SPILL REPORT

COMPREHENSIVE ASSESSMENT REPORT

TEXAS - NEW MEXICO PIPELINE COMPANY
MONUMENT SITE NO. 3
LEA COUNTY, NEW MEXICO

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COMPREHENSIVE ASSESSMENT REPORT

MONUMENT SITE NO. 3
LEA COUNTY, NEW MEXICO

PREPARED FOR:

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September 9, 1997

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EXECUTIVE SUMMARY

This report summarizes the results of subsurface assessment activities conducted at *Monument Site No. 3, located in Lea County, New Mexico. Site No. 3 includes four* separate areas of investigation designated as Site Nos. 3, 3A, 3B, and 3C. Activities were performed in general accordance with the work plan submitted with the Phase I - Preliminary Site Characterization Report and approved by the State of New Mexico Oil Conservation Division.

Field activities associated with the subsurface assessment consisted of advancing five soil borings for the collection of native soil samples for field screening and 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 toluene, ethylbenzene, xylenes and total petroleum hydrocarbons (TPH) at concentrations noted within the report. Benzene was not detected.
- Ground water was not encountered during the subsurface assessment.
- Observed impact to soils from petroleum hydrocarbons extended from the ground surface to 14 feet below ground surface.
- Soils at Site 3A require remediation.

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

- Excavate impacted material as required to bring residual hydrocarbon concentrations to closure levels.
- Obtain OCD approval and transport excavated soil to an off-site landfarm.
- Backfill excavation with clean fill.
- Prepare closure report.

INTRODUCTION

This report summarizes assessment activities conducted in response to suspected crude oil impact at Monument Site No. 3, located in Lea County New Mexico. Site No. 3 consisted of four separate areas of investigation designated as Site Nos. 3, 3A, 3B, and 3C. Details of each site are presented on FIGs. 2, 3, 4, and 5. A site location map is presented as FIG. 1. Descriptions of each of the areas investigated are as follows:

- Site No. 3 consists of an excavation approximately 38 feet long, 24 feet wide, and 5 feet deep; a stockpile of soils recovered from the excavation; and a surface stain along a section of pipeline adjacent to the excavation.

- Site No. 3A consists of an excavation approximately 63 feet long, 27 feet wide, and 2 feet deep and a stockpile of soils recovered from the excavation.

- Site No. 3B consists of an excavation approximately 90 feet wide, 70 feet long, and 2 feet deep and a stockpile of soils recovered from the excavation.

- Site No. 3C consists of an excavation approximately 40 feet wide, 25 feet long, and 6 feet deep and a stockpile of soils recovered from the excavation.

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.

- Soil borings within the excavations at each of the 4 sites described above.

SUBSURFACE INVESTIGATION

SENSITIVE RECEPTOR SURVEY/MIGRATION PATHWAY EVALUATION

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 vacant range land to the north and east, a gas plant to the south, and a concrete batch plant to the west. An abandoned oil well was located approximately 400 feet to the southeast.

A search of State of New Mexico water well registrations indicated two registered water wells within a .5-mile radius of the site. A copy of the well registration data is presented in APPENDIX A. Approximate locations of the identified wells are presented on FIG. 1.

Migration Pathway Evaluation

Potential manmade migration pathways identified during the survey included the former location of a TNMPL pipeline extending north to south through the center of the site and an existing petroleum product pipeline extending east to west approximately 60 feet to the south.

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

FIELD ACTIVITIES

On March 5 and 6, 1997 soil borings B3-1, B3A-1, B3B-1, B3C-1 and B3C-2 were advanced utilizing a direct-push hydraulic sampling system. On April 2, 1997 Soil Boring B3AT-1 was advanced utilizing a tricone sampling system. The soil borings were advanced to depths ranging from 11 to 17 feet bgs. Field observations obtained during the soil boring advancement included the following:

- Ground water was not observed during soil boring advancement.
- Hydrocarbon impact extends from the ground surface to the total depth of each exploratory hole within each of the areas investigated.
- Hydrocarbon impact to vadose zone soils has been vertically delineated to concentrations which do not appear to require remediation.

Upon completion of sampling activities, each soil boring was backfilled to the ground surface with a cement/bentonite grout. Approximate locations of the soil borings are presented on FIGs. 2 through 5.

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 and limestone bedrock were encountered. A general description, approximate thickness, and head-space results of the soil type is discussed as follows:

Soil Type 1

This soil type consisted of a tan gravel with a high calcareous content (caliche) encountered at all soil boring locations. The gravel was silty and dry to moist. This soil type was encountered from the ground surface to the maximum depth investigated, approximately 17 feet bgs. Head-space readings ranged from below instrument detection limits (ND) to 48 ppm.

Limestone

A hard, grey limestone was encountered as sampler refusal at the bottom of soil borings B3A-1, B3B-1, and B3C-2 and beneath the upper clay at B3AT-1 to a depth of approximately 15 feet bgs. The limestone was encountered continuously from a depth of 0.5 feet to 15 feet bgs at B3AT-1. Head-space readings obtained from samples of the limestone were all ND.

Graphic logs indicating the subsurface soil profile, depths at which soil samples were obtained, head-space results, laboratory results, and the soil boring details are presented on FIGS. 6 and 7.

LABORATORY ANALYSIS

Soil samples were selected for laboratory analysis from sample intervals that, at a minimum, represented the high field screening result and the bottom of the hole of each soil boring. The selected soil samples 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 soil boring samples:

CONSTITUENT	RANGE OF CONCENTRATIONS
TPH	26.5 to 2830 mg/kg
Benzene	ND
BTEX	ND to 0.706 mg/kg

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 B.

WASTE MANAGEMENT

Cuttings generated during soil boring advancement were placed in the existing stockpiles.

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 equipment prior to drilling and prior to starting each hole. Prior to each 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. The container was filled to capacity to

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

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 presented based on the field observations, drilling activities, and soil laboratory results:

- Soil impact extends from the ground surface to approximately 14 feet bgs.
- Standard New Mexico Oil and Conservation Division regulatory site closure concentrations for soils were exceeded by TPH concentrations in a sample collected from Soil Boring B3A-1.
- Hydrocarbon impact to vadose zone soils has been vertically delineated at each of the Site No. 3 areas of investigation to concentrations which do not appear to require remediation.

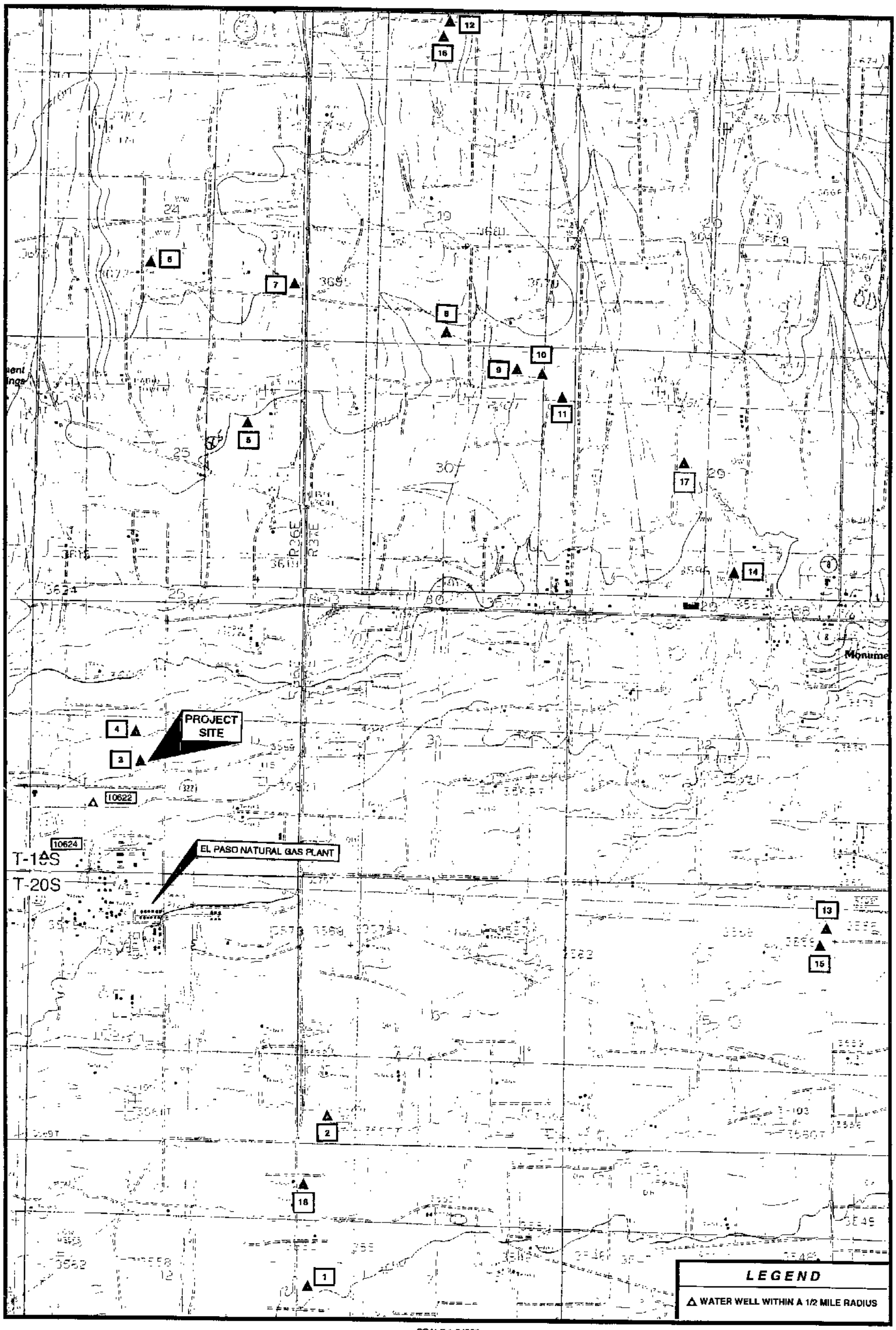
RECOMMENDATIONS

Recommendations for remediation of observed soil impact at the site consist of the following:

- Excavate impacted material as required to bring residual hydrocarbon concentrations to closure levels.
- Obtain OCD approval and transport impacted soil to an off-site landfarm.
- Backfill excavation with clean fill.
- Prepare closure report.

MONUMENT NORTH QUADRANGLE
NEW MEXICO - LEA COUNTY
PRINTED 1985

MONUMENT SOUTH QUADRANGLE
NEW MEXICO - LEA COUNTY
PRINTED 1985



SCALE 1:24000

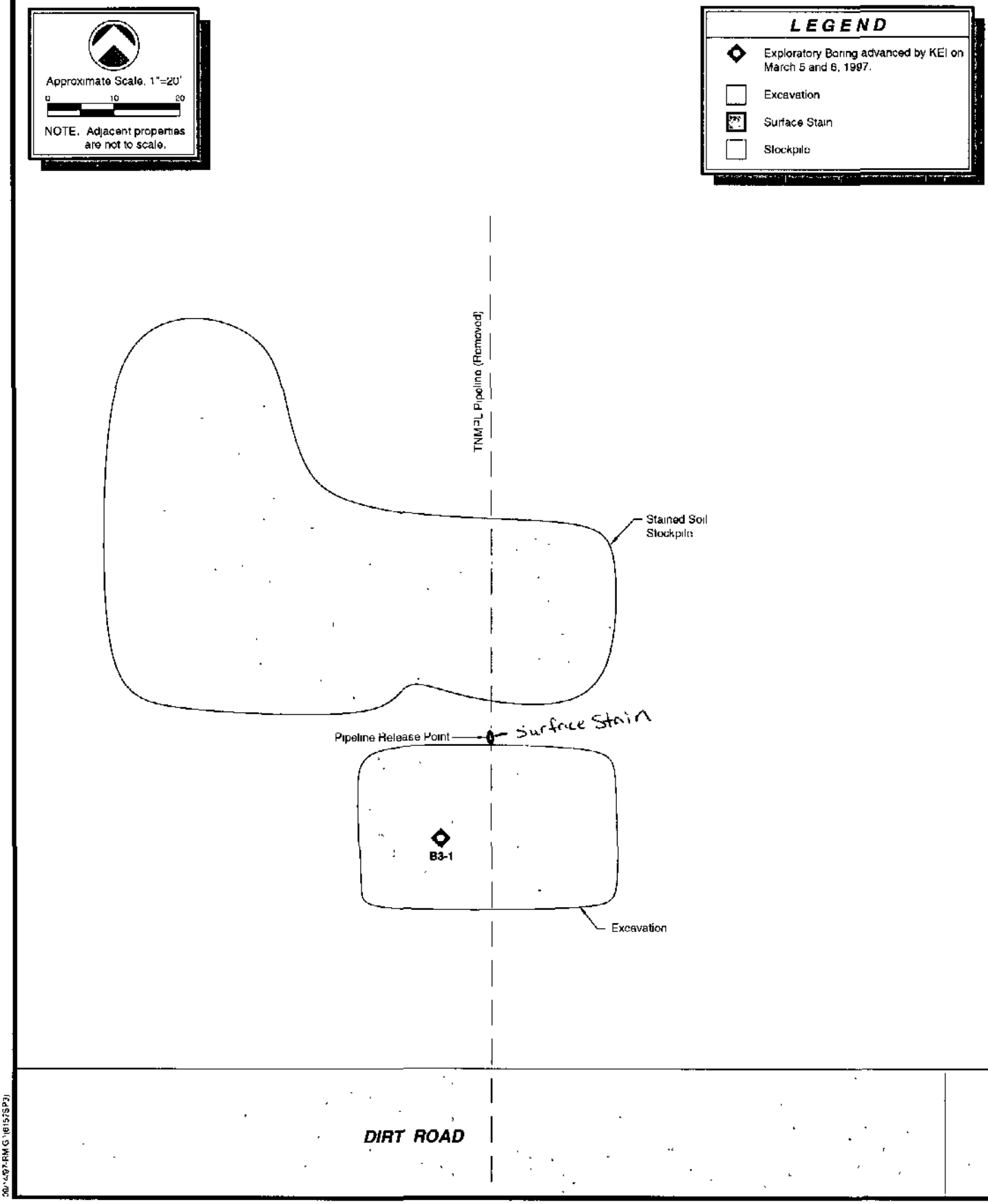
1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

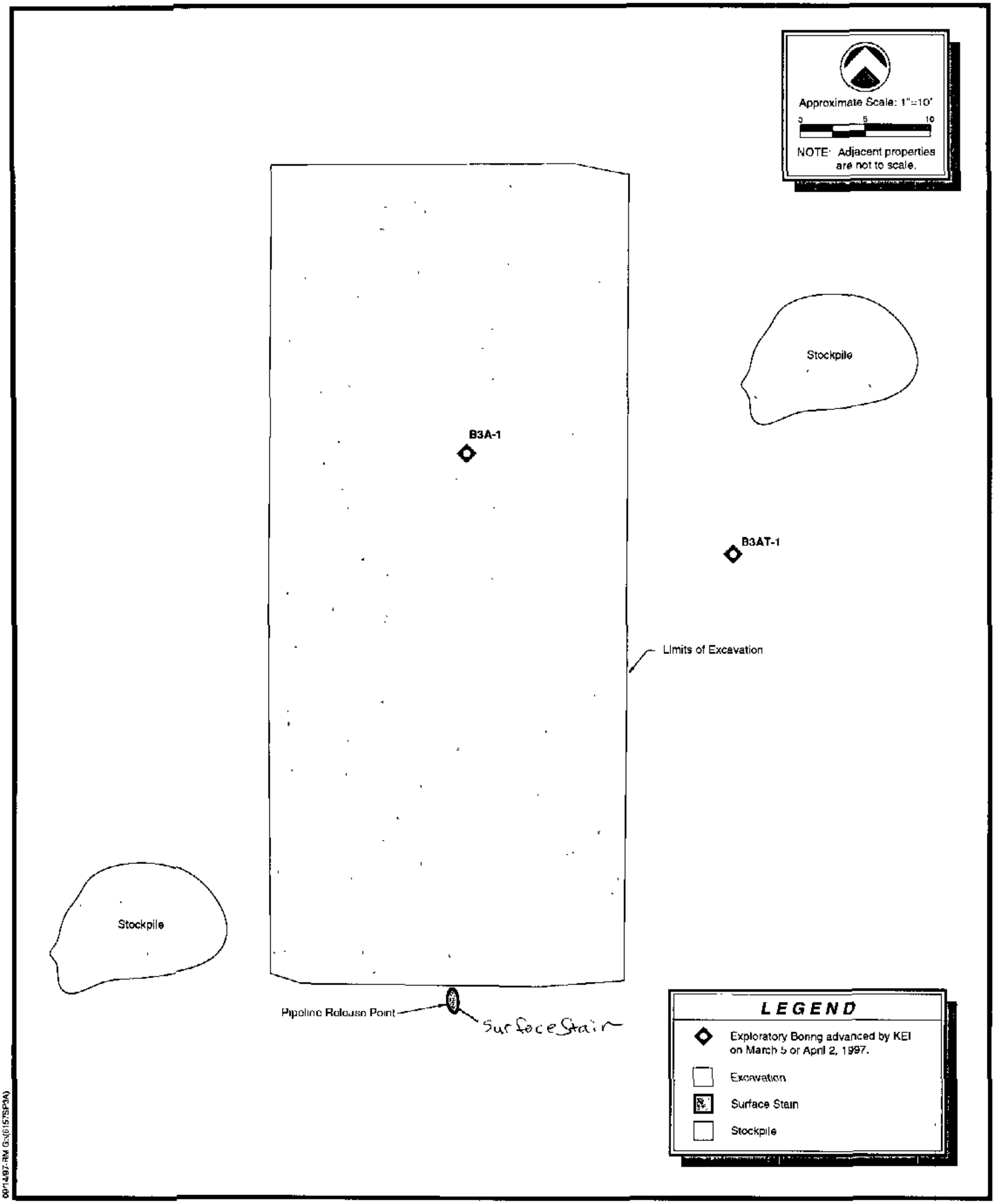
1 .5 0 1 KILOMETRE

CONTOUR INTERVAL 5 FEET

k·e·i	*SITE LOCATION MAP*	610057
	TEXAS - NEW MEXICO PIPE LINE CO. MONUMENT SITE NO. 3 LEA COUNTY, NEW MEXICO	FIG 1



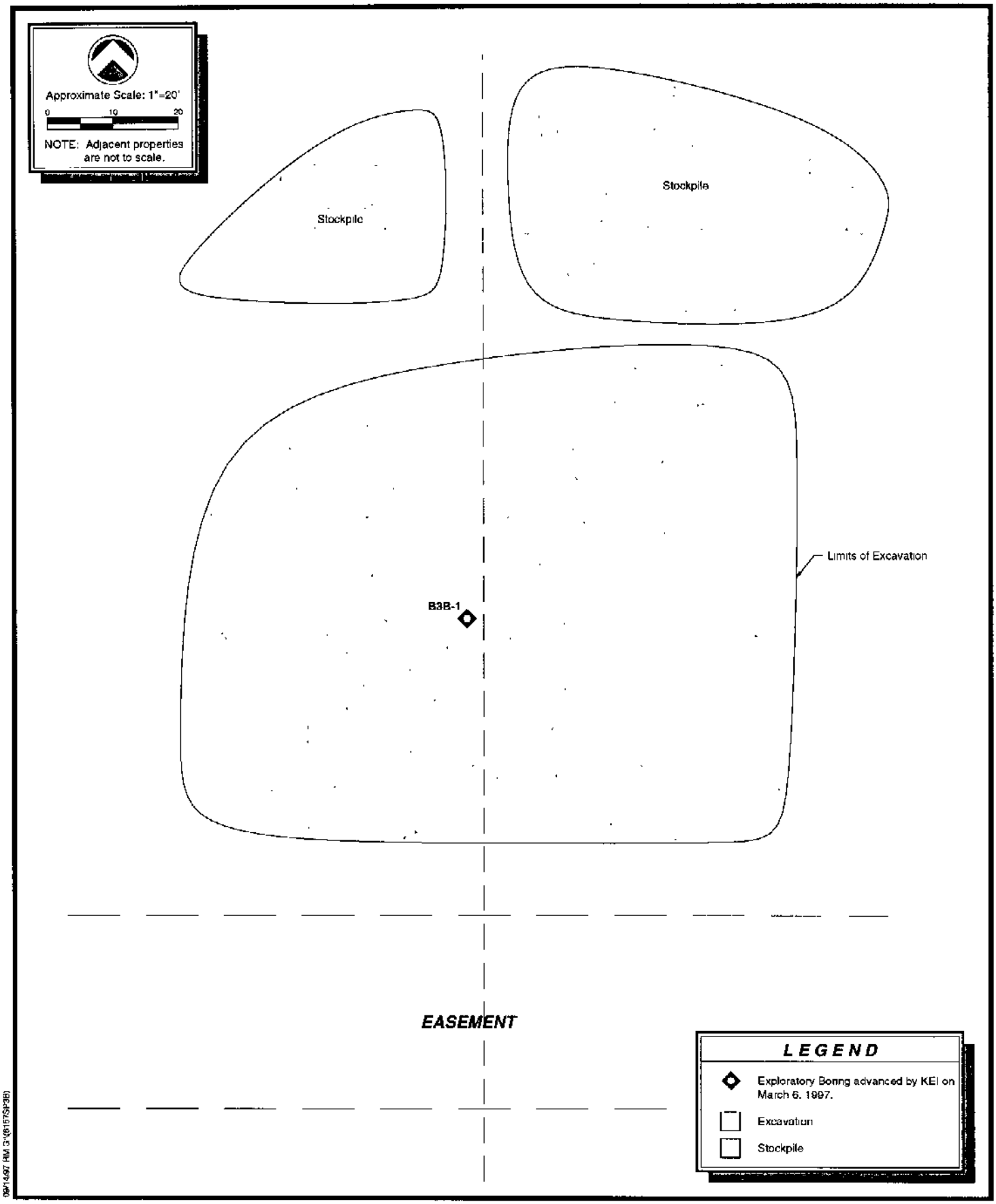
k·e·i	SITE DETAILS	610057
	TEXAS - NEW MEXICO PIPE LINE CO. MONUMENT SITE NO. 3 LEA COUNTY, NEW MEXICO	FIG 2



09/14/97-RM G:\(61575P3A)

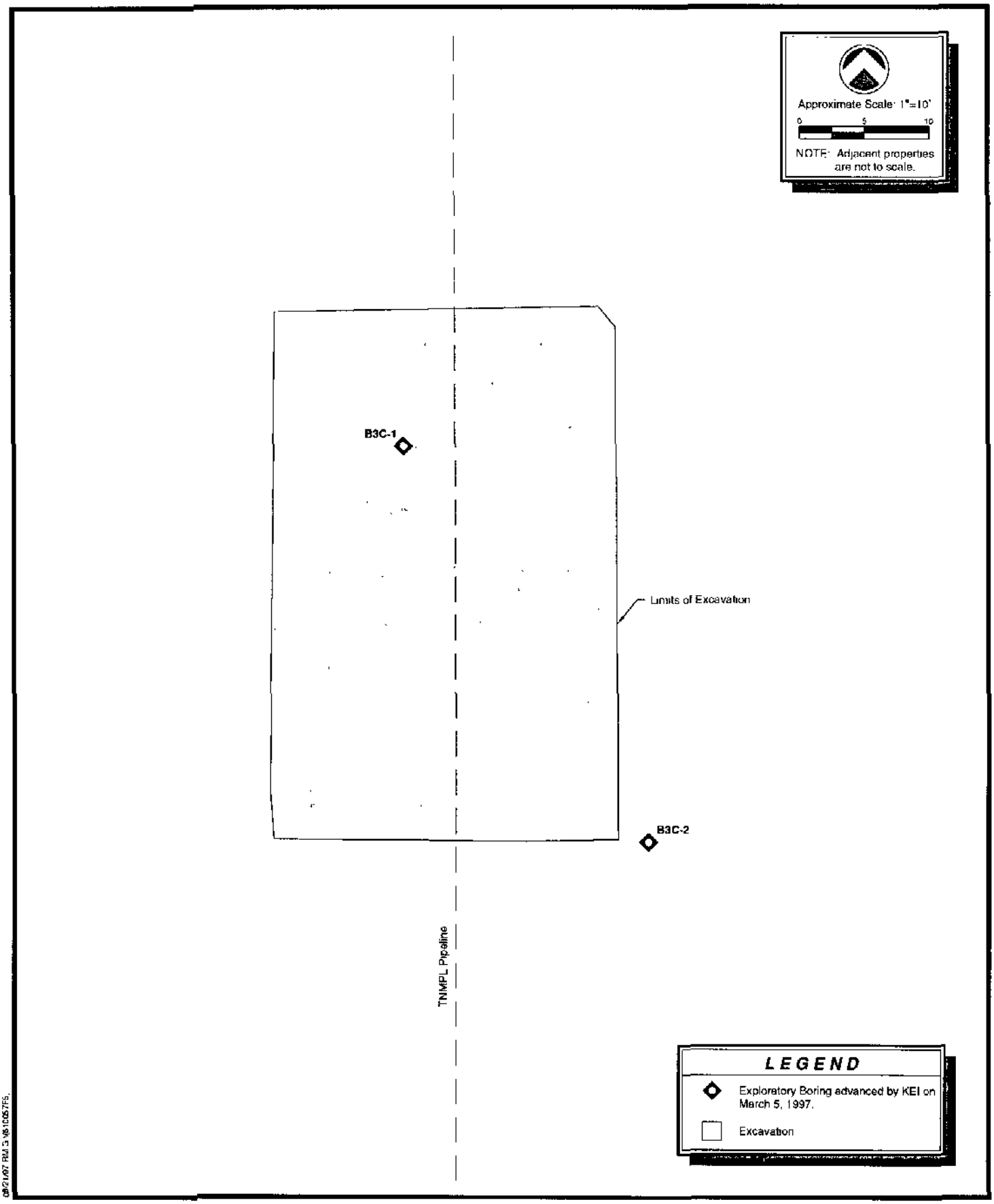
k·e·i

SITE DETAILS			610057
TEXAS - NEW MEXICO PIPE LINE CO.	MONUMENT SITE NO. 3A	LEA COUNTY, NEW MEXICO	FIG 3



09/14/97 RM G:\610157\P3B)

k·e·i	SITE DETAILS	610057
	TEXAS - NEW MEXICO PIPE LINE CO. MONUMENT SITE NO. 3B LEA COUNTY, NEW MEXICO	FIG 4



k·e·i	SITE DETAILS	610057
	TEXAS - NEW MEXICO PIPE LINE CO. MONUMENT SITE NO. 3C LEA COUNTY, NEW MEXICO	FIG 5

LEGEND

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

Limestone; hard, light grey.

Indicates the depth interval from which a soil sample was selected and prepared for field head-space and/or laboratory analysis. The soil samples were obtained continuously by advancing a plastic lined four-foot sampling barrel.

Indicates sample selected for laboratory analysis.

Indicates sampler refusal.

B = benzene concentration (mg/kg)
BTEX = total BTEX concentration (mg/kg)
TPH = total petroleum hydrocarbon concentration (mg/kg)

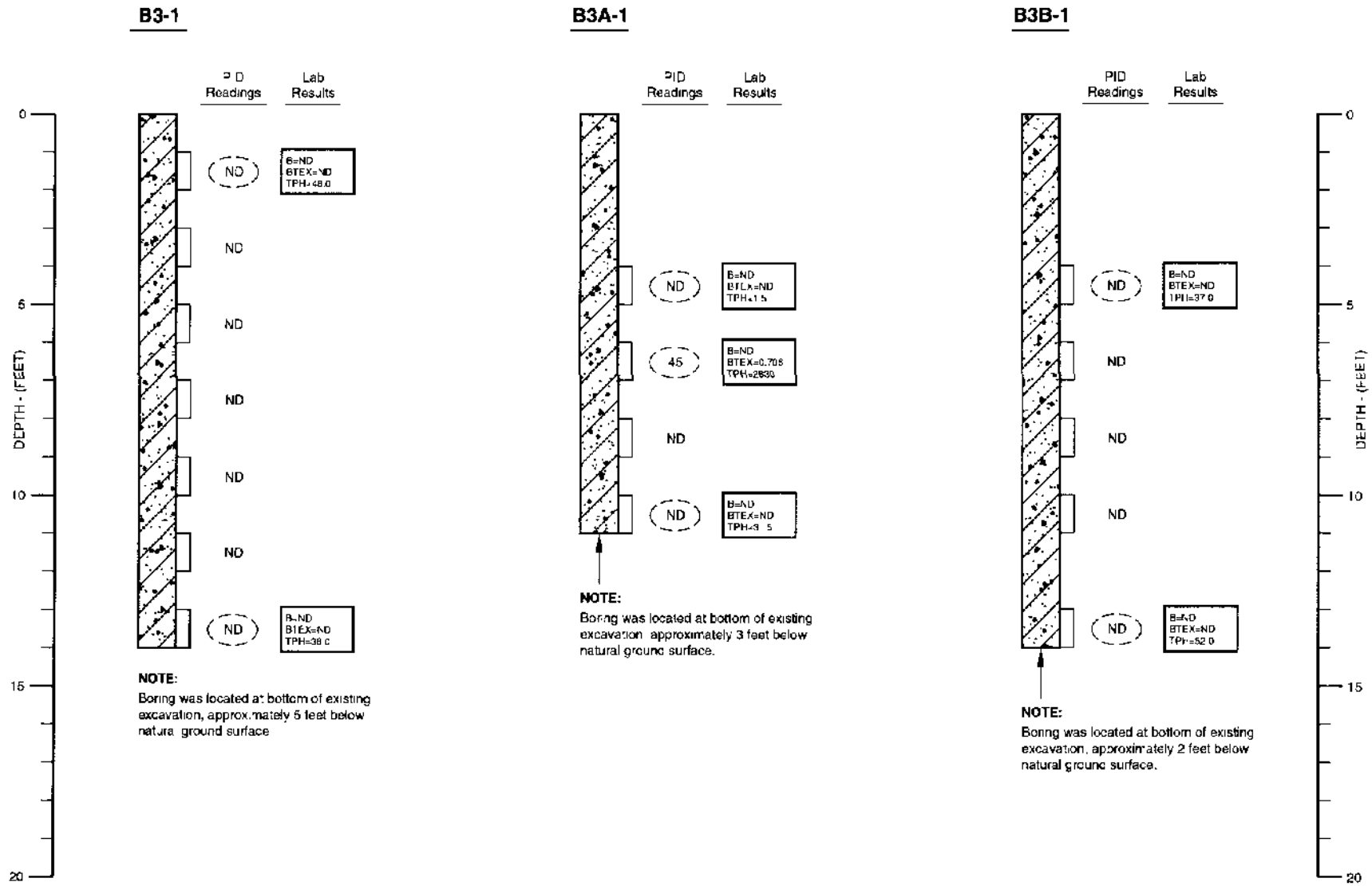
PID Head-space readings in ppm obtained with a photoionization detector.

ND = Indicates the concentration was below laboratory detection limits.

NOTES:

1. Borings B3-1, B3A-1, B3B-1, B3c-1, and B3C-2 were advanced utilizing a direct-push sampling system on March 5 and 6, 1997. Boring B3AT-1 was advanced on April 2, 1997 utilizing a 6" tricone sampling system.
2. No ground water was 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	*LEGEND AND NOTES FOR SOIL BORINGS*	610057
	TEXAS - NEW MEXICO PIPE LINE CO. MONUMENT SITE NO. 3 LEA COUNTY, NEW MEXICO	FIG 6



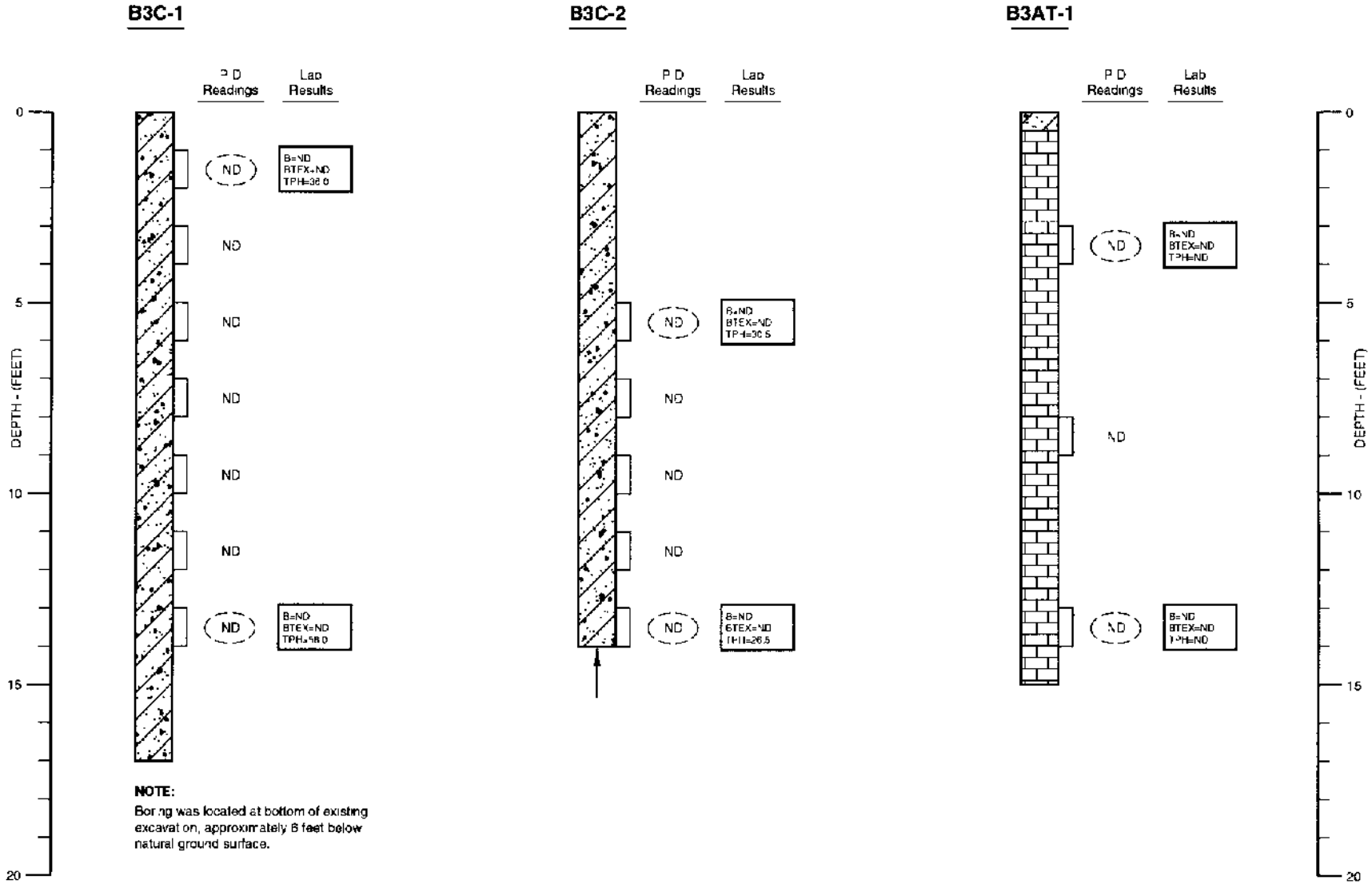
k·e·i

LOGS AND DETAILS OF SOIL BORINGS

TEXAS - NEW MEXICO PIPE LINE CO. **MONUMENT SITE NO. 3** **LEA COUNTY, NEW MEXICO**

610057

FIG 7



k·e·i	*LOGS AND DETAILS OF SOIL BORINGS*	610057
	TEXAS - NEW MEXICO PIPE LINE CO. MONUMENT SITE NO. 3 LEA COUNTY, NEW MEXICO	FIG 8

GENERAL NOTES

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

Depth is referenced from 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. 3
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)
B3-1	03/05/97	1-2	ND	ND	ND	ND	ND	48.0
	03/05/97	13-14	ND	ND	ND	ND	ND	38.0
B3A-1	03/05/97	4-5	ND	ND	ND	ND	ND	49.5
	03/05/97	6-7	ND	0.135	0.082	0.489	0.706	2830
	03/05/97	10-11	ND	ND	ND	ND	ND	31.5
B3B-1	03/06/97	4-5	ND	ND	ND	ND	ND	37.0
	03/06/97	13-14	ND	ND	ND	ND	ND	52.0
B3C-1	03/05/97	1-2	ND	ND	ND	ND	ND	36.0
	03/05/97	13-14	ND	ND	ND	ND	ND	56.0
B3C-2	03/05/97	5-6	ND	ND	ND	ND	ND	30.5
	03/05/97	13-14	ND	ND	ND	ND	ND	26.5
3AT-1	04/02/97	3	ND	ND	ND	ND	ND	ND
	04/02/97	13	ND	ND	ND	ND	ND	ND

[redacted]

10604	L	02414				07	20	1953	PMT	DOM	19S	36E	21	333	19S	36E	35	0364	63	MONUMENT CHURCH	3.00	3.00	0
10605	L	02793				07	28	1955	PMT	DOM	19S	36E	30	1211	19S	36E	30	0693	63	HUGHES LARRY BENNETT	20.00	60.00	58
10606	L	01797	L	03715		01	07	1953	LIC	IRR SHA	19S	36E	30										
			L	03715		10	31	1957	LIC	IRR SHA	19S	36E	30	122	19S	36E	30	0893	63	HUGHES LARRY BENNETT	0.00	0.00	0
10609	L	00558				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	113	19S	36E	32	0564	63	TURNER FRANK K	30.00	90.00	75
10611	L	08083				05	25	1979	PMT	DOM	19S	36E	32	330	19S	36E	32	0579	63	COX ARNO	3.00	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	25	1945	PMT	IRR SHA	19S	36E	32	3234	19S	36E	32	1191	63	MASSEY CLARENCE & NORMA	0.00	0.00	0 DBA M & M FARMS
10614	L	08286	L	00512	S	36	12	1980	PMT	OWD	19S	36E	32	3232	19S	36E	32	0834	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	IRR SHA	19S	36E	33	333	19S	36E	33	0492	63	KLEIN FAYE L	0.00	0.00	0 USED FOR STOCK ALSO
10616	L	03114				02	27	1956	PMT	OWD	19S	36E	34	210	19S	36E	34	0864	63	BOURG CEDAR DRG CO	0.00	0.00	0
10617	L	00000				10	00	1977		BPW	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	1959	PMT	STK	19S	36E	35	340	19S	36E	35	0964	63	MUSICK J E	0.00	3.00	0
10620	L	04715				09	06	1961	PMT	DIC	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	DCM	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	35	442	19S	36E	36	0564	63	GULF OIL CORP	0.00	0.00	0
10624	L	01267				10	18	1951	PMT	DIC	19S	36E	35	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	2134	19S	37E	01	0779	64	HOBBS COUNTRY CLUB	27.16	81.48	68
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	01340	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	DCM	19S	37E	01	421	19S	37E	01	0885	64	BOY SCOUTS OF AMERICA	0.00	3.00	0
10633	L	02182				04	27	1953	PMT	DOM	19S	37E	01	422	19S	37E	01	0764	64	BOY SCOUTS OF AMERICA	0.00	3.00	0
10634	L	02393				06	02	1955	PMT	DCM	19S	37E	01	422	19S	37E	01	0964	64	BOY SCOUTS OF AMERICA	0.00	3.00	0
10635	L	01239	L	01843		01	21	1953	LIC	REC	19S	37E	01	51-42	19S	37E	01	1194	64	HOBBS COUNTRY CLUB	73.01	219.03	183

ANALYTICAL REPORT 1-70560

for

K.E.I. Consultants, Inc.

Project Manager: Ann Baker

Project Name: TNMPL Monument

March 12, 1997

XENCO Laboratories

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March 12, 1997

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

Reference: **XENCO Report No.: 1-70560**
Project Name: TNMPL Monument
Project ID: 610057-2-3,3A,3B,3C
Project Address: Sites 3,3A,3B,3C

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 1-70560. 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. 1-70560 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 Tonemoto, Ph.D.
QA/QC Manager

XENCO Laboratories

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CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Lab. Batch # 170560-SA

Contractor: KET Consultants | Phone: (210) 680-3767

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

Project Name: TNMPL Monument | Project Director: Paul Hartnett

Project Location: Sites 3, 3A, 3B, 3C | Project Manager: Ann Baker

Sampler Signature: Brian Siefried | Project No.: 610057-2-3, 3A, 3B, 3C

No. coolers this shipment: | Contractor COC # 0005

Carrier: | Quote #:

Airbill No. | P.O. No: 7172

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 (8020/8020-8021)	TPH (418.1)	Please Hold	Remarks	LAB ONLY ID #
1	B3-1 1-2	3/5/97	1545	1-2	X				4 oz	G	X		B3-1, 1-2	1	X	X			1
2	B3-1 13-14		1615	13-14					4 oz				B3-1, 13-14	1					2
3	B3A-1 4-5		1510	4-5					4 oz				B3A-1, 4-5	1					3
4	B3A-1 6-7		1510	6-7					4 oz				B3A-1, 6-7	1					4
5	B3A-1 6-7		1510	6-7					8 oz				B3A-1, 6-7	1				Hold	5
6	B3A-1 10-11		1525	10-11					4 oz				B3A-1, 10-11	1	X	X			6
7	B3B-1 4-5	3/6/97	0845	4-5					4 oz				B3B-1 4-5	1					7
8	B3B-1 13-14		0855	13-14					4 oz				B3B-1, 13-14	1					8
9	B3C-1 1-2	3/5/97	1550	1-2					4 oz				B3C-1, 1-2	1					9
10	B3C-1 13-14		1615	13-14					4 oz				B3C-1, 13-14	1					10

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

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
Brian Siefried	3/6/97	1600	Ann Dekker	3/7/97	1005
Ann Baker	3/7/97	1010			
			Received For Laboratory by		
				3/7 97	1010

Remarks: call with highest TPH result

Pink (Contractor), Yellow & White (Lab)

* Pre-scheduling is recommended

Precision Analytical Services

XENCO Laboratories

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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Lab. Batch # 170560-SA

Contractor: KEI Consultants Phone (210) 680-3767

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

Project Name: TNMPL Monument Project Director: Paul Hartnett

Project Location: Site 3, 3A, 3B, 3C Project Manager: Ann Baker

Sampler Signature: Brian Siegfried Project No. 61005 7-2-3, 3A, 3B, 3C

No. coolers this shipment:

Carrier:

Airbill No.

Contractor COC # 0005

Quote #:

P.O. No: 7172

	Field ID	Date	Time	Depth	Soil	Water	Comp	Grab	Container Size	Container Type P, G	Preservative Ice	Preservative Other	Sample Description (Uni Dies Ker Unknown / Waste Oil / PIT No: Tank No:)	No of Containers Total	BTEX (5030/8020-602)	TPH (418.1)									Please Hold	Remarks (Turn-around: ASAP, 24 hrs, 48 hrs, Standard)	LAB ONLY ID #
1	B3c-2 5-6	3/5/97	1410	5-6	X				4oz	G	X		B3c-2, 5-6'	1	X	X											1
2	B3c-2 13-14	3/5/97	1450	13-14	X				4oz	G	X		B3c-2, 13-14	1	X	X											2
3																											3
4																											4
5																											5
6																											6
7																											7
8																											8
9																											9
10																											10

Turn-around: ASAP, 24 hrs, 48 hrs, (Standard) — Standard circled

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
Brian Siegfried	3/6/97	1000	Ann D Baker	3/7/97	1005
Ann D Baker	3/7/97	1010			
			Received For Laboratory by: [signature]	3/7/97	1010

Remarks: Call with highest TPH result

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

* Pre-scheduling is recommended

Precision Analytical Services

XENCO Laboratories

ANALYTICAL CHAIN OF CUSTODY REPORT
CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project ID: 610057-2-3,3A,3B,3C
Project Name: TNMPL Monument
Project Manager: Ann Baker
Project Location: Sites 3,3A,3B,3C

XENCO COC#: 1-70560
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	B3-1(1-2')	170560-001	BTEX	SW-846	ppm	Standard	Mar 5, 1997 15:45		Mar 10, 1997 by CB	Mar 10, 1997 22:53 by CB
2			TPH	EPA 418.1	ppm	Standard	Mar 5, 1997 15:45		Mar 10, 1997 by HL	Mar 10, 1997 17:23 by HL
3	B3-1(13-14')	170560-002	BTEX	SW-846	ppm	Standard	Mar 5, 1997 16:15		Mar 10, 1997 by CB	Mar 10, 1997 23:10 by CB
4			TPH	EPA 418.1	ppm	Standard	Mar 5, 1997 16:15		Mar 10, 1997 by HL	Mar 10, 1997 17:26 by HL
5	B3A-1(4-5')	170560-003	BTEX	SW-846	ppm	Standard	Mar 5, 1997 15:10		Mar 10, 1997 by CB	Mar 10, 1997 23:28 by CB
6			TPH	EPA 418.1	ppm	Standard	Mar 5, 1997 15:10		Mar 10, 1997 by HL	Mar 10, 1997 17:29 by HL
7	B3A-1(6-7')	170560-004	BTEX	SW-846	ppm	Standard	Mar 5, 1997 15:10		Mar 11, 1997 by CB	Mar 11, 1997 11:57 by CB
8			TPH	EPA 418.1	ppm	Standard	Mar 5, 1997 15:10		Mar 10, 1997 by HL	Mar 10, 1997 17:34 by HL
9	B3A-1(10-11')	170560-006	BTEX	SW-846	ppm	Standard	Mar 5, 1997 15:25		Mar 10, 1997 by CB	Mar 10, 1997 23:45 by CB
10			TPH	EPA 418.1	ppm	Standard	Mar 5, 1997 15:25		Mar 10, 1997 by HL	Mar 10, 1997 17:37 by HL
11	B3B-1(4-5')	170560-007	BTEX	SW-846	ppm	Standard	Mar 6, 1997 08:45		Mar 10, 1997 by CB	Mar 11, 1997 00:03 by CB
12			TPH	EPA 418.1	ppm	Standard	Mar 6, 1997 08:45		Mar 10, 1997 by HL	Mar 10, 1997 17:41 by HL
13	B3B-1(13-14')	170560-008	BTEX	SW-846	ppm	Standard	Mar 6, 1997 08:55		Mar 10, 1997 by CB	Mar 11, 1997 00:20 by CB
14			TPH	EPA 418.1	ppm	Standard	Mar 6, 1997 08:55		Mar 10, 1997 by HL	Mar 10, 1997 17:44 by HL
15	B3C-1(1-2')	170560-009	BTEX	SW-846	ppm	Standard	Mar 5, 1997 10:50		Mar 10, 1997 by CB	Mar 11, 1997 00:37 by CB
16			TPH	EPA 418.1	ppm	Standard	Mar 5, 1997 10:50		Mar 10, 1997 by HL	Mar 10, 1997 17:47 by HL
17	B3C-1(13-14')	170560-010	BTEX	SW-846	ppm	Standard	Mar 5, 1997 11:15		Mar 10, 1997 by CB	Mar 11, 1997 00:55 by CB
18			TPH	EPA 418.1	ppm	Standard	Mar 5, 1997 11:15		Mar 10, 1997 by HL	Mar 10, 1997 17:50 by HL
19	B3C-2(5-6')	170560-011	BTEX	SW-846	ppm	Standard	Mar 5, 1997 14:10		Mar 10, 1997 by CB	Mar 11, 1997 01:12 by CB
20			TPH	EPA 418.1	ppm	Standard	Mar 5, 1997 14:10		Mar 10, 1997 by HL	Mar 10, 1997 17:53 by HL
21	B3C-2(13-14')	170560-012	BTEX	SW-846	ppm	Standard	Mar 5, 1997 14:50		Mar 10, 1997 by CB	Mar 10, 1997 16:00 by CB
22			TPH	EPA 418.1	ppm	Standard	Mar 5, 1997 14:50		Mar 10, 1997 by HL	Mar 10, 1997 17:56 by HL

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-70560

K.E.I. Consultants, Inc.

Project ID: 610057-2-3,3A,3B,3C
Project Name: TNMPL Monument
Project Manager: Ann Baker
Project Location: Sites 3,3A,3B,3C

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:*	170560-001	170560-002	170560-003	170560-004	170560-006	170560-007	170560-008	170560-009	170560-010
	Field ID:	B3-1	B3-1	B3A-1	B3A-1	B3A-1	B3B-1	B3B-1	B3C-1	B3C-1
	Depth:	1-2'	13-14'	4-5'	6-7'	10-11'	4-5'	13-14'	1-2'	13-14'
BTEX by EPA 8020		Date Analyzed - Analytical Results								**ppm (mg/L - mg/Kg)**
		Mar 10, 1997	Mar 10, 1997	Mar 10, 1997	Mar 11, 1997	Mar 10, 1997	Mar 11, 1997	Mar 11, 1997	Mar 11, 1997	Mar 11, 1997
Benzene		< 0.020	< 0.020	< 0.020	< 0.050	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Toluene		< 0.020	< 0.020	< 0.020	0.135	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Ethylbenzene		< 0.020	< 0.020	< 0.020	0.082	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
m,p-Xylenes		< 0.040	< 0.040	< 0.040	0.387	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040
o-Xylene		< 0.020	< 0.020	< 0.020	0.102	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Total BTEX		< 0.120	< 0.120	< 0.120	0.706	< 0.120	< 0.120	< 0.120	< 0.120	< 0.120
Total Petroleum Hydrocarbons by EPA 418.1		Date Analyzed - Analytical Results								**ppm (mg/L - mg/Kg)**
		Mar 10, 1997	Mar 10, 1997	Mar 10, 1997	Mar 10, 1997	Mar 10, 1997	Mar 10, 1997	Mar 10, 1997	Mar 10, 1997	Mar 10, 1997
Total Petroleum Hydrocarbons		48.0	38.0	49.5	2830	31.5	37.0	52.0	36.0	56.0

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

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-70560

K.E.I. Consultants, Inc.

Project ID: 610057-2-3,3A,3B,3C
Project Name: *TNMPL Monument*
Project Manager: Ann Baker
Project Location: Sites 3,3A,3B,3C

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:	170560-011	170560-012
	Field ID:	B3C-2	B3C-2
	Depth:	5-6'	13-14'
BTEX by EPA 8020		Date Analyzed - Analytical Results	**ppm (mg/L - mg/Kg)**
		Mar 11, 1997	Mar 10, 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
Total Petroleum Hydrocarbons by EPA 418.1		Date Analyzed - Analytical Results	**ppm (mg/L - mg/Kg)**
		Mar 10, 1997	Mar 10, 1997
Total Petroleum Hydrocarbons		30.5	26.5

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

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A25A73

SW- 846 5030/8020 BTEX

Date Validated: Mar 11, 1997 10:00
Date Analyzed: Mar 10, 1997 13:07
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: CB
Matrix: Solid

MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY

Q.C. Sample ID 170565- 002	[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	%	%	%	%	%	
Benzene	< 0.020	2.160	2.020	2.000	0.020	25 0	6 7	108.0	101.0	65-135	
Toluene	< 0.020	2.060	1.938	2.000	0.020	25.0	6.1	103.0	96.9	65-135	
Ethylbenzene	< 0.020	2.180	2.040	2.000	0.020	25 0	6 6	109.0	102.0	65-135	
m,p-Xylenes	< 0.040	4.440	4.180	4.000	0 040	25.0	6 0	111.0	104.5	65-135	
o-Xylene	< 0.020	2.180	2.040	2.000	0.020	25.0	6.6	109.0	102.0	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 : 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	[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	1.762	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 / **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	1.866	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 : 17A30A82

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 11, 1997 11:00
Date Analyzed: Mar 10, 1997 17:29
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: HL
Matrix: Solid

MATRIX SPIKE ANALYSIS

Q.C. Sample ID I70560- 003 / Parameter	[A] Sample Result ppm	[B] Matrix Spike Result ppm	[C] Matrix Spike Amount ppm	[D] Method Detection Limit ppm	[E] QC Matrix Spike Recovery %	[F] LIMITS Recovery Range %	[G] Qualifier
Total Petroleum Hydrocarbons	49.50	211	198	7.50	81.7	65-135	

Matrix 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 : 17A30A82

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 11, 1997 11:00
Date Analyzed: Mar 10, 1997 17:34
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: HL
Matrix: Solid

MATRIX DUPLICATE ANALYSIS

Q.C. Sample ID 170560- 004	[A]	[B]	[C]	[D]	[E]	[F]
	Sample	Duplicate	Method	QC LIMITS		
Parameter	Result	Result	Detection Limit	Relative Difference	Relative Difference	Qualifier
	ppm	ppm	ppm	%	%	
Total Petroleum Hydrocarbons	2830	3170	75.0	11.3	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 :: 17A30A82

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Mar 11, 1997 11:00
Date Analyzed: Mar 10, 1997 17:11
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	186	198	7.50	94.1	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

ANALYTICAL REPORT 1-70811

for

K.E.I. Consultants, Inc.

Project Manager: Ann Baker

Project Name: TNMPL

Project Id: 610057-2-3A

April 10, 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

April 10, 1997

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

Reference: **XENCO Report No.: 1-70811**
Project Name: TNMPL
Project ID: 610057-2-3A
Project Address: Site 3A

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 1-70811. 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. 1-70811 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 Tomemoto, Ph.D.
QA/QC Manager

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 # 170811-SA

Contractor: KEI Phone (210) 680-3767

Address: 5309 WURZBACH SUITE 100 SA TX 78238

Project Name: TNMPL Project Director: PAUL HARTNET

Project Location: SITE 3A Project Manager: ANN BAKER

Sampler Signature: Project No.: 610057-2-3A

No. coolers this shipment: 1 Contractor COC #

Carrier: UPS Quote #:

Airbill No. P.O. No.: 7172

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 (8020/8020-602)	TPH (418.1)	Please Hold	Remarks	LAB ONLY ID #
1	3AT-1@3	4/2/97	1016	3'	X			X	1-8oz 1-4oz	G	X		SOIL	2	X	X	X	Hold 8oz	1
2	3AT-1@13'	4/2/97	1036	13'	X			X	1-8oz 1-4oz	G	X		SOIL	2	X	X	X	Hold 8oz	2
3																			3
4																			4
5																			5
6																			6
7																			7
8																			8
9																			9
10																			10

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

Waste Oil: Unl Dies Ker Unknown

PIT No: Tank No:

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
	4/7/97	1600			
			Received For Laboratory by:	4/8/97	1200

Remarks: VIA UPS

Pink (Contractor), Yellow & White (Lab)

* Pre-scheduling is recommended

Precision Analytical Services

XENCO Laboratories

ANALYTICAL CHAIN OF CUSTODY REPORT
CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project ID: 610057-2-3A
Project Manager: Ann Baker
Project Location: Site 3A

Project Name: TNMPL

XENCO COC#: 1-70811
Date Received in Lab: Apr 8, 1997 12:00 by CMC
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	3AT-1@3' Soil	170811-001	BTEX	SW-846	ppm	Standard	Apr 2, 1997 10:16		Apr 8, 1997 by HL	Apr 8, 1997 15:28 by HL
2			TPH	EPA 418.1	ppm	Standard	Apr 2, 1997 10:16		Apr 9, 1997 by OL	Apr 9, 1997 15:06 by OL
3	3AT-1@13' Soil	170811-002	BTEX	SW-846	ppm	Standard	Apr 2, 1997 10:38		Apr 8, 1997 by HL	Apr 8, 1997 16:19 by HL
4			TPH	EPA 418.1	ppm	Standard	Apr 2, 1997 10:38		Apr 9, 1997 by OL	Apr 9, 1997 15:09 by OL

XENCO Laboratories

CERTIFICATE OF ANALYSIS SUMMARY 1-70811

K.E.I. Consultants, Inc.

Project Name: TNMPL

Project ID: 610057-2-3A
Project Manager: Ann Baker
Project Location: Site 3A

Date Received in Lab: Apr 8, 1997 12:00 by CMC
Date Report Faxed: Apr 10, 1997
XENCO contact: Carlos Castro/Edward Yonemoto

Analysis Requested	*Lab ID:*	170811-001	170811-002				
	Field ID:	3AT-1@3'	3AT-1@13'				
	Depth:	3'	13'				
BTEX Analyzed by EPA 8020		Date Analyzed - Analytical Results					**ppm (mg/L - mg/Kg)**
		Apr 8, 1997	Apr 8, 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)**
		Apr 9, 1997	Apr 9, 1997				
Total Petroleum Hydrocarbons		< 10.0	< 10.0				

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

XENCO Laboratories

Certificate Of Quality Control for Batch : 17A25B11

SW- 846 5030/8020 BTEX

Date Validated: Apr 9, 1997 09:00
Date Analyzed: Apr 8, 1997 15:10
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 LIMITS Blank Spike Recovery %	[F] Recovery Range %	[G] Qualifier
Benzene	< 0.0010	0.1050	0.1000	0.0010	105.0	65-135	
Toluene	< 0.0010	0.1080	0.1000	0.0010	108.0	65-135	
Ethylbenzene	< 0.0010	0.1090	0.1000	0.0010	109.0	65-135	
m,p-Xylenes	< 0.0020	0.2220	0.2000	0.0020	111.0	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 : 17A25B11

SW- 846 5030/8020 BTEX

Date Validated: Apr 9, 1997 09:00
Date Analyzed: Apr 8, 1997 15:45
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: HL
Matrix: Solid

Q.C. Sample ID 170811- 001	MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY										
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	< 0.020	2.100	2.140	2.000	0.020	25.0	1.9	105.0	107.0	65-135	
Toluene	< 0.020	2.120	2.100	2.000	0.020	25.0	0.9	106.0	105.0	65-135	
Ethylbenzene	< 0.020	2.100	2.140	2.000	0.020	25.0	1.9	105.0	107.0	65-135	
m,p-Xylenes	< 0.040	4.300	4.360	4.000	0.040	25.0	1.4	107.5	109.0	65-135	
o-Xylene	< 0.020	2.100	2.140	2.000	0.020	25.0	1.9	105.0	107.0	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 : 17A30B30

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Apr 9, 1997 17:00
Date Analyzed: Apr 9, 1997 14:45
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: OL
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
Total Petroleum Hydrocarbons	< 7.50	177	198	7.50	89.6	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 : 17A30B30

EPA 418.1 Total Petroleum Hydrocarbons

Date Validated: Apr 9, 1997 17:00
Date Analyzed: Apr 9, 1997 14:48
QA/QC Manager: Edward H. Yonemoto, Ph.D.

Analyst: OL
Matrix: Solid

MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY

Q.C. Sample ID 170812- 006 / 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
Total Petroleum Hydrocarbons	< 7.50	153	160	198	7.50	30.0	4.5	77.4	81.0	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