1R - 233

GENERAL CORRESPONDENCE

YEAR(S):

1995-1993

CURA, INC.
3001 North Big Spring
Suite 101
Midland, Texas 79705
(915) 570-8408
FAX (915) 570-8409

PRELIMINARY SITE ASSESSMENT

DELAWARE STATION
LEA COUNTY, NEW MEXICO

CURA PROJECT NO. 15-92567.18

SHELL PIPE LINE CORPORATION
TWO SHELL PLAZA
P.O. BOX 2099
HOUSTON, TEXAS 77252-2099

January 14, 1993

Prepared By: F. Wesley Root for
Environmental Geologist

Reviewed By: Greg C. Walterscheid, R.E.M.
Project Manager

Herbert E. Fry, C.P.G.
Director of Geology/Hydrogeology

TABLE OF CONTENTS

1.0 REPORT SUMMARY

1.1 EXECUTIVE SUMMARY

Two soil borings (B-1 and B-2) were performed on December 9, 1992, as a baseline assessment of soil and groundwater conditions on site prior to a planned real estate divestment. Measurable hydrocarbon concentrations were detected in the soil samples obtained during drilling operations. Benzene levels were below method detection limits of 0.001 mg/kg (parts per million; ppm) in the sampled intervals of borings B-1 and B-2. The total BTEX (benzene, toluene, ethylbenzene, xylenes) levels ranged from 0.007 ppm in the 5 foot to 7 foot interval of boring B-2 to 0.011 ppm in the 5 foot to 7 foot interval of boring B-1. TPH (total petroleum hydrocarbons) levels ranged from 13 ppm in the 10 foot to 12 foot interval of boring B-2 to 19 ppm in the 5 foot to 7 foot interval of boring B-1. The current New Mexico Oil Conservation Commission (OCC) recommended remediation levels for crude oil impacted soils are 10 ppm benzene, 50 ppm total BTEX, and either 100 ppm, 1,000 ppm, or 5,000 ppm TPH depending upon the risk assessment ranking for the site. Groundwater was not encountered during this subsurface investigation.

1.2 SCOPE OF SERVICES

The following scope of services was conducted for the Preliminary Site Assessment:

- Met with Shell Pipe Line Corporation to determine boring locations and specific site conditions.
- Conducted a preliminary literature search of the geology and hydrogeology of the site area.
- Performed soil borings and obtained soil samples to aid in classifying subsurface conditions with respect to petroleum hydrocarbons.
- Constructed a soil hydrocarbon concentration map to help delineate the horizontal and vertical extent of hydrocarbon-affected soils.
- Assembled soil profile columns from soil boring logs and reviewed the soil classification for the site area.
- Identified possible off-site petroleum hydrocarbon contamination sources within a one-quarter mile radius of the site.
- Identified potential receptors in the site area.
- Summarized findings in the Preliminary Site Assessment Report.

2.0 INTRODUCTION

CURA was contracted by Shell Pipe Line Corporation to conduct a Preliminary Site Assessment prior to planned site divestment. The purpose of the Preliminary Site Assessment was to establish a baseline of the subsurface soil and groundwater conditions. Boring locations were chosen based on potential source areas (ie. tanks, sumps, pipelines) and property boundaries. The site, Delaware Station, is located approximately 3 miles south-southwest of Eunice in Lea County, New Mexico (Appendix A, Figure 1) and is utilized as a crude oil pipeline pump station.

3.0 SITE DESCRIPTION

Delaware Station is utilized as a crude oil pipeline pumping station in which subsurface crude oil field lines from various oil field leases are manifolded into the main subsurface discharge pipeline currently operated by Shell Pipe Line Corporation. An aboveground crude oil storage tank (Tank 826X) is located in the center of the north portion of the site (Appendix A, Figure 2) and is surrounded by an earthen dike. A single-walled steel sump is near the center of the south half of the site adjacent to some piping. No pumping equipment was observed on site.

Delaware Station is bounded by barbed-wire fencing to the east, north and west. The south property boundary is a gravel access road. The site is located in a rural area within the Monument-Jal Oil Field. No residences, public buildings, surface bodies of water, or water wells were observed within a 1,000 foot radius of the facility.

4.0 SITE HYDROGEOLOGY

The site is located in Lea County, New Mexico, within the Great Plains physiographical province along the southwestern edge of the High Plains Region of New Mexico and Texas. Soils on site belong to the Pyote Series consisting of well-drained, sandy loam soils that have a fine sandy loam subsoil. These soils formed in wind-deposited sediments on upland plains and alluvial fans.

Water wells in the site area typically produce water from three principal geologic units (from oldest to youngest), the Dockum group, the Ogallala formation, and Quaternary alluvium. The Ogallala formation is the major water-bearing formation in the area with well yields ranging from 30 gpm to 700 gpm. The Ogallala formation is of Pliocene age and consists of semiconsolidated fine-grained calcareous sand overlain by a thick layer of caliche. The formation contains some clay, silt, and often a basal gravel. It is a heterogeneous complex of terrestrial sediments deposited over an irregular erosional surface cut into the Triassic rocks and ranges in thickness from a few inches to approximately 300 feet.

Eolian and alluvial deposits of Recent to Pleistocene age overlie the Ogallala formation in the site area. These deposits consist of fine to medium grained sands, and calcareous silt and clays. Ranging in thickness from 0 to 400 feet, these Quaternary deposits often form a continuous aquifer with the underlying Ogallala formation and are considered to act as one aquifer beneath the site area. Where the Ogallala is not present, the Quaternary alluvium produces limited quantities of groundwater with well yields generally less than 30 gpm.

The Triassic age Dockum group consists of the Chinle formation and the underlying Santa Rosa sandstone. The Chinle formation is a 0 - 1270 foot thick claystone containing minor fine-grained sandstones and siltstones. Wells completed in the Chinle formation generally yield less than 10 gpm. The Santa Rosa sandstone is a

140 - 300 foot thick fine to coarse-grained sandstone which generally yields small quantities of water, but some wells yield up to 100 gpm. Produced waters from both the Chinle formation and the Santa Rosa sandstone are high in sulfate content.

According to published data (Nicholson, 1961), there are no registered water wells within a 1,000 foot radius of the site. The closest known water well is located approximately 1,200 feet northeast of the site. Completed in 1946, the well was drilled to a total depth of 172 feet and completed in Quaternary Alluvium. Originally used for oil well flooding, the current status and construction data on this well is unknown.

According to the U.S.G.S. Eunice, New Mexico, topographic quadrangle, the site is approximately 3,395 feet above mean sea level (Figure 4). The general trend of the local topography and surface drainage of the site area is to the south.

According to the U.S. Department of Agriculture, the soils on site belong to the Pyote Series consisting of well-drained, light-brown to reddish brown fine sands from 0 to 48 inches underlain by a noncalcareous to calcareous pink fine sandy loam subsoil. These soils formed in wind-deposited sediments on upland plains and alluvial fans. The soils described in the soil survey are generally consistent with the observed soil on site.

Subsurface conditions were similar for borings B-1 and B-2. The soils consisted of 7 feet to 10 feet of red-brown silty sand (SM) underlain by pink calcareous sand (caliche) to a depth of approximately 12 feet. The soil boring logs included in Appendix B provide a more detailed description of the subsurface conditions.

Currently, the groundwater in the site area is not used as a drinking water source. The drinking water in Eunice is supplied from a well field located approximately 16

miles north-northwest of the site that produce from the Ogallala Formation at a depth of 80 to 120 feet.

A field survey of the site and surrounding area was conducted to identify potential receptors (residences, public buildings, water supply wells, and surface bodies of water) in the site vicinity. No residences, public buildings, or water supply wells were identified within a 1,000 foot radius of the site.

5.0 HYDROGEOLOGICAL INVESTIGATION AND FINDINGS

5.1 SOIL INVESTIGATION

5.1.1 SOIL BORING LOCATIONS

Boring B-1 was located south of Tank 826X and just west of the center of the site. Boring B-2 was placed south of the sump near the center of the south half of the property. The apparent downgradient direction of the observed local surface drainage is to the south.

5.1.1 SOIL SAMPLING OPERATIONS

Soil samples were retrieved from the borings to be analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX) and total petroleum hydrocarbons (TPH). Samples were obtained at five foot intervals in each boring using a split spoon sampling device. The soil sample obtained from each interval was split into two separate containers. One sample was placed into a glass jar with teflon-lined lids and zero head space and preserved at 4 ° C in accordance with EPA protocol for shipment to the laboratory. The other soil sample from each interval was placed in a sample jar and field-screened (head space analysis) with a flame ionization detector (FID) Century 128 Organic Vapor Analyzer (OVA). The OVA detects volatile petroleum and non-petroleum organic compounds in parts per million (ppm) methane equivalent.

5.1.2 SOIL SAMPLE ANALYTICAL RESULTS

OVA readings ranged from 1 ppm in the 5 foot to 7 foot sample interval of boring B-2 to <1 ppm in each sample interval obtained from the bottom the borings. Two samples from each boring were submitted for laboratory analyses. The sample with the highest relative OVA reading and the sample at the total depth of each boring unless noted otherwise were submitted to the laboratory for BTEX and TPH analyses using EPA-approved analytical methods (EPA Method 8020 and EPA Method 418.1, respectively). Complete OVA readings and a listing of those samples submitted to the laboratory are presented in Table 1. No hydrocarbon staining or odors were observed during sampling operations.

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
Soil Samples Obtained December 9, 1992

Boring	Sample Interval (feet)	OVA	Benzene	Toluene	Ethyl-benzene	Xylenes	Total BTEX	TPH
B-1	1 - 3	<1	<0.001	0.002	<0.001	0.007	0.009	14
	5 - 7	<1	<0.001	0.002	0.002	0.007	0.011	19
B-2	1 - 3	<1						
	5 - 7	1	<0.001	0.002	<0.001	0.005	0.007	16
	10 - 12	<1	<0.001	0.007	<0.001	0.003	0.010	13

OVA results listed in parts per million (ppm) equivalent methane.
BTEX results in mg/kg (parts per million; ppm) with a method detection limit of 0.001 ppm.
TPH results in mg/kg (parts per million; ppm) with a method detection limit of 10 ppm.
Analyses were conducted using EPA Method 8020 (BTEX) and EPA Method 418.1 (TPH) by SPL Environmental Laboratories.

Benzene levels were below method detection limits of 0.001 mg/kg (parts per million; ppm) in the sampled intervals of Borings B-1 and B-2. The total BTEX (benzene, toluene, ethylbenzene, xylenes) levels ranged from 0.007 ppm in the 5 foot to 7 foot interval of boring B-2 to 0.011 ppm in the 5 foot to 7 foot interval of boring B-1. TPH (total petroleum hydrocarbons) levels ranged from 13 ppm in the 10 foot to 12 foot interval of boring B-2 to 19 ppm in the 5 foot to 7 foot interval of boring B-1. Hydrocarbon concentrations are illustrated on the site map (Appendix B, Figure 2) to indicate soil sample depths and the corresponding hydrocarbon concentration levels.

A summary of the analytical results is presented in Table 1. Laboratory reports and the chain-of-custody are included in Appendix C.

5.2 GROUNDWATER ASSESSMENT

Groundwater was not encountered during drilling operations. Based on OVA readings and visual observations noted during sampling operations, monitor wells were not installed on site.

6.0 CONCLUSIONS

1. The surface geology of the site area is composed of eolian and alluvial deposits of Recent to Pleistocene age which consist of fine to medium grained sands, calcareous silt and clays. The alluvial deposits are a source for limited quantities of groundwater and can form a continuous aquifer with the underlying Ogallala Formation. Water wells in the site area typically produce water from the Ogallala Formation and to a lessor extent the underlying Santa Rosa sandstone.

2. Subsurface conditions were similar for borings B-1 and B-2. The soils consisted of 7 feet to 10 feet of red-brown silty sand (SM) underlain by pink calcareous sand (caliche) to a depth of approximately 12 feet. The soil boring logs included in Appendix B provide a more detailed description of the subsurface conditions.

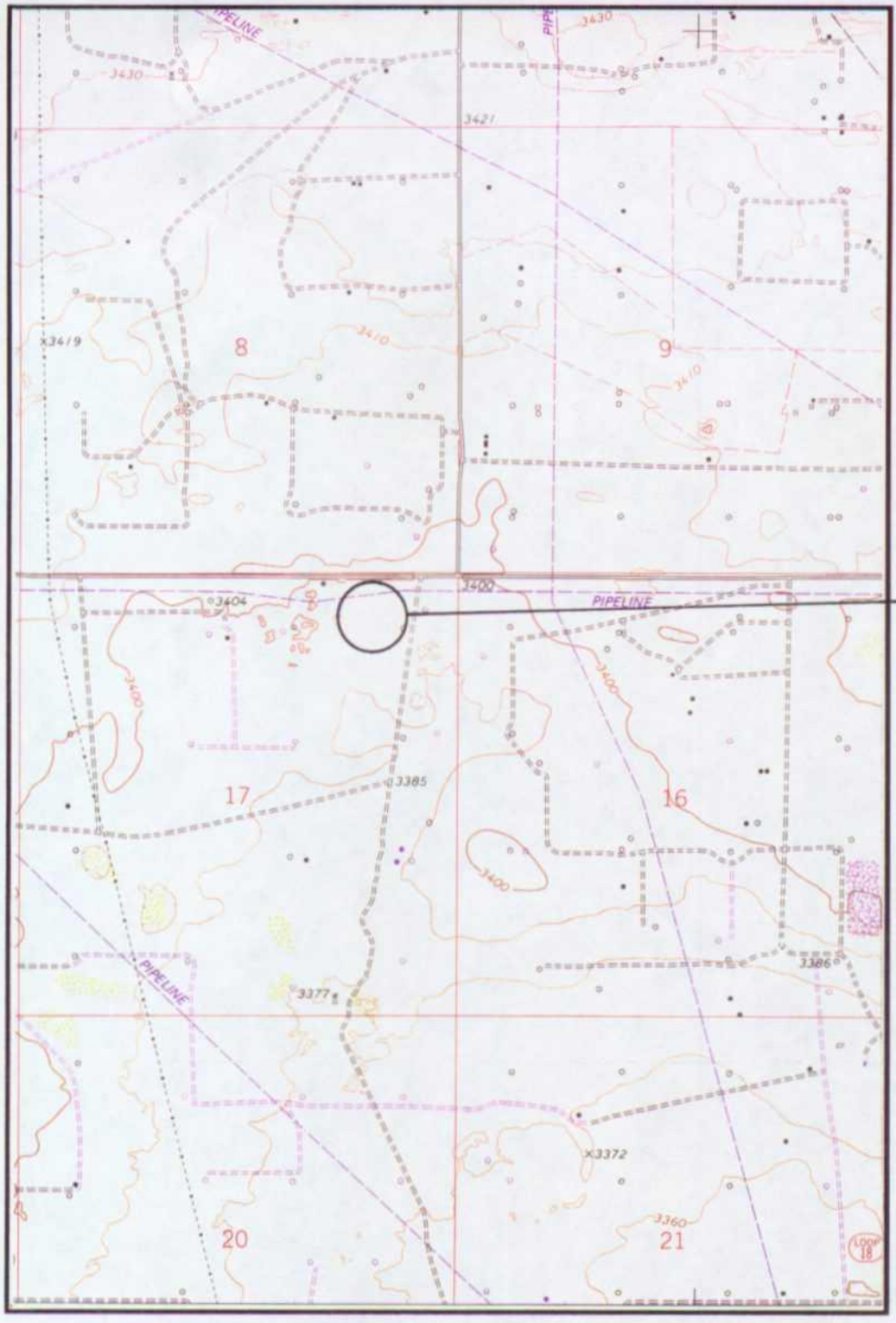
3. Benzene levels were below method detection limits <0.001 mg/kg ppm in the sampled intervals of Borings B-1 through B-4. The total BTEX (benzene, toluene, ethylbenzene, xylenes) levels ranged from 0.007 ppm in the 5 foot to 7 foot interval of boring B-2 to 0.011 ppm in the 5 foot to 7 foot interval of boring B-1. TPH (total petroleum hydrocarbons) levels ranged from 13 ppm in the 10 foot to 12 foot interval of boring B-2 to 19 ppm in the 5 foot to 7 foot interval of boring B-1.

4. Groundwater was not encountered during this investigation.

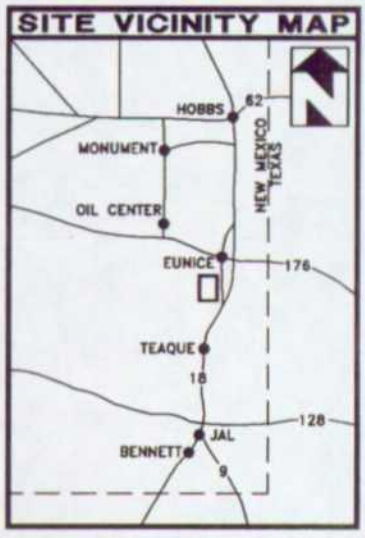
7.0 APPENDICES

APPENDIX A

FIGURES



N



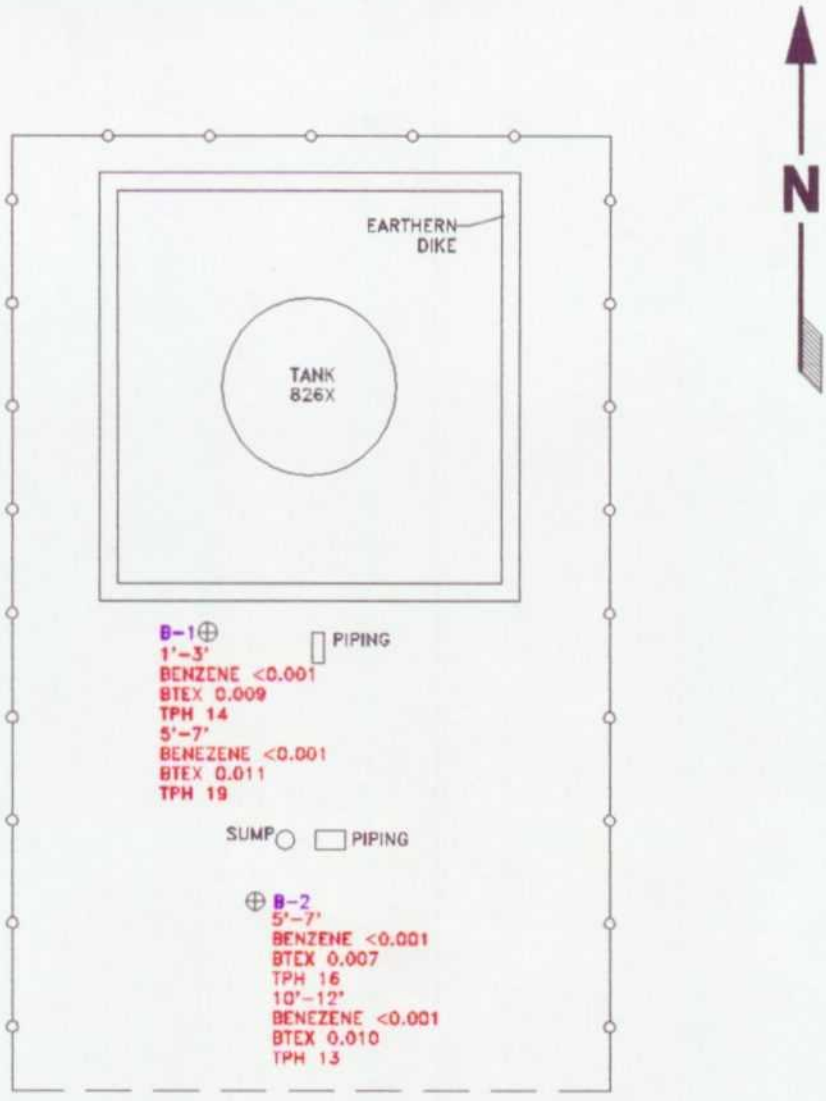
SITE LOCATION MAP

REF: USGS EUNICE, NEW MEXICO TOPOGRAPHIC QUADRANGLE (1969)
PHOTOREVISED 1977

CURA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-8219

DELAWARE STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
JAN 1993	1"≃2000'
PROJECT NO.	FIGURE NO.
15-92567	1



SITE MAP

RED NUMBERS INDICATE
BENZENE, TOTAL BTEX, AND TPH CONCENTRATIONS IN mg/kg (ppm)

0 60'
APPROXIMATE SCALE

CURA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-6219

DELAWARE STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
JAN 1993	SEE ABOVE
PROJECT NO.	FIGURE NO.
15-92567	2

APPENDIX B
BORING/WELL LOGS

CRA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-8219

RECORD OF SUBSURFACE EXPLORATION

Project No.: 15-92567
Project: DELAWARE STATION
LEA COUNTY, NEW MEXICO
-
Drilling Co: HI PLAINS DRILLING
Driller: B.S.
Drilling Method: AIR ROTARY

Well/Boring #: B-1
Depth of Boring: 7 FEET
Depth of Well: -
Length of Screen: -
Length of Casing: -
Logged By: F.W.R.

Date Drilled: 12/09/92
Diameter of Boring: 5 1/8 INCHES
Diameter of Screen: -
Diameter of Casing: -
Slot Size: -
Well Material: GROUT

DEPTH FEET	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	OVA (PPM)	WELL DESIGN	REMARKS
0	Dark red-brown clayey SAND (SC)					
2.5		1	SS	<1	■	BENZENE <0.001 mg/kg BTEX=0.009 mg/kg TPH=14 mg/kg
5.0	Red-brown silty SAND (SM)	2	SS	<1	■	BENZENE <0.001 mg/kg BTEX=0.011 mg/kg TPH=19 mg/kg
7.5	Bottom of boring @ 7.0 feet					
10.0						
12.5						
15.0						
17.5						
20.0						
22.5						
25.0						
27.5						
30.0						

SS-Driven Split Spoon
ST-Pressed Shelby Tube
CA-Continuous Flight Auger
RC-Rock Core
THD-Texas Highway Department Cone
CT-5' Continuous Sampler

ABBREVIATIONS AND SYMBOLS

HSA-Hollow Stem Augers
CFA-Continuous Flight Augers
DC-Driving Casing
MD-Mud Drilling

WATER LEVEL
▽ At Completion
▼ After Hours
● Water on Rods

■ Sample submitted to lab
Bottom Cap
Sand Pack
Bentonite Seal
Factory-Slotted Well Screen
Well Casing
Voloclay Grout Seal

CRA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-8219

RECORD OF SUBSURFACE EXPLORATION

Project No.: 15-92567
Project: DELAWARE STATION
LEA COUNTY, NEW MEXICO
-
Drilling Co: HI PLAINS DRILLING
Driller: B.S.
Drilling Method: AIR ROTARY

Well/Boring #: B-2
Depth of Boring: 12 FEET
Depth of Well: -
Length of Screen: -
Length of Casing: -
Logged By: F.W.R.

Date Drilled: 12/09/92
Diameter of Boring: 5 1/8 INCHES
Diameter of Screen: -
Diameter of Casing: -
Slot Size: -
Well Material: GROUT

DEPTH FEET	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	OVA (PPM)	WELL DESIGN	REMARKS
0	Red-brown silty SAND (SM)					
2.5		1	SS	<1		
5.0		2	SS	1	■	BENZENE <0.001 mg/kg BTEX=0.007 mg/kg TPH=16 mg/kg
7.5						
10.0	Pink calcareous SAND (caliche)	2	SS	<1	■	BENZENE <0.001 mg/kg BTEX=0.010 mg/kg TPH=13 mg/kg
12.5	Bottom of boring @ 12.0 feet					
15.0						
17.5						
20.0						
22.5						
25.0						
27.5						
30.0						

SS-Driven Split Spoon
ST-Pressed Shelby Tube
CA-Continuous Flight Auger
RC-Rock Core
THD-Texas Highway Department Cone
CT-5' Continuous Sampler

ABBREVIATIONS AND SYMBOLS

HSA-Hollow Stem Augers
CFA-Continuous Flight Augers
DC-Driving Casing
MD-Mud Drilling

WATER LEVEL
▽ At Completion
▼ After Hours
● Water on Rods

■ Sample submitted to lab
Bottom Cap
Sand Pack
Bentonite Seal
Factory-Slotted Well Screen
Well Casing
Voloclay Grout Seal

APPENDIX C
ANALYTICAL RESULTS

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 92-12-369

Approved for release by:

M. Scott Sample
S. Sample, Laboratory Director

Date: 12/23/92

Edward Fry
Edward Fry, Project Management

Date: 12/23/92

****SUMMARY REPORT*****

12/21/92

Company: Shell Pipe Line Corporation
Site: Lea County, NM
Project No: 15-92567.18
Project: Delaware Station
Sampled by: Cura

ANALYTICAL DATA
NOTE: ND - Not Detected

SPL ID	CLIENT ID	MATRIX	BENZENE	TOLUENE	ETHYLBENZ.	XYLENE	TPH-IR	TPH-GC	LEAD	MTBE
9212369-01	B-1 (1-3 ft)	SOIL	NDµg/Kg	2µg/Kg	NDµg/Kg	7µg/Kg	14mg/Kg			
9212369-02	B-1 (5-7 ft)	SOIL	NDµg/Kg	2µg/Kg	2µg/Kg	7µg/Kg	19mg/Kg			
9212369-03	B-2 (5-7 ft)	SOIL	NDµg/Kg	2µg/Kg	NDµg/Kg	5µg/Kg	16mg/Kg			
9212369-04	B-2 (10-12 ft)	SOIL	NDµg/Kg	7µg/Kg	NDµg/Kg	3µg/Kg	13mg/Kg			

BTEX - Method-5030/8020 [SW846]
TPH-IR - Mod. 418.1

Shari L. Grice

SPL, Inc., - Shari L. Grice

Certificate of Analysis No. 9212369-01

Shell Pipe Line Corporation
P.O. Box 2099
Houston, TX 77252-2099
ATTN: John Hite

P.O.# CAO-B-131201-GK
DATE: 12/22/92

PROJECT: Delaware Station
SITE: Lea County, NM
SAMPLED BY: Cura
SAMPLE ID: B-1 (1-3 ft.)

PROJECT NO: 15-92567.18
MATRIX: SOIL
DATE SAMPLED: 12/09/92 14:50:00
DATE RECEIVED: 12/15/92

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	0.0010 P	mg/Kg
ETHYLBENZENE	ND	0.0010 P	mg/Kg
TOLUENE	0.0020	0.0010 P	mg/Kg
TOTAL XYLENE	0.0070	0.0010 P	mg/Kg
TOTAL BTEX	0.009		mg/Kg
METHOD 5030/8020 ***			
Analyzed by: JZL			
Date: 12/17/92			
Petroleum extractables	14	10	mg/Kg
Mod. 418.1			
Analyzed by: AO			
Date: 12/17/92			

ND - Not detected. (P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Shari L. Grice
SPL, Inc., - Shari L. Grice

SPL®

Certificate of Analysis No. 9212369-02

Shell Pipe Line Corporation
P.O. Box 2099
Houston, TX 77252-2099
ATTN: John Hite

P.O.# CAO-B-131201-GK
DATE: 12/22/92

PROJECT: Delaware Station
SITE: Lea County, NM
SAMPLED BY: Cura
SAMPLE ID: B-1 (5-7 ft.)

PROJECT NO: 15-92567.18
MATRIX: SOIL
DATE SAMPLED: 12/09/92 14:55:00
DATE RECEIVED: 12/15/92

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	0.0010 P	mg/Kg
ETHYLBENZENE	0.0020	0.0010 P	mg/Kg
TOLUENE	0.0020	0.0010 P	mg/Kg
TOTAL XYLENE	0.0070	0.0010 P	mg/Kg
TOTAL BTEX	0.011		mg/Kg
METHOD 5030/8020 ***			
Analyzed by: JZL			
Date: 12/17/92			
Petroleum extractables	19	10	mg/Kg
Mod. 418.1			
Analyzed by: AO			
Date: 12/17/92			

ND - Not detected. (P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Shari L. Grice

SPL, Inc., - Shari L. Grice

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Certificate of Analysis No. 9212369-03

Shell Pipe Line Corporation
P.O. Box 2099
Houston, TX 77252-2099
ATTN: John Hite

P.O.# CAO-B-131201-GK
DATE: 12/22/92

PROJECT: Delaware Station
SITE: Lea County, NM
SAMPLED BY: Cura
SAMPLE ID: B-2 (5-7 ft.)

PROJECT NO: 15-92567.18
MATRIX: SOIL
DATE SAMPLED: 12/09/92 15:00:00
DATE RECEIVED: 12/15/92

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	0.0010 P	mg/Kg
ETHYLBENZENE	ND	0.0010 P	mg/Kg
TOLUENE	0.0020	0.0010 P	mg/Kg
TOTAL XYLENE	0.0050	0.0010 P	mg/Kg
TOTAL BTEX	0.007		mg/Kg
METHOD 5030/8020 ***			
Analyzed by: JZL			
Date: 12/17/92			
Petroleum extractables	16	10	mg/Kg
Mod. 418.1			
Analyzed by: AO			
Date: 12/17/92			

ND - Not detected. (P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Shari L. Grice

SPL, Inc., - Shari L. Grice

Certificate of Analysis No. 9212369-04

Shell Pipe Line Corporation
P.O. Box 2099
Houston, TX 77252-2099
ATTN: John Hite

P.O.# CAO-B-131201-GK
DATE: 12/22/92

PROJECT: Delaware Station
SITE: Lea County, NM
SAMPLED BY: Cura
SAMPLE ID: B-2 (10-12 ft.)

PROJECT NO: 15-92567.18
MATRIX: SOIL
DATE SAMPLED: 12/09/92 15:10:00
DATE RECEIVED: 12/15/92

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	0.0010 P	mg/Kg
ETHYLBENZENE	ND	0.0010 P	mg/Kg
TOLUENE	0.0070	0.0010 P	mg/Kg
TOTAL XYLENE	0.0030	0.0010 P	mg/Kg
TOTAL BTEX	0.010		mg/Kg
METHOD 5030/8020 ***			
Analyzed by: JZL			
Date: 12/17/92			
Petroleum extractables	13	10	mg/Kg
Mod. 418.1			
Analyzed by: AO			
Date: 12/18/92			

ND - Not detected. (P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Shari L. Grice

SPL, Inc., - Shari L. Grice

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** SPL Quality Control Report **
BTEX MATRIX SPIKE/MATRIX SPIKE DUPLICATE
Method 8020/602

SPL Sample ID: 9212345-29A **Reported on:** 12/22/92
Matrix: Soil **Analyzed on:** 12/17/92

This sample was randomly selected for use in the SPL quality control program. One in twenty samples is fortified, in duplicate, with a known concentration of the substance being analyzed.
The results are as follows:

---- **SPIKE ANALYSIS** -----

Compound	Blank Value	Spike Added µg/Kg	Original Sample Concentration µg/Kg	MS Concentration µg/Kg	MS % Rec#	QC Limits Range
BENZENE	ND	50	ND	51	102	39 - 150 %
TOLUENE	ND	50	ND	49	98	46 - 148 %
ETHYL_BENZENE	ND	50	ND	47	94	32 - 160 %
O XYLENE	ND	50	ND	44	88	32 - 160 %
M AND P XYLENE	ND	100	ND	91	91	32 - 160 %

---- **SPIKE DUPLICATE ANALYSIS** -----

Compound	Spike Added µg/Kg	MSD Concentration µg/Kg	MSD % Rec#	% RPD	RPD Limit	QC Rec Range
BENZENE	50	52	104	2	20	39 - 150 %
TOLUENE	50	48	96	2	20	46 - 148 %
ETHYL_BENZENE	50	48	96	2	20	32 - 160 %
O XYLENE	50	45	90	2	20	32 - 160 %
M AND P XYLENE	100	91	91	0	20	32 - 160 %

VARF921217212300

Cynthia Schreiner, QC Officer

** SPL QUALITY CONTROL REPORT **
TOTAL PETROLEUM HYDROCARBONS [TPH]

SPL sample Id: 9212368-4B
Matrix: SOIL

Reported on: 12/22/92
Analyzed on: 12/17/92

This sample was randomly selected for use in the SPL quality control program. One in ten samples is fortified with a known concentration of the substance being analyzed and one in ten samples is analyzed in duplicate. The result are as follows:

-- **SPIKE ANALYSIS** --

Sample Id	Blank Value	Spike Added mg/L	Original Sample Concentration mg/Kg	MS Concentration mg/Kg	MS % Rec
9212368-4B	ND	372	9	358	94

-- **SPIKE DUPLICATE ANALYSIS** --

Sample Id	Spike Added mg/L	MSD Concentration mg/Kg	MSD % Rec	% RPD
9212368-4B	372	357	94	0

SPL, Incorporated

Cynthia Schreiner, QC Officer

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING

CHAIN OF CUSTODY RECORD NO. 04858

Date: 12-12-92
Page 1 of 1

SHELL PIPELINE CORP

SITE ADDRESS: DeLAWARE Station
Lea County, New Mexico

WBS#: PROJ # 15-92567.18

CONSULTANT NAME & ADDRESS: CURA, Inc.
3001 N. Big Spring, STE 101, Midland, TX 79705

CONSULTANT CONTACT: F. Wesley Root

PHONE: 915-570-8408 FAX: 915-570-8409

SAMPLED BY: Frank Wesley Root

CHECK ONE BOX ONLY CT/DT

- QUARTERLY MONITORING ☐ 5461
- SITE INVESTIGATION ☒ 5441
- SOIL FOR DISPOSAL ☐ 5442
- WATER FOR DISPOSAL ☐ 5443
- AIR SAMPLER - SYS O+M ☐ 5452
- WATER SAMPLE - SYS O+M ☐ 5453
- OTHER _____ ☐

SAMPLE I.D.	DATE	TIME	COMP.	GRAB	MATRIX: H2O	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCl	HNO3	H2SO4	NONE	OTHER: ICE	NO. OF CONTAINERS	CONTAINER SIZE	ANALYSIS REQUEST: BTEX 602 ☐ / 8020 ☒ WITH MTBE ☐	BTEX/GAS HYDROCARBONS PID/FID ☐ WITH MTBE	VOL 624/PPL ☐ / 8240/TAL ☐ NBS (+15) ☐	PNA/PAH 8310 ☐ / 8100 ☐ 610 ☐	SEMI-VOL 625/PPL ☐ / 8270/TAL ☐ NBS (+25) ☐	TPH/IR 418.1 ☒ / SM503 ☐ ☐ ☐	TPH/GC 8015 Mod. GAS ☐ 8015 Mod DIESEL ☐	TCLP METALS ☐ VOL ☐ SEMI-VOL ☐ PEST ☐ HERB ☐	EP TOX METALS ☐ PESTICIDES ☐ HERBICIDES ☐	REACTIVITY ☐ CORROSIVITY ☐ IGNITABILITY ☐	OTHER	REMARKS
B-1 (1-3')	12-9-92	14:50		X		X								X	1	4oz	X					X						
B-1 (5-7')	12-9-92	14:55		X		X								X	1	4oz	X					X						
B-2 (5-7')	12-9-92	15:00		X		X								X	1	4oz	X					X						
B-2 (10-12')	12-9-92	15:10		X		X								X	1	4oz	X					X						

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
Frank Wesley Root	12-12-92	10:00		12/12/92	1445
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
	12/12/92	1600			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
				12/15/92	1330

BILL NO.: _____

LABORATORY: _____

SHELL CONTACT: Van Thompson PHONE: 713 241 3036 FAX: 713 241 1124

TURN AROUND TIME (CHECK ONE)

7 DAYS ☒ (NORMAL) 14 DAYS ☐

48 HOURS ☐ 4 ☐ OTHER ☐ _____

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN OF CUSTODY WITH INVOICE AND RESULTS

DISTRIBUTION: PINK Sampling Coordinator - WHITE & YELLOW Accompanies Shipment - WHITE Returned with Report

SPL HOUSTON ENVIRONMENTAL LABORATORY

SAMPLE LOGIN CHECKLIST

DATE: 12/15/94 TIME: 13:30 CLIENT NO. _____
LOT NO. _____ CONTRACT NO. _____

CLIENT SAMPLE NOS. _____

SPL SAMPLE NOS.: _____

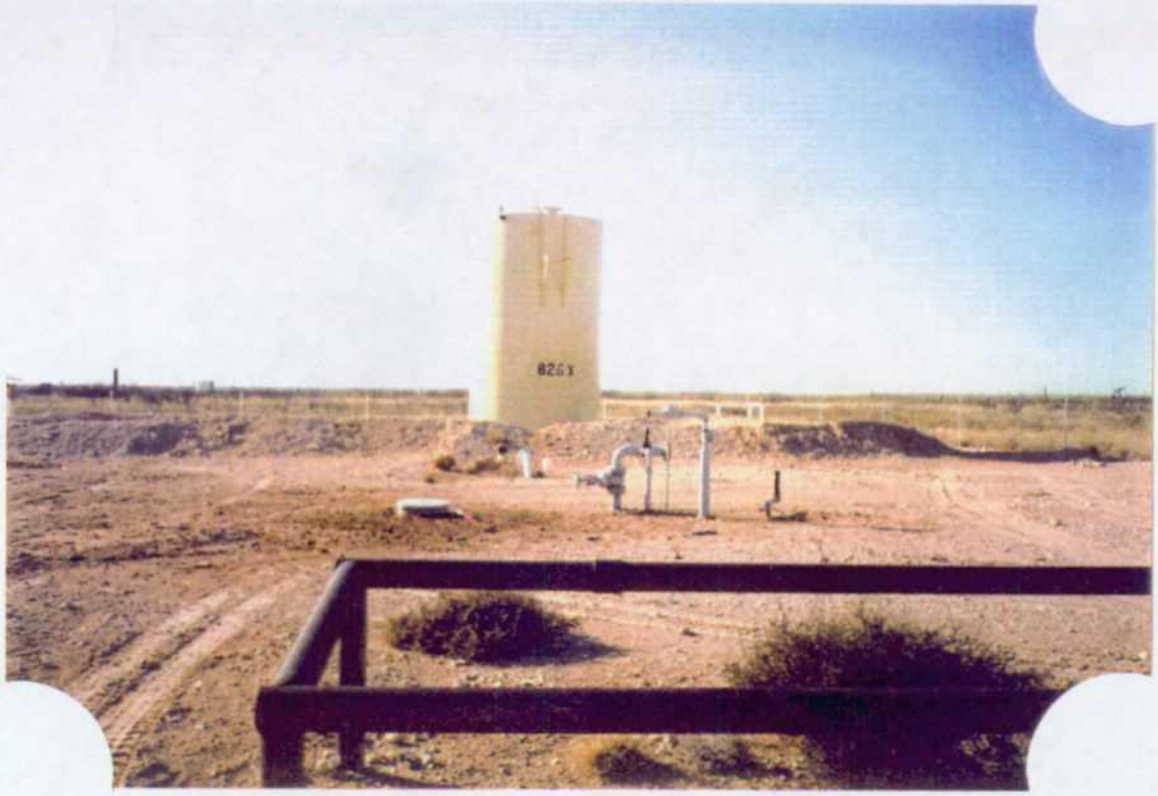
		YES	NO
1.	Is a Chain-of-Custody form present?	✓	
2.	Is the COC properly completed?	✓	
	If no, describe what is incomplete:		
	If no, has the client been contacted about it?		
	(Attach subsequent documentation from client about the situation)		
3.	Is airbill/packing list/bill of lading with shipment?	✓	
	If yes, ID#: VOA		
4.	Is a USEPA Traffic Report present?		✓
5.	Is a USEPA SAS Packing List present?		✓
6.	Are custody seals present on the package?		✓
	If yes, were they intact upon receipt?		✓
7.	Are all samples tagged or labeled?	✓	
	Do the sample tags/labels match the COC?	✓	
	If no, has the client been contacted about it?		
	(Attach subsequent documentation from client about the situation)		
8.	Do all shipping documents agree?		
	If no, describe what is in nonconformity:		

9. Condition/temperature of shipping container: Intact - 4°C
10. Condition/temperature of sample bottles: Good - 4°C
11. Sample Disposal?: SPL disposal _____ Return to client _____

NOTES (reference item number if applicable): _____

ATTEST: _____ DATE: 12/15/94
DELIVERED FOR RESOLUTION: REC'D _____ DATE: _____
RESOLVED: _____ DATE: _____

APPENDIX D
PHOTO-DOCUMENTATION



Photograph 1: View of Delaware Station looking north with sump in foreground.

8.0 QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

8.1 SAMPLING PROCEDURES

A strict Quality Assurance Plan was incorporated throughout all phases of the drilling and sampling operations. The sampling and drilling equipment was decontaminated by a high-pressure steam cleaner before the start of sampling operations and between the borings. The soil samples were collected with decontaminated stainless steel sampling trowels. The sampling equipment was cleaned between sample collections to eliminate the potential of cross-contamination between sampling stations. Groundwater samples were obtained with new disposable bailers after each monitor well was purged.

The soil and water samples were placed in glass jars and sample vials with teflon-lined lids and preserved at 4°C with zero head space in accordance with EPA requirements (EPA 600/4-82-029). A chain-of-custody (COC) that documents sample collection times and delivery times to the laboratory was completed for each set of samples. The COCs are included with the analytical results in the Appendices. Analyses were performed using EPA-recommended analytical methods on all samples.

CURA maintains the highest quality assurance standards with direct supervision of operations (sample handling and storage). Drilling operations were conducted using a licensed water well driller. CURA provides management oversight for laboratory procedures and analytical results and uses laboratories that maintain strict quality control, i.e., equipment calibration and standardization, EPA-recommended analytical methods, preparing spiked samples, and complete chains-of-custody.

9.0 SITE SAFETY PLAN

The sampling operations were performed at level D personal protection. All CURA personnel involved in on-site activities have completed the Hazardous Waste Field Operation training course (OSHA 29 CFR 1910.120). Applicable safety equipment was available on site to CURA personnel.

SITE SAFETY PLAN

Site Name: SPLC - Delaware Station

Site Address: 3 miles south-southwest of Eunice in Lea County, New Mexico

Site Owner: Shell Pipe Line Corporation

Contacts: John B. Hite (713) 241-1001

Work Description: Environmental site assessment activities: soil borings, soil sampling, and site mapping.

Proposed Date of Work: December 9, 1992

Work Team: Team Leader - Weldon Langley (Shell Pipe Line Corporation)
Site Safety Officer - F. Wesley Root (CURA, Inc.)
Team Member - Barry Simmons (Hi-Plains Drilling Company)
Team Member - Mike Torrez (Hi-Plains Drilling Company)

Plan prepared by: Greg C. Walterscheid

Reviewed by: Richard Wilson, PHD

EMERGENCY INFORMATION

Site Name: SPLC - Delaware Station

Site Address: 3 miles south-southwest of Eunice in Lea County, New Mexico

Site Owner: Shell Pipe Line Corporation

Telephone Numbers:

Ambulance Service: 911

Hospital: Lea Regional Hospital 505-392-6581

Norte Vista Medical Center 505-392-5571

Poison Control Center: 911

Police: 505-394-2112

Fire Department: 505-394-2111

Emergency Contacts

Company Health and Safety Officer: Dr. Richard Wilson
Work: (214) 620-7117
Home: (214) 241-5803

Project Manager: Greg C. Walterscheid

Work: 1-800-486-7117
Mobile Phone: 1-214-202-9320
Pager: 1-214-807-8154
Home: 1-214-317-0518

10.0 REFERENCES

Code of Federal Regulations, Title 40 §§ 280 and 281.

Dinwiddie, G. A., 1963. Municipal Water Supplies and Uses, Southeastern New Mexico. Technical Report 29A. New Mexico State Engineer, Santa Fe, New Mexico.

Groat, C. G., 1976. Geologic Atlas of Texas (Hobbs Sheet). Bureau of Economic Geology, The University of Texas at Austin. Austin, Texas.

Oil Conservation Division, Memorandum, December 21, 1992. Final Draft OCD Surface Impoundment Closure Guidelines. Energy, Minerals and Resources Department, Santa Fe, New Mexico.

Oil Conservation Division, Environmental Regulations, 1992. Energy, Minerals and Resources Department, Santa Fe, New Mexico.

Nicholson, Alexander, Jr., 1961. Geology and Ground-Water Conditions in Southern Lea County, New Mexico. United States Geological Survey, Ground-Water Report 6. New Mexico Bureau of Mines and Mineral Resources, Campus Station, Socorro, New Mexico.

Turner, M.T., et al., 1974. Soil Survey of Lea County, New Mexico. United States Department of Agriculture Soil Conservation Service, in cooperation with the New Mexico Agricultural Experiment Station. U.S. Publishing Office: Washington, D.C.

USGS Topographic Survey Map. Eunice, New Mexico, Quadrangle. 1969. Photorevised 1979.

Shell Oil Company

Two Shell Plaza
P. O. Box 2099
Houston, Texas 77252-2099

January 6, 1995

REGISTERED MAIL

William Olson
State of New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco St.
Santa Fe, New Mexico 87504

SUBJECT: DELAWARE STATION, LEA COUNTY, NEW MEXICO

Dear Mr. Olson,

Enclosed is Shell Pipe Line Corporation's final report on soil remediation at Delaware Station. The affected soils were remediated as proposed in Shell's letters of November 10, 1993 and June 20, 1994. Impacted soils were excavated, treated, and backfilled and not placed on the firewall. The remedial activities exceeded the conditions in your letter of August 8, 1994. I believe that, based upon the success of the remedial activities, the site can be closed and no further action required. If you do not concur with our conclusion, please let me know. If I do not hear from your office within 45 days, I will consider that you agree with our conclusion.

If you have any questions, please call me at 713-241-2961.

Sincerely,

Neal Stidham

cc: Paul Newman
EOTT Energy Corporation
Jerry Sexton-OCD Hobbs

CURA INC.
Environmental Consultants, Engineers & Scientists
2735 Villa Creek Drive • Building C • Suite 250 • Dallas, Texas 75234 • 214/620-7117 • FAX 620-8219

January 4, 1995

Mr. Neal D. Stidham
Environmental & Technical
Shell Oil Company
Two Shell Plaza, Room 1452
777 Walker Street
Houston, Texas 77002

RE: SOIL EXCAVATION AND REMEDIATION OPERATIONS
DELAWARE STATION
LEA COUNTY, NEW MEXICO

CURA PROJECT NO. 24-93674.4

Mr. Stidham:

CURA, Inc. (CURA) has completed delineation, excavation, and remediation operations at the above-referenced facility. The purpose of this investigation was to excavate the previously-identified hydrocarbon-affected soils, including any affected soils discovered during field activities and remediate the soils in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills, and Releases, dated August 13, 1993.

The site assessments previously provided to the NMOCD for the inactive Delaware Pump Station indicated hydrocarbon impacted soils in the vicinity of boring SB-1 (Figure 1, Appendix A). Depth to groundwater below ground surface is approximately 76 feet based on gauging and sampling operations at monitor well MW-1. Groundwater samples obtained from MW-1 recorded benzene, toluene, ethyl-benzene, xylenes (BTEX) and total petroleum hydrocarbon (TPH) levels less than the method detection limits of 0.001 ppm and 1 ppm, respectively.

SOIL EXCAVATION OPERATIONS

Between November 29, 1994 and December 13, 1994, CURA supervised excavation, soil shredding and mixing, confirmatory soil sampling, and backfill operations of the soils

previously identified in boring SB-1. The hydrocarbon impacted soils were located within the firewall of the inactive tank battery located on the western portion of the site (Figure 2, Appendix A). The firewall was breached and the inactive tank was moved to the northeast corner of the site to provide access to the impacted area.

Excavation operations at the impacted area (E-1) extended to a maximum depth of 8.5 feet, with hydrocarbon staining observed in the excavated soils from ground surface to an average depth of approximately 5.5 feet. The visibly stained area was approximately 35 feet wide and 50 feet long. Excavation E-1 extended to an average depth of 7.0 feet and measured approximately 38.0 feet wide by 61.0 feet long. Soils encountered during excavation operations consisted of 1 to 2 feet of brown sand overlying a 5 to 6-foot thick layer of reddish-brown calcareous sand. An indurated bed of light-brown to white caliche was encountered at a depth of 7 feet below ground surface.

Excavation operations generated approximately 850 cubic yards of loose soil. The soil was staged along the north, east, and west margins of the excavation pending remediation operations. During excavation operations composite soil samples were obtained from the walls and bottom of the excavations to verify the affected soils had been removed and the remaining hydrocarbon concentrations were in accordance with NMOCD guidelines.

Mr. Wayne Price, Environmental Engineer with the NMOCD Hobbs Office, was on site on December 8, 1994 to observe excavation and remediation operations. At Mr. Price's direction a grab sample from a 2-foot by 2-foot area of visible staining in the southwest corner of the caliche bottom of E-1 was collected for TPH analysis. The sample, obtained from a depth of 7 feet below ground surface, recorded a TPH concentration of 17,640 ppm. Additional samples obtained during excavation of the stained area recorded TPH levels of 2,700 ppm at a depth of 7.5 feet and 193 ppm at a depth of 8.5 feet. The analytical results and nature of the rock (indurated caliche) indicate the impacted area was limited in extent (approximately 2 feet by 2 feet by 1.5 feet deep).

Soil shredding operations were performed from December 1, 1994 to December 8,1994 to aerate and mix the hydrocarbon-affected soils previously identified during excavation operations. During shredding and mixing operations approximately 830 loose cubic yards of additional non-impacted material and granulated fertilizer (21% nitrogen, 12% nitrogen, and 24% sulfur) was blended with the hydrocarbon impacted soil to assist TPH reduction efforts and hydrocarbon degradation. The shredded soils were staged in approximately 40-cubic yard piles and monitored for TPH. Approximately 840 cubic yards of soil containing TPH concentrations less than 1,000 ppm and a volume weighted average of 335 ppm was used to backfill the excavation. The remaining soils containing a volume weighted average TPH concentration of 2,180 ppm were mixed with the near surface soils and spread over the

site in a 1 foot to 1.5-foot thick layer.

After spreading, composite samples of the mixed material were obtained to verify that the hydrocarbon concentrations were in accordance with NMOCD guidelines (Figure 3, Appendix A). Confirmatory sampling operations were conducted using soil analysis for TPH to aid in the determination of the hydrocarbon reduction achieved in the mixed soils.

SOIL SAMPLE ANALYTICAL RESULTS

OVA readings ranged from less than 1 ppm to 90 ppm in the soil samples obtained from excavation E-1. The composite samples of the excavated soil material after mixing recorded OVA readings ranging from less than 1 ppm to 2 ppm. Complete OVA readings are presented in Table 1, Appendix B.

TPH concentrations in the bottom and walls of the excavation recorded levels ranging from less than 10 parts per million (ppm) to 790 ppm. TPH concentrations in the soils used to backfill the excavation ranged from 150 ppm to 900 ppm with a volume weighted average of 335 ppm. TPH concentrations in the confirmatory samples obtained from the 1 foot to 1.5-foot layer of mixed soil spread on site ranged from 152 ppm to 336 ppm.

SOIL SAMPLING OPERATIONS

During this investigation, the sampled soils were field-screened with a flame ionization detector (FID) Century 128 OVA to aid in the determination of the lateral and vertical extent of the hydrocarbon-affected materials. Field screening was performed using soil vapor headspace procedures outlined in NMOCD's Guidelines for Remediation of Leaks, Spills, and Releases. Composite samples obtained from the bottom and walls of the excavations were analyzed for TPH using EPA Method 418.1.

A summary of the soil sample analytical results is presented in Table 1, Appendix B. The sample key is presented in Table 2. A summary of the soil sample analytical results from boring SB-1 is presented in Table 3. Laboratory reports and the chains-of-custody are included in Appendix C.

CONCLUSIONS

The soil sample analytical results indicate that the extent of hydrocarbon-affected soils previously identified in boring SB-1 have been defined and that the TPH concentrations in the impacted soils has been reduced to concentrations below 900 ppm.

CURA appreciates the opportunity to provide you with our professional consulting services. If you have any questions or concerns, please do not hesitate to contact us at (915) 570-8408.

Respectfully,
CURA, Inc.

F. Wesley Root
Environmental Geologist

Charles D. Harlan
Project Manager

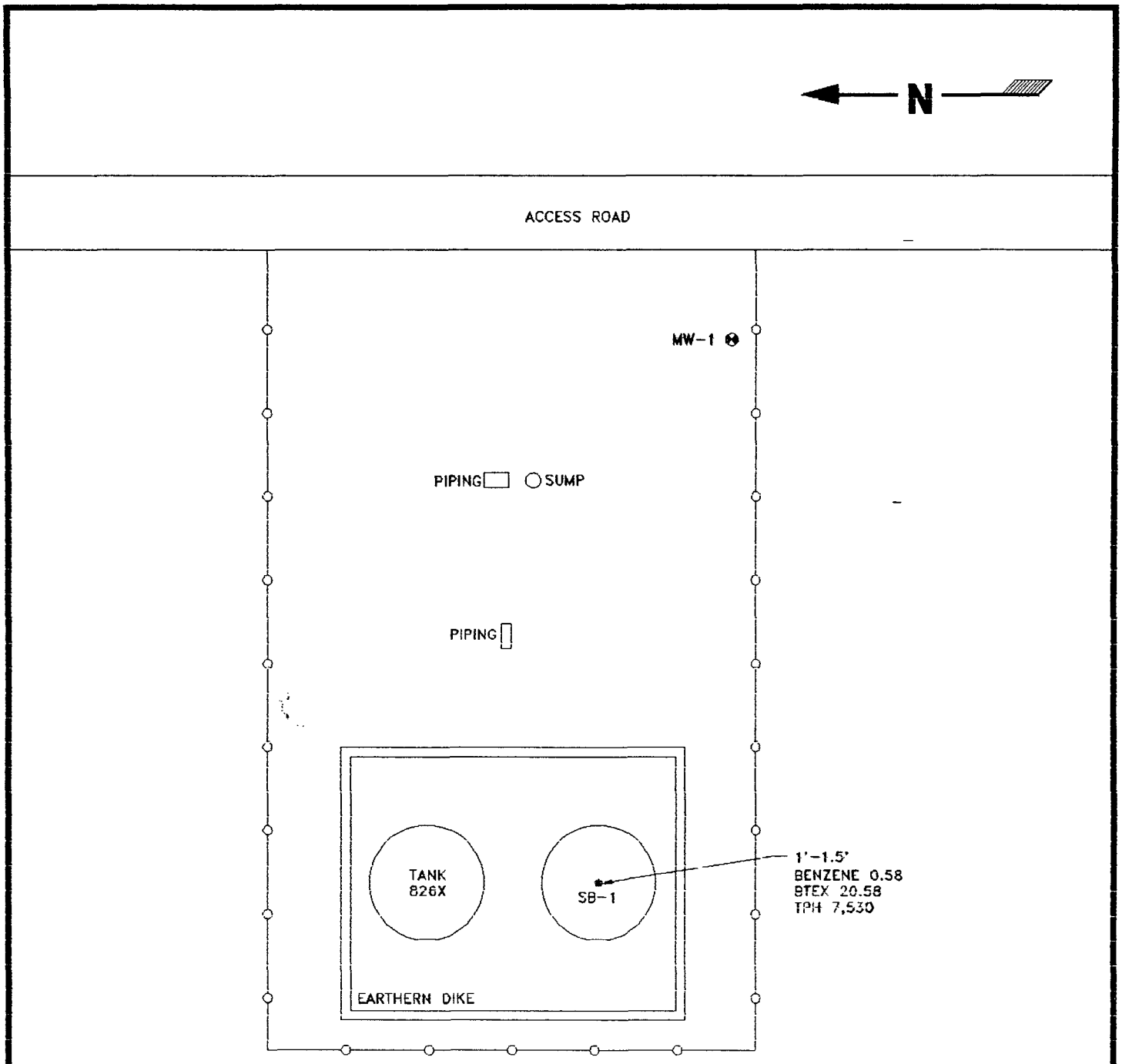
Richard G. Burbidge, Ph.D.
Technical Director/Vice President

FWR/chs

Enclosures

APPENDIX A

FIGURES



SOIL HYDROCARBON CONCENTRATION MAP

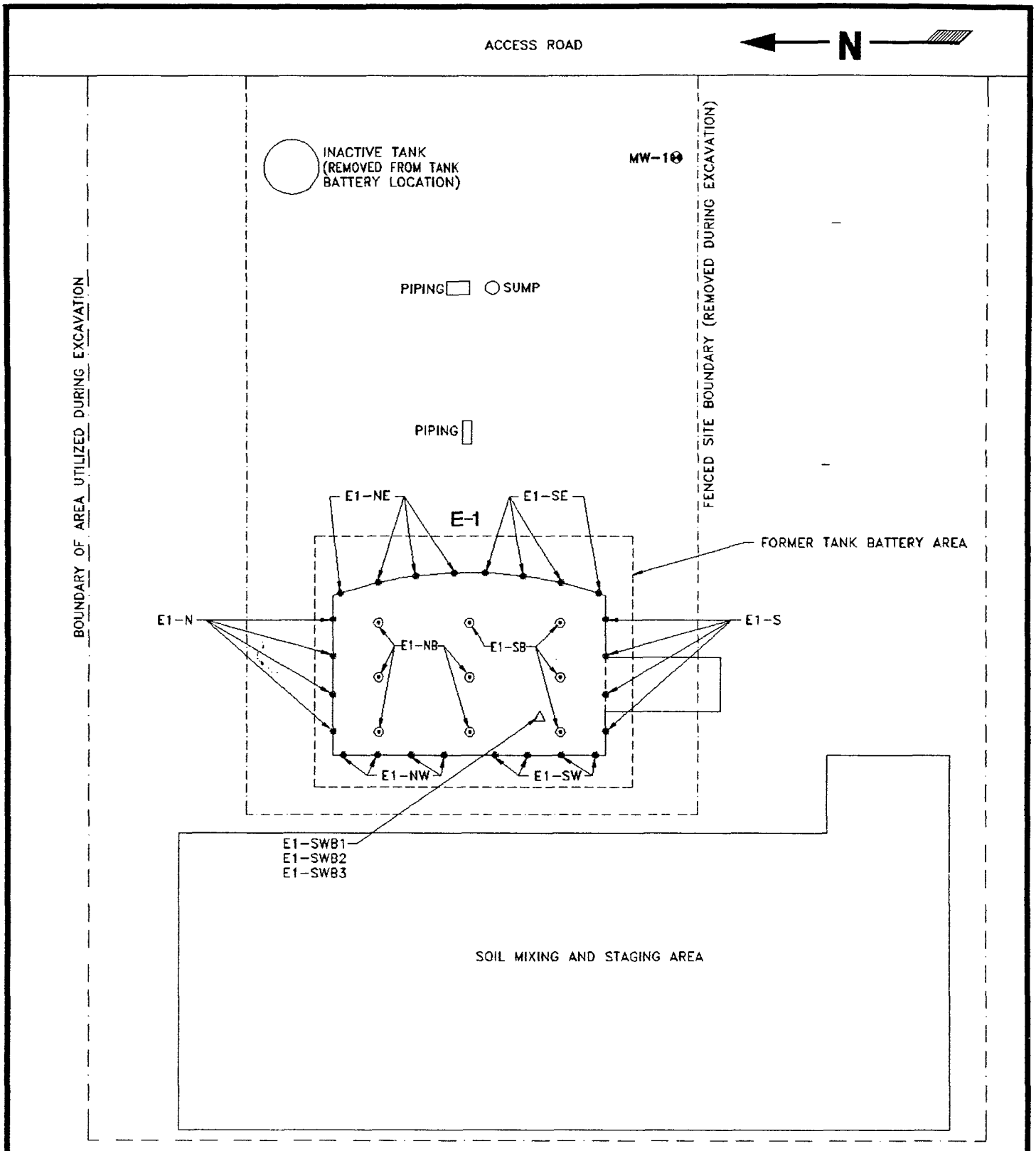
-BORING SB-1 WAS SAMPLED ON 06/23/93
-BTEX AND TPH CONCENTRATIONS IN mg/kg (ppm)

0 30'
APPROXIMATE SCALE

CRA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-6219

DELAWARE STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
DEC 1994	SEE ABOVE
PROJECT NO.	FIGURE NO.
15-93674	1



SOIL SAMPLE LOCATION MAP

EXCAVATION E-1

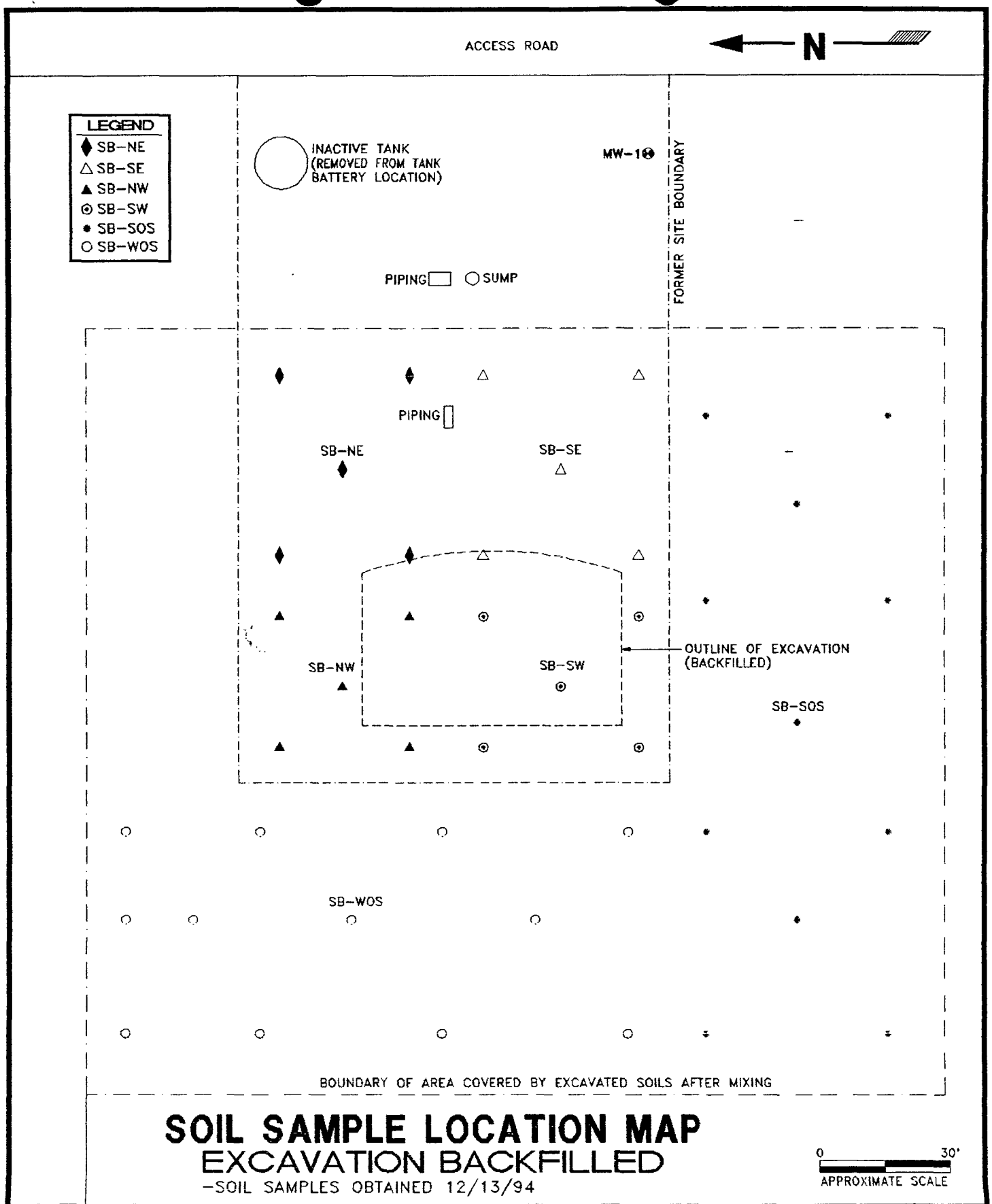
-SOIL SAMPLES OBTAINED 12/10/94 AND 12/07/94

CRA INC.

2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-6219

DELAWARE STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
DEC 1994	SEE ABOVE
PROJECT NO.	FIGURE NO.
15-93674	2



SOIL SAMPLE LOCATION MAP

EXCAVATION BACKFILLED

-SOIL SAMPLES OBTAINED 12/13/94

0 30'

APPROXIMATE SCALE

CURA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-8219

DELAWARE STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
DEC 1994	SEE ABOVE
PROJECT NO.	FIGURE NO.
15-93674	3

APPENDIX B

TABLES

TABLE 1
SOIL ANALYTICAL RESULTS
EXCAVATIONS AT DELAWARE STATION

Sample ID	Date	OVA (ppm)	TPH (ppm)
Excavation of former tank battery area on western portion of site (E-1)			
E1-N	12/01/94	<1	20
E1-NW	12/01/94	20	550
E1-SW	12/01/94	25	790
E1-S	12/07/94	<1	162
E1-NE	12/07/94	<1	100
E1-SE	12/01/94	<1	<10
E1-SB	12/01/94	25	26
E1-NB	12/01/94	55	50
E1-SWB1	12/08/94		17,640
E1-SWB2	12/08/94	40	2,700
E1-SWB3	12/08/94	20	193
Shredded and mixed soils spread over backfilled Excavation E-1			
SB-NE	12/13/94	<1	242
SB-SE	12/13/94	<1	152
SB-NW	12/13/94	2	294
SB-SW	12/13/94	<1	261
SB-SOS	12/13/94	<1	336
SB-WOS	12/13/94	<1	168

TPH results in mg/l (parts per million; ppm) with practical quantitation limits shown in Appendix D.
Analyses were conducted using EPA Method 418.1 (TPH) by SPL - Houston Laboratory or on site by Allstate Services.

TABLE 2
SAMPLE KEY
EXCAVATION SAMPLES FROM DELAWARE STATION

SAMPLE ID	DESCRIPTION
Excavation of former tank battery area on western portion of site (E-1)	
E1-N	Composite sample of the north wall of E-1
E1-NW	Composite sample of the north half of the west wall of E-1
E1-SW	Composite sample of the south half of the west wall of E-1
E1-NE	Composite sample of the north half of the east wall of E-1
E1-SE	Composite sample of the south half of the east wall of E-1
E1-S	Composite sample of the south wall of E-1
E1-NB	Composite sample of the north half of the bottom of E-1 at a depth of 7.0 feet
E1-SB	Composite sample of the south half of the bottom of E-1 at a depth of 7.0 feet
E1-SWB1	Sample of an area of staining in the southwest corner of E-1 at a depth of 7.0 feet
E1-SWB2	Sample of area in the southwest corner of E-1 at a depth of 7.5 feet
E1-SWB1	Sample of area in the southwest corner of E-1 at a depth of 8.5 feet
Shredded and mixed soils spread over backfilled excavation E-1	
SB-NE	Composite sample of the northeast quarter of site (depth; 0.0 feet to 1.5 feet)
SB-SE	Composite sample of the southeast quarter of site (depth; 0.0 feet to 1.5 feet)
SB-NW	Composite sample of the northwest quarter of site (depth; 0.0 feet to 1.5 feet)
SB-SW	Composite sample of the southwest quarter of site (depth; 0.0 feet to 1.5 feet)
SB-SOS	Composite sample of southern off site area (depth; 0.0 feet to 1.5 feet)
SB-WOS	Composite sample of western off site area (depth; 0.0 feet to 1.5 feet)

TABLE 3
SOIL SAMPLE ANALYTICAL RESULTS
BORINGS AT DELAWARE STATION
Soil Samples Obtained on June 23, 1993

Hand Boring	Sample Interval (feet)	OVA Reading	Benzene	Toluene	Ethyl-benzene	Xylenes	Total BTEX	TPH
SB-1	1.0 - 1.5	>1000	0.58	<0.16	5.000	15.000	20.580	7,530

BTEX and TPH results in mg/kg (parts per million; ppm).
Information obtained from Weston's Environmental Assessment (report dated July 20, 1993).

APPENDIX C

SOIL ANALYSIS

AND

CHAIN-OF-CUSTODY

ALLSTATE SERVICES
P.O. Box 11322
Midland, Texas 79702
Office: (915) 682-3547
FAX: (915) 682-4182

Company: CURA, Inc.
Site: Delaware Station
Shell Pipe Line Corp
Project Number: 15-93674.4

Sample ID	Date	Time	Sampled By	TPH/IR (ppm)
SB-NE	12-13-94	16:40	F. Wesley Root	242
SB-SE	12-13-94	16:55	F. Wesley Root	152
SB-NW	12-13-94	17:10	F. Wesley Root	294
SB-SW	12-13-94	17:30	F. Wesley Root	261
SB-SOS	12-13-94	17:50	F. Wesley Root	336
SB-WOS	12-13-94	18:10	F. Wesley Root	168

Relinquished by: (signature)	Date:	Time:	Received by: (signature)	Date:	Time:
F. Wesley Root	12-15-94	17:10		12-15-94	17:15

Analyzed by:
K. C. Offield
Allstate Services
Ref: EPA Method 418.1

ALLSTATE SERVICES
P.O. Box 11322
Midland, Texas 79702
Office: (915) 682-3547
FAX: (915) 682-4182

Company: CURA, Inc.
Site: Delaware Station
Shell Pipe Line Corp
Project Number: 15-93674.4

Sample ID	Date	Time	Sampled By	TPH/IR (ppm)
E1-S	12-7-94	16:30	F. Wesley Root	- 162
E1-NE	12-7-94	16:45	F. Wesley Root	100

Relinquished by: (signature)	Date:	Time:	Received by: (signature)	Date:	Time:
F. Wesley Root	12-7-94	16:45		12-7-94	16:52

Analyzed by:
K. C. Offield
Allstate Services

Ref: EPA Method 418.1

ALLSTATE SERVICES
P.O. Box 11322
Midland, Texas 79702
Office: (915) 682-3547
FAX: (915) 682-4182

Company: CURA, Inc.
Site: Delaware Station
Shell Pipe Line Corp
Project Number: 15-93674.4

Sample ID	Date	Time	Sampled By	TPH/IR (ppm)
E1-SWB1	12-8-94	10:45	F. Wesley Root	17,640
E1-SWB2	12-8-94	14:45	F. Wesley Root	2,700
E1-SWB 3	12-8-94	16:10	F. Wesley Root	193

Relinquished by: (signature)	Date:	Time:	Received by: (signature)	Date:	Time:
F. Wesley Root	12-8-94	16:10		12-8-94	16:15

Analyzed by:
K. C. Offield
Allstate Services
Ref: EPA Method 418.1

HOUSTON LABORATORY
8880 INTERCHANGE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 94-12-130

Approved for release by:

Date: 12/5/94

Brent Barron, Project Manager

Date: 12/5/94

S. Sample, Laboratory Director

Certificate of Analysis No. H9-9412130-01

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neal Stidham

P.O.#
MESA-CAO-B-131201-PX-4204-NS
DATE: 12/05/94

PROJECT: Delaware Station
SITE: Lea County, NM
SAMPLED BY: CURA
SAMPLE ID: E1-N

PROJECT NO: 15-93674
MATRIX: SOIL
DATE SAMPLED: 12/01/94 16:00:00
DATE RECEIVED: 12/02/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: DB Date: 12/03/94	20	10	mg/Kg

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Certificate of Analysis No. H9-9412130-03

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neal Stidham

P.O.#
MESA-CAO-B-131201-PX-4204-NS
DATE: 12/05/94

PROJECT: Delaware Station
SITE: Lea County, NM
SAMPLED BY: CURA
SAMPLE ID: E1-NW

PROJECT NO: 15-93674
MATRIX: SOIL
DATE SAMPLED: 12/01/94 16:25:00
DATE RECEIVED: 12/02/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: DB Date: 12/03/94	550	10	mg/Kg

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Certificate of Analysis No. H9-9412130-02

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neal Stidham

P.O.#
MESA-CAO-B-131201-PX-4204-NS
DATE: 12/05/94

PROJECT: Delaware Station
SITE: Lea County, NM
SAMPLED BY: CURA
SAMPLE ID: E1-SW

PROJECT NO: 15-93674
MATRIX: SOIL
DATE SAMPLED: 12/01/94 16:15:00
DATE RECEIVED: 12/02/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: DB Date: 12/03/94	790	10	mg/Kg

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Certificate of Analysis No. H9-9412130-06

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neal Stidham

P.O.# MESA-CAO-B-131201-PX-4204-NS
DATE: 12/05/94

PROJECT: Delaware Station
SITE: Lea County, NM
SAMPLED BY: CURA
SAMPLE ID: E E1-SE FWR

PROJECT NO: 15-93674
MATRIX: SOIL
DATE SAMPLED: 12/01/94 17:00:00
DATE RECEIVED: 12/02/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: DB Date: 12/03/94	ND	10	mg/Kg

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Certificate of Analysis No. H9-9412130-04

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neal Stidham

P.O.#
MESA-CAO-B-131201-PX-4204-NS
DATE: 12/05/94

PROJECT: Delaware Station
SITE: Lea County, NM
SAMPLED BY: CURA
SAMPLE ID: E1-SB

PROJECT NO: 15-93674
MATRIX: SOIL
DATE SAMPLED: 12/01/94 16:35:00
DATE RECEIVED: 12/02/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: DB Date: 12/03/94	26	10	mg/Kg

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Certificate of Analysis No. H9-9412130-05

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neal Stidham

P.O.#
MESA-CAO-B-131201-PX-4204-NS
DATE: 12/05/94

PROJECT: Delaware Station
SITE: Lea County, NM
SAMPLED BY: CURA
SAMPLE ID: NB

PROJECT NO: 15-93674
MATRIX: SOIL
DATE SAMPLED: 12/01/94 16:45:00
DATE RECEIVED: 12/02/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: DB Date: 12/03/94	50	10	mg/Kg

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL DOCUMENTATION

** SPL QUALITY CONTROL REPORT **
TOTAL PETROLEUM HYDROCARBONS (TPH)

SPL sample Id: 9412085-2A **Reported on:** 12/05/94
Matrix: SOIL **Analyzed on:** 12/04/94

This sample was randomly selected for use in the SPL quality control program. One in ten samples is fortified with a known concentration of the substance being analyzed and one in ten samples is analyzed in duplicate. The result are as follows:

-- SPIKE ANALYSIS --

Sample Id	Blank Value	Spike Added mg/L	Original Sample Concentration mg/Kg	MS Concentration mg/Kg	MS % Rec
9412085-2A	ND	201	19	202	91

-- SPIKE DUPLICATE ANALYSIS --

Sample Id	Spike Added mg/L	MSD Concentration mg/Kg	MSD % Rec	% RPD
9412085-2A	201	204	92	1

SPL, Incorporated

Idelis Williams, QC Officer

CHAIN OF CUSTODY

AND

SAMPLE RECEIPT CHECKLIST

94VG45U 211

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING

CHAIN OF CUSTODY RECORD NO. H 10289

Date: 12-1-94
Page 1 of 1

SITE ADDRESS: Shell Pipeline Corporation Delaware Station
Lea County, New Mexico

WIC #: Project # 15-73674

CONSULTANT NAME & ADDRESS: CURA Inc.
731 W. Wadley, Bldg, Ste 200, Midland, TX 79705

CONSULTANT CONTACT: F. Wesley Root

PHONE: 915-570-8408 FAX: 915-570-8409

SAMPLED BY: F. Wesley Root

CHECK ONE BOX ONLY CT/DT

- QUARTERLY MONITORING ☐ 5461
- SITE INVESTIGATION ☐ 5441
- SOIL FOR DISPOSAL ☐ 5442
- WATER FOR DISPOSAL ☐ 5443
- AIR SAMPLER - SYS O+M ☐ 5452
- WATER SAMPLE - SYS O+M ☐ 5453
- OTHER _____ ☐

SAMPLE I.D.	DATE	TIME	COMP.	GRAB	MATRIX: H2O	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCl	HNO3	H2SO4	NONE	OTHER	NO. OF CONTAINERS	CONTAINER SIZE	BTEX 602 ☐ 8020 ☐ WITH MTBE ☐	BTEX/GAS HYDROCARBONS PID/FID ☐ WITH MTBE	VOL 624/PPL ☐ 8240/TAL ☐ NBS (+15) ☐	PNA/PAH 8310 ☐ 8100 ☐ 610 ☐	SEMI - VOL 625/PPL ☐ 8270/TAL ☐ NBS (+25) ☐	TPH/IR 418.1 ☐ SM503 ☐ ☐ ☐	TPH/GC 8015 Mod GAS ☐ 8015 Mod DIESEL ☐	TCLP METALS ☐ VOL ☐ SEMI-VOL ☐ PEST ☐ HERB ☐	EP TOX METALS ☐ PESTICIDES ☐ HERBICIDES ☐	REACTIVITY ☐ CORROSIVITY ☐ IGNITABILITY ☐	OTHER	REMARKS
E1-N	12-1-94	16:00	V			V								ICE	1	4oz						V						24 hr Rush
E1-SW	12-1-94	16:15	V			V								ICE	1	4oz						V						"
E1-NW	12-1-94	16:25	V			V								ICE	1	4oz						V						"
E1-SB	12-1-94	16:35	V			V								ICE	1	4oz						V						"
E1-NB	12-1-94	16:45	V			V								ICE	1	4oz						V						"
E1-E	12-1-94	17:00	V			V								ICE	1	4oz						V						"
SRD-1	12-1-94	17:30	V			V								ICE	1	4oz						V						"

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
F. Wesley Root	12-1-94	18:00			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

BILL NO.: _____
LABORATORY: SPL - Houston
SHELL CONTACT: Neal Stidham PHONE: _____ FAX: _____

TURN AROUND TIME (CHECK ONE)
7 DAYS ☐ (NORMAL) 14 DAYS ☐
48 HOURS ☐ OTHER ☐ 24 hr Turn per SPLC contract

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN OF CUSTODY WITH INVOICE AND RESULTS

DISTRIBUTION: PINK ... WHITE ... WHITE Returned with Report

APPENDIX D

QUALITY ASSURANCE/QUALITY CONTROL

SAFETY PLAN, AND LIMITATIONS

QUALITY ASSURANCE/QUALITY CONTROL

A strict Quality Assurance Plan was incorporated throughout all phases of the on-site operations and sampling procedures. Soil or solid material samples were collected using new disposable or properly decontaminated reusable stainless steel equipment. Water or liquid samples were collected with new disposable bailers or decontaminated pump equipment. All non-reusable equipment was disposed of and reusable equipment was decontaminated between sampling stations to eliminate the potential of cross-contamination. The water samples were transferred from the bailers into airtight septum-sealed 40-ml glass VOA vials, one-liter amber glass jars with Teflon-lined lids, or other sample containers appropriate for the required analyses.

The samples were sealed with QA/QC seals, preserved with acid (if required), and maintained at 4°C in accordance with Environmental Protection Agency (EPA) requirements (EPA 600/4-82-029) for shipment to the laboratory. A chain-of-custody (COC) which documents sample collection times and delivery times to the laboratory was completed for each set of samples. The COC is included with the analytical results in the Appendix.

CURA utilizes laboratories that maintain strict quality controls, i.e. equipment calibration and standardization, appropriate analytical methods, preparation of quality control samples, and complete chains-of-custody. Analyses were performed on all samples using the EPA-, state-, or local agency-directed methods. The maximum recommended holding times were not exceeded unless noted in the text.

SAFETY PLAN

The sampling operations were performed at level D personal protection. CURA personnel involved in on-site activities have completed the Occupational Safety and health for Hazardous Waste Field Operation training course (OSHA 29 CFR 1910.120). Applicable safety equipment was on site to CURA personnel.

LIMITATIONS

It should be noted that all subsurface investigations are inherently limited in the sense that conclusions are drawn and recommendations are developed from samples which depict subsurface conditions at representative locations over relatively short periods of time. Subsurface conditions elsewhere may differ from those at the sampling locations. In addition, subsurface conditions at sampling locations may vary over longer periods of time than can be observed in a study of this type. The passage of time, manifestation of latent conditions, or occurrence of future events may require further site exploration, data collection and analysis, and reevaluation of the findings, observations, conclusions, and recommendation expressed in this report.

cc: BILL OLSON

STATE OF NEW MEXICO
NMOCD District I

INTER-OFFICE MEMO

To file: Shell Delaware Crude Station

Date: December 8, 1994
Time: 9:30 am

Telephone call:____ Meeting:___ Other:_X___Site Visit

Person called or attending:

Wes Root - Cura
Randy Offield - Allstate Services
Wayne Price - NMOCD

REFERENCE: Site Remediation

Subject: On site Inspection of activities

Comments:

Progress as of this date:

The area where the old crude storage tank sat has been excavated down to approximately 7' deep. The excavated area is approximately 20' x 50 ' in size. The soil is being treated with a soil shredder device and diluted with clean soil. The treated soil is less than 1000 ppm TPH.

There is a monitor well on site. Depth to ground water is 76'. Distance from MW to pit is about 45'.

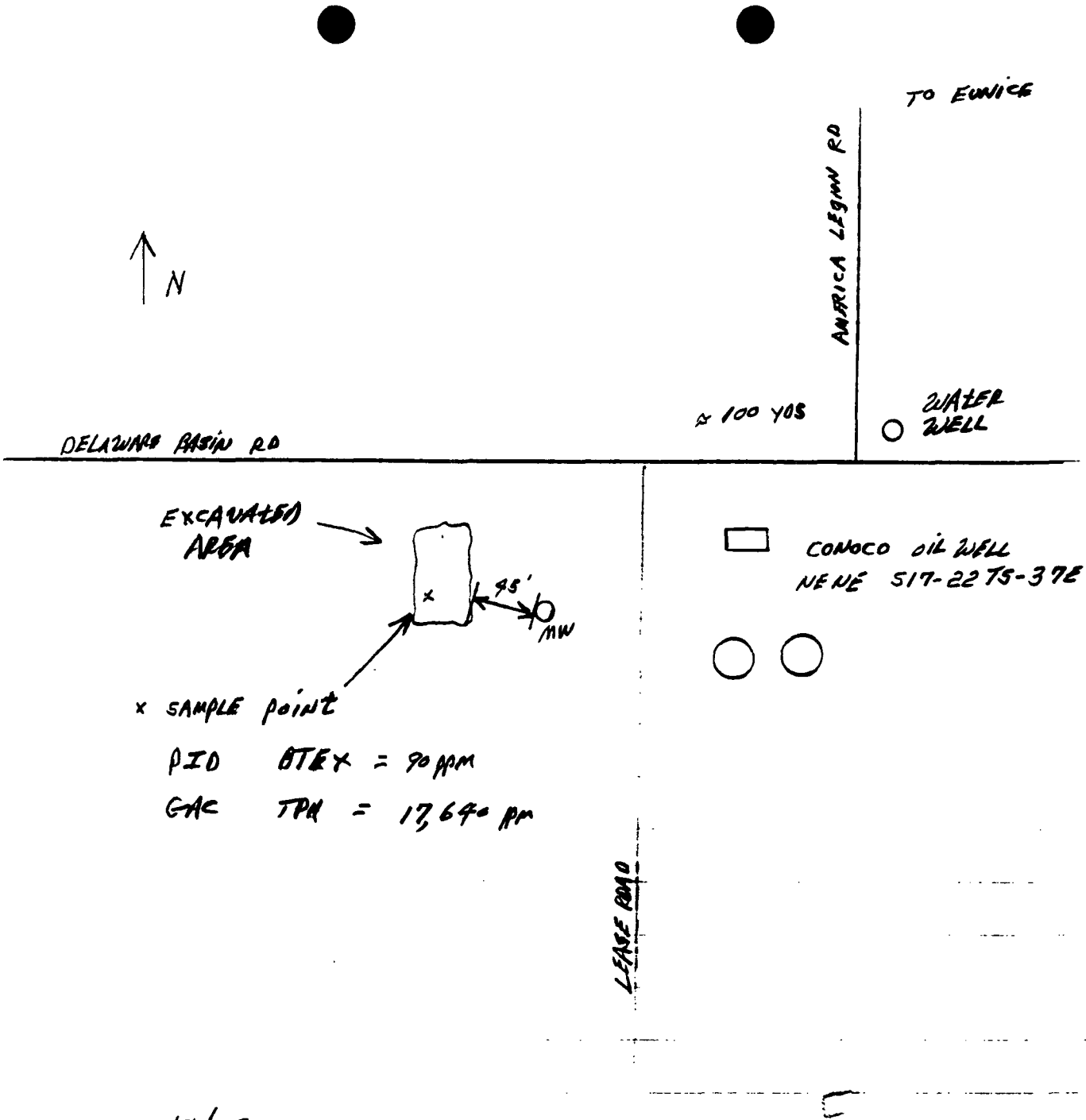
Took a sample of soil from the bottom of the excavated area. The following results were obtained using field methods.

PID BTEX 90 ppm
GAC TPH 17,640 ppm

Observed that hole was excavated down to the top of the caliche. Visual observations indicate some small spots of contamination exist in the top of the caliche. The sample taken above was worst case. These small spots appear to be stringers in the caliche where the contamination migrated downward.

Took photos.- See attached sketch

Wayne Price
NMOCD Environmental Engineer-District I



12/8/94

SHELL DELAWARE CRUDE St.

PLOT PLAN

Shell Oil Company

Two Shell Plaza
P. O. Box 2099
Houston, Texas 77252-2099

November 22, 1994

William Olson
State of New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco St.
Santa Fe, New Mexico 87504

SUBJECT: HUGH STATION, DELAWARE STATION, AND ANDERSON RANCH STATION, LEA COUNTY NEW MEXICO, SOIL REMEDIATION

Dear Mr. Olson,

Shell Oil Company plans to conduct the soil excavation and remediation at the above locations according to the following schedule:

Hugh Station- start in the afternoon on Monday November 28,

Delaware Station- start in the morning of Wednesday November 30,

Anderson Ranch- start in the morning of December 5

Should something happen to alter this schedule I will let you know immediately.

If you have any questions, please do not hesitate to call me at 713-241-2961.

Sincerely,

Neal Stidham

CC: Paul Newman
EOTT Energy Corp.

Jerry Sexton
OCD-Hobbs

Shell Oil Company

Two Shell Plaza
P. O. Box 2099
Houston, Texas 77252-2099

December 19, 1994

William Olson
State of New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco St.
Santa Fe, New Mexico 87504

SUBJECT: HUGH STATION, ANDERSON RANCH, DELAWARE STATION, AND DUBLIN STATION REPORTS

Dear Mr. Olson,

I respectfully request a delay until January 12, 1995 to submit the activity reports for the above referenced stations. The work at these stations, as discussed in previous letters, has been completed. However the delay in finalizing the graphics and reproduction will preclude me from submitting the reports by December 20, as I had planned.

If you have any questions, please call me at 713-241-2961.

Sincerely,

Neal Stidham

cc: Paul Newman
EOTT Energy Corp.

12/30/94
Verbal Approval
Will Olson

Shell Oil Company

Two Shell Plaza
P. O. Box 2099
Houston, Texas 77252-2099

November 22, 1994

William Olson
State of New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco St.
Santa Fe, New Mexico 87504

SUBJECT: HUGH STATION, DELAWARE STATION, AND ANDERSON RANCH STATION, LEA COUNTY NEW MEXICO, SOIL REMEDIATION

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Should something happen to alter this schedule I will let you know immediately.

If you have any questions, please do not hesitate to call me at 713-241-2961.

Sincerely,

Neal Stidham

CC: Paul Newman
EOTT Energy Corp.

Jerry Sexton
OCD-Hobbs

Shell Oil Company

Two Shell Plaza
P. O. Box 2099
Houston, Texas 77252-2099

September 28, 1994

Mr. William Olson
State of New Mexico Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBJECT: REQUEST FOR EXTENSION, ANDERSON RANCH, DELAWARE STATION, DUBLIN STATION

Dear Mr. Olson,

By way of this letter I am requesting an extension of the times specified in your letters of June 6, 1994 (Anderson Ranch Station); July 13, 1994 (Dublin Station); and August 8, 1994 (Delaware Station) to file a final report for either the landfarming activities or the actual construction specifics for the Dublin Soil Vapor Extraction system. The final design specifications for the SVE system are being completed and I should be able to provide them within 30 days. The request for delay on the landfarming activity is to allow me to obtain approval of the landfarming plans for Hugh and Eunice Stations. Upon approval of these plans I will be able to maximize the amount of work in one trip with a contractor, as opposed to making multiple trips.

If you have any questions please call me at 713-241-2961.

Sincerely,

Neal Stidham

Neal Stidham

cc: Mr. Paul Newman
EOTT Energy Corporation

Verbally approved extension to Dec. 20, 1994
Will Olson
10/6/94

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

August 8, 1994

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P-111-334-151

Mr. Neal Stidham
Shell Pipe Line Corporation
Two Shell Plaza
P.O. Box 2648
Houston, Texas 77252-2648

RE: SITE ASSESSMENT AND CLOSURE PLAN
SHELL DELAWARE CRUDE STATION
LEA COUNTY, NEW MEXICO

Dear Mr. Stidham:

The New Mexico Oil Conservation Division (OCD) has completed a review of the following documents submitted by the Shell Oil Company:

- November 11, 1993 "GENERAL LANDFARMING PROCEDURES FOR LOCATIONS REQUIRING ACTION".
- November 10, 1993 "FINAL SITE ASSESSMENT AND CLOSURE PLAN, DELAWARE STATION (INACTIVE), LEA COUNTY, NEW MEXICO".
- October 25, 1993 "PHASE III SUBSURFACE INVESTIGATION, DELAWARE STATION, LEA COUNTY NEW MEXICO, CURA PROJECT NO.15-93674.3".
- September 10, 1993 "SITE ASSESSMENT, DELAWARE STATION (INACTIVE), LEA COUNTY, NEW MEXICO".
- August 1993 "FINAL REPORT ENVIRONMENTAL DUE DILIGENCE ASSESSMENT, NEW MEXICO SWEET SYSTEM AND NEW MEXICO SOUR SYSTEM".
- January 14, 1993 "PRELIMINARY SITE ASSESSMENT, DELAWARE STATION, LEA COUNTY, NEW MEXICO, CURA PROJECT NO.15-92567.18".
- June 20, 1994 "DELAWARE STATION".

The site assessment and proposed remedial actions for the Delaware Crude Station, which are contained in the above referenced documents, are approved with the following conditions:

1. Shell will document the final contaminant concentrations remaining in the soil upon completion of excavation of contaminated soils Samples will be taken from the bottom and side walls of the excavation upon completion to confirm that the remedial action conforms with the recommended remediation levels as contained in OCD's "GUIDELINES FOR REMEDIATION OF LEAKS SPILLS AND RELEASES".

2. Soils in excess of the OCD's recommended remediation levels for the site will not be placed on the fire walls.

3. Shell will submit a final report on the closure activities to the OCD by October 1, 1994. The report will include a description of the closure activities, the volume of soils excavated and the results of all soil sampling. A copy of this report will also be provided to the OCD Hobbs District Office.

4. Shell will notify the OCD at least 72 hours in advance of all scheduled activities such that the OCD may have the opportunity to witness the events and/or split samples.

Please be advised that OCD approval does not relieve Shell of liability should the closure activities fail to adequately remediate contaminants related to Shell's activities. In addition, OCD approval does not relieve Shell of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any questions, please contact me at (505) 827-5885.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

xc: Jerry Sexton, OCD Hobbs District Office
Wayne Price, OCD Hobbs Office

P 111 334 151

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

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Street and No.	
P.O., State and ZIP Code	
Postage	$
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Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	

PS Form **3800**, June 1991

Fold at line over top of envelope to the right of the return address

Shell Pipe Line Corporation

Two Shell Plaza
P. O. Box 2648
Houston, Texas 77252-2648

June 20, 1994

Mr. William Olson
State of New Mexico Oil Conservation Division
Environmental Bureau
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBJECT: DELAWARE STATION

Dear Mr. Olson:

The following is in response to the comments in your letter to Shell Pipe Line Corporation of November 30, 1993, regarding Delaware Station. I sincerely apologize for my delay in responding.

Comment 1 - Samples designated as SB-1A and SB-1B (duplicate) were collected from the same location and depth as SB-01, June 1993, and were analyzed for extractable benzene. The results (enclosed), <.001 mg/L benzene and 0.001 mg/L benzene, are below the thresholds for hazardous waste.

Comment 2 - The impacted area around SB-1 is an old release. Our records do not show any releases on the station in the past five years. The contaminated soil will be removed and either spread on the fire walls and clean soil placed in the excavation or it will be mixed with clean soil and backfilled. The soil will be mixed or tilled to obtain a TPH level of 5,000 ppm or less and a Benzene/BTEX level not exceeding 10/50ppm or a field headspace measurement of 200 ppm Total Organic Vapor.

If you have any questions, please call me at 713-241-2961.

Sincerely,

Neal Stidham

Enclosure

cc: Mr. Paul Newman
EOTT Energy Corporation

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 94-03845

Approved for release by:

W. Scott Sample Date: 4/7/94

S. Sample, Laboratory Director

Barbara Martinez Date: 4/7/94

Barbara Martinez, Client Services Representative

CASE NARRATIVE

QUALITY CONTROL RESULTS SUMMARY

WORK ORDER NO(S).: 9403845

Soil sample "SB-1A (1.0-1.5')" (SPL# 9403845-01B) was analyzed for volatile organics by SW-846 method 8240. The surrogate Bromofluorobenzene was above the QC acceptance limits. Upon reanalysis of the sample, the surrogate recovery was still above the QC acceptance limits. Therefore, the reanalysis confirmed matrix interferences.

Lan Le
GC/MS Supervisor

Certificate of Analysis No. 9403845-01

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neil Stidham

P.O.# NSX3-94
DATE: 04/07/94

PROJECT: Delaware Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA, Inc.
SAMPLE ID: SB-1A (1'-1.5')

PROJECT NO: 15-9367400 C.3
MATRIX: SOIL
DATE SAMPLED: 03/22/94 15:45:00
DATE RECEIVED: 03/24/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	54	25 P	µg/Kg
Surrogate	**% Recovery**		
TOLUENE-D8	102		
4-BROMOFLUOROBENZENE	138		
1,2-DICHLOROETHANE-D4	98		
VOLATILE ORGANICS - METHOD 8240***			
Analyzed by: JC			
Date: 03/25/94			
Benzene	270	50	µg/Kg
METHOD 8020***			
Analyzed by: KA			
Date: 03/25/94 10:02:10			
TCLP Benzene	ND	1	µg/L
METHOD 8020***			
Analyzed by: MOO			
Date: 04/05/94 02:25:10			
Zero Headspace extraction	03/25/94		
METHOD 1311			
Analyzed by: MO			
Date: 03/25/94			

(P) - Practical Quantitation Limit ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Shari L. Grice

SPL, Inc. - Shari L. Grice

** SPL QUALITY CONTROL SUMMARY ** PAGE 1

Matrix:	Soil	**Reported on:**	04/06/94 15:11:25
Sample ID:	9403642-03A	**Analyzed on:**	03/25/94 10:02:10
Batch ID:	VARJ940325100210	**Analyst:**	KA

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Benzene
Method 8020

C O M P O U N D	Sample Value µg/Kg	Spike Added µg/Kg	MS % Recovery #	MSD % Recovery #	Relative % Difference #
BENZENE	ND	20	95	95	0

NOTES

column to be used to flag recovery and RPD values with an asterisk
* values outside of QC Limits.

Idelis Williams, QC Officer

Matrix:	Aqueous	**Reported on:**	04/06/94 15:11:07
Sample ID:	9403B16-01A	**Analyzed on:**	04/05/94 02:25:10
Batch ID:	VARE940405022510	**Analyst:**	MOO

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Benzene
Method 8020

COMPOUND	Sample Value µg/L	Spike Added µg/L	MS % Recovery #	MSD % Recovery #	Relative % Difference #
BENZENE	ND	20	105	110	5

NOTES

column to be used to flag recovery and RPD values with an asterisk
* values outside of QC Limits.

Idelis Williams, QC Officer

2B

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: SPLHOUSTON Contract: _____

Lab Code: SPL Case No.: 403845 SAS No.: _____ SDG No.: 403845

Level:(low/med) LOW

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	SB-1A(1_-1_5	102	138 *	98	0	1
02	SB-1A(1_-1_5	107	173 *	87	0	1
03	VBLK01	97	86	94	0	0
04	VSBLK01	98	101	103	0	0

	QC LIMITS
SMC1 (TOL) = Toluene-d8	(84-138)
SMC2 (BFB) = Bromofluorobenzene	(59-113)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPLHOUSTON Contract: _____

Lab Code: SPL Case No.: 403746 SAS No.: _____ SDG No.: 403845

Matrix Spike - EPA Sample No.: B-9(5-7_) Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.00	0	54.40	109	59-172
Trichloroethene	50.00	0	44.10	88	62-137
Benzene	50.00	0	46.00	92	66-142
Toluene	50.00	0	59.90	120	59-139
Chlorobenzene	50.00	0	48.70	97	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	51.70	103	6	22	59-172
Trichloroethene	50.00	44.30	89	1	24	62-137
Benzene	50.00	45.30	91	1	21	66-142
Toluene	50.00	56.40	113	6	21	59-139
Chlorobenzene	50.00	45.00	90	7	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: 8240S,403746,,B-9 (5-7'),L,S,9403746-01A,V,E,5.0 GRS,
PACK,0323VS2B1,0323BFB1,0323VSBB1,,,,45/3-220@8,INST B1,

4A

VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK01

Lab Name: SPLHOUSTON Contract: _____

Lab Code: SPL Case No.: 403845 SAS No.: _____ SDG No.: 403845

Lab File ID: 0325VSBB1 Lab Sample ID: VSBLK010325B

Date Analyzed: 03/25/94 Time Analyzed: 1049

GC Column: PACK ID: _____(mm) Heated Purge: (Y/N) Y

Instrument ID: B1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	SB-1A(1_-1_5	9403845-01B	V384501	1800

COMMENTS: SPLINC,BLANK,,VBLK01,L,S,VSBLK010325B,V,B,
PACK,0325VS2B1,0325BFB1,0325VSBB1,,,,45/3-220@8,INST B1,

Matrix: Soil
Sample ID: VSBLK010325
Batch: VOB940325095100

Reported on: 03/30/94 09:26
Analyzed on: 03/25/94 10:49
Analyst: JC

Compound	Result	Detection Limit	Units
Benzene	ND	5	µg/Kg

Surrogate	Result	QC Criteria	Units
Toluene-d8	97	84-138	% Recovery
4-Bromofluorobenzene	86	59-113	% Recovery
1,2-Dichloroethane-d4	94	70-121	% Recovery

Samples in Batch 9403845-01

Notes

ND - Not detected.

Idelis Williams, QC Officer

4A

VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VSBLK01

Lab Name: SPLHOUSTON Contract: _____

Lab Code: SPL Case No.: 403845 SAS No.: _____ SDG No.: 403845

Lab File ID: 0328VSBA1 Lab Sample ID: VSBLK010328A

Date Analyzed: 03/28/94 Time Analyzed: 855

GC Column: PACK ID: _____(mm) Heated Purge: (Y/N) Y

Instrument ID: A1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	SB-1A(1_-1_5	9403845-01B	V384501A	1316

COMMENTS: SPL,BLANK,,VSBLK01,L,S,VSBLK010328A,V,B,X1,
PACK,0328VS2A1,0328BFA1,0328VSBA1,,,,45/3-220@8,INST A,

Matrix: Soil
Sample ID: VSBLK010328
Batch: VOA940328072400

Reported on: 03/30/94 09:26
Analyzed on: 03/28/94 8:55
Analyst: HLW

Compound	Result	Detection Limit	Units
Benzene	ND	5	µg/Kg

Surrogate	Result	QC Criteria	Units
Toluene-d8	98	84-138	% Recovery
4-Bromofluorobenzene	101	59-113	% Recovery
1,2-Dichloroethane-d4	103	70-121	% Recovery

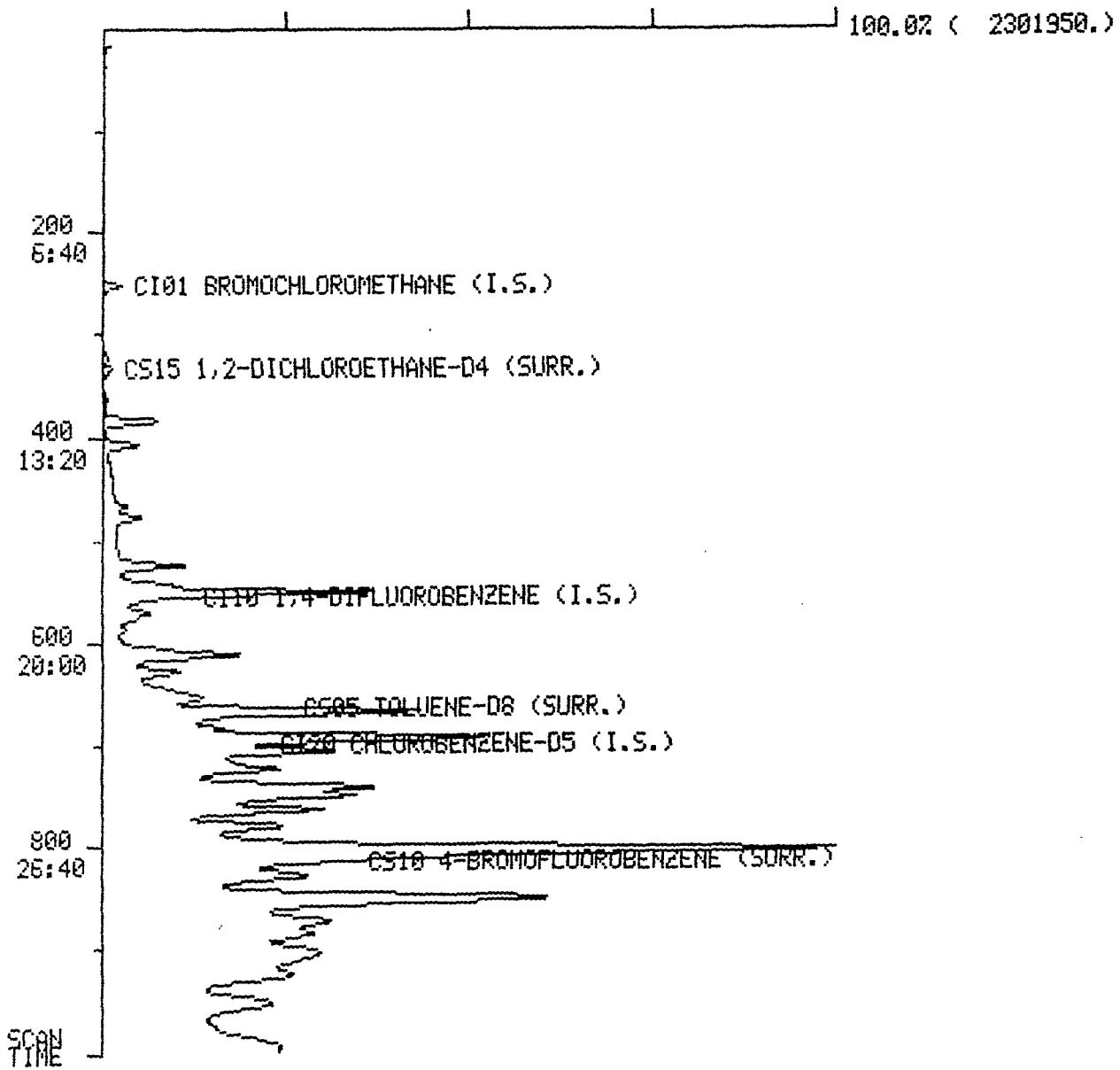
Samples in Batch 9403845-01

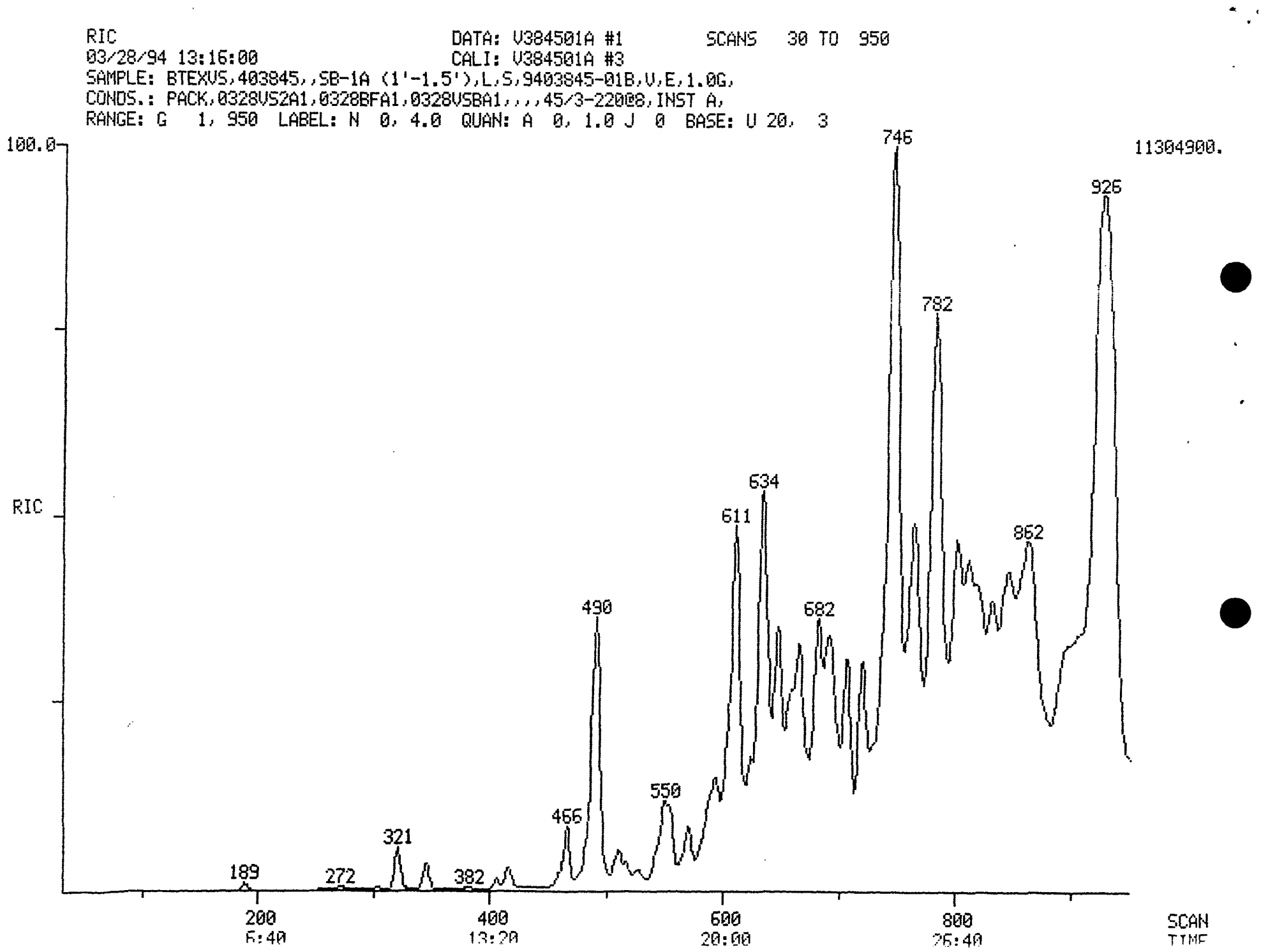
Notes

ND - Not detected.

Idelis Williams, QC Officer

DATA FROM FILE: V384501 SCANS 1 TO 1000 ACQUIRED: 03/25/94 18:00:00
CALI: V384501 #3
SAMPLE: BTEXVS,403845,,SB-1A (1'-1.5'),L,S,9403845-01B,V,E,1.0 GR,
CONDS.: PACK,0325VS2B1,0325BFB1,0325VSBB1,,,,45/3-220@8,INST B1,




RIC
DATA: V384501A #1
SCANS 30 TO 950
03/28/94 13:16:00
CALI: V384501A #3
SAMPLE: BTEXVS,403845,,SB-1A (1'-1.5'),L,S,9403845-01B,V,E,1.0G,
CONDS.: PACK,0328VS2A1,0328BFA1,0328VSBA1,,,,45/3-22008,INST A,
RANGE: G 1, 950 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3
100.0
11304900.
RIC
189
272
321
382
466
490
550
611
634
682
746
782
862
926
200
6:40
400
13:20
600
20:00
800
26:40
SCAN
TIME

9403845

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING

CHAIN OF CUSTODY RECORD NO. H 10216

Date: 3-22-94
Page 1 of 1

SITE ADDRESS: Delaware Station
Lea County, NM
~~WBS~~ Proj. # 15-9367400C.3

CONSULTANT NAME & ADDRESS: CURA, Inc
731 W. Wadley, Ste. L-200 Midland, Tx 79705

CONSULTANT CONTACT: Wes Root

PHONE: 915-570-8408 FAX: 915-570-8409

SAMPLED BY: Gil Van Deventer

CHECK ONE BOX ONLY CT/DT

- QUARTERLY MONITORING ☐ 5461
- SITE INVESTIGATION ☒ 5441
- SOIL FOR DISPOSAL ☐ 5442
- WATER FOR DISPOSAL ☐ 5443
- AIR SAMPLER - SYS O+M ☐ 5452
- WATER SAMPLE - SYS O+M ☐ 5453
- OTHER _____ ☐

SAMPLE I.D.	DATE	TIME	COMP.	GRAB	MATRIX: H2O	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCl	HNO3	H2SO4	NONE	OTHER	NO. OF CONTAINERS	CONTAINER SIZE (Ounces)	BTEX 602 ☐ 8020 ☒ WITH MTBE ☐	BTEX/GAS HYDROCARBONS PID/FID ☐ WITH MTBE	VOL 624/PPL ☐ 8240/TAL ☒ NBS (+15) ☐	PNA/PAH 8310 ☐ 8100 ☐ 610 ☐	SEMI-VOL 625/PPL ☐ 8270/TAL ☐ NBS (+25) ☐	TPH/IR 418.1 ☐ SM503 ☐ ☐	TPH/GC 8015 Mod. GAS ☐ 8015 Mod DIESEL ☐	TCLP METALS ☐ VOL ☐ SEMI-VOL ☐ PEST ☐ HERB ☐	EP TOX METALS ☐ PESTICIDES ☐ HERBICIDES ☐	REACTIVITY ☐ CORROSIVITY ☐ IGNITABILITY ☐	OTHER	REMARKS
SB-1 A ~~B~~ (1'-1.5')	3/22/94	1545		✓		✓			ice						2	8	✓		✓									* If benzene ≥ 0.05 mg/kg based on 8020 and/or 8240 results, then analyze for TCLP benzene

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
Gil Van Deventer	3/23/94	1110			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			intact 3°		
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			Stynes	3/24/94	1400

BILL NO.: _____
LABORATORY: SPL - Houston
SHELL CONTACT: Neal Stidham PHONE: 713 241-2961 FAX: 713 241-1124

TURN AROUND TIME (CHECK ONE)
7 DAYS ☐ (NORMAL) 14 DAYS ☐
48 HOURS ☐ OTHER ☒ ~~per~~ per SPLC contract

FED EX: 059787453

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN OF CUSTODY WITH INVOICE AND RESULTS
DISTRIBUTION: PINK Sampling Coordinator - WHITE & YELLOW Accompanies Shipment - WHITE Returned with Report

SPL HOUSTON ENVIRONMENTAL LABORATORY

SAMPLE LOGIN CHECKLIST

DATE: 3/24 TIME: 14:00 CLIENT NO. _____
LOT NO. _____ CONTRACT NO. _____

CLIENT SAMPLE NOS. _____

SPL SAMPLE NOS.: 9403845

		YES	NO
1.	Is a Chain-of-Custody form present?	✓	
2.	Is the COC properly completed?	✓	
	If no, describe what is incomplete:		
	If no, has the client been contacted about it? (Attach subsequent documentation from client about the situation)		
3.	Is airbill/packing list/bill of lading with shipment? If yes, ID#: FEDERAL EXPRESS		✓
4.	Is a USEPA Traffic Report present?		✓
5.	Is a USEPA SAS Packing List present?		✓
6.	Are custody seals present on the package?	✓	
	If yes, were they intact upon receipt?	✓	
7.	Are all samples tagged or labeled?	✓	
	Do the sample tags/labels match the COC?	✓	
	If no, has the client been contacted about it? (Attach subsequent documentation from client about the situation)		
8.	Do all shipping documents agree?	✓	
	If no, describe what is in nonconformity:		

9. Condition/temperature of shipping container: INTACT 3°C
10. Condition/temperature of sample bottles: GOOD 3°C
11. Sample Disposal?: SPL disposal ✓ Return to client _____

NOTES (reference item number if applicable): _____

ATTEST: _____ DATE: 3/24/94
DELIVERED FOR RESOLUTION: REC'D _____ DATE: _____
RESOLVED: _____ DATE: _____

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal | Time 1515 | Date 3/16/94

Originating Party	Other Parties
Wes Root - CURA (915) 570-8408	Bill Olson - Envir. Bureau

Subject

Shell Crude Stations

Discussion

Will be taking water samples tommorow at - Denton Station
- Anderson Ranch

and Friday at - Lea Station

also taking soil samples Friday at - Delaware Station
Dublin Station

Conclusions or Agreements

I cannot attend but will inform Wayne Price at OCD Hobbs office

Distribution
Denton, Anderson Ranch, Lea, Delaware, Dublin files
Wayne Price OCD Hobbs (verbally, mail fax 3/16)

Signed Bill Olson

Shell Oil Company

Two Shell Plaza
P.O. Box 2099
Houston, TX 77252

January 5, 1994

State of New Mexico
Oil Conservation Division
ATTN Mr. Roger C. Anderson
P. O. Box 2088
Land Office Building
Santa Fe, NM 87504-2088

Gentlemen:

SUBJECT: SITE ASSESSMENTS AND ACTION PLANS
LEA COUNTY, NEW MEXICO

Thank you for meeting with us on December 15, 1993. The meeting was informative and will help us in our remediation activities.

I have been assigned to another department and Mr. Neal Stidham will be handling the environmental matters for the New Mexico locations. His telephone number is (713) 241-2961.

It has been my pleasure to work with you and Mr. Olson to develop action plans on these locations. I appreciate the help and guidance you both have provided.

Please thank Mr. Olson for me.

Again, thank you for your help and I hope both of you have a great 1994.

I enjoyed my trip to Santa Fe. It was all you said it would be.

Sincerely,

John B. Hite

cc: SHELL PIPE LINE CORPORATION
G. H. Sherwin, Manager Environmental & Technical
N. D. Stidham, Staff Engineer

DG400503.JBH

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

November 30, 1993

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P-667-242-414

Mr. John B. Hite
Engineering Advisor
General Engineering
Shell Oil Company
Two Shell Plaza
P.O. Box 2099
Houston, Texas 77252

RE: SITE ASSESSMENT AND CLOSURE PLAN
SHELL DELAWARE CRUDE STATION
LEA COUNTY, NEW MEXICO

Dear Mr. Hite:

The New Mexico Oil Conservation Division (OCD) is in the process of reviewing the following documents submitted by the Shell Oil Company on November 15, 1993:

a. November 11, 1993 "GENERAL LANDFARMING PROCEDURES FOR LOCATIONS REQUIRING ACTION".

b. November 10, 1993 "FINAL SITE ASSESSMENT AND CLOSURE PLAN, DELAWARE STATION (INACTIVE), LEA COUNTY, NEW MEXICO".

c. October 25, 1993 "PHASE III SUBSURFACE INVESTIGATION, DELAWARE STATION, LEA COUNTY NEW MEXICO, CURA PROJECT NO.15-93674.3".

d. September 10, 1993 "SITE ASSESSMENT, DELAWARE STATION (INACTIVE), LEA COUNTY, NEW MEXICO".

e. August 1993 "FINAL REPORT ENVIRONMENTAL DUE DILIGENCE ASSESSMENT, NEW MEXICO SWEET SYSTEM AND NEW MEXICO SOUR SYSTEM".

f. January 14, 1993 "PRELIMINARY SITE ASSESSMENT, DELAWARE STATION, LEA COUNTY, NEW MEXICO, CURA PROJECT NO.15-92567.18".

The OCD has the following comments and requests for information regarding the above referenced documents:

1. The August 1993 Due Diligence Assessment documented total benzene concentrations in the soil from borehole SB-1, inside the dike of the storage tank, in excess of Toxic Characteristic (TC) hazardous waste limits as defined under federal RCRA Subtitle C regulations. Since crude oil pump stations are not exempt from these regulations, the OCD requires that Shell provide OCD with a Toxic Characteristic Leaching Procedure benzene analysis of the soils from this area.

2. The November 10, 1993 closure plan proposes excavation of the contaminated soils adjacent to the tank, but, does not contain a method for documenting the final contaminant levels upon completion of excavation. Please supply the OCD with a method for confirming that this remedial action will meet the OCD's recommended soil remediation levels.

Receipt of the above information will allow the OCD to complete a review of the above referenced documents.

If you have any questions, please contact me at (505) 827-5885.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

xc: OCD Hobbs District Office

P 667 242 414

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(See Reverse)

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TOTAL Postage & Fees	$
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PS Form 3800, June 1990

Fold at line over top of envelope to the right of the return address.

Shell Oil Company

Two Shell Plaza
P.O. Box 2099
Houston, TX 77252

November 11, 1993

State of New Mexico
Energy, Minerals and Natural Resource Dept.
Oil Conservation Division
ATTN Mr. William C. Olson
Hydrogeologist - Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504

Gentlemen:

SUBJECT: GENERAL LAND FARMING PROCEDURES FOR LOCATIONS REQUIRING ACTION

The site assessments and proposed action plans have been sent to you on the following locations:

Denton
Eunice
Dublin
Hugh
Anderson Ranch
Delaware

Land farming was a part of each of these locations remedial action plans. The areas to be land farmed are relatively small and all are inside the fenced station locations. We propose to till and/or disk the soil to 12 inches to 18 inches deep and add a high nitrogen content fertilizer at a rate of 200 to 250 pounds per acre and retill or disk the fertilizer into the soil. There are several areas that may require some spot excavation (primarily around the sumps). The excavated soils will be placed with the soils in the land farm areas. All of the sites will be land farmed in place. At the Delaware location, we propose to place some of the impacted soils on the tank dikes.

The soils in all cases are unsaturated contaminated soils. Our primary concern is with TPH levels. We will remediate until the soil TPH values are below 5000 ppm. At each of the facilities listed, the areas to be land farmed are located in places where any rainfall runoff will not be a concern.

DG331503.JBH

Attached is a paper (No. WRC-49-89 Land Farming) that was prepared by Shell and we will use it as a guide.

Please advise if these procedures will be acceptable to the Oil Conservation Division (OCD) for Shell to use on the subject locations.

The Denton Station will require a system to remove the crude oil found on an abandoned water well. The site assessment and proposed action plan sent to the OCD address it.

The Dublin Station has a hot spot that goes down to the groundwater at 103 feet. The groundwater was not impacted above your regulatory limit and our proposed plan sent to the OCD addresses it.

At the Lea Station, we are in the process of doing additional feasibility testing and you will receive a proposed action plan on it in the near future.

Shell would like to schedule a meeting with you after you have had a chance to review our proposed action plans. I will call you and see when it would be convenient for you to meet with us.

If you have any questions, please call me at (713) 241-1001. We look forward to working with the OCD to remediate the sites.

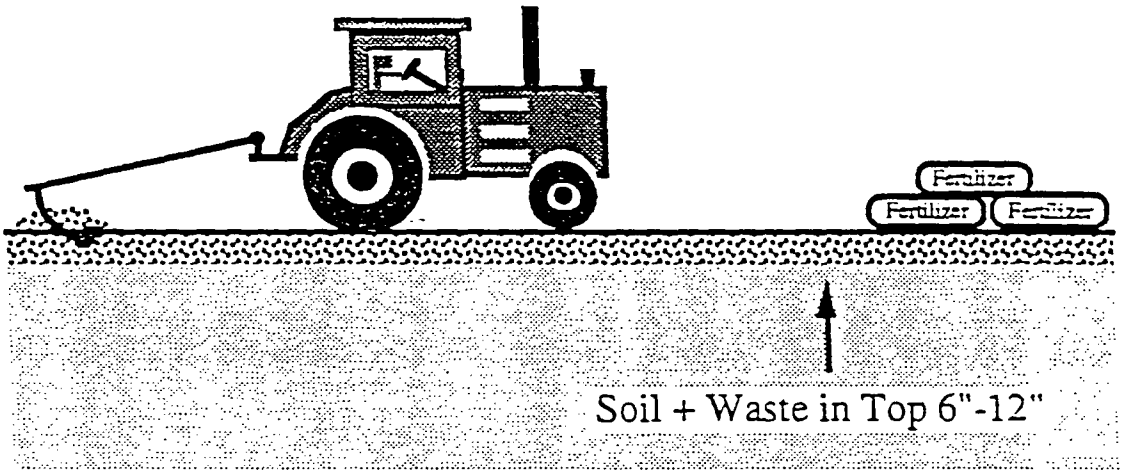
Sincerely,

John B. Hite
Engineering Advisor
General Engineering

Attachment

DG331503.JBH

Landfarming



Process Description

"Landfarming" refers to the practice of spreading organic wastes over an area of land, then relying on natural microbial action to degrade the waste. It is a widely accepted and cost-effective practice for the treatment of petroleum hydrocarbons, chlorinated compounds, and pesticides. In this process soil-associated microorganisms (bacteria and fungi) degrade the organic compounds to CO_2, water, and biomass.

An efficient and effective land treatment process involves optimizing the bacterial degradative activity by controlling soil aeration (discing, rotatilling), nutrient addition (NH_4^+ or NO_3^- - nitrogen, PO_4^{3-} - phosphorous, Fe - iron, fertilizer), and pH and moisture control.

A petroleum industry review on the treatment of waste oily sludges at refineries indicated that substantial hydrocarbon removal efficiencies of 70% - 90% can be achieved at loading rates of 1% - 5% (w/v) in surface soils.

Applications

Types of petroleum industry wastes that can be treated include refinery oily sludges, tank bottoms, crude oil, and gasoline. Landfarming has also been used to treat drilling mud pit sludges, and accidental releases of crude oil from pipelines.

Limitations

Landfarming is generally limited to wastes containing smaller hydrocarbon molecules. Medium chain length alkanes and aromatic fractions are degraded nearly completely, while polynuclear aromatic hydrocarbons (PAH's) are degraded very slowly in soil (0-10% total). Examples of PAH's include: chrysene, pyrene, fluoranthene, benzo (a) anthracene, and perylene. The presence of salts and/or metals may inhibit microbial activity.

Typical Operating Conditions

During landfarming, soil aeration (discing, rotatilling), nutrient addition (NH_4^+ or NO_3^- - nitrogen, PO_4^{3-} - phosphorous, Fe - iron, fertilizer), and pH and moisture are controlled to maximize the rate of biodegradation.

Soil pH:	6 to 8. If soil is too acidic (<pH 6), it can be treated with lime.
Waste Level:	0.5% - 5% by weight as oil and grease (O&G), incorporated into top six inches of soil.
Fertilizer Addition:	Approximately 50 - 500 lbs Nitrogen (as NH_4^+ or NO_3^- per acre, and 5 - 50 lbs Phosphorous (as PO_4^{3-}) per acre.
Other Amendments:	a) Mulch (bark, wood chips, straw, etc.) to facilitate mixing and soil aeration. b) Microbes and organic nutrients (i.e. animal manure) to enhance degradation.
Tilling Frequency:	For aeration, once every two to four weeks during growing season.
Water Application:	Soil should be maintained in a moist state, but not flooded. Spray irrigation may be required in dry climates.
Revegetation:	Plant regrowth (seeding) can occur after 0.5 to 3 years. Weeds or local crops can be used.
Sampling:	Composite samples from several representative plot areas. For example, soil might be analyzed for oil and grease if petroleum hydrocarbons are being treated.
Performance Evaluation:	Waste degradation occurs more rapidly when soil temperatures are ≥ 50°F. Decreases in the oil and grease content should decrease with a half-life ($t_{1/2}$) of 50 - 60%/month during the growing season, and $t_{1/2}$=0 - 20%/month during winter months.

Process Economics

Depending upon the extent of contamination, waste type, and biodegradation rates, costs are $5 - $50 per yd^3.

Waste Streams

Wastes streams are not usually generated, and often the hydrocarbons do not migrate beyond the root zone (6 - 12 inches below surface) before they are degraded. If the waste contains highly volatile or soluble compounds, the possibility of vapor emissions or migration to groundwater must be considered.

Permitting

Permits are not usually required for a one-time treatment, unless controlled substances are present in air emissions.

As with all ex-situ treatment processes, there will be permitting requirements for the vapors, odors, and dust associated with digging, storing, and feeding the soils.

Associated Factors

Depending on the location, surface water run-on/run-off controls may be required. While landfarming is an attractive remediation technology because it does not require sophisticated machinery, and the operating costs are low, the costs associated with permitting may increase the total treatment cost significantly. Large areas must also be dedicated for landfarming.

Contacts Within Shell

Joe P. Salanitro	- Westhollow Research Center (Room EC-661) - SSN-433-7552
Curtis C. Stanley	- Shell Oil Co. Head Office (Room TSP 2236) - SSN-241-6094

Shell Applications

Crude Oil Spill Release (Pipeline) Remediations:

(1)	Location:	Milepole 526 Capline Karmak, Illinois (Massac County).
	Date:	October 1988
	Spill:	Unknown amount released. Landfarmed 0.8 -3.6% by weight oil in soil.
	Remediation:	Fertilizer - at 300 lbs/acre Nitrogen, bark mulch, lime, and manure added. Soil was tilled once a week for six weeks.
	Results:	95% reduction in oil and grease content (degradation rate of 63% per month). Revegetation occurred with planted wheat and native grasses.
	Contact:	R. Williams, Shell Pipeline Co., Mid-Continent Division, Wood River, Illinois.
(2)	Location:	Everidge Cotton Farm, Upton County, West Texas
	Date:	November 1986
	Spill:	50 barrels crude oil in 0.2 acre of land. The contaminated area was landfarmed at 0.3 - 8.6% by weight oil and grease levels in soil.
	Remediation:	Fertilizer - 150 lbs/acre. The area was spray irrigated and tilled about once a month.
	Results:	Reduction rate for oil and grease content was about 4 - 10% per month during 15 months of treatment. Some vegetation (cotton) was observed at the edges of the treatment zone after one year.
	Contact:	C. D. Simons, Shell Pipeline Co., Mid-Continent, West Texas Unit, Midland, Texas.

Shell Oil Company

Two Shell Plaza
P.O. Box 2099
Houston, TX 77252

November 10, 1993

State of New Mexico
Energy, Minerals and Natural Resource Department
Oil Conservation Division
ATTN Mr. William C. Olson
Hydrogeologist - Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504

Gentlemen:

SUBJECT: FINAL SITE ASSESSMENT AND CLOSURE PLAN
DELAWARE STATION (INACTIVE)
LEA COUNTY, NEW MEXICO

Please find enclosed a copy of Shell Pipe Line Corporation environmental contractor's (CURA, Inc.) site assessment report and EOTT Energy Corp. environmental contractor's (Roy F. Weston, Inc.) due diligence assessment on the inactive Delaware Station.

CURA advanced two soil borings in areas where crude oil impact to the environment would likely occur.

Two samples per boring were analyzed for TPH and BTEX. All sample values were less than 20 ppm TPH and benzene levels were less than 0.001 ppm.

Delaware Station is located approximately three miles south-southwest of Eunice in Lea County, New Mexico. The site (.34 acres) is bounded by a barbed wire fence to the east, north and west. The south property boundary is a gravel road. The site is located in a rural area within the Monument-Jal oil field and has been inactive since 1989. One idled tank (400 bbls.) and a 50 gallon sump are all that remain on the site.

No residences, public buildings, surface bodies of water or water wells are located within a 1,000 foot radius of the facility.

DelSite.jbh

According to published data (Nicholson, 1961), there are no registered water wells within a 1,000 foot radius of the site. The closest known water well is located approximately 1,200 feet northeast of the site. Completed in 1946, the well was drilled to a total depth of 172 feet and completed in Quaternary Alluvium. The well was originally used for oil well flooding.

Currently, the groundwater in the site area is not used as a drinking water source. The drinking water in Eunice is supplied from a well field located about 16 miles north-northwest of the site that produces from the Ogallala Formation at a depth of 80 to 120 feet.

One soil sample had values greater than 100 ppm TPH. Weston's boring SB-1 at 1 to 1.5 feet inside the diked area had 20.58 ppm BTEX and 7,530 ppm TPH.

We have installed the monitoring well that we proposed in our September 10, 1993 letter to the Oil Conservation Division. Groundwater was encountered at 74 feet below ground surface. The TPH values ranged between 10 ppm and 90 ppm. A sample of the water was collected and analyzed. The results were:

Benzene	< 0.001 ppm
Toluene	< 0.001 ppm
Ethylbenzene	< 0.001 ppm
Xylene	< 0.001 ppm
BTEX	< 0.001 ppm
TPH	< 0.001 ppm

Shell proposes to excavate the soil in the diked area where the TPH values were 7530 ppm at 1 to 1.5 feet and place the excavated material on the existing dike walls.

The results of the site assessments show that the soil TPH values are less than 20 ppm in all the soil samples taken with the exception of the sample taken from within the diked area. The water at the site has not been impacted.

Shell believes this is a low risk site (see attached Ranking Criteria Form [Score]) and that the proposed plan will isolate the impacted soil and prevent it from affecting the fresh waters, public health and the environment.

Please advise me if this proposed plan is acceptable to the New Mexico Oil Conservation Department. Upon receiving your approval, we will implement the work.

If you have any questions or comments, please contact me at (713) 241-1001.

Sincerely,

John B. Hite
Engineering Advisor
General Engineering

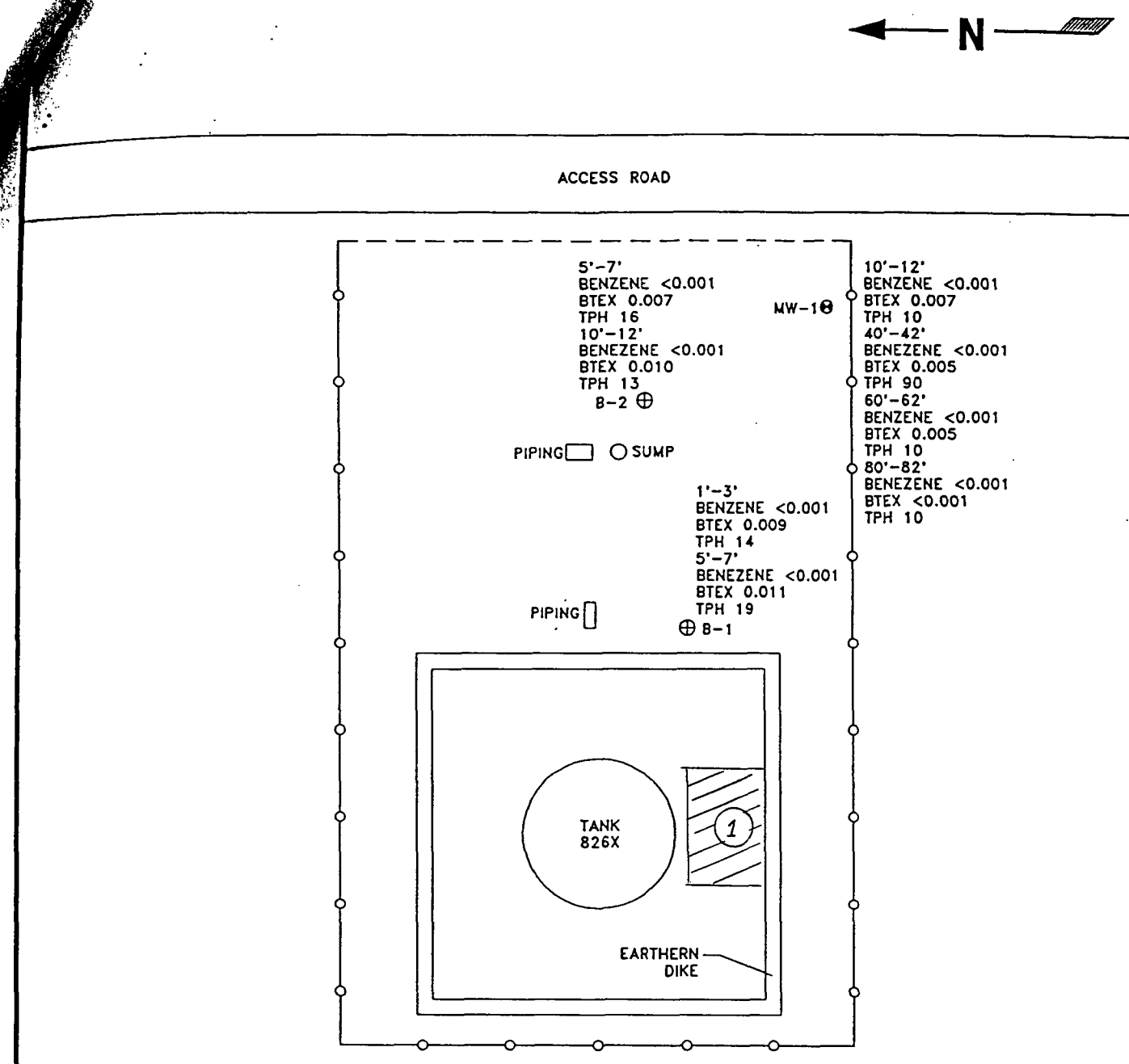
Attachment

DelSite.jbh

RANKING CRITERIA

	Ranking Score	Score
Depth to Groundwater		
< 50 feet or unknown	20	____
50 - 99	10	10
100 - 200	5	____
> 200	0	____
Wellhead Protection Area		
< 1000 feet from a water source or,		
< 200 feet from domestic water source		
Yes	20	____
No	0	0
Distance to Surface Water Body		
< 500 horizontal feet	20	____
500 - 1000 horizontal feet	10	____
> 1000 horizontal feet	0	0
Native Soil Type		
Low permeability	0	0
Moderate permeability	5	____
High permeability	10	____
Total		10

DG330101.JBH



(1) Excavate 1 to 1½ feet deep and place on Dike Walls
Fill with clean dirt or suitable material

SOIL HYDROCARBON CONCENTRATION MAP

BTEX AND TPH CONCENTRATIONS IN mg/kg (ppm)

0 60'
APPROXIMATE SCALE

CURA INC. 2735 VILLA CREEK DRIVE - TWO METRO SQUARE BLDG. C - SUITE 250 - DALLAS, TX 75234 620-7117 FAX - 620-8219	DELAWARE STATION SHELL PIPE LINE CORPORATION LEA COUNTY, NEW MEXICO	DATE: OCT 1993	SCALE: SEE ABOVE
		PROJECT NO. 15-93674	FIGURE NO. 1

CURA INC.
Environmental Consultants, Engineers & Scientists
3001 North Big Spring, Suite 101 • Midland, Texas 79705 • 915/570-8408 • FAX 570-8409

October 25, 1993

Mr. John Hite
Shell Pipe Line Company
Two Shell Plaza
P.O. Box 2099
Houston, Texas 77252-2099

RE: PHASE III SUBSURFACE INVESTIGATION
DELAWARE STATION
LEA COUNTY, NEW MEXICO

CURA PROJECT NO. 15-93674.3

Mr. Hite:

CURA, Inc. has completed the Phase III Subsurface Investigation at the above-referenced facility. As outlined in Shell Pipe Line Corporation's Scope of Work dated August 10, 1993, the field investigation included the drilling and sampling of one soil boring to a maximum depth of 100 feet and subsequent conversion to a monitor well if groundwater was encountered. The boring was completed to determine depth-to-groundwater (if less than 100 feet) and identify hydrocarbon concentrations in the soils and groundwater if present.

No hydrocarbon-impacted soils (total petroleum hydrocarbons [TPH] >100) were identified during the previous investigation in borings B-1 and B-2, however additional investigation as part of a property divestment was required to identify the depth to groundwater and determine if groundwater was impacted by groundwater.

SOIL BORING OPERATIONS AND ANALYTICAL RESULTS

On September, 27, 1993, one soil boring (MW-1) was drilled to a depth of 82 feet using an air rotary drilling rig. The boring was drilled in the southeast corner of the site in the apparent downgradient direction (based on surface topography) from the sump and tank battery (possible source areas) (Appendix A, Figure 1).

The soils encountered during the boring operations consisted of 3 feet to 10 feet of reddish-brown silty sand (SM) underlain by approximately 30 feet of white to pink calcareous sand (caliche). A brown slightly calcareous sand (SM) was present from approximately 38 feet to the bottom of the boring at 82 feet.

Groundwater was encountered at 74 feet during drilling operations. The boring logs are included in Appendix B and provide a more detailed description of the subsurface conditions encountered at the site.

Soil samples were collected intermittently using a split spoon sampling device. The samples were field screened with a Century 128 organic vapor analyzer (OVA). The soil samples which registered the highest OVA reading, had the greatest hydrocarbon odors or staining, and the samples from the greatest depth above groundwater were submitted to the laboratory to be analyzed for TPH and benzene, toluene, ethylbenzene, and xylenes (BTEX).

Field observations during the soil sampling operations indicated no significant hydrocarbon-impacted soils on site based on visual observation and OVA readings. The soil sample analytical results were less than the current OCD guideline levels (< 10 ppm benzene, < 50 ppm total BTEX, and < 100 ppm TPH) where groundwater is present at depths less than 100 feet.

A complete listing of the OVA readings and the soil sample analytical results is provided in Table 1 (Appendix C). Hydrocarbon concentrations of the subsurface soils are illustrated on the site map (Appendix A, Figure 1). The laboratory reports and chain-of-custodies are included in Appendix D.

MONITOR WELL OPERATIONS AND ANALYTICAL RESULTS

Boring MW-1 was drilled to a depth of 82 feet and completed as a monitor well to characterize groundwater conditions immediately downgradient of the sump and tank battery. The monitor well was constructed of 4 inch diameter schedule 40 PVC well casing

and screen. The screened portion of the monitor well was surrounded by a sandpack which was capped with a bentonite seal (minimum thickness 4 feet). The annular space above the bentonite seal was then grouted to surface. A 3-foot by 3-foot concrete pad and above grade steel monument pipe well cover were then installed at the surface. The boring logs in Appendix B provide a more detailed description of the screened interval and well construction materials used.

MW-1 was gauged on September 30, 1993, to determine the presence of PSH, groundwater elevation and gradient. Depth to groundwater on site measured 76 feet below ground surface. The apparent groundwater gradient is to the south-southeast based on surface drainage characteristics. No PSH was observed in MW-1 during gauging operations. A summary of groundwater elevation measurements is listed in Table 2 (Appendix C).

On September 30, 1993, groundwater samples obtained from monitor well MW-1 recorded BTEX and TPH levels less than the method detection limits of 0.001 mg/l (parts per million; ppm) and 1 mg/l, respectively.

CONCLUSIONS

- Field observations, OVA readings and soil sample analytical results do not indicate hydrocarbon-impact exceeding the New Mexico Oil Conservation Division (OCD) guidelines for crude oil impacted soils.

- No PSH was observed in monitor well MW-1.

- No groundwater hydrocarbon-impact is indicated as the dissolved BTEX and TPH concentrations from MW-1 were below method detection limits.

RECOMMENDATIONS

Based on field observations and analytical results obtained from the investigations performed to date, no further action is deemed necessary.

CURA appreciates the opportunity to provide you with our professional consulting services. If you have any questions, please do not hesitate to contact us.

Respectively,
CURA, Inc.

F. Wesley Root
Environmental Geologist

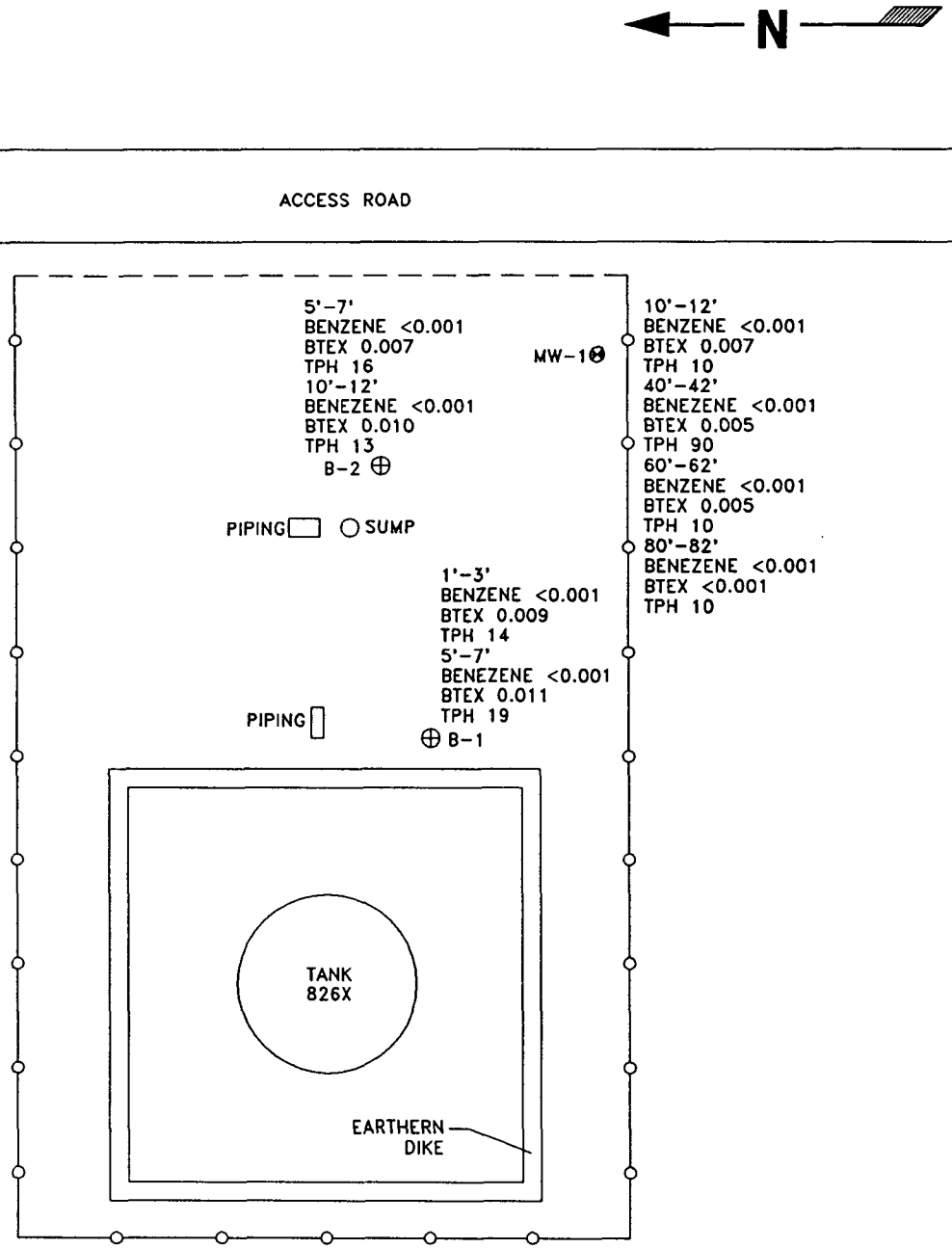
Greg C. Walterscheid, R.E.M., C.P.G.
Branch Manager - Midland

FWR/chs

Attachments

APPENDIX A

FIGURES



SOIL HYDROCARBON CONCENTRATION MAP

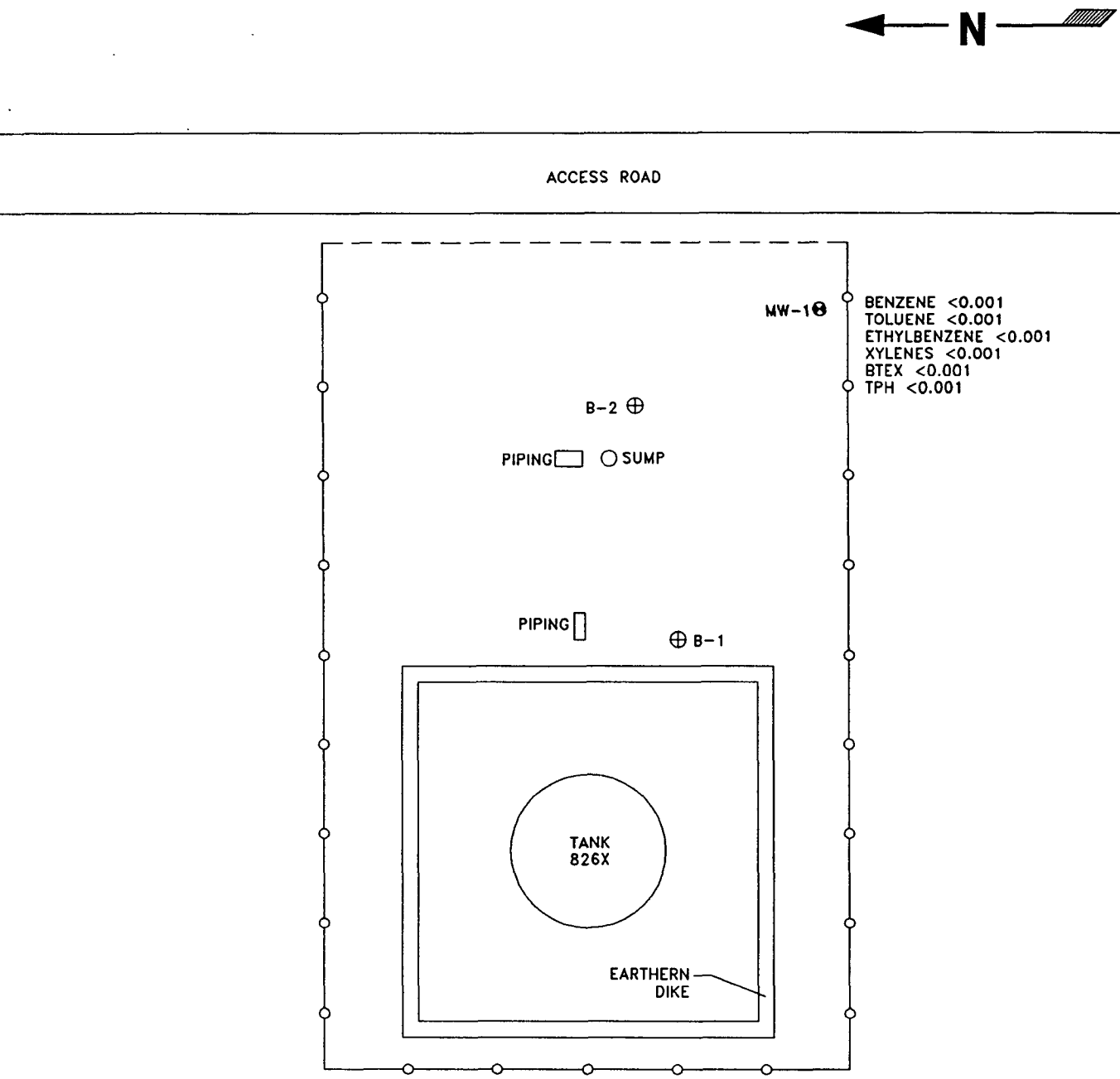
BTEX AND TPH CONCENTRATIONS IN mg/kg (ppm)

0 60'
APPROXIMATE SCALE

CRA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-8219

DELAWARE STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
OCT 1993	SEE ABOVE
PROJECT NO.	FIGURE NO.
15-93674	1



DISSOLVED HYDROCARBON MAP

-SAMPLES OBTAINED 09/30/93
-RED NUMBERS INDICATE CONCENTRATIONS IN mg/l (ppm)

0 60'
APPROXIMATE SCALE

CURA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-8219

DELAWARE STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
OCT 1993	SEE ABOVE
PROJECT NO.	FIGURE NO.
15-93674	2

APPENDIX B

SOIL BORING LOGS

CRA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-8219

RECORD OF SUBSURFACE EXPLORATION

Project No.: 15-93674	Well/Boring #: MW-1	Date Drilled: 09/27/93
Project: DELAWARE STATION LEA COUNTY, NEW MEXICO	Depth of Boring: 82 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 82 FEET	Diameter of Screen: 4 INCHES
Drilling Co: HI PLAINS DRILLING	Length of Screen: 20 FEET	Diameter of Casing: 4 INCHES
Driller: B.S.	Length of Casing: 62 FEET	Slot Size: 0.02 INCH
Drilling Method: AIR ROTARY	Logged By: F.W.R.	Well Material: SCH 40 PVC

DEPTH FEET	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	OVA (PPM)	WELL DESIGN	REMARKS
0	Brown medium-grained SAND (SM)					
2.5						
5.0		1	SS	<1		
7.5	Buff-white calcareous SAND (caliche)					
10.0		2	SS	<1		Hard streak Benzene <0.001 mg/kg BTEX=0.007 mg/kg TPH=10 mg/kg
12.5						
15.0		3	SS	<1		
17.5						
20.0		4	SS	<1		
22.5						
25.0	Buff-pink calcareous SAND (caliche)	5	SS	NR		
27.5						
30.0						

SS-Driven Split Spoon
ST-Pressed Shelby Tube
CA-Continuous Flight Auger
RC-Rock Core
THD-Texas Highway Department Cone
CT-5' Continuous Sampler

ABBREVIATIONS AND SYMBOLS

HSA-Hollow Stem Augers
CFA-Continuous Flight Augers
DC-Driving Casing
MD-Mud Drilling

WATER LEVEL
▽ At Completion
▼ After Hours
● Water on Rods

■ Sample submitted to lab
Bottom Cap
Sand Pack
Bentonite Seal
Factory-Slotted Well Screen
Well Casing
Volclay Grout Seal

CRA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-8219

RECORD OF SUBSURFACE EXPLORATION

Project No.: 15-93674	Well/Boring #: MW-1	Date Drilled: 09/27/93
Project: DELAWARE STATION LEA COUNTY, NEW MEXICO	Depth of Boring: 82 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 82 FEET	Diameter of Screen: 4 INCHES
Drilling Co: HI PLAINS DRILLING	Length of Screen: 20 FEET	Diameter of Casing: 4 INCHES
Driller: B.S.	Length of Casing: 62 FEET	Slot Size: 0.02 INCH
Drilling Method: AIR ROTARY	Logged By: F.W.R.	Well Material: SCH 40 PVC

DEPTH FEET	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	OVA (PPM)	WELL DESIGN	REMARKS
30.0	Buff-pink calcareous SAND (caliche)	6	SS	<1		
32.5						
35.0						
37.5	Brown medium-grained slightly calcareous SAND (SM) contains scattered calcareous nodules					
40.0		7	SS	2		Benzene <0.001 mg/kg BTEX=0.003 mg/kg TPH=90 mg/kg
42.5						
45.0						
47.5						
50.0		8	SS	2		
52.5						
55.0						
57.5						
60.0						

SS-Driven Split Spoon
ST-Pressed Shelby Tube
CA-Continuous Flight Auger
RC-Rock Core
THD-Texas Highway Department Cone
CT-5' Continuous Sampler

ABBREVIATIONS AND SYMBOLS

HSA-Hollow Stem Augers
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WATER LEVEL
▽ At Completion
▼ After Hours
● Water on Rods

■ Sample submitted to lab
Bottom Cap
Sand Pack
Bentonite Seal
Factory-Slotted Well Screen
Well Casing
Volclay Grout Seal

CRA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-8219

RECORD OF SUBSURFACE EXPLORATION

Project No.: 15-93674	Well/Boring #: MW-1	Date Drilled: 09/27/93
Project: DELAWARE STATION LEA COUNTY, NEW MEXICO -	Depth of Boring: 82 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 82 FEET	Diameter of Screen: 4 INCHES
Drilling Co: HI PLAINS DRILLING	Length of Screen: 20 FEET	Diameter of Casing: 4 INCHES
Driller: B.S.	Length of Casing: 62 FEET	Slot Size: 0.02 INCH
Drilling Method: AIR ROTARY	Logged By: F.W.R.	Well Material: SCH 40 PVC

DEPTH FEET	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	OVA (PPM)	WELL DESIGN	REMARKS
60.0	Brown fine to medium grained slightly calcareous SAND (SM)	9	SS	3		Benzene <0.001 mg/kg BTEX=0.003 mg/kg TPH <10 mg/kg
62.5						
65.0						
67.5						
70.0						
72.5						▽Water @ 74'
75.0						
77.5						
80.0		10	SS	<1		Benzene <0.001 mg/kg BTEX <0.001 mg/kg TPH=10 mg/kg
82.5	Bottom of boring @ 82.0 feet					
85.0						
87.5						
90.0						

SS-Driven Split Spoon
ST-Pressed Shelby Tube
CA-Continuous Flight Auger
RC-Rock Core
THD-Texas Highway Department Cone
CT-5' Continuous Sampler

ABBREVIATIONS AND SYMBOLS

HSA-Hollow Stem Augers
CFA-Continuous Flight Augers
DC-Driving Casing
MD-Mud Drilling

WATER LEVEL
▽ At Completion
▼ After Hours
● Water on Rods

■ Sample submitted to lab
Bottom Cap
Sand Pack
Bentonite Seal
Factory-Slotted Well Screen
Well Casing
Volclay Grout Seal

APPENDIX C

TABLES

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS

Boring	Date Sampled	Sample Interval (feet)	OVA	Benzene	Toluene	Ethyl-benzene	Xylenes	Total BTEX	TPH
B-1	12-09-92	1 - 3	<1	<0.001	0.002	<0.001	0.007	0.009	14
		5 - 7	<1	<0.001	0.002	0.002	0.007	0.011	19
B-2	12-09-92	1 - 3	<1						
		5 - 7	1	<0.001	0.002	<0.001	0.005	0.007	16
		10 - 12	<1	<0.001	0.007	<0.001	0.003	0.010	13
MW-1	09-27-93	5 - 7	<1						
		10 - 12	<1	<0.001	0.003	<0.001	0.004	0.007	10
		15 - 17	<1						
		20 - 22	<1						
		25 - 27	<1	No Recovery					
		30 - 32	<1						
		40 - 42	2	<0.001	0.002	<0.001	0.003	0.005	90
		50 - 52	2						
		60 - 62	3	<0.001	<0.001	<0.001	0.003	0.003	<10
		80 - 82	<1	<0.001	<0.001	<0.001	<0.001	<0.001	10

OVA results listed in parts per million (ppm) equivalent methane.
BTEX results in mg/kg (parts per million; ppm) method detection limit listed in appendix D.
TPH results in mg/kg (parts per million; ppm) method detection limit listed in appendix D.
Analyses were conducted using EPA Method 8020 (BTEX) and EPA Method 418.1 (TPH) by SPL Environmental Laboratories.

TABLE 2
SUMMARY OF RELATIVE GROUNDWATER LEVEL ELEVATIONS AND PHASE-SEPARATED HYDROCARBON THICKNESSES
Groundwater Elevations Obtained September 30, 1993

Monitor Well	Relative Ground Surface Elevation (feet)	Relative Top of Casing Elevation (feet)*	Depth to Water Below Top of Casing (feet)	Corrected Relative Groundwater Elevation (feet)**	Phase-Separated Hydrocarbon Thickness (feet)
MW-1	100.04	102.3	78.94	23.36	0.00

* Measured from a relative datum (benchmark = 200.00 feet) located at the southwest corner of the concrete pump pad. The monitor well casings were marked to provide consistent reference points for future gauging operations.

** Correction Equation for Phase-Separated Hydrocarbons: Corrected Groundwater Elevation = Top of Casing Elevation - (Depth to Water Below Top of Casing - [SG] [PSH Thickness])
Specific Gravity (SG) = 0.73 for gasoline, 0.85 for diesel, 0.9 for crude oil.

TABLE 3
WATER SAMPLE ANALYTICAL RESULTS

Water Samples Obtained on September 30, 1993

Monitor Well	Date	Benzene	Toluene	Ethyl-benzene	Xylenes	Total BTEX	TPH	TDS
MW-1	09-30-93	<0.001	<0.001	<0.001	<0.001	<0.001	<1	804

BTEX results listed in m/l (parts per million; ppm) with a method detection limit of 0.001 ppm.
TPH and TDS results listed in mg/l (parts per million; ppm) with a method detection limit of 1 ppm.
Analyses were conducted using EPA Method 8020 (BTEX), EPA Method 418.1 (TPH), and EPA Method 160.1 (TDS) by SPL Environmental Laboratories.

APPENDIX D

ANALYTICAL RESULTS

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 93-10-077

Approved for release by:

S. Sample Date: 10/7/93

S. Sample, Laboratory Director

Ed Fry Date: 10/7/93

Ed Fry, Project Manager

****SUMMARY REPORT*****

10/06/93

Company: Shell Pipe Line Corporation
Site: Lea County, New Mexico
Project No: 15-93674.3
Project: Delaware Station

ANALYTICAL DATA
NOTE: ND - Not Detected

SPL ID MATRIX	CLIENT ID DATE SAMPLED	BENZENE PQL	TOLUENE PQL	ETHYLBENZ. PQL	XYLENE PQL	TPH-IR	TPH-GC	LEAD	MTBE
9310077-01 SOIL	MW-1 (10-12) 09/27/93 12:00:00	ND 0.0010mg/Kg	0.0030 0.0010mg/Kg	ND 0.0010mg/Kg	0.0040 0.0010mg/Kg	10 10mg/Kg			
9310077-02 SOIL	MW-1 (40-42) 09/27/93 12:35:00	ND 0.0010mg/Kg	0.0020 0.0010mg/Kg	ND 0.0010mg/Kg	0.0030 0.0010mg/Kg	90 10mg/Kg			
9310077-03 SOIL	MW-1 (60-62) 09/27/93 13:02:00	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	0.0030 0.0010mg/Kg	ND 10mg/Kg			
9310077-04 SOIL	MW-1 (80-82) 09/27/93 13:02:00	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	10 10mg/Kg			

BTEX - METHOD 5030/8020 ***
TPH-IR - METHOD Mod. 418.1*

Shari L. Grice

SPL, Inc., - Shari L. Grice

Certificate of Analysis No. 9310077-01

Shell Pipe Line Corporation
P.O. Box 2099
Houston, TX 77252-2099
ATTN: John Hite

P.O.# PX-9103-JBH
DATE: 10/06/93

PROJECT: Delaware Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-1 (10-12)

PROJECT NO: 15-93674.3
MATRIX: SOIL
DATE SAMPLED: 09/27/93 12:00:00
DATE RECEIVED: 10/02/93

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	0.0010 P	mg/kg
TOLUENE	0.0030	0.0010 P	mg/kg
ETHYLBENZENE	ND	0.0010 P	mg/kg
TOTAL XYLENE	0.0040	0.0010 P	mg/kg
TOTAL BTEX	0.007		mg/kg
METHOD 5030/8020 ***			
Analyzed by: KA			
Date: 10/04/93			
Petroleum Extractables	10	10	mg/Kg
METHOD Mod. 418.1*			
Analyzed by: AR			
Date: 10/05/93			

ND - Not detected. (P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Shari L. Grice

SPL, Inc., - Shari L. Grice

Certificate of Analysis No. 9310077-03

Shell Pipe Line Corporation
P.O. Box 2099
Houston, TX 77252-2099
ATTN: John Hite

P.O.# PX-9103-JBH
DATE: 10/06/93

PROJECT: Delaware Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-1 (60-62)

PROJECT NO: 15-93674.3
MATRIX: SOIL
DATE SAMPLED: 09/27/93 13:02:00
DATE RECEIVED: 10/02/93

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	0.0010 P	mg/kg
TOLUENE	ND	0.0010 P	mg/kg
ETHYLBENZENE	ND	0.0010 P	mg/kg
TOTAL XYLENE	0.0030	0.0010 P	mg/kg
TOTAL BTEX	0.003		mg/kg
METHOD 5030/8020 ***			
Analyzed by: KA			
Date: 10/04/93			
Petroleum Extractables	ND	10	mg/Kg
METHOD Mod. 418.1*			
Analyzed by: AR			
Date: 10/05/93			

ND - Not detected. (P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Shari L. Grice

SPL, Inc., - Shari L. Grice

Certificate of Analysis No. 9310077-04

Shell Pipe Line Corporation
P.O. Box 2099
Houston, TX 77252-2099
ATTN: John Hite

P.O.# PX-9103-JBH
DATE: 10/06/93

PROJECT: Delaware Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-1 (80-82)

PROJECT NO: 15-93674.3
MATRIX: SOIL
DATE SAMPLED: 09/27/93 13:02:00
DATE RECEIVED: 10/02/93

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	0.0010 P	mg/kg
TOLUENE	ND	0.0010 P	mg/kg
ETHYLBENZENE	ND	0.0010 P	mg/kg
TOTAL XYLENE	ND	0.0010 P	mg/kg
TOTAL BTEX	ND		mg/kg
METHOD 5030/8020 ***			
Analyzed by: KA			
Date: 10/04/93			
Petroleum Extractables	10	10	mg/Kg
METHOD Mod. 418.1*			
Analyzed by: AR			
Date: 10/05/93			

ND - Not detected. (P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Shari L. Grice

SPL, Inc., - Shari L. Grice

** SPL Quality Control Report **
BTEX MATRIX SPIKE/MATRIX SPIKE DUPLICATE
Method 8020

SPL Sample ID: 9309513-01A **Reported on:** 10/06/93
Matrix: Soil **Analyzed on:** 10/04/93

This sample was randomly selected for use in the SPL quality control program. One in twenty samples is fortified, in duplicate, with a known concentration of the substance being analyzed.
The results are as follows:

---- **S P I K E A N A L Y S I S** -----

Compound	Blank Value	Spike Added µg/Kg	Original Sample Concentration µg/Kg	MS Concentration µg/Kg	MS % Rec#	QC Limits Range
BENZENE	ND	20	ND	20	100	39 - 150 %
TOLUENE	ND	20	ND	22	110	46 - 148 %
ETHYL_BENZENE	ND	20	ND	22	110	32 - 160 %
O XYLENE	ND	20	ND	24	120	32 - 160 %
M AND P XYLENE	ND	40	1	48	117	32 - 160 %

---- **S P I K E D U P L I C A T E A N A L Y S I S** -----

Compound	Spike Added µg/Kg	MSD Concentration µg/Kg	MSD % Rec#	% RPD	RPD Limit	QC Rec Range
BENZENE	20	19	95	5	20	39 - 150 %
TOLUENE	20	21	105	5	20	46 - 148 %
ETHYL_BENZENE	20	20	100	10	20	32 - 160 %
O XYLENE	20	21	105	13	20	32 - 160 %
M AND P XYLENE	40	41	100	16	20	32 - 160 %

VARJ931004124800

D. J. Williams
Idelis Williams, QC Officer

** SPL QUALITY CONTROL REPORT **
TOTAL PETROLEUM HYDROCARBONS [TPH]

SPL sample Id: 9310106-1B
Matrix: SOIL

Reported on: 10/07/93
Analyzed on: 10/05/93

This sample was randomly selected for use in the SPL quality control program. One in ten samples is fortified with a known concentration of the substance being analyzed and one in ten samples is analyzed in duplicate. The result are as follows:

-- SPIKE ANALYSIS --

Sample Id	Blank Value	Spike Added mg/L	Original Sample Concentration mg/Kg	MS Concentration mg/Kg	MS % Rec
9310106-1B	ND	384	6	330	85

-- SPIKE DUPLICATE ANALYSIS --

Sample Id	Spike Added mg/L	MSD Concentration mg/Kg	MSD % Rec	% RPD
9310106-1B	384	327	84	1

SPL, Incorporated

for Cynthia Schreiner, QC Officer

9310077

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING

CHAIN OF CUSTODY RECORD NO. H 10272

Date: 9-27-93
Page 1 of 1

Shell Pipe Line Corp
SITE ADDRESS: Delaware Station
Lea County, New Mexico

WIC #: Proj # 15-93674.3

CONSULTANT NAME & ADDRESS: CURA Inc.
3001 N. Big Spring, Ste 101, Midland, TX 79705

CONSULTANT CONTACT: F. Wesley Root

PHONE: 915-570-8408 FAX: 915-570-8409

SAMPLED BY: F. Wesley Root

CHECK ONE BOX ONLY CT/DT

- QUARTERLY MONITORING ☐ 5461
- SITE INVESTIGATION ☒ 5441
- SOIL FOR DISPOSAL ☐ 5442
- WATER FOR DISPOSAL ☐ 5443
- AIR SAMPLER - SYS O+M ☐ 5452
- WATER SAMPLE - SYS O+M ☐ 5453
- OTHER ☐

SAMPLE I.D.	DATE	TIME	COMP.	GRAB	MATRIX: H2O	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCl	HNO3	H2SO4	NONE	OTHER	NO. OF CONTAINERS	CONTAINER SIZE	BTEX 602 ☐ / 8020 WITH MTBE ☐ ☒	BTEX/GAS HYDROCARBONS PID/FID ☐ WITH MTBE	VOL 624/PPL ☐ / 8240/TAL ☐ / NBS (+15) ☐	PNA/PAH 8310 ☐ / 8100 ☐ / 610 ☐	SEMI - VOL 625/PPL ☐ / 8270/TAL ☐ / NBS (+25) ☐	TPH/IR 418.1 ☒ / SM503 ☐ ☐ ☐	TPH/GC 8015 Mod. GAS ☐ / 8015 Mod DIESEL ☐	TCLP METALS ☐ VOL ☐ SEMI-VOL ☐ PEST ☐ HERB ☐	EP TOX METALS ☐ PESTICIDES ☐ HERBICIDES ☐	REACTIVITY ☐ CORROSIVITY ☐ IGNITABLITY ☐	OTHER	REMARKS
MW-1 (10-12)	9-27-93	12:00		V		V								ICE	1	4oz	V					V						
MW-1 (40-42)	9-27-93	12:35		V		V								ICE	1	4oz	V					V						
MW-1 (60-62)	9-27-93	13:02		V		V								ICE	1	4oz	V					V						
MW-1 (80-82)	9-27-93	13:02		V		V								ICE	1	4oz	V					V						

ANALYSIS REQUEST: (CHECK APPROPRIATE BOX)

OTHER

REMARKS

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
F. Wesley Root	10-1-93	16:30			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
				10/2/93	09:30

BILL NO.:
LABORATORY:
SHELL CONTACT: John Hite PHONE: 713-241-1001 FAX:

TURN AROUND TIME (CHECK ONE)
7 DAYS ☐ (NORMAL) 14 DAYS ☐
48 HOURS ☐ 4 9 OTHER ☐ per Shell contract

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN OF CUSTODY WITH INVOICE AND RESULTS

DISTRIBUTION: PINK Sampling Coordinator - WHITE & YELLOW Accompanies Shipment - WHITE Returned with Report

SPL HOUSTON ENVIRONMENTAL LABORATORY

SAMPLE LOGIN CHECKLIST

DATE: 10/2/93 TIME: 09:30 CLIENT NO. _____
LOT NO. _____ CONTRACT NO. _____

CLIENT SAMPLE NOS. _____

SPL SAMPLE NOS.: _____

		YES	NO
1.	Is a Chain-of-Custody form present?	✓	
2.	Is the COC properly completed?	✓	
	If no, describe what is incomplete:		
	If no, has the client been contacted about it?		
	(Attach subsequent documentation from client about the situation)		
3.	Is airbill/packing list/bill of lading with shipment?	✓	
	If yes, ID#: FLST		
4.	Is a USEPA Traffic Report present?		✓
5.	Is a USEPA SAS Packing List present?		✓
6.	Are custody seals present on the package?	✓	
	If yes, were they intact upon receipt?	✓	
7.	Are all samples tagged or labeled?	✓	
	Do the sample tags/labels match the COC?		
	If no, has the client been contacted about it?		
	(Attach subsequent documentation from client about the situation)		
8.	Do all shipping documents agree?		
	If no, describe what is in nonconformity:		

9. Condition/temperature of shipping container: INTACT-4°C
10. Condition/temperature of sample bottles: GOOD-4°C
11. Sample Disposal?: SPL disposal ✓ Return to client ____

NOTES (reference item number if applicable): _____

ATTEST: _____ DATE: 10/2/93
DELIVERED FOR RESOLUTION: REC'D _____ DATE: _____
RESOLVED: _____ DATE: _____

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 93-10-180

Approved for release by:

Scott Sample Date: 10/13/93

S. Sample, Laboratory Director

Ed Fry Date: 10/13/93

Ed Fry, Project Manager

Certificate of Analysis No. 9310180-01

Shell Pipe Line Corporation
P.O. Box 2099
Houston, TX 77252-2099
ATTN: John Hite

P.O.# PX-9103-JBH
DATE: 10/12/93

PROJECT: Delaware Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA, Inc.
SAMPLE ID: MW-1

PROJECT NO: 15-93674.3
MATRIX: WATER
DATE SAMPLED: 09/30/93 12:30:00
DATE RECEIVED: 10/06/93

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	ND	0.0010 P	mg/L
TOLUENE	ND	0.0010 P	mg/L
ETHYLBENZENE	ND	0.0010 P	mg/L
TOTAL XYLENE	ND	0.0010 P	mg/L
TOTAL BTEX	ND		mg/L
METHOD 5030/8020 ***			
Analyzed by: LFD			
Date: 10/08/93			
Petroleum extractables	ND	1	mg/L
METHOD 418.1*			
Analyzed by: MF			
Date: 10/11/93			
Total Dissolved Solids	804	4	mg/L
METHOD 160.1 *			
Analyzed by: DSE			
Date: 10/08/93			

ND - Not detected. (P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

Shari L. Grice

SPL, Inc., - Shari L. Grice

SPL

**** SPL Quality Control Report ****
BTEX MATRIX SPIKE/MATRIX SPIKE DUPLICATE
Method 8020

SPL Sample ID: 9310156-01A **Reported on:** 10/12/93
Matrix: Water **Analyzed on:** 10/08/93

This sample was randomly selected for use in the SPL quality control program. One in twenty samples is fortified, in duplicate, with a known concentration of the substance being analyzed.
The results are as follows:

---- S P I K E A N A L Y S I S -----

Compound	Blank Value	Spike Added µg/L	Original Sample Concentration µg/L	MS Concentration µg/L	MS % Rec#	QC Limits Range
BENZENE	ND	20	ND	17	85	39 - 150 %
TOLUENE	ND	20	ND	17	85	46 - 148 %
ETHYL_BENZENE	ND	20	ND	18	90	32 - 160 %
O XYLENE	ND	20	ND	19	95	32 - 160 %
M AND P XYLENE	ND	40	ND	41	102	32 - 160 %

---- S P I K E D U P L I C A T E A N A L Y S I S -----

Compound	Spike Added µg/L	MSD Concentration µg/L	MSD % Rec#	% RPD	RPD Limit	QC Rec Range
BENZENE	20	16	80	6	20	39 - 150 %
TOLUENE	20	15	75	12	20	46 - 148 %
ETHYL_BENZENE	20	16	80	12	20	32 - 160 %
O XYLENE	20	18	90	5	20	32 - 160 %
M AND P XYLENE	40	37	92	10	20	32 - 160 %

HP_N931008160900

I. J. Williams
Idelis Williams, QC Officer

** SPL QUALITY CONTROL REPORT **
TOTAL PETROLEUM HYDROCARBONS [TPH]

SPL sample Id: BLANK
Matrix: WATER

Reported on: 10/12/93
Analyzed on: 10/11/93

This sample was randomly selected for use in the SPL quality control program. One in ten samples is fortified with a known concentration of the substance being analyzed and one in ten samples is analyzed in duplicate. The result are as follows:

-- SPIKE ANALYSIS --

Sample Id	Blank Value	Spike Added mg/L	Original Sample Concentration mg/L	MS Concentration mg/L	MS % Rec
BLANK	ND	384	ND	324	84

-- SPIKE DUPLICATE ANALYSIS --

Sample Id	Spike Added mg/L	MSD Concentration mg/L	MSD % Rec	% RPD
BLANK	384	331	86	2

SPL, Incorporated

D. J. Williams

Cynthia Schreiner, QC Officer

8880 Interchange Drive, Houston, Texas 77054 713/660-0901

Wet Chemistry QA/QC Validation Report

Test Code TDS Date 10-8-93 Analyst DSE

Method 160.1 Time 2:00PM Matrix LIQUID

Of Samples in Set 10 Detection Limit 1

Sample #'s in Set					Units Mg/L
309647-5A, 6A	310132-1B				
310181-1C	310180-1C	310219-3C, 8B			
310122-1A, 2A	310183-1C				

Standards	EM, %T, ABS.	Actual Concentration	Theoretical Concentration	% Recovery	Upper Limit	Lower Limit
Blank		ND	< 1	ND	NA	NA
#1						
#2						
#3						
#4						
Check Std.		145	153	95.0	194	118

Duplicate	#1	#2	RPD (%)	Upper Limit	Lower Limit	Dilution
309647-5A	483	488	1.0	7.6	5.6	
-6A	216	204	5.7	↓	↓	
310219-3C	655	630	3.9			
-8B	1745	1735	0.6			

Spike Sample	Concentration Before Spike	Amount Added	Concentration After Spike	After - Before	% Recovery	Upper Limit	Lower Limit

Spike Recovery Calculation

$$\% \text{ Recovery} = \frac{(\text{Actual} - \text{Original})}{\text{Amount Added}} \times 100$$

Relative Percent Difference Calculation

$$\text{RPD} = \frac{(\#1 - \#2)}{(\#1 + \#2)(0.5)} \times 100$$

Reviewed By Maria G. Macias

Date 10/11/93

Approved By

Date 10/11/93

9310180 197

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING

CHAIN OF CUSTODY RECORD NO. H 10284

Date: 10-4-93
Page 1 of 1

SITE ADDRESS: Shell Pipe Line Corp- Delaware Station
proj # WIC #: 15-93674.3
CONSULTANT NAME & ADDRESS: CURA Inc 3001 N. Big Spring, 101, Midland TX 79705
CONSULTANT CONTACT: Greg Waltenscheid
PHONE: (915) 570-9408 FAX: (915) 570-8409
SAMPLED BY: Bill Smith

CHECK ONE BOX ONLY CT/DT

- QUARTERLY MONITORING ☐ 5461
- SITE INVESTIGATION ☒ 5441
- SOIL FOR DISPOSAL ☐ 5442
- WATER FOR DISPOSAL ☐ 5443
- AIR SAMPLER - SYS O+M ☐ 5452
- WATER SAMPLE - SYS O+M ☐ 5453
- OTHER ☐

SAMPLE I.D.	DATE	TIME	COMP.	GRAB	MATRIX: H2O	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCl	HNO3	H2SO4	NONE	OTHER: ICE	NO. OF CONTAINERS	CONTAINER SIZE	ANALYSIS REQUEST: BTEX 602 ☐ WITH MTBE ☐ 8020 ☒	BTEX/GAS HYDROCARBONS PID/FID ☐ WITH MTBE	VOL 624/PPL ☐ 8240/TAL ☐	PNA/PAH 8310 ☐ 8100 ☐	SEMI - VOL 625/PPL ☐ 8270/TAL ☐ NBS (+25) ☐	TPH/IR 418.1 ☒ SM503 ☐ ☐	TPH/GC 8015 Mod. GAS ☐ 8015 Mod DIESEL ☐	TCLP METALS ☐ VOL ☐ SEMI-VOL ☐ PEST ☐ HERB ☐	EP TOX METALS ☐ PESTICIDES ☐ HERBICIDES ☐	REACTIVITY ☐ CORROSIVITY ☐ IGNITABILITY ☐	OTHER: TDS	REMARKS
MW-1	9-30-93	1230		✓	✓					✓				✓	5	✓	✓					✓					✓	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
Bill Smith	10-4-93	1100			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			INTACT 3°C		
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
				10-6-93	09:00

BILL NO.: Rel No PX-9103 - JBH
LABORATORY:
SHELL CONTACT: John Hite PHONE: (713) 241-1001 FAX: (713) 241-3517

TURN AROUND TIME (CHECK ONE)
7 DAYS ☐ (NORMAL) 14 DAYS ☐
48 HOURS ☐ OTHER ☒ per SPLC contract

801438860

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN OF CUSTODY WITH INVOICE AND RESULTS
DISTRIBUTION: PINK Sampling Coordinator - WHITE & YELLOW Accompanies Shipment - WHITE Returned with Report

SPL HOUSTON ENVIRONMENTAL LABORATORY

SAMPLE LOGIN CHECKLIST

DATE: 10-6 TIME: 09:00 CLIENT NO. _____
LOT NO. _____ CONTRACT NO. _____

CLIENT SAMPLE NOS. _____

SPL SAMPLE NOS.: 9310180

		YES	NO
1.	Is a Chain-of-Custody form present?	✓	
2.	Is the COC properly completed?	✓	
	If no, describe what is incomplete:		
	If no, has the client been contacted about it?		
	(Attach subsequent documentation from client about the situation)		
3.	Is airbill/packing list/bill of lading with shipment?	✓	
	If yes, ID#: FEDEX: 8014383860		
4.	Is a USEPA Traffic Report present?		✓
5.	Is a USEPA SAS Packing List present?		✓
6.	Are custody seals present on the package?	✓	
	If yes, were they intact upon receipt?	✓	
7.	Are all samples tagged or labeled?	✓	
	Do the sample tags/labels match the COC?	✓	
	If no, has the client been contacted about it?		
	(Attach subsequent documentation from client about the situation)		
8.	Do all shipping documents agree?	✓	
	If no, describe what is in nonconformity:		

9. Condition/temperature of shipping container: INTACT 3°C
10. Condition/temperature of sample bottles: ✓ GOOD 3°C
11. Sample Disposal?: SPL disposal ✓ Return to client ____

NOTES (reference item number if applicable): _____

ATTEST: _____ DATE: 10-6-93
DELIVERED FOR RESOLUTION: REC'D _____ DATE: _____
RESOLVED: _____ DATE: _____

APPENDIX E

PHOTO-DOCUMENTATION

Photograph 1: View of Delaware Station looking west with sump in the foreground.

Photograph 2: View of drilling operations on monitor well MW-.1

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal | Time 1100 | Date 9/27/93

Originating Party	Other Parties
Bill Olson - Envir. Bureau	John Hite - Shell Pipeline

Subject

Pump Station Environmental Assessments

Discussion

Told him OCD needs TCLP analyses on any constituents with totals above TC limits
OCD will also need MW construction details

Conclusions or Agreements

Shell is currently completing work referenced in the reports. Final reports on sites and proposed remediation will be submitted to OCD in approx. 30 days

Distribution

Signed Bill Olson

Shell Oil Company

Two Shell Plaza
P.O. Box 2099
Houston, TX 77252

September 10, 1993

State of New Mexico
Energy, Minerals and Natural Resource Department
Oil Conservation Division
ATTN Mr. William C. Olson
Hydrogeologist - Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504

Gentlemen:

SUBJECT: SITE ASSESSMENT
DELAWARE STATION (INACTIVE)
LEA COUNTY, NEW MEXICO

Please find enclosed a copy of Shell Pipe Line Corporation environmental contractor's (CURA, Inc.) site assessment report and EOTT Energy Corp. environmental contractor's (Roy F. Weston, Inc.) due diligence assessment on the inactive Delaware Station.

CURA advanced two soil borings in areas where crude oil impact to the environment would likely occur.

Two samples per boring were analyzed for TPH and BTEX. All sample values were less than 20 ppm TPH and benzene levels were less than 0.001 ppm.

Delaware Station is located approximately three miles south-southwest of Eunice in Lea County, New Mexico. The site (.34 acres) is bounded by a barbed wire fence to the east, north and west. The south property boundary is a gravel road. The site is located in a rural area within the Monument-Jal oil field and has been inactive since 1989. One idled tank (400 bbls.) and a 50 gallon sump are all that remain on the site.

No residences, public buildings, surface bodies of water or water wells are located within a 1,000 foot radius of the facility.

According to published data (Nicholson, 1961), there are no registered water wells within a 1,000 foot radius of the site. The closest known water well is located approximately 1,200 feet northeast of the site. Completed in 1946, the well was drilled

to a total depth of 172 feet and completed in Quaternary Alluvium. The well was originally used for oil well flooding.

Currently, the groundwater in the site area is not used as a drinking water source. The drinking water in Eunice is supplied from a well field located about 16 miles north-northwest of the site that produces from the Ogallala Formation at a depth of 80 to 120 feet.

One soil sample had values greater than 100 ppm TPH. Weston's boring SB-1 at 1 to 1.5 feet inside the diked area had 20.58 ppm BTEX and 7,530 ppm TPH. We propose to install a monitoring well to approximately 100 feet to determine any groundwater impact.

After we install the well and review the analytical results, we will provide the Oil Conservation Division with a report and our proposed remediation plan.

If you have any questions, please contact me at (713) 241-1001.

Sincerely,

John B. Hite
Engineering Advisor
General Engineering

Attachment

DelSite.jbh