CLOSURE REPORT

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

October 19, 1998

CERTIFIED MAIL
RETURN RECEIPT NO: Z-274-520-573

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

RE: SPILL REMEDIATION AND INVESTIGATION
MONUMENT SITE #13

Dear Mr. Savoie:

The New Mexico Oil Conservation Division (OCD) has reviewed Texas-New Mexico Pipe Line Company's (TNMPLC) July 24, 1998 "CLOSURE REPORT, MONUMENT SITE NO. 13, SECTION 5, TOWNSHIP 20 SOUTH, RANGE 37 EAST, LEA COUNTY, NEW MEXICO, JOB NO. 610057-2-13" which was submitted on behalf on TNMPLC by their consultant KEI. This document contains the results of the remediation and investigation of a spill of crude oil from a TNMPLC pipeline and requests closure of the remedial actions.

The above referenced closure request is approved.

Please be advised that OCD approval does not relieve TNMPLC of liability if remaining contaminants pose a future threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve TNMPLC of responsibility for compliance with any other federal, state or local laws and regulations.

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

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Supervisor
Theresa Nix, KEI

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

July 24, 1998

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

Re: Closure Report
Monument Site No. 13
Section 5, Township 20 South, Range 37 East
Lea County, New Mexico
Job No. 610057-2-13

Dear Mr. Savoie:

Transmitted with this letter is the final copy of the Closure Report for Monument Site No. 13 located in Lea County, New Mexico. One copy has been forwarded to OCD Hobbs and one to OCD Sante Fe.

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

Respectfully,

for
Theresa Nix
Project Manager

Enclosure

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

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CLOSURE REPORT

TEXAS - NEW MEXICO PIPE LINE COMPANY
MONUMENT SITE 13
LEA COUNTY, NEW MEXICO

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

CLOSURE REPORT

TEXAS - NEW MEXICO PIPE LINE COMPANY
MONUMENT SITE 13
LEA COUNTY, NEW MEXICO

PREPARED FOR:

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

Mr. Tony Savoie

PREPARED BY:

KEI

Daryl Stacey
Project Manager

Theresa Nix
Project Manager

Pat Bullinger, P.E.

KEI Job No. 610057-2-13

July 24, 1998

TABLE OF CONTENTS

PURPOSE AND SCOPE

The objective of the site activities was to obtain closure based on New Mexico Oil Conservation Division (OCD) regulations. The following activities were performed to achieve this objective:

- determination of closure standards
- removal of impacted soil
- characterization of removed impacted soil
- confirmation sampling in the excavated area
- transportation and off-site landfarming of impacted soil
- backfilling with clean soil in the excavated area

PREVIOUS INVESTIGATION

The Texas - New Mexico Pipe Line Company (TNMPL) alleged release site 13 is located in Section 5, Township 20 South, Range 37 East as shown on FIG. 1. A subsurface investigation was conducted at the site in general accordance with the work plan submitted with the Phase I - Preliminary Site Characterization Report dated February 28, 1997. The results of this investigation are summarized in the Comprehensive Assessment Report dated August 20, 1997. The following activities were performed as part of the subsurface investigation:

- sensitive receptor survey, migration pathway analysis, and registered water well search
- installation of 5 soil borings on March 7, 1997
- collection of soil samples from native soils during soil boring installation on March 7, 1997
- conversion of 3 soil borings into monitoring wells and collection of additional soil samples at lower depths on March 24 and 25, 1997
- collection of ground water samples from the monitoring wells for laboratory analyses on May 2, 1997

Soil samples collected during the advancement of soil borings B13-1 through B13-5 were submitted for determination of benzene, toluene, ethylbenzene, and xylene (BTEX) and total petroleum hydrocarbons (TPH) concentrations. Soil samples obtained from borings B13-1 through B13-5 indicated BTEX concentrations below method detection limits (ND). Laboratory results from the soil samples are summarized in TABLE I. Soil laboratory reports and chain-of-custody documentation are presented as APPENDIX A.

Ground water monitoring and sampling events were conducted at the site during the second, third, and fourth quarters of 1997. Ground water samples were submitted for determination of BTEX, polynuclear aromatic hydrocarbons (PAH), metals, total dissolved solids (TDS) and cations/anions. Analytical results for water samples did not indicate hydrocarbon impact. During the fourth quarter event conducted on November 1, 1997, the depth to ground water ranged from 31.38 to 32.02 feet below ground surface. The calculated gradient was approximately 0.003 ft/ft towards the southwest. Ground water

contours are presented on FIG. 2. Ground water results are summarized in TABLES II through IV. Ground water analytical reports and chain-of-custody documentation are presented in APPENDIX B. Location of borings and monitoring wells are shown on FIG. 2.

CLOSURE ACTIVITIES

CLOSURE STANDARDS

The New Mexico OCD Guidelines for Remediation of Leaks, Spills, and Releases contains the standard criteria for remediation activities. A ranking analysis for the site was performed to determine appropriate soil remediation levels. The ranking analysis is as follows:

Depth to Ground Water	Less Than 50 Feet	20 Points
Well Head Protection	Greater Than 1000 Feet to Water Source Greater Than 200 Feet to Private Water Source	20 Points
Surface Water Body	Greater Than 1000 Feet	0 Points
	Total Ranking Score	**40 Points**

Based on the total ranking score, the closure objectives for this site for concentrations of benzene, BTEX, and TPH are summarized below.

CONSTITUENT	CLOSURE CONCENTRATIONS (mg/kg)
BENZENE	10
BTEX	50
TPH	100 + Background Concentration

EXCAVATION, TREATMENT, AND BACKFILL

An estimated 6,198 cubic yards of impacted soil were removed from Site 13 and transported to an off-site landfarm in December 1997. TNMPL characterized the excavated soil by collecting 1 composite soil sample from the stockpile on December 5, 1997. The sample was submitted for determination of TPH concentration. Laboratory results indicated a TPH concentration of 1,149 mg/kg.

Composite soil samples were collected by Allstate Services Environmental of Midland, Texas on December 12, 1997, from the excavation bottom and sidewall and submitted for determination of BTEX and TPH concentrations. Laboratory results of the composite soil samples indicated the following:

SAMPLE LOCATION	TPH (mg/kg)	BENZENE (mg/kg)	BTEX (mg/kg)
Final Soil Sidewall (mg/kg)	ND	ND	0.744
Soil Bottom (mg/kg)	ND	ND	0.134

Soil laboratory results are summarized in Table I and confirmation soil results are graphically presented on FIG. 3. Soil analytical reports and chain-of-custody documentation are presented in APPENDIX A.

A sample of groundwater, which had seeped into the excavation, was collected by Allstate Services Environmental on December 12, 1997, and submitted for determination of BTEX concentration. The ground water results are presented on Table II. The BTEX concentration was below New Mexico Environmental Department (NMED) Drinking Water Standards. The NMED Drinking Water Standards for BTEX are as follows:

CONSTITUENT	DRINKING WATER STANDARD (mg/l)
BENZENE	0.01
TOLUENE	0.75
ETHYLBENZENE	0.75
XYLENES	0.62

Authorization to transport and landfarm the impacted soils was obtained from OCD The impacted soils were transported to C&C Landfarm Incorporated located approximately 2 miles south of Monument, New Mexico. Disposal documentation is presented in APPENDIX C.

Approximately 4,998 cubic yards of clean fill material was purchased from Mr. Cooper and placed in the excavation. The remaining non-impacted stockpiled soils from the excavation activities were used to complete the backfilling operations.

CLOSURE SUMMARY

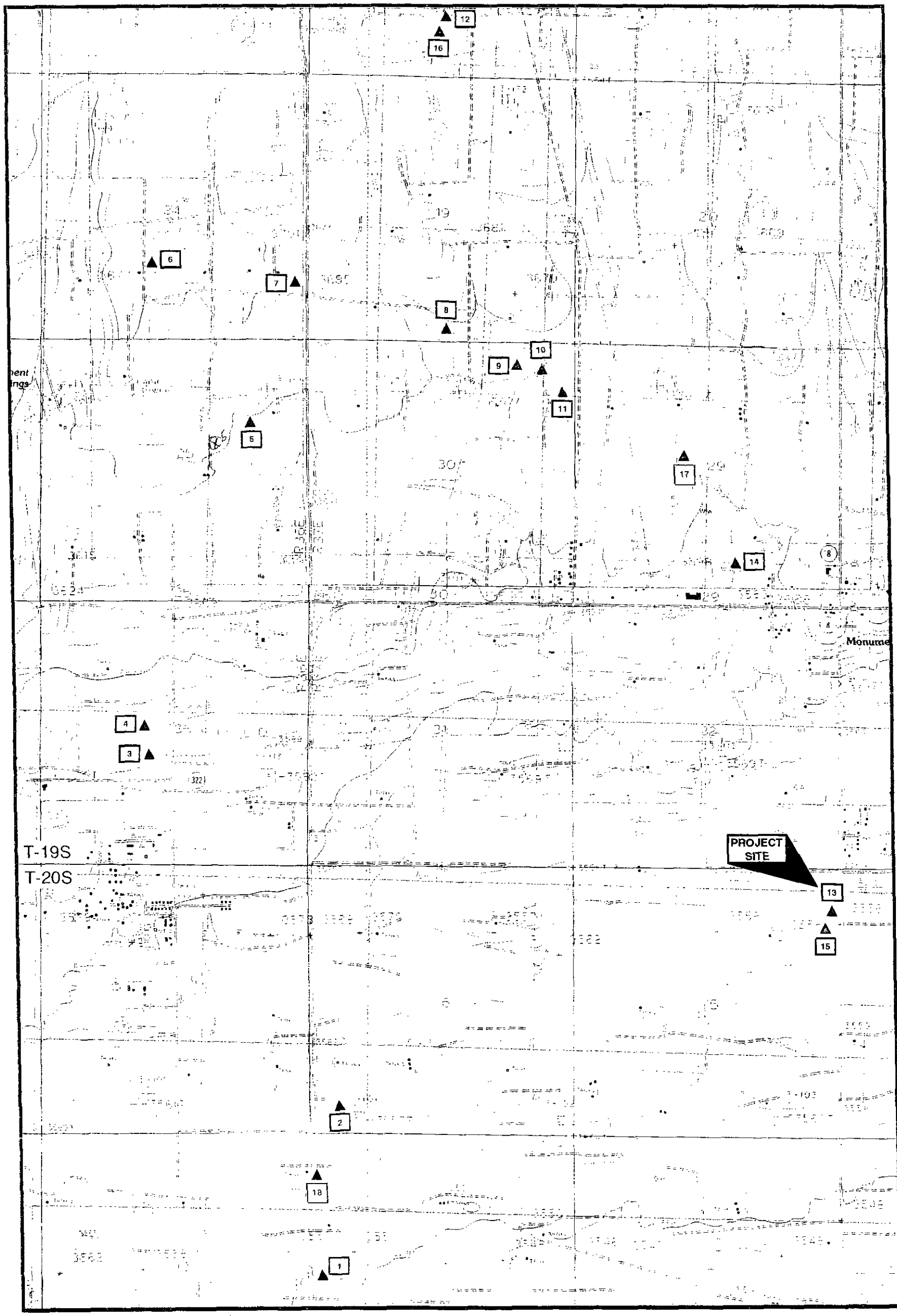
The following can be summarized from field and laboratory data:

- Approximately 6,200 cubic yards of impacted soil was excavated, stockpiled, and landfarmed off-site.
- Confirmation soil samples at the site indicated TPH, benzene, and BTEX concentrations below closure standards.
- Groundwater samples obtained through 3 quarters of monitoring at the site indicated no hydrocarbon impact. BTEX concentrations from these samples and a water sample taken from the bottom of the excavation were below NMED Drinking Water Standards.

From the details presented above, we request the site be closed under New Mexico Oil Conservation Division (OCD) regulations.

MONUMENT NORTH QUADRANGLE
NEW MEXICO - LEA COUNTY
PRINTED 1985

MONUMENT SOUTH QUADRANGLE
NEW MEXICO - LEA COUNTY
PRINTED 1985



SCALE 1:24000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETRE

CONTOUR INTERVAL 5 FEET

05/21/96--S (610057SL)

SITE LOCATION MAP		610057
TEXAS - NEW MEXICO PIPE LINE CO.	MONUMENT SITE NO. 13 LEA COUNTY, NEW MEXICO	FIG 1

Approximate Scale: 1"=40'

0 20 40

NOTE: Adjacent properties are not to scale.

LEGEND

- Location of Soil Boring advanced by KEI on March 7, 1997.
- Location of Monitoring Well installed by KEI on March 25, 1997.
- Excavation
- Stockpile

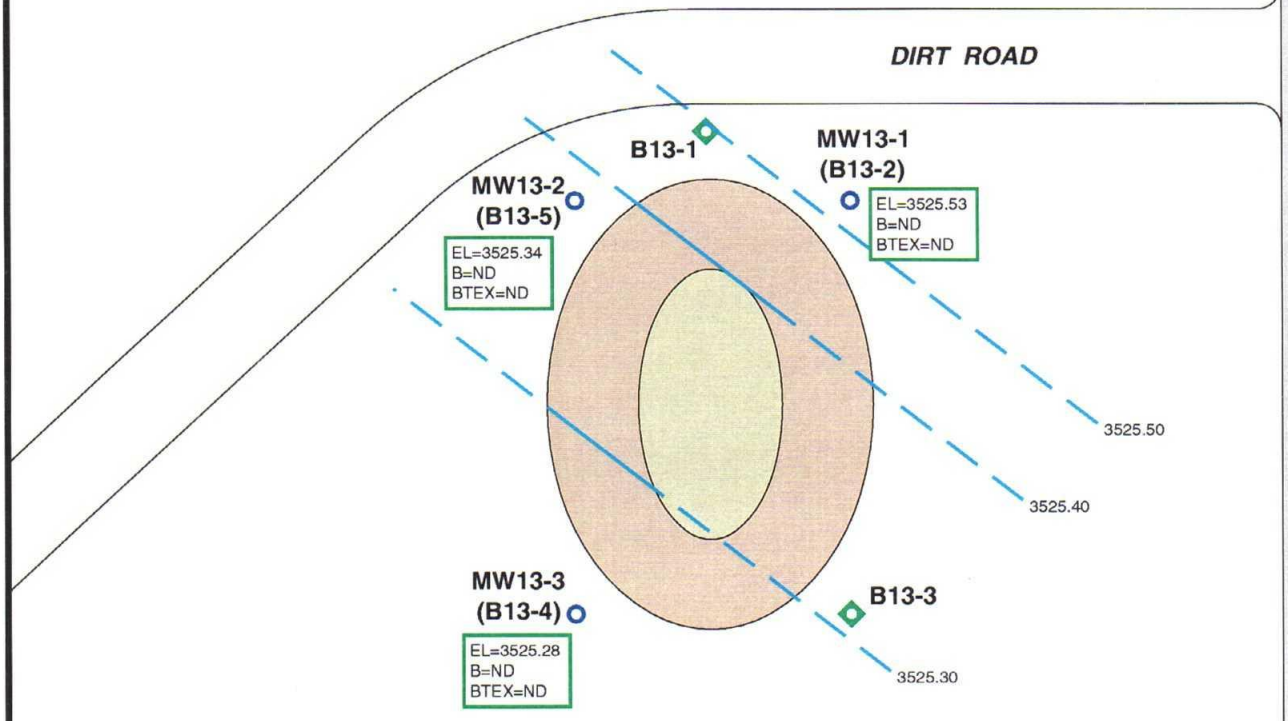
EL= Ground water elevation (feet) calculated using measurements obtained on November 1, 1997.
B= Benzene Concentration (mg/l)
BTEX= Total Benzene, Toluene, Ethylbenzene, and Xylenes Concentration (mg/l)
TPH= Total Petroleum Hydrocarbon Concentration (mg/kg)
ND= Not Detected

CLOSURE LEVEL

TPH = 100

SOIL RESULTS

	Sidewall	Bottom	Stockpile
TPH =	ND	ND	1149



NOTE:

1. Ground water samples were collected on November 1, 1997.
2. Soil samples were collected on December 12, 1997.

04/14/98-RM (TPH-4Q97)

k·e·i

GROUND WATER CONTOURS / CONCENTRATION MAP - NOVEMBER 1997

TEXAS - NEW MEXICO PIPE LINE CO. MONUMENT SITE NO. 13 LEA COUNTY, NEW MEXICO

610057

FIG 2

GENERAL NOTES

ND - Indicates constituent was not detected above the method detection or laboratory reporting limit.

Method detection/reporting limits:

Soil:	BTEX	-	0.001 to 0.100 mg/kg
	TPH	-	10 mg/kg
Water:	BTEX	-	0.001 to 0.006 mg/l
	TPH	-	1 mg/l
	Metals	-	0.0010 to 0.25 mg/l
	PAH	-	0.002 mg/l

Laboratory test methods:

BTEX	-	EPA Method SW846-8020, 5030
TPH	-	EPA Method 418.1
Metals	-	EPA Method 6010
PAH	-	EPA Method 8100
Bicarbonate	-	SM4500CO2D
Carbonate	-	SM4500CO2D
TDS	-	EPA Method 160.1
Anions	-	EPA Method 300.0
TIC	-	Modified Method 415.1

TABLE I

SUMMARY OF SOIL RESULTS - BTEX AND TPH
TEXAS - NEW MEXICO PIPE LINE COMPANY
MONUMENT SITE NO. 13
LEA COUNTY, NEW MEXICO

SAMPLE LOCATION	SAMPLE DATE	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL-BENZENE (mg/kg)	XYLENES (mg/kg)	BTEX (mg/kg)	TPH (mg/kg)
Boring Installation							
B13-1 at 1-2 feet	03/07/97	ND	ND	ND	ND	ND	2,340
B13-1 at 15-16 feet	03/07/97	ND	ND	ND	ND	ND	ND
B13-2 at 1-2 feet	03/07/97	ND	ND	ND	ND	ND	ND
B13-2 at 9-10 feet	03/07/97	ND	ND	ND	ND	ND	ND
B13-2 at 32-33 feet	03/24/97	ND	ND	ND	ND	ND	33.5
B13-3 at 1-2 feet	03/07/97	ND	ND	ND	ND	ND	ND
B13-3 at 14-16 feet	03/07/97	ND	ND	ND	ND	ND	ND
B13-3 at 32-33 feet	03/25/97	ND	ND	ND	ND	ND	19.0
B13-4 at 1-2 feet	03/07/97	ND	ND	ND	ND	ND	ND
B13-4 at 11-12 feet	03/07/97	ND	ND	ND	ND	ND	ND
B13-4 at 31-32 feet	03/24/97	ND	ND	ND	ND	ND	109
B13-5 at 1-2 feet	03/07/97	ND	ND	ND	ND	ND	ND
B13-5 at 12-13 feet	03/07/97	ND	ND	ND	ND	ND	ND
B13-5 at 32-33 feet	03/25/97	ND	ND	ND	ND	ND	1,370
Soil Characterization Sampling							
Stockpile	12/05/97	---	---	---	---	---	1,149
Confirmation Sampling							
Final Soil Sidewall	12/12/97	ND	0.169	0.116	0.459	0.744	ND
Soil Bottom	12/12/97	ND	ND	ND	0.134	0.134	ND

TABLE II

SUMMARY OF GROUND WATER RESULTS - BTEX
TEXAS - NEW MEXICO PIPE LINE COMPANY
MONUMENT SITE NO. 13
LEA COUNTY, NEW MEXICO

MONITORING WELL NO.	DATE SAMPLED	DEPTH TO WATER (feet)	GROUND WATER ELEVATION (feet)	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYL-BENZENE (mg/l)	XYLENES (mg/l)	BTEX (mg/l)
MW13-1	04/30/98	30.60	3526.31	---	---	---	---	---
MW13-1	05/02/97	---	---	ND	ND	ND	ND	ND
MW13-1	08/15/97	---	---	ND	ND	ND	ND	ND
MW13-1	11/01/97	---	---	ND	ND	ND	ND	ND
MW13-2	04/30/98	31.04	3526.04	---	---	---	---	---
MW13-2	05/02/97	---	---	ND	ND	ND	ND	ND
MW13-2	08/15/97	---	---	ND	ND	ND	ND	ND
MW13-2	11/01/97	---	---	ND	ND	ND	ND	ND
MW13-3	04/30/98	31.46	3525.84	---	---	---	---	---
MW13-3	05/02/97	---	---	ND	ND	ND	ND	ND
MW13-3	08/15/97	---	---	ND	ND	ND	ND	ND
MW13-3	11/01/97	---	---	ND	ND	ND	ND	ND
Excavation Bottom	12/12/97	---	---	ND	ND	ND	0.006	0.006

TABLE III

SUMMARY OF GROUND WATER RESULTS - METALS
TEXAS - NEW MEXICO PIPE LINE COMPANY
MONUMENT SITE NO. 13
LEA COUNTY, NEW MEXICO

SAMPLE LOCATION	MW13-1	MW13-2	MW13-3
METALS CONSTITUENT	CONCENTRATION (mg/l)		
Aluminum	29.0	12.3	76.9
Barium	0.85	0.22	1.94
Calcium	447	372	1,120
Chromium	ND	ND	0.06
Iron	18.7	7.67	43.6
Magnesium	56.3	53.3	75.6
Manganese	0.60	0.54	1.39
Potassium	10.4	7.65	15.5
Sodium	142	139	122
Tin	7.50	2.89	17.8
Vanadium	0.12	ND	0.25
Boron	0.28	0.26	0.26
Silicon	19.3	26.3	15.4
Strontium	2.24	2.28	2.88

NOTES:

1. Ground water samples were collected on 05/02/97.
2. Metals constituents not listed above were below laboratory detection/reporting limits.

TABLE IV

SUMMARY OF GROUND WATER RESULTS - MISCELLANEOUS
TEXAS - NEW MEXICO PIPE LINE COMPANY
MONUMENT SITE NO. 13
LEA COUNTY, NEW MEXICO

MONITORING WELL NO.	BICARBONATE (mg/l)	CARBONATE (mg/l)	TDS (mg/l)	SULFATE (mg/l)	CHLORIDE (mg/l)	TIC (mg/l)
MW13-1	358	1.8	1,080	125	264	80.0
MW13-2	360	3.7	1,100	127	281	56.6
MW13-3	325	2.9	1,180	145	305	73.3

NOTE:

1. Ground water samples were collected on 05/02/97.

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-70587

K.E.I. Consultants, Inc.

Project ID: 610057-02-13
Project Manager: Ann Baker
Project Location: Site 13

Project Name: TNMPL Monument

Date Received in Lab : Mar 11, 1997 10:30 by RT
Date Report Faxed: Mar 14, 1997
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	170587-001	170587-002	170587-003	170587-004	170587-005	170587-006	170587-007	170587-008	170587-009
	Field ID:	B13-1	B13-1	B13-2	B13-2	B13-3	B13-3	B13-4	B13-4	B13-5
	Depth:	1-2'	15-16'	1-2'	9-10'	1-2'	14-16'	1-2'	11-12'	1-2'
BTEX by EPA 8020		Date Analyzed - Analytical Results								**ppm (mg/L - mg/Kg)**
		Mar 11, 1997	Mar 12, 1997	Mar 12, 1997	Mar 12, 1997	Mar 12, 1997	Mar 13, 1997	Mar 12, 1997	Mar 12, 1997	Mar 12, 1997
Benzene		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Toluene		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Ethylbenzene		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
m,p-Xylenes		< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100
o-Xylene		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Total BTEX		< 0.300	< 0.300	< 0.300	< 0.300	< 0.300	< 0.300	< 0.300	< 0.300	< 0.300
Total Petroleum Hydrocarbons by EPA 418.1		Date Analyzed - Analytical Results								**ppm (mg/L - mg/Kg)**
		Mar 13, 1997	Mar 13, 1997	Mar 13, 1997	Mar 13, 1997	Mar 13, 1997	Mar 13, 1997	Mar 13, 1997	Mar 13, 1997	Mar 13, 1997
Total Petroleum Hydrocarbons		2340	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0

Edward S. Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-70587

K.E.I. Consultants, Inc.

Project ID: 610057-02-13
Project Manager: Ann Baker
Project Location: Site 13

Project Name: TNMPL Monument

Date Received in Lab : Mar 11, 1997 10:30 by RT
Date Report Faxed: Mar 14, 1997
XENCO contact : Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	170587-010
	Field ID:	B13-5
	Depth:	12-13'
BTEX by EPA 8020	Date Analyzed - Analytical Results	**ppm (mg/L - mg/Kg)**
	Mar 12, 1997	
Benzene	< 0.050	
Toluene	< 0.050	
Ethylbenzene	< 0.050	
m,p-Xylenes	< 0.100	
o-Xylene	< 0.050	
Total BTEX	< 0.300	
Total Petroleum Hydrocarbons by EPA 418.1	Date Analyzed - Analytical Results	**ppm (mg/L - mg/Kg)**
	Mar 13, 1997	
Total Petroleum Hydrocarbons	< 10.0	

Edward H. Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A29A78

SW- 846 5030/8020 BTEX

Date Validated: Mar 13, 1997 14:45
Date Analyzed: Mar 11, 1997 13:51
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: IF
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	0.0857	0.1000	0.0010	85.7	65-135	
Toluene	< 0.0010	0.0922	0.1000	0.0010	92.2	65-135	
Ethylbenzene	< 0.0010	0.0857	0.1000	0.0010	85.7	65-135	
m,p-Xylenes	< 0.0020	0.1840	0.2000	0.0020	92.0	65-135	
o-Xylene	< 0.0010	0.0917	0.1000	0.0010	91.7	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A29A78

SW- 846 5030/8020 BTEX

Date Validated: Mar 13, 1997 14:45
Date Analyzed: Mar 11, 1997 20:30
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: IF
Matrix: Solid

MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY

Q.C. Sample ID 170585- 002 / Parameter	[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
	ppm	ppm	ppm	ppm	ppm	%	%	%	%	%	
Benzene	< 0.050	1.380	1.430	2.000	0.050	25.0	3.6	69.0	71.5	65-135	
Toluene	< 0.050	1.925	1.805	2.000	0.050	25.0	6.4	96.3	90.3	65-135	
Ethylbenzene	< 0.050	1.610	1.605	2.000	0.050	25.0	0.3	80.5	80.3	65-135	
m,p-Xylenes	< 0.100	3.705	3.580	4.000	0.100	25.0	3.4	92.6	89.5	65-135	
o-Xylene	< 0.050	1.885	1.870	2.000	0.050	25.0	0.8	94.3	93.5	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A29A79

SW- 846 5030/8020 BTEX

Date Validated: Mar 13, 1997 15:30
Date Analyzed: Mar 12, 1997 14:36
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: IF
Matrix: Solid

	MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY										
Q.C. Sample ID 170587- 002 / **Parameter**	[A] Sample Result ppm	[B] Matrix Spike Result ppm	[C] Matrix Spike Duplicate Result ppm	[D] Matrix Spike Amount ppm	[E] Method Detection Limit ppm	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
Benzene	< 0.050	2.025	1.895	2.000	0.050	25.0	6.6	101.3	94.8	65-135	
Toluene	< 0.050	2.180	2.110	2.000	0.050	25.0	3.3	109.0	105.5	65-135	
Ethylbenzene	< 0.050	1.925	1.880	2.000	0.050	25.0	2.4	96.3	94.0	65-135	
m,p-Xylenes	< 0.100	4.330	4.210	4.000	0.100	25.0	2.8	108.3	105.3	65-135	
o-Xylene	< 0.050	2.130	2.085	2.000	0.050	25.0	2.1	106.5	104.3	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A29A79

SW- 846 5030/8020 BTEX

Date Validated: Mar 13, 1997 15:30
Date Analyzed: Mar 12, 1997 09:55
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: IF
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	0.0808	0.1000	0.0010	80.8	65-135	
Toluene	< 0.0010	0.0866	0.1000	0.0010	86.6	65-135	
Ethylbenzene	< 0.0010	0.0806	0.1000	0.0010	80.6	65-135	
m,p-Xylenes	< 0.0020	0.1730	0.2000	0.0020	86.5	65-135	
o-Xylene	< 0.0010	0.0886	0.1000	0.0010	88.6	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A29A80

SW- 846 5030/8020 BTEX

Date Validated: Mar 13, 1997 16:25
Date Analyzed: Mar 13, 1997 10:27
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: IF
Matrix: Solid

	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	0.1000	0.0966	0.1000	0.0010	25.0	3.5	100.0	96.6	65-135	
Toluene	< 0.0010	0.1110	0.1020	0.1000	0.0010	25.0	8.5	111.0	102.0	65-135	
Ethylbenzene	< 0.0010	0.1070	0.1040	0.1000	0.0010	25.0	2.8	107.0	104.0	65-135	
m,p-Xylenes	< 0.0020	0.2110	0.2030	0.2000	0.0020	25.0	3.9	105.5	101.5	65-135	
o-Xylene	< 0.0010	0.1110	0.0999	0.1000	0.0010	25.0	10.5	111.0	99.9	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A07B76

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 14, 1997 10:15
Date Analyzed: Mar 13, 1997 17:26
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CG
Matrix: Solid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 170583- 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	%	%	
Total Petroleum Hydrocarbons	< 7.50	< 7.50	7.50	N.C	30.0	

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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A07B76

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 14, 1997 10:15
Date Analyzed: Mar 13, 1997 17:28
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CG
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
Total Petroleum Hydrocarbons	< 7.50	201	202	7.50	99.5	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch = 17A07B80

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 14, 1997 10:10
Date Analyzed: Mar 13, 1997 17:56
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CG
Matrix: Solid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 170587- 005	[A] Sample Result	[B] Duplicate Result	[C] Method Detection Limit	[D] QC Relative Difference	[E] LIMITS Relative Difference	[F] Qualifier
Parameter	ppm	ppm	ppm	%	%	
Total Petroleum Hydrocarbons	< 7.50	< 7.50	7.50	N.C	30.0	

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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A07B80

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 14, 1997 10:10
Date Analyzed: Mar 13, 1997 17:58
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CG
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
Total Petroleum Hydrocarbons	< 7.50	199	202	7.50	98.5	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.
QA/QC Manager

XENCO Laboratories

ANALYTICAL CHAIN OF CUSTODY REPORT
CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project Name: TNMPL Monument

Project ID: 610057-02-13
Project Manager: Ann Baker
Project Location: Site 13

XENCO COC#: 1-70587
Date Received in Lab: Mar 11, 1997 10:30 by RT
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	B13-1(1-2')	170587-001	BTEX	SW-846	ppm	Standard	Mar 7, 1997 08:30		Mar 11, 1997 by IF	Mar 11, 1997 21:40 by IF
2			TPH	EPA 418.1	ppm	Standard	Mar 7, 1997 08:30		Mar 13, 1997 by OG	Mar 13, 1997 17:18 by CG
3	B13-1(15-16')	170587-002	BTEX	SW-846	ppm	Standard	Mar 7, 1997 09:00		Mar 12, 1997 by IF	Mar 12, 1997 10:23 by IF
4			TPH	EPA 418.1	ppm	Standard	Mar 7, 1997 09:00		Mar 13, 1997 by OG	Mar 13, 1997 17:20 by CG
5	B13-2(1-2')	170587-003	BTEX	SW-846	ppm	Standard	Mar 7, 1997 09:10		Mar 12, 1997 by IF	Mar 12, 1997 10:41 by IF
6			TPH	EPA 418.1	ppm	Standard	Mar 7, 1997 09:10		Mar 13, 1997 by OG	Mar 13, 1997 17:22 by CG
7	B13-2(9-10')	170587-004	BTEX	SW-846	ppm	Standard	Mar 7, 1997 09:20		Mar 12, 1997 by IF	Mar 12, 1997 12:52 by IF
8			TPH	EPA 418.1	ppm	Standard	Mar 7, 1997 09:20		Mar 13, 1997 by OG	Mar 13, 1997 17:24 by CG
9	B13-3(1-2')	170587-005	BTEX	SW-846	ppm	Standard	Mar 7, 1997 09:40		Mar 12, 1997 by IF	Mar 12, 1997 13:09 by IF
10			TPH	EPA 418.1	ppm	Standard	Mar 7, 1997 09:40		Mar 13, 1997 by OG	Mar 13, 1997 17:36 by CG
11	B13-3(14-16')	170587-006	BTEX	SW-846	ppm	Standard	Mar 7, 1997 10:05		Mar 13, 1997 by IF	Mar 13, 1997 11:23 by IF
12			TPH	EPA 418.1	ppm	Standard	Mar 7, 1997 10:05		Mar 13, 1997 by OG	Mar 13, 1997 17:38 by CG
13	B13-4(1-2')	170587-007	BTEX	SW-846	ppm	Standard	Mar 7, 1997 10:15		Mar 12, 1997 by IF	Mar 12, 1997 13:43 by IF
14			TPH	EPA 418.1	ppm	Standard	Mar 7, 1997 10:15		Mar 13, 1997 by OG	Mar 13, 1997 17:40 by CG
15	B13-4(11-12')	170587-008	BTEX	SW-846	ppm	Standard	Mar 7, 1997 10:25		Mar 12, 1997 by IF	Mar 12, 1997 15:33 by IF
16			TPH	EPA 418.1	ppm	Standard	Mar 7, 1997 10:25		Mar 13, 1997 by OG	Mar 13, 1997 17:42 by CG
17	B13-5(1-2')	170587-009	BTEX	SW-846	ppm	Standard	Mar 7, 1997 10:30		Mar 12, 1997 by IF	Mar 12, 1997 15:50 by IF
18			TPH	EPA 418.1	ppm	Standard	Mar 7, 1997 10:30		Mar 13, 1997 by OG	Mar 13, 1997 17:44 by CG
19	B13-5(12-13')	170587-010	BTEX	SW-846	ppm	Standard	Mar 7, 1997 10:45		Mar 12, 1997 by IF	Mar 12, 1997 16:19 by IF
20			TPH	EPA 418.1	ppm	Standard	Mar 7, 1997 10:45		Mar 13, 1997 by OG	Mar 13, 1997 17:46 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

Page 1 of 1

Lab. Batch # 170587-H

Contractor: KEI | Phone: (210) 680 3767

Address: 5309 WURZBACH STE 100 SAN ANTONIO TX 78233

Project Name: TNMPL MONUMENT | Project Director: PAUL HARTNETT

Project Location: SITE 13 | Project Manager: ANN BAKER

Sampler Signature: [signature] | Project No.: 610057-05-02-13

No. coolers this shipment: 2 | Contractor COC #: 0003

Carrier: | Quote #:

Airbill No. | P.O. No.: 7199

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 (8020/8020-8021)	TPH (418.1)	Please Hold	Remarks	LAB ONLY ID #
1	B13-1 1-2'	3/7/97	0830	1-2'	X			X	4,8	G	X		B13-1, 1-2'	2	X	X		How $oz.	1
2	B13-1, 15-16'		0900	15-16'	X			X					B13-1, 15-16'						2
3	B13-2 1-2'		0910	1-2'									B13-2, 1-2'						3
4	B13-2 9-10'		0920	9-10'									B13-2, 9-10'						4
5	B13-3 1-2'		0940	1-2'									B13-3, 1-2'						5
6	B13-3 14-16'		1005	14-16'									B13-3, 14-16'						6
7	B13-4 1-2'		1015	1-2'									B13-4, 1-2'						7
8	B13-4 11-12'		1025	11-12'									B13-4, 11-12'						8
9	B13-5 1-2'		1030	1-2'									B13-5, 1-2'						9
10	B13-5 12-13'		1045	12-13'									B13-5, 12-13'						10

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

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
[signature]	3/9/97	1930	Gerald J Carrillo	3-10-97	0730
			Received For Laboratory by: [signature]	3-11-97	1030

Remarks: Hold $oz. Pending TPH Results

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

* Pre-scheduling is recommended

Precision Analytical Services

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-70730

K.E.I. Consultants, Inc.

Project Name: TNMPL Monument

Project ID: 610057-2-13
Project Manager: Ann Baker
Project Location: Site 13

Date Received in Lab: Mar 28, 1997 09:40 by CC
Date Report Faxed: Apr 2, 1997
XENCO contact: Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	170730-001	170730-002	170730-003	170730-004		
	Field ID:	B-13-2	B13-3	B13-4	B-13-5		
	Depth:	32-33'	32-33'	31-32'	32-33'		
BTEX Analyzed by EPA 8020		Date Analyzed - Analytical Results					**ppm (mg/L - mg/Kg)**
		Mar 31, 1997	Mar 31, 1997	Mar 31, 1997	Mar 31, 1997		
Benzene		< 0.020	< 0.040	< 0.040	< 0.10		
Toluene		< 0.020	< 0.040	< 0.040	< 0.10		
Ethylbenzene		< 0.020	< 0.040	< 0.040	< 0.10		
m,p-Xylenes		< 0.040	< 0.080	< 0.080	< 0.20		
o-Xylene		< 0.020	< 0.040	< 0.040	< 0.10		
Total BTEX		< 0.120	< 0.240	< 0.240	< 0.60		
TPH Analyzed by EPA 418.1		Date Analyzed - Analytical Results					**ppm (mg/L - mg/Kg)**
		Mar 29, 1997	Mar 29, 1997	Mar 29, 1997	Mar 29, 1997		
Total Petroleum Hydrocarbons		33.5	19.0	109	1370		

Edward H. Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A25B03

SW- 846 5030/8020 BTEX

Date Validated: Apr 1, 1997 09:00
Date Analyzed: Mar 31, 1997 16:16
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CB
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	0.1060	0.1000	0.0010	106.0	65-135	
Toluene	< 0.0010	0.1070	0.1000	0.0010	107.0	65-135	
Ethylbenzene	< 0.0010	0.1080	0.1000	0.0010	108.0	65-135	
m,p-Xylenes	< 0.0020	0.2200	0.2000	0.0020	110.0	65-135	
o-Xylene	< 0.0010	0.1070	0.1000	0.0010	107.0	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A25B03

SW- 846 5030/8020 BTEX

Date Validated: Apr 1, 1997 09:00
Date Analyzed: Mar 31, 1997 16:34
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CB
Matrix: Solid

	MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY										
Q.C. Sample ID 170728- 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	2.500	2.640	2.000	0.020	25.0	5.4	125.0	132.0	65-135	
Toluene	< 0.020	2.440	2.600	2.000	0.020	25.0	6.3	122.0	130.0	65-135	
Ethylbenzene	< 0.020	2.480	2.600	2.000	0.020	25.0	4.7	124.0	130.0	65-135	
m,p-Xylenes	< 0.040	4.960	5.360	4.000	0.040	25.0	7.8	124.0	134.0	65-135	
o-Xylene	< 0.020	2.460	2.620	2.000	0.020	25.0	6.3	123.0	131.0	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch = 17A30B18

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 31, 1997 15:00
Date Analyzed: Mar 29, 1997 16:06
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
Total Petroleum Hydrocarbons	< 7.50	179	198	7.50	90.6	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A30B18

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 31, 1997 15:00
Date Analyzed: Mar 29, 1997 16:21
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: HL
Matrix: Solid

MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY

Q.C. Sample ID 170729- 003	[A]	[B]	[C]	[D]	[E]	Matrix	[F]	[G]	[H]	[I]	[J]
	Sample Result	Matrix Spike Result	Matrix Spike Duplicate Result	Matrix Spike Amount	Method Detection Limit	Limit Relative Difference	QC Spike Relative Difference	QC Matrix Spike Recovery	QC M.S.D. Recovery	Matrix Spike Recovery Range	Qualifier
Parameter	ppm	ppm	ppm	ppm	ppm	%	%	%	%	%	
Total Petroleum Hydrocarbons	16.00	196	188	198	7.50	30.0	4.2	91.1	87.0	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.
QA/QC Manager

XENCO Laboratories

ANALYTICAL CHAIN OF CUSTODY REPORT
CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project ID: 610057-2-13
Project Manager: Ann Baker
Project Location: Site 13

Project Name: TNMPL Monument

XENCO COC#: 1-70730
Date Received in Lab: Mar 28, 1997 09:40 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	B-13-2 (32-33')	170730-001	BTEX	SW-846	ppm	Standard	Mar 24, 1997 17:30		Mar 31, 1997 by CB	Mar 31, 1997 22:18 by CB
2			TPH	EPA 418.1	ppm	Standard	Mar 24, 1997 17:30		Mar 29, 1997 by HL	Mar 29, 1997 16:30 by HL
3	B13-3 (32-33')	170730-002	BTEX	SW-846	ppm	Standard	Mar 25, 1997 09:20		Mar 31, 1997 by CB	Mar 31, 1997 22:36 by CB
4			TPH	EPA 418.1	ppm	Standard	Mar 25, 1997 09:20		Mar 29, 1997 by HL	Mar 29, 1997 16:33 by HL
5	B13-4 (31-32')	170730-003	BTEX	SW-846	ppm	Standard	Mar 24, 1997 15:15		Mar 31, 1997 by CB	Mar 31, 1997 22:53 by CB
6			TPH	EPA 418.1	ppm	Standard	Mar 24, 1997 15:15		Mar 29, 1997 by HL	Mar 29, 1997 16:36 by HL
7	B-13-5 (32-33')	170730-004	BTEX	SW-846	ppm	Standard	Mar 25, 1997 09:40		Mar 31, 1997 by CB	Mar 31, 1997 23:10 by CB
8			TPH	EPA 418.1	ppm	Standard	Mar 25, 1997 09:40		Mar 29, 1997 by HL	Mar 29, 1997 16:39 by HL

XENCO Laboratories

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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Page 1 of 1

Lab. Batch #170730-SA

Contractor: KES | Phone: (210) 680 5767

Address: 5309 WURZBACH STE 100 SAN ANTONIO TX

Project Name: TNMPL MONUMENT | Project Director: PAUL HARTNETT

Project Location: SITE 13 | Project Manager: ANN BAKER

Sampler Signature: [signature] | Project No.: 610057-2-13

No. coolers this shipment: 1 | Contractor COC #: 0020

Carrier: UPS | 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 (EPA 8020-602)	TPH (418.1)	Please Hold	Remarks	LAB ONLY ID #
1	B-13-2, 32-33'	3/24/97	1730	32-33	X			X	4,8	G	X		B13-2, 32-33'	2	X	X		Hold 8oz	1
2	B13-3 32-33'	3/25/97	0920	32-33	X			X	4,8	G	X		B13-3, 32-33'	2	X	X		Hold 8oz	2
3	B13-4 31-32'	3/24/97	1515	31-32'	X			X	4,8	G	X		B13-4, 31-32'	2	X	X		Hold 8oz.	3
4	B13-5 32-33'	3/25/97	0940	32-33'	X			X	4,8	G	X		B13-5, 32-33'	2	X	X		Hold 8oz.	4
5																			5
6																			6
7																			7
8																			8
9																			9
10																			10

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

Unl Dies Ker Unknown | Waste Oil | PIT No: | Tank No:

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
[signature]	3/27/97	1700			
			Received For Laboratory By: [signature]	3/28/97	09:40

Remarks: (Via UPS)

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

* Pre-scheduling is recommended

Precision Analytical Services

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TEXAS NEW MEXICO PIPE LINE
ATTN: MR. TONY SAVOIE
P.O. BOX 1030
JAL, NEW MEXICO 88252
FAX: 505-395-2636

Receiving Date: 12/12/97
Sample Type: SOIL
Project #: TNM SITE 13
Project Name: PIG TRAP
Project Location: 1 MI. SOUTH MONUMENT,N.M.

Analysis Date: 12/14/97
Sampling Date: 12/12/97
Sample Condition: Intact/Iced

ELT#	FIELD CODE	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYLBENZENE (mg/kg)	m,p-XYLENE (mg/kg)	o-XYLENE (mg/kg)	TPH (DRO) C10-C28 (mg/kg)
13246	12-12-97 BH COMP.	<0.100	<0.100	<0.100	0.134	<0.100	<10
13247	12-12-97 SW COMP.	<0.100	0.169	0.116	0.357	0.102	<10
	% IA	108	110	111	110	112	93
	% EA	115	117	117	117	118	104
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001	<10

METHODS: EPA SW 846-8020,5030, 8015M DRO

Michael R. Fowler

12-15-97
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TEXAS NEW MEXICO PIPE LINE
ATTN: MR. TONY SAVOIE
P.O. BOX 1030
JAL, NEW MEXICO 88252
FAX: 505-395-2636

Receiving Date: 12/12/97
Sample Type: WATER
Project #: TNM SITE 13
Project Name: PIG TRAP
Project Location: 1 MI. SOUTH MONUMENT,N.M.

Analysis Date: 12/15/97
Sampling Date: 12/12/97
Sample Condition: Intact/Iced

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
13248	12-12-97 WATER SAMPLE	<.001	<.001	<.001	0.004	0.002
	% IA	108	110	111	110	112
	% EA	102	102	102	100	103
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: EPA SW 846-8020,5030

Michael R. Fowler

12-15-97
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Clayton A. McDonald
Phone #: 915/682-3547
FAX #: 915/682-4182

Company Name & Address: ALLLSTATE SERVICES ENVIRONMENTAL, MIDLAND, TEXAS

Project #: TNM Site 13
Project Name: Pig Trap

Project Location: 1 mile south Monument, NM
Sampler Signature: CA McDonald

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8021/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI	8015 - DRO
13246	12-12-97 BH Comp	1			X						X			Dec 12 1997	11:00	X								X
13247	12-12-97 SW Comp	1			X						X			Dec 12 1997	11:45	X								X
13248	12-12-97 Water Sample	2		X					X					Dec 12 1997	11:30	X								

Relinquished by:	Date:	Times:	Received by:
CA McDonald	12-12-97	16:00	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TEXAS NEW MEXICO PIPE LINE COMPANY
ATTN: MR. TONY SAVOIE
P.O. BOX 1030
JAL, NM 88252
FAX: 505-395-2636
FAX: 505-397-5125

RECEIVING DATE: 12/05/97
SAMPLE TYPE: SOIL
PROJECT #: TNM SITE 13
PROJECT NAME: NONE GIVEN
PROJECT LOCATION: 1 MI. SOUTH MONUMENT, N.M.

ANALYSIS DATE: 12/05/97
SAMPLING DATE: 12/05/97
SAMPLE CONDITION: Intact/Iced

ELT#	FIELD CODE	TPH(DRO) C10-C28 (mg/kg)
13204	12-5-97 PARTICLIZED COMP. PILE	1,149
	BLANK	<10
	% INSTRUMENT ACCURACY	94
	% EXTRACTION ACCURACY	1

after shredding
Proof of 2190
for Cooper

Methods: SW 846-8015M DRO

Michael R. Fowler

12-8-97
Date

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-71049

K.E.I. Consultants, Inc.

Project Name: Monument

Project ID: 610057 Site #13
Project Manager: Ann Baker
Project Location: Site #13

Date Received in Lab: May 6, 1997 10:00 by RT
Date Report Faxed: May 22, 1997
XENCO contact: Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	171049-001	171049-002	171049-003			
	Field ID:	MW-1	MW-2	MW-3			
	Depth:						
Metals (ICP) Analyzed by EPA 6010		Date Analyzed - Analytical Results					**ppm (mg/L - mg/Kg)**
		May 13, 1997	May 13, 1997	May 13, 1997			
Aluminum		29.0	12.3	76.9			
Arsenic		< 0.05	< 0.05	< 0.05			
Barium		0.85	0.22	1.94			
Beryllium		< 0.005	< 0.005	< 0.005			
Cadmium		< 0.01	< 0.01	< 0.01			
Calcium		447	372	1120			
Chromium		< 0.05	< 0.05	0.06			
Cobalt		< 0.10	< 0.10	< 0.10			
Iron		18.7	7.67	43.6			
Lead		< 0.05	< 0.05	< 0.05			
Magnesium		56.3	53.3	75.6			
Manganese		0.60	0.54	1.39			
Molybdenum		< 0.20	< 0.20	< 0.20			
Potassium		10.4	7.65	15.5			
Silver		< 0.02	< 0.02	< 0.02			
Sodium		142	139	122			
Tin		7.50	2.89	17.8			
Vanadium		0.12	< 0.05	0.25			
Zinc		< 0.25	< 0.25	< 0.25			
Nickel		< 0.10	< 0.10	< 0.10			
Copper		< 0.25	< 0.25	< 0.25			
Boron		0.28	0.26	0.26			
Silicon		19.3	26.3	15.4			
Strontium		2.24	2.28	2.88			

Edward T. Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-71049

K.E.I. Consultants, Inc.

Project Name: Monument

Project ID: 610057 Site #13
Project Manager: Ann Baker
Project Location: Site #13

Date Received in Lab: May 6, 1997 10:00 by RT
Date Report Faxed: May 22, 1997
XENCO contact: Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	171049-001	171049-002	171049-003			
	Field ID:	MW-1	MW-2	MW-3			
	Depth:						
Mercury, Tot Analyzed by EPA 7470		Date Analyzed - Analytical Results					ppm (mg/L - mg/Kg)
		May 12, 1997	May 12, 1997	May 12, 1997			
Mercury		< 0.0010	< 0.0010	< 0.0010			
BTEX Analyzed by EPA 8020		Date Analyzed - Analytical Results					ppm (mg/L - mg/Kg)
		May 9, 1997	May 9, 1997	May 9, 1997			
Benzene		< 0.001	< 0.001	< 0.001			
Toluene		< 0.001	< 0.001	< 0.001			
Ethylbenzene		< 0.001	< 0.001	< 0.001			
m,p-Xylenes		< 0.002	< 0.002	< 0.002			
o-Xylene		< 0.001	< 0.001	< 0.001			
Total BTEX		< 0.006	< 0.006	< 0.006			
PAH Analyzed by EPA 8100		Date Analyzed - Analytical Results					ppm (mg/L - mg/Kg)
		May 15, 1997	May 15, 1997	May 15, 1997			
Acenaphthene		< 0.002	< 0.002	< 0.002			
Acenaphthylene		< 0.002	< 0.002	< 0.002			
Anthracene		< 0.002	< 0.002	< 0.002			
Benzo(a)anthracene		< 0.002	< 0.002	< 0.002			
Benzo(a)pyrene		< 0.002	< 0.002	< 0.002			
Benzo(b)fluoranthene		< 0.002	< 0.002	< 0.002			
Benzo(g,h,i)perylene		< 0.002	< 0.002	< 0.002			
Benzo(k)fluoranthene		< 0.002	< 0.002	< 0.002			
Chrysene		< 0.002	< 0.002	< 0.002			
Dibenzo(a,e)pyrene		< 0.002	< 0.002	< 0.002			
Dibenzo(a,h)anthracene		< 0.002	< 0.002	< 0.002			
Dibenz(a,j)acridine		< 0.002	< 0.002	< 0.002			
Fluoranthene		< 0.002	< 0.002	< 0.002			
Fluorene		< 0.002	< 0.002	< 0.002			

Edward H. Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-71049

K.E.I. Consultants, Inc.

Project Name: Monument

Project ID: 610057 Site #13
Project Manager: Ann Baker
Project Location: Site #13

Date Received in Lab: May 6, 1997 10:00 by RT
Date Report Faxed: May 22, 1997
XENCO contact: Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	171049-001	171049-002	171049-003			
	Field ID:	MW-1	MW-2	MW-3			
	Depth:						
Indeno(1,2,3-cd)pyrene		< 0.002	< 0.002	< 0.002			
3-Methylcholanthrene		< 0.002	< 0.002	< 0.002			
Naphthalene		< 0.002	< 0.002	< 0.002			
Phenanthrene		< 0.002	< 0.002	< 0.002			
Pyrene		< 0.002	< 0.002	< 0.002			
Dibenz(a,h)acridine		< 0.002	< 0.002	< 0.002			
Benzo(j)fluoranthene		< 0.002	< 0.002	< 0.002			
7H-Dibenzo(c,g)carbazole		< 0.002	< 0.002	< 0.002			
Dibenzo(a,h)pyrene		< 0.002	< 0.002	< 0.002			
Dibenzo(a,i)pyrene		< 0.002	< 0.002	< 0.002			
Bicarbonate Analyzed by SM 4500CO2D		Date Analyzed - Analytical Results					ppm (mg/L - mg/Kg)
		May 10, 1997	May 10, 1997	May 10, 1997			
Bicarbonate		358	360	325			
Carbonate Analyzed by SM4500CO2D		Date Analyzed - Analytical Results					ppm (mg/L - mg/Kg)
		May 10, 1997	May 10, 1997	May 10, 1997			
Carbonate		1.8	3.7	2.9			
TDS Analyzed by EPA 160.1		Date Analyzed - Analytical Results					ppm (mg/L - mg/Kg)
		May 9, 1997	May 9, 1997	May 9, 1997			
Total Dissolved Solids		1080	1100	1180			
Anions Analyzed by EPA 300.0		Date Analyzed - Analytical Results					ppm (mg/L - mg/Kg)
		May 8, 1997	May 8, 1997	May 8, 1997			
Sulfate		125	127	145			
Chloride		264	281	305			
TIC Mod. Analyzed by Mod. 415.1		Date Analyzed - Analytical Results					ppm (mg/L - mg/Kg)
		May 14, 1997	May 14, 1997	May 14, 1997			

Edward H. Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-71049

K.E.I. Consultants, Inc.

Project Name: Monument

Project ID: 610057 Site #13
Project Manager: Ann Baker
Project Location: Site #13

Date Received in Lab: May 6, 1997 10:00 by RT
Date Report Faxed: May 22, 1997
XENCO contact: Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:* / *Field ID:* / *Depth:*	171049-001 MW-1	171049-002 MW-2	171049-003 MW-3			
Total Inorganic Carbon		80.0	56.6	73.3			

Edward H. Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A18C05

EPA 6010 Metals by ICP

Date Validated: May 15, 1997 09:00
Date Analyzed: May 13, 1997 11:30
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: SA
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] Recovery Range %	[G] Qualifier
Aluminum	< 0.01	0.72	1.00	0.01	72.0	70-125	
Arsenic	< 0.050	0.869	1.000	0.050	86.9	70-125	
Barium	< 0.002	0.429	0.500	0.002	85.8	70-125	
Beryllium	< 0.0050	0.1808	0.2000	0.0050	90.4	70-125	
Boron	< 0.03	1.20	1.56	0.03	76.9	70-125	
Cadmium	< 0.010	0.162	0.200	0.010	81.0	70-125	
Calcium	< 0.01	1.82	2.00	0.01	91.0	70-125	
Chromium	< 0.013	0.433	0.500	0.013	86.6	70-125	
Cobalt	< 0.003	0.423	0.500	0.003	84.6	70-125	
Copper	< 0.008	0.443	0.500	0.008	88.6	70-125	
Iron	< 0.006	0.814	1.000	0.006	81.4	70-125	
Lead	< 0.03	0.85	1.00	0.03	85.0	70-125	
Magnesium	< 0.01	1.79	2.00	0.01	89.5	70-125	
Nickel	< 0.03	0.46	0.50	0.03	92.0	70-125	
Potassium	< 0.0250	2.1275	2.0000	0.0250	106.4	70-125	
Silver	< 0.010	0.334	0.400	0.010	83.5	70-125	
Sodium	< 0.0250	1.8363	2.0000	0.0250	91.8	70-125	
Strontium	< 0.025	1.171	1.560	0.025	75.1	70-125	
Vanadium	< 0.00	0.44	0.50	0.00	88.0	70-125	
Zinc	< 0.008	0.431	0.500	0.008	86.2	70-125	

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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A18C05

EPA 6010 Metals by ICP

Date Validated: May 15, 1997 09:00
Date Analyzed: May 13, 1997 19:46
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: SA
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 171051- 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	%	%	
Aluminum	21.16	16.94	0.01	22.2	25.0	
Arsenic	< 0.050	< 0.050	0.050	N.C	25.0	
Barium	0.746	0.766	0.002	2.6	25.0	
Beryllium	< 0.0050	< 0.0050	0.0050	N.C	25.0	
Boron	0.148	0.139	0.025	6.3	25.0	
Cadmium	< 0.010	< 0.010	0.010	N.C	25.0	
Calcium	1170	1110	0.01	5.3	25.0	
Chromium	0.039	0.039	0.013	0.0	25.0	
Cobalt	0.011	0.013	0.003	16.7	25.0	
Copper	0.014	0.014	0.008	0.0	25.0	
Iron	13.43	13.26	0.01	1.3	25.0	
Lead	< 0.025	< 0.025	0.025	N.C	25.0	
Magnesium	39.95	37.77	0.01	5.6	25.0	
Manganese	0.291	0.300	0.006	3.0	25.0	
Molybdenum	< 0.025	< 0.025	0.025	N.C	25.0	
Nickel	< 0.025	0.157	0.025	N.C	25.0	
Potassium	7.841	7.730	0.025	1.4	25.0	
Silicon	24.49	16.18	0.03	40.9	25.0	A
Silver	< 0.010	< 0.010	0.010	N.C	25.0	

(A) Variability in duplicate measurement attributed to sample non-homogeneity.
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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A18C05

EPA 6010 Metals by ICP

Date Validated: May 15, 1997 09:00
Date Analyzed: May 13, 1997 19:46
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: SA
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 171051- 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	%	%	
Sodium	80.69	76.85	0.03	4.9	25.0	
Strontium	2.164	2.036	0.025	6.1	25.0	
Tin	5.533	5.160	0.025	7.0	25.0	
Vanadium	0.054	0.058	0.003	7.1	25.0	
Zinc	0.090	0.087	0.008	3.4	25.0	

(A) Variability in duplicate measurement attributed to sample non-homogeneity.
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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A18C05

EPA 6010 Metals by ICP

Date Validated: May 15, 1997 09:00
Date Analyzed: May 13, 1997 11:30
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: SA
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					MATRIX SPIKE ANALYSIS				
Q.C. Sample ID 171046- 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	%	%	
Aluminum	30.68	30.75	0.01	0.2	25.0	40.7	12.5	79.8	70-125	
Arsenic	< 0.050	< 0.050	0.050	N.C	25.0	0.89	1.00	88.7	70-125	
Barium	1.031	1.233	0.002	17.8	25.0	1.25	0.50	44.6	70-125	B
Beryllium	< 0.0050	< 0.0050	0.0050	N.C	25.0	0.179	0.200	89.3	70-125	
Boron	0.173	0.178	0.025	2.8	25.0	2.51	3.13	74.8	70-125	
Cadmium	< 0.010	< 0.010	0.010	N.C	25.0	0.16	0.20	79.5	70-125	
Calcium	114	134	0.01	16.1	25.0	133	12.5	152.0	70-125	A,B
Chromium	0.031	0.030	0.013	3.3	25.0	0.44	0.50	81.0	70-125	
Cobalt	0.037	0.032	0.003	14.5	25.0	0.39	0.50	69.8	70-125	B
Copper	0.026	0.030	0.008	14.3	25.0	0.46	0.50	86.8	70-125	
Iron	38.92	37.58	0.01	3.5	25.0	45.1	12.5	49.5	70-125	A,B
Lead	< 0.025	< 0.025	0.025	N.C	25.0	0.80	1.00	80.2	70-125	
Magnesium	21.29	23.91	0.01	11.6	25.0	31.9	12.5	85.0	70-125	

(A) High analyte concentration affects spike recovery.
(B) Post-digestion spike within acceptance limits.
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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A18C05

EPA 6010 Metals by ICP

Date Validated: May 15, 1997 09:00
Date Analyzed: May 13, 1997 11:30
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: SA
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					MATRIX SPIKE ANALYSIS				
Q.C. Sample ID 171046- 001	[A] Sample Result	[B] Duplicate Result	[C] Method Detection Limit	[D] QC Relative Difference	[E] LIMITS Relative Difference	[F] Matrix Spike Result	[G] Matrix Spike Amount	[H] QC Matrix Spike Recovery	[I] LIMITS Recovery Range	[G] Qualifier
Parameter	mg/L	mg/L	mg/L	%	%	mg/L	mg/L	%	%	
Manganese	1.263	1.503	0.006	17.4	25.0	12.16	12.50	87.2	70-125	
Molybdenum	< 0.025	< 0.025	0.025	N.C	25.0	0.55	0.63	88.6	70-125	
Nickel	< 0.025	< 0.025	0.025	N.C	25.0	0.40	0.50	80.2	70-125	
Potassium	7.715	8.064	0.025	4.4	25.0	19.08	12.50	90.9	70-125	
Silver	< 0.010	< 0.010	0.010	N.C	25.0	0.33	0.40	81.3	70-125	
Sodium	56.80	67.17	0.03	16.7	25.0	72.3	12.5	123.7	70-125	
Strontium	0.921	1.095	0.025	17.3	25.0	3.05	3.13	68.1	70-125	B
Vanadium	0.128	0.142	0.003	10.4	25.0	0.51	0.50	77.2	70-125	
Zinc	0.180	0.201	0.008	11.0	25.0	0.57	0.50	78.6	70-125	

(A) High analyte concentration affects spike recovery.
(B) Post-digestion spike within acceptance limits.
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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A05B25

SW846- 7470 Total Mercury

Date Validated: May 15, 1997 14:15
Date Analyzed: May 12, 1997 13:22
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: EZ
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					MATRIX SPIKE ANALYSIS				
Q.C. Sample ID 171051- 002	[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	%	%	
Mercury	< 0.0010	< 0.0010	0.0010	N.C	25.0	0.0025	0.0025	100.0	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

Edward H. Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A05B25

SW846- 7470 Total Mercury

Date Validated: May 15, 1997 14:15
Date Analyzed: May 12, 1997 12:58
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: EZ
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					MATRIX SPIKE ANALYSIS				
Q.C. Sample ID 171047- 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	%	%	
Mercury	< 0.0010	< 0.0010	0.0010	N.C	25.0	0.0026	0.0025	104.0	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

Edward H. Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A05B25

SW846- 7470 Total Mercury

Date Validated: May 15, 1997 14:15
Date Analyzed: May 12, 1997 12:55
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: EZ
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] QC LIMITS Recovery Range %	[G] Qualifier
Mercury	< 0.0010	0.0022	0.0025	0.0010	88.0	70-125	

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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A04B61

SW- 846 5030/8020 BTEX

Date Validated: May 12, 1997 14:50

Date Analyzed: May 9, 1997 13:42

QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: IF

Matrix: Liquid

MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY

Q.C. Sample ID 171048- 001 / Parameter	[A] Sample Result ppm	[B] Matrix Spike Result ppm	[C] Matrix Spike Duplicate Result ppm	[D] Matrix Spike Amount ppm	[E] Method Detection Limit ppm	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
Benzene	< 0.0010	0.0868	0.0864	0.1000	0.0010	25.0	0.5	86.8	86.4	65-135	
Toluene	< 0.0010	0.1160	0.1120	0.1000	0.0010	25.0	3.5	116.0	112.0	65-135	
Ethylbenzene	< 0.0010	0.1180	0.1130	0.1000	0.0010	25.0	4.3	118.0	113.0	65-135	
m,p-Xylenes	< 0.0020	0.2420	0.2330	0.2000	0.0020	25.0	3.8	121.0	116.5	65-135	
o-Xylene	< 0.0010	0.1160	0.1120	0.1000	0.0010	25.0	3.5	116.0	112.0	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A04B61

SW- 846 5030/8020 BTEX

Date Validated: May 12, 1997 14:50
Date Analyzed: May 9, 1997 10:17
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: IF
Matrix: Liquid

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 LIMITS Blank Spike Recovery %	[F] QC LIMITS Recovery Range %	[G] Qualifier
Benzene	< 0.0010	0.1130	0.1000	0.0010	113.0	65-135	
Toluene	< 0.0010	0.1160	0.1000	0.0010	116.0	65-135	
Ethylbenzene	< 0.0010	0.1170	0.1000	0.0010	117.0	65-135	
m,p-Xylenes	< 0.0020	0.2410	0.2000	0.0020	120.5	65-135	
o-Xylene	< 0.0010	0.1150	0.1000	0.0010	115.0	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A34B35

SW-846 8100 PAHs by GC-MS

Date Validated: May 15, 1997 17:56
Date Analyzed: May 14, 1997 22:20
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: MM
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	< 0.0020	0.0658	0.0670	0.1000	0.0020	31.0	1.8	65.8	67.0	46-118	
4-Chloro-3-Methylphenol	< 0.0020	0.0398	0.0332	0.1000	0.0020	42.0	18.1	39.8	33.2	23-97	
2-Chlorophenol	< 0.0020	0.0630	0.0644	0.1000	0.0020	40.0	2.2	63.0	64.4	27-123	
1,4-Dichlorobenzene	< 0.0020	0.0702	0.0724	0.1000	0.0020	28.0	3.1	70.2	72.4	36-97	
2,4-Dinitrotoluene	< 0.0020	0.0628	0.0632	0.1000	0.0020	38.0	0.6	62.8	63.2	24-96	
N-Nitroso-di-n-propylamine	< 0.0040	0.0742	0.0738	0.1000	0.0040	38.0	0.5	74.2	73.8	41-116	
4-Nitrophenol	< 0.0040	0.0250	0.0248	0.1000	0.0040	50.5	0.8	25.0	24.8	10-80	
Pentachlorophenol	< 0.0010	0.0738	0.0706	0.1000	0.0010	50.0	4.4	73.8	70.6	9-103	
Phenol	< 0.0010	0.0222	0.0224	0.1000	0.0010	42.0	0.9	22.2	22.4	12-89	
Pyrene	< 0.0020	0.0852	0.0840	0.1000	0.0020	31.0	1.4	85.2	84.0	26-127	
1,2,4-Trichlorobenzene	< 0.0010	0.0736	0.0714	0.1000	0.0010	28.0	3.0	73.6	71.4	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A20A24

SM4500CO2D Carbonate

Date Validated: May 14, 1997 15:30
Date Analyzed: May 10, 1997 09:20
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CG
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 171047- 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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A20A22

SM 4500C02D Bicarbonate

Date Validated: May 14, 1997 15:30
Date Analyzed: May 10, 1997 09:20
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CG
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 171047- 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	127	127	0.5	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

Edward H. Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A19A95

EPA 160.1 Total Dissolved Solids

Date Validated: May 9, 1997 13:45
Date Analyzed: May 9, 1997 09:40
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CG
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 171046- 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	526	504	4.0	4.3	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A10A40

EPA 300.0 Anions by Ion Chromatography

Date Validated: May 9, 1997 12:00
Date Analyzed: May 8, 1997 12:23
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: JS
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
Chloride	< 0.050	5.070	5.090	5.000	0.050	20.0	0.4	101.4	101.8	70-125	
Sulfate	< 0.10	4.97	5.06	5.00	0.10	20.0	1.8	99.4	101.2	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A10A40

EPA 300.0 Anions by Ion Chromatography

Date Validated: May 9, 1997 12:00
Date Analyzed: May 8, 1997 12:55
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: JS
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 171046- 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	%	%	
Chloride	72.400	75.900	0.050	4.7	20.0	
Sulfate	59.60	62.30	0.10	4.4	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17Z99A23

MOD. 415.1 Total Inorganic Carbon

Date Validated: May 19, 1997 09:00
Date Analyzed: May 14, 1997 09:22
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: IF
Matrix: Liquid

	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 LIMITS Blank Spike Recovery %	[F] Recovery Range %	[G] Qualifier
Total Inorganic Carbon	< 1.0	20.6	20.0	1.0	103.0	70-120	

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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17Z99A23

MOD. 415.1 Total Inorganic Carbon

Date Validated: May 19, 1997 09:00
Date Analyzed: May 14, 1997 11:41
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: IF
Matrix: Liquid

	MATRIX DUPLICATE ANALYSIS					MATRIX SPIKE ANALYSIS				
Q.C. Sample ID 171049- 002	[A] Sample Result	[B] Duplicate Result	[C] Method Detection Limit	[D] QC Relative Difference	[E] LIMITS Relative Difference	[F] Matrix Spike Result	[G] Matrix Spike Amount	[H] QC Matrix Spike Recovery	[I] LIMITS Recovery Range	[G] Qualifier
Parameter	ppm	ppm	ppm	%	%	ppm	ppm	%	%	
Total Inorganic Carbon	56.61	55.44	1.00	2.1	20.0	74.6	20.0	90.0	70-120	

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.
QA/QC Manager

XENCO Laboratories

ANALYTICAL CHAIN OF CUSTODY REPORT
CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project ID: 610057 Site #13
Project Manager: Ann Baker
Project Location: Site #13

Project Name: Monument

XENCO COC#: 1-71049
Date Received in Lab: May 6, 1997 10:00 by RT
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	171049-001	BTEX	SW-846	ppm	Standard	May 2, 1997 15:40		May 9, 1997 by IF	May 9, 1997 12:29 by IF
2			PAH	SW-846 8100	mg/L	Standard	May 2, 1997 15:40		May 9, 1997 by CY	May 15, 1997 04:36 by MM
3			TDS	EPA 160.1	mg/L	Standard	May 2, 1997 15:40		May 8, 1997 by CG	May 9, 1997 10:05 by CG
4			Anions	EPA 300.0	mg/L	Standard	May 2, 1997 15:40		May 8, 1997 by JS	May 8, 1997 14:13 by JS
5			Carbonate	SM4500CO2D	ppm	Standard	May 2, 1997 15:40		May 10, 1997 by CG	May 10, 1997 09:40 by CG
6			Bicarbonate	SM 4500CO2D	mg/L	Standard	May 2, 1997 15:40		May 10, 1997 by CG	May 10, 1997 09:40 by CG
7			Metals (ICP)	EPA 6010	mg/L	Standard	May 2, 1997 15:40		May 9, 1997 by EZ	May 13, 1997 18:51 by SA
8			Mercury, Tot	SW846-7470	mg/L	Standard	May 2, 1997 15:40		May 9, 1997 by EZ	May 12, 1997 13:15 by EZ
9			TIC Mod.	MOD. 415.1	ppm	Standard	May 2, 1997 15:40		May 14, 1997 by IF	May 14, 1997 14:59 by IF
10	MW-2	171049-002	BTEX	SW-846	ppm	Standard	May 2, 1997 15:55		May 9, 1997 by IF	May 9, 1997 12:47 by IF
11			PAH	SW-846 8100	mg/L	Standard	May 2, 1997 15:55		May 9, 1997 by CY	May 15, 1997 05:22 by MM
12			TDS	EPA 160.1	mg/L	Standard	May 2, 1997 15:55		May 8, 1997 by CG	May 9, 1997 10:10 by CG
13			Anions	EPA 300.0	mg/L	Standard	May 2, 1997 15:55		May 8, 1997 by JS	May 8, 1997 14:22 by JS
14			Carbonate	SM4500CO2D	ppm	Standard	May 2, 1997 15:55		May 10, 1997 by CG	May 10, 1997 09:45 by CG
15			Bicarbonate	SM 4500CO2D	mg/L	Standard	May 2, 1997 15:55		May 10, 1997 by CG	May 10, 1997 09:45 by CG
16			Metals (ICP)	EPA 6010	mg/L	Standard	May 2, 1997 15:55		May 9, 1997 by EZ	May 13, 1997 19:19 by SA
17			Mercury, Tot	SW846-7470	mg/L	Standard	May 2, 1997 15:55		May 9, 1997 by EZ	May 12, 1997 13:16 by EZ
18			TIC Mod.	MOD. 415.1	ppm	Standard	May 2, 1997 15:55		May 14, 1997 by IF	May 14, 1997 11:37 by IF
19	MW-3	171049-003	BTEX	SW-846	ppm	Standard	May 2, 1997 16:15		May 9, 1997 by IF	May 9, 1997 13:06 by IF
20			PAH	SW-846 8100	mg/L	Standard	May 2, 1997 16:15		May 9, 1997 by CY	May 15, 1997 06:06 by MM
21			TDS	EPA 160.1	mg/L	Standard	May 2, 1997 16:15		May 8, 1997 by CG	May 9, 1997 10:15 by CG
22			Anions	EPA 300.0	mg/L	Standard	May 2, 1997 16:15		May 8, 1997 by JS	May 8, 1997 14:34 by JS
23			Carbonate	SM4500CO2D	ppm	Standard	May 2, 1997 16:15		May 10, 1997 by CG	May 10, 1997 09:50 by CG
24			Bicarbonate	SM 4500CO2D	mg/L	Standard	May 2, 1997 16:15		May 10, 1997 by CG	May 10, 1997 09:50 by CG
25			Metals (ICP)	EPA 6010	mg/L	Standard	May 2, 1997 16:15		May 9, 1997 by EZ	May 13, 1997 19:26 by SA
26			Mercury, Tot	SW846-7470	mg/L	Standard	May 2, 1997 16:15		May 9, 1997 by EZ	May 12, 1997 13:17 by EZ
27			TIC Mod.	MOD. 415.1	ppm	Standard	May 2, 1997 16:15		May 14, 1997 by IF	May 14, 1997 12:19 by IF

XENCO Laboratories

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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Page 1 of 1

Lab. Batch # 171049-H

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

Address: 4800 Wurzbach Drive Suite 100 San Antonio Tx

Project Name: Monument — Project Director: Paul Hartnet

Project Location: Site #13 — Project Manager: Ann Baker

Sampler Signature: — Project No.: 610057 site #13

No. coolers this shipment:

Carrier: UPS

Airbill No.

Contractor COC #

Quote #:

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 (8030/8020-602)	TPH (418.1)	Heavy Metals	PAH (8100)	TDS (160.1)	CATIONS/ANIONS	Please Hold	LAB ONLY ID #
1	MW-1	5-2-97	1540			X					X	X		7	X	X	X	X	X	X		1
2	MW-2	5-2-97	1555			X					X	X		7	X	X	X	X	X	X		2
3	MW-3	5-2-97	1615			X					X	X		7	X	X	X	X	X	X		3
4																						4
5																						5
6																						6
7																						7
8																						8
9																						9
10																						10

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
	05-25-97	0600			
			Received For Laboratory by	5-6-97	1000

Remarks

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

* Pre-scheduling is recommended

Precision Analytical Services

ANALYTICAL REPORT 1-71049

for

K.E.I. Consultants, Inc.

Project Manager: Ann Baker

Project Name: Monument

Project Id: 610057 Site #13

May 22, 1997

XENCO Laboratories

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

May 22, 1997

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

Reference: **XENCO Report No.: 1-71049**
Project Name: Monument
Project ID: 610057 Site #13
Project Address: Site #13

Dear Ann Baker:

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 1-71049. 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. 1-71049 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 Yamamoto, Ph.D.
QA/QC Manager

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-71967

K.E.I. Consultants, Inc.

Project Name: TNMPL Monument

Project ID: 610057
Project Manager: Mike Hawthorne
Project Location: Site 13

Date Received in Lab: Aug 25, 1997 10:15 by LY
Date Report Faxed: Aug 27, 1997
XENCO contact: Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:* / *Field ID:* / *Depth:*	171967-001 MW-1	171967-002 MW-2	171967-003 MW-3			
BTEX Analyzed by EPA 8020		Date Analyzed - Analytical Results					**ppm (mg/L - mg/Kg)**
		Aug 26, 1997	Aug 26, 1997	Aug 26, 1997			
Benzene		< 0.001	< 0.004	< 0.001			
Toluene		< 0.001	< 0.004	< 0.001			
Ethylbenzene		< 0.001	< 0.004	< 0.001			
m,p-Xylenes		< 0.002	< 0.008	< 0.002			
o-Xylene		< 0.001	< 0.004	< 0.001			
Total BTEX		< 0.006	< 0.024	< 0.006			

Edward H. Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A25C85

SW- 846 5030/8020 BTEX

Date Validated: Aug 26, 1997 11:00
Date Analyzed: Aug 25, 1997 18:17
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	0.1000	0.1030	0.1000	0.0010	25.0	3.0	100.0	103.0	65-135	
Toluene	< 0.0010	0.1000	0.1010	0.1000	0.0010	25.0	1.0	100.0	101.0	65-135	
Ethylbenzene	< 0.0010	0.1030	0.1070	0.1000	0.0010	25.0	3.8	102.9	106.9	65-135	
m,p-Xylenes	< 0.0020	0.2100	0.2160	0.2000	0.0020	25.0	2.8	104.9	107.9	65-135	
o-Xylene	< 0.0010	0.1050	0.1050	0.1000	0.0010	25.0	0.0	104.9	104.9	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.
QA/QC Manager

XENCO Laboratories

ANALYTICAL CHAIN OF CUSTODY REPORT
CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project ID: 610057
Project Manager: Mike Hawthorne
Project Location: Site 13

Project Name: TNMPL Monument

XENCO COC#: 1-71967
Date Received in Lab: Aug 25, 1997 10:15 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	171967-001	BTEX	SW-846	ppm	Standard	Aug 15, 1997 13:30		Aug 26, 1997 by HL	Aug 26, 1997 01:14 by HL
2	MW-2	171967-002	BTEX	SW-846	ppm	Standard	Aug 15, 1997 13:45		Aug 26, 1997 by HL	Aug 26, 1997 02:29 by HL
3	MW-3	171967-003	BTEX	SW-846	ppm	Standard	Aug 15, 1997 14:00		Aug 26, 1997 by HL	Aug 26, 1997 01:33 by HL

XENCO Laboratories

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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Page 1 of 1

Lab. Batch # 17967-SA

Contractor: KEI Consultants Phone (210) 680 3767

Address: 5309 Wurzbach Suite 100 SA Tx 78238

Project Name: Project Director:

Project Location: Site 13 Project Manager:

Sampler Signature: Project No.: 610057

No. coolers this shipment: Contractor COC #

Carrier: Quote #:

Airbill No. P.O. No:

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

	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 (8020/8020-602)	TPH (418.1)	Please Hold	Remarks	LAB ONLY ID #
1	MW-1	8-15-97	1330			X					X	HCl		2	X				1
2	MW-2	8-15-97	1345			X					X	HCl		2	X				2
3	MW-3	8-15-97	1400			X					X	HCl		2	X				3
4																			4
5																			5
6																			6
7																			7
8																			8
9																			9
10																			10

Waste Oil PIT No: Tank No:

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
	8-22-97	1600			
			Received For Laboratory by: by UPS Laura Yockey	8/25/97	1015

Remarks

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

* Pre-scheduling is recommended

Precision Analytical Services

ANALYTICAL REPORT 1-71967

for

SEP - 4 1997

K.E.I. Consultants, Inc.

Project Manager: Mike Hawthorne

Project Name: TNMPL Monument

Project Id: 610057

August 27, 1997

XENCO Laboratories

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

August 27, 1997

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

Reference: **XENCO Report No.: 1-71967**
Project Name: TNMPL Monument
Project ID: 610057
Project Address: Site 13

Dear Mike Hawthorne:

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 1-71967. 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. 1-71967 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 Zonemate, Ph.D.
QA/QC Manager

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-72736

K.E.I. Consultants, Inc.

Project Name: TNMPL-Site #13

Project ID: 610057
Project Manager: Theresa Nix
Project Location: Monument, NM

Date Received in Lab: Nov 4, 1997 10:30 by CC
Date Report Faxed: Nov 5, 1997
XENCO contact: Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	172736-001	172736-002	172736-003			
	Field ID:	MW-1	MW-2	MW-3			
	Depth:						
BTEX Analyzed by EPA 8020		Date Analyzed - Analytical Results					**ppm (mg/L - mg/Kg)**
		Nov 4, 1997	Nov 4, 1997	Nov 4, 1997			
Benzene		< 0.001	< 0.001	< 0.001			
Toluene		< 0.001	< 0.001	< 0.001			
Ethylbenzene		< 0.001	< 0.001	< 0.001			
m,p-Xylenes		< 0.002	< 0.002	< 0.002			
o-Xylene		< 0.001	< 0.001	< 0.001			
Total BTEX		< 0.006	< 0.006	< 0.006			

Edward H. Yonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A25D51

SW- 846 5030/8020 BTEX

Date Validated: Nov 5, 1997 09:00
Date Analyzed: Nov 4, 1997 13:07
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: HL
Matrix: Liquid

	MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY										
Q.C. Sample ID 172734- 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	< 0.0010	0.0846	0.0855	0.1000	0.0010	25.0	1.1	84.6	85.5	65-135	
Toluene	< 0.0010	0.0860	0.0857	0.1000	0.0010	25.0	0.3	86.0	85.7	65-135	
Ethylbenzene	< 0.0010	0.0871	0.0877	0.1000	0.0010	25.0	0.7	87.1	87.7	65-135	
m,p-Xylenes	< 0.0020	0.1720	0.1730	0.2000	0.0020	25.0	0.6	86.0	86.5	65-135	
o-Xylene	< 0.0010	0.0893	0.0898	0.1000	0.0010	25.0	0.6	89.3	89.8	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.
QA/QC Manager

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A25D51

SW- 846 5030/8020 BTEX

Date Validated: Nov 5, 1997 09:00
Date Analyzed: Nov 4, 1997 12:28
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: HL
Matrix: Liquid

	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 LIMITS Blank Spike Recovery %	[F] Recovery Range %	[G] Qualifier
Benzene	< 0.0010	0.0984	0.1000	0.0010	98.4	65-135	
Toluene	< 0.0010	0.1000	0.1000	0.0010	100.0	65-135	
Ethylbenzene	< 0.0010	0.1020	0.1000	0.0010	102.0	65-135	
m,p-Xylenes	< 0.0020	0.2020	0.2000	0.0020	101.0	65-135	
o-Xylene	< 0.0010	0.1040	0.1000	0.0010	104.0	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.
QA/QC Manager

XENCO Laboratories

ANALYTICAL CHAIN OF CUSTODY REPORT
CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project ID: 610057
Project Manager: Theresa Nix
Project Location: Monument, NM

Project Name: TNMPL-Site #13

XENCO COC#: 1-72736
Date Received in Lab: Nov 4, 1997 10:30 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	MW-1	172736-001	BTEX	SW-846	ppm	Standard	Nov 1, 1997 13:45		Nov 4, 1997 by HL	Nov 4, 1997 14:43 by HL
2	MW-2	172736-002	BTEX	SW-846	ppm	Standard	Nov 1, 1997 14:00		Nov 4, 1997 by HL	Nov 4, 1997 18:14 by HL
3	MW-3	172736-003	BTEX	SW-846	ppm	Standard	Nov 1, 1997 14:15		Nov 4, 1997 by HL	Nov 4, 1997 15:21 by HL

XENCO Laboratories

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(713) 589-0692 Fax (713) 589-0695

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Page 1 of 1

Lab. Batch #172736-SA

Contractor: K.E.I Consultants Phone (210) 680-3767

Address: 5309 Wurzbach, Suite 100 San Antonio, TX 78238

Project Name: TUMPL Project Director: Mike Hawthorn

Project Location: Monument Project Manager: Theresa Nix

Sampler Signature: Stanley Hoover Project No.: 610057 Site # [redacted] 13

No. coolers this shipment: Contractor COC #

Carrier: UPS Quote #:

Airbill No. P.O. No: 8130

	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 (8260) (8020) (602)	TPH (418.1)	Please Hold	Remarks	LAB ONLY ID #
1	mw-1	11-1-97	13:45			/					/	HCl		2	/				1
2	mw-2	11-1-97	1400			/					/	HCl		2	/				2
3	mw-3	11-1-97	1415			/					/	HCl		2	/				3
4																			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

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
Stanley Hoover	11-3-97	1600			
			Received For Laboratory By: Carlos	11-4-97	10:30

Remarks: Please fax Analytical to Theresa Nix Fax (830) 591-1476 Phone (210) 680-3767

→ UPS

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

* Pre-scheduling is recommended

Precision Analytical Services

ANALYTICAL REPORT 1-72736

for

K.E.I. Consultants, Inc.

Project Manager: Theresa Nix

Project Name: TNMPL-Site #13

Project Id: 610057

November 5, 1997

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

November 5, 1997

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

Reference: **XENCO Report No.: 1-72736**
Project Name: TNMPL-Site #13
Project ID: 610057
Project Address: Monument, 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 1-72736. 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.

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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

District I - (505) 393-6161
P. O. Box 1980
Hobbs, NM 88241-1980
District II - (505) 748-1283
811 S. First
Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Road
Aztec, NM 87410
District IV - (505) 827-7131

New Mexico
Energy Minerals and Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

Form C-138
Originated 8/8/95

Submit Original
Plus 1 Copy
to appropriate
District Office

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE

1. RCRA Exempt: ☐ Non-Exempt: ☑	4. Generator Trim PLC.
Verbal Approval Received: Yes ☐ No ☐	5. Originating Site Cooper # 13
2. Management Facility Destination C & C Landfarm	6. Transporter Turner Trucking
3. Address of Facility Operator 2 m. South of Monument	8. State New Mexico
7. Location of Material (Street Address or ULSTR) NE¼ / NE¼ Sec 5 T20S R37E	

9. Circle One:

A. All requests for approval to accept oilfield exempt wastes will be accompanied by a certification of waste from the Generator; one certificate per job.

(B.) All requests for approval to accept non-exempt wastes must be accompanied by necessary chemical analysis to PROVE the material is not-hazardous and the Generator's certification of origin. No waste classified hazardous by listing or testing will be approved.

All transporters must certify the wastes delivered are only those consigned for transport.

BRIEF DESCRIPTION OF MATERIAL:

Hydro Carbon Stained Soil Non Hazardous / Knowledge of Process Approval NMOCD

Estimated Volume 4500 cy Known Volume (to be entered by the operator at the end of the haul) _____ cy

SIGNATURE: [signature] TITLE: President DATE: 12-4-97
Waste Management Facility Authorized Agent

TYPE OR PRINT NAME: Lonnie T Cooper TELEPHONE NO. 397-2295

(This space for State Use)

APPROVED BY: Chris Williams TITLE: District Supervisor DATE: 12/8/97

APPROVED BY: _____ TITLE: _____ DATE: _____

C & C LANDFARM, INC.

BOX 55
MONUMENT, NEW MEXICO 88265
PHONE: (505) 397-2045
(505) 397-2860
(505) 392-2236

001978

COMPANY NAME Tel New Mex Pipeline

COMPANY REPRESENTATIVE NAME Tony Lovie

LEASE NAME TNM SWD - #13

SEC.	TOWNSHIP	RANGE
5	19	36

TRUCKING COMPANY NAME Lumen

DRIVERS SIGNATURE [illegible] Donald

TYPE OF MATERIAL BEING HAULED AND QUANTITY 6 yds & yds daily dirt.

COPY OF ANALYSIS ATTACHED, IF REQUIRED Non Haz

TPHC 1149

BENZENE

TOLUENE

ETHYL BENZENE

PARA XYLENE

ATTENDANT ON DUTY [signature]

DATE 12-31-91

02-97-5pt.-500-bk25-#1701

Jim Cooper

C & C ~~LANDFARM, INC.~~

BOX 55

MONUMENT, NEW MEXICO 88265

PHONE: (505) 397-2045
(505) 397-2860
(505) 392-2236

001520

COMPANY NAME Ly N Mel Rapke

COMPANY REPRESENTATIVE NAME Tony Lara

LEASE NAME Dete #13

SEC.	TOWNSHIP	RANGE
5	20	37

TRUCKING COMPANY NAME Lara

DRIVERS SIGNATURE A McDonald

TYPE OF MATERIAL BEING HAULED AND QUANTITY 4998 yds
Tank Inside Unit.

COPY OF ANALYSIS ATTACHED, IF REQUIRED

TPHC

BENZENE

TOLUENE

ETHYL BENZENE

PARA XYLENE

ATTENDANT ON DUTY Jim Cooper

DATE 1-5-95

3-96-500-5-Bk25-41201

QA/QC PROCEDURES

DECONTAMINATION OF EQUIPMENT

Cleaning of drilling equipment was the responsibility of the drilling company. Prior to collection of each soil sample, sampling equipment was cleaned with Liqui-Nox detergent and rinsed with distilled water.

SOIL SAMPLING

Samples of subsurface soils were obtained by hydraulically pushing a 2-inch stainless steel sampler or a five-foot continuous core sampler. 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 sealed and labeled for head-space analysis using a photoionization 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 samples collected were placed in a sterile glass container equipped with a Teflon-lined lid furnished by the analytical laboratory. The container was filled to capacity with soil to limit the amount of head-space present. Each container was labeled and placed on ice in an insulated cooler. The cooler was sealed for shipment to Xenco Laboratories in Houston, Texas or Environmental Lab of Texas, Inc. in Odessa, Texas. Proper chain-of-custody documentation was maintained throughout the sampling process.

GROUND WATER SAMPLING

Ground water samples were collected from the 3 monitoring wells. After measuring the depth to ground water, each well was purged of approximately 3 well volumes of water using a PVC bailer. The bailer was cleaned prior to each use with Liqui-Nox detergent and rinsed with distilled water.

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

Ground water samples collected for BTEX analyses were placed in sterile, 40 ml glass VOA vials equipped with Teflon-lined caps. Water samples collected for PAH analysis were placed in sterile one liter glass containers equipped with Teflon-lined caps. Water samples collected for metals analysis were placed in 500 ml containers equipped with Teflon-lined caps. The containers were provided by the analytical laboratory. The vials were filled to a positive meniscus, sealed, and visually checked for the presence of air bubbles. If air bubbles were present, the vials were uncapped, additional sample water was added, and the vials were resealed until no air bubbles were present.

The filled containers were labeled and placed on ice in an insulated cooler, and chilled to an approximate temperature of 40°F (4°C). The cooler was sealed for shipment to Xenco Laboratories in Houston, Texas. Proper chain-of-custody documentation was maintained throughout the sampling process. The laboratory was responsible for maintaining proper laboratory analytical QA/QC procedures. These procedures are either transmitted with the laboratory reports or are on file at the laboratory.

SOIL SAMPLES

Soil samples were transported to a certified laboratory for TPH and BTEX analyses using the methods described below. Soil samples were analyzed for TPH and BTEX within 14 days following the collection date.

The soil samples were analyzed for TPH concentrations in accordance with EPA Method 418.1 and for BTEX concentrations in accordance with EPA Method SW846-8020, 5030.

GROUND WATER SAMPLES

Ground water samples from the 3 events and the excavation bottom were submitted for determination of BTEX concentrations. Ground water samples collected during the first event were also submitted for determination of metals, PAH, major cations/anions, total dissolved solids (TDS), and total inorganic carbon (TIC). All PAH constituents were below laboratory detection limits.

The samples were analyzed for BTEX concentrations using EPA Method SW846-8020, 5030.

The water sample was analyzed for PAH in accordance with EPA Method 8100, metals in accordance with EPA Method 6010, for TDS in accordance with EPA Method 160.1, for TIC in accordance with Modified Method 415.1, for anions in accordance with EPA Method 300.0, and for carbonate/bicarbonate in accordance with SM4500CO2D.