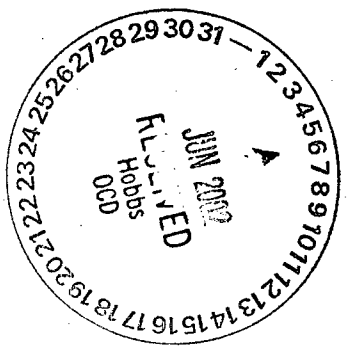
Highlander Environmental Corp.

Midland, Texas

May 23, 2002



Mr. Paul Sheeley
Environmental Bureau
Oil Conservation Division
1625 N. French Drive
P.O. Box 1980
Hobbs, New Mexico 88240

RE: Project 1712, Assessment and Work Plan for the Pipeline Leak located at the Duke NMR Regional Pipeline, San Simon, Section 27, Township 21 South, Range 35 East Lea County, New Mexico.

Dear Mr. Sheeley,

Highlander Environmental Corp. (Highlander) was contacted by Duke Energy Field Services, LP (Duke) to assess a pipeline spill, which occurred at the Duke NMR Regional Pipeline, San Simon, in Lea County, New Mexico. The Site is located in Section 27, Township 21 South, Range 35 East at location 32° 26' 45.1"N, 103° 21' 22.8"W. The Site location is shown in Figure 1.

According to published data, one well is shown in Section 27, Township 21 South, Range 35 East, with a water level of 22' below surface. In addition, the New Mexico State Engineers Office Well Reports indicated a water well located in Section 27, Township 21 South, Range 35 East. This well appears to be a windmill located approximately 1,000 feet northwest of the spill area and indicated a total well depth of 31 feet below surface. During the installation of the boreholes, groundwater was encountered at approximately 23' below ground surface.

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remediation action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene and xylene). Based upon on the regional groundwater data, the proposed RRAL for TPH is 100 mg/kg.

Background

On January 5, 2001, a leak occurred from a gas gathering line and released pipeline liquids into the surrounding soils. The leak released approximately 840 gallons (20 barrels) of petroleum oils and liquids. No liquids were recovered at the Site. Once the leak was discovered, the pipeline leak was immediately repaired. No remediation activity on the soil has been performed at the Site.

application - pPAC 0608129059

1910 N. Big Spring • Midland, Texas 79705 • (915) 682-4559 • Fax (915) 682-3946

Site Inspection and Assessment

Augerhole Installation and Analysis

On September 6, 2001, Highlander inspected the leak area. The aerial extent of the impact is shown on Figure 2. The impacted area measured approximately 35' x 45'. Soil samples were collected using a stainless steel, bucket-type, hand auger. A total of five (5) auger holes (AH) were installed near the release point. Due to a shallow dense caliche encountered at approximately 2.0 feet below surface, the impact was not vertically defined. The soil sample results are shown in Table 1. Based on the results of AH-1 and AH-5, Duke proposed to further investigate the release area by installing air rotary-drilled boreholes in the area of the release.

Borehole Installation and Analysis

On February 15, 2002, Highlander Environmental Corp. (Highlander) supervised the installation of six (6) air rotary-drilled boreholes. The borehole locations are shown in Figure 2. Selected boreholes were installed to a total depth of 16' to 26' below surface. Split spoon or core samples were collected at 5 feet intervals for field screening using a Thermo Environmental Equipment Model 580B, Organic Vapor Meter (OVM). At least two soil samples from each borehole were analyzed for chloride, total petroleum hydrocarbons (TPH) by EPA method 418.1 and benzene, toluene, ethylbenzene and xylene (BTEX) by EPA method 602/8021B. Chloride samples were analyzed by using an EPA standard method. The soil sample results are summarized in Table 2.

The perimeter boreholes (BH-2, BH-4, BH-5 and BH-6), installed to define the horizontal extent of the impact, appear to show lateral confinement to the immediate area measuring approximately 35' x 45'. The heaviest impact appears to be in the shallow soils to a depth of approximately 5-6' below surface. On selected boreholes, the TPH levels significantly decreased at a point below 5' below surface, however, the deeper samples in some boreholes did show TPH levels above the RRAL of 100 mg/kg.

Boreholes (BH-1 and BH-3) were installed near the pipeline to assess the vertical extent of the impact. Soil samples collected from the boreholes were all above the RRAL of 100 mg/kg. In the area of BH-1 and BH-3, the heaviest impact was found to a depth of approximately 5' and 15' below surface, respectively. BH-1 had a TPH level of 29,600 mg/kg and total BTEX of 193 mg/kg at 5-6' below surface. The TPH level decreases with depth to 110 mg/kg (15-16'), 412 mg/kg (20-21') and 109 mg/kg (24-25'), however, levels exceeded the RRAL of 100 mg/kg. The traces of BTEX detected at these depths were all below the RRAL for BTEX. BH-3 had TPH levels ranging from 5,960 mg/kg to 28,100 mg/kg to a depth of 15' below surface. The TPH significantly decreased with depth to 170 mg/kg (20-21') and 436 mg/kg (25-26'), however, levels still exceeded the RRAL. Based on the OVM readings and analytical data, the total BTEX levels exceeding the RRAL appears to extend to a depth of 10-11' below surface. The chloride levels detected in BH-1 and BH-3 do not appear to be an environmental concern.

Recommendation/Work Plan

Based on the shallow groundwater, the heaviest soil impact will need to be excavated at the Site. However, Duke proposes to evaluate the groundwater quality for potential impact. Once the groundwater has been evaluated, the extent of impacted soil will be removal and proper disposal.

The groundwater evaluation will consist of the installation of four (4) monitor wells. The locations of the proposed wells are shown in the Figure 3. The monitoring wells will be drilled using air or water rotary drilling techniques, and constructed using two-(2) inch diameter schedule 40 PVC threaded casing and factory slotted screen. The wells will be constructed with approximately fifteen (15) feet of well screen. The wells will be drilled to a depth of approximately 30-35' below ground surface (BGS), and the well screen will be installed with about five (5) feet of screen above and ten (10) feet below the groundwater, to evaluate groundwater quality for light hydrocarbons compounds. The well screens will be surrounded with graded silica sand to a depth approximately 2 feet above the screen. A layer of bentonite pellets, approximately 2 feet thick, will be placed in the borehole above the sand. The remainder of the borehole will be filled with cement and bentonite grout to about one (1) foot below ground. The wells will be secured with locking steel protectors anchored in a concrete pad measuring approximately 3 feet by 3 feet. A land surveyor licensed in the State of New Mexico will survey the wells for location and elevation.

Following installation, the wells will be developed by bailing with a rig or hand bailer, or pumped with an electric submersible pump to remove fine grained sediment disturbed during drilling and to ensure collection of representative groundwater samples. Water removed from the wells will be placed in appropriate containers (i.e., 55-gallon drums, portable tank, etc.) and retained at the Site until disposal is arranged. Groundwater samples will be collected following well development and analyzed for BTEX by EPA method 602/8021B.

Each well will be inspected for the presence of phase-separated hydrocarbons (PSH) and, if present, a sample will be collected and analyzed by gas chromatography (GC) to determine composition and origin. If PSH is detected in a monitor well, groundwater samples will not be collected from that well. All samples will be delivered to the laboratory via overnight delivery and under chain of custody control.

All downhole equipment (i.e., drill rods, drill bits, etc.) will be thoroughly decontaminated between each use with a high-pressure hot water wash and rinse. Soil cuttings from drilling will be stockpiled adjacent to the well until disposal is arranged. All equipment coming in contact with groundwater has the potential for cross contamination if not properly decontaminated, therefore, all such equipment (i.e., water level indicator, interface probe, submersible pump, etc.) will be thoroughly cleaned between wells by washing with laboratory grade detergent and potable water.

Upon receipt of analytical data, the excavation will be performed and Highlander will prepare a detail report that discusses the activities performed at the Site. If you require any additional information or have any questions or comments concerning the assessment report and work plan, please call.

Very truly yours,

Ike Tavarez
Project Manager/Geologist

cc: Stan Shaver
Steve Weathers

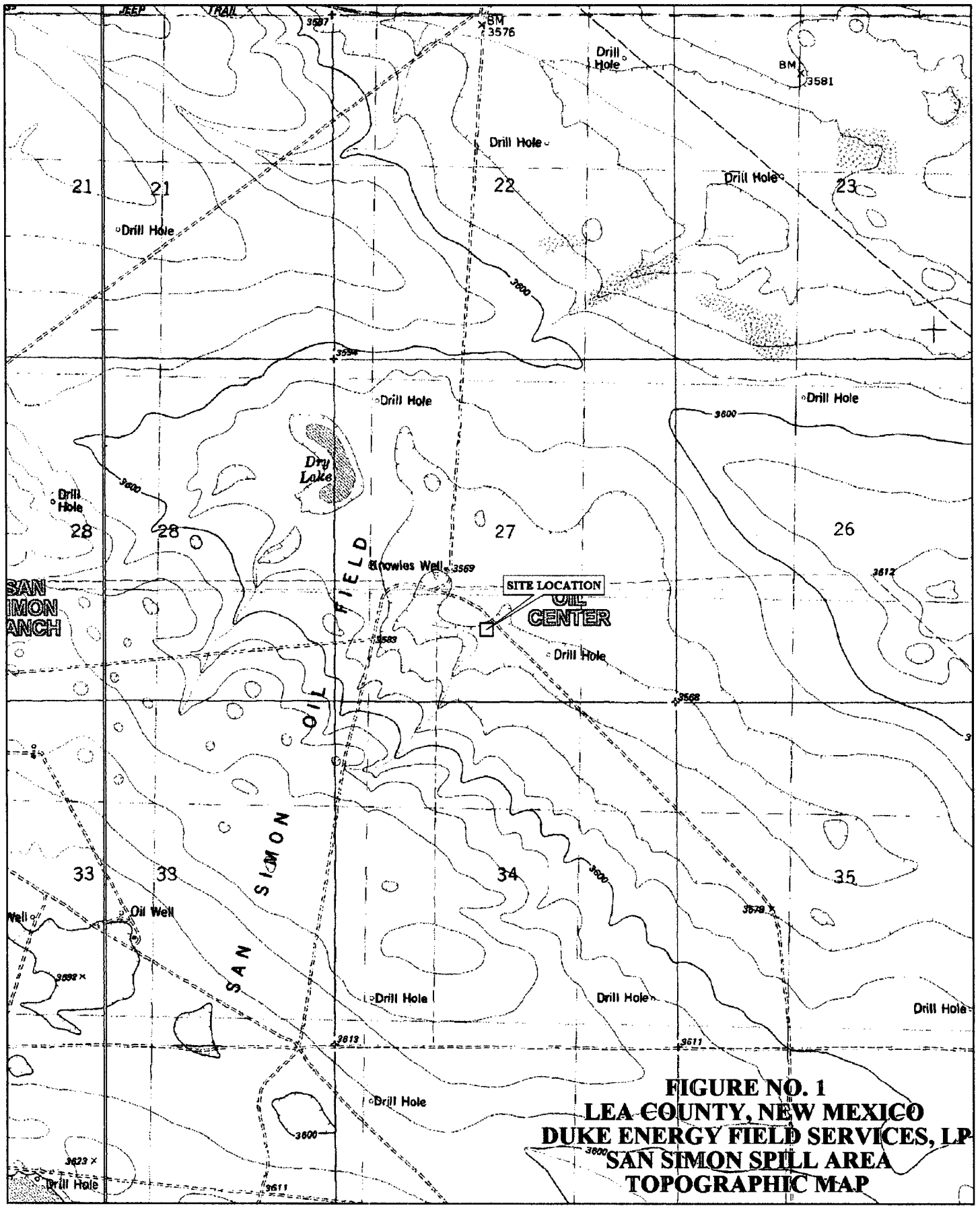


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
DUKE ENERGY FIELD SERVICES, LP
SAN SIMON SPILL AREA
TOPOGRAPHIC MAP

 Scale: 1 : 24,000 Zoom Level: 13-0 Datum: NAD27

2000 ft

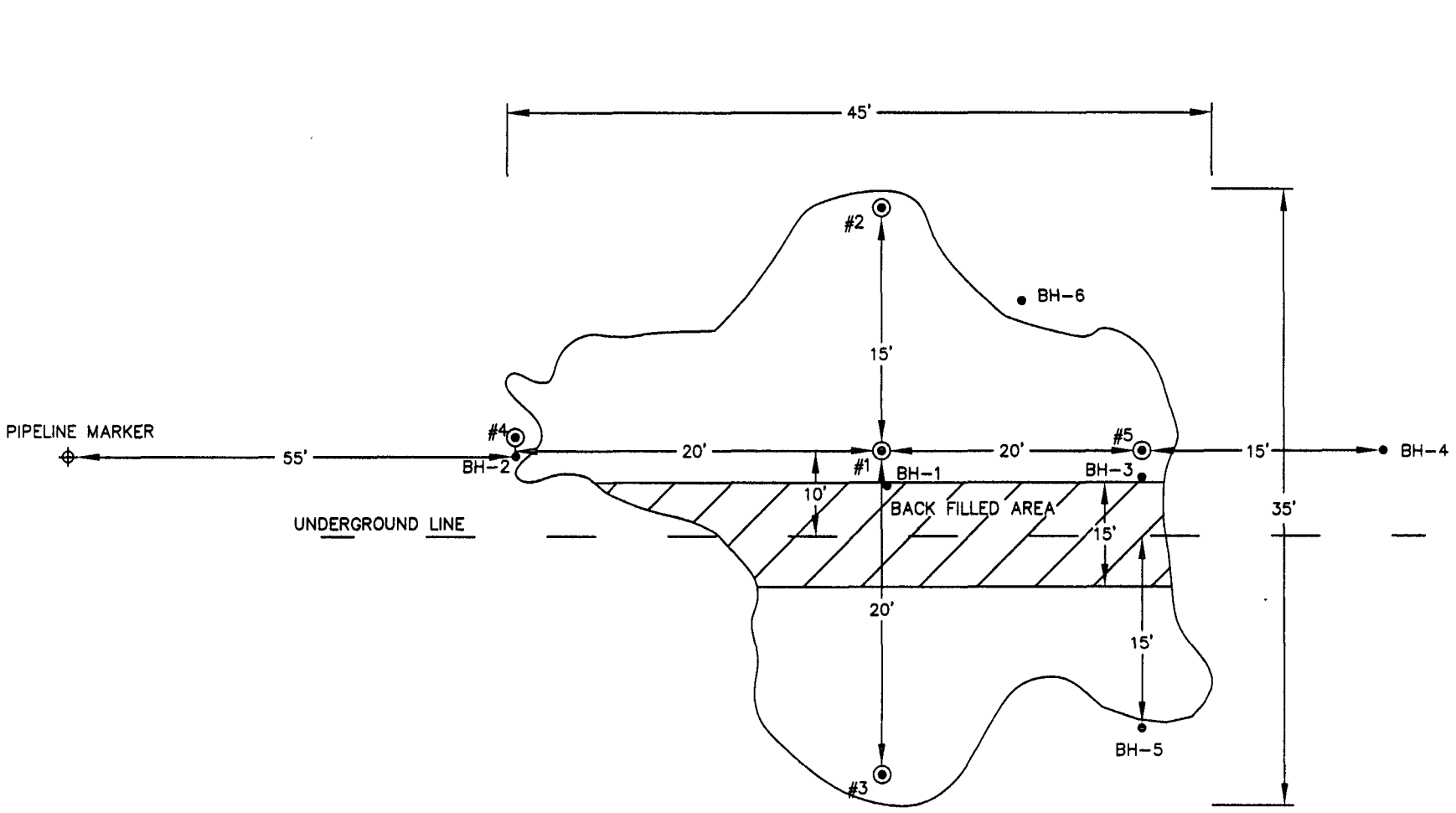


FIGURE NO. 2

LEA COUNTY, NEW MEXICO

DUKE ENERGY FIELD SERVICES, LP

SAN SIMON SPILL

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

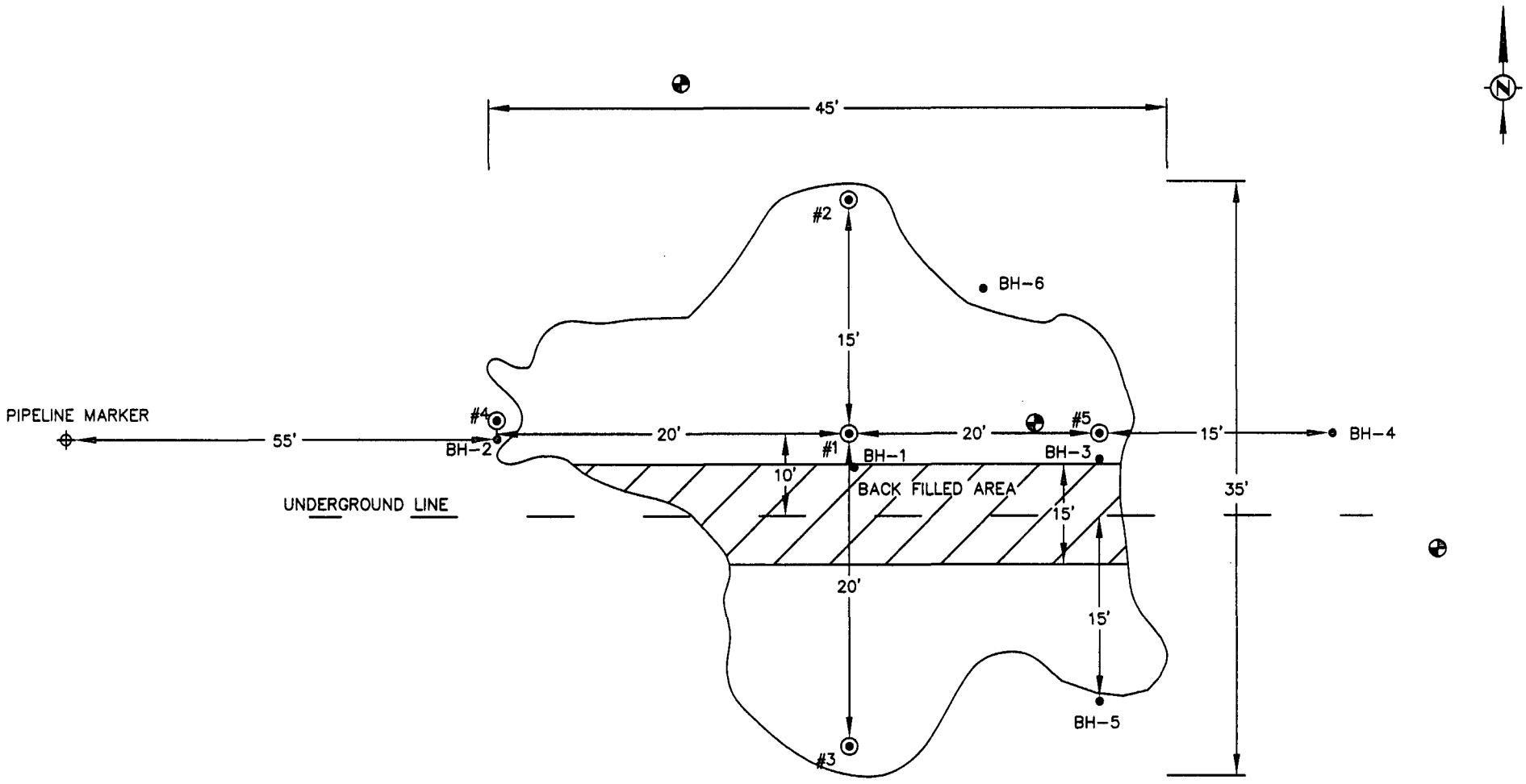
LEGEND

- AUGERHOLE LOCATION
- BOREHOLE LOCATION

SCALE: 1"=10'

10 5 0 10

DATE: 9/10/01
DWG. BY: JDA
FILE: c:\DUKE\1712\FIG-2



LEGEND

- PROPOSED MONITOR WELL LOCATION
- AUGERHOLE LOCATION
- BOREHOLE LOCATION

SCALE: 1"=10'

10 5 0 10

FIGURE NO. 3

LEA COUNTY, NEW MEXICO

DUKE ENERGY FIELD SERVICES, LP

PROPOSED MONITOR WELL LOCATIONS

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 5/28/02
DWG. BY: JDA
FILE: C:\DUKE\1712\FIG-3

Table 1
Duke Energy Field Services
San Simon - Pipeline Spill
Lea County, New Mexico

Sample ID	Date Sampled	Depth (ft)	OVM (ppm)	TPH (mg/kg)	B	T	E	X	Total BTEX	Chloride (mg/kg)
					(mg/kg)					
AH-1	9/6/01	0-1	697	**18000**	0.356	3.49	0.660	13.7	18.2	6157.7
	9/6/01	1.5-2.0	435	-	-	-	-	-	-	5902.80
	9/6/01	2.0	666	**16000**	<0.010	1.480	5.39	29	35.9	-
AH-2	9/6/01	2.0	-	<10	<0.010	<0.010	0.026	0.016	0.042	-
AH-3	9/6/01	2-2.5	148	**855**	<0.010	0.053	0.017	0.093	0.163	-
AH-4	9/6/01	2.0	<10	<10	-	-	-	-	-	-
AH-5	9/6/01	2-2.5	666	**19300**	4.49	21.40	7.76	**54.00**	**87.7**	-

AH - (augerhole)
(-) Not Analyzed

Table 2
Duke Energy Field Services
San Simon - Pipeline Spill
Lea County, New Mexico

Sample ID	Date Sampled	Depth (ft)	OVM (ppm)	TPH (mg/kg)	B	T	E	X	Total BTEX	Chloride (mg/kg)
					(mg/kg)					
BH-1	2/15/02	5-6	426	29600	<0.005	52.50	24.1	116.0	**193.0**	375
	2/15/02	10-11	100	-	-	-	-	-	-	-
	2/15/02	15-16	107	110	0.0398	0.158	0.171	0.629	0.998	<10
	2/15/02	20-21	96	412	-	-	-	-	-	-
	2/15/02	24-25	37	109	0.0407	0.108	0.119	0.337	0.605	<10
BH-2	2/15/02	5-6	20	<10	-	-	-	-	-	-
	2/15/02	10-11	13	-	-	-	-	-	-	-
	2/15/02	15-16	18	<10	-	-	-	-	-	-
BH-3	2/15/02	5-6	577	28100	1.73	30.50	11.60	77.80	**122.0**	1090
	2/15/02	10-11	568	-	-	-	-	-	-	-
	2/15/02	15-16	460	5960	1.13	8.44	5.67	31.40	46.60	36.9
	2/15/02	20-21	136	170	0.0391	0.112	0.154	0.512	0.817	17.2
	2/15/02	25-26	80	436	-	-	-	-	-	-
BH-4	2/15/02	5-6	60	222	0.0396	0.118	0.153	0.550	0.861	-
	2/15/02	10-11	20	-	-	-	-	-	-	-
	2/15/02	15-16	18	14.9	-	-	-	-	-	-
BH-5	2/15/02	5-6	400	1060	0.0551	1.45	1.16	7.54	10.2	-
	2/15/02	10-11	30	28.6	-	-	-	-	-	-
	2/15/02	15-16	20	156	-	-	-	-	-	-
BH-6	2/15/02	5-6	90	127	<0.010	0.106	0.124	0.385	0.615	-
	2/15/02	10-11	50	120	-	-	-	-	-	-
	2/15/02	15-16	30	120	-	-	-	-	-	-

BH - (boreholes)
(-) Not Analyzed

Summary Report

Ike Tavarez
Highlander Environmental Services
1910 N. Big Spring St.
Midland, TX 79705

Report Date: September 21, 2001

Order ID Number: A01091002

Project Number: 1712
Project Name: Duke/San Simon Spill Area
Project Location: N/A

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
178845	AH-1 (0-1')	Soil	9/6/01	:	9/8/01
178846	AH-1 (1.5-2.0')	Soil	9/6/01	:	9/8/01
178847	AH-1 (2.0')	Soil	9/6/01	:	9/8/01
178849	AH-2 (2-0')	Soil	9/6/01	:	9/8/01
178851	AH-3 (2-2.5')	Soil	9/6/01	:	9/8/01
178853	AH-4 (2.0)	Soil	9/6/01	:	9/8/01
178855	AH-5 (2-2.5')	Soil	9/6/01	:	9/8/01

This report consists of a total of 1 page(s) and is intended only as a summary of results for the sample(s) listed above.

	BTEX					TPH
Sample - Field Code	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	M,P,O-Xylene (ppm)	Total BTEX (ppm)	TRPHC (ppm)
178845 - AH-1 (0-1')	0.356	3.49	0.669	13.7	18.2	18000
178847 - AH-1 (2.0')	<0.010	1.48	5.39	29 [1]	35.9	16700
178849 - AH-2 (2-0')	<0.010	<0.010	0.026	0.016	0.042	<10.0
178851 - AH-3 (2-2.5')	<0.010	0.053	0.017	0.093	0.163	855
178853 - AH-4 (2.0)	-	-	-	-	-	<10.0
178855 - AH-5 (2-2.5')	4.49	21.4 [2]	7.76	54	87.7 [3]	19300

Sample: 178845 - AH-1 (0-1')

Param	Flag	Result	Units
CL		6157.74	mg/Kg

Sample: 178846 - AH-1 (1.5-2.0')

Param	Flag	Result	Units
CL		5902.82	mg/Kg

[1] Estimated concentration value greater than the standard value.
[2] Estimated concentration value greater than the standard range.
[3] Estimated concentration value greater than the standard range.

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
155 McCutcheon, Suite H El Paso, Texas 79932 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Ike Tavarez
Highlander Environmental Services
1910 N. Big Spring St.
Midland, TX 79705

Report Date: September 21, 2001

Order ID Number: A01091002

Project Number: 1712
Project Name: Duke/San Simon Spill Area
Project Location: N/A

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to Trace-Analysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
178845	AH-1 (0-1')	Soil	9/6/01	:	9/8/01
178846	AH-1 (1.5-2.0')	Soil	9/6/01	:	9/8/01
178847	AH-1 (2.0')	Soil	9/6/01	:	9/8/01
178849	AH-2 (2-0')	Soil	9/6/01	:	9/8/01
178851	AH-3 (2-2.5')	Soil	9/6/01	:	9/8/01
178853	AH-4 (2.0)	Soil	9/6/01	:	9/8/01
178855	AH-5 (2-2.5')	Soil	9/6/01	:	9/8/01

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.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 178845 - AH-1 (0-1')

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC13904	Date Analyzed:	9/10/01
Analyst:	CG	Preparation Method:	E 5035	Prep Batch:	PB11864	Date Prepared:	9/10/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		0.356	mg/Kg	10	0.001
Toluene		3.49	mg/Kg	10	0.001
Ethylbenzene		0.669	mg/Kg	10	0.001
M,P,O-Xylene		13.7	mg/Kg	10	0.001
Total BTEX		18.2	mg/Kg	10	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.892	mg/Kg	10	0.10	89	72 - 128
4-BFB	[1]	3.82	mg/Kg	10	0.10	382	72 - 128

Sample: 178845 - AH-1 (0-1')

Analysis:	Ion Chromatography (IC)	Analytical Method:	E 300.0	QC Batch:	QC14087	Date Analyzed:	9/16/01
Analyst:	JSW	Preparation Method:	N/A	Prep Batch:	PB12011	Date Prepared:	9/13/01

Param	Flag	Result	Units	Dilution	RDL
CL		6157.74	mg/Kg	1000	0.50

Sample: 178845 - AH-1 (0-1')

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC14002	Date Analyzed:	9/17/01
Analyst:	JJ	Preparation Method:	E 3550B	Prep Batch:	PB11952	Date Prepared:	9/14/01

Param	Flag	Result	Units	Dilution	RDL
TRPHC		18000	mg/Kg	1	10

Sample: 178846 - AH-1 (1.5-2.0')

Analysis:	Ion Chromatography (IC)	Analytical Method:	E 300.0	QC Batch:	QC14087	Date Analyzed:	9/16/01
Analyst:	JSW	Preparation Method:	N/A	Prep Batch:	PB12011	Date Prepared:	9/13/01

Param	Flag	Result	Units	Dilution	RDL
CL		5902.82	mg/Kg	1000	0.50

Sample: 178847 - AH-1 (2.0')

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC13904	Date Analyzed:	9/10/01
Analyst:	CG	Preparation Method:	E 5035	Prep Batch:	PB11864	Date Prepared:	9/10/01

[1] High surrogate recovery due to peak interference.

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.010	mg/Kg	10	0.001
Toluene		1.48	mg/Kg	10	0.001
Ethylbenzene		5.39	mg/Kg	10	0.001
M,P,O-Xylene	[2]	29	mg/Kg	10	0.001
Total BTEX		35.9	mg/Kg	10	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.859	mg/Kg	10	0.10	86	72 - 128
4-BFB	[3]	6.85	mg/Kg	10	0.10	685	72 - 128

Sample: 178847 - AH-1 (2.0')

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC14002	Date Analyzed:	9/17/01
Analyst:	JJ	Preparation Method:	E 3550B	Prep Batch:	PB11952	Date Prepared:	9/14/01

Param	Flag	Result	Units	Dilution	RDL
TRPHC		16700	mg/Kg	1	10

Sample: 178849 - AH-2 (2-0')

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC13904	Date Analyzed:	9/10/01
Analyst:	CG	Preparation Method:	E 5035	Prep Batch:	PB11864	Date Prepared:	9/10/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.010	mg/Kg	10	0.001
Toluene		<0.010	mg/Kg	10	0.001
Ethylbenzene		0.026	mg/Kg	10	0.001
M,P,O-Xylene		0.016	mg/Kg	10	0.001
Total BTEX		0.042	mg/Kg	10	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		1.19	mg/Kg	10	0.10	119	72 - 128
4-BFB		1.02	mg/Kg	10	0.10	102	72 - 128

Sample: 178849 - AH-2 (2-0')

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC14144	Date Analyzed:	9/20/01
Analyst:	MS	Preparation Method:	E 3550B	Prep Batch:	PB12061	Date Prepared:	9/18/01

Param	Flag	Result	Units	Dilution	RDL
TRPHC		<10.0	mg/Kg	1	10

Sample: 178851 - AH-3 (2-2.5')

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC13904	Date Analyzed:	9/10/01
Analyst:	CG	Preparation Method:	E 5035	Prep Batch:	PB11864	Date Prepared:	9/10/01

[2]Estimated concentration value greater than the standard value.
[3]High surrogate recovery due to peak interference.

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.010	mg/Kg	10	0.001
Toluene		0.053	mg/Kg	10	0.001
Ethylbenzene		0.017	mg/Kg	10	0.001
M,P,O-Xylene		0.093	mg/Kg	10	0.001
Total BTEX		0.163	mg/Kg	10	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		1.15	mg/Kg	10	0.10	115	72 - 128
4-BFB		0.998	mg/Kg	10	0.10	100	72 - 128

Sample: 178851 - AH-3 (2-2.5')

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC14002	Date Analyzed:	9/17/01
Analyst:	JJ	Preparation Method:	E 3550B	Prep Batch:	PB11952	Date Prepared:	9/14/01

Param	Flag	Result	Units	Dilution	RDL
TRPHC		855	mg/Kg	1	10

Sample: 178853 - AH-4 (2.0)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC14002	Date Analyzed:	9/17/01
Analyst:	JJ	Preparation Method:	E 3550B	Prep Batch:	PB11952	Date Prepared:	9/14/01

Param	Flag	Result	Units	Dilution	RDL
TRPHC		<10.0	mg/Kg	1	10

Sample: 178855 - AH-5 (2-2.5')

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC13904	Date Analyzed:	9/10/01
Analyst:	CG	Preparation Method:	E 5035	Prep Batch:	PB11864	Date Prepared:	9/10/01

Param	Flag	Result	Units	Dilution	RDL
Benzene		4.49	mg/Kg	20	0.001
Toluene	[4]	21.4	mg/Kg	20	0.001
Ethylbenzene		7.76	mg/Kg	20	0.001
M,P,O-Xylene		54	mg/Kg	20	0.001
Total BTEX	[5]	87.7	mg/Kg	20	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT	[6]	0.912	mg/Kg	20	0.10	45	72 - 128
4-BFB	[7]	5.2	mg/Kg	20	0.10	260	72 - 128

[4]Estimated concentration value greater than the standard range.
[5]Estimated concentration value greater than the standard range.
[6]Low surrogate recovery due to matrix difficulties.
[7]High surrogate recovery due to peak interference.

Sample: 178855 - AH-5 (2-2.5')

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC14002	Date Analyzed:	9/17/01
Analyst:	JJ	Preparation Method:	E 3550B	Prep Batch:	PB11952	Date Prepared:	9/14/01

Param	Flag	Result	Units	Dilution	RDL
TRPHC		19300	mg/Kg	1	10

Quality Control Report
Method Blank

Method Blank

QCBatch: QC13904

Param	Flag	Results	Units	Reporting Limit
Benzene		<0.010	mg/Kg	0.001
Toluene		<0.010	mg/Kg	0.001
Ethylbenzene		<0.010	mg/Kg	0.001
M,P,O-Xylene		<0.010	mg/Kg	0.001
Total BTEX		<0.010	mg/Kg	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		1.2	mg/Kg	10	0.10	116	72 - 128
4-BFB		0.990	mg/Kg	10	0.10	99	72 - 128

Method Blank

QCBatch: QC14002

Param	Flag	Results	Units	Reporting Limit
TRPHC		<10.0	mg/Kg	10

Method Blank

QCBatch: QC14087

Param	Flag	Results	Units	Reporting Limit
CL		21.91	mg/Kg	0.50

Method Blank

QCBatch: QC14144

Param	Flag	Results	Units	Reporting Limit
TRPHC		<10.0	mg/Kg	10

Quality Control Report
Lab Control Spikes and Duplicate Spikes

Laboratory Control Spikes

QCBatch: QC13904

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.993	1.02	mg/Kg	10	0.10	<0.010	99	2	80 - 120	20

Continued ...

... *Continued*

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Benzene	1.01	1.05	mg/Kg	10	0.10	<0.010	101	3	80 - 120	20
Toluene	1.02	1.06	mg/Kg	10	0.10	<0.010	102	3	80 - 120	20
Ethylbenzene	1.02	1.06	mg/Kg	10	0.10	<0.010	102	3	80 - 120	20
M,P,O-Xylene	3.1	3.19	mg/Kg	10	0.30	<0.010	106	2	80 - 120	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	Dilution	Spike Amount	LCS % Rec	LCSD % Rec	Recovery Limits
TFT	1.14	1.16	mg/Kg	10	0.10	114	116	72 - 128
4-BFB	1.05	1.06	mg/Kg	10	0.10	105	106	72 - 128

Laboratory Control Spikes

QCBatch: QC14002

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
TRPHC	210	225	mg/Kg	1	250	<10.0	84	6	70 - 130	20

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

Laboratory Control Spikes

QCBatch: QC14087

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
CL	[8] 33.15	33.31	mg/Kg	1	12.50	21.91	265	0	90 - 110	20

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

Laboratory Control Spikes

QCBatch: QC14144

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
TRPHC	249	253	mg/Kg	1	250	<10.0	99	1	70 - 130	20

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

Quality Control Report
Matrix Spikes and Duplicate Spikes

Matrix Spikes

QCBatch: QC13904

[8] When soil blank is subtracted, LCS %EA is 90

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Benzene	[9] <0.010	[10] <0.010	mg/Kg	10	0.10	<0.010	0	0	80 - 120	20
Toluene	[11] <0.010	[12] <0.010	mg/Kg	10	0.10	<0.010	0	0	80 - 120	20
Ethylbenzene	[13] <0.010	[14] <0.010	mg/Kg	10	0.10	<0.010	0	0	80 - 120	20
M,P,O-Xylene	[15] <0.010	[16] <0.010	mg/Kg	10	0.30	<0.010	0	0	80 - 120	20

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

Surrogate	MS Result	MSD Result	Units	Dilution	Spike Amount	MS % Rec	MSD % Rec	Recovery Limits
TFT	1.08	1.04	mg/Kg	10	0.10	108	104	72 - 128
4-BFB	0.976	0.941	mg/Kg	10	0.10	97	94	72 - 128

Matrix Spikes

QCBatch: QC14002

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
TRPHC	229	236	mg/Kg	1	250	<10.0	91	3	70 - 130	20

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

Matrix Spikes

QCBatch: QC14087

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
CL	[17] 227.2	231.41	mg/Kg	1	625	175.66	8	-278	69 - 121	20

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

Matrix Spikes

QCBatch: QC14144

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
TRPHC	280	287	mg/Kg	1	250	<10.0	112	2	70 - 130	20

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

Quality Control Report
Continuing Calibration Verification Standards

[9]No purgeable in MS/MSD. LCS/LCSD show the method to be in control.
[10]No purgeable in MS/MSD. LCS/LCSD show the method to be in control.
[11]No purgeable in MS/MSD. LCS/LCSD show the method to be in control.
[12]No purgeable in MS/MSD. LCS/LCSD show the method to be in control.
[13]No purgeable in MS/MSD. LCS/LCSD show the method to be in control.
[14]No purgeable in MS/MSD. LCS/LCSD show the method to be in control.
[15]No purgeable in MS/MSD. LCS/LCSD show the method to be in control.
[16]No purgeable in MS/MSD. LCS/LCSD show the method to be in control.
[17]Matrix %EA is 82

CCV (1) QCBatch: QC13904

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/Kg	0.10	0.092	92	85 - 115	9/10/01
Benzene		mg/Kg	0.10	0.098	98	85 - 115	9/10/01
Toluene		mg/Kg	0.10	0.099	99	85 - 115	9/10/01
Ethylbenzene		mg/Kg	0.10	0.098	98	85 - 115	9/10/01
M,P,O-Xylene		mg/Kg	0.30	0.295	98	85 - 115	9/10/01

CCV (2) QCBatch: QC13904

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/Kg	0.10	0.091	91	85 - 115	9/10/01
Benzene		mg/Kg	0.10	0.091	91	85 - 115	9/10/01
Toluene		mg/Kg	0.10	0.092	92	85 - 115	9/10/01
Ethylbenzene		mg/Kg	0.10	0.091	91	85 - 115	9/10/01
M,P,O-Xylene		mg/Kg	0.30	0.276	92	85 - 115	9/10/01

ICV (1) QCBatch: QC13904

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/Kg	0.10	0.100	100	85 - 115	9/10/01
Benzene		mg/Kg	0.10	0.097	97	85 - 115	9/10/01
Toluene		mg/Kg	0.10	0.097	97	85 - 115	9/10/01
Ethylbenzene		mg/Kg	0.10	0.097	97	85 - 115	9/10/01
M,P,O-Xylene		mg/Kg	0.30	0.292	97	85 - 115	9/10/01

CCV (1) QCBatch: QC14002

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC		mg/Kg	100	106	106	75 - 125	9/17/01

CCV (2) QCBatch: QC14002

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC		mg/Kg	100	102	102	75 - 125	9/17/01

ICV (1) QCBatch: QC14002

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC		mg/Kg	100	105	105	75 - 125	9/17/01

CCV (1) QCBatch: QC14087

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.48	99	90 - 110	9/16/01
CL		mg/L	12.50	11.81	94	90 - 110	9/16/01
Fluoride		mg/L	2.50	2.33	93	90 - 110	9/16/01
Nitrate-N		mg/L	2.50	2.35	94	90 - 110	9/16/01
Sulfate		mg/L	12.50	11.60	92	90 - 110	9/16/01

ICV (1) QCBatch: QC14087

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.50	100	90 - 110	9/16/01
CL		mg/L	12.50	11.53	92	90 - 110	9/16/01
Fluoride		mg/L	2.50	2.37	94	90 - 110	9/16/01
Nitrate-N		mg/L	2.50	2.31	92	90 - 110	9/16/01
Sulfate		mg/L	12.50	11.78	94	90 - 110	9/16/01

CCV (1) QCBatch: QC14144

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC		mg/Kg	100	102	102	75 - 125	9/20/01

ICV (1) QCBatch: QC14144

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC		mg/Kg	100	103	103	75 - 125	9/20/01

A 0109 1002

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

PAGE: 1 OF: 2

ANALYSIS REQUEST (Circle or Specify Method No.)

CLIENT NAME: Duke

SITE MANAGER: IKE Tavarez

PROJECT NO.: 1712

PROJECT NAME: Duke / San Simon Spill Area, Lea County NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 418.1 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Chloride
178845	9/6/01		S		X	AH-1 (0-1')	1				✓		X		X															X
46	↓		S		X	AH-1 (1.5-2.0')	1				✓																			X
47			S		X	AH-1 (2.0')-2.5'	1				✓		X		X															
48			S		X	AH-2 (0-1')	1				✓																			
49			S		X	AH-2 (2.0')	1				✓		X		X															
50			S		X	AH-3 (0-1')	1				✓																			
51			S		X	AH-3 (2-2.5')	1				✓		X		X															
52			S		X	AH-4 (0-1')	1				✓																			
53			S		X	AH-4 (2.0)	1				✓		[illegible]		X															
54	↓		S		X	AH-5 (0-1')	1				✓																			

RELINQUISHED BY: (Signature) [signature] Date: 9/07/01 Time: 1700
RECEIVED BY: (Signature) Allen Shelton Date: 9/07/01 Time: 1700

RELINQUISHED BY: (Signature) Allen Shelton Date: 9/07/01 Time: 1845
RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace Labs
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature) [signature] Chaffin
DATE: 9/8/01 TIME: 11:00 9°C

SAMPLED BY: (Print & Sign) IKE Tavarez / Ray Taylor Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS (circled) AIRBILL #
HAND DELIVERED UPS OTHER:

HIGHLANDER CONTACT PERSON: IKE Tavarez

Results by: MON Sept. 17
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS:

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

MA 10 samples - HS Bus 163 506 6355 9/24

A0109100 2

Analysis Request and Chain of Custody Record

PAGE: 2 OF: 2

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Duke.

SITE MANAGER: IKE Tavarez

PROJECT NO.: 1712

PROJECT NAME: Duke / San Simon Spill area. Lea County, NM.

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	8015 MOD. TX1005 (418.1) TPH	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	ECI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 608/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
178855	9/6/01		S		X	AH-5 (2-2.5')	1				✓		X		X													

RELINQUISHED BY: (Signature) Date: 9/07/01 Time: 1700 RECEIVED BY: (Signature) Date: 9/07/01 Time: 1700

SAMPLED BY: (Print & Sign) IKE Tavarez Date: Time:

RELINQUISHED BY: (Signature) Helen Shelton Date: 9/07/01 Time: 1845 RECEIVED BY: (Signature) Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX HAND DELIVERED UPS OTHER: AIRBILL # Overnight

RELINQUISHED BY: (Signature) Date: Time: RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace Lab.
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature) Barry Chaffin
DATE: 9/8/01 TIME: 11:00 9°C

HIGHLANDER CONTACT PERSON: IKE Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid (S-Soil) SL-Sludge O-Other

REMARKS:

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

NA 1 sample - HS Dun 163506 6395

Summary Report

Ike Tavarez
Highlander Environmental Services
1910 N. Big Spring St.
Midland, TX 79705

Report Date: February 28, 2002

Order ID Number: A02022021

Project Number: 1712
Project Name: Duke/San Simon Spill Area
Project Location: N/A

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
191296	BH-1 (5-6')	Soil	2/15/02	:	2/20/02
191298	BH-1 (15-16)	Soil	2/15/02	:	2/20/02
191299	BH-1 (20-21)	Soil	2/15/02	:	2/20/02
191300	BH-1 (24-25')	Soil	2/15/02	:	2/20/02
191301	BH-2 (5-6)	Soil	2/15/02	:	2/20/02
191303	BH-2 (15-16)	Soil	2/15/02	:	2/20/02
191304	BH-3 (5-6)	Soil	2/15/02	:	2/20/02
191306	BH-3 (15-16)	Soil	2/15/02	:	2/20/02
191307	BH-3 (20-21')	Soil	2/15/02	:	2/20/02
191308	BH-3 (25-26')	Soil	2/15/02	:	2/20/02
191309	BH-4 (5-6)	Soil	2/15/02	:	2/20/02
191311	BH-4 (15-16)	Soil	2/15/02	:	2/20/02
191312	BH-5 (5-6)	Soil	2/15/02	:	2/20/02
191313	BH-5 (10-11)	Soil	2/15/02	:	2/20/02
191314	BH-5 (15-16)	Soil	2/15/02	:	2/20/02
191315	BH-6 (5-7)	Soil	2/15/02	:	2/20/02
191316	BH-6 (10-11)	Soil	2/15/02	:	2/20/02
191317	BH-6 (15-16)	Soil	2/15/02	:	2/20/02

0 This report consists of a total of 2 page(s) and is intended only as a summary of results for the sample(s) listed above.

	BTEX							TPH
Sample - Field Code	MTBE (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	M,P,O-Xylene (ppm)	Total BTEX (ppm)	Test Comments (ppm)	TRPHC (ppm)
191296 - BH-1 (5-6')	<0.500	<0.500	52.5	24.1	116	193	* [1]	29600
191298 - BH-1 (15-16)	-	0.0398	0.158	0.171	0.629	0.998	-	110
191299 - BH-1 (20-21)	-	-	-	-	-	-	-	412
191300 - BH-1 (24-25')	-	0.0407	0.108	0.119	0.337	0.605	-	109
191301 - BH-2 (5-6)	-	-	-	-	-	-	-	<10.0
191303 - BH-2 (15-16)	-	-	-	-	-	-	-	<10.0
191304 - BH-3 (5-6)	<0.200	1.73	30.5	11.6	77.8	122	-	28100
191306 - BH-3 (15-16)	-	1.13	8.44	5.67	31.4	46.6	-	5960
191307 - BH-3 (20-21')	-	0.0391	0.112	0.154	0.512	0.817	-	170
191308 - BH-3 (25-26')	-	-	-	-	-	-	-	436
191309 - BH-4 (5-6)	-	0.0396	0.118	0.153	0.550	0.861	-	222
191311 - BH-4 (15-16)	-	-	-	-	-	-	-	14.9
191312 - BH-5 (5-6)	-	0.0551	1.45	1.16	7.54	10.2	-	1060
191313 - BH-5 (10-11)	-	-	-	-	-	-	-	28.6

Continued ...

[1] Sample ran at a dilution due to hydrocarbons beyond xylene.

Continued ...

Sample - Field Code	BTEX MTBE (ppm)	BTEX Benzene (ppm)	BTEX Toluene (ppm)	BTEX Ethylbenzene (ppm)	BTEX M,P,O-Xylene (ppm)	BTEX Total BTEX (ppm)	BTEX Test Comments (ppm)	TPH TRPHC (ppm)
191314 - BH-5 (15-16)	-	-	-	-	-	-	-	156
191315 - BH-6 (5-7)	-	<0.010	0.106	0.124	0.385	0.615	-	127
191316 - BH-6 (10-11)	-	-	-	-	-	-	-	120
191317 - BH-6 (15-16)	-	-	-	-	-	-	-	120

Sample: 191296 - BH-1 (5-6')

Param	Flag	Result	Units
Chloride		375	mg/Kg

Sample: 191298 - BH-1 (15-16)

Param	Flag	Result	Units
Chloride		<10.0	mg/Kg

Sample: 191300 - BH-1 (24-25')

Param	Flag	Result	Units
Chloride		<10.0	mg/Kg

Sample: 191304 - BH-3 (5-6)

Param	Flag	Result	Units
Chloride		1090	mg/Kg

Sample: 191306 - BH-3 (15-16)

Param	Flag	Result	Units
Chloride		36.9	mg/Kg

Sample: 191307 - BH-3 (20-21')

Param	Flag	Result	Units
Chloride		17.2	mg/Kg

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
155 McCutcheon, Suite H El Paso, Texas 79932 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Ike Tavarez
Highlander Environmental Services
1910 N. Big Spring St.
Midland, TX 79705

Report Date: February 28, 2002

Order ID Number: A02022021

Project Number: 1712
Project Name: Duke/San Simon Spill Area
Project Location: N/A

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to Trace-Analysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
191296	BH-1 (5-6')	Soil	2/15/02	:	2/20/02
191298	BH-1 (15-16)	Soil	2/15/02	:	2/20/02
191299	BH-1 (20-21)	Soil	2/15/02	:	2/20/02
191300	BH-1 (24-25')	Soil	2/15/02	:	2/20/02
191301	BH-2 (5-6)	Soil	2/15/02	:	2/20/02
191303	BH-2 (15-16)	Soil	2/15/02	:	2/20/02
191304	BH-3 (5-6)	Soil	2/15/02	:	2/20/02
191306	BH-3 (15-16)	Soil	2/15/02	:	2/20/02
191307	BH-3 (20-21')	Soil	2/15/02	:	2/20/02
191308	BH-3 (25-26')	Soil	2/15/02	:	2/20/02
191309	BH-4 (5-6)	Soil	2/15/02	:	2/20/02
191311	BH-4 (15-16)	Soil	2/15/02	:	2/20/02
191312	BH-5 (5-6)	Soil	2/15/02	:	2/20/02
191313	BH-5 (10-11)	Soil	2/15/02	:	2/20/02
191314	BH-5 (15-16)	Soil	2/15/02	:	2/20/02
191315	BH-6 (5-7)	Soil	2/15/02	:	2/20/02
191316	BH-6 (10-11)	Soil	2/15/02	:	2/20/02
191317	BH-6 (15-16)	Soil	2/15/02	:	2/20/02

0
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. Note: the RDL is equal to MQL for all organic analytes including TPH.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 191296 - BH-1 (5-6')

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18415	Date Analyzed:	2/25/02
Analyst:	CG	Preparation Method:	S 5035	Prep Batch:	PB17896	Date Prepared:	2/25/02

Param	Flag	Result	Units	Dilution	RDL
MTBE		<0.500	mg/Kg	500	0.001
Benzene		<0.500	mg/Kg	500	0.001
Toluene		52.5	mg/Kg	500	0.001
Ethylbenzene		24.1	mg/Kg	500	0.001
M,P,O-Xylene		116	mg/Kg	500	0.001
Total BTEX		193	mg/Kg	500	0.001
Test Comments	[1]	*	mg/Kg	1	

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT	[2]	1.89	mg/Kg	500	1	189	70 - 130
4-BFB	[3]	9.24	mg/Kg	500	1	924	70 - 130

Sample: 191296 - BH-1 (5-6')

Analysis:	Ion Chromatography (IC)	Analytical Method:	E 300.0	QC Batch:	QC18455	Date Analyzed:	2/25/02
Analyst:	JS	Preparation Method:	N/A	Prep Batch:	PB17928	Date Prepared:	2/25/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		375	mg/Kg	10	0.50

Sample: 191296 - BH-1 (5-6')

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18426	Date Analyzed:	2/25/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17905	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		29600	mg/Kg	1	10

Sample: 191298 - BH-1 (15-16)

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18291	Date Analyzed:	2/20/02
Analyst:	CG	Preparation Method:	S 5035	Prep Batch:	PB17799	Date Prepared:	2/20/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		0.0398	mg/Kg	10	0.001
Toluene		0.158	mg/Kg	10	0.001
Ethylbenzene		0.171	mg/Kg	10	0.001
M,P,O-Xylene		0.629	mg/Kg	10	0.001
Total BTEX		0.998	mg/Kg	10	0.001

[1] Sample ran at a dilution due to hydrocarbons beyond xylene.
[2] High surrogate recovery due to peak interference.
[3] High surrogate recovery due to peak interference.

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.899	mg/Kg	10	1	90	70 - 130
4-BFB		1.17	mg/Kg	10	1	117	70 - 130

Sample: 191298 - BH-1 (15-16)

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC18455 Date Analyzed: 2/25/02
Analyst: JS Preparation Method: N/A Prep Batch: PB17928 Date Prepared: 2/25/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		<10.0	mg/Kg	1	0.50

Sample: 191298 - BH-1 (15-16)

Analysis: TPH Analytical Method: E 418.1 QC Batch: QC18426 Date Analyzed: 2/25/02
Analyst: KM Preparation Method: E 3550B Prep Batch: PB17905 Date Prepared: 2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		110	mg/Kg	1	10

Sample: 191299 - BH-1 (20-21)

Analysis: TPH Analytical Method: E 418.1 QC Batch: QC18426 Date Analyzed: 2/25/02
Analyst: KM Preparation Method: E 3550B Prep Batch: PB17905 Date Prepared: 2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		412	mg/Kg	1	10

Sample: 191300 - BH-1 (24-25')

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC18291 Date Analyzed: 2/20/02
Analyst: CG Preparation Method: S 5035 Prep Batch: PB17799 Date Prepared: 2/20/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		0.0407	mg/Kg	10	0.001
Toluene		0.108	mg/Kg	10	0.001
Ethylbenzene		0.119	mg/Kg	10	0.001
M,P,O-Xylene		0.337	mg/Kg	10	0.001
Total BTEX		0.605	mg/Kg	10	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.877	mg/Kg	10	1	88	70 - 130
4-BFB		1.02	mg/Kg	10	1	102	70 - 130

Sample: 191300 - BH-1 (24-25')

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC18455 Date Analyzed: 2/25/02
Analyst: JS Preparation Method: N/A Prep Batch: PB17928 Date Prepared: 2/25/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		<10.0	mg/Kg	1	0.50

Sample: 191300 - BH-1 (24-25')

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18426	Date Analyzed:	2/25/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17905	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		109	mg/Kg	1	10

Sample: 191301 - BH-2 (5-6)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18426	Date Analyzed:	2/25/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17905	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		<10.0	mg/Kg	1	10

Sample: 191303 - BH-2 (15-16)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18426	Date Analyzed:	2/25/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17905	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		<10.0	mg/Kg	1	10

Sample: 191304 - BH-3 (5-6)

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18415	Date Analyzed:	2/25/02
Analyst:	CG	Preparation Method:	S 5035	Prep Batch:	PB17896	Date Prepared:	2/25/02

Param	Flag	Result	Units	Dilution	RDL
MTBE		<0.200	mg/Kg	200	0.001
Benzene		1.73	mg/Kg	200	0.001
Toluene		30.5	mg/Kg	200	0.001
Ethylbenzene		11.6	mg/Kg	200	0.001
M,P,O-Xylene		77.8	mg/Kg	200	0.001
Total BTEX		122	mg/Kg	200	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		1.28	mg/Kg	200	1	128	70 - 130
4-BFB	[4]	6.69	mg/Kg	200	1	669	70 - 130

Sample: 191304 - BH-3 (5-6)

Analysis:	Ion Chromatography (IC)	Analytical Method:	E 300.0	QC Batch:	QC18455	Date Analyzed:	2/25/02
Analyst:	JS	Preparation Method:	N/A	Prep Batch:	PB17928	Date Prepared:	2/25/02

[4] High surrogate recovery due to peak interference.

Param	Flag	Result	Units	Dilution	RDL
Chloride		1090	mg/Kg	50	0.50

Sample: 191304 - BH-3 (5-6)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18426	Date Analyzed:	2/25/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17905	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		28100	mg/Kg	1	10

Sample: 191306 - BH-3 (15-16)

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18291	Date Analyzed:	2/20/02
Analyst:	CG	Preparation Method:	S 5035	Prep Batch:	PB17799	Date Prepared:	2/20/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		1.13	mg/Kg	10	0.001
Toluene		8.44	mg/Kg	10	0.001
Ethylbenzene		5.67	mg/Kg	10	0.001
M,P,O-Xylene		31.4	mg/Kg	10	0.001
Total BTEX		46.6	mg/Kg	10	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.912	mg/Kg	10	1	91	70 - 130
4-BFB	[5]	2.61	mg/Kg	10	1	261	70 - 130

Sample: 191306 - BH-3 (15-16)

Analysis:	Ion Chromatography (IC)	Analytical Method:	E 300.0	QC Batch:	QC18455	Date Analyzed:	2/25/02
Analyst:	JS	Preparation Method:	N/A	Prep Batch:	PB17928	Date Prepared:	2/25/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		36.9	mg/Kg	1	0.50

Sample: 191306 - BH-3 (15-16)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18426	Date Analyzed:	2/25/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17905	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		5960	mg/Kg	1	10

Sample: 191307 - BH-3 (20-21')

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18291	Date Analyzed:	2/20/02
Analyst:	CG	Preparation Method:	S 5035	Prep Batch:	PB17799	Date Prepared:	2/20/02

[5] High surrogate recovery due to peak interference.

Param	Flag	Result	Units	Dilution	RDL
Benzene		0.0391	mg/Kg	10	0.001
Toluene		0.112	mg/Kg	10	0.001
Ethylbenzene		0.154	mg/Kg	10	0.001
M,P,O-Xylene		0.512	mg/Kg	10	0.001
Total BTEX		0.817	mg/Kg	10	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.899	mg/Kg	10	1	90	70 - 130
4-BFB		1.08	mg/Kg	10	1	108	70 - 130

Sample: 191307 - BH-3 (20-21')

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC18455 Date Analyzed: 2/25/02
Analyst: JS Preparation Method: N/A Prep Batch: PB17928 Date Prepared: 2/25/02

Param	Flag	Result	Units	Dilution	RDL
Chloride		17.2	mg/Kg	1	0.50

Sample: 191307 - BH-3 (20-21')

Analysis: TPH Analytical Method: E 418.1 QC Batch: QC18426 Date Analyzed: 2/25/02
Analyst: KM Preparation Method: E 3550B Prep Batch: PB17905 Date Prepared: 2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		170	mg/Kg	1	10

Sample: 191308 - BH-3 (25-26')

Analysis: TPH Analytical Method: E 418.1 QC Batch: QC18437 Date Analyzed: 2/26/02
Analyst: KM Preparation Method: E 3550B Prep Batch: PB17914 Date Prepared: 2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		436	mg/Kg	1	10

Sample: 191309 - BH-4 (5-6)

Analysis: BTEX Analytical Method: S 8021B QC Batch: QC18291 Date Analyzed: 2/20/02
Analyst: CG Preparation Method: S 5035 Prep Batch: PB17799 Date Prepared: 2/20/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		0.0396	mg/Kg	10	0.001
Toluene		0.118	mg/Kg	10	0.001
Ethylbenzene		0.153	mg/Kg	10	0.001
M,P,O-Xylene		0.550	mg/Kg	10	0.001
Total BTEX		0.861	mg/Kg	10	0.001

Continued ...

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.991	mg/Kg	10	1	99	70 - 130
4-BFB		1.17	mg/Kg	10	1	117	70 - 130

Sample: 191309 - BH-4 (5-6)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18437	Date Analyzed:	2/26/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17914	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		222	mg/Kg	1	10

Sample: 191311 - BH-4 (15-16)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18437	Date Analyzed:	2/26/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17914	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		14.9	mg/Kg	1	10

Sample: 191312 - BH-5 (5-6)

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18291	Date Analyzed:	2/20/02
Analyst:	CG	Preparation Method:	S 5035	Prep Batch:	PB17799	Date Prepared:	2/20/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		0.0551	mg/Kg	10	0.001
Toluene		1.45	mg/Kg	10	0.001
Ethylbenzene		1.16	mg/Kg	10	0.001
M,P,O-Xylene		7.54	mg/Kg	10	0.001
Total BTEX		10.2	mg/Kg	10	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.808	mg/Kg	10	1	81	70 - 130
4-BFB	[6]	0.558	mg/Kg	10	1	55	70 - 130

Sample: 191312 - BH-5 (5-6)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18437	Date Analyzed:	2/26/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17914	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		1060	mg/Kg	1	10

[6] Low surrogate recovery due to matrix difficulties.

Sample: 191313 - BH-5 (10-11)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18437	Date Analyzed:	2/26/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17914	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		28.6	mg/Kg	1	10

Sample: 191314 - BH-5 (15-16)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18437	Date Analyzed:	2/26/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17914	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		156	mg/Kg	1	10

Sample: 191315 - BH-6 (5-7)

Analysis:	BTEX	Analytical Method:	S 8021B	QC Batch:	QC18291	Date Analyzed:	2/20/02
Analyst:	CG	Preparation Method:	S 5035	Prep Batch:	PB17799	Date Prepared:	2/20/02

Param	Flag	Result	Units	Dilution	RDL
Benzene		<0.010	mg/Kg	10	0.001
Toluene		0.106	mg/Kg	10	0.001
Ethylbenzene		0.124	mg/Kg	10	0.001
M,P,O-Xylene		0.385	mg/Kg	10	0.001
Total BTEX		0.615	mg/Kg	10	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.953	mg/Kg	10	1	95	70 - 130
4-BFB		1.11	mg/Kg	10	1	111	70 - 130

Sample: 191315 - BH-6 (5-7)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18437	Date Analyzed:	2/26/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17914	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		127	mg/Kg	1	10

Sample: 191316 - BH-6 (10-11)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18437	Date Analyzed:	2/26/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17914	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		120	mg/Kg	1	10

Sample: 191317 - BH-6 (15-16)

Analysis:	TPH	Analytical Method:	E 418.1	QC Batch:	QC18437	Date Analyzed:	2/26/02
Analyst:	KM	Preparation Method:	E 3550B	Prep Batch:	PB17914	Date Prepared:	2/22/02

Param	Flag	Result	Units	Dilution	RDL
TRPHC		120	mg/Kg	1	10

Quality Control Report
Method Blank

Method Blank

QCBatch: QC18291

Param	Flag	Results	Units	Reporting Limit
Benzene		<0.010	mg/Kg	0.001
Toluene		<0.010	mg/Kg	0.001
Ethylbenzene		<0.010	mg/Kg	0.001
M,P,O-Xylene		<0.010	mg/Kg	0.001
Total BTEX		<0.010	mg/Kg	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.924	mg/Kg	10	1	92	70 - 130
4-BFB		0.814	mg/Kg	10	1	81	70 - 130

Method Blank

QCBatch: QC18415

Param	Flag	Results	Units	Reporting Limit
MTBE		<0.010	mg/Kg	0.001
Benzene		<0.010	mg/Kg	0.001
Toluene		<0.010	mg/Kg	0.001
Ethylbenzene		<0.010	mg/Kg	0.001
M,P,O-Xylene		<0.010	mg/Kg	0.001
Total BTEX		<0.010	mg/Kg	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
TFT		0.924	mg/Kg	10	1	92	70 - 130
4-BFB		0.871	mg/Kg	10	1	87	70 - 130

Method Blank

QCBatch: QC18426

Param	Flag	Results	Units	Reporting Limit
TRPHC		<10.0	mg/Kg	10

Method Blank

QCBatch: QC18437

Param	Flag	Results	Units	Reporting Limit
TRPHC		<10.0	mg/Kg	10

Method Blank

QCBatch: QC18455

Param	Flag	Results	Units	Reporting Limit
Chloride		11.85	mg/Kg	0.50

Quality Control Report
Lab Control Spikes and Duplicate Spikes

Laboratory Control Spikes

QCBatch: QC18291

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.912	0.922	mg/Kg	10	1	<0.010	91	1	79 - 113	20
Benzene	0.910	0.915	mg/Kg	10	1	<0.010	91	0	88 - 107	20
Toluene	0.923	0.934	mg/Kg	10	1	<0.010	92	1	86 - 110	20
Ethylbenzene	0.926	0.934	mg/Kg	10	1	<0.010	93	1	85 - 110	20
M,P,O-Xylene	2.80	2.80	mg/Kg	10	3	<0.010	93	0	86 - 112	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	Dilution	Spike Amount	LCS % Rec	LCSD % Rec	Recovery Limits
TFT	0.940	0.937	mg/Kg	10	1	94	94	70 - 130
4-BFB	0.940	0.920	mg/Kg	10	1	94	92	70 - 130

Laboratory Control Spikes

QCBatch: QC18415

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.923	0.916	mg/Kg	10	1	<0.010	92	1	79 - 113	20
Benzene	0.982	0.962	mg/Kg	10	1	<0.010	98	2	88 - 107	20
Toluene	0.947	0.935	mg/Kg	10	1	<0.010	95	1	86 - 110	20
Ethylbenzene	0.959	0.945	mg/Kg	10	1	<0.010	96	1	85 - 110	20
M,P,O-Xylene	2.76	2.72	mg/Kg	10	3	<0.010	92	1	86 - 112	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	Dilution	Spike Amount	LCS % Rec	LCSD % Rec	Recovery Limits
TFT	0.927	0.933	mg/Kg	10	1	93	93	70 - 130
4-BFB	0.874	0.878	mg/Kg	10	1	87	88	70 - 130

Laboratory Control Spikes

QCBatch: QC18426

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
TRPHC	206	214	mg/Kg	1	250	<10.0	82	3	70 - 130	20

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

Laboratory Control Spikes

QCBatch: QC18437

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
TRPHC	204	211	mg/Kg	1	250	<10.0	81	3	70 - 130	20

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

Laboratory Control Spikes

QCBatch: QC18455

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	23.23	23.19	mg/Kg	1	12.50	11.85	91	0	90 - 110	20

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

Quality Control Report
Matrix Spikes and Duplicate Spikes

Matrix Spikes

QCBatch: QC18291

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Benzene	1.01	0.978	mg/Kg	10	1	0.0398	101	3	68 - 102	20
Toluene	1.24	1.19	mg/Kg	10	1	0.154	124	4	69 - 105	20
Ethylbenzene	1.20	1.13	mg/Kg	10	1	0.190	120	6	65 - 108	20
M,P,O-Xylene	3.38	3.18	mg/Kg	10	3	<0.010	113	6	63 - 114	20

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

Surrogate	MS Result	MSD Result	Units	Dilution	Spike Amount	MS % Rec	MSD % Rec	Recovery Limits
TFT	0.801	0.873	mg/Kg	10	1	80	87	70 - 130
4-BFB	0.956	1.05	mg/Kg	10	1	96	105	70 - 130

Matrix Spikes

QCBatch: QC18415

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
MTBE	0.816	0.792	mg/Kg	10	1		82	3	47 - 138	20
Benzene	0.915	0.898	mg/Kg	10	1	<0.010	91	2	68 - 102	20
Toluene	0.931	0.912	mg/Kg	10	1	<0.010	93	2	69 - 105	20
Ethylbenzene	0.893	0.872	mg/Kg	10	1	<0.010	89	2	65 - 108	20
M,P,O-Xylene	2.72	2.73	mg/Kg	10	3	<0.010	91	0	63 - 114	20

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

Surrogate	MS Result	MSD Result	Units	Dilution	Spike Amount	MS % Rec	MSD % Rec	Recovery Limits
TFT	[7] 0.678	[8] 0.630	mg/Kg	10	1	68	63	70 - 130
4-BFB	0.709	[9] 0.644	mg/Kg	10	1	71	64	70 - 130

Matrix Spikes

QCBatch: QC18426

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
TRPHC	248	258	mg/Kg	1	250	<10.0	99	3	70 - 130	20

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

Matrix Spikes

QCBatch: QC18437

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
TRPHC	[10] 462	599	mg/Kg	1	250	436	10	144	70 - 130	20

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

Matrix Spikes

QCBatch: QC18455

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Chloride	28.50	28.64	mg/Kg	1	12.50	17.2	90	0	69 - 121	20

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

Quality Control Report
Continuing Calibration Verification Standards

CCV (1)

QCBatch: QC18291

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.115	115	85 - 115	2/20/02
Benzene		mg/L	0.10	0.101	101	85 - 115	2/20/02
Toluene		mg/L	0.10	0.115	115	85 - 115	2/20/02
Ethylbenzene		mg/L	0.10	0.117	117	85 - 115	2/20/02
M,P,O-Xylene		mg/L	0.30	0.336	112	85 - 115	2/20/02

[7] Low surrogate recovery due to prep. LCS/LCSD show the method to be in control.
[8] Low surrogate recovery due to prep. LCS/LCSD show the method to be in control.
[9] Low surrogate recovery due to prep. LCS/LCSD show the method to be in control.
[10] Poor spike recovery due to high TPH in sample. LCS / LCSD show analysis in control.

CCV (2)

QCBatch: QC18291

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.096	96	85 - 115	2/20/02
Benzene		mg/L	0.10	0.092	92	85 - 115	2/20/02
Toluene		mg/L	0.10	0.099	99	85 - 115	2/20/02
Ethylbenzene		mg/L	0.10	0.102	102	85 - 115	2/20/02
M,P,O-Xylene		mg/L	0.30	0.304	101	85 - 115	2/20/02

ICV (1)

QCBatch: QC18291

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.103	103	85 - 115	2/20/02
Benzene		mg/L	0.10	0.102	102	85 - 115	2/20/02
Toluene		mg/L	0.10	0.11	110	85 - 115	2/20/02
Ethylbenzene		mg/L	0.10	0.107	107	85 - 115	2/20/02
M,P,O-Xylene		mg/L	0.30	0.266	88	85 - 115	2/20/02

CCV (1)

QCBatch: QC18415

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.095	95	85 - 115	2/25/02
Benzene		mg/L	0.10	0.0986	99	85 - 115	2/25/02
Toluene		mg/L	0.10	0.0991	99	85 - 115	2/25/02
Ethylbenzene		mg/L	0.10	0.0947	95	85 - 115	2/25/02
M,P,O-Xylene		mg/L	0.30	0.311	104	85 - 115	2/25/02

CCV (2)

QCBatch: QC18415

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE	[11]	mg/L	0.10	0.084	84	85 - 115	2/25/02
Benzene		mg/L	0.10	0.094	94	85 - 115	2/25/02
Toluene		mg/L	0.10	0.095	95	85 - 115	2/25/02
Ethylbenzene		mg/L	0.10	0.091	91	85 - 115	2/25/02
M,P,O-Xylene		mg/L	0.30	0.268	89	85 - 115	2/25/02

ICV (1)

QCBatch: QC18415

[11] MTBE outside normal limits. Average of CCV components within acceptable limits.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/L	0.10	0.0984	98	85 - 115	2/25/02
Benzene		mg/L	0.10	0.105	105	85 - 115	2/25/02
Toluene		mg/L	0.10	0.102	102	85 - 115	2/25/02
Ethylbenzene		mg/L	0.10	0.102	102	85 - 115	2/25/02
M,P,O-Xylene		mg/L	0.30	0.290	97	85 - 115	2/25/02

CCV (1) QCBatch: QC18426

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC		mg/Kg	100	102	102	75 - 125	2/25/02

CCV (2) QCBatch: QC18426

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC		mg/Kg	100	102	102	75 - 125	2/25/02

ICV (1) QCBatch: QC18426

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC		mg/Kg	100	103	103	75 - 125	2/25/02

CCV (1) QCBatch: QC18437

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC		mg/Kg	100	102	102	75 - 125	2/26/02

ICV (1) QCBatch: QC18437

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
TRPHC		mg/Kg	100	101	101	75 - 125	2/26/02

CCV (1)

QCBatch: QC18455

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.50	11.36	90	90 - 110	2/25/02

ICV (1)

QCBatch: QC18455

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.50	11.27	90	90 - 110	2/25/02

A020 22021

Analysis Request and Chain of Custody Record

PAGE: 1 OF: 3

ANALYSIS REQUEST (Circle or Specify Method No.)

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Duke
SITE MANAGER: IKE Tavarez
PROJECT NO.: 1712
PROJECT NAME: Duke / San Simon - Spill pipeline, Lea County NM

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	(BTEX) 8020/602	MTBE 8020/602	(TPH) (418.1) 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Chloride
191296	2/15/02		S			BH-1 (5-6')	1				/		X		X															X
97			S			BH-1 (10-11)	1				/			Hold.																
98			S			BH-1 (15-16)	1						X		X															X
99			S			BH-1 (20-21)	1				/				X															
300			S			BH-1 (24-25')	1				/		X		X															X
301			S			BH-2 (5-6)	1				/				X															
302			S			BH-2 (10-11)	1				/			Hold.																
303			S			BH-2 (15-16)	1				/				X															
304			S			BH-3 (5-6)	1				/		X		X															X
305			S			BH-3 (10-11)	1				/			Hold.																

RELINQUISHED BY: (Signature) [signature] Date: 2/19/02 Time: 1500
RECEIVED BY: (Signature) Helen Shelton Date: 2/19/02 Time: 1500

RELINQUISHED BY: (Signature) Helen Shelton Date: 2/19/02 Time: 1830
RECEIVED BY: (Signature) [signature] Date: 2/20/02 Time: 10:00

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Sign) IKE Tavarez Date: Time:

SAMPLE SHIPPED BY: (Circle) Greyhound
FEDEX (BUS) AIRBILL #
HAND DELIVERED UPS OTHER:

RECEIVING LABORATORY: Trace Lab.
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature)
DATE: TIME:

HIGHLANDER CONTACT PERSON: IKE Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water (S-Soil) A-Air SL-Sludge SD-Solid O-Other

REMARKS: Rec'd by Thurs. - Feb. 28, 2002 FtP 2/28/02

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

NM 11 samples - HS 1103511118111c c/0

A020220021

Analysis Request and Chain of Custody Record

PAGE: 2 OF: 3

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Duke
SITE MANAGER: Ike Tavarez
PROJECT NO.: 1712
PROJECT NAME: Duke/San Simon - Spill pipeline

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 418.1 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Chloride
191306	2/15/02					BH-3 (15-16)	1				✓		X		X															X
307	↓					BH-3 (20-21)	1				✓		X		X															X
308	↓					BH-3 (25-26)	1				✓				X															
309	↓					BH-4 (5-6)	1				✓		X		X															
310	↓					BH-4 (10-11)	1				✓		Hold																	
311	↓					BH-4 (15-16)	1				✓				X															
312	↓					BH-5 (5-6)	1				✓		X		X															
313	↓					BH-5 (10-11)	1				✓				X															
314	↓					BH-5 (15-16)	1				✓				X															

RELINQUISHED BY: (Signature) [signature] Date: 2/19/02 Time: 1500
RECEIVED BY: (Signature) Helen Shelton Date: 2/19/02 Time: 1500

RELINQUISHED BY: (Signature) Helen Shelton Date: 2/19/02 Time: 1830
RECEIVED BY: (Signature) Nick Vernaz Date: 2-20-02 Time: 10:00

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX (BUS) Greyhound AIRBILL #
HAND DELIVERED UPS OTHER:

RECEIVING LABORATORY: Trace Co.
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

HIGHLANDER CONTACT PERSON: Ike Tavarez
Results by:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:
MATRIX: W-Water (S-Soil) A-Air SL-Sludge SD-Solid O-Other
REMARKS: Need by Thurs. - Feb. 28, 2002

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

M 9 samples - HS 11135111811110 40

AO20...

Analysis Request and Chain of Custody Record

PAGE: 3 OF: 3

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Duke
SITE MANAGER: Ike Tavarez
PROJECT NO.: 1712
PROJECT NAME: Duke / San Simon - Spill pipeline, Lea County, NM

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	(BTEX) 8020/602	MTBE 8020/602	(TPH) (418.1) 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
191315	2/15/02		S		✓	BH-6 (5-7)	1				✓		X		X														
316	2/15/02		S		✓	BH-6 (10-11)	1				✓				X														
317	2/15/02		S		✓	BH-6 (15-16)	1				✓				X														

RELINQUISHED BY: (Signature) [signature] Date: 2/19/02 Time: 1500
RECEIVED BY: (Signature) Helen Shelton Date: 2/19/02 Time: 1500
RELINQUISHED BY: (Signature) Helen Shelton Date: 2/19/02 Time: 1830
RECEIVED BY: (Signature) [signature] Date: 2-20-02 Time: 10:0
RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
RECEIVING LABORATORY: Trace Ltd.
RECEIVED BY: (Signature)
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE: DATE: TIME:

SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX (BUS) Greyhound AIRBILL #
HAND DELIVERED UPS OTHER:
HIGHLANDER CONTACT PERSON: Ike Tavarez
Results by:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:
MATRIX: W-Water A-Air SD-Solid (S-Soil) SL-Sludge O-Other
REMARKS: Need by Thurs - Feb. 28, 2002

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

ML 3 samples - HS 110357010 8/1010 4.0