SPILL REPORT

CERTIFICATE OF WASTE STATUS

NON-EXEMPT WASTE MATERIAL

Originating Location: TNM Sites 3, 3A, 3B, 3C & 4 Monument area, Lea County

Source: Crude Oil Pipeline SPILL

Disposal Location: C & C Land Farm Inc. 2 miles South of Monument NM

As a condition of acceptance for disposal, I hereby certify that this waste is a non-exempt waste as defined by the Environmental Protection Agency's July 1988 Regulatory Determination. To my knowledge, this waste will either be analyzed pursuant to the provisions of 40 CFR Part 261 to verify the nature as non-hazardous or has been verified non-hazardous due to "Knowledge of Process." I further certify that to my knowledge no "hazardous or listed wastes" pursuant to the provisions of 40 CFR Part 261, Subparts C and D, has been added or mixed with the waste so as to make the resultant mixture a "hazardous waste" pursuant to the provisions of 40 CFR, Section 261.3 (b).

I, the undersigned as the agent for the Texas New Mexico Pipeline Co. concur with the status of the waste from the subject site.

NAME John A. Savoie

TITLE/AGENCY Senior Tech

ADRESS P.O. Box 1030

SIGNATURE John A. Savoie

DATE 4-23-97

OCD HOBBS OFFICE
APR 23 1997
RECEIVED

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-13
Originated 8/8/

Submit Origir
Plus 1 Co
to appropria
District Offi

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE

1. RCRA Exempt: ☐ Non-Exempt: ☒ per W Price-Hrcd 4/23/97 Verbal Approval Received: Yes ☒ No ☐	4. Generator Texas N.M. Pipeline Company
	5. Originating Site Cooper Sites 3, 3a, 3b, 3c & 4
2. Management Facility Destination C & C Landfarm Inc.	6. Transporter Turner Trucking
3. Address of Facility Operator 2 miles South of Monument	8. State New Mexico
7. Location of Material (Street Address or ULSTR) NE¼ SW¼ Sect. 36, T19S, R36E	

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:

Crude oil Affected Soil

Non Hazardous By Knowledge of Process N.M.O.C.D
Approved November, 1996

OCD HOBBS OFFICE
APR 23
RECEIVED

Estimated Volume 3000 cy Known Volume (to be entered by the operator at the end of the haul) _____ cy

SIGNATURE: [signature] TITLE: Pres. DATE: 4-15-97
Waste Management Facility Authorized Agent

TYPE OR PRINT NAME: Jimmy T. Cooper TELEPHONE NO. _____

(This space for State Use)

APPROVED BY: [signature] TITLE: Env Engr DATE: 4/23/97

APPROVED BY: _____ TITLE: _____ DATE: _____

COMPREHENSIVE ASSESSMENT REPORT

TEXAS - NEW MEXICO PIPELINE COMPANY
MONUMENT SITE NO. 4
LEA COUNTY, NEW MEXICO

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

COMPREHENSIVE ASSESSMENT REPORT

MONUMENT SITE NO. 4
LEA COUNTY, NEW MEXICO

PREPARED FOR:

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

Mr. Tony Savoie

PREPARED BY:

KEI

E. Michael Chapa
Associate Scientist

J. Michael Hawthorne, P.G., REM
Senior Geologist

KEI Job No. 610057

September 19, 1997

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This report summarizes the results of subsurface assessment activities conducted at Monument Site No. 4, located in Lea County, New Mexico. Activities were performed in general accordance with the work plan submitted with the Phase I - Preliminary Site Characterization Report prepared for the site and approved by the State of New Mexico Oil Conservation Division.

Field activities associated with the subsurface assessment consisted of collecting composite samples from the sidewalls, floor and associated stockpile of the on-site excavation and advancing one soil boring within the excavation for the collection of native soil samples for laboratory analysis. A sensitive receptor survey/migration pathway evaluation was also conducted.

Results of the assessment included the following:

- Soil analytical results indicated the presence of xylenes and total petroleum hydrocarbons (TPH) at concentrations noted within the report.

- Observed impact to soils from petroleum hydrocarbons extended from the ground surface to approximately 16 feet below ground surface.

Recommended remediation activities to be conducted pursuant to final site closure include:

- Excavate soils with TPH impact exceeding the State of New Mexico Oil Conservation Division regulatory closure concentration of 100 mg/kg.
- Conduct off-site landfarming of excavated soil.

INTRODUCTION

This report summarizes the results of the subsurface assessment activities conducted in response to suspected crude oil impact at Monument Site No. 4, located in Lea County, New Mexico. Site No. 4 consisted of an open excavation approximately 6 feet wide, 30 feet long, and 4 feet deep and an associated soil stockpile. A site location map is presented as FIG. 1.

A scope of work for the subsurface assessment was prepared based upon field observations obtained during a preliminary investigation of surface site conditions. The proposed work plan was presented in the Phase I - Preliminary Site Characterization report dated June 21, 1996, and was approved by the State of New Mexico Oil Conservation Division in a letter dated August 16, 1996. The general scope of work for the subsurface investigation included:

- A sensitive receptor survey, migration pathway evaluation and registered water well search.
- Collecting composite samples from the floor and sidewalls of the excavation and from the soil stockpile.
- A single soil boring advanced within the excavation.

SUBSURFACE INVESTIGATION

SENSITIVE RECEPTOR SURVEY/MIGRATION PATHWAY EVALUATION

Receptor Survey

A sensitive receptor survey/migration pathway evaluation was conducted at the site. No potential receptors were identified within a 500-foot radius of the site. Adjacent properties consisted of an inactive crude oil pumping unit and storage tank to the north, range land with two crude oil pumping units to the east, and vacant range land to the south and west.

A search of State of New Mexico water well registrations indicated one registered water well within a 1/2-mile radius of the site. A copy of the well registration is presented in APPENDIX A. An approximate location of the well is presented on FIG. 1.

Migration Pathway Evaluation

Potential manmade migration pathways identified during the survey included a TNMPL crude oil pipeline extending north to south through the approximate center of the site; a pipeline of undetermined ownership extending from northwest to southeast approximately 20 feet south of the excavation; a Texaco Products gas line extending from east to west approximately 50 feet north of the excavation; an ENRON Gas pipeline extending from the northwest to southeast approximately 45 feet southwest of the excavation; and a Warren Gas pipeline extending from the northeast to the southwest approximately 80 feet west of the excavation.

Approximate locations of the identified manmade potential migration pathways are presented on FIG. 2.

Ground water was not observed during the subsurface assessment. Surface drainage at the site is to the southeast.

FIELD ACTIVITIES

Soil Borings

On March 6, 1997, Soil Boring B4-1 was advanced utilizing a direct-push hydraulic sampling system. The boring was advanced within the excavation for the purposes of delineating vertical hydrocarbon impact above closure concentrations. Field observations obtained during the soil boring advancement included the following:

- Ground water was not observed during advancement of B4-1.
- Phase-separate hydrocarbons (PSH) was not identified during the advancement of B4-1.
- Hydrocarbon impact above closure concentrations in vadose zone soils appears to be limited to surficial soils within the excavation.

Upon completion of sampling activities, the soil boring was backfilled to the ground surface with a cement/bentonite grout. The approximate location of the soil boring is presented on FIG. 2.

Excavation Composite Samples

On March 21, 1997, a KEI field technician obtained composite samples of the excavation floor, sidewalls and associated stockpile. Each of the samples consisted of a five-part composite collected from evenly distributed sections of the respective sample location.

SOIL ASSESSMENT

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

Soil Type 1

The soil consisted of a tan gravel. The moist gravel was mixed with silt and sand and was calcareous (caliche). The gravel was encountered from the ground surface to the maximum depth investigated, approximately 16 feet below ground surface (bgs). The head-space readings from samples of this soil type were below instrument detection levels (ND).

A graphic log indicating the subsurface soil profile, depths at which soil samples were obtained, head-space results, laboratory results, and the soil boring details is presented on FIG. 3.

LABORATORY ANALYSES

Soil

Soil samples selected for laboratory analysis were express mailed to Xenco Laboratories in San Antonio, Texas for determination of TPH concentrations by EPA METHOD 418.1 and BTEX concentrations by EPA Method SW846-8020.

Analytical results indicated the following range of constituent concentrations for the excavation composite and soil boring samples:

CONSTITUENT	RANGE OF CONCENTRATIONS
TPH	32.5 to 785 mg/kg
BTEX	ND to 0.025 mg/kg
Benzene	ND

A complete summary of analytical results for soil samples is presented in TABLE I. Copies of the certified laboratory reports and chain-of-custody documentation for soils are presented in APPENDIX A.

WASTE MANAGEMENT

No wastes were generated during the assessment activities.

QA/QC PROCEDURES

DECONTAMINATION OF EQUIPMENT

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

SOIL SAMPLING

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

The other portion of the soil sample was placed in a sterile glass container equipped with a Teflon-lined lid furnished by the analytical laboratory.

Excavation composite samples were hand collected by KEI field personnel wearing disposable neoprene gloves and utilizing clean stainless-steel hand tools. Any sampling equipment utilized was decontaminated between sampling points with a Liqui-Nox detergent wash and a distilled water rinse.

Each sample container was filled to capacity to limit the amount of head-space present, was labeled and placed on ice in an insulated cooler. Upon selection of samples for analysis, the cooler was sealed for shipment to the laboratory. Proper chain-of-custody documentation was maintained throughout the sampling process.

LABORATORY PROTOCOL

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

CONCLUSIONS

The following conclusions are based on the field observations, drilling activities, and soil laboratory results:

- Petroleum hydrocarbon impact above closure concentrations is limited to surficial soils within the excavation and to soils contained in the on-site stockpiles.
- Vadose zone soils greater than 1.5 feet below the bottom of the excavation floor do not appear to be impacted above State of New Mexico Oil Conservation Division regulatory closure concentrations.

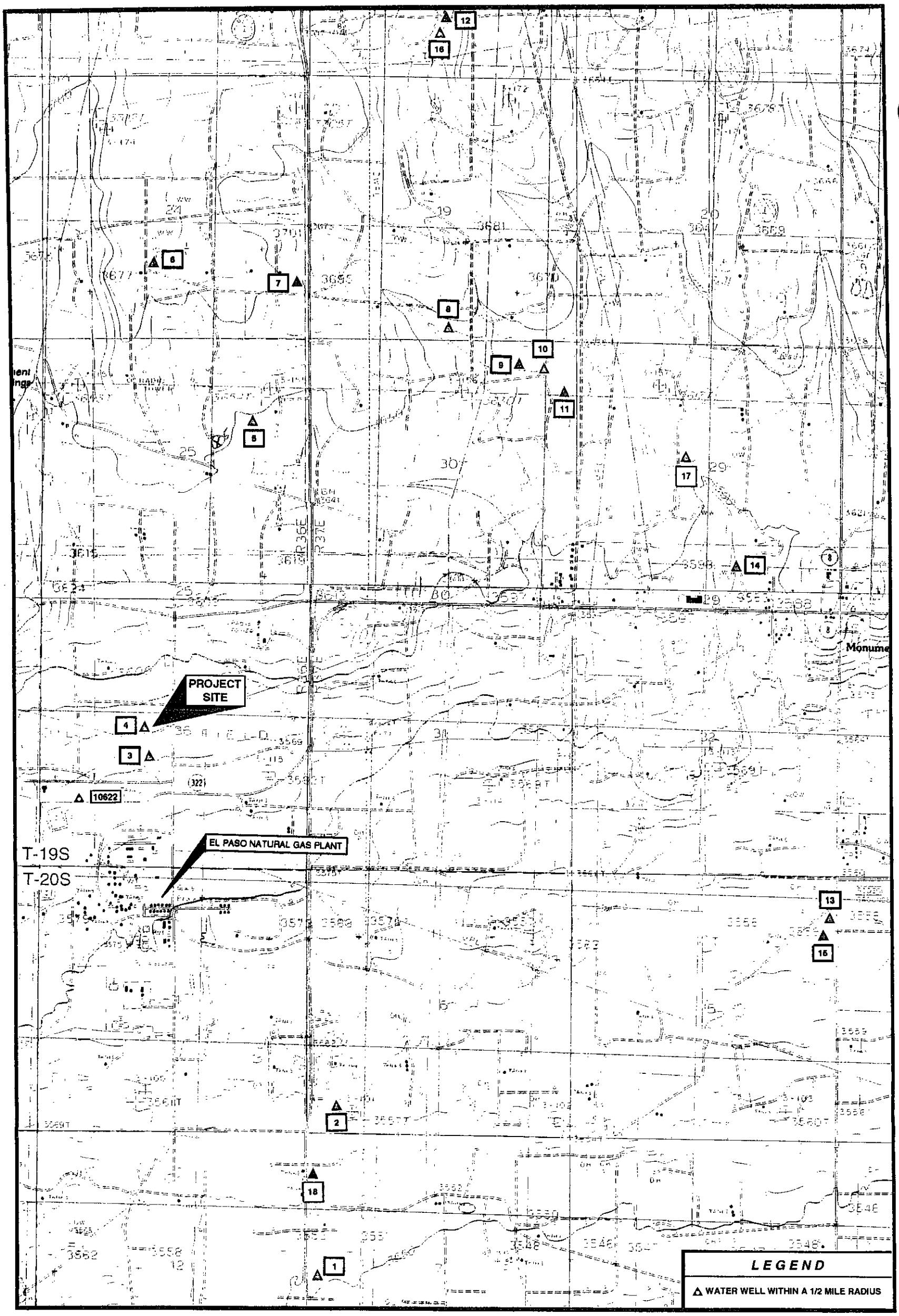
RECOMMENDATIONS

Recommendations for remediation of impacted soil at the site include the following:

- Excavate soils exceeding TPH closure concentration of 100 mg/kg.
- Conduct off-site landfarming of excavated soil.

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

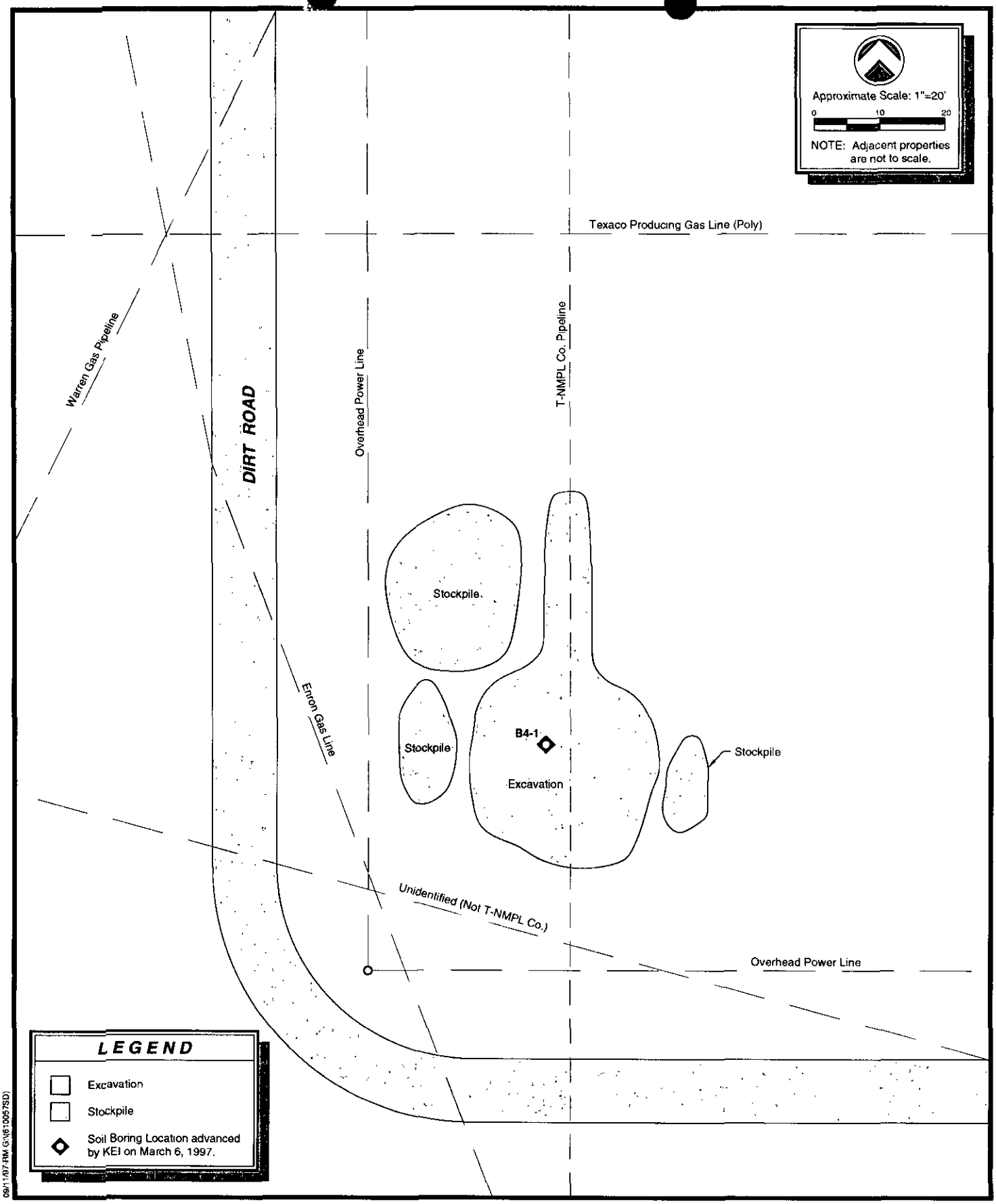
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETRE

CONTOUR INTERVAL 5 FEET

k·e·i

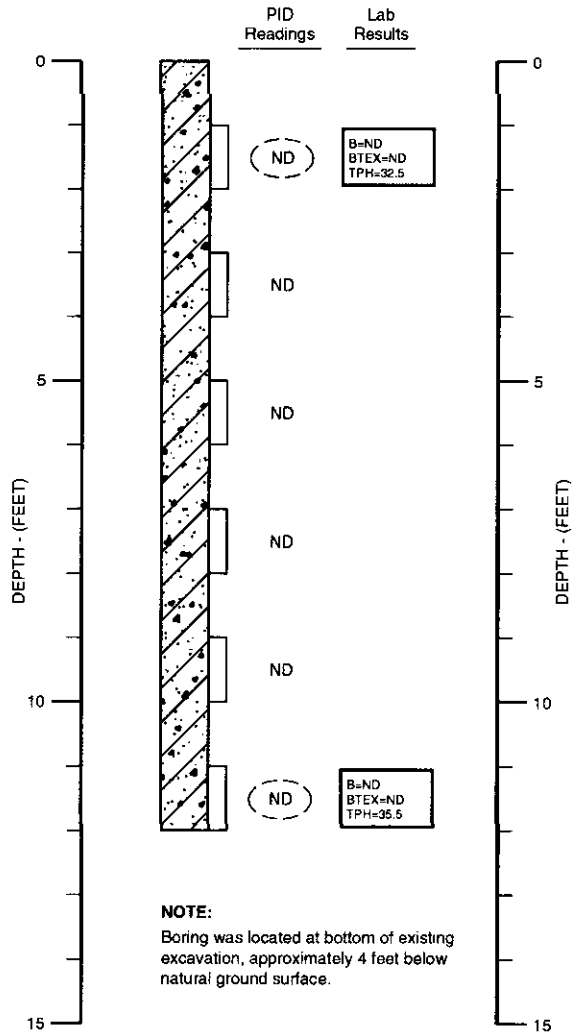
SITE LOCATION MAP		610057
TEXAS - NEW MEXICO PIPE LINE CO.	MONUMENT SITE NO. 4	LEA COUNTY, NEW MEXICO	FIG 1



09/11/97-RM G:\610057SD\

k·e·i	SITE DETAILS	610057
	TEXAS - NEW MEXICO PIPE LINE CO. MONUMENT SITE NO. 4 LEA COUNTY, NEW MEXICO	FIG 2

SOIL BORING B4-1



NOTE:
Boring was located at bottom of existing excavation, approximately 4 feet below natural ground surface.

LEGEND

Gravel (GM), silty gravel-sand-silt mixtures, calcareous, (caliche), moist, tan.

Indicates the depth interval from which a soil sample was selected and prepared for field head-space and/or laboratory analysis.

Indicates sample selected for laboratory analysis.

B =	Benzene concentration (mg/kg)
BTEX =	Total BTEX concentration (mg/kg)
TPH =	Total petroleum hydrocarbon concentration (mg/kg)
PID	Head-space readings in ppm obtained with a photoionization detector.
ND =	Indicates the concentration was below instrument or laboratory detection limits.

NOTES:

1. The boring was advanced utilizing a direct-push sampling system on March 6, 1997.
2. Ground water was not encountered during boring advancement.
3. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
4. The depths indicated are referenced from the ground surface.
5. The soil borings were grouted to the ground surface with cement grout containing 5 percent bentonite.

k·e·i

LOG AND DETAILS OF SOIL BORING B4-1

610057

TEXAS - NEW MEXICO PIPE LINE CO. | MONUMENT SITE NO. 4 | LEA COUNTY, NEW MEXICO

FIG 3

GENERAL NOTES

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

N/A - Indicates depth of sample is not applicable or not available.

Depths for soil boring samples are referenced from the bottom of the excavation, approximately 4 feet below natural ground surface. All other depths are referenced from the ground surface.

Method detection limit

Benzene	-	0.020 to 0.050 mg/kg
Toluene	-	0.020 to 0.050 mg/kg
Ethylbenzene	-	0.020 to 0.050 mg/kg
Xylene	-	0.060 to 0.150 mg/kg
BTEX	-	0.120 to 0.300 mg/kg
TPH	-	10 mg/kg

Laboratory testing method

BTEX	-	EPA Method SW846-8020
TPH	-	EPA Method 418.1

TABLE I

SUMMARY OF LABORATORY BTEX/TPH RESULTS - SOIL
MONUMENT SITE NO. 4
LEA COUNTY, NEW MEXICO

SAMPLE LOCATION	SAMPLE DATE	DEPTH (feet)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL-BENZENE (mg/kg)	XYLENES (mg/kg)	TOTAL BTEX (mg/kg)	TPH (mg/kg)
B4-1	03/06/97	1-2	ND	ND	ND	ND	ND	32.5
B4-1	03/06/97	11-12	ND	ND	ND	ND	ND	35.5
EXCAVATION FLOOR	03/21/97	4	ND	ND	ND	ND	ND	213
EXCAVATION SIDEWALL	03/21/97	N/A	ND	ND	ND	ND	ND	319
STOCKPILE	03/21/97	N/A	ND	ND	ND	0.025	0.025	785

10603	L	024																									
10604	L	029																									
10605	L	029				07	28	1953	PMT	DOM	19S	36E	29	332	19S	36E	29	0864	63	MONUMENT CHURCH		0.00	3.00	0		
10606	L	01	L	03715		01	07	1953	LIC	IRR SHA	19S	36E	30	1211	19S	36E	30	0693	63	HUGHES LARRY BENNETT		20.00	60.00	50		
10607	L	03	L	03715		10	31	1957	LIC	IRR SHA	19S	36E	30	122	19S	36E	30	0393	63	HUGHES LARRY BENNETT		0.00	0.00	0		
10609	L	00331				07	14	1947	PMT	NOT	19S	36E	30	231	19S	36E	30	0464	63	JORDAN E R		0.00	0.00	0		
10610	L	00011				04	00	1925	DCL	IRR	19S	36E	32	110	19S	36E	32	0564	63	TURNER FRANK A		30.00	90.00	75		
10611	L	08083				05	25	1979	PMT	DOM	19S	36E	32	300	19S	36E	32	0579	63	COX ARNO		0.00	3.00	0		
10612	L	00512				02	26	1948	LIC	IRR SHA	19S	36E	32	3212	19S	36E	32	1191	63	MASSEY CLARENCE & NORMA		40.00	120.00	100	DBA M & M FARMS	
10613	L	00512	S	L	08286	02	26	1948	PMT	IRR SHA	19S	36E	32	3204	19S	36E	32	1197	63	MASSEY CLARENCE & NORMA		0.00	0.00	0	DBA M & M FARMS	
10614	L	08286		L	00512 S	06	12	1980	PMT	DWD	19S	36E	32	3232	19S	36E	32	0884	63	HAMON JAKE		0.00	0.00	0		
10615	L	09343				09	21	1983	WDN	IRR	19S	36E	33	11	19S	36E	33	0983	63	KLEIN FAYE L		0.00	0.00	0		
12758	L	10245						1931	DCL	DOM SHA	19S	36E	33	300	19S	36E	33	0492	63	KLEIN FAYE L		0.00	0.00	0	USED FOR STOCK ALSO	
10616	L	03114				02	27	1956	PMT	DWD	19S	36E	34	210	19S	36E	34	0664	63	BOURE OSCAR DEC ED		0.00	0.00	0		
10617	L	00000				10	00	1977		DPW	19S	36E	34	4440	19S	36E	34	1279	63			0.00	0.00	0		
10618	L	04756				11	03	1961	PMT	EXP	19S	36E	35	200	19S	36E	35	0778	63	CLIMAX CHEMICAL CO		0.00	0.00	0		
10619	L	03921				07	11	1958	PMT	STK	19S	36E	35	340	19S	36E	35	0964	63	MUSICK T E		0.00	3.00	0		
10620	L	04715				09	06	1961	PMT	DTC	19S	36E	35	430	19S	36E	35	1064	63	CLIMAX CHEMICAL CO		0.00	3.00	0		
10621	L	04755				11	03	1961	PMT	EXP	19S	36E	35	440	19S	36E	35	0778	63	CLIMAX CHEMICAL CO		0.00	0.00	0		
10622	L	04716				09	06	1961	PMT	DOM	19S	36E	36	300	19S	36E	36	1064	63	CLIMAX CHEMICAL CO		0.00	3.00	0		
10623	L	01270				10	18	1951	PMT	NOT	19S	36E	36	442	19S	36E	36	0564	63	GULF OIL CORP		0.00	0.00	0		
10624	L	01269				10	18	1951	PMT	DTC	19S	36E	36	444	19S	36E	36	0564	63	GULF OIL CORP		0.00	3.00	0		
10625	L	01840	S2	L	01843 E	02	24	1967	PMT	REC	19S	37E	01	2121	19S	37E	01	0672	64	HOBBS COUNTRY CLUB		0.00	0.00	0		
10627	L	01840	E	L	01843 E	05	07	1965	LIC	REC	19S	37E	01	213*	19S	37E	01	0779	64	HOBBS COUNTRY CLUB		27.16	81.48	48		
10628	L	01842		L	01840 S4	01	21	1953	LIC	REC	19S	37E	01	2134	19S	37E	01		64	HOBBS COUNTRY CLUB		0.00	0.00	0		
10629	L	01843		L	01840 S5	01	21	1953	LIC	REC	19S	37E	01	222	19S	37E	01	0664	64	HOBBS COUNTRY CLUB		0.00	0.00	0		
10630	L	01841		L	01840 S3	01	21	1953	LIC	REC	19S	37E	01	2311	19S	37E	01	0779	64	HOBBS COUNTRY CLUB		0.00	0.00	0		
10631	L	01840	S	L	01843	05	07	1965	PMT	REC	19S	37E	01	2343	19S	37E	01	0779	64	HOBBS COUNTRY CLUB		0.00	0.00	0		
10632	L	01844		L	01840	01	21	1953	PMT	NOT	19S	37E	01	410	19S	37E	01	0664	64	HOBBS COUNTRY CLUB		0.00	0.00	0		
12136	L	09739				08	29	1985	PMT	DOM	19S	37E	01	421	19S	37E	01	0885	64	BOY SCOUTS OF AMERICA		0.00	3.00	0		
10633	L	02182				04	27	1955	PMT	DOM	19S	37E	01	422	19S	37E	01	0764	64	BOY SCOUTS OF AMERICA		0.00	3.00	0		
10634	L	02893				06	02	1955	PMT	DOM	19S	37E	01	422	19S	37E	01	0864	64	BOY SCOUTS OF AMERICA		0.00	3.00	0		
10626	L	01840		L	01841	01	21	1953	LIC	REC	19S	37E	01	E1-42	19S	37E	01	1194	64	HOBBS COUNTRY CLUB		73.01	219.03	183		

Section 36
Site 3 x 4

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-70563

K.E.I. Consultants, Inc.

Project Name: TNMPL Monument

Project ID: 610057 2-4
Project Manager: Ann Baker
Project Location: Site 4

Date Received in Lab: Mar 7, 1997 10:10 by CB
Date Report Faxed: Mar 12, 1997
XENCO contact: Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	170563-001	170563-002				
	Field ID:	B4-1	B4-1				
	Depth:	1-2'	11-12'				
BTEX Analyzed by EPA 8020		Date Analyzed - Analytical Results					**ppm (mg/L - mg/Kg)**
		Mar 10, 1997	Mar 11, 1997				
Benzene		< 0.020	< 0.020				
Toluene		< 0.020	< 0.020				
Ethylbenzene		< 0.020	< 0.020				
m,p-Xylenes		< 0.040	< 0.040				
o-Xylene		< 0.020	< 0.020				
Total BTEX		< 0.120	< 0.120				
TPH Analyzed by EPA 418.1		Date Analyzed - Analytical Results					**ppm (mg/L - mg/Kg)**
		Mar 11, 1997	Mar 11, 1997				
Total Petroleum Hydrocarbons		32.5	35.5				

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

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A25A74

SW- 846 5030/8020 BTEX

Date Validated: Mar 11, 1997 11:00
Date Analyzed: Mar 10, 1997 22:18
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CB
Matrix: Solid

	MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY										
Q.C. Sample ID 170563- 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	< 0.020	1.762	1.798	2.000	0.020	25.0	2.0	88.1	89.9	65-135	
Toluene	< 0.020	1.784	1.842	2.000	0.020	25.0	3.2	89.2	92.1	65-135	
Ethylbenzene	< 0.020	1.856	1.934	2.000	0.020	25.0	4.1	92.8	96.7	65-135	
m,p-Xylenes	< 0.040	3.740	3.940	4.000	0.040	25.0	5.2	93.5	98.5	65-135	
o-Xylene	< 0.020	1.808	1.928	2.000	0.020	25.0	6.4	90.4	96.4	65-135	

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

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

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A25A75

SW- 846 5030/8020 BTEX

Date Validated: Mar 11, 1997 16:30
Date Analyzed: Mar 11, 1997 09:38
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CB
Matrix: Solid

	MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY										
Q.C. Sample ID 170563- 002	[A] Sample Result	[B] Matrix Spike Result	[C] Matrix Spike Duplicate Result	[D] Matrix Spike Amount	[E] Method Detection Limit	Matrix Limit Relative Difference	[F] QC Spike Relative Difference	[G] QC Matrix Spike Recovery	[H] QC M.S.D. Recovery	[I] Matrix Spike Recovery Range	[J] Qualifier
Parameter	ppm	ppm	ppm	ppm	ppm	%	%	%	%	%	
Benzene	< 0.020	1.866	1.784	2.000	0.020	25.0	4.5	93.3	89.2	65-135	
Toluene	< 0.020	1.884	1.810	2.000	0.020	25.0	4.0	94.2	90.5	65-135	
Ethylbenzene	< 0.020	1.872	1.800	2.000	0.020	25.0	3.9	93.6	90.0	65-135	
m,p-Xylenes	< 0.040	3.840	3.680	4.000	0.040	25.0	4.3	96.0	92.0	65-135	
o-Xylene	< 0.020	1.882	1.812	2.000	0.020	25.0	3.8	94.1	90.6	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 : 17A30A81

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 11, 1997 11:00
Date Analyzed: Mar 11, 1997 09:21
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 : 17A30A81

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 11, 1997 11:00
Date Analyzed: Mar 11, 1997 09:37
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: HL
Matrix: Solid

	MATRIX DUPLICATE ANALYSIS					
Q.C. Sample ID 170562- 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	17500	17800	375	1.7	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

ANALYTICAL CHAIN OF CUSTODY REPORT
CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project ID: 610057 2-4
Project Manager: Ann Baker
Project Location: Site 4

Project Name: TNMPL Monument

XENCO COC#: 1-70563
Date Received in Lab: Mar 7, 1997 10:10 by CB
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	B4-1(1-2')	170563-001	BTEX	SW-846	ppm	Standard	Mar 6, 1997 09:30		Mar 10, 1997 by CB	Mar 10, 1997 22:01 by CB
2			TPH	EPA 418.1	ppm	Standard	Mar 6, 1997 09:30		Mar 11, 1997 by HL	Mar 11, 1997 09:40 by HL
3	B4-1(11-12')	170563-002	BTEX	SW-846	ppm	Standard	Mar 6, 1997 09:40		Mar 11, 1997 by CB	Mar 11, 1997 09:38 by CB
4			TPH	EPA 418.1	ppm	Standard	Mar 6, 1997 09:40		Mar 11, 1997 by HL	Mar 11, 1997 09:43 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

Lab. Batch # 170563-SA

Contractor: KEI Consultants Phone (210) 680-3767

Address: 5309 Wurzbach ste 100, San Antonio, Tx 78238

Project Name: TNMPL monument Project Director: Paul Hertnett

Project Location: Site 4 Project Manager: Ann Baker

Sampler Signature: Brian SiegFried Project No. 610057 2-4

No. coolers this shipment: Contractor COC # 0005

Carrier: Quote #:

Airbill No. P.O. No: 7239

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 or 8020-602)	TPH (418.1)	Please Hold	Turn-around * ASAP * 24 hrs 48 hrs Standard	Remarks	LAB ONLY ID #
1 B4-1 1-2'	3/6/97	0930	1-2'	X				4oz	G	X		B4-1, 1-2'	1	X	X				1
2 B4-1 11-12'	↓	09:40	11-12'	X				4oz	G	X		B4-1, 11-12'	1	X	X				2
3																			3
4																			4
5																			5
6																			6
7																			7
8																			8
9																			9
10																			10

SAMPLE CHARACTERIZATION: Soil, Water, Comp, Grab

Container: Size, Type P, G

Preservative: Ice, Other

Uni Dies Ker Unknown

Waste Oil

PIT No: Tank No:

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
Brian SiegFried	3/6/97	1600	Ann D Baker	3/7/97	1005
Ann D Baker	3/7/97	1018 1005			
			Received For Laboratory by: Casey Brown	3/7/97	10:10

Remarks: call with highest TPH Results

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

* Pre-scheduling is recommended

Precision Analytical Services

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-70700

K.E.I. Consultants, Inc.

Project Name: 610057.02.04

Project ID: 610057.02.04
Project Manager: Paul Hartnett
Project Location: Monument

Date Received in Lab: Mar 25, 1997 10:00 by CC
Date Report Faxed: Mar 28, 1997
XENCO contact: Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:* / *Field ID:* / *Depth:*	170700-001 Excav. F. Surface	170700-002 Ex.SideWal Surface	170700-003 Stockpile Surface			
BTEX Analyzed by EPA 8020		Date Analyzed - Analytical Results					ppm (mg/L - mg/Kg)
		Mar 26, 1997	Mar 26, 1997	Mar 26, 1997			
Benzene		< 0.020	< 0.050	< 0.020			
Toluene		< 0.020	< 0.050	< 0.020			
Ethylbenzene		< 0.020	< 0.050	< 0.020			
m,p-Xylenes		< 0.040	< 0.100	< 0.040			
o-Xylene		< 0.020	< 0.050	0.025			
Total BTEX		< 0.120	< 0.300	0.025			
TPH Analyzed by EPA 418.1		Date Analyzed - Analytical Results					ppm (mg/L - mg/Kg)
		Mar 26, 1997	Mar 26, 1997	Mar 26, 1997			
Total Petroleum Hydrocarbons		213	319	785			

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

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A25B00

SW- 846 5030/8020 BTEX

Date Validated: Mar 26, 1997 18:00
Date Analyzed: Mar 26, 1997 10:46
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 LIMITS Blank Spike Recovery %	[F] Recovery Range %	[G] Qualifier
Benzene	< 0.0010	0.1080	0.1000	0.0010	108.0	65-135	
Toluene	< 0.0010	0.1090	0.1000	0.0010	109.0	65-135	
Ethylbenzene	< 0.0010	0.1080	0.1000	0.0010	108.0	65-135	
m,p-Xylenes	< 0.0020	0.2210	0.2000	0.0020	110.5	65-135	
o-Xylene	< 0.0010	0.1080	0.1000	0.0010	108.0	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 : 17A25B00

SW- 846 5030/8020 BTEX

Date Validated: Mar 26, 1997 18:00
Date Analyzed: Mar 26, 1997 11:21
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CB
Matrix: Solid

	MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY										
Q.C. Sample ID 170699- 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 %	Qualifier
Benzene	< 0.020	1.932	1.848	2.000	0.020	25.0	4.4	96.6	92.4	65-135	
Toluene	< 0.020	1.920	1.810	2.000	0.020	25.0	5.9	96.0	90.5	65-135	
Ethylbenzene	< 0.020	1.952	1.852	2.000	0.020	25.0	5.3	97.6	92.6	65-135	
m,p-Xylenes	< 0.040	3.960	3.760	4.000	0.040	25.0	5.2	99.0	94.0	65-135	
o-Xylene	< 0.020	1.938	1.844	2.000	0.020	25.0	5.0	96.9	92.2	65-135	

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

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

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A30B11

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 26, 1997 17:00
Date Analyzed: Mar 26, 1997 11:15
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	171	198	7.50	86.5	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 : 17A30B11

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 26, 1997 17:00
Date Analyzed: Mar 26, 1997 11:21
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: HL
Matrix: Solid

	MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY										
Q.C. Sample ID 170699- 002	[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	%	%	%	%	%	
Total Petroleum Hydrocarbons	20.00	190	198	198	7.50	30.0	4.1	86.0	90.1	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: 610057.02.04
Project Manager: Paul Hartnett
Project Location: Monument

Project Name: 610057.02.04

XENCO COC#: 1-70700
Date Received in Lab: Mar 25, 1997 10:00 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	Excavation Floor	170700-001	BTEX	SW-846	ppm	Standard	Mar 21, 1997 11:00		Mar 26, 1997 by CB	Mar 26, 1997 13:03 by CB
2			TPH	EPA 418.1	ppm	Standard	Mar 21, 1997 11:00		Mar 26, 1997 by HL	Mar 26, 1997 11:33 by HL
3	Excavation Sidewall	170700-002	BTEX	SW-846	ppm	Standard	Mar 21, 1997 11:15		Mar 26, 1997 by CB	Mar 26, 1997 13:20 by CB
4			TPH	EPA 418.1	ppm	Standard	Mar 21, 1997 11:15		Mar 26, 1997 by HL	Mar 26, 1997 11:36 by HL
5	Stockpile	170700-003	BTEX	SW-846	ppm	Standard	Mar 21, 1997 11:30		Mar 26, 1997 by CB	Mar 26, 1997 13:37 by CB
6			TPH	EPA 418.1	ppm	Standard	Mar 21, 1997 11:30		Mar 26, 1997 by HL	Mar 26, 1997 11:42 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 # 170700-SA

Contractor: KEI | Phone: (210) 680-3767

Address: 5309 Wurzback Suite 100

Project Name: 610057.02.084 | Project Director: Paul Hartnett

Project Location: Monument | Project Manager:

Sampler Signature: Gerald J Carrillo | Project No.: 610057.02.04

No. coolers this shipment: | Contractor COC # 0018

Carrier: | Quote #:

Airbill No. | P.O. No.:

Field ID	Date	Time	DEPTH	SOIL	WATER	COMP	GRAB	Container Size	Container Type P, G	Preservative Ice	Preservative Other	Sample Description	No of CONTAINERS Total	BTEX (EPA 8020-602)	TPH (418.1)	Please Hold	Lab ID #
1	04	3/21/97	1100	1FT	X		X		4oz	G	X		Composite BOTTOM OF HOLE		X	X	1
2	04	"	1115	"	"		"		"	"			Composite SIDE walls		"	"	2
3	04	"	1130	"	"		"		"	"			Composite Stockpile		"	"	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

Remarks

LAB ONLY

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
Gerald J Carrillo	3-24-97	1000			
			Received For Laboratory by:		
			Carla P	3/25/97	10:00

Remarks: (via UPS)

Pink (Contractor), Yellow & White (Lab)

* Pre-scheduling is recommended

Precision Analytical Services