AP - 36

STAGE 1 & 2 REPORTS

DATE: 6/3/1998

SUBSURFACE INVESTIGATION REPORT

MONITORING WELL MW-1, SOIL BORING SB-1

TEXAS - NEW MEXICO PIPE LINE COMPANY
TNM-97-23
EUNICE, NEW MEXICO

RECEIVED
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ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

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SUBSURFACE INVESTIGATION REPORT
MONITORING WELL MW-1, SOIL BORING SB-1

TEXAS - NEW MEXICO PIPE LINE COMPANY
TNM-97-23
EUNICE, NEW MEXICO

PREPARED FOR:

TEXAS - NEW MEXICO PIPE LINE COMPANY
P. O. Box 1030
Jal, New Mexico 88252

Mr. Tony Savoie

PREPARED BY:

KEI

Theresa Nix
Project Manager

Pat Bullinger, P.E.

KEI Job No. 710046-1

June 3, 1998

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PURPOSE AND SCOPE

The purpose of the subsurface investigation was to determine the extent of hydrocarbon impact in the source area and to determine the depth to ground water. One soil boring was installed in the source area, 1 monitoring well was installed outside of the source area, and 9 test pits were excavated within the stained area to determine the vertical extent of hydrocarbon impact.

SITE BACKGROUND

Site TNM-97-23 is located approximately 2 miles east of Eunice, New Mexico, in Section 14, Township 22 South, and Range 37 East in Lea County, New Mexico. A site location map is presented as FIG. 1. A pipeline release was discovered at the site in November 1997. Initial response activities conducted to control the release included:

- Pipeline repair
- Construction of a bermed soil stockpile area
- Excavation of heavily impacted soils to prevent additional migration of hydrocarbons
- Stockpiling of excavated soils on plastic sheeting in the soil stockpile area

Two surface stains are located on-site. The first surface stain is approximately 605 feet long and 21 feet to 54 feet wide. The second surface stain is approximately 210 feet long and 11 to 31 feet wide. One excavation is located at the pipeline repair and is approximately 134 feet long and approximately 7 feet wide. Site details are presented on FIG. 2.

SOIL INVESTIGATION

During the subsurface investigation, 9 test pits were excavated within the 2 stained areas, and 1 monitoring well (designated MW-1) and 1 soil boring (designated SB-1) were installed utilizing air rotary drilling. Soil samples were collected at selected intervals during drilling and from the bottom of the test pits. The soils were classified in the field, soil samples were field screened, and selected samples from the borings and test pits were prepared and shipped to the laboratory for analysis.

Upon advancement to total depth and collection of soil samples, a permanent monitoring well consisting of 2 inch perforated PVC and blank riser was placed in the boring.

The monitoring well location was surveyed by a Professional Land Surveyor registered in the State of New Mexico. The locations of the test pits, monitoring well, and soil boring installed are presented on FIG. 2.

SOIL DESCRIPTION

The subsurface soil profile was classified in general accordance with the Unified Soil Classification System by visually observing the soil samples obtained during the assessment. In general, 3 soil types were encountered. A general description of the soil, approximate thickness, and head-space sample results for each soil type are as follows:

Soil Type I
This soil type consisted of a red to brown sand and was encountered at monitoring well MW-1 and soil boring SB-1. The sand was fine-grained and slightly moist to moist. This soil type thickness ranged from 6.5 to 18 feet. The head-space readings from this soil type ranged from below instrument detection limits (ND) to 62 ppm.

Soil Type II
This soil type consisted of a red to brown clay encountered only at monitoring well MW-1. The clay was sandy, firm, and moist. Observed thickness of this soil type ranged from 6.5 to 9 feet. Head-space readings from samples of this soil type were ND.

Soil Type III
This soil type consisted of a tan to gray sand and was encountered at both monitoring well MW-1 and soil boring SB-1. The sand was fine to medium-grained, contained calcareous nodules, and was moist. Observed thickness of this soil type ranged from 2 to 17 feet. The head-space readings from samples of this soil type were ND.

Logs indicating the typical subsurface soil profile, depths at which soil samples were obtained, head-space results, laboratory results, and generalized geologic profiles are presented on FIGs. 3 and 4.

SAMPLING AND ANALYTICAL RESULTS

Native soil samples were collected from 2 different depths at each test pit to determine the vertical extent of hydrocarbon impact. Native soil samples were also collected at selected intervals during drilling by pushing a split spoon sampler. The soil samples were used to evaluate water levels and the distribution of phase-separate hydrocarbons.

Soil samples from the boring and monitoring well were selected for analytical testing based on the following criteria:

- The sample with the highest head-space reading
- The sample collected from 2 to 4 feet below ground surface
- The sample collected from 10 to 12 feet below ground surface
- The sample collected from 30 to 32 feet below ground surface
- The sample at the bottom of each boring

Two soil samples from each test pit were selected for determination of total petroleum hydrocarbons - diesel range organics (TPH-DRO) concentrations. Three soil samples from the monitoring well and 4 samples from the soil boring were selected for determination of TPH and benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations. The sample collected from the borings with the highest TPH concentration (SB-1 at 0 to 2 feet) was also submitted for determination of SPLP semi-volatile organic compounds (SVOC), SPLP volatile organic compounds (VOC), and SPLP TPH.

One additional soil sample was collected from test pits T-3, T-5, T-6, and T-9 on January 21, 1998 following additional excavation. These samples were submitted for determination of BTEX and TPH concentrations.

Laboratory results for the selected test pit samples indicated the following concentration ranges:

CONSTITUENT	CONCENTRATION RANGE (mg/kg)
TPH	ND to 47,500
BENZENE	ND
BTEX	ND to 2.99

Laboratory results for the selected boring samples indicated the following concentration ranges:

CONSTITUENT	CONCENTRATION RANGE (mg/kg)
BENZENE (mg/kg)	ND to 0.95
BTEX (mg/kg)	ND to 53.72
TPH (mg/kg)	ND to 6,830
BENZO(A)PYRENE (mg/L)	0.067
2-METHYLNAPHTHALENE (mg/L)	0.036
BIS[2-ETHYLHEXYL]PHTHALATE (mg/L)	3.137
1,2-DICHLOROPROPANE (mg/L)	0.026
1,3,5-TRIMETHYLBENZENE (mg/L)	0.065
O-XYLENE (mg/L)	0.063
SPLP TPH (ppm)	82.3

The bis[2-Ethylhexyl]phthalate concentration was beyond calibration limits. Those constituents not listed above were ND. Soil laboratory results are summarized in TABLES I and II. BTEX and TPH laboratory results are also graphically presented on FIG. 5. Analytical laboratory reports and chain-of-custody documentation are presented in APPENDIX A. QA/QC procedures are presented in APPENDIX C.

GROUND WATER SAMPLING AND ANALYTICAL RESULTS

Upon completion of drilling and then approximately once a month, the well was gauged to determine the depth to ground water and the PSH thickness. Gauging during the March 6, 1998 event indicated the depth to ground water in MW-1 was 56.35 feet below the ground surface. Ground water measurements are summarized in TABLE III.

On February 4, 1998, a ground water monitoring and sampling event was conducted. Ground water samples were collected from MW-1 and submitted for determination of metals, BTEX, PAH, major cations/anions, and total dissolved solids (TDS) concentrations. Laboratory results indicated the following concentrations:

CONSTITUENT	CONCENTRATION (mg/L)
BENZENE	ND
BTEX	ND
BARIUM	0.059
BORON	0.48
CALCIUM	180
MAGNESIUM	72.0
POTASSIUM	8.76
SODIUM	187
SILICON	48.1
STRONTIUM	3.86
VANADIUM	0.058
ZINC	0.13
BICARBONATE	198
TDS	1,570
SULFATE	165
CHLORIDE	405

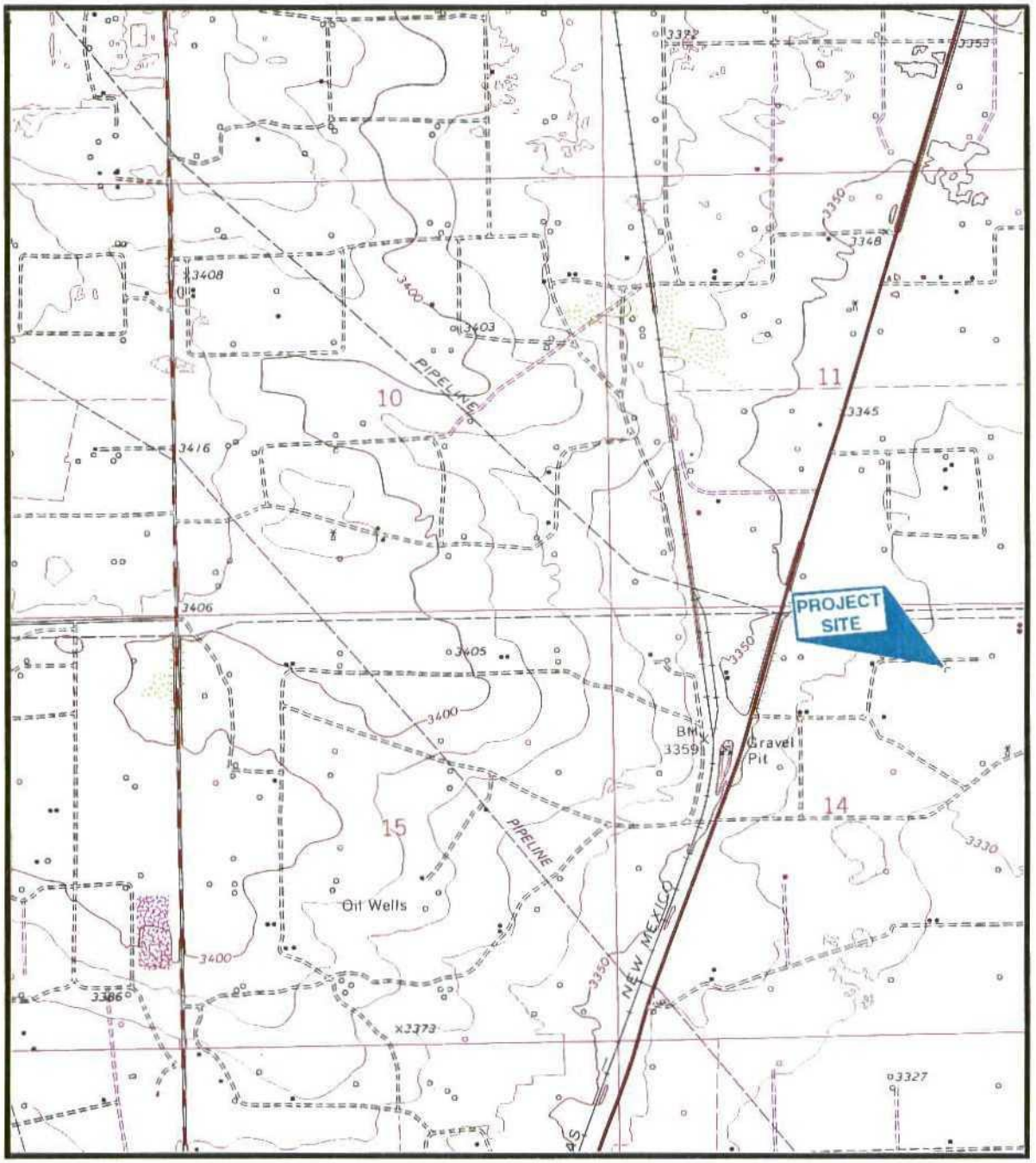
Metals and PAH constituents not listed above were all ND. Ground water laboratory results are summarized in TABLES III and IV. Analytical laboratory reports and chain-of-custody documentation are presented in APPENDIX B. QA/QC procedures are outlined in APPENDIX C.

Purged water collected during the event was stored in steel drums pending disposal.

EUNICE QUADRANGLE

NEW MEXICO - LEA CO.

PRINTED 1979



SCALE 1:24000

1 1/2 0 1 MILE

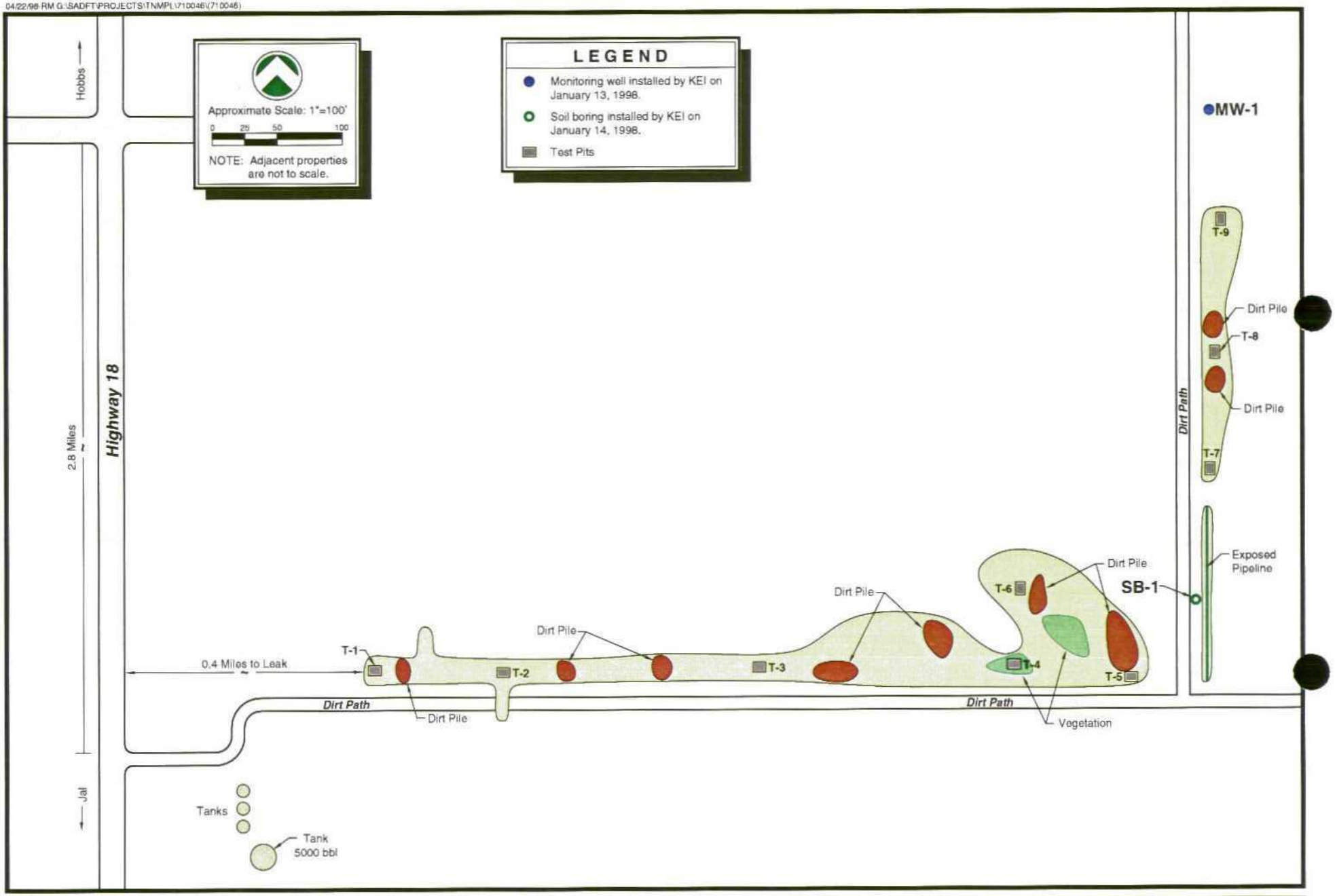
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET

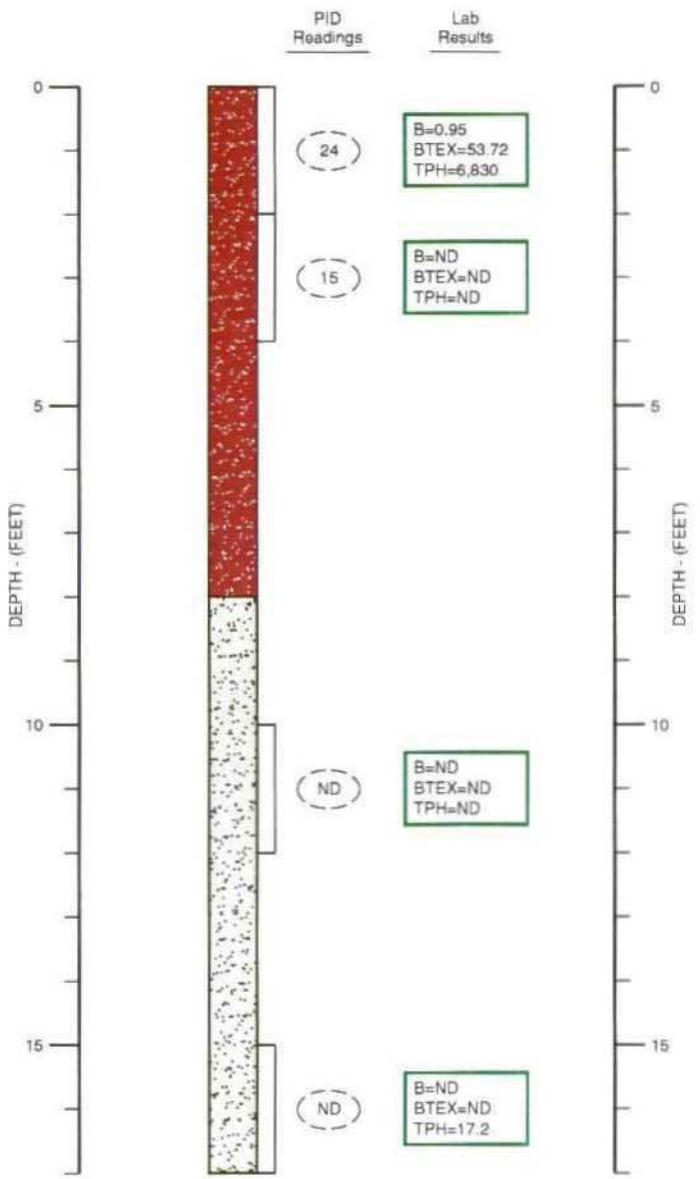
k·e·i	*SITE LOCATION MAP*	710046
	TNMPL TNM - 97 - 23 LEA COUNTY, NEW MEXICO	FIG 1

04/22/98 RM G:\SADFT\PROJECTS\TNMPL\710046\(710046)



k·e·i	*SITE DETAILS*		710046
	TNMPL	TNM-97-23 EUNICE, NEW MEXICO	FIG 2

SOIL BORING SB-1



LEGEND

Sand (SM), fine-grained, red to brown, slightly moist to moist.

Sand (SM), fine to medium grained, calcareous nodules, tan to gray, moist.

Indicates sample interval. Sample was obtained by a split-spoon sampler.

Indicates sample selected for laboratory analysis.

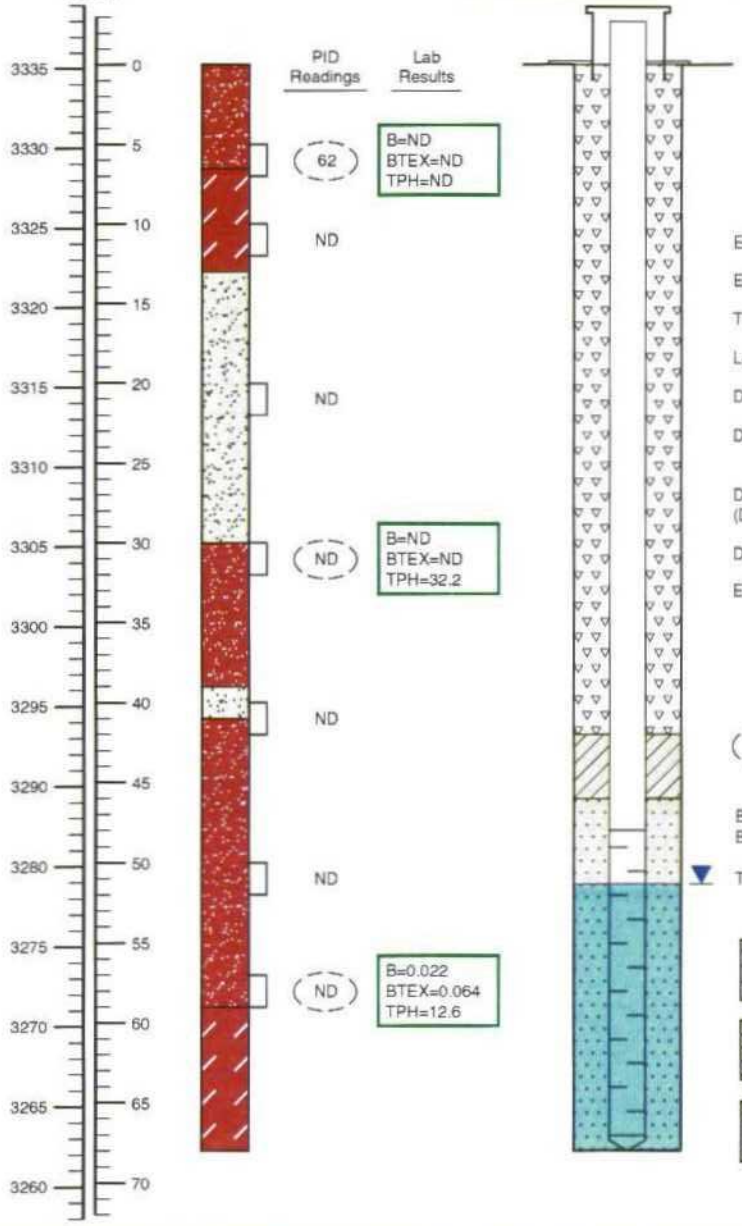
B =	Benzene Concentration (mg/kg)
BTEX =	Total Benzene, Toluene, Ethylbenzene, and Xylenes Concentration (mg/kg)
TPH =	Total Petroleum Hydrocarbon Concentration (mg/kg)
PID	Head-space readings in ppm obtained with a photoionization detector.
ND =	Indicates the concentration was below instrument or laboratory detection limits.

NOTES:

1. The soil boring was advanced on January 14, 1998 using an air rotary rig.
2. Ground water was not encountered during boring advancement.
3. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
4. The depths indicated are referenced from the ground surface unless otherwise noted.
5. The soil boring was grouted to the ground surface.

k·e·i	*LOG AND DETAILS OF SOIL BORING SB-1*		710046
	TNMPL	TNM-97-23 EUNICE, NEW MEXICO	FIG 3

MONITORING WELL MW-1



Monitoring Well Details (MW-1)

Elev of Ground Surface	3335.27 ft
Elev Top of PVC Well	3338.00 ft
Thickness of Bentonite Seal	4.0 ft
Length of PVC Well Screen	20.0 ft
Depth of PVC Well	71.30 ft
Depth of Exploratory Hole	68.0 ft
Depth to Ground Water (During drilling)	56.35 ft
Depth to Ground Water	56.35 ft
Elev of Ground Water	3278.92 ft

Indicates sample selected for laboratory analysis.

B = Benzene Concentration (mg/kg)
BTEX = Total Benzene, Toluene, Ethylbenzene, and Xylenes Concentration (mg/kg)
TPH = Total Petroleum Hydrocarbon Concentration (mg/kg)

Concrete Seal

Bentonite Pellet Seal

Sand Pack

LEGEND

Sand (SM), fine to medium grained, calcareous nodules, tan to gray, moist.

Sand (SM), fine-grained, red to brown, slightly moist to moist.

Clay (CL), sandy, firm, red to brown, moist.

Indicates sample interval. Sample was obtained by a split-spoon sampler.

Indicates the ground water level measured on April 8, 1998.

PID Head-space readings in ppm obtained with a photoionization detector.

ND Indicates the concentration was below instrument or laboratory detection limits.

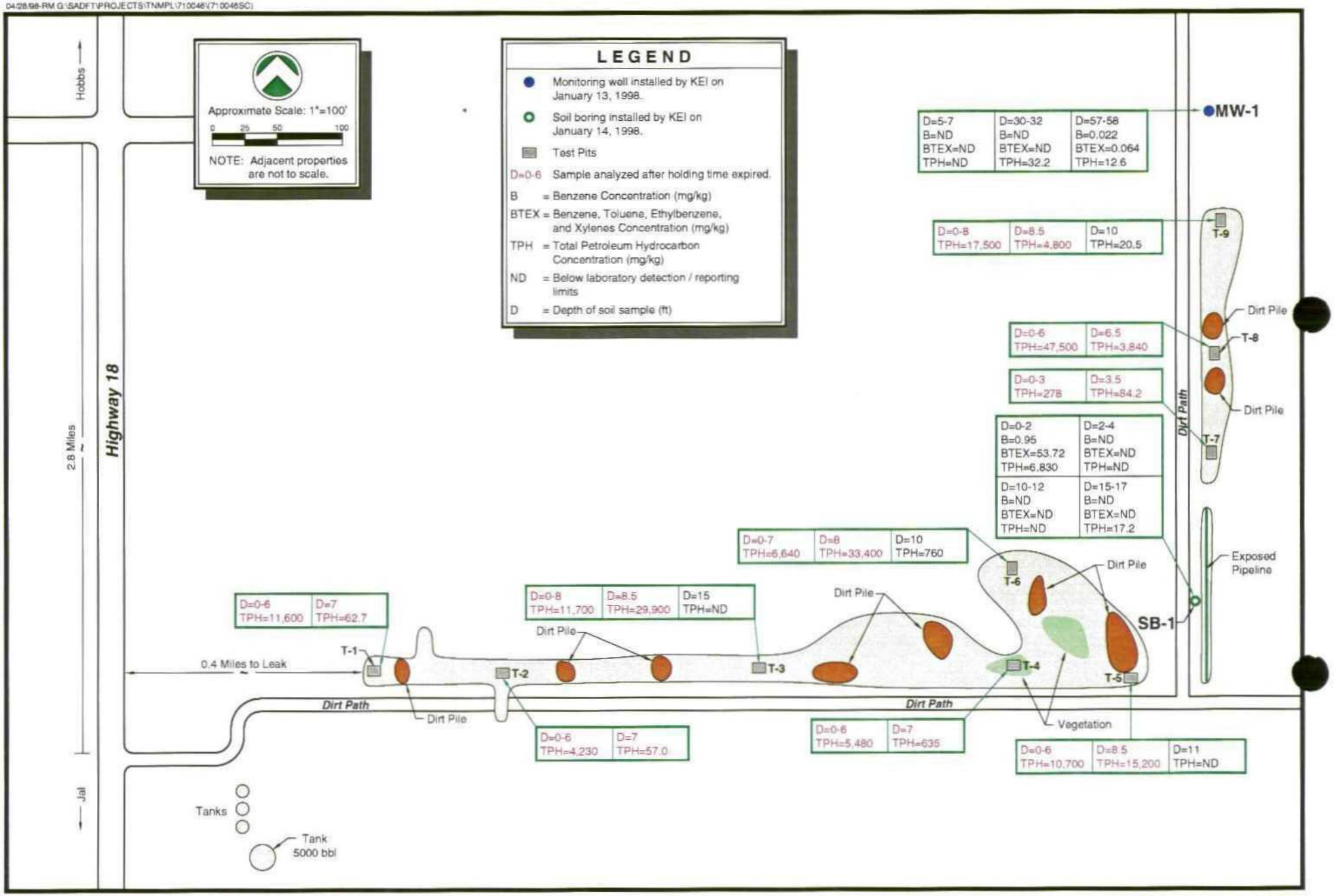
NOTES

1. The monitoring well was installed on January 13, 1998 using an air rotary rig.
2. The well was constructed with 2 inch ID, 0.010 inch factory slotted, threaded joint, Schedule 40 PVC pipe.
3. The well is protected with a stick-up steel cover and a locked compression cap.
4. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
5. The depths indicated are referenced from the ground surface.

k·e·i

LOG AND DETAILS OF MONITORING WELL MW-1		710046
TNMPL	TNM-97-23 EUNICE, NEW MEXICO	FIG 4

04/28/98-RM G:\SADFT\PROJECTS\TNMPL\710046\(710046SC)



k·e·i	SOIL CONCENTRATION MAP	710046
	TNMPL TNM-97-23 EUNICE, NEW MEXICO	FIG 5

GENERAL NOTES

--- - Indicates the constituent was not analyzed (TABLES I and III).
ND - Indicates constituent was not detected above the method detection limit.
PSH - Phase-separate hydrocarbons.

Method detection or reporting limits:

Soil:	BTEX	- 0.020 to 0.20 mg/kg
	TPH	- 10.0 to 200 mg/kg (soil boring and monitoring well)
	TPH	- 10.0 to 12,500 mg/kg (test pits)
	SPLP SVOC	- 0.025 to 0.063 mg/l
	SPLP VOC	- 0.025 to 0.500 mg/l
	SPLP TPH	- 5.7 ppm
Water:	BTEX	- 0.004 to 0.008 mg/l
	Metals	- 0.022 to 2.22 mg/l
	PAH	- 0.002 mg/l
	Anions	- 0.20 mg/l
	TDS	- 4.0 mg/l

Laboratory test methods:

BTEX	- EPA Method SW846-8020
TPH	- Modified EPA Method 8015 Diesel Range Organics
Metals	- EPA ICP Method 6010
TDS	- EPA Method 160.1
Anions	- EPA Method 300.0
PAH	- EPA Method 8100
SPLP SVOC	- EPA Method 1312/8270
SPLP VOC	- EPA Method 1312/8260
SPLP TPH	- EPA Method 1312/418.1
Bicarbonate	- SM4500CO2D
Carbonate	- SM4500CO2D

TABLE I

SUMMARY OF SOIL RESULTS - BTEX AND TPH
TEXAS - NEW MEXICO PIPE LINE COMPANY
TNM-97-23
EUNICE, NEW MEXICO

SAMPLE LOCATION	DATE SAMPLED	SAMPLE DEPTH (feet)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL-BENZENE (mg/kg)	XYLENES (mg/kg)	BTEX (mg/kg)	TPH (mg/kg)
TEST PIT 1	01/13/98	0 - 6	---	---	---	---	---	11,600
TEST PIT 1	01/13/98	7	---	---	---	---	---	62.7
TEST PIT 2	01/13/98	0 - 6	---	---	---	---	---	4,230
TEST PIT 2	01/13/98	7	---	---	---	---	---	57.0
TEST PIT 3	01/13/98	0 - 8	---	---	---	---	---	11,700
TEST PIT 3	01/13/98	8.5	---	---	---	---	---	29,900
TEST PIT 3	01/21/98	15	ND	ND	ND	ND	ND	ND
TEST PIT 4	01/13/98	0 - 6	---	---	---	---	---	5,480
TEST PIT 4	01/13/98	7	---	---	---	---	---	635
TEST PIT 5	01/13/98	0 - 6	---	---	---	---	---	10,700
TEST PIT 5	01/13/98	8.5	---	---	---	---	---	15,200
TEST PIT 5	01/21/98	11	ND	ND	ND	ND	ND	ND
TEST PIT 6	01/13/98	0 - 7	---	---	---	---	---	6,640
TEST PIT 6	01/13/98	8	---	---	---	---	---	33,400
TEST PIT 6	01/21/98	10	ND	0.21	0.48	2.30	2.99	760
TEST PIT 7	01/13/98	0 - 3	---	---	---	---	---	278
TEST PIT 7	01/13/98	3.5	---	---	---	---	---	84.2
TEST PIT 8	01/13/98	0 - 6	---	---	---	---	---	47,500
TEST PIT 8	01/13/98	6.5	---	---	---	---	---	3,840
TEST PIT 9	01/13/98	0 - 8	---	---	---	---	---	17,500
TEST PIT 9	01/13/98	8.5	---	---	---	---	---	4,800
TEST PIT 9	01/21/98	10	ND	ND	ND	ND	ND	20.5
SB-1	01/14/98	0 - 2	0.95	6.19	4.08	42.50	53.72	6,830
SB-1	01/14/98	2 - 4	ND	ND	ND	ND	ND	ND
SB-1	01/14/98	10 - 12	ND	ND	ND	ND	ND	ND
SB-1	01/14/98	15 - 17	ND	ND	ND	ND	ND	17.2
MW-1	01/13/98	5 - 7	ND	ND	ND	ND	ND	ND
MW-1	01/13/98	30 - 32	ND	ND	ND	ND	ND	32.2
MW-1	01/13/98	57 - 58	0.022	ND	ND	0.042	0.064	12.6

NOTE:

1. The test pit samples obtained on 01/13/98 were analyzed after the holding time expired.

TABLE II

SUMMARY OF SOIL RESULTS - SPLP
TEXAS - NEW MEXICO PIPE LINE COMPANY
TNM-97-23
EUNICE, NEW MEXICO

PARAMETER	CONCENTRATION (mg/L)
SVOC	
Benzo(a)pyrene	0.067
2-Methylnaphthalene	0.036
bis[2-Ethylhexyl]phthalate	3.137*
VOC	
1,2-Dichloropropane	0.026
1,3,5-Trimethylbenzene	0.065
o-Xylene	0.063
TPH (ppm)	82.3

NOTES:

1. The sample was collected on 01/14/98 from SB-1 at 0 - 2 feet.
2. Constituents not listed above were ND.
3. * Indicates the result was beyond calibration limits.

TABLE III

SUMMARY OF GROUND WATER RESULTS - BTEX
TEXAS - NEW MEXICO PIPE LINE COMPANY
TNM-97-23
EUNICE, NEW MEXICO

DATE SAMPLED OR MEASURED	DEPTH TO WATER FROM PVC (feet)	DEPTH TO WATER BGS (feet)	GROUND WATER ELEVATION (feet)	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYL-BENZENE (mg/l)	XYLENES (mg/l)	BTEX (mg/l)
02/04/98	59.03	56.30	3278.97	ND	ND	ND	ND	ND
03/06/98	59.08	56.35	3278.92	---	---	---	---	---

NOTE:

1. The ground water sample was collected on 02/04/98 from monitoring well MW-1.

TABLE IV

SUMMARY OF GROUND WATER RESULTS - MISCELLANEOUS
TEXAS - NEW MEXICO PIPE LINE COMPANY
TNM-97-23
EUNICE, NEW MEXICO

PARAMETER	CONCENTRATION (mg/l)
Metals	
Barium	0.059
Boron	0.48
Calcium	180
Magnesium	72.0
Potassium	8.76
Silicon	48.1
Sodium	187
Strontium	3.86
Vanadium	0.058
Zinc	0.13
Cations/Anions	
Bicarbonate	198
Sulfate	165
Chloride	405
TDS	1,570

NOTES:

1. The sample was collected on 02/04/98 from MW-1.
2. Those constituents not listed were ND.

ANALYTICAL REPORT 1-80283

for

K.E.I. Consultants, Inc.

Project Manager: Theresa Nix

Project Name: TNM 97-23

Project Id: 710046

January 29, 1998

HOUSTON - DALLAS - SAN ANTONIO

11381 Meadowglen Lane Suite L * Houston, Texas 77082-2647
Phone (281) 589-0692 Fax (281) 589-0695

XENCO Laboratories
11381 Meadowglen Suite L
Houston, Texas 77082-2647
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Houston - Dallas - San Antonio

January 29, 1998

Project Manager: Theresa Nix
K.E.I. Consultants, Inc.
5309 Wurzbach Rd. Suite 100
San Antonio, TX 78238

Reference: **XENCO Report No.: 1-80283**
Project Name: TNM 97-23
Project ID: 710046
Project Address: Eunice

Dear Theresa Nix:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with XENCO Chain of Custody Number 1-80283. All results being reported to you apply only to the samples analyzed, properly identified with a Laboratory ID number. This letter documents the official transmission of the contents of the report and validates the information contained within.

All the results for the quality control samples passed thorough examination. Also, all parameters for data reduction and validation checked satisfactorily. In view of this, we are able to release the analytical data for this report within acceptance criteria for accuracy, precision, and completeness.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 3 years in our archives and after that time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in COC No. 1-80283 will be filed for 60 days, and after that time they will be properly disposed of without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

XENCO Laboratories is accredited by the American Association for Laboratory Accreditation (A2LA) for technical competence in the field of Environmental Testing (Certificate No. 0343-01). In accordance with A2LA's guidelines, XENCO operates a Quality System that meets ISO/IEC Guide 25 requirements and is strictly implemented and enforced through our standard QA/QC procedures.

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Sincerely,

Eddie Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80283

K.E.I. Consultants, Inc.

Project Name: TNM 97-23

Project ID: 710046
Project Manager: Theresa Nix
Project Location: Eunice

Date Received in Lab : Jan 24, 1998 11:11
Date Report Faxed: Jan 29, 1998
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:* / *Field ID:* / *Depth:* / *Matrix:* / *Sampled:*	180283 001 T-3 15' Solid 01/21/98 11:30	180283 002 T-5 11' Solid 01/21/98 12:00	180283 003 T-6 10' Solid 01/21/98 12:40	180283 004 T-9 10' Solid 01/21/98 13:15
TPH-DRO (Diesel) **EPA 8015 M**	*Analyzed:* *Units:*	01/27/98 mg/kg R.L.	01/27/98 mg/kg R.L.	01/27/98 mg/kg R.L.	01/27/98 mg/kg R.L.
Total Petroleum Hydrocarbons		< 10.0 (10.0)	< 10.0 (10.0)	760 (10.0)	20.5 (10.0)
BTEX **EPA 8020**	*Analyzed:* *Units:*	01/28/98 ppm R.L.	01/28/98 ppm R.L.	01/28/98 ppm R.L.	01/28/98 ppm R.L.
Benzene		< 0.020 (0.020)	< 0.020 (0.020)	< 0.10 (0.10)	< 0.020 (0.020)
Toluene		< 0.020 (0.020)	< 0.020 (0.020)	0.21 (0.10)	< 0.020 (0.020)
Ethylbenzene		< 0.020 (0.020)	< 0.020 (0.020)	0.48 (0.10)	< 0.020 (0.020)
m,p-Xylenes		< 0.040 (0.040)	< 0.040 (0.040)	1.42 (0.20)	< 0.040 (0.040)
o-Xylene		< 0.020 (0.020)	< 0.020 (0.020)	0.88 (0.10)	< 0.020 (0.020)
Total BTEX		N.D.	N.D.	2.99	N.D.

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A25A31

SW- 846 5030/8020 BTEX

Date Validated: Jan 28, 1998 18:00
Date Analyzed: Jan 28, 1998 09:20
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: HL
Matrix: Solid

	BLANK SPIKE ANALYSIS						
Parameter	[A] Blank Result ppm	[B] Blank Spike Result ppm	[C] Blank Spike Amount ppm	[D] Method Detection Limit ppm	[E] QC Blank Spike Recovery %	[F] LIMITS Recovery Range %	[G] Qualifier
Benzene	< 0.0010	0.0945	0.1000	0.0010	94.5	65-135	
Toluene	< 0.0010	0.0930	0.1000	0.0010	93.0	65-135	
Ethylbenzene	< 0.0010	0.0961	0.1000	0.0010	96.1	65-135	
m,p-Xylenes	< 0.0020	0.2050	0.2000	0.0020	102.5	65-135	
o-Xylene	< 0.0010	0.0930	0.1000	0.0010	93.0	65-135	

Blank Spike Recovery [E] = 100*(B-A)/(C)
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
All results are based on MDL and validated for QC purposes only

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A25A31

SW- 846 5030/8020 BTEX

Date Validated: Jan 28, 1998 18:00
Date Analyzed: Jan 28, 1998 10:16
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: HL
Matrix: Solid

	MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY										
Q.C. Sample ID 180279- 001	[A] Sample Result	[B] Matrix Spike Result	[C] Matrix Spike Duplicate Result	[D] Matrix Spike Amount	[E] Method Detection Limit	Matrix Limit Relative Difference	[F] QC Spike Relative Difference	[G] QC Matrix Spike Recovery	[H] QC M.S.D. Recovery	[I] Matrix Spike Recovery Range	[J] Qualifier
Parameter	ppm	ppm	ppm	ppm	ppm	%	%	%	%	%	
Benzene	< 0.020	1.928	1.938	2.000	0.020	25.0	0.5	96.4	96.9	65-135	
Toluene	< 0.020	1.904	1.894	2.000	0.020	25.0	0.5	95.2	94.7	65-135	
Ethylbenzene	< 0.020	1.948	1.968	2.000	0.020	25.0	1.0	97.4	98.4	65-135	
m,p-Xylenes	< 0.040	4.240	4.300	4.000	0.040	25.0	1.4	106.0	107.5	65-135	
o-Xylene	< 0.020	1.910	1.948	2.000	0.020	25.0	2.0	95.5	97.4	65-135	

Spike Relative Difference [F] = 200*(B-C)/(B+C)
Matrix Spike Recovery [G] = 100*(B-A)/[D]
M.S.D. = Matrix Spike Duplicate
M.S.D. Recovery [H] = 100*(C-A)/[D]
N.D. = Below detection limit or not detected
All results are based on MDL and validated for QC purposes

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18Z99A15

SW- 846 8015 M TPH- DRO (Diesel)

Date Validated: Jan 30, 1998 16:45
Date Analyzed: Jan 27, 1998 06:09
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: OR
Matrix: Solid

	BLANK SPIKE ANALYSIS						
	[A]	[B]	[C]	[D]	[E]	[F]	[G]
					QC	LIMITS	
Parameter	Blank Result	Blank Spike Result	Blank Spike Amount	Method Detection Limit	Blank Spike Recovery	Recovery Range	Qualifier
	mg/kg	mg/kg	mg/kg	mg/kg	%	%	
Total Petroleum Hydrocarbons	< 10.00	232	200	10.00	116.0	65-135	

Blank Spike Recovery [E] = 100*(B-A)/(C)
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
All results are based on MDL and validated for QC purposes only

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18Z99A15

SW- 846 8015 M TPH- DRO (Diesel)

Date Validated: Jan 30, 1998 16:45
Date Analyzed: Jan 27, 1998 11:08
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: OR
Matrix: Solid

	MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY										
Q.C. Sample ID 180281- 001	[A] Sample Result	[B] Matrix Spike Result	[C] Matrix Spike Duplicate Result	[D] Matrix Spike Amount	[E] Method Detection Limit	Matrix Limit Relative Difference	[F] QC Spike Relative Difference	[G] QC Matrix Spike Recovery	[H] QC M.S.D. Recovery	[I] Matrix Spike Recovery Range	[J] Qualifier
Parameter	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	%	
Total Petroleum Hydrocarbons	31.26	341	361	400	10.00	30.0	5.7	77.4	82.4	65-135	

Spike Relative Difference [F] = 200*(B-C)/(B+C)
Matrix Spike Recovery [G] = 100*(B-A)/[D]
M.S.D. = Matrix Spike Duplicate
M.S.D. Recovery [H] = 100*(C-A)/[D]
N.D. = Below detection limit or not detected
All results are based on MDL and validated for QC purposes

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

ANALYTICAL CHAIN OF CUSTODY REPORT
CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project ID: 710046
Project Manager: Theresa Nix
Project Location: Eunice

Project Name: TNM 97-23

XENCO COC#: 1-80283
Date Received in Lab: Jan 24, 1998 11:11 by CC
XENCO contact : Carlos Castro/Edward Yonemoto

	Field ID	Lab. ID	Method Name	Method ID	Units	Turn Around	Date and Time: Sample Collected	Date and Time: Addition Requested	Date and Time: Extraction	Date and Time: Analysis
1	T-3 / 15'	180283-001	BTEX	SW-846	ppm	7 days	Jan 21, 1998 11:30		Jan 28, 1998 by HL	Jan 28, 1998 16:18 by HL
2			TPH8015M-D	SW-846 8015 M	mg/kg	7 days	Jan 21, 1998 11:30		Jan 26, 1998 by SS	Jan 27, 1998 19:19 by OR
3	T-5 / 11"	180283-002	BTEX	SW-846	ppm	7 days	Jan 21, 1998 12:00		Jan 28, 1998 by HL	Jan 28, 1998 16:38 by HL
4			TPH8015M-D	SW-846 8015 M	mg/kg	7 days	Jan 21, 1998 12:00		Jan 26, 1998 by SS	Jan 27, 1998 19:42 by OR
5	T-6 / 10'	180283-003	BTEX	SW-846	ppm	7 days	Jan 21, 1998 12:40		Jan 28, 1998 by HL	Jan 28, 1998 13:26 by HL
6			TPH8015M-D	SW-846 8015 M	mg/kg	7 days	Jan 21, 1998 12:40		Jan 26, 1998 by SS	Jan 27, 1998 20:13 by OR
7	T-9 / 10'	180283-004	BTEX	SW-846	ppm	7 days	Jan 21, 1998 13:15		Jan 28, 1998 by HL	Jan 28, 1998 16:57 by HL
8			TPH8015M-D	SW-846 8015 M	mg/kg	7 days	Jan 21, 1998 13:15		Jan 26, 1998 by SS	Jan 27, 1998 20:40 by OR

XENCO Laboratories

11381 Meadowglen Suite L Houston, Texas 77082
(713) 589-0692 Fax (713) 589-0695

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Lab. Batch # 180283-SA

Contractor: KEI Consultants — Phone (800) 253-0507

Address: 5309 Wurzbach Suite 100 San Antonio Tx 78238

Project Name: TNM 97-23 — Project Director: Mike Hawthorne

Project Location: Eunice — Project Manager: Theresa Nix

Sampler Signature: — Project No.: 710046

No. coolers this shipment: — Contractor COC #

Carrier: — Quote # :

Airbill No. — P.O. No.:

Field ID	Date	Time	DEPTH	SOIL	WATER	COMP	GRAB	Container Size	Container Type P, G	Preservative Ice	Preservative Other	Sample Description	No of Containers Total	BTEX (5030/8020-602)	TPH (418.1) 8015 DRO	Please Hold	LAB ONLY ID #
1 T-3	1-21-98	11:30	15'	✓		✓		4oz	G	✓				✓	✓		1
2 T-5	✓	12:00	11'	✓		✓		✓	✓	✓				✓	✓		2
3 T-6	✓	12:40	10'	✓		✓		✓	✓	✓				✓	✓		3
4 T-9	✓	13:15	10'	✓		✓		✓	✓	✓				✓	✓		4
5																	5
6																	6
7																	7
8																	8
9																	9
10																	10

Unl Dies Ker Unknown

Waste Oil

PIT No: Tank No:

Turn-around: * ASAP * 24 hrs 48 hrs (Standard)

Remarks

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
J. A. Burrige	1-21-98	15:35		1-21-98	1535
	1-23-98	1100			
			Received For Laboratory by:	1-24-98	11:11

Remarks: (via UPS)

Pink (Contractor), Yellow & White (Lab)

* Pre-scheduling is recommended

Precision Analytical Services

ANALYTICAL REPORT 1-80178

for

K.E.I. Consultants, Inc.

Project Manager: Theresa Nix

Project Name: TNM 97-23

Project Id: 710046

February 20, 1998

HOUSTON - DALLAS - SAN ANTONIO

11381 Meadowglen Lane Suite L * Houston, Texas 77082-2647
Phone (281) 589-0692 Fax (281) 589-0695

XENCO Laboratories

11381 Meadowglen Suite L
Houston, Texas 77082-2647
(281) 589-0692 Fax: (281) 589-0695
Houston - Dallas - San Antonio - Latin America

February 20, 1998

Project Manager: Theresa Nix
K.E.I. Consultants, Inc.
5309 Wurzbach Rd. Suite 100
San Antonio, TX 78238

Reference: **XENCO Report No.: 1-80178**
Project Name: TNM 97-23
Project ID: 710046
Project Address: Eunice

Dear Theresa Nix:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with XENCO Chain of Custody Number 1-80178. All results being reported to you apply only to the samples analyzed, properly identified with a Laboratory ID number. This letter documents the official transmission of the contents of the report and validates the information contained within.

All the results for the quality control samples passed thorough examination. Also, all parameters for data reduction and validation checked satisfactorily. In view of this, we are able to release the analytical data for this report within acceptance criteria for accuracy, precision, completeness or properly flagged.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 3 years in our archives and after that time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in COC No. 1-80178 will be filed for 60 days, and after that time they will be properly disposed of without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

XENCO operates under the A2LA guidelines. Our Quality System meets ISO/IEC Guide 25 requirements which is strictly implemented and enforced through our standard QA/QC procedures.

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Sincerely,

Eddie Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80178

K.E.I. Consultants, Inc.

Project ID: 710046
Project Manager: Theresa Nix
Project Location: Eunice

Project Name: TNM 97-23

Date Received in Lab : Jan 19, 1998 09:40
Date Reported: Feb 20, 1998
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:* / *Field ID:* / *Depth:* / *Matrix:* / *Sampled:*	180178 001 SB-1 0-2 Solid 01/14/98	180178 002 SB-1 2-4 Solid 01/14/98	180178 003 SB-1 10-12 Solid 01/14/98	180178 004 SB-1 15-17 Solid 01/14/98	180178 005 MW-1 5-7 Solid 01/13/98	180178 006 MW-1 30-32 Solid 01/13/98
TPH-DRO (Diesel) **EPA 8015 M**	*Analyzed:* *Units:*	01/22/98 mg/kg R.L.	01/21/98 mg/kg R.L.	01/22/98 mg/kg R.L.	01/22/98 mg/kg R.L.	01/22/98 mg/kg R.L.	01/22/98 mg/kg
Total Petroleum Hydrocarbons		6830 (200)	< 10.0 (10.0)	< 10.0 (10.0)	17.2 (10.0)	< 10.0 (10.0)	32.2 (10.0)
BTEX **EPA 8020**	*Analyzed:* *Units:*	01/20/98 ppm R.L.	01/20/98 ppm R.L.	01/20/98 ppm R.L.	01/20/98 ppm R.L.	01/20/98 ppm R.L.	01/20/98 ppm R.L.
Benzene		0.95 (0.10)	< 0.020 (0.020)	< 0.020 (0.020)	< 0.020 (0.020)	< 0.020 (0.020)	< 0.020 (0.020)
Toluene		6.19 (0.10)	< 0.020 (0.020)	< 0.020 (0.020)	< 0.020 (0.020)	< 0.020 (0.020)	< 0.020 (0.020)
Ethylbenzene		4.08 (0.10)	< 0.020 (0.020)	< 0.020 (0.020)	< 0.020 (0.020)	< 0.020 (0.020)	< 0.020 (0.020)
m,p-Xylenes		27.70 (0.20)	< 0.040 (0.040)	< 0.040 (0.040)	< 0.040 (0.040)	< 0.040 (0.040)	< 0.040 (0.040)
o-Xylene		14.80 (0.10)	< 0.020 (0.020)	< 0.020 (0.020)	< 0.020 (0.020)	< 0.020 (0.020)	< 0.020 (0.020)
Total BTEX		53.72	N.D.	N.D.	N.D.	N.D.	N.D.
SPLP-Semivolatiles **EPA1312/8270**	*Analyzed:* *Units:*	01/24/98 mg/L R.L.					
Acenaphthene		< 0.025 (0.025)					
Acenaphthylene		< 0.025 (0.025)					
Anthracene		< 0.025 (0.025)					
Benzo(a)anthracene		< 0.025 (0.025)					
Benzo(a)pyrene		0.067 (0.025)					
Benzo(b)fluoranthene		< 0.025 (0.025)					
Benzo(g,h,i)perylene		< 0.025 (0.025)					
Benzo(k)fluoranthene		< 0.025 (0.025)					
4-Bromophenyl-phenylether		< 0.025 (0.025)					
Butyl benzyl phthalate		< 0.025 (0.025)					
Carbazole		< 0.025 (0.025)					
4-Chloro-3-Methylphenol		< 0.025 (0.025)					

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80178

K.E.I. Consultants, Inc.

Project ID: 710046
Project Name: TNM 97-23
Date Received in Lab : Jan 19, 1998 09:40
Project Manager: Theresa Nix
Date Reported: Feb 20, 1998
Project Location: Eunice
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	180178 001	180178 002	180178 003	180178 004	180178 005	180178 006
	Field ID:	SB-1	SB-1	SB-1	SB-1	MW-1	MW-1
	Depth:	0-2	2-4	10-12	15-17	5-7	30-32
	Matrix:	Solid	Solid	Solid	Solid	Solid	Solid
	Sampled:	01/14/98	01/14/98	01/14/98	01/14/98	01/13/98	01/13/98
	Analyzed:	01/24/98					
	Units:	mg/L R.L.					
4-Chloroaniline		< 0.025 (0.025)					
2-Chloronaphthalene		< 0.025 (0.025)					
2-Chlorophenol		< 0.025 (0.025)					
4-Chlorophenyl-phenyl ether		< 0.025 (0.025)					
Chrysene		< 0.025 (0.025)					
Di-n-butyl phthalate		< 0.025 (0.025)					
Di-n-octyl phthalate		< 0.025 (0.025)					
Dibenzo(a,h)anthracene		< 0.025 (0.025)					
Dibenzofuran		< 0.025 (0.025)					
1,2-Dichlorobenzene		< 0.025 (0.025)					
1,3-Dichlorobenzene		< 0.025 (0.025)					
1,4-Dichlorobenzene		< 0.025 (0.025)					
3,3'-Dichlorobenzidine		< 0.025 (0.025)					
2,4-Dichlorophenol		< 0.025 (0.025)					
Diethyl phthalate		< 0.025 (0.025)					
2,4-Dimethylphenol		< 0.025 (0.025)					
Dimethyl phthalate		< 0.025 (0.025)					
4,6-Dinitro-2-methylphenol		< 0.063 (0.063)					
2,4-Dinitrophenol		< 0.063 (0.063)					
2,4-Dinitrotoluene		< 0.025 (0.025)					
2,6-Dinitrotoluene		< 0.025 (0.025)					
Fluoranthene		< 0.025 (0.025)					
Fluorene		< 0.025 (0.025)					
Hexachlorobenzene		< 0.025 (0.025)					

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80178

K.E.I. Consultants, Inc.

Project ID: 710046
Project Name: TNM 97-23
Date Received in Lab : Jan 19, 1998 09:40
Project Manager: Theresa Nix
Date Reported: Feb 20, 1998
Project Location: Eunice
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	180178 001	180178 002	180178 003	180178 004	180178 005	180178 006
	Field ID:	SB-1	SB-1	SB-1	SB-1	MW-1	MW-1
	Depth:	0-2	2-4	10-12	15-17	5-7	30-32
	Matrix:	Solid	Solid	Solid	Solid	Solid	Solid
	Sampled:	01/14/98	01/14/98	01/14/98	01/14/98	01/13/98	01/13/98
	Analyzed:	01/24/98					
	Units:	mg/L R.L.					
Hexachlorobutadiene		< 0.025 (0.025)					
Hexachlorocyclopentadiene		< 0.025 (0.025)					
Hexachloroethane		< 0.025 (0.025)					
Indeno(1,2,3-cd)pyrene		< 0.025 (0.025)					
Isophorone		< 0.025 (0.025)					
2-Methylnaphthalene		0.036 (0.025)					
2-Methylphenol		< 0.025 (0.025)					
4-Methylphenol		< 0.025 (0.025)					
N-Nitroso-di-n-propylamine		< 0.025 (0.025)					
N-Nitrosodiphenylamine		< 0.025 (0.025)					
Naphthalene		< 0.025 (0.025)					
2-Nitroaniline		< 0.063 (0.063)					
3-Nitroaniline		< 0.063 (0.063)					
4-Nitroaniline		< 0.063 (0.063)					
Nitrobenzene		< 0.025 (0.025)					
2-Nitrophenol		< 0.025 (0.025)					
4-Nitrophenol		< 0.025 (0.025)					
Pentachlorophenol		< 0.063 (0.063)					
Phenanthrene		< 0.025 (0.025)					
Phenol		< 0.025 (0.025)					
Pyrene		< 0.025 (0.025)					
1,2,4-Trichlorobenzene		< 0.025 (0.025)					
2,4,5-Trichlorophenol		< 0.063 (0.063)					
2,4,6-Trichlorophenol		< 0.025 (0.025)					

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80178

K.E.I. Consultants, Inc.

Project ID: 710046
Project Name: *TNM 97-23*
Project Manager: Theresa Nix
Project Location: Eunice

Date Received in Lab : Jan 19, 1998 09:40
Date Reported: Feb 20, 1998
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	Lab ID: / Field ID: / Depth: / Matrix: / Sampled:	180178 001 SB-1 0-2 Solid 01/14/98	180178 002 SB-1 2-4 Solid 01/14/98	180178 003 SB-1 10-12 Solid 01/14/98	180178 004 SB-1 15-17 Solid 01/14/98	180178 005 MW-1 5-7 Solid 01/13/98	180178 006 MW-1 30-32 Solid 01/13/98
	Analyzed: / Units:	01/24/98 mg/L R.L.					
bis [2-Chloroethoxy] methane		< 0.025 (0.025)					
bis [2-Chloroethyl] ether		< 0.025 (0.025)					
bis [2-Chloroisopropyl] ether		< 0.025 (0.025)					
bis [2-Ethylhexyl] phthalate		** 3.137 (0.025)					
** Result beyond calibration limits							
SPLP Volatiles EPA 8260	Analyzed: / Units:	01/28/98 mg/L R.L.					
Benzene		< 0.025 (0.025)					
Bromobenzene		< 0.025 (0.025)					
Bromochloromethane		< 0.025 (0.025)					
Bromodichloromethane		< 0.025 (0.025)					
Bromoform		< 0.025 (0.025)					
Bromomethane		< 0.025 (0.025)					
Carbon Tetrachloride		< 0.025 (0.025)					
Chlorobenzene		< 0.025 (0.025)					
Chloroethane		< 0.050 (0.050)					
Chloroform		< 0.025 (0.025)					
Chloromethane		< 0.050 (0.050)					
2-Chlorotoluene		< 0.025 (0.025)					
4-Chlorotoluene		< 0.025 (0.025)					
1,2-Dibromo-3-chloropropane		< 0.025 (0.025)					
Dibromochloromethane		< 0.025 (0.025)					
1,2-Dibromoethane		< 0.025 (0.025)					
Dibromomethane		< 0.025 (0.025)					

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80178

K.E.I. Consultants, Inc.

Project ID: 710046
Project Name: *TNM 97-23*
Project Manager: Theresa Nix
Project Location: Eunice

Date Received in Lab : Jan 19, 1998 09:40
Date Reported: Feb 20, 1998
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	Lab ID:	180178 001	180178 002	180178 003	180178 004	180178 005	180178 006
	Field ID:	SB-1	SB-1	SB-1	SB-1	MW-1	MW-1
	Depth:	0-2	2-4	10-12	15-17	5-7	30-32
	Matrix:	Solid	Solid	Solid	Solid	Solid	Solid
	Sampled:	01/14/98	01/14/98	01/14/98	01/14/98	01/13/98	01/13/98
	Analyzed:	01/28/98					
	Units:	mg/L R.L.					
1,2-Dichlorobenzene		< 0.025 (0.025)					
1,3-Dichlorobenzene		< 0.025 (0.025)					
1,4-Dichlorobenzene		< 0.025 (0.025)					
Dichlorodifluoromethane		< 0.025 (0.025)					
1,1-Dichloroethane		< 0.025 (0.025)					
1,2-Dichloroethane		< 0.025 (0.025)					
1,1-Dichloroethene		< 0.025 (0.025)					
1,2-Dichloropropane		0.026 (0.025)					
1,3-Dichloropropane		< 0.025 (0.025)					
2,2-Dichloropropane		< 0.025 (0.025)					
1,1-Dichloropropene		< 0.025 (0.025)					
Ethylbenzene		< 0.025 (0.025)					
Hexachlorobutadiene		< 0.025 (0.025)					
Isopropylbenzene		< 0.025 (0.025)					
MTBE		< 0.050 (0.050)					
Methylene chloride		< 0.050 (0.050)					
Naphthalene		< 0.025 (0.025)					
Styrene		< 0.025 (0.025)					
1,1,1,2-Tetrachloroethane		< 0.025 (0.025)					
1,1,2,2-Tetrachloroethane		< 0.025 (0.025)					
Tetrachloroethene		< 0.025 (0.025)					
Toluene		< 0.025 (0.025)					
1,2,3-Trichlorobenzene		< 0.025 (0.025)					
1,2,4-Trichlorobenzene		< 0.025 (0.025)					

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80178

K.E.I. Consultants, Inc.

Project ID: 710046
Project Name: TNM 97-23
Date Received in Lab : Jan 19, 1998 09:40
Project Manager: Theresa Nix
Date Reported: Feb 20, 1998
Project Location: Eunice
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	180178 001	180178 002	180178 003	180178 004	180178 005	180178 006
	Field ID:	SB-1	SB-1	SB-1	SB-1	MW-1	MW-1
	Depth:	0-2	2-4	10-12	15-17	5-7	30-32
	Matrix:	Solid	Solid	Solid	Solid	Solid	Solid
	Sampled:	01/14/98	01/14/98	01/14/98	01/14/98	01/13/98	01/13/98
	Analyzed:	01/28/98					
	Units:	mg/L R.L.					
1,1,1-Trichloroethane		< 0.025 (0.025)					
1,1,2-Trichloroethane		< 0.025 (0.025)					
Trichloroethene		< 0.025 (0.025)					
Trichlorofluoromethane		< 0.500 (0.500)					
1,2,3-Trichloropropane		< 0.025 (0.025)					
1,2,4-Trimethylbenzene		< 0.025 (0.025)					
1,3,5-Trimethylbenzene		0.065 (0.025)					
Vinyl chloride		< 0.025 (0.025)					
cis-1,2-Dichloroethene		< 0.025 (0.025)					
cis-1,3-Dichloropropene		< 0.025 (0.025)					
m,p-Xylenes		< 0.025 (0.025)					
n-Butylbenzene		< 0.025 (0.025)					
n-Propylbenzene		< 0.025 (0.025)					
o-Xylene		0.063 (0.025)					
p-Isopropyltoluene		< 0.025 (0.025)					
sec-Butylbenzene		< 0.025 (0.025)					
tert-Butylbenzene		< 0.025 (0.025)					
trans-1,2-Dichloroethene		< 0.025 (0.025)					
trans-1,3-Dichloropropene		< 0.025 (0.025)					
SPLP TPH 1312/418.1	*Analyzed:*	01/27/98					
	Units:	ppm R.L.					
Total Petroleum Hydrocarbons		82.3 (5.7)					

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80178

K.E.I. Consultants, Inc.

Project ID: 710046
Project Manager: Theresa Nix
Project Location: Eunice

Project Name: TNM 97-23

Date Received in Lab : Jan 19, 1998 09:40
Date Reported: Feb 20, 1998
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	180178 007	180178 008	180178 009	180178 010	180178 011	180178 012
	Field ID:	MW-1	T-1	T-1	T-2	T-2	T-3
	Depth:	57-58	7	0-6	7	0-6	8.5
	Matrix:	Solid	Solid	Solid	Solid	Solid	Solid
	Sampled:	01/13/98	01/13/98	01/13/98	01/13/98	01/13/98	01/13/98
TPH-DRO (Diesel) **EPA 8015 M**	*Analyzed:*	01/22/98	02/19/98	02/19/98	02/20/98	02/20/98	02/20/98
	Units:	mg/kg R.L.	mg/kg R.L.	mg/kg R.L.	mg/kg R.L.	mg/kg R.L.	mg/kg
Total Petroleum Hydrocarbons		12.6 (10.0)	62.7 (10.0)	11600 (4000)	57.0 (20.0)	4230 (2200)	29900 (8000)
BTEX **EPA 8020**	*Analyzed:*	01/20/98					
	Units:	ppm R.L.					
Benzene		0.022 (0.020)					
Toluene		< 0.020 (0.020)					
Ethylbenzene		< 0.020 (0.020)					
m,p-Xylenes		0.042 (0.040)					
o-Xylene		< 0.020 (0.020)					
Total BTEX		0.064					

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80178

K.E.I. Consultants, Inc.

Project ID: 710046 | ***Project Name: TNM 97-23*** | **Date Received in Lab :** Jan 19, 1998 09:40

Project Manager: Theresa Nix | **Date Reported:** Feb 20, 1998

Project Location: Eunice | **XENCO contact :** Carlos Castro/Edward Yonemoto

Analysis Requested		180178 013	180178 014	180178 015	180178 016	180178 017	180178 018
	Lab ID:	180178 013	180178 014	180178 015	180178 016	180178 017	180178 018
	Field ID:	T-3	T-4	T-4	T-5	T-5	T-6
	Depth:	0-8	7	0-6	8.5	0-6	8.0
	Matrix:	Solid	Solid	Solid	Solid	Solid	Solid
	Sampled:	01/13/98	01/13/98	01/13/98	01/13/98	01/13/98	01/13/98
TPH-DRO (Diesel)	*Analyzed:*	02/20/98	02/20/98	02/20/98	02/20/98	02/20/98	02/20/98
EPA 8015 M	*Units:*	mg/kg R.L.	mg/kg R.L.	mg/kg R.L.	mg/kg R.L.	mg/kg R.L.	mg/kg R.L.
Total Petroleum Hydrocarbons		11700 (3600)	635 (300)	5480 (2500)	15200 (4600)	10700 (4000)	33400 (12500)

This report summary, and the entire report it represents, has been made for the exclusive and confidential use of K.E.I. Consultants, Inc..
The interpretations and results expressed through this analytical report represent the best judgment of XENCO Laboratories.
XENCO Laboratories, however, assumes no responsibility and makes no warranty to the end use of the data hereby presented.

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80178

K.E.I. Consultants, Inc.

Project ID: 710046
Project Name: TNM 97-23
Date Received in Lab : Jan 19, 1998 09:40
Project Manager: Theresa Nix
Date Reported: Feb 20, 1998
Project Location: Eunice
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested		Lab ID:	180178 019		180178 020		180178 021		180178 022		180178 023		180178 024	
		Field ID:	T-6		T-7		T-7		T-8		T-8		T-9	
		Depth:	0-7		3.5		0-3		6.5		0-6		8.5	
		Matrix:	Solid		Solid		Solid		Solid		Solid		Solid	
		Sampled:	01/13/98		01/13/98		01/13/98		01/13/98		01/13/98		01/13/98	
TPH-DRO (Diesel)		Analyzed:	02/20/98		02/20/98		02/20/98		02/20/98		02/20/98		02/20/98	
EPA 8015 M		Units:	mg/kg	R.L.	mg/kg	R.L.	mg/kg	R.L.	mg/kg	R.L.	mg/kg	R.L.	mg/kg	R.L.
Total Petroleum Hydrocarbons			6640	(2000)	84.2	(50.0)	278	(150)	3840	(200)	47500	(4000)	4800	(3600)

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XENCO Laboratories, however, assumes no responsibility and makes no warranty to the end use of the data hereby presented.

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80178

K.E.I. Consultants, Inc.

Project ID: 710046
Project Manager: Theresa Nix
Project Location: Eunice

Project Name: TNM 97-23

Date Received in Lab : Jan 19, 1998 09:40
Date Reported: Feb 20, 1998
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested							
	Lab ID:	180178 025					
	Field ID:	T-9					
	Depth:	0-8					
	Matrix:	Solid					
	Sampled:	01/13/98					
TPH-DRO (Diesel)	*Analyzed:*	02/20/98					
EPA 8015 M	*Units:*	mg/kg R.L.					
Total Petroleum Hydrocarbons		17500 (10000)					

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18Z99A35

SW- 846 8015 M TPH- DRO (Diesel)

Date Validated: Feb 20, 1998 16:21
Date Analyzed: Feb 19, 1998 13:31
QA/QC Manager: Sunil Ajai, M.S.

Analyst: OR
Matrix: Solid

	BLANK SPIKE ANALYSIS						
Parameter	[A] Blank Result mg/kg	[B] Blank Spike Result mg/kg	[C] Blank Spike Amount mg/kg	[D] Method Detection Limit mg/kg	[E] QC LIMITS Blank Spike Recovery %	[F] Recovery Range %	[G] Qualifier
Total Petroleum Hydrocarbons	< 10.00	170	200	10.00	85.0	65-135	

ank Spike Recovery [E] = 100*(B-A)/(C)
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
results are based on MDL and validated for QC purposes only

Edward H. Tonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18Z99A35

SW- 846 8015 M TPH- DRO (Diesel)

Date Validated: Feb 20, 1998 16:21
Date Analyzed: Feb 19, 1998 21:27
QA/QC Manager: Sunil Ajai, M.S.

Analyst: OR
Matrix: Solid

MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY

Q.C. Sample ID 180178- 008 / Parameter	[A] Sample Result mg/kg	[B] Matrix Spike Result mg/kg	[C] Matrix Spike Duplicate Result mg/kg	[D] Matrix Spike Amount mg/kg	[E] Method Detection Limit mg/kg	Matrix Limit Relative Difference %	[F] QC Spike Relative Difference %	[G] QC Matrix Spike Recovery %	[H] QC M.S.D. Recovery %	[I] Matrix Spike Recovery Range %	[J] Qualifier
Total Petroleum Hydrocarbons	62.68	203	235	200	10.00	30.0	14.6	70.2	86.2	65-135	

Spike Relative Difference [F] = 200*(B-C)/(B+C)
Matrix Spike Recovery [G] = 100*(B-A)/[D]
M.S.D. = Matrix Spike Duplicate
M.S.D. Recovery [H] = 100*(C-A)/[D]
N.D. = Below detection limit or not detected
All results are based on MDL and validated for QC purposes

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

ANALYTICAL CHAIN OF CUSTODY REPORT
CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project ID: 710046
Project Manager: Theresa Nix
Project Location: Eunice

Project Name: TNM 97-23

XENCO COC#: 1-80178
Date Received in Lab: Jan 19, 1998 09:40 by LY
XENCO contact : Carlos Castro/Edward Yonemoto

	Field ID	Lab. ID	Method Name	Method ID	Units	Turn Around	Date and Time: Sample Collected	Addition Requested	Extraction	Analysis
1	SB-1 / 0-2	180178-001	BTEX	SW-846	ppm	3 days	Jan 14, 1998		Jan 20, 1998 by HL	Jan 20, 1998 13:46 by HL
2			TPH8015M-D	SW-846 8015 M	mg/kg	3 days	Jan 14, 1998		Jan 21, 1998 by RR	Jan 22, 1998 11:35 by OR
3			SPLP TPH	EPA	ppm	Standard	Jan 14, 1998	Jan22,1998 16:00	Jan 27, 1998 by RR	Jan 27, 1998 16:15 by RR
4			VOA (8260)	EPA1312/8260	mg/kg	Standard	Jan 14, 1998	Jan22,1998 16:00	Jan 28, 1998 by CE	Jan 28, 1998 14:43 by CE
5			SPLP-SV(TCL)	SW846-1312/82	ug/L	5 days	Jan 14, 1998	Jan22,1998 16:00	Jan 23, 1998 by RK	Jan 24, 1998 04:10 by LC
6	SB-1 / 2-4	180178-002	BTEX	SW-846	ppm	3 days	Jan 14, 1998		Jan 20, 1998 by HL	Jan 20, 1998 13:27 by HL
7			TPH8015M-D	SW-846 8015 M	mg/kg	3 days	Jan 14, 1998		Jan 21, 1998 by RR	Jan 21, 1998 23:06 by OR
8	SB-1 / 10-12	180178-003	BTEX	SW-846	ppm	3 days	Jan 14, 1998		Jan 20, 1998 by HL	Jan 20, 1998 13:08 by HL
9			TPH8015M-D	SW-846 8015 M	mg/kg	3 days	Jan 14, 1998		Jan 21, 1998 by RR	Jan 22, 1998 00:26 by OR
10	SB-1 / 15-17	180178-004	BTEX	SW-846	ppm	3 days	Jan 14, 1998		Jan 20, 1998 by HL	Jan 20, 1998 12:49 by HL
11			TPH8015M-D	SW-846 8015 M	mg/kg	3 days	Jan 14, 1998		Jan 21, 1998 by RR	Jan 22, 1998 00:52 by OR
12	MW-1 / 5-7	180178-005	BTEX	SW-846	ppm	3 days	Jan 13, 1998		Jan 20, 1998 by HL	Jan 20, 1998 12:30 by HL
13			TPH8015M-D	SW-846 8015 M	mg/kg	3 days	Jan 13, 1998		Jan 21, 1998 by RR	Jan 22, 1998 01:19 by OR
14	MW-1 / 30-32	180178-006	BTEX	SW-846	ppm	3 days	Jan 13, 1998		Jan 20, 1998 by HL	Jan 20, 1998 12:11 by HL
15			TPH8015M-D	SW-846 8015 M	mg/kg	3 days	Jan 13, 1998		Jan 21, 1998 by RR	Jan 22, 1998 01:46 by OR
16	MW-1 / 57-58	180178-007	BTEX	SW-846	ppm	3 days	Jan 13, 1998		Jan 20, 1998 by HL	Jan 20, 1998 11:14 by HL
17			TPH8015M-D	SW-846 8015 M	mg/kg	3 days	Jan 13, 1998		Jan 21, 1998 by RR	Jan 22, 1998 02:12 by OR
18	T-1 / 7	180178-008	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 19, 1998 21:27 by OR
19	T-1 / 0-6	180178-009	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 19, 1998 23:47 by OR
20	T-2 / 7	180178-010	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 00:35 by OR
21	T-2 / 0-6	180178-011	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 01:22 by OR
22	T-3 / 8.5	180178-012	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 02:10 by OR
23	T-3 / 0-8	180178-013	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 02:57 by OR
24	T-4 / 7	180178-014	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 03:45 by OR
25	T-4 / 0-6	180178-015	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 04:32 by OR
26	T-5 / 8.5	180178-016	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 05:20 by OR
27	T-5 / 0-6	180178-017	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 06:08 by OR
28	T-6 / 8.0	180178-018	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 07:28 by OR

XENCO Laboratories

ANALYTICAL CHAIN OF CUSTODY REPORT
CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project ID: 710046
Project Manager: Theresa Nix
Project Location: Eunice

Project Name: TNM 97-23

XENCO COC#: 1-80178
Date Received in Lab: Jan 19, 1998 09:40 by LY
XENCO contact : Carlos Castro/Edward Yonemoto

	Field ID	Lab. ID	Method Name	Method ID	Units	Turn Around	Date and Time: Sample Collected	Date and Time: Addition Requested	Date and Time: Extraction	Date and Time: Analysis
29	T-6 / 0-7	180178-019	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 07:55 by OR
30	T-7 / 3.5	180178-020	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 08:22 by OR
31	T-7 / 0-3	180178-021	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 08:50 by OR
32	T-8 / 6.5	180178-022	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 09:17 by OR
33	T-8 / 0-6	180178-023	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 09:45 by OR
34	T-9 / 8.5	180178-024	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 10:12 by OR
35	T-9 / 0-8	180178-025	TPH8015M-D	SW-846 8015 M	mg/kg	24 hours	Jan 13, 1998	Feb19,1998 13:45	Feb 19, 1998 by OG	Feb 20, 1998 10:40 by OR

XENCO Laboratories
11381 Meadowglen Suite L Houston, Texas 77082
(713) 589-0692 Fax (713) 589-0695

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Lab. Batch # 180178-SA

Contractor: KEI Consultants | Phone (800) 253-0507

Address: 5309 Wurzbach Suite 100 San Antonio, Tx 78238

Project Name: TNM 97-23 | Project Director: Mike Hawthorne

Project Location: Eunice | Project Manager: Theresa Nix

Sampler Signature: | Project No.: 710046

No. coolers this shipment: | Contractor COC #

Carrier: | Quote #:

Airbill No. | P.O. No.:

SAMPLE CHARACTERIZATION

	Field ID	Date	Time	DEPTH	SOIL	WATER	COMP	GRAB	Container Size	Container Type P, G	Preservative Ice	Preservative Other	Sample Description	No of CONTAINERS Total	BTEX (5030/8020-602)	TPH (418.1)	Please Hold	LAB ONLY ID #
1	T-1	1-13-98		7	/		/		4oz	G	/			2			/	1
2	T-1	1-13-98		0-6	/		/				/			2			/	2
3	T-2	1-13-98		7	/		/				/			2			/	3
4	T-2	1-13-98		0-6	/		/				/			2			/	4
5	T-3	1-13-98		8.5	/		/				/			2			/	5
6	T-3	1-13-98		0-8	/		/				/			2			/	6
7	T-4	1-13-98		7	/		/				/			2			/	7
8	T-4	1-13-98		0-6	/		/				/			2			/	8
9	T-5	1-13-98		8.5	/		/				/			2			/	9
10	T-5	1-13-98		0-6	/		/		▼	▼	/			2			/	10

Preservative: Unl Dies Ker Unknown; Waste Oil; PIT No: Tank No:

Turn-around: * ASAP; * 24 hrs; 48 hrs; Standard

Remarks

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
	1-16-98	0920			
			Received For Laboratory by: UPS		
			Lanie Yordy	1/16/98	940

Remarks: Please call w/ results will advise of any further analysis

Pink (Contractor), Yellow & White (Lab).

* Pre-scheduling is recommended

Precision Analytical Services

XENCO Laboratories
11381 Meadowglen Suite L Houston, Texas 77082
(713) 589-0692 Fax (713) 589-0695

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Lab. Batch # 180178-8A

Contractor: KEI Consultants Phone (800) 253-0507

Address: 5309 Wurzbach Suite 100 SA, Tx 78238

Project Name: TNM 97-23 Project Director: Mike Hawthorne

Project Location: Eunice Project Manager: Theresa Nix

Sampler Signature: Project No. 710046

No. coolers this shipment: Contractor COC #

Carrier: Quote #:

Airbill No. P.O. No:

	Field ID	Date	Time	Depth	Soil	Water	Comp	Grab	Container Size	Container Type P, G	Preservative Ice	Preservative Other	Sample Description	No of Containers Total	BTEX (5030/8020-602)	TPH (418.1)	Please Hold	Remarks	LAB ONLY ID #
1	T-6	1-13-98		8.0	/		/		4oz	G				2			/		1
2	T-6	1-13-98		0-7	/		/							2			/		2
3	T-7	1-13-98		3.5	/		/							2			/		3
4	T-7	1-13-98		0-3	/		/							2			/		4
5	T-8	1-13-98		6.5	/		/							2			/		5
6	T-8	1-13-98		0-6	/		/							2			/		6
7	T-9	1-13-98		8.5	/		/							2			/		7
8	T-9	1-13-98		0-8	/		/							2			/		8
9																			9
10																			10

Turn-around: * ASAP * 24 hrs 48 hrs (Standard)

SAMPLE CHARACTERIZATION: Unl Dies Ker Unknown; Waste Oil; PIT No: Tank No:

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
	1-16-98	0920			
			Received For Laboratory by UPS		
			Laura Yockey	1/19/98	940

Remarks: Please see note on pg. 2

Pink (Contractor), Yellow & White (Lab).

* Pre-scheduling is recommended

ANALYTICAL REPORT 1-80459

for

K.E.I. Consultants, Inc.

Project Manager: Theresa Nix

Project Name: TNMPL

Project Id: 710046

March 5, 1998

HOUSTON - DALLAS - SAN ANTONIO

11381 Meadowglen Lane Suite L * Houston, Texas 77082-2647
Phone (281) 589-0692 Fax (281) 589-0695

XENCO Laboratories

11381 Meadowglen Suite L
Houston, Texas 77082-2647
(281) 589-0692 Fax: (281) 589-0695
Houston - Dallas - San Antonio - Latin America

March 5, 1998

Project Manager: Theresa Nix
K.E.I. Consultants, Inc.
5309 Wurzbach Rd. Suite 100
San Antonio, TX 78238

Reference: **XENCO Report No.: 1-80459**
Project Name: TNMPL
Project ID: 710046
Project Address: 2 Mile outside Eunice, NM

Dear Theresa Nix:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with XENCO Chain of Custody Number 1-80459. All results being reported to you apply only to the samples analyzed, properly identified with a Laboratory ID number. This letter documents the official transmission of the contents of the report and validates the information contained within.

All the results for the quality control samples passed thorough examination. Also, all parameters for data reduction and validation checked satisfactorily. In view of this, we are able to release the analytical data for this report within acceptance criteria for accuracy, precision, completeness or properly flagged.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 3 years in our archives and after that time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in COC No. 1-80459 will be filed for 60 days, and after that time they will be properly disposed of without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

XENCO operates under the A2LA guidelines. Our Quality System meets ISO/IEC Guide 25 requirements which is strictly implemented and enforced through our standard QA/QC procedures.

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Sincerely,

Eddie Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80459

K.E.I. Consultants, Inc.

Project Name: TNMPL

Project ID: 710046
Project Manager: Theresa Nix
Project Location: 2 Mile outside Eunice, NM

Date Received in Lab : Feb 6, 1998 11:40
Date Report Faxed: Mar 5, 1998
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	180459 001				
	Field ID:	MW-1				
	Depth:					
	Matrix:	Liquid				
	Sampled:	02/04/98 13:50				
Metals by ICP **EPA 6010**	*Analyzed:* *Units:*	02/13/98 mg/L	R.L.			
Aluminum		< 0.22	(0.22)			
Barium		0.059	(0.044)			
Beryllium		< 0.022	(0.022)			
Cadmium		< 0.044	(0.044)			
Calcium		180	(0.6)			
Chromium		< 0.11	(0.11)			
Cobalt		< 0.056	(0.056)			
Copper		< 0.033	(0.033)			
Iron		< 0.11	(0.11)			
Magnesium		72.0	(0.1)			
Manganese		< 0.056	(0.056)			
Molybdenum		< 0.22	(0.22)			
Nickel		< 0.11	(0.11)			
Potassium		8.76	(0.56)			
Silver		< 0.089	(0.089)			
Sodium		187	(2.22)			
Strontium		3.86	(0.22)			
Tin		< 0.22	(0.22)			
Vanadium		0.058	(0.056)			
Zinc		0.13	(0.03)			
Total Boron	*Analyzed:* *Units:*	03/03/98 mg/L	R.L.			
Boron		0.48	(0.11)			
Total Silicon **EPA 6010/Si**	*Analyzed:* *Units:*	03/03/98 mg/L	R.L.			
Silicon		48.1	(0.2)			
BTEX **EPA 8020**	*Analyzed:* *Units:*	02/10/98 ppm	R.L.			
Benzene		< 0.004	(0.004)			
Toluene		< 0.004	(0.004)			
Ethylbenzene		< 0.004	(0.004)			
m,p-Xylenes		< 0.008	(0.008)			
o-Xylene		< 0.004	(0.004)			
Total BTEX			N.D.			

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80459

K.E.I. Consultants, Inc.

Project Name: TNMPL

Project ID: 710046
Project Manager: Theresa Nix
Project Location: 2 Mile outside Eunice, NM

Date Received in Lab : Feb 6, 1998 11:40
Date Report Faxed: Mar 5, 1998
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:* / *Field ID:* / *Depth:* / *Matrix:* / *Sampled:*	180459 001 / MW-1 / / Liquid / 02/04/98 13:50			
PAHs by GC-MS **EPA 8100**	*Analyzed:* / *Units:*	02/10/98 / mg/L	R.L.		
7H-Dibenzo(c,g)carbazole		< 0.002	(0.002)		
Acenaphthene		< 0.002	(0.002)		
Acenaphthylene		< 0.002	(0.002)		
Anthracene		< 0.002	(0.002)		
Benzo(a)anthracene		< 0.002	(0.002)		
Benzo(a)pyrene		< 0.002	(0.002)		
Benzo(b)fluoranthene		< 0.002	(0.002)		
Benzo(g,h,i)perylene		< 0.002	(0.002)		
Benzo(j)fluoranthene		< 0.002	(0.002)		
Benzo(k)fluoranthene		< 0.002	(0.002)		
Chrysene		< 0.002	(0.002)		
Dibenz(a,h)acridine		< 0.002	(0.002)		
Dibenz(a,j)acridine		< 0.002	(0.002)		
Dibenzo(a,e)pyrene		< 0.002	(0.002)		
Dibenzo(a,h)anthracene		< 0.002	(0.002)		
Dibenzo(a,h)pyrene		< 0.002	(0.002)		
Dibenzo(a,i)pyrene		< 0.002	(0.002)		
Fluoranthene		< 0.002	(0.002)		
Fluorene		< 0.002	(0.002)		
Indeno(1,2,3-cd)pyrene		< 0.002	(0.002)		
3-Methylcholanthrene		< 0.002	(0.002)		
Naphthalene		< 0.002	(0.002)		
Phenanthrene		< 0.002	(0.002)		
Pyrene		< 0.002	(0.002)		
Bicarbonate **SM 4500CO2D**	*Analyzed:* / *Units:*	02/09/98 / mg/L	R.L.		
Bicarbonate		198	(1.0)		
Carbonate **SM4500CO2D**	*Analyzed:* / *Units:*	02/09/98 / ppm	R.L.		
Carbonate		< 1.0	(1.0)		
Total Dissolved Solids **EPA 160.1**	*Analyzed:* / *Units:*	02/10/98 / mg/L	R.L.		
Total Dissolved Solids		1570	(4.0)		

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-80459

K.E.I. Consultants, Inc.

Project Name: TNMPL

Project ID: 710046
Project Manager: Theresa Nix
Project Location: 2 Mile outside Eunice, NM

Date Received in Lab : Feb 6, 1998 11:40
Date Report Faxed: Mar 5, 1998
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:* / *Field ID:* / *Depth:* / *Matrix:* / *Sampled:*	180459 001 / MW-1 / / Liquid / 02/04/98 13:50			
Anions by Ion Chromatography EPA 300.0	*Analyzed:* / *Units:*	02/09/98 / mg/L	R.L.		
Chloride		405	(0.20)		
Sulfate		165	(0.2)		

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A18B06

EPA 6010 Metals by ICP

Date Validated: Feb 17, 1998 12:00
Date Analyzed: Feb 13, 1998 15:11
QA/QC Manager: Sunil Ajai, M.S.

Analyst: CG
Matrix: Liquid

	BLANK SPIKE ANALYSIS						
Parameter	[A] Blank Result mg/L	[B] Blank Spike Result mg/L	[C] Blank Spike Amount mg/L	[D] Method Detection Limit mg/L	[E] QC LIMITS Blank Spike Recovery %	[F] LIMITS Recovery Range %	[G] Qualifier
Aluminum	< 0.222	1.913	2.222	0.222	86.1	70-125	
Barium	< 0.0222	1.1356	1.1111	0.0222	102.2	70-125	
Beryllium	< 0.0222	0.4444	0.4444	0.0222	100.0	70-125	
Cadmium	< 0.0444	0.4700	0.4444	0.0444	105.8	70-125	
Calcium	0.350	5.092	5.556	0.056	85.4	70-125	
Chromium	< 0.111	1.152	1.111	0.111	103.7	70-125	
Cobalt	< 0.0222	1.1478	1.1111	0.0222	103.3	70-125	
Copper	< 0.0333	1.0422	1.1111	0.0333	93.8	70-125	
Iron	< 0.028	2.062	2.222	0.028	92.8	70-125	
Magnesium	< 0.056	4.606	5.556	0.056	82.9	70-125	
Manganese	< 0.028	2.210	2.222	0.028	99.5	70-125	
Nickel	< 0.111	1.214	1.111	0.111	109.3	70-125	
Potassium	0.193	3.674	4.444	0.111	78.3	70-125	
Silver	< 0.0444	0.8944	0.8889	0.0444	100.6	70-125	
Sodium	1.16	9.33	8.88	0.11	92.0	70-125	
Strontium	< 0.111	2.208	2.222	0.111	99.4	70-125	
Vanadium	< 0.0333	1.0700	1.1111	0.0333	96.3	70-125	
Zinc	< 0.0333	1.2144	1.1111	0.0333	109.3	70-125	

Blank Spike Recovery [E] = 100*(B-A)/(C)
N.C. = Not calculated, data below detection limit
B.D. = Below detection limit
All results are based on MDL and validated for QC purposes only

Sunil S. Ajai
Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A18B06

EPA 6010 Metals by ICP

Date Validated: Feb 17, 1998 12:00
Date Analyzed: Feb 13, 1998 15:23
QA/QC Manager: Sunil Ajai, M.S.

Analyst: CG
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					MATRIX SPIKE ANALYSIS				
Q.C. Sample ID 180459- 001	[A] Sample Result	[B] Duplicate Result	[C] Method Detection Limit	[D] QC LIMITS Relative Difference	[E] LIMITS Relative Difference	[F] Matrix Spike Result	[G] Matrix Spike Amount	[H] QC LIMITS Matrix Spike Recovery	[I] LIMITS Recovery Range	[G] Qualifier
Parameter	mg/L	mg/L	mg/L	%	%	mg/L	mg/L	%	%	
Potassium	8.759	7.506	0.111	15.4	20.0	10.144	4.44	31.2	70-125	B
Silver	<0.0889	< 0.0889	0.0889	N.C	20.0	0.7244	0.889	75.0	70-125	
Sodium	187	169	0.111	10.1	20.0	157	8.88	337.8	70-125	A,B
Strontium	3.862	3.934	0.111	1.8	25.0	5.516	2.22	74.4	70-125	
Vanadium	0.0578	0.0533	0.0333	8.1	25.0	1.0756	1.111	91.6	70-125	
Zinc	0.130	0.071	0.033	58.7	20.0	1.279	1.11	103.4	70-125	C

(A) High analyte concentration affects spike recovery.
(B) Post-digestion spike within acceptance limits.
(C) Presence of a non-homogeneous sample affects duplicate recovery.
Relative Difference [D] = 200*(B-A)/(B+A)
Matrix Spike Recovery [H] = 100*(F-A)/[G]
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
All results are based on MDL and validated for QC purposes only

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A18B06

EPA 6010 Metals by ICP

Date Validated: Feb 17, 1998 12:00
Date Analyzed: Feb 13, 1998 15:23
QA/QC Manager: Sunil Ajai, M.S.

Analyst: CG
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					MATRIX SPIKE ANALYSIS				
Q.C. Sample ID 180459- 001	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[G]
	Sample	Duplicate	Method	QC	LIMITS	Matrix Spike	Matrix	QC	LIMITS	
Parameter	Result	Result	Detection Limit	Relative Difference	Relative Difference	Result	Spike Amount	Matrix Spike Recovery	Recovery Range	Qualifier
	mg/L	mg/L	mg/L	%	%	mg/L	mg/L	%	%	
Aluminum	< 0.222	< 0.222	0.222	N.C	25.0	2.812	2.22	126.5	70-125	B
Barium	0.0589	0.0489	0.0222	18.6	25.0	1.0100	1.111	85.6	70-125	
Beryllium	< 0.0222	< 0.0222	0.0222	N.C	25.0	0.4033	0.444	90.8	70-125	
Cadmium	< 0.0444	< 0.0444	0.0444	N.C	25.0	0.5133	0.444	115.6	70-125	
Calcium	179	175	0.06	2.3	25.0	160	5.6	342.0	70-125	A,B
Chromium	< 0.111	< 0.111	0.111	N.C	25.0	1.070	1.11	96.3	70-125	
Cobalt	< 0.0222	< 0.0222	0.0222	N.C	25.0	1.1011	1.111	99.1	70-125	
Copper	< 0.0333	< 0.0333	0.0333	N.C	25.0	0.8867	1.111	79.8	70-125	
Iron	< 0.028	< 0.028	0.028	N.C	25.0	2.280	2.22	102.6	70-125	
Magnesium	71.99	70.26	0.06	2.4	25.0	68.22	5.6	67.9	70-125	A,B
Manganese	0.0300	0.0378	0.0278	23.0	25.0	2.3222	2.222	103.2	70-125	
Molybdenum	< 0.111	< 0.111	0.111	N.C	25.0	0.767	1.11	69.0	70-125	B
Nickel	< 0.111	< 0.111	0.111	N.C	25.0	1.100	1.11	99.0	70-125	

(A) High analyte concentration affects spike recovery.

(B) Post-digestion spike within acceptance limits.

(C) Presence of a non-homogeneous sample affects duplicate recovery.

Relative Difference [D] = 200*(B-A)/(B+A)
Matrix Spike Recovery [H] = 100*(F-A)/[G]
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
All results are based on MDL and validated for QC purposes only

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A18B42

EPA SW846/6010 Total Boron

Date Validated: Mar 3, 1998 17:10
Date Analyzed: Mar 3, 1998 16:33
QA/QC Manager: Sunil Ajai, M.S.

Analyst: CG
Matrix: Liquid

	BLANK SPIKE ANALYSIS						
Parameter	[A] Blank Result mg/L	[B] Blank Spike Result mg/L	[C] Blank Spike Amount mg/L	[D] Method Detection Limit mg/L	[E] QC Blank Spike Recovery %	[F] LIMITS Recovery Range %	[G] Qualifier
Boron	< 0.111	10.522	11.100	0.111	94.8	70-125	

Blank Spike Recovery [E] = 100*(B-A)/(C)
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
* results are based on MDL and validated for QC purposes only

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A18B42

EPA SW846/6010 Total Boron

Date Validated: Mar 3, 1998 17:10
Date Analyzed: Mar 3, 1998 16:42
QA/QC Manager: Sunil Ajai, M.S.

Analyst: CG
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					MATRIX SPIKE ANALYSIS				
Q.C. Sample ID 180459- 001	[A] Sample Result	[B] Duplicate Result	[C] Method Detection Limit	[D] QC LIMITS Relative Difference	[E] QC LIMITS Relative Difference	[F] Matrix Spike Result	[G] Matrix Spike Amount	[H] QC LIMITS Matrix Spike Recovery	[I] QC LIMITS Recovery Range	[G] Qualifier
Parameter	mg/L	mg/L	mg/L	%	%	mg/L	mg/L	%	%	
Boron	0.480	0.430	0.111	11.0	25.0	11.937	11.10	103.2	70-125	

Relative Difference [D] = 200*(B-A)/(B+A)
Matrix Spike Recovery [H] = 100*(F-A)/[G]
N C = Not calculated, data below detection limit
N.D. = Below detection limit
All results are based on MDL and validated for QC purposes only

Sunil S. Ajai
Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A18B41

EPA SW846/6010 Total Silicon

Date Validated: Mar 3, 1998 17:10
Date Analyzed: Mar 3, 1998 16:42
QA/QC Manager: Sunil Ajai, M.S.

Analyst: CG
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 180459- 001	[A] Sample Result	[B] Duplicate Result	[C] Method Detection Limit	[D] QC Relative Difference	[E] LIMITS Relative Difference	[F] Qualifier
Parameter	mg/L	mg/L	mg/L	%	%	
Silicon	48.10	48.08	0.22	0.0	25.0	

Relative Difference [D] = 200*(B-A)/(B+A)
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
All results are based on MDL and validated for QC purposes only

Sunil S. Ajai

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A18B41

EPA SW846/6010 Total Silicon

Date Validated: Mar 3, 1998 17:10
Date Analyzed: Mar 3, 1998 16:33
QA/QC Manager: Sunil Ajai, M.S.

Analyst: CG
Matrix: Liquid

	BLANK SPIKE ANALYSIS						
Parameter	[A] Blank Result mg/L	[B] Blank Spike Result mg/L	[C] Blank Spike Amount mg/L	[D] Method Detection Limit mg/L	[E] QC Blank Spike Recovery %	[F] LIMITS Recovery Range %	[G] Qualifier
Silicon	< 0.222	< 0.222	2.222	0.222	N.C.	70-125	

Blank Spike Recovery [E] = 100*(B-A)/(C)
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
results are based on MDL and validated for QC purposes only

Sunil S. Ajai
Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A25A48

SW- 846 5030/8020 BTEX

Date Validated: Feb 10, 1998 16:30
Date Analyzed: Feb 10, 1998 09:40
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: HL
Matrix: Liquid

BLANK SPIKE / BLANK SPIKE DUPLICATE AND RECOVERY

Parameter	[A] Blank Result ppm	[B] Blank Spike Result ppm	[C] Blank Spike Duplicate Result ppm	[D] Blank Spike Amount ppm	[E] Method Detection Limit ppm	Blank Limit Relative Difference %	[F] QC Spike Relative Difference %	[G] QC Blank Spike Recovery %	[H] QC B.S.D. Recovery %	[I] Blank Spike Recovery Range %	[J] Qualifier
Benzene	< 0.0010	0.0911	0.0864	0.1000	0.0010	20.0	5.3	91.1	86.4	65-135	
Toluene	< 0.0010	0.0912	0.0860	0.1000	0.0010	20.0	5.9	91.2	86.0	65-135	
Ethylbenzene	< 0.0010	0.0935	0.0889	0.1000	0.0010	20.0	5.0	93.5	88.9	65-135	
m,p-Xylenes	< 0.0020	0.1900	0.1790	0.2000	0.0020	20.0	6.0	95.0	89.5	65-135	
o-Xylene	< 0.0010	0.0937	0.0891	0.1000	0.0010	20.0	5.0	93.7	89.1	65-135	

Spike Relative Difference [F] = 200*(B-C)/(B+C)
Blank Spike Recovery [G] = 100*(B-A)/[D]
B.S.D. = Blank Spike Duplicate
B.S.D. Recovery [H] = 100*(C-A)/[D]
N.D. = Below detection limit or not detected
All results are based on MDL and validated for QC purposes

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A02A74

EPA 625 Semi-volatiles

Date Validated: Feb 10, 1998 16:43
Date Analyzed: Feb 9, 1998 22:49
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: LC
Matrix: Liquid

BLANK SPIKE / BLANK SPIKE DUPLICATE AND RECOVERY

Parameter	[A] Blank Result mg/L	[B] Blank Spike Result mg/L	[C] Blank Spike Duplicate Result mg/L	[D] Blank Spike Amount mg/L	[E] Method Detection Limit mg/L	Blank Limit Relative Difference %	[F] QC Spike Relative Difference %	[G] QC Blank Spike Recovery %	[H] QC B.S.D. Recovery %	[I] Blank Spike Recovery Range %	[J] Qualifier
Acenaphthene	< 0.0050	0.0812	0.0850	0.1000	0.0050	19.0	4.6	81.2	85.0	46-118	
4-Chloro-3-Methylphenol	< 0.0076	0.0802	0.0790	0.1000	0.0076	42.0	1.5	80.2	79.0	23-97	
2-Chlorophenol	< 0.0100	0.0682	0.0730	0.1000	0.0100	40.0	6.8	68.2	73.0	27-123	
1,4-Dichlorobenzene	< 0.0084	0.0766	0.0852	0.1000	0.0084	25.0	10.6	76.6	85.2	36-97	
2,4-Dinitrotoluene	< 0.0100	0.0756	0.0782	0.1000	0.0100	38.0	3.4	75.6	78.2	24-96	
N-Nitroso-di-n-propylamine	< 0.0080	0.0826	0.0896	0.1000	0.0080	38.0	8.1	82.6	89.6	41-116	
4-Nitrophenol	< 0.0080	0.0170	0.0188	0.1000	0.0080	50.0	10.1	17.0	18.8	10-80	
Pentachlorophenol	< 0.0172	0.0664	0.0730	0.1000	0.0172	50.0	9.5	66.4	73.0	9-103	
Phenol	< 0.0074	0.0280	0.0286	0.1000	0.0074	42.0	2.1	28.0	28.6	12-89	
Pyrene	< 0.0032	0.1046	0.1082	0.1000	0.0032	31.0	3.4	104.6	108.2	26-127	
1,2,4-Trichlorobenzene	< 0.0108	0.0796	0.0868	0.1000	0.0108	23.0	8.7	79.6	86.8	39-98	

Spike Relative Difference [F] = 200*(B-C)/(B+C)
Blank Spike Recovery [G] = 100*(B-A)/[D]
B.S.D. = Blank Spike Duplicate
B.S.D. Recovery [H] = 100*(C-A)/[D]
N.D. = Below detection limit or not detected
All results are based on MDL and validated for QC purposes

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A20A17

SM 4500CO2D Bicarbonate

Date Validated: Feb 18, 1998 16:50
Date Analyzed: Feb 9, 1998 11:00
QA/QC Manager: Sunil Ajai, M.S.

Analyst: RR
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 180459- 001	[A] Sample Result	[B] Duplicate Result	[C] Method Detection Limit	[D] QC LIMITS Relative Difference	[E] LIMITS Relative Difference	[F] Qualifier
Parameter	mg/L	mg/L	mg/L	%	%	
Bicarbonate	198	196	1.00	1.0	25.0	

Relative Difference [D] = 200*(B-A)/(B+A)
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
All results are based on MDL and validated for QC purposes only

Edward H. Tonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A20A17

SM 4500CO2D Bicarbonate

Date Validated: Feb 18, 1998 16:50
Date Analyzed: Feb 9, 1998 10:40
QA/QC Manager: Sunil Ajai, M.S.

Analyst: RR
Matrix: Liquid

	BLANK SPIKE ANALYSIS						
Parameter	[A] Blank Result mg/L	[B] Blank Spike Result mg/L	[C] Blank Spike Amount mg/L	[D] Method Detection Limit mg/L	[E] QC Blank Spike Recovery %	[F] LIMITS Recovery Range %	[G] Qualifier
Bicarbonate	< 1.00	250	250	1.00	100.0	70-125	

Blank Spike Recovery [E] = 100*(B-A)/(C)
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
results are based on MDL and validated for QC purposes only

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A20A15

SM4500CO2D Carbonate

Date Validated: Feb 18, 1998 10:40
Date Analyzed: Feb 9, 1998 10:55
QA/QC Manager: Sunil Ajai, M.S.

Analyst: RR
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 180459- 001	[A] Sample Result	[B] Duplicate Result	[C] Method Detection Limit	[D] QC Relative Difference	[E] LIMITS Relative Difference	[F] Qualifier
Parameter	ppm	ppm	ppm	%	%	
Carbonate	< 1.00	< 1.00	1.00	N.C	25.0	

Relative Difference [D] = 200*(B-A)/(B+A)
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
All results are based on MDL and validated for QC purposes only

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A19A53

EPA 160.1 Total Dissolved Solids

Date Validated: Feb 10, 1998 11:20
Date Analyzed: Feb 10, 1998 10:10
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: RR
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 180459- 001	[A] Sample Result	[B] Duplicate Result	[C] Method Detection Limit	[D] QC Relative Difference	[E] LIMITS Relative Difference	[F] Qualifier
Parameter	mg/L	mg/L	mg/L	%	%	
Total Dissolved Solids	1570	1500	4.00	4.6	25.0	

Relative Difference [D] = 200*(B-A)/(B+A)
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
All results are based on MDL and validated for QC purposes only

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A10A26

EPA 300.0 Anions by Ion Chromatography

Date Validated: Feb 10, 1998 13:15
Date Analyzed: Feb 9, 1998 15:16
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: OR
Matrix: Liquid

	BLANK SPIKE / BLANK SPIKE DUPLICATE AND RECOVERY										
Parameter	[A] Blank Result mg/L	[B] Blank Spike Result mg/L	[C] Blank Spike Duplicate Result mg/L	[D] Blank Spike Amount mg/L	[E] Method Detection Limit mg/L	Blank Limit Relative Difference %	[F] QC Spike Relative Difference %	[G] QC Blank Spike Recovery %	[H] QC B.S.D. Recovery %	[I] Blank Spike Recovery Range %	[J] Qualifier
Nitrate	< 0.10	5.43	5.48	6.00	0.10	20.0	0.9	90.5	91.3	70-125	
Ortho-phosphate (P)	< 0.20	4.08	4.08	5.00	0.20	20.0	0.0	81.6	81.6	70-125	
Sulfate	< 0.10	4.53	4.58	5.00	0.10	20.0	1.1	90.6	91.6	70-125	

Spike Relative Difference [F] = 200*(B-C)/(B+C)
Blank Spike Recovery [G] = 100*(B-A)/[D]
B.S.D. = Blank Spike Duplicate
B.S.D. Recovery [H] = 100*(C-A)/[D]
N.D. = Below detection limit or not detected
All results are based on MDL and validated for QC purposes

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

Certificate Of Quality Control for Batch : 18A10A26

EPA 300.0 Anions by Ion Chromatography

Date Validated: Feb 10, 1998 13:15
Date Analyzed: Feb 9, 1998 17:04
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: OR
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 180480- 003	[A] Sample Result	[B] Duplicate Result	[C] Method Detection Limit	[D] QC Relative Difference	[E] LIMITS Relative Difference	[F] Qualifier
Parameter	mg/L	mg/L	mg/L	%	%	
Nitrate	32.81	33.15	0.10	1.0	20.0	
Ortho-phosphate (P)	< 0.20	< 0.20	0.20	N.C	20.0	
Sulfate	849	853	0.10	0.5	20.0	

Relative Difference [D] = 200*(B-A)/(B+A)
N.C. = Not calculated, data below detection limit
N.D. = Below detection limit
All results are based on MDL and validated for QC purposes only

Edward H. Yonemoto, Ph.D.
Technical Director

XENCO Laboratories

ANALYTICAL CHAIN OF CUSTODY REPORT
CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project ID: 710046
Project Manager: Theresa Nix
Project Location: 2 Mile outside Eunice, NM

Project Name: TNMPL

XENCO COC#: 1-80459
Date Received in Lab: Feb 6, 1998 11:40 by LY
XENCO contact : Carlos Castro/Edward Yonemoto

	Field ID	Lab. ID	Method Name	Method ID	Units	Turn Around	Date and Time: Sample Collected	Date and Time: Addition Requested	Date and Time: Extraction	Date and Time: Analysis
1	MW-1	180459-001	BTEX	SW-846	ppm	3 days	Feb 4, 1998 13:50		Feb 10, 1998 by HL	Feb 10, 1998 13:11 by HL
2			PAH	SW-846 8100	mg/L	7 days	Feb 4, 1998 13:50		Feb 9, 1998 by SS	Feb 10, 1998 02:34 by LC
3			TDS	EPA 160.1	mg/L	7 days	Feb 4, 1998 13:50		Feb 9, 1998 by RR	Feb 10, 1998 10:10 by RR
4			Bicarbonate	SM 4500CO2D	mg/L	7 days	Feb 4, 1998 13:50		Feb 9, 1998 by RR	Feb 9, 1998 10:55 by RR
5			Anions	EPA 300.0	mg/L	7 days	Feb 4, 1998 13:50		Feb 9, 1998 by OR	Feb 9, 1998 17:45 by OR
6			Metals (ICP)	EPA 6010	mg/L	7 days	Feb 4, 1998 13:50		Feb 12, 1998 by AO	Feb 13, 1998 15:19 by CG
7			Carbonate	SM4500CO2D	ppm	7 days	Feb 4, 1998 13:50		Feb 9, 1998 by RR	Feb 9, 1998 10:55 by RR
8			Tot. Silicon	EPA	mg/L	Standard	Feb 4, 1998 13:50		Feb 12, 1998 by CG	Mar 3, 1998 16:39 by CG
9			Tot. Boron	EPA	mg/L	Standard	Feb 4, 1998 13:50		Feb 12, 1998 by AO	Mar 3, 1998 16:39 by CG

XENCO Laboratories

11381 Meadowglen Suite L Houston, Texas 77082
(713) 589-0692 Fax (713) 589-0695

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Lab. Batch # 180459-SA

Contractor: K.E.I Consultants — Phone: (210) 600-3767

Address: 5309 Wurzbach, Suite 180, San Antonio, TX 78238

Project Name: TNMPL — Project Director: Mike Hawthorn

Project Location: 2 mile outside Eunice, NM — Project Manager: Theresa Nix

Sampler Signature: [signature] — Project No.: 710046

No. coolers this shipment: — Contractor COC #

Carrier: UPS — Quote #:

Airbill No. — P.O. No.: 8433

	SAMPLE CHARACTERIZATION										Preservative		Unl Dies Ker Unknown / Waste Oil / PIT No: / Tank No: / Sample Description	No of CONTAINERS Total	EPA method 5030/8020-602 BTEX	TPH (418.1)	PAH EPA method 8100	TDS EPA method 160.1	Cations & Anions	Heavy metals (ICP scan)					Turn-around: ASAP / 24 hrs / 48 hrs / Standard — Remarks	LAB ONLY ID #
	Field ID	Date	Time	DEPTH	SOIL	WATER	COMP	GRAB	Container Size	Container Type P, G	Ice	Other												Please Hold		
1	MW-1	2-4-98	1350			/					/	HCl HNO_3		6												1
2																										2
3																										3
4																										4
5																										5
6																										6
7																										7
8																										8
9																										9
10																										10

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
[signature]	2-5-98	1600			
			Received For Laboratory by: UPS [signature]	2/6/98	1140

Remarks
Please Fax to Theresa Nix 210-680-3763
Please cc to STAN Craver: 505-392-2065
Heavy metals: ICP SCAN

Pink (Contractor), Yellow & White (Lab).

* Pre-scheduling is recommended

Precision Analytical Services

QA/QC PROCEDURES

DECONTAMINATION OF EQUIPMENT

Cleaning of drilling equipment was the responsibility of the drilling company. In general, the cleaning procedures consisted of using high pressure steam to wash the drilling and sampling equipment prior to drilling and prior to starting each hole. Prior to use, the sampling equipment was cleaned with Liqui-Nox detergent and rinsed with distilled water.

SOIL SAMPLING

Samples of the subsurface soils were obtained utilizing an air rotary drilling rig with split spoon samples at discrete intervals. Representative soil samples were divided into two separate portions using clean, disposable gloves and clean sampling tools. One portion of the soil sample was placed in a disposable sample bag. The bag was labeled and sealed for head-space analysis using a photo-ionization detector (PID) calibrated to a 100 ppm isobutylene standard. Each sample was allowed to volatilize for approximately 30 minutes at ambient temperature prior to conducting the analysis.

The other portion of the soil sample was placed in a sterile glass container equipped with a Teflon-lined lid furnished by the analytical laboratory. The container was filled to capacity to limit the amount of head-space present. Each container was labeled and placed on ice in an insulated cooler. Upon selection of samples for analysis, the cooler was sealed for shipment to the laboratory. Proper chain-of-custody documentation was maintained throughout the sampling process.

Soil samples were express mailed to Xenco Laboratories of San Antonio, Texas for BTEX, TPH-DRO, SPLP SVOC, SPLP VOC, SPLP TPH, FOC, and moisture content analyses using the methods described below. Soil samples were analyzed for BTEX, TPH, and SPLP concentrations within 14 days following the collection date.

The soil samples were analyzed in accordance with the methods as follows:

- BTEX concentrations in accordance with EPA Method SW846-8020
- TPH concentrations in accordance with modified EPA Method 8015-DRO
- SPLP TPH concentrations in accordance with EPA Method 1312/418.1
- SPLP VOC concentrations in accordance with EPA Method SW846-1312/8260
- SPLP SVOC concentrations in accordance with EPA Method SW846-1312/8270
- FOC concentrations in accordance with ASTM Method D2974
- moisture content in accordance with ASTM 2216-71

GROUND WATER SAMPLING

Monitoring wells were developed and purged with a clean PVC bailer. The bailer was cleaned prior to each use with Liqui-Nox detergent and rinsed with distilled water. Monitoring wells with sufficient recharge were purged by removing a minimum of 3 well volumes. Monitoring wells that did not recharge sufficiently were purged until no additional ground water could be obtained.

After purging the wells, ground water samples were collected with a disposable Teflon sampler and polyethylene line by personnel wearing clean, disposable gloves. Ground water sample containers were filled in the order of decreasing volatilization sensitivity (i.e., BTEX containers were filled first and PAH containers second).

Ground water samples collected for BTEX analysis were placed in 40 ml glass VOA vials equipped with Teflon-lined caps. The containers provided were pre-preserved with HCl by the analytical laboratory. The vials were filled to a positive meniscus, sealed, and visually checked to ensure the absence of air bubbles.

Ground water samples collected for PAH and metals analysis were filled to capacity in sterile, 1 liter glass containers equipped with Teflon-lined caps. Ground water samples collected for metals analysis were filled to capacity in sterile, 1 liter plastic containers equipped with Teflon-lined caps. The containers were provided by the analytical laboratory.

The filled containers were labeled and placed on ice in an insulated cooler. The cooler was sealed for transportation to the analytical laboratory. Proper chain-of-custody documentation was maintained throughout the sampling process.

The ground water samples were analyzed in accordance with the methods as follows:

- BTEX concentrations in accordance with EPA Method SW846-8020
- Metals concentrations in accordance with EPA ICP Method 6010
- PAH concentrations in accordance with EPA Method 8270

LABORATORY PROTOCOL

The laboratory was responsible for proper QA/QC procedures. These procedures are either transmitted with the laboratory reports or are on file at the laboratory.

EOTT ENERGY Pipeline Limited Partnership

P.O. BOX 1660
5805 E. BUSINESS 20
MIDLAND, TEXAS 79702
(915) 682-3761

FEDERAL EXPRESS
AIR BILL # 8170 0342 3660

March 30, 2000

State of New Mexico
Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505
Attn: William Olson

RE: **ANNUAL GROUND WATER MONITORING REPORTS**

Dear Mr. Olson:

Attached please find the 2000 Annual Groundwater Monitoring Reports for the following sites:

Monument #18	Monument #10
Monument #17	TNM-97-16 (Becky Jo Doom site)
Monument #2	HDO-90-23
Monument #15	SPS-11
TNM-97-17	TNM-98-02
TNM-97-18	TNM-98-S01
TNM-98-05A	TNM-97-23
TNM-96-16	TNM-95-10 (Saunders)
TNM-97-14	TNM-97-04 (Townsend)

I hope all meets with OCD requirements for closure of the site but if you have any questions, please don't hesitate to call me at 915/684-3467.

Sincerely,

Lennah Frost
Sr. Environmental Engineer

cc: Environmental File

EOTT ENERGY Pipeline Limited Partnership

P.O. BOX 1660
5805 E. BUSINESS 20
MIDLAND, TEXAS 79702
(915) 682-3761

CERTIFIED MAIL
RETURN RECEIPT NO. Z 471 136 375

December 20, 1999

Mr. & Mrs. Tom Kennan
P.O. Box 186
Eunice, NM 88231-0186

RE: Proposed Soil Remediation
Sec. 14, T-22-S, R-37-E, Lea Co., NM
Site TNM-97-23, Leo Sims Estate

Dear Mr. and Mrs. Kennan:

EOTT Energy will begin cleanup/remediation of the above captioned site at 8:00 am on January 10, 2000. Below is the procedure that we will be following.

1. EOTT will haul off the contaminated soil that is presently stockpiled at the leaksite. This will be taken to EPI Landfarm directly west of the leaksite. At that time we will remediate the remaining contaminated soil on site using the DRIS system. EOTT believes that this technology will clean the TPH and BTEX concentrations in the soil to levels below the NMOCD required limit. Using the DRIS technology limits the surface damage to the ranch and returns the insitu soil almost to its' original condition.

2. Clean soil from your ranch will be used to backfill any excavations that are now open and those that may be necessary to dig to remediate soil at the leak site.

3. Cleanup levels are based upon depth to groundwater, proximity to water wells, and distance to surface water bodies. Depth to groundwater is approximately 55 feet which automatically triggers NMOCD guideline of 10 ppm Benzene, 50 ppm BTEX and 100 ppm TPH.

4. EOTT uses an EPA modified 8015 method for testing TPH. This give both the Gasoline Range Organic and Diesel Range Organic values.

If you have any questions or need additional information please don't hesitate to call me at 915/684-3467.

Sincerely,

Lennah Frost

Lennah Frost
Sr. Environmental Engineer

cc: NMOCD - Hobbs and Santa Fe, New Mexico
Glenn Waldrop - New Mexico Pipeline Manager
Al Hugh - Director, Environmental & Safety - Houston
Mike Kelly - Legal - Houston
Wayne Brunette - Pipeline Inspector

EOTT ENERGY Pipeline Limited Partnership

P.O. BOX 1660
5805 E. BUSINESS 20
MIDLAND, TEXAS 79702
(915) 682-3761

CERTIFIED MAIL
RETURN RECEIPT NO. Z 470 651 232

October 21, 1999

Mr. & Mrs. Tom Kennan
P.O. Box 186
Eunice, NM 88231-0186

RE: Proposed Soil Remediation
Sec. 14, T-22-S, R-37-E, Lea Co., NM
Site TNM-97-23, Leo Sim Estate

Dear Mr. and Mrs. Kennan:

Outlined below are the points referred to in your letter dated September 22, 1999.

1. Clean soil from your ranch will be used to backfill any excavations that are now open and those that may be necessary to dig to remediate soil at the leak site.
2. EOTT proposes to haul off the contaminated soil that is presently stockpiled at the leaksite. This will be taken to EPI Landfarm directly west of the leaksite. At that time we would like to remediate the remaining contaminated soil on site using the DRIS system as we previously discussed. EOTT believes that this technology will clean the TPH and BTEX concentrations in the soil to levels below the NMOCD required limit. Using the DRIS technology limits the surface damage to the ranch and returns the insitu soil almost to its' original condition.
3. Cleanup levels are based upon depth to groundwater, proximity to water wells, and distance to surface water bodies. Depth to groundwater is approximately 55 feet which automatically triggers NMOCD guideline of 10 ppm Benzene, 50 ppm BTEX and 100 ppm TPH.
4. EOTT uses an EPA modified 8015 method for testing TPH. This give both the Gasoline Range Organic and Diesel Range Organic values.
5. Compensation for damages will need to be addressed by our land and legal departments. I am not authorized to settle damages.
6. EOTT believes that once we are allowed to begin cleanup and remediation of this site we will be able to complete the project in 6 to 8 months, depending on weather factors, etc.

EOTT is anxious to begin work at this site. We propose to begin our cleanup and subsurface investigation, as discussed in my letter dated 9/2/99, as soon as we have your approval.

If you have any questions or need additional information please don't hesitate to call me at 915/684-3467.

Sincerely,

Lennah Frost

Lennah Frost
Sr. Environmental Engineer

cc: NMOCD - Hobbs and Santa Fe, New Mexico
Glenn Waldrop - New Mexico Pipeline Manager
Al Hugh - Director, Environmental & Safety - Houston
Mike Kelly - Legal - Houston

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

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

September 11, 1998

Mr. Tony Savoie
Texas-New Mexico Pipe Line Company
P.O. Box 1030
Jal, New Mexico 88252

RE: INVESTIGATION REPORT
TNM-97-23 SITE

Dear Mr. Savoie:

The New Mexico Oil Conservation Division (OCD) has reviewed Texas-New Mexico Pipe Line Company's (TNMPLC) June 3, 1998 "SUBSURFACE INVESTIGATION REPORT, TNM-97-23, EUNICE, NEW MEXICO, JOB NO. 710046-1" which was submitted on behalf of TNMPLC by their consultant KEI. This document contains the results of TNMPLC's investigation of the extent of soil and ground water contamination resulting from a crude oil pipeline spill at the TNM-97-23 site located in Unit A, Section 14, Township 22 South, Range 37 East, Lea County, New Mexico.

The investigation and remedial actions taken to date are satisfactory. However, a review of the document shows that elevated levels of total petroleum hydrocarbons still remain in the soils in the area of test hole T-8. Therefore, the OCD requires that TNMPLC address the remaining contamination in this area. In order to provide a better understanding of site actions, the OCD also requires that all future investigation reports include a description of all soil and ground water remedial actions taken prior to submission of the reports including the volume of contaminated soils excavated and the disposition of the excavated soils.

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

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Wayne Price, OCD Hobbs District Office
Theresa Nix, KEI

5309 Wurzbach, Suite 100
San Antonio, Texas 78238
(210) 680-3767
(210) 680-3763 FAX

June 3, 1998

Mr. Tony Savoie
TEXAS - NEW MEXICO PIPE LINE COMPANY
P.O. Box 1030
Jal, New Mexico 88252

Re: Subsurface Investigation Report
TNM-97-23
Eunice, New Mexico
Job No. 710046-1

Dear Mr. Savoie:

Transmitted with this letter is the subsurface investigation report for TNM-97-23, located in Lea County, New Mexico. One copy has been submitted to the OCD Hobbs and OCD Santa Fe offices.

Please contact me at (210) 680-3767 if you have any questions.

Respectfully,

Theresa Nix
Project Manager

Enclosure

cc: Marc Oler; TTTI
Wayne Price, OCD Hobbs
William Olson, OCD Santa Fe

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