted the fourth quarter groundwater monitoring event. Groundwater samples were collected from all monitor wells except for MW-1, which exhibited PSH. Samples were submitted to the laboratory and analyzed for BTEX (EPA Method 8021B) and PAH (EPA Method 8270C).

Laboratory analytical results indicated BTEX and PAH concentrations were below detection limit in all monitor wells sampled in 2004. Figures 4 and 5 of Attachment A illustrate the dissolved hydrocarbon concentrations across the site based on the two quarterly gauging events for the year. Laboratory analytical results are summarized in Table 2, Attachment B of this report with laboratory data sheets included in Attachment C.

Enercon Services, Inc. appreciates the opportunity to provide you with our professional consulting services on this important project. If you have any questions or if we can be of further assistance, please do not hesitate to call.

Respectfully,
Enercon Services, Inc.


Jeffrey W. Kindley, P.G.
Project Manager


Lori M. Evans, P.G.
Senior Geologist

ATTACHMENT A

FIGURES

Site Map (Figure 1)

Groundwater Gradient Maps (Figures 2 and 3)

Hydrocarbon Concentration Maps (Figures 4 and 5)

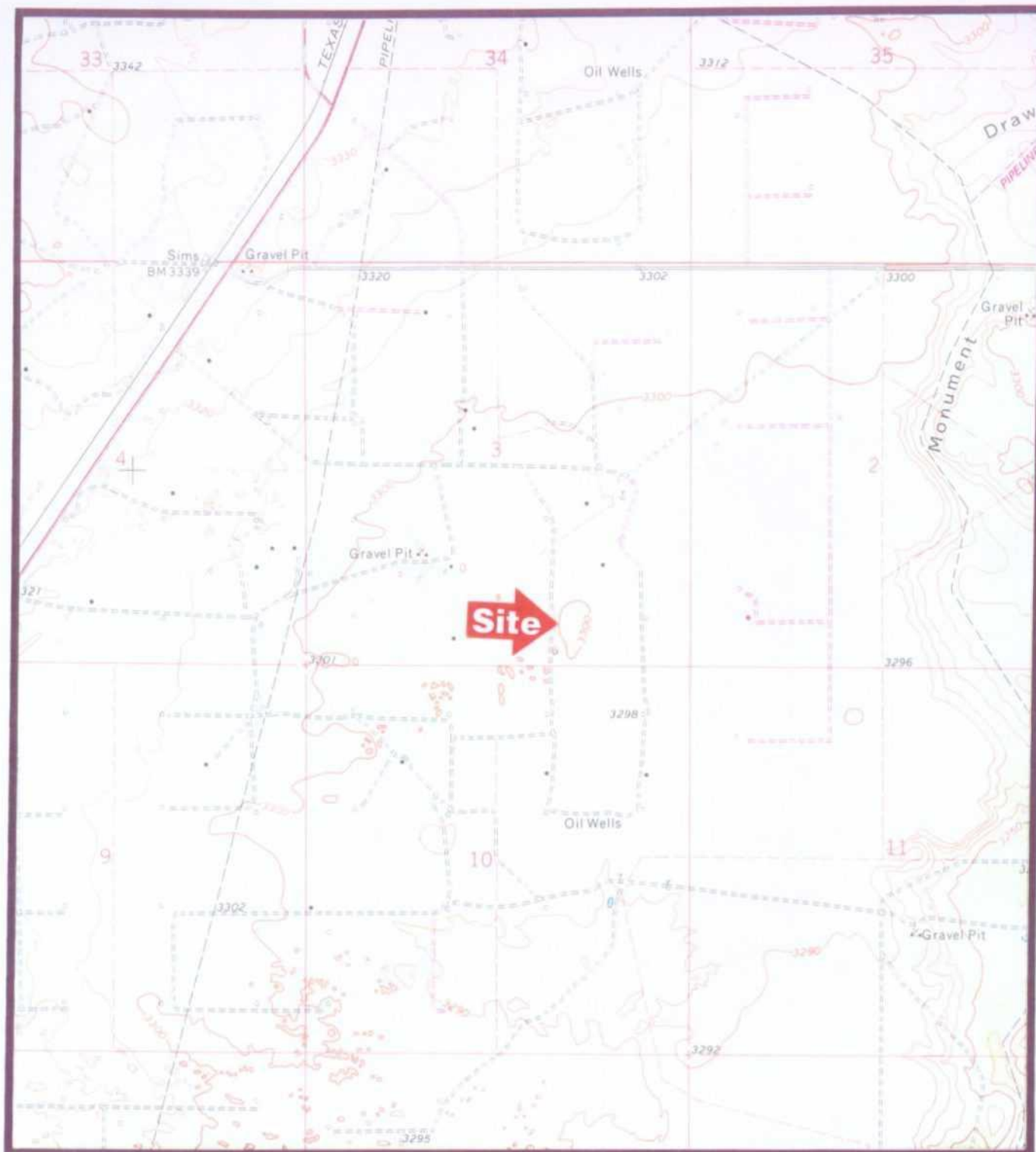


Figure 1
7.5 Minute Topographic Map
 Rattlesnake Canyon, New Mexico,
 Quadrangle
 1979

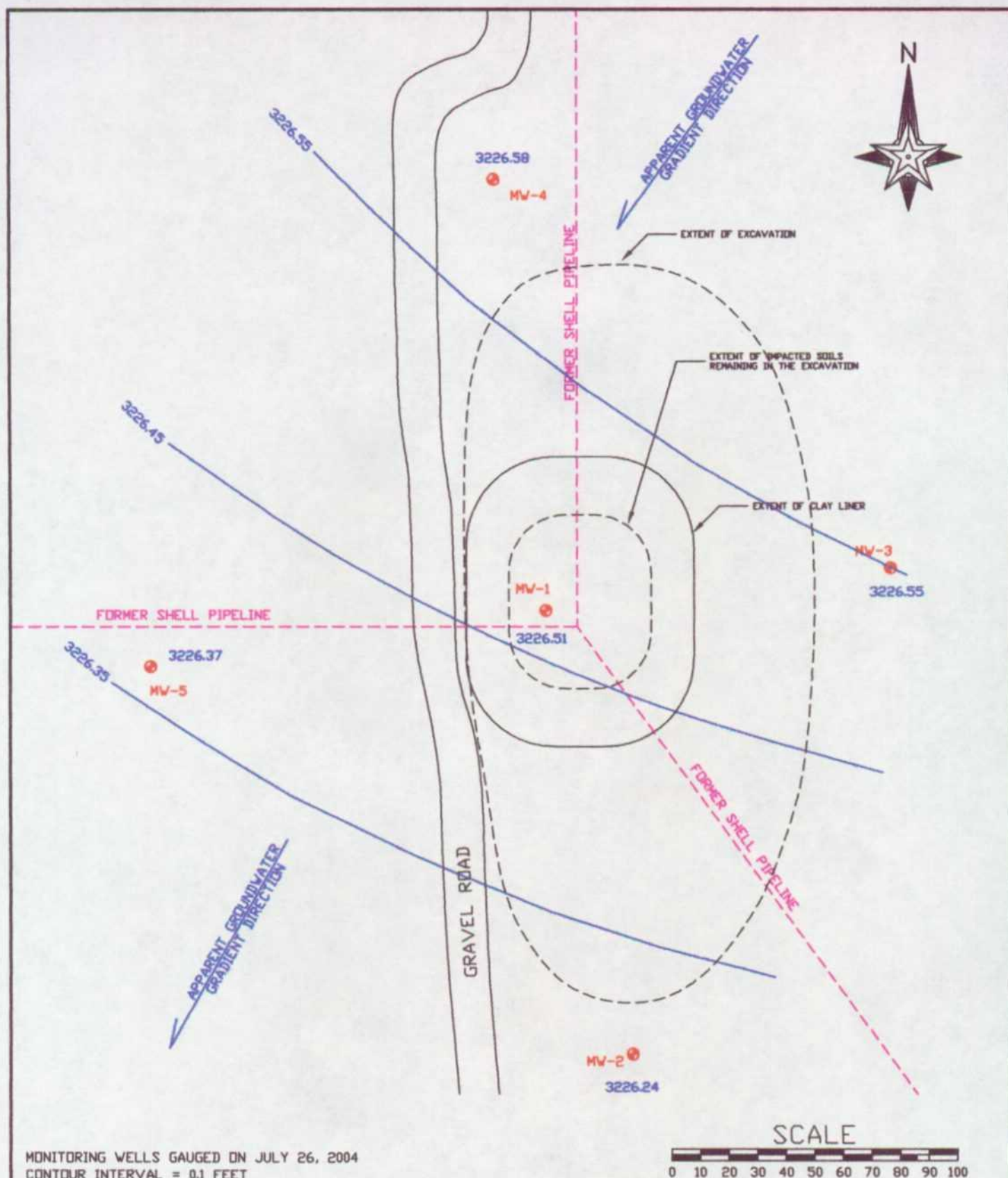
Source: USGS TOPODEPARTMENT OF THE INTERIOR



ENERCON SERVICES, INC.

**SHELL OIL PRODUCTS US
 PENROSE "A" LEASE
 WINNIE KENNAN RANCH
 LEA COUNTY, NEW MEXICO**

PROJECT NO: ES-533



GROUNDWATER GRADIENT MAP

PREPARED FOR:

SHELL OIL PRODUCTS, U.S.
PENROSE (WINNIE KENNAN RANCH)
LEA COUNTY, NEW MEXICO

PREPARED BY:

ENERCON SERVICES, INC.
306 WEST WALL, SUITE 1312
MIDLAND, TX 79701
(432) 570-8726

JULY, 2004

DRAWN BY:

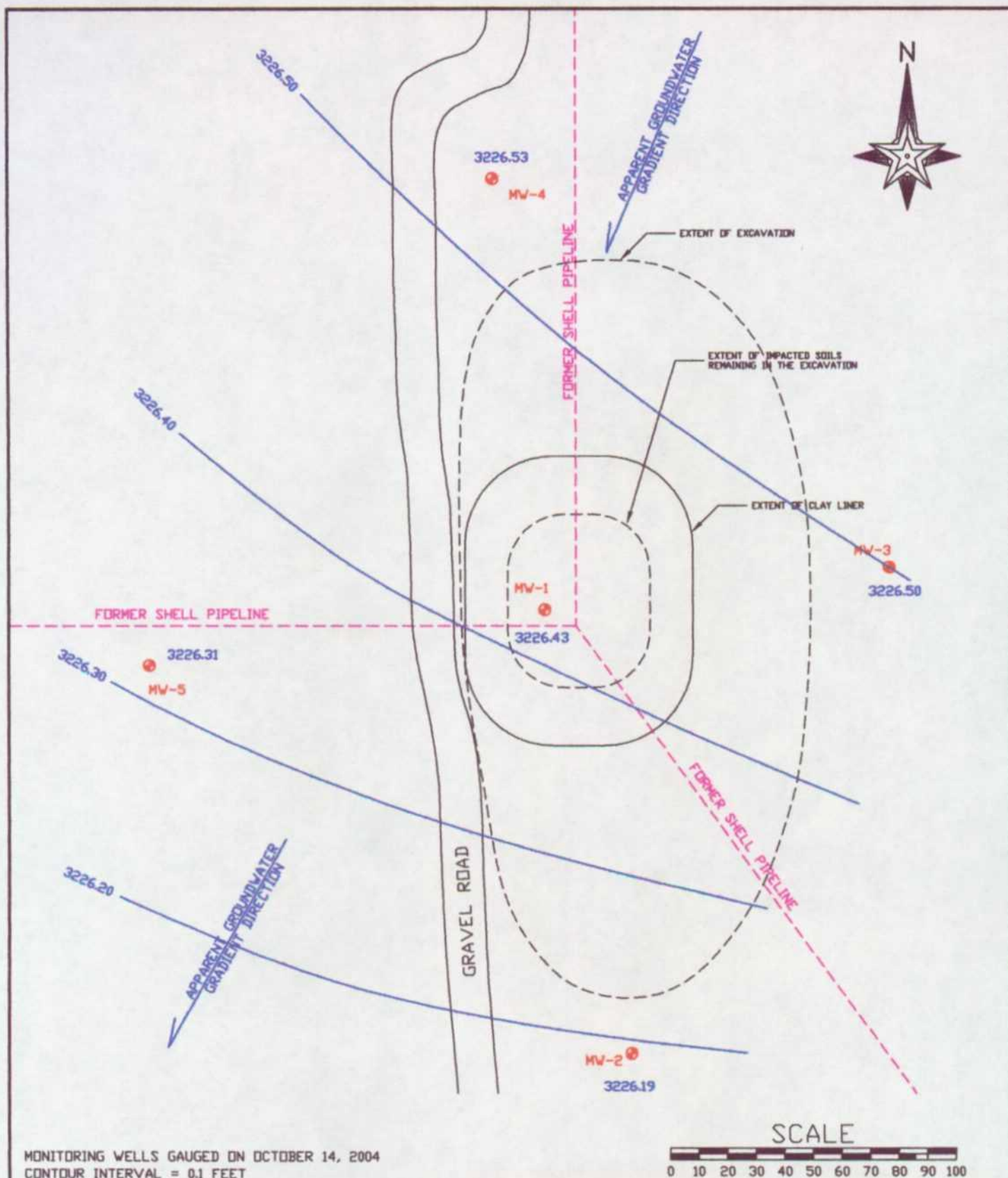
S. GOOD

PROJECT NUMBER

ES-533

FIGURE

2



MONITORING WELLS GAUGED ON OCTOBER 14, 2004
CONTOUR INTERVAL = 0.1 FEET

SCALE

0 10 20 30 40 50 60 70 80 90 100

GROUNDWATER GRADIENT MAP

OCTOBER, 2004

PREPARED FOR:

SHELL OIL PRODUCTS, U.S.
PENROSE (WINNIE KENNAN RANCH)
LEA COUNTY, NEW MEXICO

PREPARED BY:

ENERCON SERVICES, INC.
306 WEST WALL, SUITE 1312
MIDLAND, TX 79701
(432) 570-8726

DRAWN BY:

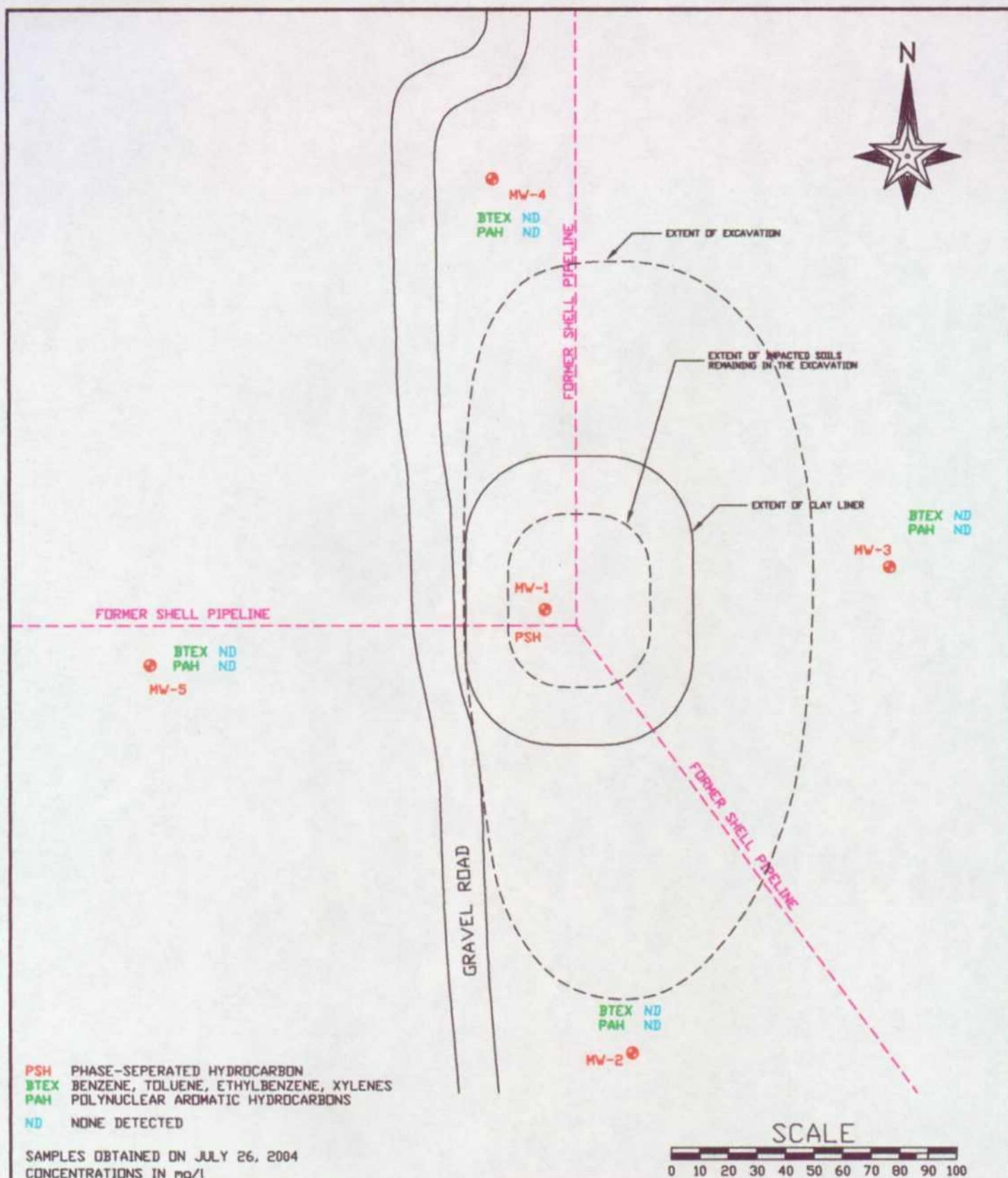
S. GOOD

PROJECT NUMBER:

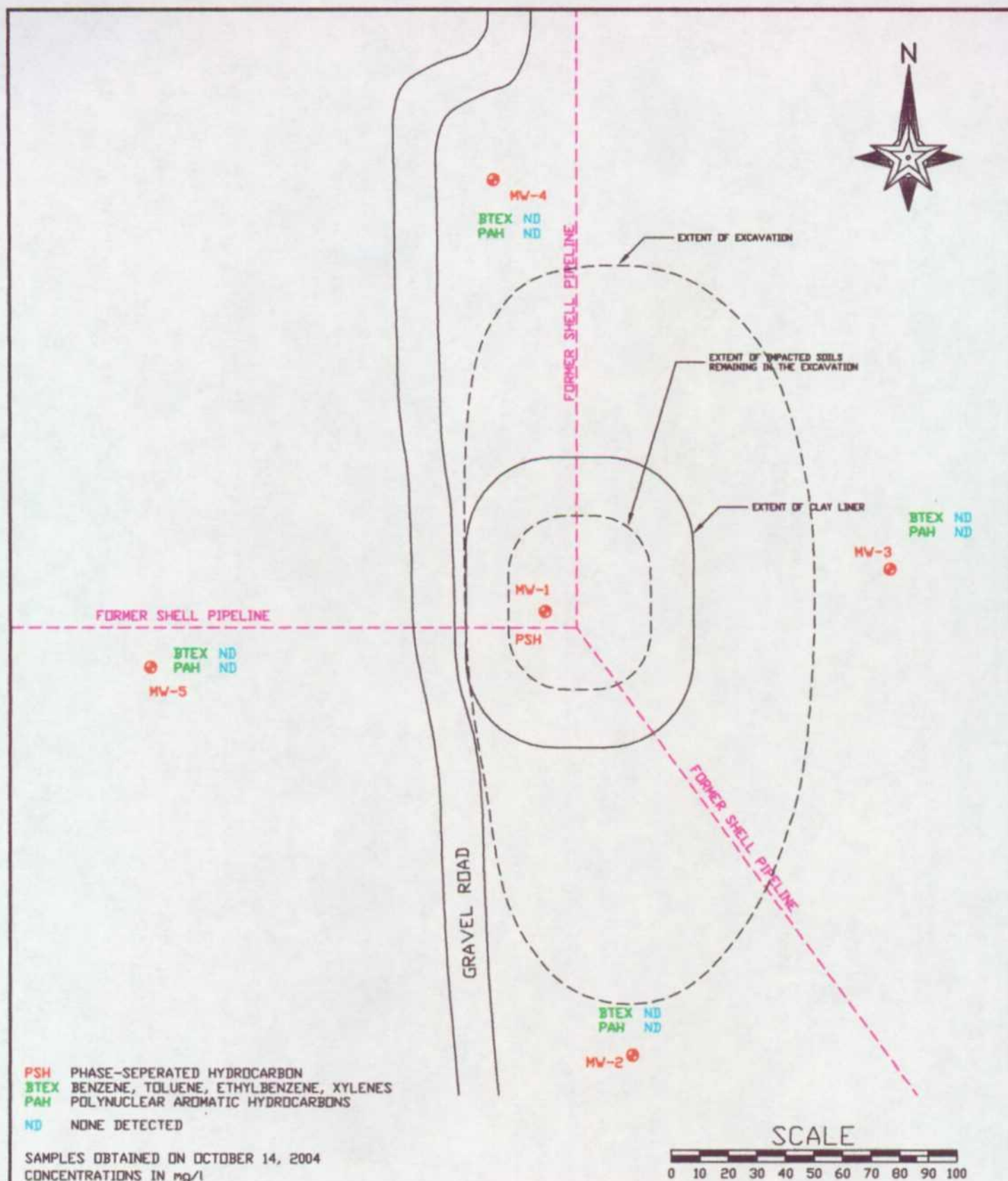
ES-533

FIGURE

3



HYDROCARBON CONCENTRATION MAP		JULY, 2004	
PREPARED FOR: SHELL OIL PRODUCTS, U.S. PENROSE (WINNIE KENNAN RANCH) LEA COUNTY, NEW MEXICO	PREPARED BY: ENERCON SERVICES, INC. 306 WEST WALL, SUITE 1312 MIDLAND, TX 79701 (432) 570-8726	DRAWN BY: S. GOOD	FIGURE
		PROJECT NUMBER: ES-533	4



HYDROCARBON CONCENTRATION MAP		OCTOBER, 2004	
PREPARED FOR: SHELL OIL PRODUCTS, U.S. PENROSE (WINNIE KENNAN RANCH) LEA COUNTY, NEW MEXICO	PREPARED BY: ENERCON SERVICES, INC. 306 WEST WALL, SUITE 1312 MIDLAND, TX 79701 (432) 570-8726	DRAWN BY: S. GOOD	FIGURE 5
		PROJECT NUMBER: ES-533	

ATTACHMENT B

TABLES

Relative Groundwater Elevations, PSH Thickness, and Manual PSH Recovery (Table 1)
Groundwater Analytical Results (Table 2)

TABLE 1
RELATIVE GROUNDWATER ELEVATIONS/PSH THICKNESS AND RECOVERY
SHELL OIL PRODUCTS US
PENROSE "A" LEASE (WINNIE KENNAN RANCH)
LEA COUNTY, NEW MEXICO

Monitor Well	Date Gauged	Relative Top of Casing Elevation (feet)*	PSH Below Top of Casing (feet)*	Water Below Top of Casing (feet)	Corrected Relative Groundwater Elevation (feet)**	Phase-Separated Hydrocarbon Thickness (feet)	PSH Recovery (gallons)	PSH Cumulative Recovery (gallons)	Type of Recovery
MW-1	07/26/04	3296.75	69.94	72.90	3226.51	2.96	0.50	0.50	Hand Bail
	10/14/04		70.10	72.26	3226.43	2.16	0.00	0.50	Hand Bail
	10/27/04		69.99	72.54	3226.51	2.55	2.00	2.50	Hand Bail
	11/21/04		69.98	72.67	3226.50	2.69	1.50	4.00	Pump***
	12/22/04		70.01	72.01	3226.54	2.00	1.50	5.50	Pump
MW-2	07/26/04	3299.25		73.01	3226.24	0.00			
	10/14/04			73.06	3226.19	0.00			
MW-3	07/26/04	3298.43		71.88	3226.55	0.00			
	10/14/04			71.93	3226.50	0.00			
MW-4	07/26/04	3297.43		70.85	3226.58	0.00			
	10/14/04			70.90	3226.53	0.00			
MW-5	07/26/04	3299.34		72.97	3226.37	0.00			
	10/14/04			73.03	3226.31	0.00			

** Correction Equation for Phase-Separated Hydrocarbons: Corrected Groundwater Elevation = Top of Casing
Total PSH Recovered = 5.50 gallons

* Measured from top of casing of monitor wells.

*** KVA 12 volt pump utilized for removal of PSH

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

Specific Gravity (SG) = 0.9 for crude oil.

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
SHELL OIL PRODUCTS US
TROSE "A" LEASE (WINNIE KENNAN RANCH)
EUNICE, LEA COUNTY, NEW MEXICO

Monitor Well	Date Sampled	BTEX					PAH		
		Benzene (mg/L)	Toluene (mg/L)	EthylBenzene (mg/L)	Total Xylenes (mg/L)	Total BTEX (mg/L)	Total (mg/L)	Fluorene (mg/L)	Phenanthrene (mg/L)
MW-1	07/26/04 10/14/04	PSH PSH	PSH PSH	PSH PSH	PSH PSH	PSH PSH	PSH PSH	PSH PSH	PSH PSH
MW-2	07/26/04 10/14/04	<0.001 <0.005	<0.001 <0.005	<0.001 <0.005	<0.001 <0.005	<0.001 <0.005	<0.0002 <0.0002	<0.0002 <0.0002	<0.0002 <0.0002
MW-3	07/26/04 10/14/04	<0.001 <0.005	<0.001 <0.005	<0.001 <0.005	<0.001 <0.005	<0.001 <0.005	<0.0002 <0.0002	<0.0002 <0.0002	<0.0002 <0.0002
MW-4	07/26/04 10/14/04	<0.001 <0.005	<0.001 <0.005	<0.001 <0.005	<0.001 <0.005	<0.001 <0.005	<0.0002 <0.0002	<0.0002 <0.0002	<0.0002 <0.0002
MW-5	07/26/04 10/14/04	<0.001 <0.005	<0.001 <0.005	<0.001 <0.005	<0.001 <0.005	<0.001 <0.005	<0.0002 <0.0002	<0.0002 <0.0002	<0.0002 <0.0002
NMOCD Standards		0.01	0.75	0.75	0.62	NA	NA	NA	NA
NA-Not Applicable									
PSH-Phase Separated Hydrocarbons									

ATTACHMENT C

ANALYTICAL DATA

Analytical and Quality Control Report

Jeffery Kindley
Enercon Services-Midland
306 West Wall Street
Suite 1312
Midland, TX 79701

Report Date: August 4, 2004

Work Order: 4072806

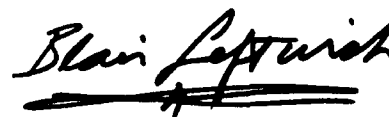
Incident #: 300108
Project Location: Lea Co,NM
Project Name: Penrose A
Project Number: ES-533

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
39899	MW-2	water	2004-07-26	14:40	2004-07-28
39900	MW-3	water	2004-07-26	13:35	2004-07-28
39901	MW-4	water	2004-07-26	16:50	2004-07-28
39902	MW-5	water	2004-07-26	15:40	2004-07-28

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 10 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



Dr. Blair Leftwich, Director

Analytical Report

Sample: 39899 - MW-2

Analysis: BTEX
QC Batch: 11442
Prep Batch: 10114

Analytical Method: S 8021B
Date Analyzed: 2004-07-28
Date Prepared: 2004-07-28

Prep Method: S 5030B
Analyzed By: MS
Prepared By: MS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0946	mg/L	1	0.100	95	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.0863	mg/L	1	0.100	86	53.1 - 149

Sample: 39899 - MW-2

Analysis: PAH
QC Batch: 11634
Prep Batch: 10225

Analytical Method: S 8270C
Date Analyzed: 2004-08-03
Date Prepared: 2004-08-02

Prep Method: S 3510C
Analyzed By: RC
Prepared By: RC

Parameter	Flag	RL Result	Units	Dilution	RL
Naphthalene		<0.000200	mg/L	0.001	0.200
Acenaphthylene		<0.000200	mg/L	0.001	0.200
Acenaphthene		<0.000200	mg/L	0.001	0.200
Fluorene		<0.000200	mg/L	0.001	0.200
Phenanthrene		<0.000200	mg/L	0.001	0.200
Anthracene		<0.000200	mg/L	0.001	0.200
Fluoranthene		<0.000200	mg/L	0.001	0.200
Pyrene		<0.000200	mg/L	0.001	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.001	0.200
Chrysene		<0.000200	mg/L	0.001	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.001	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.001	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0514	mg/L	0.001	80.0	64	0 - 128
2-Fluorobiphenyl		0.0384	mg/L	0.001	80.0	48	0 - 140
Terphenyl-d14		0.0381	mg/L	0.001	80.0	48	0 - 165

Sample: 39900 - MW-3

Analysis: BTEX
QC Batch: 11444
Prep Batch: 10116

Analytical Method: S 8021B
Date Analyzed: 2004-07-28
Date Prepared: 2004-07-28

Prep Method: S 5030B
Analyzed By: MS
Prepared By: MS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0934	mg/L	1	0.100	93	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.0858	mg/L	1	0.100	86	53.1 - 149

Sample: 39900 - MW-3

Analysis: PAH
QC Batch: 11634
Prep Batch: 10225

Analytical Method: S 8270C
Date Analyzed: 2004-08-03
Date Prepared: 2004-08-02

Prep Method: S 3510C
Analyzed By: RC
Prepared By: RC

Parameter	Flag	RL Result	Units	Dilution	RL
Naphthalene		<0.000200	mg/L	0.001	0.200
Acenaphthylene		<0.000200	mg/L	0.001	0.200
Acenaphthene		<0.000200	mg/L	0.001	0.200
Fluorene		<0.000200	mg/L	0.001	0.200
Phenanthrene		<0.000200	mg/L	0.001	0.200
Anthracene		<0.000200	mg/L	0.001	0.200
Fluoranthene		<0.000200	mg/L	0.001	0.200
Pyrene		<0.000200	mg/L	0.001	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.001	0.200
Chrysene		<0.000200	mg/L	0.001	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.001	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.001	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0536	mg/L	0.001	80.0	67	0 - 128
2-Fluorobiphenyl		0.0386	mg/L	0.001	80.0	48	0 - 140
Terphenyl-d14		0.0376	mg/L	0.001	80.0	47	0 - 165

Sample: 39901 - MW-4

Analysis: BTEX
QC Batch: 11444
Prep Batch: 10116

Analytical Method: S 8021B
Date Analyzed: 2004-07-28
Date Prepared: 2004-07-28

Prep Method: S 5030B
Analyzed By: MS
Prepared By: MS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0952	mg/L	1	0.100	95	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.0859	mg/L	1	0.100	86	53.1 - 149

Sample: 39901 - MW-4

Analysis: PAH
QC Batch: 11634
Prep Batch: 10225

Analytical Method: S 8270C
Date Analyzed: 2004-08-03
Date Prepared: 2004-08-02

Prep Method: S 3510C
Analyzed By: RC
Prepared By: RC

Parameter	Flag	RL Result	Units	Dilution	RL
Naphthalene		<0.000200	mg/L	0.001	0.200
Acenaphthylene		<0.000200	mg/L	0.001	0.200
Acenaphthene		<0.000200	mg/L	0.001	0.200
Fluorene		<0.000200	mg/L	0.001	0.200
Phenanthrene		<0.000200	mg/L	0.001	0.200
Anthracene		<0.000200	mg/L	0.001	0.200
Fluoranthene		<0.000200	mg/L	0.001	0.200
Pyrene		<0.000200	mg/L	0.001	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.001	0.200
Chrysene		<0.000200	mg/L	0.001	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.001	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.001	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0538	mg/L	0.001	80.0	67	0 - 128
2-Fluorobiphenyl		0.0392	mg/L	0.001	80.0	49	0 - 140
Terphenyl-d14		0.0364	mg/L	0.001	80.0	46	0 - 165

Sample: 39902 - MW-5

Analysis: BTEX
QC Batch: 11444
Prep Batch: 10116

Analytical Method: S 8021B
Date Analyzed: 2004-07-28
Date Prepared: 2004-07-28

Prep Method: S 5030B
Analyzed By: MS
Prepared By: MS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100

continued ...

sample 39902 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0936	mg/L	1	0.100	94	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.0867	mg/L	1	0.100	87	53.1 - 149

Sample: 39902 - MW-5

Analysis: PAH
QC Batch: 11634
Prep Batch: 10225

Analytical Method: S 8270C
Date Analyzed: 2004-08-03
Date Prepared: 2004-08-02

Prep Method: S 3510C
Analyzed By: RC
Prepared By: RC

Parameter	Flag	RL Result	Units	Dilution	RL
Naphthalene		<0.000200	mg/L	0.001	0.200
Acenaphthylene		<0.000200	mg/L	0.001	0.200
Acenaphthene		<0.000200	mg/L	0.001	0.200
Fluorene		<0.000200	mg/L	0.001	0.200
Phenanthrene		<0.000200	mg/L	0.001	0.200
Anthracene		<0.000200	mg/L	0.001	0.200
Fluoranthene		<0.000200	mg/L	0.001	0.200
Pyrene		<0.000200	mg/L	0.001	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.001	0.200
Chrysene		<0.000200	mg/L	0.001	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.001	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.001	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0522	mg/L	0.001	80.0	65	0 - 128
2-Fluorobiphenyl		0.0399	mg/L	0.001	80.0	50	0 - 140
Terphenyl-d14		0.0384	mg/L	0.001	80.0	48	0 - 165

Method Blank (1) QC Batch: 11442

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0963	mg/L	1	0.100	96	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0889	mg/L	1	0.100	89	70 - 130

Method Blank (1) QC Batch: 11444

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0951	mg/L	1	0.100	95	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0853	mg/L	1	0.100	85	70 - 130

Method Blank (1) QC Batch: 11634

Parameter	Flag	Result	Units	RL
Naphthalene		<0.000200	mg/L	0.2
Acenaphthylene		<0.000200	mg/L	0.2
Acenaphthene		<0.000200	mg/L	0.2
Fluorene		<0.000200	mg/L	0.2
Phenanthrene		<0.000200	mg/L	0.2
Anthracene		<0.000200	mg/L	0.2
Fluoranthene		<0.000200	mg/L	0.2
Pyrene		<0.000200	mg/L	0.2
Benzo(a)anthracene		<0.000200	mg/L	0.2
Chrysene		<0.000200	mg/L	0.2
Benzo(b)fluoranthene		<0.000200	mg/L	0.2
Benzo(k)fluoranthene		<0.000200	mg/L	0.2
Benzo(a)pyrene		<0.000200	mg/L	0.2
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.2
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.2
Benzo(g,h,i)perylene		<0.000200	mg/L	0.2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0318	mg/L	0.001	80.0	40	0 - 128
2-Fluorobiphenyl		0.0326	mg/L	0.001	80.0	41	0 - 140
Terphenyl-d14		0.0359	mg/L	0.001	80.0	45	0 - 165

Laboratory Control Spike (LCS-1) QC Batch: 11442

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0833	0.0834	mg/L	1	0.100	<0.000136	83	0	70 - 130	20
Toluene	0.0833	0.0840	mg/L	1	0.100	<0.000247	83	1	70 - 130	20
Ethylbenzene	0.0918	0.0912	mg/L	1	0.100	<0.000550	92	1	70 - 130	20
Xylene	0.304	0.304	mg/L	1	0.300	<0.00156	101	0	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0990	0.0979	mg/L	1	0.100	99	98	70 - 130
4-Bromofluorobenzene (4-BFB)	0.101	0.101	mg/L	1	0.100	101	101	70 - 130

Laboratory Control Spike (LCS-1) QC Batch: 11444

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0836	0.0830	mg/L	1	0.100	<0.000136	84	1	70 - 130	20
Toluene	0.0840	0.0838	mg/L	1	0.100	<0.000247	84	0	70 - 130	20
Ethylbenzene	0.0935	0.0932	mg/L	1	0.100	<0.000550	94	0	70 - 130	20
Xylene	0.312	0.311	mg/L	1	0.300	<0.00156	104	0	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0969	0.0973	mg/L	1	0.100	97	97	70 - 130
4-Bromofluorobenzene (4-BFB)	0.100	0.101	mg/L	1	0.100	100	101	70 - 130

Laboratory Control Spike (LCS-1) QC Batch: 11634

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Naphthalene	32.0	32.4	mg/L	1	80.0	<0.0445	40	1	22.5 - 119	20
Acenaphthylene	34.4	34.6	mg/L	1	80.0	<0.0383	43	0	42.3 - 127	20
Acenaphthene	31.6	31.8	mg/L	1	80.0	<0.0421	40	1	38 - 125	20
Fluorene	32.2	32.0	mg/L	1	80.0	<0.0655	40	1	36.6 - 130	20
Phenanthrene	¹² 27.9	27.8	mg/L	1	80.0	<0.0383	35	0	40.3 - 131	20
Anthracene	30.6	30.1	mg/L	1	80.0	<0.0468	38	2	36.7 - 135	20
Fluoranthene	³⁴ 31.3	31.3	mg/L	1	80.0	<0.0550	39	0	43.2 - 133	20
Pyrene	⁵⁶ 29.5	29.6	mg/L	1	80.0	<0.0904	37	0	48.8 - 157	20
Benzo(a)anthracene	⁷⁸ 31.4	31.2	mg/L	1	80.0	<0.0993	39	1	40.2 - 138	20
Chrysene	24.5	24.3	mg/L	1	80.0	<0.121	31	1	5.5 - 179	20
Benzo(b)fluoranthene	32.3	32.8	mg/L	1	80.0	<0.171	40	2	16.4 - 156	20
Benzo(k)fluoranthene	35.4	35.4	mg/L	1	80.0	<0.0951	44	0	40.9 - 150	20

continued ...

¹ The average of the spike compounds shows that the process is in control.

² The average of the spike compounds shows that the process is in control.

³ The average of the spike compounds shows that the process is in control.

⁴ The average of the spike compounds shows that the process is in control.

⁵ The average of the spike compounds shows that the process is in control.

⁶ The average of the spike compounds shows that the process is in control.

⁷ The average of the spike compounds shows that the process is in control.

⁸ The average of the spike compounds shows that the process is in control.

control spikes continued ...

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzo(a)pyrene	35.5	35.8	mg/L	1	80.0	<0.135	44	1	38.7 - 149	20
Indeno(1,2,3-cd)pyrene	35.3	35.5	mg/L	1	80.0	<0.176	44	0	32 - 153	20
Dibenzo(a,h)anthracene	25.5	25.5	mg/L	1	80.0	<0.184	32	0	0 - 202	20
Benzo(g,h,i)perylene	35.3	35.5	mg/L	1	80.0	<0.134	44	0	39.1 - 144	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Nitrobenzene-d5	46.1	45.9	mg/L	1	80.0	58	57	0 - 128
2-Fluorobiphenyl	39.1	39.0	mg/L	1	80.0	49	49	0 - 140
Terphenyl-d14	38.9	39.2	mg/L	1	80.0	49	49	0 - 165

Standard (CCV-1) QC Batch: 11442

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene	⁹	mg/L	0.100	0.0832	83	85 - 115	2004-07-28
Toluene	¹⁰	mg/L	0.100	0.0832	83	85 - 115	2004-07-28
Ethylbenzene		mg/L	0.100	0.0926	93	85 - 115	2004-07-28
Xylene		mg/L	0.300	0.309	103	85 - 115	2004-07-28

Standard (CCV-2) QC Batch: 11442

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene	¹¹	mg/L	0.100	0.0830	83	85 - 115	2004-07-28
Toluene	¹²	mg/L	0.100	0.0835	84	85 - 115	2004-07-28
Ethylbenzene		mg/L	0.100	0.0932	93	85 - 115	2004-07-28
Xylene		mg/L	0.300	0.311	104	85 - 115	2004-07-28

Standard (ICV-1) QC Batch: 11444

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene	¹³	mg/L	0.100	0.0828	83	85 - 115	2004-07-28
Toluene	¹⁴	mg/L	0.100	0.0833	83	85 - 115	2004-07-28
Ethylbenzene		mg/L	0.100	0.0933	93	85 - 115	2004-07-28
Xylene		mg/L	0.300	0.312	104	85 - 115	2004-07-28

Standard (CCV-1) QC Batch: 11444

⁹ Benzene outside normal limits in ICV/CCV. Average of ICV/CCV components within acceptable range.

¹⁰ Toluene outside normal limits in ICV/CCV. Average of ICV/CCV components within acceptable range.

¹¹ Benzene outside normal limits in ICV/CCV. Average of ICV/CCV components within acceptable range.

¹² Toluene outside normal limits in ICV/CCV. Average of ICV/CCV components within acceptable range.

¹³ Benzene outside normal limits in ICV-1. Average of ICV components fall within acceptable range.

¹⁴ Toluene outside normal limits in ICV-1. Average of ICV components fall within acceptable range.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0854	85	85 - 115	2004-07-28
Toluene		mg/L	0.100	0.0926	93	85 - 115	2004-07-28
Ethylbenzene		mg/L	0.100	0.0940	94	85 - 115	2004-07-28
Xylene		mg/L	0.300	0.316	105	85 - 115	2004-07-28

Standard (CCV-1) QC Batch: 11634

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Naphthalene		mg/L	60.0	61.1	102	80 - 120	2004-08-03
Acenaphthylene		mg/L	60.0	61.6	103	80 - 120	2004-08-03
Acenaphthene		mg/L	60.0	60.7	101	80 - 120	2004-08-03
Fluorene		mg/L	60.0	60.7	101	80 - 120	2004-08-03
Phenanthrene		mg/L	60.0	60.4	101	80 - 120	2004-08-03
Anthracene		mg/L	60.0	60.6	101	80 - 120	2004-08-03
Fluoranthene		mg/L	60.0	60.1	100	80 - 120	2004-08-03
Pyrene		mg/L	60.0	61.6	103	80 - 120	2004-08-03
Benzo(a)anthracene		mg/L	60.0	60.9	102	80 - 120	2004-08-03
Chrysene		mg/L	60.0	61.8	103	80 - 120	2004-08-03
Benzo(b)fluoranthene		mg/L	60.0	59.7	100	80 - 120	2004-08-03
Benzo(k)fluoranthene		mg/L	60.0	51.3	86	80 - 120	2004-08-03
Benzo(a)pyrene		mg/L	60.0	61.7	103	80 - 120	2004-08-03
Indeno(1,2,3-cd)pyrene		mg/L	60.0	61.6	103	80 - 120	2004-08-03
Dibenzo(a,h)anthracene		mg/L	60.0	62.4	104	80 - 120	2004-08-03
Benzo(g,h,i)perylene		mg/L	60.0	61.6	103	80 - 120	2004-08-03

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limit
Nitrobenzene-d5		62.0	mg/L	1	60.0	103	80 - 120
2-Fluorobiphenyl		60.7	mg/L	1	60.0	101	80 - 120
Terphenyl-d14		61.5	mg/L	1	60.0	102	80 - 120

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C. / 2 samples HS
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Analytical and Quality Control Report

Jeffery Kindley
Enercon Services-Midland
306 West Wall Street
Suite 1312
Midland, TX 79701

Report Date: October 25, 2004

Work Order: 4101825

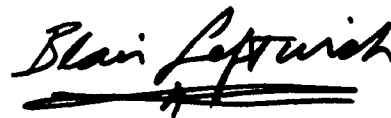
Incident #: 300108
Project Location: Lea Co,NM
Project Name: Penrose A
Project Number: ES-533

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
46336	MW 5	water	2004-10-14	16:20	2004-10-18
46337	MW 2	water	2004-10-14	15:40	2004-10-18
46338	MW 3	water	2004-10-14	14:55	2004-10-18
46339	MW 4	water	2004-10-14	14:15	2004-10-18

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 11 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



Dr. Blair Leftwich, Director

Analytical Report

Sample: 46336 - MW 5

Analysis: BTEX
QC Batch: 13415
Prep Batch: 11855

Analytical Method: S 8021B
Date Analyzed: 2004-10-19
Date Prepared: 2004-10-19

Prep Method: S 5030B
Analyzed By: MT
Prepared By: MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene	1	<0.00500	mg/L	5	0.00100
Toluene		<0.00500	mg/L	5	0.00100
Ethylbenzene		<0.00500	mg/L	5	0.00100
Xylene		<0.00500	mg/L	5	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.458	mg/L	5	0.100	92	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.341	mg/L	5	0.100	68	53.1 - 149

Sample: 46336 - MW 5

Analysis: PAH
QC Batch: 13526
Prep Batch: 11954

Analytical Method: S 8270C
Date Analyzed: 2004-10-24
Date Prepared: 2004-10-20

Prep Method: S 3510C
Analyzed By: RC
Prepared By: RC

Parameter	Flag	RL Result	Units	Dilution	RL
Naphthalene		<0.000200	mg/L	0.001	0.200
Acenaphthylene		<0.000200	mg/L	0.001	0.200
Acenaphthene		<0.000200	mg/L	0.001	0.200
Fluorene		<0.000200	mg/L	0.001	0.200
Phenanthrene		<0.000200	mg/L	0.001	0.200
Anthracene		<0.000200	mg/L	0.001	0.200
Fluoranthene		<0.000200	mg/L	0.001	0.200
Pyrene		<0.000200	mg/L	0.001	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.001	0.200
Chrysene		<0.000200	mg/L	0.001	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.001	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.001	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0152	mg/L	0.001	80.0	19	0 - 128
2-Fluorobiphenyl		0.0145	mg/L	0.001	80.0	18	0 - 140
Terphenyl-d14		0.0284	mg/L	0.001	80.0	36	0 - 165

¹ RR due to unsatisfactory surrogate recovery.

Sample: 46337 - MW 2

Analysis: BTEX
QC Batch: 13415
Prep Batch: 11855

Analytical Method: S 8021B
Date Analyzed: 2004-10-19
Date Prepared: 2004-10-19

Prep Method: S 5030B
Analyzed By: MT
Prepared By: MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene	2	<0.00500	mg/L	5	0.00100
Toluene		<0.00500	mg/L	5	0.00100
Ethylbenzene		<0.00500	mg/L	5	0.00100
Xylene		<0.00500	mg/L	5	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.467	mg/L	5	0.100	93	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.337	mg/L	5	0.100	67	53.1 - 149

Sample: 46337 - MW 2

Analysis: PAH
QC Batch: 13526
Prep Batch: 11954

Analytical Method: S 8270C
Date Analyzed: 2004-10-24
Date Prepared: 2004-10-20

Prep Method: S 3510C
Analyzed By: RC
Prepared By: RC

Parameter	Flag	RL Result	Units	Dilution	RL
Naphthalene		<0.000200	mg/L	0.001	0.200
Acenaphthylene		<0.000200	mg/L	0.001	0.200
Acenaphthene		<0.000200	mg/L	0.001	0.200
Fluorene		<0.000200	mg/L	0.001	0.200
Phenanthrene		<0.000200	mg/L	0.001	0.200
Anthracene		<0.000200	mg/L	0.001	0.200
Fluoranthene		<0.000200	mg/L	0.001	0.200
Pyrene		<0.000200	mg/L	0.001	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.001	0.200
Chrysene		<0.000200	mg/L	0.001	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.001	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.001	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.00272	mg/L	0.001	80.0	3	0 - 128
2-Fluorobiphenyl		0.000920	mg/L	0.001	80.0	1	0 - 140
Terphenyl-d14		0.0319	mg/L	0.001	80.0	40	0 - 165

Sample: 46338 - MW 3

²RR due to unsatisfactory surrogate recovery.

Report Date: October 25, 2004
ES-533

Work Order: 4101825
Penrose A

Page Number: 4 of 11
Lea Co,NM

Analysis: BTEX
QC Batch: 13407
Prep Batch: 11849

Analytical Method: S 8021B
Date Analyzed: 2004-10-18
Date Prepared: 2004-10-18

Prep Method: S 5030B
Analyzed By: MT
Prepared By: MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0771	mg/L	1	0.100	77	71.2 - 115
4-Bromofluorobenzene (4-BFB)	3	0.0456	mg/L	1	0.100	46	76.5 - 116

Sample: 46338 - MW 3

Analysis: PAH
QC Batch: 13526
Prep Batch: 11954

Analytical Method: S 8270C
Date Analyzed: 2004-10-24
Date Prepared: 2004-10-20

Prep Method: S 3510C
Analyzed By: RC
Prepared By: RC

Parameter	Flag	RL Result	Units	Dilution	RL
Naphthalene		<0.000200	mg/L	0.001	0.200
Acenaphthylene		<0.000200	mg/L	0.001	0.200
Acenaphthene		<0.000200	mg/L	0.001	0.200
Fluorene		<0.000200	mg/L	0.001	0.200
Phenanthrene		<0.000200	mg/L	0.001	0.200
Anthracene		<0.000200	mg/L	0.001	0.200
Fluoranthene		<0.000200	mg/L	0.001	0.200
Pyrene		<0.000200	mg/L	0.001	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.001	0.200
Chrysene		<0.000200	mg/L	0.001	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.001	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.001	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0642	mg/L	0.001	80.0	80	0 - 128
2-Fluorobiphenyl		0.0629	mg/L	0.001	80.0	79	0 - 140
Terphenyl-d14		0.0622	mg/L	0.001	80.0	78	0 - 165

Sample: 46339 - MW 4

Analysis: BTEX
QC Batch: 13415

Analytical Method: S 8021B
Date Analyzed: 2004-10-19

Prep Method: S 5030B
Analyzed By: MT

³Low BFB surrogate recovery due to matrix interference. TFT surrogate recovery shows the method to be in control.

Prep Batch: 11855

Date Prepared: 2004-10-19

Prepared By: MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene	4	<0.00500	mg/L	5	0.00100
Toluene		<0.00500	mg/L	5	0.00100
Ethylbenzene		<0.00500	mg/L	5	0.00100
Xylene		<0.00500	mg/L	5	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.471	mg/L	5	0.100	94	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.357	mg/L	5	0.100	71	53.1 - 149

Sample: 46339 - MW 4

Analysis: PAH
QC Batch: 13526
Prep Batch: 11954

Analytical Method: S 8270C
Date Analyzed: 2004-10-24
Date Prepared: 2004-10-20

Prep Method: S 3510C
Analyzed By: RC
Prepared By: RC

Parameter	Flag	RL Result	Units	Dilution	RL
Naphthalene		<0.000200	mg/L	0.001	0.200
Acenaphthylene		<0.000200	mg/L	0.001	0.200
Acenaphthene		<0.000200	mg/L	0.001	0.200
Fluorene		<0.000200	mg/L	0.001	0.200
Phenanthrene		<0.000200	mg/L	0.001	0.200
Anthracene		<0.000200	mg/L	0.001	0.200
Fluoranthene		<0.000200	mg/L	0.001	0.200
Pyrene		<0.000200	mg/L	0.001	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.001	0.200
Chrysene		<0.000200	mg/L	0.001	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.001	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.001	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0590	mg/L	0.001	80.0	74	0 - 128
2-Fluorobiphenyl		0.0611	mg/L	0.001	80.0	76	0 - 140
Terphenyl-d14		0.0656	mg/L	0.001	80.0	82	0 - 165

Method Blank (1) QC Batch: 13407

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001

continued ...

⁴RR due to unsatisfactory surrogate recovery.

method blank continued ...

Parameter	Flag	Result	Units	RL
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0935	mg/L	1	0.100	94	70 - 130
4-Bromofluorobenzene (4-BFB)	⁵	0.0605	mg/L	1	0.100	60	70 - 130

Method Blank (1) QC Batch: 13415

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0951	mg/L	1	0.100	95	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0787	mg/L	1	0.100	79	70 - 130

Method Blank (1) QC Batch: 13526

Parameter	Flag	Result	Units	RL
Naphthalene		<0.000200	mg/L	0.2
Acenaphthylene		<0.000200	mg/L	0.2
Acenaphthene		<0.000200	mg/L	0.2
Fluorene		<0.000200	mg/L	0.2
Phenanthrene		<0.000200	mg/L	0.2
Anthracene		<0.000200	mg/L	0.2
Fluoranthene		<0.000200	mg/L	0.2
Pyrene		<0.000200	mg/L	0.2
Benzo(a)anthracene		<0.000200	mg/L	0.2
Chrysene		<0.000200	mg/L	0.2
Benzo(b)fluoranthene		<0.000200	mg/L	0.2
Benzo(k)fluoranthene		<0.000200	mg/L	0.2
Benzo(a)pyrene		<0.000200	mg/L	0.2
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.2
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.2
Benzo(g,h,i)perylene		<0.000200	mg/L	0.2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0161	mg/L	0.001	80.0	20	0 - 128

continued ...

⁵Low surrogate recovery due to prep. ICV/CCV show the method to be in control.

method blank continued ...

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
2-Fluorobiphenyl		0.0159	mg/L	0.001	80.0	20	0 - 140
Terphenyl-d14		0.0342	mg/L	0.001	80.0	43	0 - 165

Laboratory Control Spike (LCS-1) QC Batch: 13407

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0982	0.0965	mg/L	1	0.100	<0.000255	98	2	70 - 130	20
Toluene	0.0932	0.0920	mg/L	1	0.100	<0.000153	93	1	70 - 130	20
Ethylbenzene	0.0927	0.0911	mg/L	1	0.100	<0.000226	93	2	70 - 130	20
Xylene	0.261	0.256	mg/L	1	0.300	<0.000531	87	2	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0967	0.0941	mg/L	1	0.100	97	94	70 - 130
4-Bromofluorobenzene (4-BFB)	0.0842	0.0813	mg/L	1	0.100	84	81	70 - 130

Laboratory Control Spike (LCS-1) QC Batch: 13415

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0865	0.0896	mg/L	1	0.100	<0.000136	86	4	70 - 130	20
Toluene	0.0890	0.0924	mg/L	1	0.100	<0.000247	89	4	70 - 130	20
Ethylbenzene	0.0928	0.0960	mg/L	1	0.100	<0.000550	93	3	70 - 130	20
Xylene	0.305	0.315	mg/L	1	0.300	<0.00156	102	3	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0928	0.0988	mg/L	1	0.100	93	99	70 - 130
4-Bromofluorobenzene (4-BFB)	0.0950	0.0996	mg/L	1	0.100	95	100	70 - 130

Laboratory Control Spike (LCS-1) QC Batch: 13526

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Naphthalene	⁶⁷ 14.6	14.4	mg/L	1	80.0	<0.0445	18	1	22.5 - 119	20
Acenaphthylene	⁸⁹ 17.6	17.2	mg/L	1	80.0	<0.0383	22	2	42.3 - 127	20
Acenaphthene	¹⁰¹¹ 17.6	17.2	mg/L	1	80.0	<0.0421	22	2	38 - 125	20

continued ...

⁶The average of the spike compounds shows that the process is in control.

⁷The average of the spike compounds shows that the process is in control.

⁸The average of the spike compounds shows that the process is in control.

⁹The average of the spike compounds shows that the process is in control.

¹⁰The average of the spike compounds shows that the process is in control.

¹¹The average of the spike compounds shows that the process is in control.

control spikes continued...

Param		LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Fluorene	1213	19.1	18.5	mg/L	1	80.0	<0.0655	24	3	36.6 - 130	20
Phenanthrene	1415	20.4	19.8	mg/L	1	80.0	<0.0383	26	3	40.3 - 131	20
Anthracene	1617	20.2	20.1	mg/L	1	80.0	<0.0468	25	0	36.7 - 135	20
Fluoranthene	1819	21.4	20.8	mg/L	1	80.0	<0.0550	27	3	43.2 - 133	20
Pyrene	2021	35.3	34.3	mg/L	1	80.0	<0.0904	44	3	48.8 - 157	20
Benzo(a)anthracene		35.7	34.3	mg/L	1	80.0	<0.0993	45	4	40.2 - 138	20
Chrysene		36.3	35.3	mg/L	1	80.0	<0.121	45	3	5.5 - 179	20
Benzo(b)fluoranthene		39.5	38.9	mg/L	1	80.0	<0.171	49	2	16.4 - 156	20
Benzo(k)fluoranthene		34.6	33.6	mg/L	1	80.0	<0.0951	43	3	40.9 - 150	20
Benzo(a)pyrene		37.6	36.5	mg/L	1	80.0	<0.135	47	3	38.7 - 149	20
Indeno(1,2,3-cd)pyrene		37.2	36.2	mg/L	1	80.0	<0.176	46	3	32 - 153	20
Dibenzo(a,h)anthracene		37.8	36.8	mg/L	1	80.0	<0.184	47	3	0 - 202	20
Benzo(g,h,i)perylene		37.2	36.2	mg/L	1	80.0	<0.134	46	3	39.1 - 144	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Nitrobenzene-d5	15.2	14.7	mg/L	1	80.0	19	18	0 - 128
2-Fluorobiphenyl	16.3	16.1	mg/L	1	80.0	20	20	0 - 140
Terphenyl-d14	36.6	35.2	mg/L	1	80.0	46	44	0 - 165

Standard (ICV-1) QC Batch: 13407

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.100	100	85 - 115	2004-10-18
Toluene		mg/L	0.100	0.0952	95	85 - 115	2004-10-18
Ethylbenzene		mg/L	0.100	0.0944	94	85 - 115	2004-10-18
Xylene		mg/L	0.300	0.266	89	85 - 115	2004-10-18

Standard (CCV-1) QC Batch: 13407

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0962	96	85 - 115	2004-10-18
Toluene		mg/L	0.100	0.0915	92	85 - 115	2004-10-18
Ethylbenzene		mg/L	0.100	0.0908	91	85 - 115	2004-10-18
Xylene		mg/L	0.300	0.255	85	85 - 115	2004-10-18

¹²The average of the spike compounds shows that the process is in control.

¹³The average of the spike compounds shows that the process is in control.

¹⁴The average of the spike compounds shows that the process is in control.

¹⁵The average of the spike compounds shows that the process is in control.

¹⁶The average of the spike compounds shows that the process is in control.

¹⁷The average of the spike compounds shows that the process is in control.

¹⁸The average of the spike compounds shows that the process is in control.

¹⁹The average of the spike compounds shows that the process is in control.

²⁰The average of the spike compounds shows that the process is in control.

²¹The average of the spike compounds shows that the process is in control.

Standard (ICV-1) QC Batch: 13415

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0888	89	85 - 115	2004-10-19
Toluene		mg/L	0.100	0.0908	91	85 - 115	2004-10-19
Ethylbenzene		mg/L	0.100	0.0944	94	85 - 115	2004-10-19
Xylene		mg/L	0.300	0.311	104	85 - 115	2004-10-19

Standard (CCV-1) QC Batch: 13415

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0879	88	85 - 115	2004-10-19
Toluene		mg/L	0.100	0.0900	90	85 - 115	2004-10-19
Ethylbenzene		mg/L	0.100	0.0942	94	85 - 115	2004-10-19
Xylene		mg/L	0.300	0.309	103	85 - 115	2004-10-19

Standard (CCV-2) QC Batch: 13415

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0899	90	85 - 115	2004-10-19
Toluene		mg/L	0.100	0.0922	92	85 - 115	2004-10-19
Ethylbenzene		mg/L	0.100	0.0971	97	85 - 115	2004-10-19
Xylene		mg/L	0.300	0.318	106	85 - 115	2004-10-19

Standard (CCV-1) QC Batch: 13526

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Naphthalene		mg/L	60.0	59.8	100	80 - 120	2004-10-24
Acenaphthylene		mg/L	60.0	60.5	101	80 - 120	2004-10-24
Acenaphthene		mg/L	60.0	59.9	100	80 - 120	2004-10-24
Fluorene		mg/L	60.0	59.8	100	80 - 120	2004-10-24
Phenanthrene		mg/L	60.0	59.8	100	80 - 120	2004-10-24
Anthracene		mg/L	60.0	60.4	101	80 - 120	2004-10-24
Fluoranthene		mg/L	60.0	60.2	100	80 - 120	2004-10-24
Pyrene		mg/L	60.0	59.8	100	80 - 120	2004-10-24
Benzo(a)anthracene		mg/L	60.0	59.3	99	80 - 120	2004-10-24
Chrysene		mg/L	60.0	60.3	100	80 - 120	2004-10-24
Benzo(b)fluoranthene		mg/L	60.0	63.6	106	80 - 120	2004-10-24
Benzo(k)fluoranthene		mg/L	60.0	56.5	94	80 - 120	2004-10-24
Benzo(a)pyrene		mg/L	60.0	62.1	104	80 - 120	2004-10-24
Indeno(1,2,3-cd)pyrene		mg/L	60.0	61.3	102	80 - 120	2004-10-24
Dibenzo(a,h)anthracene		mg/L	60.0	62.1	103	80 - 120	2004-10-24
Benzo(g,h,i)perylene		mg/L	60.0	61.3	102	80 - 120	2004-10-24

Report Date: October 25, 2004
ES-533

Work Order: 4101825
Penrose A

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Lea Co,NM

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limit
Nitrobenzene-d5		61.1	mg/L	1	60.0	102	80 - 120
2-Fluorobiphenyl		61.1	mg/L	1	60.0	102	80 - 120
Terphenyl-d14		60.0	mg/L	1	60.0	100	80 - 120

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TraceAnalysis, Inc. 6701 Aberdeen Avenue, Ste. 9 Lubbock, Texas 79424 Tel (806) 794-1296 Fax (806) 794-1298 T (800) 378-1296		155 McCuehoun, Suite H El Paso, Texas 79932 Tel (915) 585-3443 Fax (915) 585-4944 T (888) 585-3443												
Company Name: <u>Environ Services</u> Address: <u>306 W. WALL #1312</u> Contact Person: <u>JEFF KINDLEY</u> Invoice to: <u>SHELL OIL CO 56 KEN SPRINGER # 300108</u> Project #: <u>ES 533</u> Project Location: <u>Lea Co. NM</u>		Phone #: <u>(432) 570 8726</u> Fax #: <u>(432) 684 7587</u> Project Name: <u>PENROSE "A"</u> Sampler Signature: <u>[Signature]</u>												
CHAIN-OF-CUSTODY AND ANALYSIS REQUEST LAB Order ID #: <u>4101825</u>		ANALYSIS REQUEST (Circle or Specify Method No.)												
LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	VOLUME/AMOUNT	PRESERVATIVE METHOD						SAMPLING DATE	TIME	Turn Around Time if different from standard		
				MATRIX	WATER	AIR	SLUDGE	HCl	HNO ₃				H ₂ SO ₄	NaOH
41336	MW 5	3	2-4L											
337	MW 2	1	1.1											
338	MW 3	1	1											
339	MW 4	1	1											
Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/2007 TCLP Metals Ag As Ba Cd Cr Pb Se Hg TCLP Volatiles TCLP Semi Volatiles TCLP Pesticides RCI GC/MS Vol 8260B/624 GC/MS Semi Vol 8270C/625 PCBs 8082/608 Pesticides 8081A/608 BOD TSS pH														
LAB USE ONLY Intact (Y) N Headspace Y N Temp 42 ° Log-in Review Carrier # <u>51601305514</u>														
Relinquished by: <u>[Signature]</u> Date: <u>10/15/04</u> Time: <u>12:30 PM</u> Received by: <u>[Signature]</u> Date: <u>10/15/04</u> Time: <u>12:30 PM</u> Relinquished by: <u>[Signature]</u> Date: <u>10/15/04</u> Time: <u>1730</u> Received by: <u>[Signature]</u> Date: <u>10/15/04</u> Time: <u>13:59</u>														

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