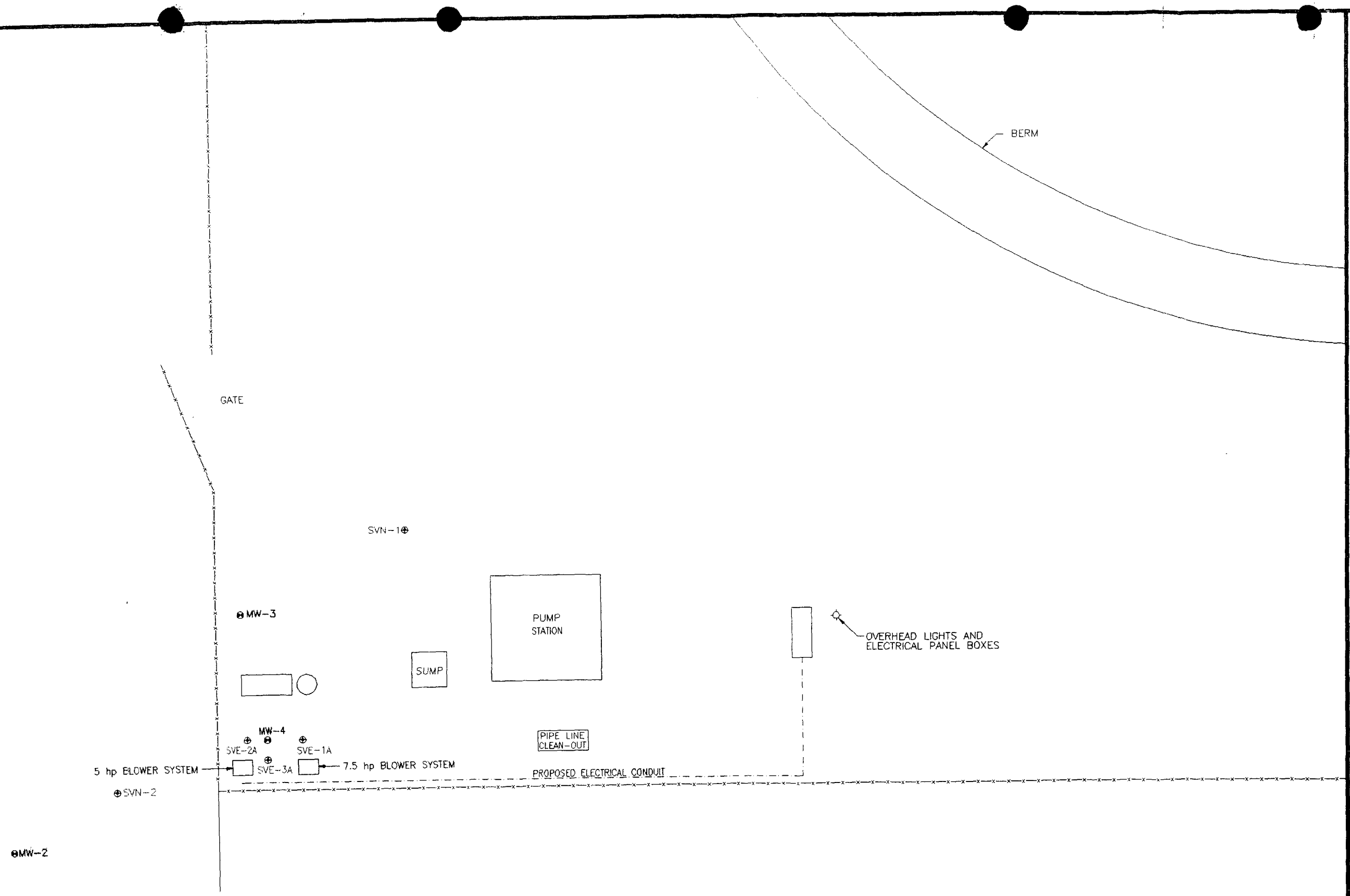

SITE MAP

0 20'
APPROXIMATE SCALE

DUBLIN STATION
SHELL OIL COMPANY
LEA COUNTY, NEW MEXICO

SCALE:
SEE ABOVE

DATE:
DEC 1994

PROJECT NUMBER:
32-93676

FIGURE NUMBER:
1

CURA INC.
DALLAS - HOUSTON - MIDLAND - ATLANTA
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TX 75234
(214) 620-7717 FAX - (214) 620-6239

SYSTEM MONITORING

CURA will have primary responsibility for operation and maintenance of the system and will also complete scheduled performance monitoring. These will include system maintenance, emissions monitoring, and measurement of vacuum pressures to operate the system at optimum conditions and monitor progress.

During the first month of operation bi-weekly visits (2) will be conducted to monitor the system. Monthly visits will be conducted from that point forward including the following operations:

- Obtain air sample for BTEX, TPH, and CO_2 analysis.
- Obtain flow rate and pressure readings from system.
- Use OVA to screen individual well emissions.
- Check system components with routine maintenance as necessary or scheduled.

At the end of the calendar year, CURA will prepare a Performance Status Report for system operations.

APPENDIX A

CEL
2209 Wisconsin St., Ste. 200
Dallas, Texas 75229
214/620-7966
800/394-2872
FAX 214/620-7963
Certes Environmental Laboratories, L.C.

CERTES ENVIRONMENTAL LABORATORIES
ANALYTICAL REPORT

Project Number: 15-93676

CEL #: 94-1448

Prepared for:
CURA,INC.
2735 Villa Creek Dr.
Two Metro Square
Bldg. C - Suite 250
Dallas, TX 75234

Attn: Charles Harlan
<CDH>

Date: 11/21/94

Included are the results for the samples submitted to CEL. All testing was performed using approved EPA Methods, unless otherwise stated. If you have any questions concerning the analytical data please contact Joe Thompson, Laboratory Manager at 214/620-7966. Thank you for the opportunity to service your environmental testing needs.

Sincerely,

CEL Staff

Report #	: 94-1448-01	Date Received	: 11/18/94
Sample ID	: SVE-1 MW-4	Date Analyzed	: 11/18/94
Project #	: 15-93676	Analyst	: JSL
Sample Matrix	: Air	Methods:	BTEX : EPA 8020 Modified Air
			TPH : EPA 8015 Modified Air

Compound	Result	Practical Quantitation Limit
Benzene	18 µg/l	5 µg/l
Toluene	88 µg/l	5 µg/l
Ethylbenzene	13 µg/l	5 µg/l
Total Xylenes	71 µg/l	5 µg/l
Total Petroleum Hydrocarbons	3,470 µg/l	50 µg/l

Joe Thompson
Director of Technical Services

Yanqi Li
Analytical Chemist

DATE RECEIVED: 11/18/94 REPORT NUMBER: 94-1448

SUBMITTED BY: CURA REPORT DATE: 11/21/94

LABORATORY QUALITY CONTROL REPORT

ANALYTE	BTEX	TPH
BATCH No.	A009	A009
LCS LOT No.	-------	-------
PREP METHOD	-------	-------
PREP DATE	-------	-------
PREP CHEMIST	-------	-------
ANALYSIS METHOD	8020-M	8020-M
ANALYSIS DATE	11/4/94	11/4/94
ANALYST	JSL	JSL
METHOD BLANK (µg/1)	<5	<50
MS% RECOVERY	-------	-------
MSD% RECOVERY	-------	-------
LCS % RECOVERY	-------	-------
DUPLICATE RPD	6.09	9.31
MS/MSD RPD	-------	-------
SPIKE LEVEL (µg/l)	-------	-------
SPIKED SAMPLE ID #	-------	-------
DUPLICATE SAMPLE ID #	1338-01	1338-01

----: Not Applicable MS: Matrix Spike LCS: Laboratory Control Sample
NC: Not Calculable MSD: Matrix Spike Duplicate RPD: Relative Percent Difference

COMMENTS:

CHAIN-OF-CUSTODY AND LAB ANALYSIS WORK ORDER

CEL
Cerles Environmental Laboratories, L.C.
2209 Wisconsin
Dallas, Texas 75229
214/620-7966
800/394-2872
FAX 214/620-7963

P.O. #

TAT
- ☐ Priority 24 hrs.
- ☐ Expedited 48 to 72 hrs.
- ☒ ~~Normal~~ (10 to 15 work days)

QA/QC LEVEL
- ☒ Level III (Normal Charge)
- ☐ CLP
- ☐ Other _____

Site Location/Client: Dublin Station Lea County N.M.

CLIENT NAME:	CURA, INC.
CLIENT ADDRESS:	2735 Villa Creek
BILLING ADDRESS:	Dallas, TX 75234
PROJECT MANAGER:	Charles Harlan
CLIENT PROJECT NO.	15-93676
PHONE NO.	214/620-7117
FAX NO.	214/620-8219
CEL LOCATION CODE:	

ATTEST THAT PROPER FIELD SAMPLING PROCEDURES WERE USED DURING THE COLLECTION PROCESS

SAMPLER NAME (Print): Don Smith

Special Reporting and Handling Instructions:

CEL USE ONLY -- CEL #	FIELD SAMPLE ID	Sampling Date	Sampling Time	Matrix: Soil (#)	Matrix: Water (#)	Matrix: Other (#)	Preservation Method: HCL	HNO3	H2SO4	Ice	None	Other	ANALYSIS REQUESTED: BTEX 602/8020A ☐ MTBE ☐ AIR ☑	TPH 418.1 ☐ 8015M ☑	EPA Metals - Priority Pollutants (13) ☐ RCRA (8) ☐	Lead 239.2 ☐ 7420 ☐ 7421 ☐	OTHERS
-01	SVE-4-MW-4	11/17/94	3:00			✓							✓	✓			

RECORD OF CUSTODY

Relinquished By Sampler: Don H Smith	DATE: 11/18/94	TIME: 8:40 A	Received By:
Relinquished By:	DATE:	TIME:	Received By:
Relinquished By:	DATE: 11/18/94	TIME: 8:40	Received By Laboratory:

94-1448

NOTES: 1. If sample is determined to be hazardous, an additional charge of $5.00 per sample will be assessed prior to disposal and billed to client.

LAB USE ONLY

APPENDIX B

CURA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TEXAS
(214) 620 - 7117

RECORD OF SUBSURFACE EXPLORATION

Project No.: 24-92567	**Well/Boring #:** SVE-1A	**Date Drilled:** 11/29/94
Project: DUBLIN STATION	**Drilling Co.:** MCDONALD	**Drilling Method:** AIR ROTARY
	Driller: TM	**Logged By:** J.W.L.

DEPTH FEET	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	OVA (PPM)	REMARKS
0	Brown/tan fine-grained sand				
2.5					
5.0	Tan/light brown fine to medium-grained sand				
7.5					
10.0	Light brown/brown fine-grained sand				
12.5					
15.0					
17.5					
20.0	Brown/grayish fine-grained sand				
22.5					
25.0	Grayish calcareous fine to medium-grained sand				
27.5					
30.0	Grayish/light green fine to medium-grained calcareous sand				
32.5					
35.0					

ABBREVIATIONS AND SYMBOLS

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

■ Sample Submitted to Lab
WATER LEVEL
▽ At Completion
▼ After Hours
● Water on Rods

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

CURA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TEXAS
(214) 620 - 7117

RECORD OF SUBSURFACE EXPLORATION

Project No.: 24-92567	**Well/Boring #:** SVE-1A	**Date Drilled:** 11/29/94
Project: DUBLIN STATION	**Drilling Co.:** MCDONALD	**Drilling Method:** AIR ROTARY
	Driller: TM	**Logged By:** J.W.L.

DEPTH FEET	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	OVA (PPM)	REMARKS
35.0	Brown calcareous fine-grained sand				
37.5					
40.0	Brown/tan, fine-grained sand				
42.5					
45.0	Red/brown fine to medium-grained calcareous sand				
47.5					
50.0					
52.5					
55.0					
57.5					
60.0					
62.5					
65.0					
67.5					
70.0					

ABBREVIATIONS AND SYMBOLS

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ST - Pressed Shelby Tube
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CT-5' - Continuous Sampler

■ Sample Submitted to Lab
WATER LEVEL
▽ At Completion
▼ After Hours
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CURA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TEXAS
(214) 620 - 7117

RECORD OF SUBSURFACE EXPLORATION

Project No.: 24-92567	**Well/Boring #:** SVE-1A	**Date Drilled:** 11/29/94
Project: DUBLIN STATION	**Drilling Co.:** MCDONALD	**Drilling Method:** AIR ROTARY
	Driller: TM	**Logged By:** J.W.L.

DEPTH FEET	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	OVA (PPM)	REMARKS
70.0					
72.5					
75.0	Lithologically identical but very moist				
77.5					
80.0					
82.5					
85.0					
87.5					
90.0					
92.5					
95.0					
97.5					
100.0	Lithologically identical but slightly cherty				
102.5					
105.0	Bottom of boring at 105 feet				

ABBREVIATIONS AND SYMBOLS

SS - Driven Split Spoon
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RC - Rock Core
THD - Texas Highway Department Cone
CT-5' - Continuous Sampler

▬ Sample Submitted to Lab

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

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

CURA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TEXAS
(214) 620 - 7117

RECORD OF SUBSURFACE EXPLORATION

Project No.: 24-92567	**Well/Boring #:** SVE-2A	**Date Drilled:** 11/29/94
Project: DUBLIN STATION	**Drilling Co.:** MCDONALD	**Drilling Method:** AIR ROTARY
	Driller: TM	**Logged By:** J.W.L.

DEPTH FEET	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	OVA (PPM)	REMARKS
35.0	Brown calcareous fine-grained sand				
37.5					
40.0	Brown/tan, fine-grained sand				
42.5					
45.0	Red/brown fine to medium-grained calcareous sand				
47.5					
50.0					
52.5					
55.0					
57.5					
60.0	Bottom of boring at 60 feet				
62.5					
65.0					
67.5					
70.0					

ABBREVIATIONS AND SYMBOLS

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

■ Sample Submitted to Lab
WATER LEVEL
▽ At Completion
▼ After Hours
● Water on Rods

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
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CURA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TEXAS
(214) 620 - 7117

RECORD OF SUBSURFACE EXPLORATION

Project No.: 24-92567	**Well/Boring #:** SVE-2A	**Date Drilled:** 11/29/94
Project: DUBLIN STATION	**Drilling Co.:** MCDONALD	**Drilling Method:** AIR ROTARY
	Driller: TM	**Logged By:** J.W.L.

DEPTH FEET	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	OVA (PPM)	REMARKS
0	Brown/tan fine-grained sand				
2.5					
5.0	Tan/light brown fine to medium-grained sand				
7.5					
10.0	Light brown/brown fine-grained sand				
12.5					
15.0					
17.5					
20.0	Brown/grayish fine-grained sand				
22.5					
25.0	Grayish calcareous fine to medium-grained sand				
27.5					
30.0	Grayish/light green fine to medium-grained calcareous sand				
32.5					
35.0					

ABBREVIATIONS AND SYMBOLS

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CA - Continuous Flight Auger
RC - Rock Core
THD - Texas Highway Department Cone
CT-5' - Continuous Sampler

▩ Sample Submitted to Lab
WATER LEVEL
▽ At Completion
▼ After Hours
● Water on Rods

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

CURA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TEXAS
(214) 620 - 7117

RECORD OF SUBSURFACE EXPLORATION

Project No.: 24-92567	**Well/Boring #:** SVE-3A	**Date Drilled:** 11/29/94
Project: DUBLIN STATION	**Drilling Co.:** MCDONALD	**Drilling Method:** AIR ROTARY
	Driller: TM	**Logged By:** J.W.L.

DEPTH FEET	SOIL DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	OVA (PPM)	REMARKS
0	Brown/tan fine-grained sand				
5.0	Tan/light brown fine to medium-grained sand				
10.0	Light brown/brown fine-grained sand				
20.0	Brown/grayish fine-grained sand				
27.5	Bottom of boring at 27 feet				
35.0					

ABBREVIATIONS AND SYMBOLS

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

■ Sample Submitted to Lab
WATER LEVEL
▽ At Completion
▼ After Hours
● Water on Rods

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

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

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

Shell Oil Company

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

August 1, 1994

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

SUBJECT: DUBLIN STATION

Dear Mr. Olson:

As required by Condition 4 in your letter of July 13, Shell Oil Company is providing 72 hour notification of our intent to begin a Soil Vapor Extraction/Injection Test at Dublin Station on Thursday August 4. Enclosed is a description of the test.

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

Sincerely,

Neal Stidham
Transportation Engineering

cc: Mr. Jerry Sexton
Oil Conservation Division
Hobbs District Supervisor
P. O. Box 1980
Hobbs, NM 88240

Mr. Paul Newman
EOTT Energy Corporation
P. O. Box 4666
Houston, TX 77210-4666

fax recieved 8/1/94 on

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

July 21, 1994

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

RE: SOIL VAPOR EXTRACTION/INJECTION TEST (SVEI)
DUBLIN STATION
LEA COUNTY, NEW MEXICO

CURA PROJECT NO. 15-93676D.3

Mr. Stidham:

CURA, Inc. has scheduled SVEI evaluation operations at the above-referenced site for the week of August 1, 1994. The testing operations will be performed to determine the effective radius of influence, optimum flow rates and pressures for final design of a vapor remediation system.

Monitoring well MW-4 and soil vapor well nests SVN-1 and SVN-2 will each be evaluated using a 5 hp regenerative blower to create a vacuum during extraction testing and to supply air during injection testing.

Magnahelic gauges will be utilized to measure vacuum and monitor flow rates during the evaluation. Monitoring points will include the three 2-inch wells within each well nest (each nest contains a 2-inch well screened at 17 feet to 27 feet, at 50 feet to 60 feet, and at 95 feet to 105 feet); and monitoring wells MW-1, MW-2, MW-3 and MW-4.

The evaluation will be performed at several vacuum pressures and flow rates (actual rates will be selected based on field response). Once the desired flow rate has been achieved in the injection/extraction well, vacuum pressures and flow rates will be monitored until equilibrium is reached at which time the flow rates will be adjusted to evaluate the resulting changes in the system.

During testing, the concentration of VOC's in the exhaust gas will be measured using an OVA. In addition, a grab sample of the air stream will be obtained for laboratory analysis.

regulatory notification purposes.

CURA appreciates the opportunity to perform these services and will notify you of the exact date evaluation operations are scheduled to begin.

It is CURA's understanding that notification of the SVEI activities will be submitted to the NMOCD by SPLC and actual work will begin only upon receipt of your approval to proceed. If you have any questions please contact Wes Root at (915) 570-8408 or Mike Clark at (214) 620-7117.

Respectfully,
CURA, Inc.

F. Wesley Root
Environmental Geologist

Michael A. Clark, P.E.
Vice President

FWR/chs

1593676D.LTR

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

July 13, 1994

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

CERTIFIED MAIL
RETURN RECEIPT NO. P-111-334-145

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

RE: SITE ASSESSMENT AND REMEDIATION PLAN
SHELL DUBLIN CRUDE STATION
LEA COUNTY, NEW MEXICO

Dear Mr. Hite:

The New Mexico Oil Conservation Division (OCD) has completed a review of the following documents submitted by the Shell Oil Company regarding investigation and remediation of petroleum contaminants at the Shell Dublin Crude Station:

a. June 1, 1994 "DUBLIN STATION".

b. April 15, 1994 "SHELL PIPE LINE CORPORATION'S NEW MEXICO REMEDIATION PROJECTS".

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

d. November 10, 1993 "SITE ASSESSMENT, DUBLIN CRUDE OIL GATHERING AND PUMP STATION, LEA COUNTY, NEW MEXICO".

e. October 25, 1993 "PHASE III SUBSURFACE INVESTIGATION, DUBLIN STATION, LEA COUNTY NEW MEXICO, CURA PROJECT NO. 15-93676.3".

f. September 10, 1993 "SITE ASSESSMENT, DUBLIN CRUDE OIL GATHERING AND PUMP STATION, LEA COUNTY, NEW MEXICO".

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

h. March 9, 1993 "PHASE II ENVIRONMENTAL SITE ASSESSMENT, DUBLIN STATION, LEA COUNTY, NEW MEXICO, CURA PROJECT NO.15-9256703.3".

The investigation activities conducted to date appear to be satisfactory and the proposed remedial actions contained in the above referenced documents **are approved with the following conditions:**

1. Shell will determine the final level of remediation achieved upon completion of the enhanced insitu bioremediation of contaminated soils in the vicinity of borehole B-5 (ie. final concentrations of benzene, toluene, ethylbenzene, xylene and total petroleum hydrocarbons).

2. A completion report containing the actual construction specifics of the air extraction system will be submitted to the OCD Santa Fe Office by October 1, 1994. A copy of this document will also be provided to the OCD Hobbs Office.

3. The "Performance Status Report" will also include the status of the enhanced insitu bioremediation of contaminated soils in the vicinity of borehole B-5 and the results of any additional ground water sampling events. The report will be submitted to the OCD Santa Fe Office by February 2, 1995 and a copy of this document will also be provided to the OCD Hobbs 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 this work plan fail to adequately remediate contamination 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 Supervisor
Wayne Price, OCD Hobbs Office

Shell Pipe Line Corporation

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

June 1, 1994

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

SUBJECT: DUBLIN STATION

Dear Mr. Olson:

I respectfully submit the following responses to your comments of December 1, 1993 concerning Shell Pipe Line's proposed remediation action at Dublin Station.

Comment #1-The 10-12' interval adjacent to MW-3 that showed high total benzene, in October 1993, was re-sampled on March 22, 1994. Two samples were taken, MW-3A and MW-3B. The samples were analyzed to determine if the extractable benzene was great enough for these to be subject to hazardous waste regulation. The TCLP benzene was .005 and .006mg/l. These samples are well below the hazard threshold of .5mg/l, laboratory results enclosed.

Comment #2-Until the SVE system is in-place and tested, it is not possible to predict exactly how much contaminant will be removed, nor how fast it will come out. What is known is that the light, volatile, and mobile components will be readily removed from the soil leaving the heavier immobile components. Once exhaust gas testing demonstrates that contaminant recovery has effectively ceased, we will resample the affected zone to check the TPH and BTEX concentrations. The results of this sampling will be used to determine whether some other active remediation technique or a risk based analyses is appropriate.

Comment #3-The plans for the installation, operation, and monitoring of the Dublin SVE system is outlined in the enclosed "Scope of Services" from our consultant.

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

Sincerely,

Neal Stidham

Attachments

cc: Paul Newman
EOTT Energy Corporation

SCOPE OF SERVICES

CURA's Contamination Reduction Plan (CRP) will consist of a soil vapor extraction (SVE) and air injection system that can also be utilized for bioventing, if required. The CRP will include the following:

- Installation of two air extraction well nests
- Initial system evaluation
- Regulatory notification
- Final installation of system
- Performance monitoring
- Operation and maintenance activities
- Reporting

APPROACH

CURA's approach to this project, the CRP, is based on efforts to remediate hydrocarbon impacted soils utilizing air, both by vacuum and injection, to reduce the volatile components and promote in-situ natural biogdegradation of less volatile hydrocarbons. The proposed system of extraction/air injection will allow feasible remedial efforts in the form of maximum air movement through impacted soils. In the event that air emissions are in excess of regulatory levels or extraction results level out over time, the system can be easily adjusted to a bioventing system by reducing extraction flow rates. The following three phase approach is recommended.

Phase I - Air Extraction Well Nest Installation/Extraction Evaluation

Two air extraction well nests will be installed on-site proximal to existing monitor well MW-4. Each extraction well will be constructed in a "nested fashion", consisting of three 2-inch PVC wells which will be installed to a depth were either geologic or hydrocarbon concentrations indicate the best potential for extraction (permeable zones with high organic vapor analyzer [OVA] readings). A typical nested SVE well is presented in Appendix A.

Upon completion of well installation, each well nest will be evaluated by connecting it to a 5 horsepower extraction unit to measure the vacuum and monitor flow rate. The vacuum created at the remaining wells will also be measured. Vacuum pressures and flow rates will be monitored until equilibrium is reached, at which time the flow rates will be adjusted to evaluate the resulting changes in the system. This data will be reduced to identify the effective radius of influence, optimum flow rates and pressures for the system.

Concurrent with the SVE evaluation, CURA will evaluate the air injection portion of the system using monitor well MW-4. Again the evaluation will identify optimum pressure and flow rates for maximizing VOC recovery. During the injection, the concentration of VOC's in the SVE exhaust gas will be measured using an OVA. In addition, a grab sample of the air stream will be obtained for laboratory analysis. This data will determine operational characteristics of the system for air regulatory notification purposes.

Phase II - Regulatory Notification/Final Installation

Based on the results of the Phase I evaluation, CURA will submit a Notice of Intent to the New Mexico Department of Environmental Quality (NMDEQ) for estimated emissions from the system. CURA intends for the system to operate below NMDEQ allowable emission standards and thereby not require an air permit for the system. In addition, CURA will obtain any necessary local building permits as required.

CURA will finalize system components and equipment specifications. Equipment will be ordered pending final approval of the Notice of Intent (expected 30 day review period).

The system is expected consist of the following primary components.

- Two well nests
- One blower (SVE) with motor starter, one blower (air injection)
- Associated piping (aboveground) to connect components
- Valves and gauges to monitor each blower, and individual wells within each nest
- Moisture/particulate filters for each blower

- Control panel
- Equipment skid (portable)

CURA will prepare a report to document system installation, evaluation and components. This will include engineering drawings to identify system components and configurations.

Final construction and installation of the system will then be performed. System start up will be conducted to ensure that the system is operated at maximum efficiency.

Phase III - Performance Monitoring/Operations and Maintenance

CURA will have the primary responsibility for operation and maintenance of the system. We will also complete scheduled performance monitoring. These will include system maintenance, emissions monitoring, and measurement of vacuum and injection pressures to operate the system at optimum conditions and monitor its progress. This proposal covers these activities for the remainder of 1994.

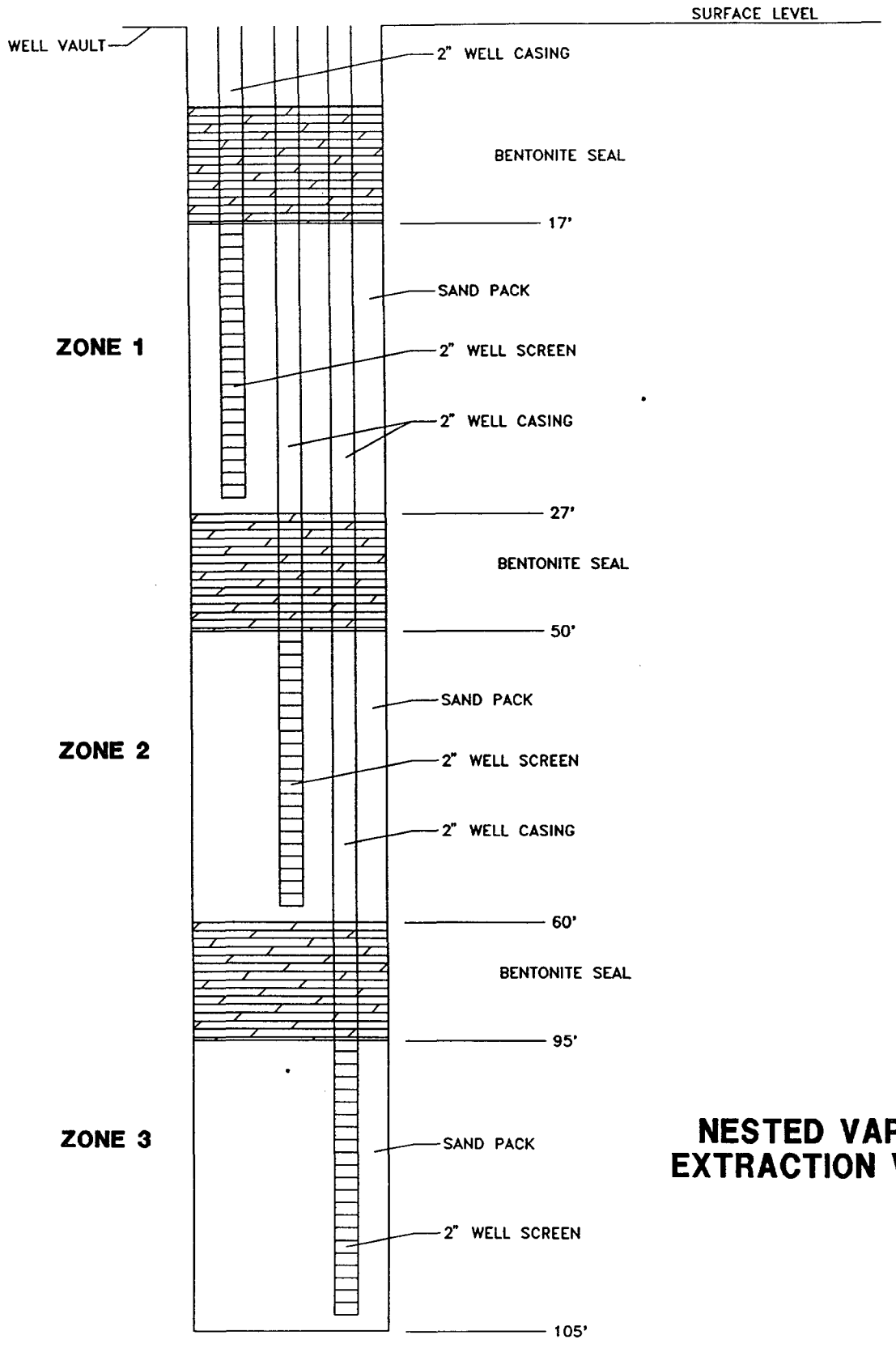
During the first month of operation weekly visits (4) will be conducted to monitor the system. Two bi-weekly visits will be conducted in the second month, with monthly visits for the remainder of 1994 (4 visits). The following will be conducted during each unit:

- Obtain air sample for BTEX, TPH and CO_2 analysis*
- Obtain flow rate and pressure readings from system.
- Use OVA to screen individual well emissions
- Check system components with routine maintenance as necessary or scheduled.

* During the first six visits only four air samples will be obtained.

At the end of the calendar year, CURA will prepare a Performance Status report for system operations in 1994.

APPENDIX A



NESTED VAPOR EXTRACTION WELL

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

DUBLIN STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
APR 1994	NTS
PROJECT NO.	FIGURE NO.
15-93676	2

APR 12 1994

SWL SOUTHWESTERN LABORATORIES

1703 West Industrial Avenue * P.O. Box 2150, Midland, Texas 79702 * 915/683-3349

Client CURA Incorporated
731 W. Wadley, Suite L-200
Midland, Texas 79705
915/570-8408 FAX 915/570-8409
Attn: Bill Smith

Client No. 26165100
Report No. M4-03-201
Report Date 04/07/94 16:45

Project No. 15-9367600C.3

Date Sampled 03/22/94

Sampled By Gil Van Deventer

Sample Type Soil

Transported by Gil Van Deventer

P.O. # _____

Date Received 03/23/94

Lab No.	Sample Identification
M4-03-201-01	Dublin MW-3A(10-12') Duplicate

SOUTHWESTERN LABORATORIES

ABB
Reviewed By

Albert B. Johnston
ALLAN B. JOHNSTON

SOUTHWESTERN LABORATORIES

Order # M4-03-201

04/04/94 10:03

Client: CURA Incorporated

TEST RESULTS BY SAMPLE

Sample Description: Dublin MW-3A(10-12') Lab No: 01A

Test Description: BTEX - SOIL SAMPLE Method: SW-846, 8020 Test Code: BTEX_S

Collected: 03/22/94

Date Extracted		Date Started	03/25/94
Analyst	MD	Detection Limit	0.30
Units	mg/kg	Method	SW-846, 8020

Compound	Results
BENZENE	0.3
TOLUENE	5.1
ETHYLBENZENE	13.5
XYLENE	24.6

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 94-03-842

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).: 9403842

Soil sample "MW-3A (10-12')" (SPL# 9403842-01B) 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. 9403842-01

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

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

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA, Inc.
SAMPLE ID: MW-3A (10-12')

PROJECT NO: 15-9367600C.3
MATRIX: SOIL
DATE SAMPLED: 03/22/94 18:00:00
DATE RECEIVED: 03/24/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	440	25 P	µg/Kg
Surrogate	**% Recovery**		
TOLUENE-D8	90		
4-BROMOFLUOROBENZENE	195		
1,2-DICHLOROETHANE-D4	97		
VOLATILE ORGANICS - METHOD 8240***			
Analyzed by: JC			
Date: 03/25/94			
Benzene	460	500	µg/Kg
METHOD 8020***			
Analyzed by: KA			
Date: 03/25/94 10:02:10			
TCLP Benzene	5.4	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

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

Matrix:	Soil	**Reported on:**	04/06/94 15:13:40
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

COMPOUND	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 15:13:26
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.: 403842 SAS No.: _____ SDG No.: 403842

Level:(low/med) LOW

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	MW-3A(10-12_	90	195 *	97	0	1
02	MW-3A(10-12_	110	152 *	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.: 403842

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.: 403842 SAS No.: _____ SDG No.: 403842

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	MW-3A(10-12_	9403842-01B	V384201	1523

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 09:42
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 9403842-01

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.: 403842 SAS No.: _____ SDG No.: 403842

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	MW-3A(10-12_	9403842-01B	V384201A	1239

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

SPL Blank QC Report

Matrix: Soil
Sample ID: VSBLK010328
Batch: VOA940328072400

Reported on: 03/30/94 09:42
Analyzed on: 03/28/94 8:55
Analyst: HLW

Compound	Result	Detection Limit	Units
Benzene	ND	5	µg/Kg

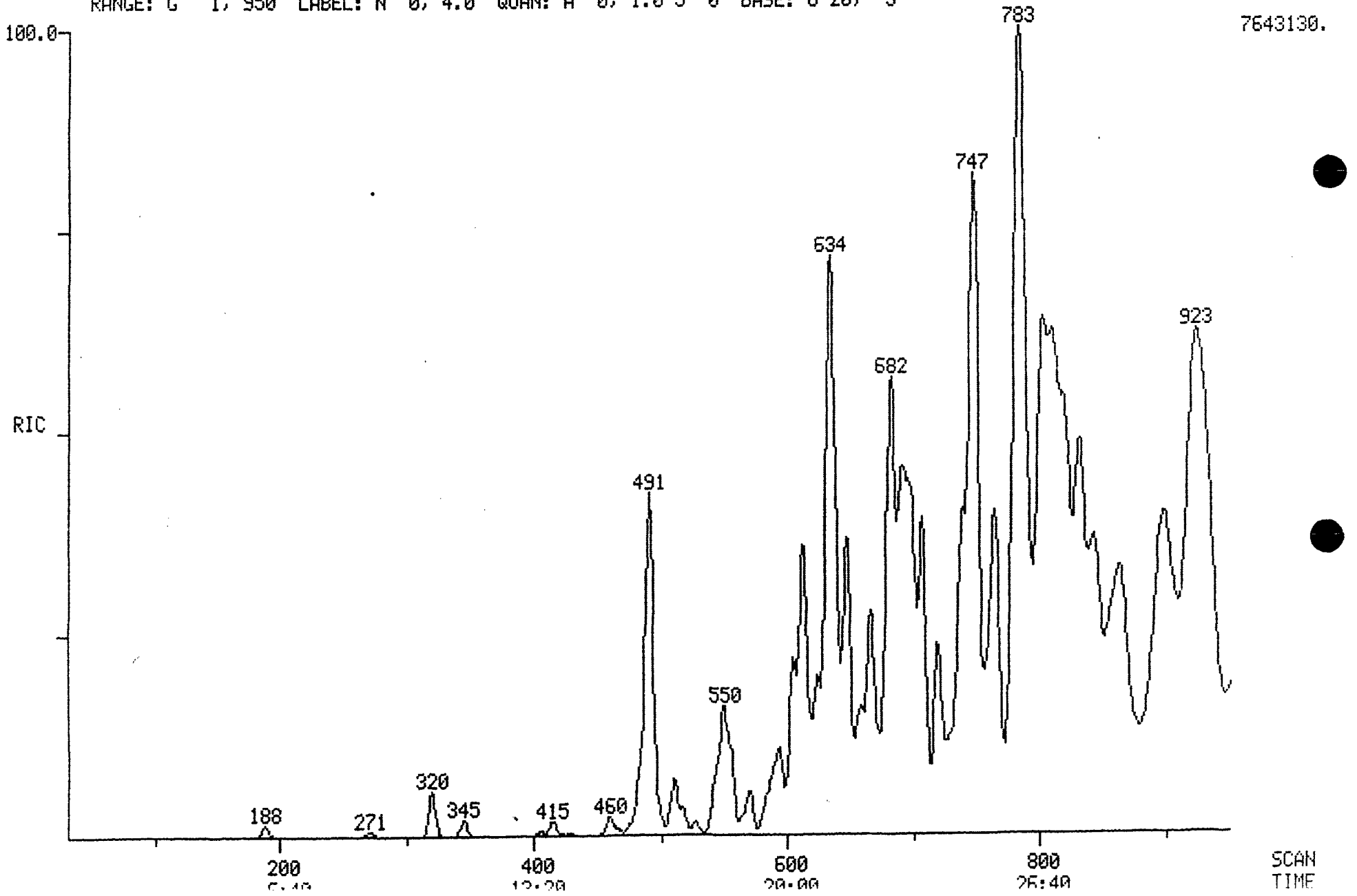
Surrogate	Result	QC Criteria	Units
Toluene-d8	98	84-138	% Recovery
4-Bromofluorobenzene	101	59-113	% Recovery
1,2-Dichloroethane-d4	103	70-121	% Recovery

Samples in Batch 9403842-01

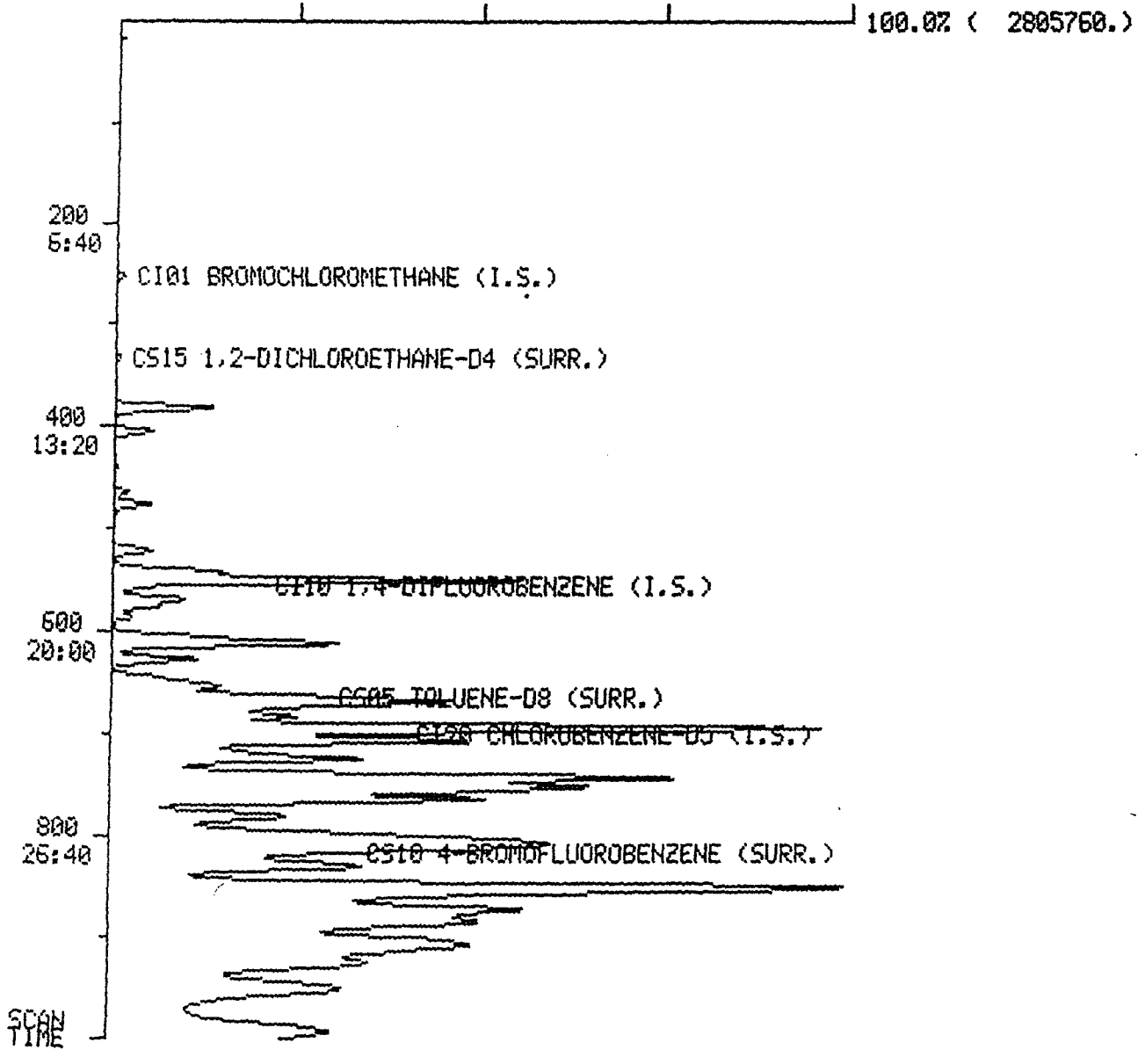
Notes

ND - Not detected.

Idelis Williams, QC Officer


RIC
DATA: V384201A #1
SCANS 30 TO 950
03/28/94 12:39:00
CALI: V384201A #3
SAMPLE: BTEXVS,403842,,MW-3A (10-12'),L,S,9403842-01B,V,E,1.0G,
CONDS.: PACK,0328V52A1,0328BFA1,0328VSBA1,,,,45/3-220@8,INST A,
RANGE: G 1, 950 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3
100.0
7643130.
RIC
188
271
320
345
415
460
491
550
634
682
747
783
923
200
400
600
800
SCAN
TIME

DATA FROM FILE: V384201 SCANS 1 TO 1000 ACQUIRED: 03/25/94 15:23:00
CALI: V384201 #3
SAMPLE: BTEXVS,403842,,MW-3A (10-12'),L,S,9403842-01B,V,E,5.0 GRS,
CONDS.: PACK,0325VS2B1,0325BFB1,0325VSBB1,,,,45/3-220@8,INST B1,



9403842

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING

CHAIN OF CUSTODY RECORD NO. H 10215

Date: 3-22-94
Page 1 of 1

SITE ADDRESS: Dublin Station
Lea County, NM
~~WIC #~~ Proj # 15-93676 00C.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) ☐ BTEX	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
MW-3A(10-12)	3/22/94	1800		✓		✓			ice						2	8	✓		✓									* If benzene ≥ 0.05 mg/kg based on 8020 and/or 8240 results then also analyze for TCLP Benzene

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
Gil Van Deventer	3/23/94	1115			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE) intact 3°	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
				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 SPLC 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: 3/24 TIME: 14:00 CLIENT NO. _____
LOT NO. _____ CONTRACT NO. _____

CLIENT SAMPLE NOS. _____

SPL SAMPLE NOS.: 9403842

		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#: By Fed Ex: 0597877453		
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: Linda Williams DATE: 3/24/94
DELIVERED FOR RESOLUTION: REC'D _____ DATE: _____
RESOLVED: _____ DATE: _____

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 94-03843

Approved for release by:

M. Scott Sample

S. Sample, Laboratory Director

Date: 4/7/94

Barbara Martinez

Barbara Martinez, Client Services Representative

Date: 4/7/94

Certificate of Analysis No. 9403843-01

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

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

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA, Inc.
SAMPLE ID: MW-3B (10-12')

PROJECT NO: 15-9367600C.3
MATRIX: SOIL
DATE SAMPLED: 03/22/94 18:20:00
DATE RECEIVED: 03/24/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	52	25 P	µg/Kg
Surrogate	**% Recovery**		
TOLUENE-D8	103		
4-BROMOFLUOROBENZENE	111		
1,2-DICHLOROETHANE-D4	106		
VOLATILE ORGANICS - METHOD 8240***			
Analyzed by: JC			
Date: 03/25/94			
Benzene	290	500	µg/Kg
METHOD 8020***			
Analyzed by: KA			
Date: 03/25/94 10:02:10			
TCLP Benzene	4.3	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

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

Matrix:	Soil	**Reported on:**	04/06/94 15:11:55
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

COMPOUND	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 15:11:41
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.: 403843 SAS No.: _____ SDG No.: 403843

Level:(low/med) LOW

	EPA SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	MW-3B(10-12_	103	111	106	0	0
02	VBLK01	97	86	94	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.: 403843

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.: 403843 SAS No.: _____ SDG No.: 403843

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	MW-3B(10-12_	9403843-01B	V384301	1642

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

Shell Pipe Line Corporation

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

April 15, 1994

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

SUBJECT: Shell Pipe Line Corporation's New Mexico Remediation Projects

Dear Mr. Olson,

This letter is to provide you an update on Shell Pipe Line's effort to address the items in your letters of December 1993 regarding the six stations in New Mexico. I will be addressing each item in each of your letters in the near future, however at this time I will only provide an overall review.

We have re-sampled the soil at the locations noted in your letter and have submitted them for analyses. Response from the laboratory has been slower than expected. Design work is underway for the soil vapor extraction system at Dublin and Phase Separated Hydrocarbon recovery and source identification continues at Denton. We also will be sampling all of our monitoring wells this spring. This sampling will give us at least two data points and in many cases three in the past 12-18 months. Developmental water will be drummed and held onsite pending receipt of the laboratory results of the water sample. If the analyses is .5mg/l benzene, or more, the appropriate drum will sampled for benzene content. If this sample is .5 mg/l or greater benzene, the drummed water will be handled in accordance with applicable New Mexico hazardous waste rules and regulations. Water less than .5mg/l benzene will be discharged on site.

Again, I will be providing you a report for each station and addressing each item as soon as possible. If you have any questions please call me at 713-241-2961.

Sincerely,

Neal Stidham

Neal Stidham
Environmental & Technical

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 not. Prd., 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

December 1, 1993

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

CERTIFIED MAIL
RETURN RECEIPT NO. P-667-242-416

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 REMEDIATION PLAN
SHELL DUBLIN 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 "SITE ASSESSMENT, DUBLIN CRUDE OIL GATHERING AND PUMP STATION, LEA COUNTY, NEW MEXICO".

c. October 25, 1993 "PHASE III SUBSURFACE INVESTIGATION, DUBLIN STATION, LEA COUNTY NEW MEXICO, CURA PROJECT NO. 15-93676.3".

d. September 10, 1993 "SITE ASSESSMENT, DUBLIN CRUDE OIL GATHERING AND PUMP STATION, LEA COUNTY, NEW MEXICO".

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

f. March 9, 1993 "PHASE II ENVIRONMENTAL SITE ASSESSMENT, DUBLIN STATION, LEA COUNTY, NEW MEXICO, CURA PROJECT NO.15-9256703.3".

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

1. The October 25, 1993 investigation report documented total benzene present in the soils during the drilling of monitor well MW-3 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 the OCD with a Toxic Characteristic Leaching Procedure (TCLP) benzene analysis of the soils from this area.

2. The November 10, 1993 report proposes enhanced insitu bioremediation of contaminated soils in the vicinity of borehole B-5. However, the proposal does not contain a method for documenting the final contaminant level upon completion of the project. Please supply the OCD with a method for confirming that this remedial action will meet the OCD's recommended soil remediation levels or an approved alternate risk based remediation level.

3. The November 10, 1993 report recommends converting monitor well MW-4 to a vacuum extraction well for the remediation of deep contaminated soils. However, these documents contain no information on the type of system proposed to be used or how the system will be monitored. Please provide the OCD with a construction design and monitoring proposal for vacuum extraction system.

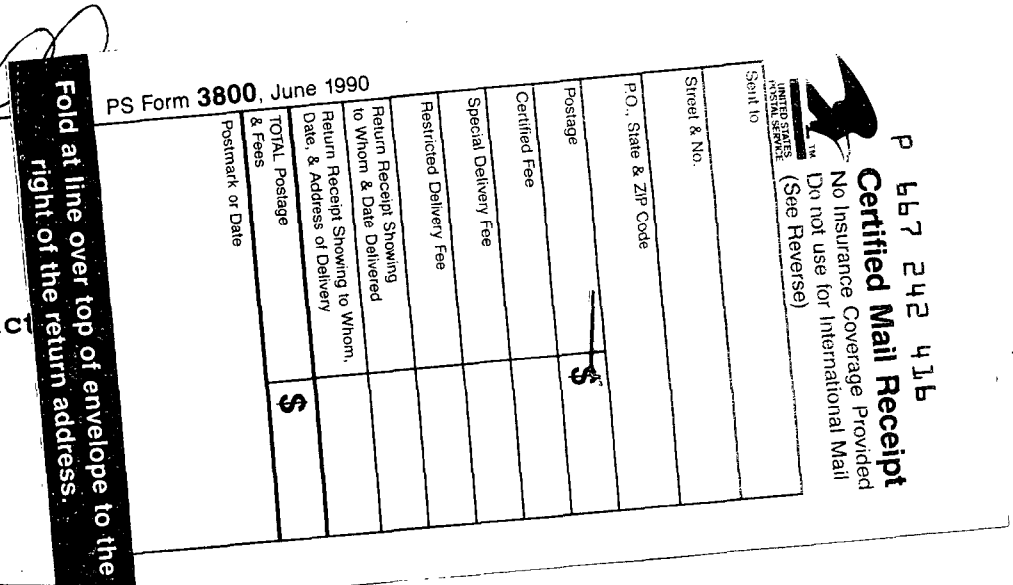
Receipt of the above information will allow the OCD to complete a review of the above referenced documents.

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

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

xc: OCD Hobbs District



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.

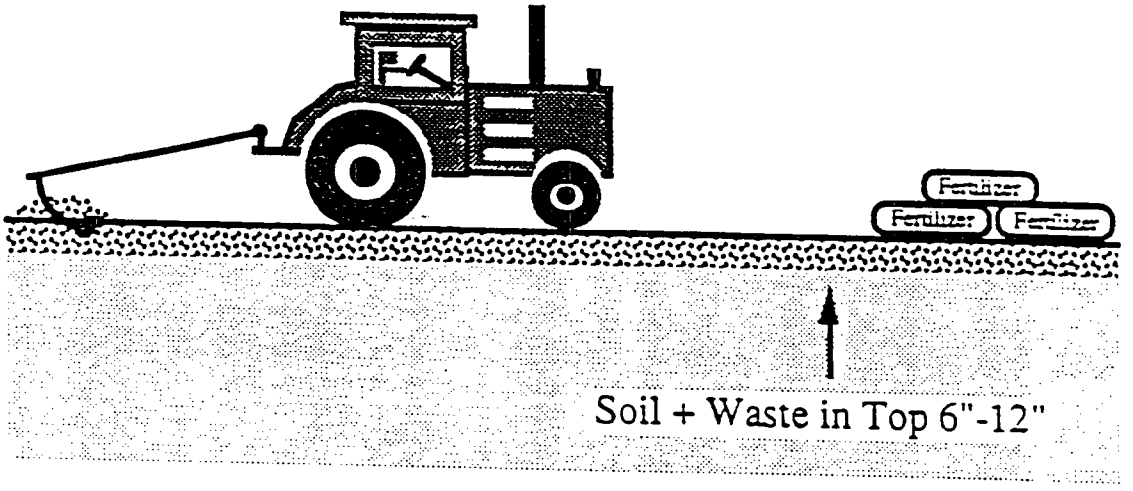
Sincerely,

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 Resources Department
Oil Conservation Division
ATTN Mr. William C. Olson
Hydrogeologist - Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504

Gentlemen:

SUBJECT: SITE ASSESSMENT
DUBLIN CRUDE OIL GATHERING AND PUMP STATION
LEA COUNTY, NEW MEXICO

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

CURA advanced 8 soil borings in areas where crude oil impact to the environment was likely to occur. The work plan called for a minimum of two samples per boring to be collected for analysis for TPH and BTEX. Monitoring wells were to be installed where groundwater was encountered. Groundwater was not encountered at the Dublin Station during the initial assessment.

Dublin Station is located approximately 4000 feet southwest of the community of Bennett and 4 miles south of the city of Jal in Lea County, New Mexico. The station is surrounded by a barbed wire fence with a locked gate. 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.

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 about 3,000 feet southwest of the site. The current status and construction data on this well are unknown.

Currently, the shallow groundwater in the site area is not used as a drinking water source. The drinking water in Jal and Bennett is supplied from a well field located about 4 miles southwest of the site that produces from the Quaternary alluvium at a total depth of 650 feet.

DublinSt.jbh

TPH values above 5000 ppm were found at two locations on the site. B-5 (near the sump for the pumping unit) had a TPH value of 15,000 ppm at 1 - 3 feet and had dropped to 14 ppm at 10 - 12 feet. Based on data obtained, the northern extent of hydrocarbon imported soils near the sump and pumping equipment in the southwest corner of the site is limited to an area less than 50 feet wide (east - west) with a maximum depth of 5 feet near B-5.

The impacted soils identified by boring B-8 south of the sump extend to a minimum depth of 92 feet. TPH values range from 20 ppm to 12,000 ppm in B-8. BTEX values in B-8 ranged from less than 0.001 ppm to 70.3 ppm. The soil benzene levels in B-8 ranged from <0.001 ppm to 0.028.

On September 28, 1993 CURA, Inc. installed four monitorings to delineate the impacted soil around boring B-8 in the southwest corner of the property. The four monitoring wells were drilled to groundwater which was encountered at 109 feet below surface level. Water samples were collected and analyzed. The benzene levels were all less than 0.001 ppm for the water. MW-4 (installed near B-8) had 0.003 ppm ethylbenzene, 0.12 ppm xylenes, 0.15 ppm BTEX and 9 ppm TPH. The soil TPH values ranged between <10 ppm and 12,000 ppm and the higher values were found only in B-8, MW-3 and MW-4.

These results indicate that the crude oil traveled straight down in the vicinity of B-8 and has had limited impact to the groundwater.

Shell believes this is a low to moderate risk site (see attached Ranking Criteria Form).

Shell proposes to land farm the impacted soil around B-5 by tilling and disking the soil in place. Fertilizer will be added at 200 lbs/acre. The area to be land farmed is approximately 30 feet by 30 feet. Shell proposes to install a vacuum extraction system on MW-4 well.

Please advise if these proposed plans are acceptable to the New Mexico Oil Conservation Division. Upon receiving your approval, we will implement the work.

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

Sincerely,

John B. Hite
Engineering Advisor
General Engineering

Attachment

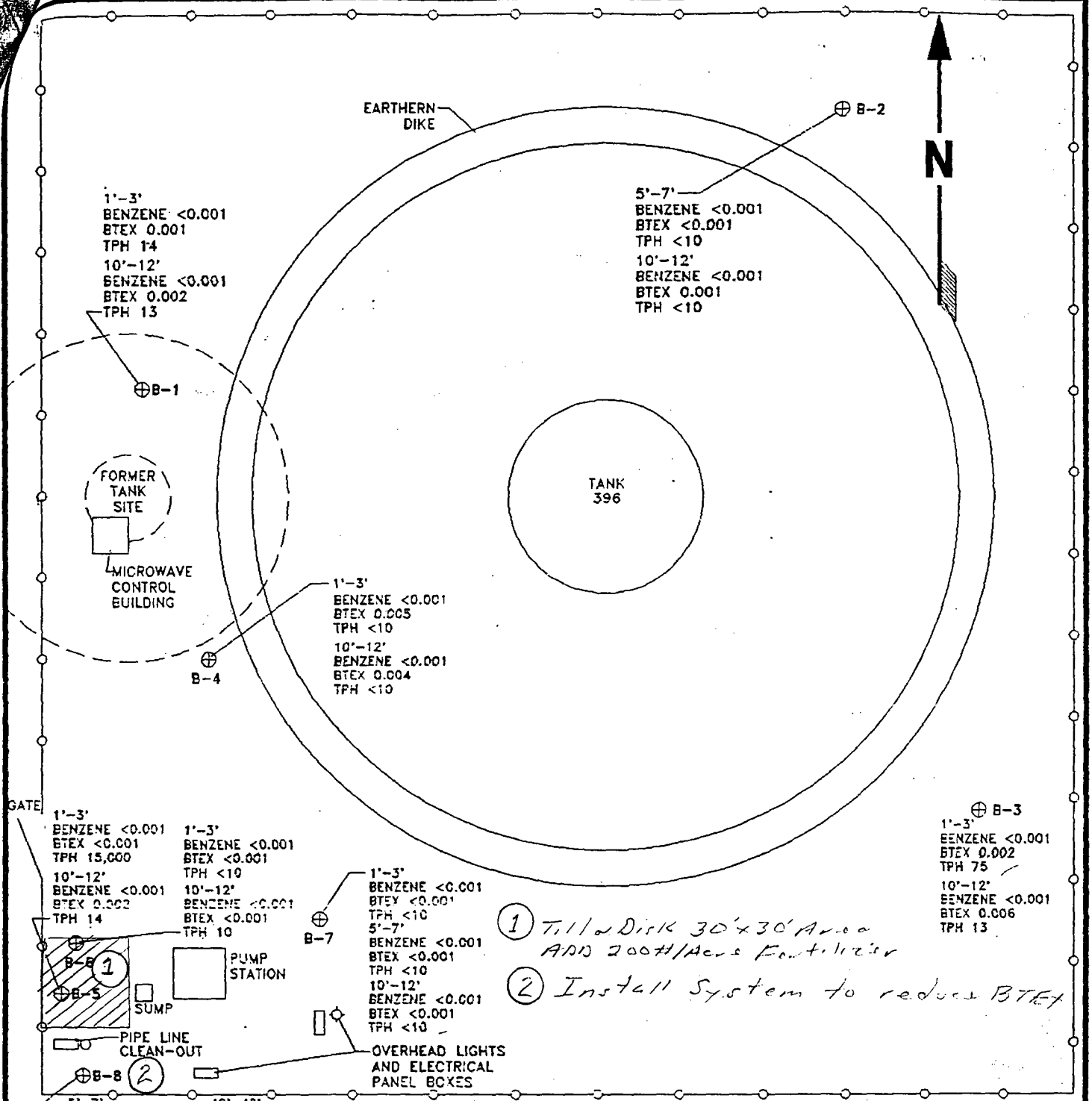
DublinSt.jbh

Dublin Station

RANKING CRITERIA

	Ranking Score	Score
Depth to Groundwater		
< 50 feet or unknown	20	____
50 - 99	10	____
100 - 200	5	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	____
Moderate permeability	5	0
High permeability	10	____
Total		10

DG330101.JBH



SITE MAP

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

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

DUBLIN STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

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

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

RECEIVED
NOV 16 1993
OIL CONSERVATION DIV.
SANTA FE

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

CURA PROJECT NO. 15-93676.3

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 three soil borings to an approximate depth of 120 feet and subsequent conversion to monitor wells after encountering groundwater. A fourth boring/monitor well was installed to complete site delineation. The borings were completed to delineate hydrocarbon impacted soils previously identified in boring B-8 and evaluate potential groundwater impact.

Hydrocarbon-impacted soils were identified during previous investigations in borings B-5 and B-8 to depths of 95 feet where drilling was discontinued.

SOIL BORING OPERATIONS AND ANALYTICAL RESULTS

On September 28 and 29, 1993, four monitor wells (MW-1, MW-2, MW-3, and MW-4) were each drilled to a depth of 120 feet using an air rotary drilling rig. Monitor wells MW-1 and MW-2 were placed off-site in the apparent downgradient direction (based on surface topography) and MW-3 was placed upgradient from the sump, subsurface piping, and associated pipeline clean-outs (possible source areas) located in the southwest corner of the site. Monitor well MW-4 was placed near the center of the suspected on-site source areas

and screened from 120 feet to 60 feet for future use as a soil vapor extraction well (Appendix A, Figure 1).

The soils encountered during the boring operations consisted of 15 to 27 feet of brown fine to medium-grained sand (SM) underlain by a series of fine-grained sands (SM) containing discontinuous zones of silty calcareous sands (caliche) to a depth of 120 feet (maximum boring depth).

Groundwater was encountered at approximately 109 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 BTEX.

Field observations during the soil sampling operations indicated no significant hydrocarbon-impacted soils are present in the two downgradient borings (MW-1 and MW-2) based on visual observation, OVA readings, and analytical results. The soil sample analytical results from borings B-8, MW-3, and MW-4 indicate vertical hydrocarbon-impact (>10 ppm benzene, >50 ppm BTEX, or >100 ppm TPH) to the subsurface soils is greatest adjacent to B-8 and MW-4 with impacted soils extending from near surface to groundwater at approximately 109 feet below groundwater surface. The horizontal extent of hydrocarbon-impacted soils appears limited to a radius of less than 50 feet from boring B-8.

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

Borings MW-1 through MW-4 were each drilled to a depth of 120 feet and completed as monitor wells to characterize groundwater conditions. Monitor wells MW-1 and MW-2 were located immediately downgradient, and MW-3 was placed upgradient of the probable source areas. Monitor Well MW-4 was placed adjacent to boring B-8 to delineate previously identified hydrocarbon impacted soils. The monitor wells were constructed of 4 inch diameter schedule 40 PVC well casing and screen. The screened portion of the monitor wells were surrounded by a sandpack which was capped with a bentonite seal (minimum thickness of 4 feet). The annular space above the bentonite seal was then grouted to surface. A 3-foot by 3-foot concrete pad and an 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 intervals and well construction materials used.

The monitor wells were gauged on September 30, 1993 to determine the presence of PSH, groundwater elevation and gradient. Depth to groundwater on site measured 109 feet below ground surface with the apparent groundwater gradient toward the south-southwest. A groundwater gradient map is presented in Figure 3 (Appendix A). No PSH was observed in the monitor wells 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 wells MW-1 through MW-4 recorded BTEX and TPH levels ranging from less than the method detection limits of 0.001 mg/l (parts per million; ppm) and 1 mg/l, respectively in MW-1 and MW-2 to a BTEX level of 0.015 ppm and a TPH level of 9 ppm in MW-4. The levels of the individual components of BTEX are below the New Mexico Water Quality Commission (WQC) maximum allowable concentrations in groundwater (MACs).

CONCLUSIONS

- Field observations, OVA readings and soil sample analytical results indicate that hydrocarbon-impacted soils exceeding the OCD recommended clean-up standards for

crude oil impacted soils are limited to an area centered around boring B-8 (less than 50' diameter by 106 feet deep).

- No PSH was observed in monitor wells MW-1, MW-2, MW-3, or MW-4.

- No significant groundwater hydrocarbon impact is indicated as the dissolved individual components of BTEX concentrations from MW-1 through MW-4 indicate levels below the WQC established MACs.

RECOMMENDATIONS

Remedial efforts should include a venting/sparging system that will remediate impacted soils through the promotion of insitu bioremediation.

Shallow impacted soils should also be treated in-situ enhanced bioremediation or through excavation and subsequent landfarming.

CURA will present a workplan for additional activities as requested. 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

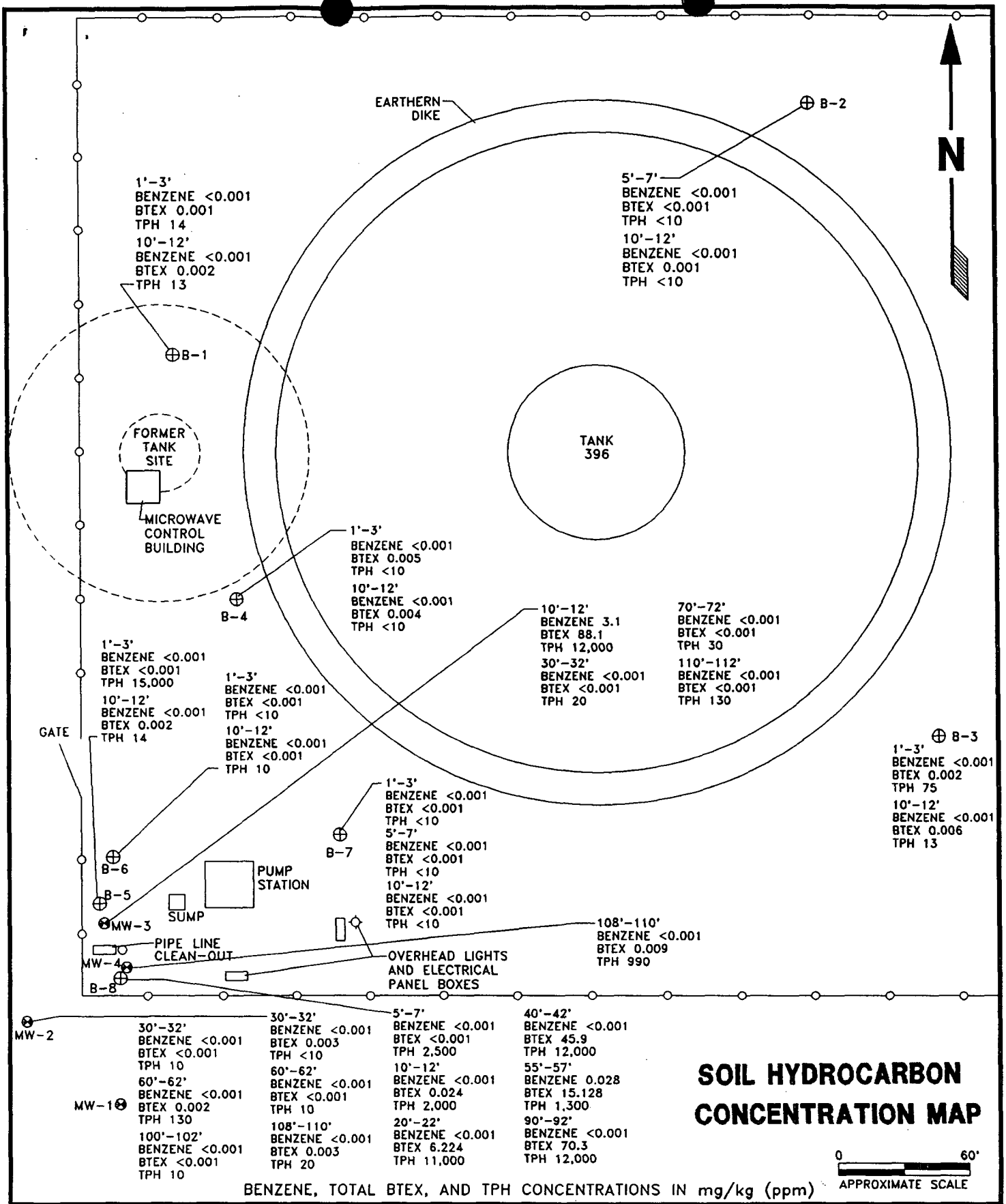
Greg C. Walterscheid, R.E.M., C.P.G.
Branch Manager - Midland

FWR/chs

Attachments

APPENDIX A

FIGURES



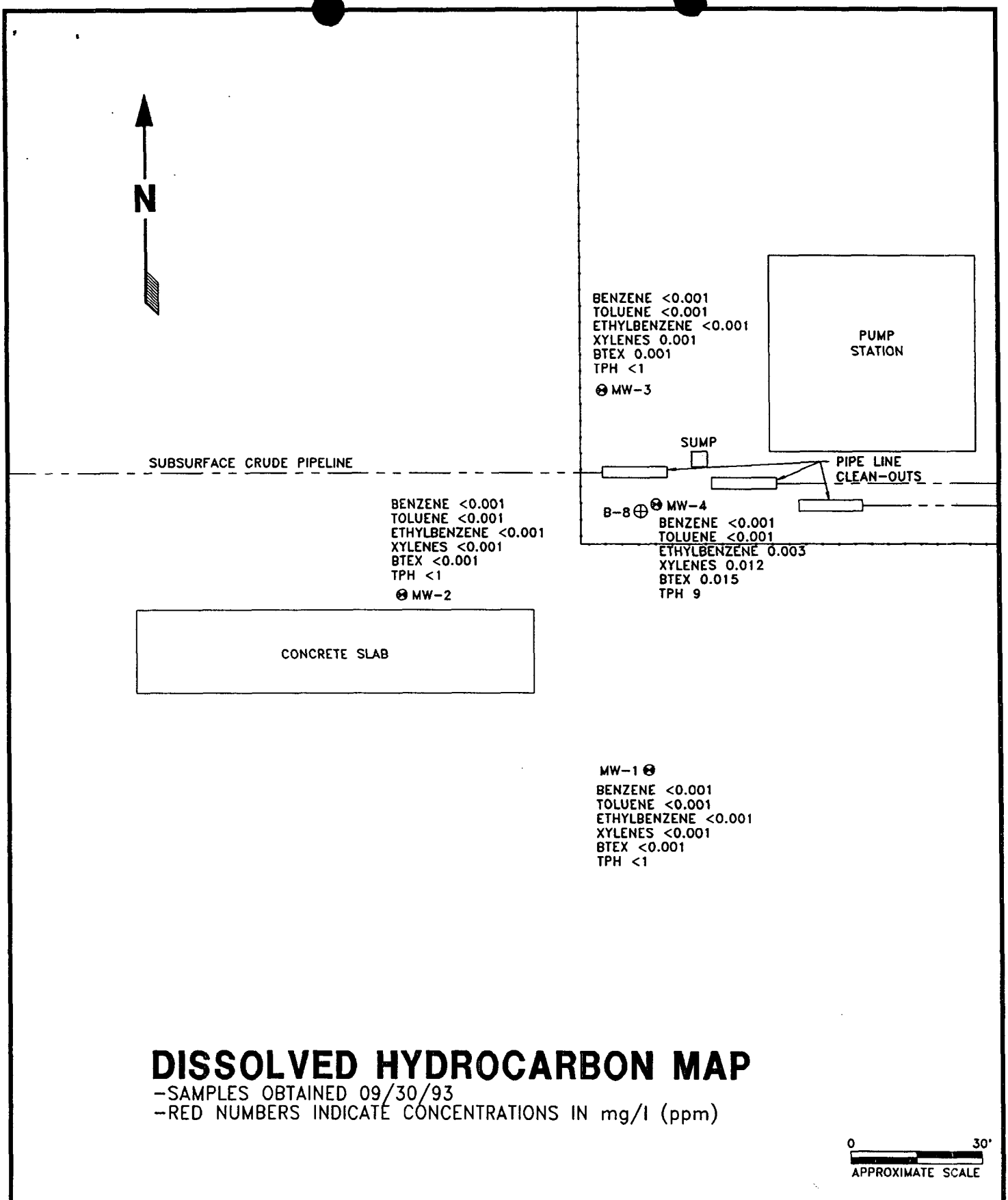
SOIL HYDROCARBON CONCENTRATION MAP

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

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

DUBLIN STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
OCT 1993	SEE ABOVE
PROJECT NO.	FIGURE NO.
15-93676	1



DISSOLVED HYDROCARBON MAP

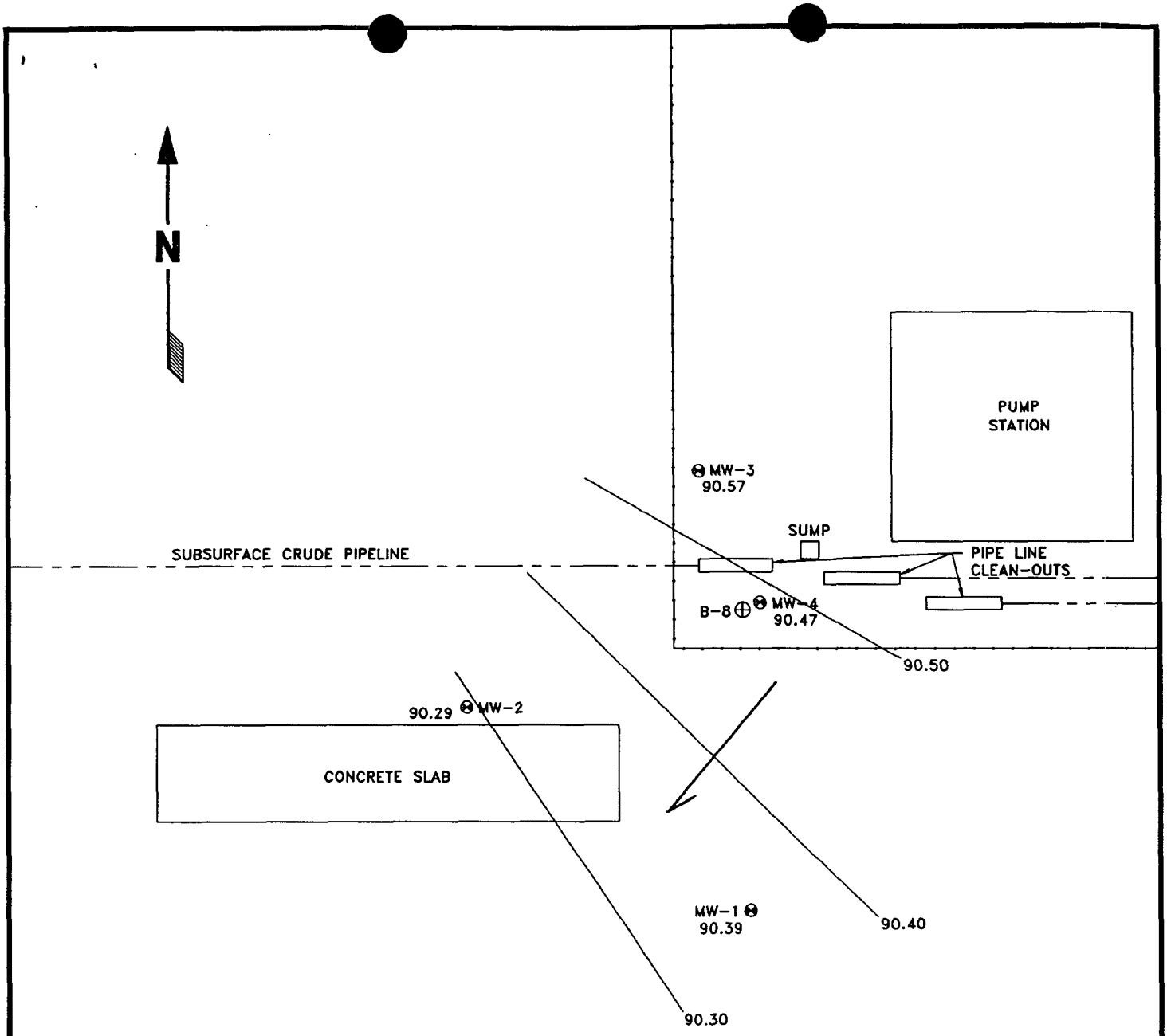
-SAMPLES OBTAINED 09/30/93
-RED NUMBERS INDICATE CONCENTRATIONS IN mg/l (ppm)

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

DUBLIN STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
OCT 1993	SEE ABOVE
PROJECT NO.	FIGURE NO.
15-93676	2



GROUNDWATER GRADIENT MAP

-WATER LEVELS OBTAINED 09/30/93
-CONTOUR INTERVAL = 0.10 FEET

0 30'
APPROXIMATE SCALE

BENCHMARK (200.00 FT.)

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

DUBLIN STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
OCT 1993	SEE ABOVE
PROJECT NO.	FIGURE NO.
15-93676	3

APPENDIX B

SOIL BORING LOGS

CRS 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.: 15-93676	Well/Boring #: MW-1	Date Drilled: 09/28/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO	Depth of Boring: 122 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 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: 100 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 fine to medium-grained SAND (SM)					
2.5						
5.0		1	SS	<1		
7.5						
10.0		2	SS	<1		
12.5						
15.0	Brown & gray mottled slightly calcareous SAND (SM)	3	SS	<1		
17.5						
20.0	Brown fine to medium-grained SAND (SM)	4	SS	<1		
22.5						
25.0						
27.5	Yellow-green & gray mottled calcareous SAND (caliche)					
30.0						

ABBREVIATIONS AND SYMBOLS

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

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
Factory-Slotted Well Screen
Sand Pack
Well Casing
Bentonite Seal
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.: 15-93676	Well/Boring #: MW-1	Date Drilled: 09/28/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO	Depth of Boring: 122 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 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: 100 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	Yellow-green & gray mottled calcareous SAND (caliche)	5	SS	<1		Benzene <0.001 mg/kg BTEX <0.001 mg/kg TPH <10 mg/kg
32.5						
35.0						
37.5						
40.0		6	SS	<1		
42.5						
45.0						
47.5						
50.0	Red-brown & gray mottled calcareous SAND (caliche)	7	SS	<1		
52.5						
55.0						
57.5						
60.0	Red-brown fine to medium-grained SAND (SM)					

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ABBREVIATIONS AND SYMBOLS

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MD-Mud Drilling

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

■ Sample submitted to lab
Bottom Cap
Factory-Slotted Well Screen
Sand Pack
Well Casing
Bentonite Seal
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.: 15-93676	Well/Boring #: MW-1	Date Drilled: 09/28/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO	Depth of Boring: 122 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 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: 100 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	Red-brown fine to medium-grained SAND (SM) With occasional calcareous streaks	8	SS	2		Benzene <0.001 mg/kg BTEX=0.002 mg/kg TPH=130 mg/kg
62.5						
65.0						
67.5						
70.0						
72.5						
75.0						
77.5						
80.0		9	SS	<1		
82.5						
85.0						
87.5						
90.0						

SS-Driven Split Spoon
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▽ At Completion
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Bottom Cap
Factory-Slotted Well Screen
Sand Pack
Well Casing
Bentonite Seal
Volclay Grout Seal

CRA INC.
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BLDG. C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-8219

RECORD OF SUBSURFACE EXPLORATION

Project No.: 15-93676	Well/Boring #: MW-1	Date Drilled: 09/28/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO	Depth of Boring: 122 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 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: 100 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
90.0	Red-brown fine to medium-grained SAND (SM) With occasional calcareous streaks					
92.5						
95.0						
97.5						
100.0		10	SS	<1		■ Benzene <0.001 mg/kg BTEX=0.002 mg/kg TPH=10 mg/kg
102.5						
105.0						
107.5						
110.0						▽ Water @ 109'
112.5						
115.0						
117.5						
120.0		11	SS	<1		
	Bottom of boring @ 122.0 feet					

ABBREVIATIONS AND SYMBOLS

SS-Driven Split Spoon
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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.: 15-93676	Well/Boring #: MW-2	Date Drilled: 09/28/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO	Depth of Boring: 122 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 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: 100 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	Gray-white fine-grained SAND (SM)					
2.5						
5.0		1	SS	<1		
7.5						
10.0	Light green fine-grained SAND (SM)	2	SS	<1		
12.5						
15.0	Red-brown & gray mottled calcareous SAND (caliche)	3	SS	<1		
17.5						
20.0	Gray-green calcareous SAND (caliche)	4	SS	<1		
22.5						
25.0						
27.5						
30.0						

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

ABBREVIATIONS AND SYMBOLS

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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.: 15-93676	Well/Boring #: MW-2	Date Drilled: 09/28/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO -	Depth of Boring: 122 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 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: 100 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	Gray-green calcareous SAND (caliche)	5	SS	1		Benzene <0.001 mg/kg BTEX=0.003 mg/kg TPH <10 mg/kg
32.5						
35.0						
37.5	Red-brown & gray mottled calcareous SAND (caliche)					
40.0		6	SS	<1		
42.5						
45.0						
47.5						
50.0						
52.5						
55.0						
57.5						
60.0						

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▽ At Completion
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■ Sample submitted to lab
Bottom Cap
Factory-Slotted Well Screen
Sand Pack
Well Casing
Bentonite Seal
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.: 15-93676	Well/Boring #: MW-2	Date Drilled: 09/28/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO	Depth of Boring: 122 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 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: 100 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	Dark red silty fine to medium-grained SAND (SM) with occasional calcareous streaks	7	SS	<1		Benzene <0.001 mg/kg BTEX=0.002 mg/kg TPH=10 mg/kg
62.5						
65.0						
67.5						
70.0						
72.5						
75.0						
77.5						
80.0		8	SS	<1		
82.5						
85.0						
87.5						
90.0						

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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.: 15-93676	Well/Boring #: MW-2	Date Drilled: 09/28/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO	Depth of Boring: 122 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 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: 100 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
90.0	Dark red silty fine to medium-grained SAND (SM) with occasional calcareous streaks					
92.5						
95.0						
97.5						
100.0		9	SS	<1		
102.5						
105.0						
107.5		10	SS	<1		Benzene <0.001 mg/kg BTEX=0.003 mg/kg TPH=20 mg/kg ▽Water @ 110'
110.0						
112.5						
115.0						
117.5						
120.0	Bottom of boring @ 120.0 feet					

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ABBREVIATIONS AND SYMBOLS

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DC-Driving Casing
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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

CURA 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.: 15-93676	Well/Boring #: MW-3	Date Drilled: 09/29/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO -	Depth of Boring: 120 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 FEET	Diameter of Screen: 4 INCHES
Drilling Co: HI PLAINS DRILLING	Length of Screen: 40 FEET	Diameter of Casing: 4 INCHES
Driller: B.S.	Length of Casing: 80 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	Gray-white fine-grained SAND (SM)					
2.5						
5.0		1	SS	200		
7.5						
10.0	Hydrocarbon staining and odor	2	SS	>1000		Benzene=3.1 mg/kg BTEX=88.1 mg/kg TPH=12,000 mg/kg
12.5						
15.0	Red and gray mottled calcareous SAND (caliche)	3	SS	600		
17.5						
20.0	Light-gray fine-grained SAND (SM)	4	SS	20		
22.5						
25.0		5	SS	40		
27.5						
30.0						

ABBREVIATIONS AND SYMBOLS

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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.: 15-93676	Well/Boring #: MW-3	Date Drilled: 09/29/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO -	Depth of Boring: 120 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 FEET	Diameter of Screen: 4 INCHES
Drilling Co: HI PLAINS DRILLING	Length of Screen: 40 FEET	Diameter of Casing: 4 INCHES
Driller: B.S.	Length of Casing: 80 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	Light-gray fine-grained calcareous SAND (SM)	5	SS	4		Benzene <0.001 mg/kg BTEX <0.001 mg/kg TPH=20 mg/kg
32.5						
35.0						
37.5						
40.0						
42.5						
45.0						
47.5						
50.0		6	SS	<1		
52.5						
55.0						
57.5	Red-brown fine to medium-grained SAND (SM)					
60.0						

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RECORD OF SUBSURFACE EXPLORATION

Project No.: 15-93676	Well/Boring #: MW-3	Date Drilled: 09/29/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO -	Depth of Boring: 120 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 FEET	Diameter of Screen: 4 INCHES
Drilling Co: HI PLAINS DRILLING	Length of Screen: 40 FEET	Diameter of Casing: 4 INCHES
Driller: B.S.	Length of Casing: 80 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						
62.5						
65.0						
67.5						
70.0	Red-brown fine to medium-grained SAND (SM) with occasional calcareous streaks	6	SS	<1		Benzene <0.001 mg/kg BTEX <0.001 mg/kg TPH=30 mg/kg
72.5						
75.0						
77.5						
80.0						
82.5						
85.0						
87.5						
90.0						

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▼ After Hours
● Water on Rods

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

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RECORD OF SUBSURFACE EXPLORATION

Project No.: 15-93676	Well/Boring #: MW-3	Date Drilled: 09/29/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO -	Depth of Boring: 120 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 FEET	Diameter of Screen: 4 INCHES
Drilling Co: HI PLAINS DRILLING	Length of Screen: 40 FEET	Diameter of Casing: 4 INCHES
Driller: B.S.	Length of Casing: 80 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
90.0						
		8	SS	<1		
92.5						
95.0						
97.5						
100.0	Red-brown fine to medium-grained SAND (SM) with occasional calcareous streaks					
102.5						
105.0						
107.5						
110.0						▽Water @ 109'
		9	SS	3		Benzene <0.001 mg/kg BTEX <0.001 mg/kg TPH=130 mg/kg
112.5						
115.0						
117.5						
120.0	Bottom of boring @ 120.0 feet					

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RECORD OF SUBSURFACE EXPLORATION

Project No.: 15-93676	Well/Boring #: MW-4	Date Drilled: 09/29/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO -	Depth of Boring: 120 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 FEET	Diameter of Screen: 4 INCHES
Drilling Co: HI PLAINS DRILLING	Length of Screen: 60 FEET	Diameter of Casing: 4 INCHES
Driller: B.S.	Length of Casing: 60 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 fine-grained SAND (SM)					
2.5						
5.0						
7.5						
10.0						
12.5						
15.0						
17.5						
20.0		1	DRILL CUTTINGS	25		
22.5	Brown and gray slightly calcareous fine-grained SAND (SM)					
25.0						
27.5						
30.0						

ABBREVIATIONS AND SYMBOLS

SS-Driven Split Spoon
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WATER LEVEL
▽ At Completion
▼ After Hours
● Water on Rods

■ Sample submitted to lab
Bottom Cap
Factory-Slotted Well Screen
Sand Pack
Well Casing
Bentonite Seal
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.: 15-93676	Well/Boring #: MW-4	Date Drilled: 09/29/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO -	Depth of Boring: 120 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 FEET	Diameter of Screen: 4 INCHES
Drilling Co: HI PLAINS DRILLING	Length of Screen: 60 FEET	Diameter of Casing: 4 INCHES
Driller: B.S.	Length of Casing: 60 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	Red-brown slightly calcareous SAND (SM)					
32.5						
35.0						
37.5						
40.0						
42.5						
45.0						
47.5						
50.0		2	DRILL CUTTINGS	800		Hydrocarbon odor in drill cuttings
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
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
Factory-Slotted Well Screen
Sand Pack
Well Casing
Bentonite Seal
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.: 15-93676	Well/Boring #: MW-4	Date Drilled: 09/29/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO	Depth of Boring: 120 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 FEET	Diameter of Screen: 4 INCHES
Drilling Co: HI PLAINS DRILLING	Length of Screen: 60 FEET	Diameter of Casing: 4 INCHES
Driller: B.S.	Length of Casing: 60 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						
62.5	Red-brown fine to medium-grained SAND (SM) with occasional calcareous streaks					
65.0						
67.5						
70.0						
72.5						
75.0						
77.5						
80.0		3	DRILL CUTTINGS	300		Hydrocarbon odor in drill cuttings
82.5						
85.0						
87.5						
90.0						

SS-Driven Split Spoon
ST-Pressed Shelby Tube
CA-Continuous Flight Auger
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ABBREVIATIONS AND SYMBOLS

HSA-Hollow Stem Augers
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WATER LEVEL
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Sample submitted to lab
Bottom Cap
Sand Pack
Bentonite Seal
Factory-Slotted Well Screen
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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.: 15-93676	Well/Boring #: MW-4	Date Drilled: 09/29/93
Project: DUBLIN STATION LEA COUNTY, NEW MEXICO	Depth of Boring: 120 FEET	Diameter of Boring: 8 INCHES
	Depth of Well: 120 FEET	Diameter of Screen: 4 INCHES
Drilling Co: HI PLAINS DRILLING	Length of Screen: 60 FEET	Diameter of Casing: 4 INCHES
Driller: B.S.	Length of Casing: 60 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
90.0						
92.5	Red-brown fine to medium-grained SAND (SM) with occasional calcareous streaks					
95.0						
97.5						
100.0						
102.5						
105.0						
107.5						
		5	SS	600		Benzene <0.001 mg/kg BTEX=0.009 mg/kg TPH=990 ▽Water @ 109'
110.0						
112.5						
115.0						
117.5						
120.0	Bottom of boring @ 120.0 feet					

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
Factory-Slotted Well Screen
Sand Pack
Well Casing
Bentonite Seal
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	12-10-92	1 - 3	1	<0.001	<0.001	<0.001	0.001	0.001	14
		5 - 7	<1						
		10 - 12	<1	<0.001	<0.001	<0.001	0.002	0.002	13
B-2	12-10-92	1 - 3	<1						
		5 - 7	1	<0.001	<0.001	<0.001	<0.001	<0.001	<10
		10 - 12	<1	<0.001	<0.001	<0.001	0.001	0.001	<10
B-3	12-10-92	1 - 3	1	<0.001	0.002	<0.001	<0.001	0.002	75
		5 - 7	<1						
		10 - 12	<1	<0.001	0.002	<0.001	0.004	0.006	13
B-4	12-10-92	1 - 3	2	<0.001	0.003	<0.001	0.002	0.005	<10
		5 - 7	<1						
		10 - 12	<1	<0.001	0.002	<0.001	0.002	0.004	<10
B-5	12-10-92	1 - 3	3	<0.001	<0.001	<0.001	<0.001	<0.001	15,000
		5 - 7	<1						
		10 - 12	<1	<0.001	0.001	<0.001	0.001	0.002	14
B-6	02-04-93	1 - 3	<1	<0.001	<0.001	<0.001	<0.001	<0.001	<10
		5 - 7	<1						
		10 - 12	<1	<0.001	<0.001	<0.001	<0.001	<0.001	10
B-7	02-04-93	1 - 3	1	<0.001	<0.001	<0.001	<0.001	<0.001	<10
		5 - 7	<1	<0.001	<0.001	<0.001	<0.001	<0.001	<10
		10 - 12	<1	<0.001	<0.001	<0.001	<0.001	<0.001	<10

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS

Boring	Date Sampled	Sample Interval (feet)	OVA	Benzene	Toluene	Ethyl-benzene	Xylenes	Total BTEX	TPH
B-8	02-04-93	1 - 3	2					0.002	20
		5 - 7	3	<0.001	<0.001	<0.001	<0.001	<0.001	2,500
		10 - 12	20	<0.001	0.011	0.006	0.007	0.024	2,000
		15 - 17	70						
		20 - 22	50	<0.001	<0.001	4.600	1.600	6.224	11,000
		25 - 27	200						
		30 - 32	>1000						
		35 - 37	>1000						
		40 - 42	>1000	<0.001	2.900	17.000	26.000	45.900	12,000
		45 - 47	>1000						
		50 - 52	>1000						
		55 - 57	>1000	0.028	<0.001	5.800	9.300	15.128	1,300
		60 - 62	>1000						
		65 - 67	>1000						
		75 - 77	700						
		90 - 92	950	<0.001	3.300	23.000	44.000	70.300	12,000

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS

Boring	Date Sampled	Sample Interval (feet)	OVA	Benzene	Toluene	Ethyl-benzene	Xylenes	Total BTEX	TPH
MW-1	09-28-93	5 - 7	<1						
		10 - 12	<1						
		15 - 17	<1						
		20 - 22	<1						
		30 - 32	1	<0.001	<0.001	<0.001	<0.001	<0.001	<10
		40 - 42	<1						
		50 - 52	<1						
		60 - 62	2	<0.001	<0.001	<0.001	0.002	0.002	130
		80 - 82	<1						
		100 - 102	<1	<0.001	<0.001	<0.001	<0.001	<0.001	10
		120 - 122	<1						
MW-2	09/28/93	5 - 7	<1						
		10 - 12	<1						
		15 - 17	<1						
		20 - 22	<1						
		30 - 32	1	<0.001	<0.001	<0.001	0.003	0.003	<10
		40 - 42	<1						
		60 - 62	<1	<0.001	0.001	<0.001	0.001	0.002	10
		80 - 82	<1						
		100 - 102	<1	<0.001	0.001	<0.001	0.002	0.003	20
		108 - 110	<1						

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS

Boring	Date Sampled	Sample Interval (feet)	OVA	Benzene	Toluene	Ethyl-benzene	Xylenes	Total BTEX	TPH
MW-3	09-28-93	5 - 7	200						
		10 - 12	>1000	3.1	17.0	22.0	46.0	88.1	12,000
		15 - 17	600						
		20 - 22	20						
		25 - 27	1						
		30 - 32	4	<0.001	<0.001	<0.001	<0.001	<0.001	20
		50 - 52	<1						
		70 - 72	<1	<0.001	<0.001	<0.001	<0.001	<0.001	30
		90 - 92	<1						
		110 - 112	3	<0.001	<0.001	<0.001	<0.001	<0.001	130
MW-4	09-29-93	20 - 22	25						
		50 - 52	800						
		80 - 82	300						
		108 - 110	600	<0.001	<0.001	0.004	0.005	0.009	990

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	199.45	202.09	111.70	90.39	0.00
MW-2	200.83	202.72	112.43	90.29	0.00
MW-3	199.68	202.83	112.26	90.57	0.00
MW-4	200.21	202.51	112.04	90.47	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

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	896
MW-2	09-30-93	<0.001	<0.001	<0.001	<0.001	<0.001	<1	
MW-3	09-30-93	<0.001	<0.001	<0.001	0.001	0.001	<1	
MW-4	09-30-93	<0.001	<0.001	0.003	0.012	0.015	9	

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: 93-10-079

Approved for release by:

S. Sample, Laboratory Director Date: 10/11/93

Ed Fry, Project Manager Date: 10/11/93

****SUMMARY REPORT*****

10/11/93

Company: Shell Pipe Line Corporation
Site: Lea County, New Mexico
Project No: 15-93676.3
Project: Dublin 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
9310079-01 SOIL	MW-1 (30-32) 09/28/93 11:15:00	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 10mg/Kg			
9310079-02 SOIL	MW-1 (60-62) 09/28/93 11:45:00	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	0.0020 0.0010mg/Kg	130 10mg/Kg			
9310079-03 SOIL	MW-1 (100-102) 09/28/93 12:20:00	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	10 10mg/Kg			
9310079-04 SOIL	MW-2 (30-32) 09/28/93 17:50:00	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	0.0030 0.0010mg/Kg	ND 10mg/Kg			
9310079-05 SOIL	MW-2 (60-62) 09/28/93 18:10:00	ND 0.0010mg/Kg	0.0010 0.0010mg/Kg	ND 0.0010mg/Kg	0.0010 0.0010mg/Kg	10 10mg/Kg			
9310079-06 SOIL	MW-2 (108-110) 09/28/93 19:00:00	ND 0.0010mg/Kg	0.0010 0.0010mg/Kg	ND 0.0010mg/Kg	0.0020 0.0010mg/Kg	20 10mg/Kg			
9310079-07 SOIL	MW-3 (10-12) 09/29/93 11:30:00	3.1 0.50mg/Kg	17 0.50mg/Kg	22 0.50mg/Kg	46 0.50mg/Kg	12000 100mg/Kg			
9310079-08 SOIL	MW-3 (30-32) 09/29/93 11:50:00	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	20 10mg/Kg			
9310079-09 SOIL	MW-3 (70-72) 09/29/93 13:40:00	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	30 10mg/Kg			
9310079-10 SOIL	MW-3 (110-112) 09/29/93 14:15:00	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	ND 0.0010mg/Kg	130 10mg/Kg			

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

Shari L. Grice

SPL, Inc., - Shari L. Grice

****SUMMARY REPORT*****

10/11/93

Company: Shell Pipe Line Corporation
Site: Lea County, New Mexico
Project No: 15-93676.3
Project: Dublin 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
9310079-11 SOIL	MW-4 (108-110) 09/29/93 18:20:00	ND 0.0010mg/Kg	ND 0.0010mg/Kg	0.0040 0.0010mg/Kg	0.0050 0.0010mg/Kg	990 10mg/Kg			

Shari L. Grice

SPL, Inc. - Shari L. Grice

Certificate of Analysis No. 9310079-01

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-1 (30-32)

PROJECT NO: 15-93676.3
MATRIX: SOIL
DATE SAMPLED: 09/28/93 11:15:00
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: DAO				
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. 9310079-02

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

P.O.# PX-9103-JBH
DATE: 10/11/93

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

PROJECT NO: 15-93676.3
MATRIX: SOIL
DATE SAMPLED: 09/28/93 11:45:00
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	0.0020	0.0010	P	mg/Kg
TOTAL BTEX	0.002			mg/Kg
METHOD 5030/8020 ***				
Analyzed by: DAO				
Date: 10/04/93				
Petroleum Extractables	130	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. 9310079-03

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-1 (100-102)

PROJECT NO: 15-93676.3
MATRIX: SOIL
DATE SAMPLED: 09/28/93 12:20:00
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: DAO				
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. 9310079-04

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-2 (30-32)

PROJECT NO: 15-93676.3
MATRIX: SOIL
DATE SAMPLED: 09/28/93 17:50:00
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: DAO			
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. 9310079-05

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-2 (60-62)

PROJECT NO: 15-93676.3
MATRIX: SOIL
DATE SAMPLED: 09/28/93 18:10:00
DATE RECEIVED: 10/02/93

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT		UNITS
BENZENE	ND	0.0010	P	mg/Kg
TOLUENE	0.0010	0.0010	P	mg/Kg
ETHYLBENZENE	ND	0.0010	P	mg/Kg
TOTAL XYLENE	0.0010	0.0010	P	mg/Kg
TOTAL BTEX	0.002			mg/Kg
METHOD 5030/8020 ***				
Analyzed by: DAO				
Date: 10/07/93				
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. 9310079-06

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-2 (108-110)

PROJECT NO: 15-93676.3
MATRIX: SOIL
DATE SAMPLED: 09/28/93 19:00:00
DATE RECEIVED: 10/02/93

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT		UNITS
BENZENE	ND	0.0010	P	mg/Kg
TOLUENE	0.0010	0.0010	P	mg/Kg
ETHYLBENZENE	ND	0.0010	P	mg/Kg
TOTAL XYLENE	0.0020	0.0010	P	mg/Kg
TOTAL BTEX	0.003			mg/Kg
METHOD 5030/8020 ***				
Analyzed by: DAO				
Date: 10/07/93				
Petroleum Extractables	20	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. 9310079-07

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-3 (10-12)

PROJECT NO: 15-93676.3
MATRIX: SOIL
DATE SAMPLED: 09/29/93 11:30:00
DATE RECEIVED: 10/02/93

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
BENZENE	3.1	0.50 P	mg/Kg
TOLUENE	17	0.50 P	mg/Kg
ETHYLBENZENE	22	0.50 P	mg/Kg
TOTAL XYLENE	46	0.50 P	mg/Kg
TOTAL BTEX	88.1		mg/Kg
METHOD 5030/8020 ***			
Analyzed by: DAO			
Date: 10/05/93			
Petroleum Extractables	12000	100	mg/Kg
METHOD Mod. 418.1*			
Analyzed by: AR			
Date: 10/05/93			

(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. 9310079-08

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-3 (30-32)

PROJECT NO: 15-93676.3
MATRIX: SOIL
DATE SAMPLED: 09/29/93 11:50:00
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: DAO				
Date: 10/05/93				
Petroleum Extractables	20	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. 9310079-09

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-3 (70-72)

PROJECT NO: 15-93676.3
MATRIX: SOIL
DATE SAMPLED: 09/29/93 13:40:00
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: DAO				
Date: 10/05/93				
Petroleum Extractables	30	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. 9310079-10

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-3 (110-112)

PROJECT NO: 15-93676.3
MATRIX: SOIL
DATE SAMPLED: 09/29/93 14:15:00
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: DAO			
Date: 10/05/93			
Petroleum Extractables	130	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. 9310079-11

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA Consultants
SAMPLE ID: MW-4 (108-110)

PROJECT NO: 15-93676.3
MATRIX: SOIL
DATE SAMPLED: 09/29/93 18:20:00
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	0.0040	0.0010 P	mg/Kg
TOTAL XYLENE	0.0050	0.0010 P	mg/Kg
TOTAL BTEX	0.009		mg/Kg
METHOD 5030/8020 ***			
Analyzed by: DAO			
Date: 10/05/93			
Petroleum Extractables	990	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:** 10/11/93
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	24	120	39 - 150 %
TOLUENE	ND	20	ND	20	100	46 - 148 %
ETHYL_BENZENE	ND	20	ND	20	100	32 - 160 %
O XYLENE	ND	20	ND	22	110	32 - 160 %
M AND P XYLENE	ND	40	1	45	110	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	24	120	0	20	39 - 150 %
TOLUENE	20	21	105	5	20	46 - 148 %
ETHYL_BENZENE	20	19	95	5	20	32 - 160 %
O XYLENE	20	20	100	10	20	32 - 160 %
M AND P XYLENE	40	42	102	8	20	32 - 160 %

VARD931004150700

I. Z. Williams
Idelis Williams, QC Officer

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

SPL Sample ID: 9309968-01A **Reported on:** 10/11/93
Matrix: Soil **Analyzed on:** 10/05/93

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	24	120	39 - 150 %
TOLUENE	ND	20	ND	21	105	46 - 148 %
ETHYL_BENZENE	ND	20	ND	20	100	32 - 160 %
O XYLENE	ND	20	ND	23	115	32 - 160 %
M AND P XYLENE	ND	40	ND	44	110	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	24	120	0	20	39 - 150 %
TOLUENE	20	20	100	5	20	46 - 148 %
ETHYL_BENZENE	20	18	90	11	20	32 - 160 %
O XYLENE	20	20	100	14	20	32 - 160 %
M AND P XYLENE	40	41	102	8	20	32 - 160 %

VARD931005100000

I. J. Williams
Idelis Williams, QC Officer

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

SPL Sample ID: 9310014-01A **Reported on:** 10/11/93
Matrix: Soil **Analyzed on:** 10/07/93

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:

---- **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	20	ND	23	115	39 - 150 %
TOLUENE	ND	20	ND	20	100	46 - 148 %
ETHYL_BENZENE	ND	20	ND	19	95	32 - 160 %
O XYLENE	ND	20	ND	21	105	32 - 160 %
M AND P XYLENE	ND	40	ND	43	107	32 - 160 %

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

Compound	Spike Added µg/Kg	MSD Concentration µg/Kg	MSD % Rec#	% RPD	RPD Limit	QC Rec Range
BENZENE	20	25	125	8	20	39 - 150 %
TOLUENE	20	22	110	10	20	46 - 148 %
ETHYL_BENZENE	20	21	105	10	20	32 - 160 %
O XYLENE	20	23	115	9	20	32 - 160 %
M AND P XYLENE	40	49	122	13	20	32 - 160 %

VARD931007094700

Idelis Williams, QC Officer

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

SPL sample Id: 9310106-1B
Matrix: SOIL
Reported on: 10/11/93
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

9310079

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING

CHAIN OF CUSTODY RECORD NO. H 10293

Date: 9-30-93
Page 1 of 1

Shell Pipe Line Corp

SITE ADDRESS: Dublin Station
Lea County, New Mexico

WIC #: Proj # 15-93676.3

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 ☐ WITH MTBE ☐ 8020 ☒	BTEX/GAS HYDROCARBONS PID/FID ☐ WITH MTBE	VOL 624/PPL ☐ 8240/TAL ☐	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
MW-1 (30-32)	9-28-93	11:15		V		V								ICE	1	4oz	V					V						
MW-1 (60-62)	9-28-93	11:45		V		V								ICE	1	4oz	V					V						
MW-1 (100-102)	9-28-93	12:20		V		V								ICE	2	4oz	V					V						Field Duplicate
MW-2 (30-32)	9-28-93	17:50		V		V								ICE	1	4oz	V					V						
MW-2 (60-62)	9-28-93	18:10		V		V								ICE	1	4oz	V					V						
MW-2 (108-110)	9-28-93	19:00		V		V								ICE	1	4oz	V					V						
MW-3 (10-12)	9-29-93	11:30		V		V								ICE	1	4oz	V					V						
MW-3 (30-32)	9-27-93	11:50		V		V								ICE	1	4oz	V					V						
MW-3 (70-72)	9-29-93	13:40		V		V								ICE	1	4oz	V					V						
MW-3 (110-112)	9-29-93	14:15		V		V								ICE	1	4oz	V					V						
MW-4 (108-110)	9-29-93	18:20		V		V								ICE	1	4oz	V					V						

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
				10/1/93	09:30

BILL NO.: _____

LABORATORY: _____

SHELL CONTACT: John Hitz PHONE: 718-241-1000 FAX: _____

TURN AROUND TIME (CHECK ONE)

7 DAYS ☐ (NORMAL) 14 DAYS ☐

48 HOURS ☐ 4 Q 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: 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#: FOX		
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: 93-10-183

Approved for release by:

M. Scott Sample Date: 10/13/93

S. Sample, Laboratory Director

Barbara Martinez Date: 10/12/93

Barbara Martinez, Client Services Representative

Certificate of Analysis No. 9310183-01

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

P.O.# PX-9103-JBH
DATE: 10/11/93

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

PROJECT NO: 15-93676.3
MATRIX: WATER
DATE SAMPLED: 09/30/93 19:45:00
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: 10/07/93				
Total Dissolved Solids	896	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

Certificate of Analysis No. 9310183-02

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA, Inc.
SAMPLE ID: MW-2

PROJECT NO: 15-93676.3
MATRIX: WATER
DATE SAMPLED: 09/30/93 20:30:00
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: 10/07/93				

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. 9310183-03

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA, Inc.
SAMPLE ID: MW-3

PROJECT NO: 15-93676.3
MATRIX: WATER
DATE SAMPLED: 09/30/93 21:00:00
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	0.0010	0.0010	P	mg/L
TOTAL BTEX	0.001			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: 10/07/93				

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. 9310183-04

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

P.O.# PX-9103-JBH
DATE: 10/11/93

PROJECT: Dublin Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA, Inc.
SAMPLE ID: MW-4

PROJECT NO: 15-93676.3
MATRIX: WATER
DATE SAMPLED: 09/30/93 22:00:00
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	0.0030	0.0010	P	mg/L
TOTAL XYLENE	0.012	0.0010	P	mg/L
TOTAL BTEX	0.015			mg/L
METHOD 5030/8020 ***				
Analyzed by: LFD				
Date: 10/08/93				
Petroleum extractables	9	1		mg/L
METHOD 418.1*				
Analyzed by: MF				
Date: 10/07/93				

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: 9310156-01A **Reported on:** 10/11/93
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:

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

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 %

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

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

Idelis Williams, QC Officer

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

SPL sample Id: BLANK
Matrix: WATER

Reported on: 10/11/93
Analyzed on: 10/07/93

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	320	83

-- SPIKE DUPLICATE ANALYSIS --

Sample Id	Spike Added mg/L	MSD Concentration mg/L	MSD % Rec	% RPD
BLANK	384	337	88	5

SPL, Incorporated

for 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 2:00 PM | Matrix LIQUID
Of Samples in Set 10 | Detection Limit 1

Sample #'s in Set					Units Mg/L
310181-1C	309647-5A, 6A	310132-1B			
30122-1A, 2A	310180-1C	310219-3C, 8B			
	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

9310183 197

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING

CHAIN OF CUSTODY RECORD NO. H 10283

Date: 10-4-93
Page 1 of 1

SITE ADDRESS: Shell Pipe Line Corp - Dublin Station
PIN #: ~~15-96~~ 15-93676.3
CONSULTANT NAME & ADDRESS: CURA Inc 3001 N. Big Spring, 101, Midland TX 79705
CONSULTANT CONTACT: Greg C. Waltrouscheid
PHONE: (915) 570-8408 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: 1 / 40ml
MW-1	9-30-93	1945		✓	✓					✓				✓	5	✓
MW-2	9-30-93	2030		✓	✓					✓				✓	4	✓
MW-3	9-30-93	2100		✓	✓					✓				✓	4	✓
MW-4	9-30-93	2200		✓	✓					✓				✓	4	✓

ANALYSIS REQUEST: (CHECK APPROPRIATE BOX)

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: TDS
✓					✓					✓
✓					✓					
✓					✓					
✓					✓					

REMARKS

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
Bill Smith	10/5/93	1100			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE) INTACT 3°C	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			Tim Adams	10-6-93	09:00

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

TURN AROUND TIME (CHECK ONE)
7 DAYS ☐ (NORMAL) 14 DAYS ☐
48 HOURS ☐ OTHER ☒ per SPLC 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: 10/6 TIME: 09:00 CLIENT NO. _____
LOT NO. _____ CONTRACT NO. _____

CLIENT SAMPLE NOS. _____

SPL SAMPLE NOS.: 9310183

		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#: FED EX: 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:		

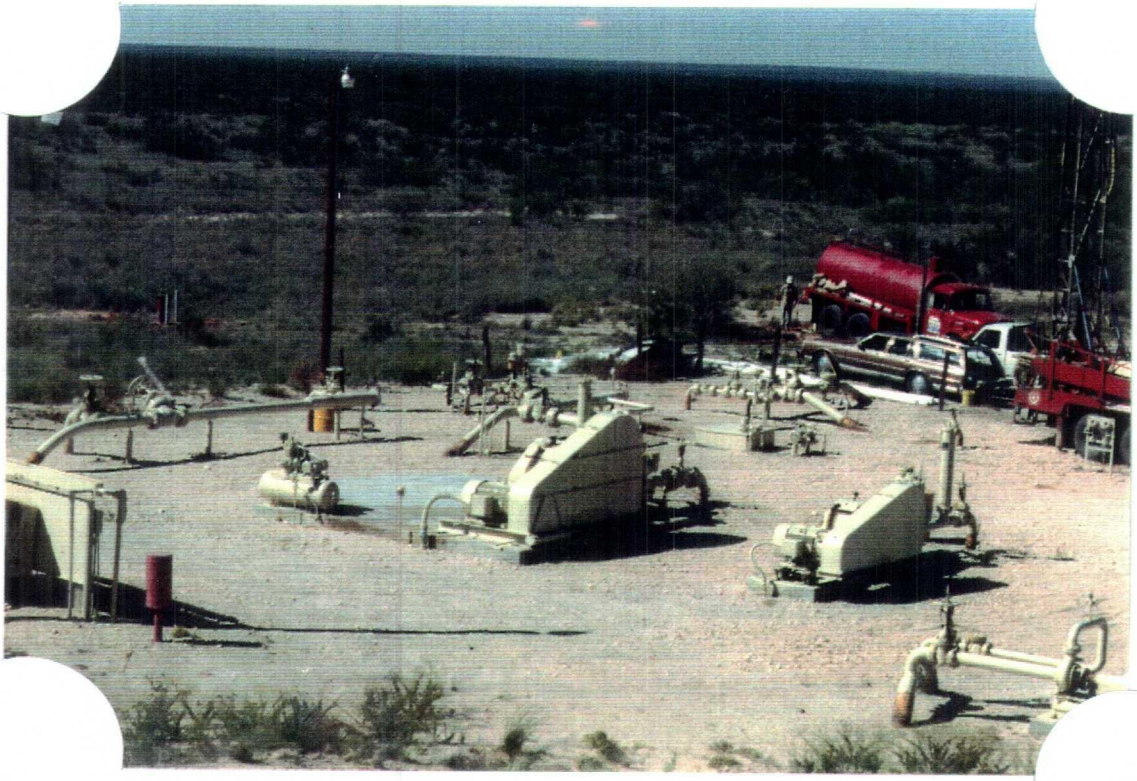
9. Condition/temperature of shipping container: INTACT 3°C
10. Condition/temperature of sample bottles: GOOD 3°C
11. Sample Disposal?: SPL disposal ✓ Return to client _____

NOTES (reference item number if applicable): _____

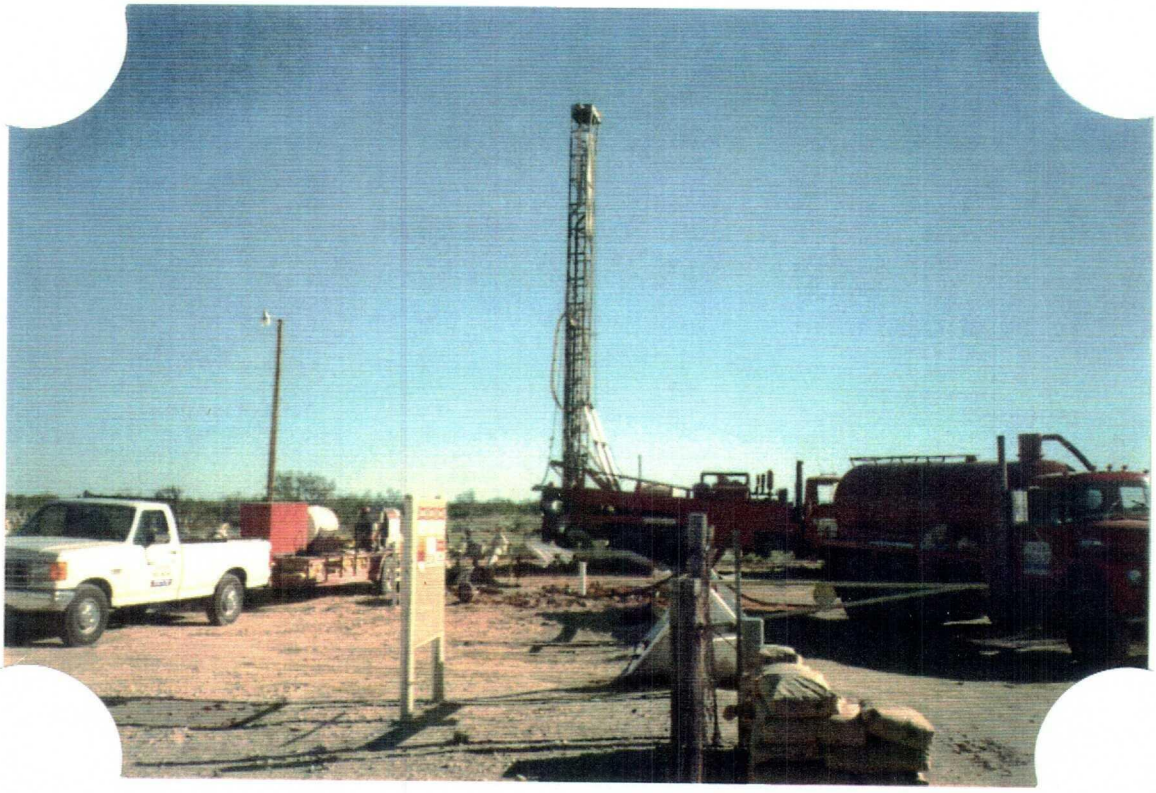
ATTEST: Jim Adams DATE: 10/6/93
DELIVERED FOR RESOLUTION: REC'D _____ DATE: _____
RESOLVED: _____ DATE: _____

APPENDIX E

PHOTO-DOCUMENTATION



Photograph 1: View of drilling operations on monitor well MW-3 at Dublin Station.



Photograph 2: View of drilling operations on monitor well MW-4 with MW-3 in the foreground.

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 Hale - 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 Resources Department
Oil Conservation Division
ATTN Mr. William C. Olson
Hydrogeologist - Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504

Gentlemen:

SUBJECT: SITE ASSESSMENT
DUBLIN CRUDE OIL GATHERING AND PUMP STATION
LEA COUNTY, NEW MEXICO

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

CURA advanced 8 soil borings in areas where crude oil impact to the environment was likely to occur. The work plan called for a minimum of two samples per boring to be collected for analysis for TPH and BTEX. Monitoring wells were to be installed where groundwater was encountered. Groundwater was not encountered at the Dublin Station.

Dublin Station is located approximately 4000 feet southwest of the community of Bennett and 4 miles south of the city of Jal in Lea County, New Mexico. The station is surrounded by a barbed wire fence with a locked gate. 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.

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 about 3,000 feet southwest of the site. The current status and construction data on this well are unknown.

DublinSt.jbh

Currently, the shallow groundwater in the site area is not used as a drinking water source. The drinking water in Jal and Bennett is supplied from a well field located about 4 miles southwest of the site that produces from the Quaternary alluvium at a total depth of 650 feet.

TPH values above 5000 ppm were found at two locations on the site. B-5 (near the sump for the pumping unit) had a TPH value of 15,000 ppm at 1 - 3 feet and had dropped to 14 ppm at 10 - 12 feet. Based on data obtained, the northern extent of hydrocarbon imported soils near the sump and pumping equipment in the southwest corner of the site is limited to an area less than 50 feet wide (east - west) with a maximum depth of 5 feet near B-5.

The impacted soils identified by boring B-8 south of the sump extend to a minimum depth of 92 feet. TPH values range from 20 ppm to 12,000 ppm in B-8. BTEX values in B-8 ranged from less than 0.001 ppm to 70.3 ppm. The soil benzene levels in B-8 ranged from <0.001 ppm to 0.028.

Shell proposes to drill three monitoring wells in the proximity of B-8 to assess possible groundwater impact and to delineate the impacted area.

After we have completed the work and reviewed the analytical data, Shell will provide the Oil Conservation Division with a proposed remediation plan and a complete copy of the site assessment.

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

Sincerely,

John B. Hite
Engineering Advisor
General Engineering

Attachment

DublinSt.jbh

FINAL REPORT

ENVIRONMENTAL DUE DILIGENCE ASSESSMENT NEW MEXICO SWEET SYSTEM AND NEW MEXICO SOUR SYSTEM

Submitted by:

Roy F. Weston, Inc.
5599 San Felipe, Suite 700
Houston, Texas 77056
(713) 621-1620

AUGUST 1993

SECTION 5

DUBLIN STATION

5.1 SITE LOCATION AND DESCRIPTION

The Dublin Station is located approximately 1/2 mile southwest of Bennet, Lea County, New Mexico. The site location is shown in Figure 5-1. The Dublin Station is a crude oil pumping station and storage facility where oil from gathering lines is pumped into a trunk line.

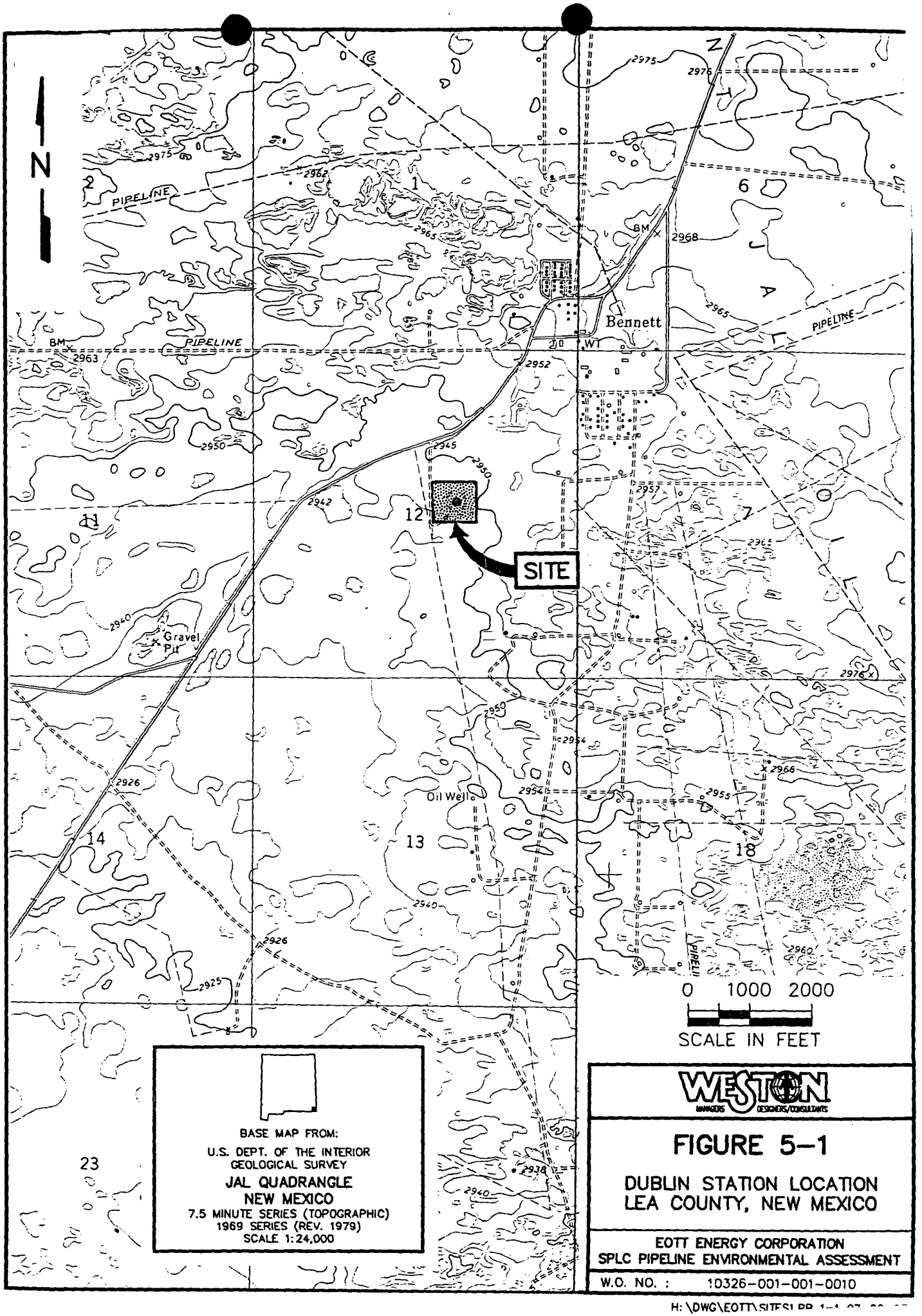
The Dublin Station layout is shown in Figure 5-2. Above-ground facilities at the 4.4 acre Dublin station include a 64,000 BBL external floating roof crude oil storage tank (tank 396), two pumps, scraper trap, pump sump, and microwave control building. Three transformers owned by Southwest Public Service are attached to a utility pole just outside the site fence across from the microwave building. The transformers do not have any PCB labelling. Approximately 25 percent of the ground within the tank dike is stained with hydrocarbons. A recent spill around the two pumps had recently been "dry-dirted" (covered with fresh soil) at the time of the site inspection. Some hydrocarbon staining was still visible around the pumps and pump sump. The extent of hydrocarbon staining is shown on Figure 5-2.

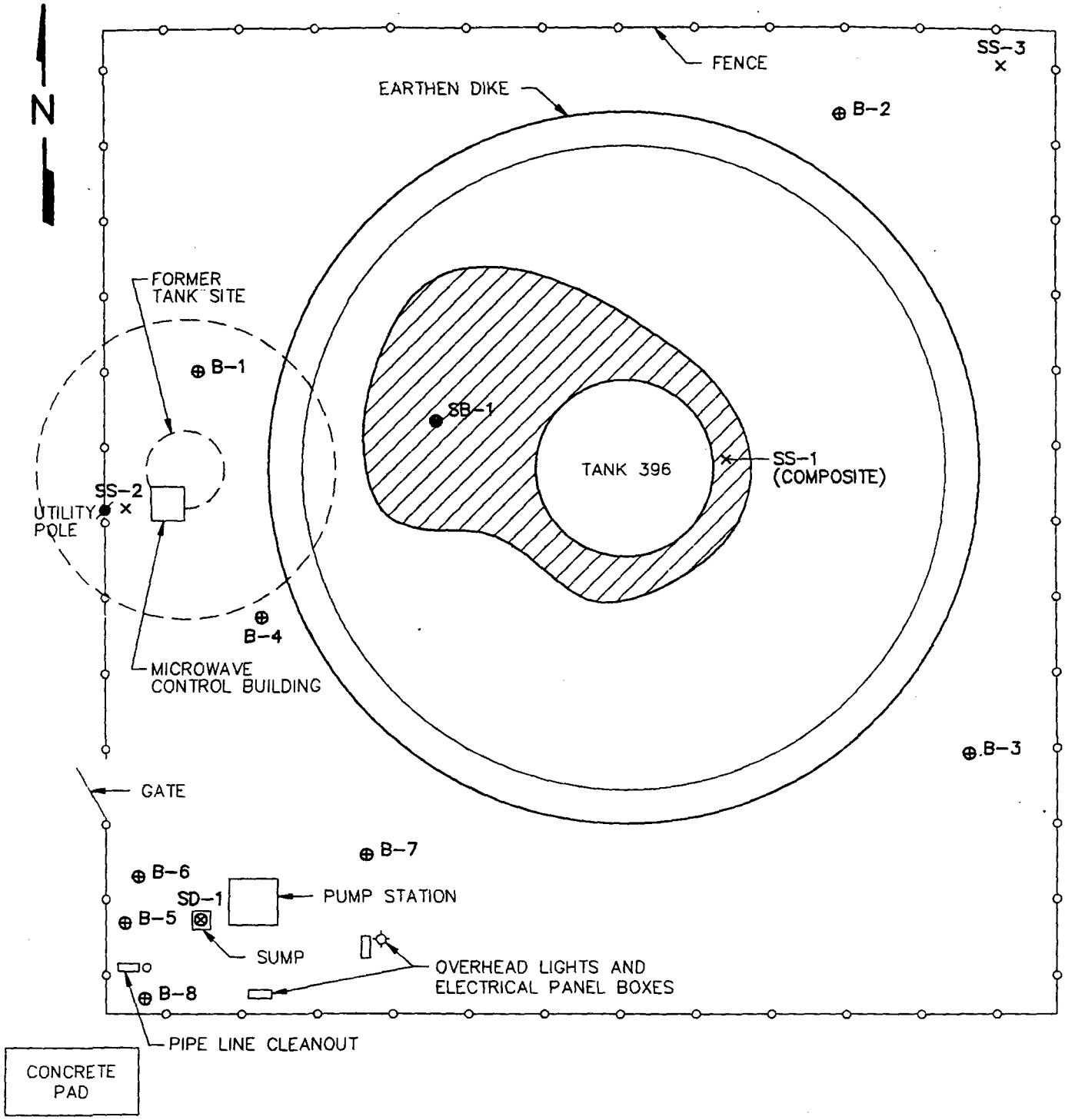
Dublin Station is located in an oil field. SPLC personnel reported that a concrete slab measuring approximately 10 feet by 50 feet located just outside the southwest corner of the site may be a former tank battery foundation. A steel pipe extends approximately 1 foot out the ground southwest of the slabs. A layer of oil is floating inside the pipe.

SPLC purchased the site from Humble Oil Company in the mid-1950's. Tank 396, a smaller tank west of tank 396, and a single pump were installed in the mid-1930's. The smaller tank has been removed from the site, and there is no visual evidence of its existence. The single pump was replaced with the current pumps approximately 2.5 years ago.

5.2 PREVIOUS INVESTIGATION RESULTS AND CONCLUSIONS

CURA, Inc. performed a baseline assessment of soil and groundwater conditions at Dublin Station in December, 1992 and a Phase II Environmental Assessment in February 1993. CURA advanced eight soil borings at the site. These boring locations are shown in Figure 5-2. Soil samples collected from the borings were analyzed for BTEX and TPH. Soil BTEX concentrations ranged from <0.001 mg/kg to 70.3 mg/kg. Soil TPH concentrations ranged from <10 to 15,000 mg/kg. CURA estimated that the extent of hydrocarbon-impacted soils near the pump in the southwest corner of the site is limited to a 50-foot wide, 5-foot deep area near the sump and pump equipment. The north-south extent of impacts was not stated.


N
PIPELINE
PIPELINE
PIPELINE
BM 2963
BM 2968
Bennett
WT
SITE
Gravel Pit
Oil Well
12
13
14
18
23
2975
2976
2962
2965
2952
2950
2945
2960
2942
2940
2926
2925
2954
2955
2938
0 1000 2000
SCALE IN FEET
BASE MAP FROM:
U.S. DEPT. OF THE INTERIOR
GEOLOGICAL SURVEY
JAL QUADRANGLE
NEW MEXICO
7.5 MINUTE SERIES (TOPOGRAPHIC)
1969 SERIES (REV. 1979)
SCALE 1:24,000
WESTON
MANAGERS DESIGNERS/CONSULTANTS
FIGURE 5-1
DUBLIN STATION LOCATION
LEA COUNTY, NEW MEXICO
EOTT ENERGY CORPORATION
SPLC PIPELINE ENVIRONMENTAL ASSESSMENT
W.O. NO. : 10326-001-001-0010
H:\DWG\EOTT\SITES\PP



NOT TO SCALE

LEGEND

- ⊕ B-1 CURA SOIL BORING LOCATION
- × SS-1 SURFACE SOIL SAMPLE LOCATION
- ⊗ SD-1 SEDIMENT SAMPLE LOCATION
- ● SB-1 WESTON SOIL BORING LOCATION
- HYDROCARBON STAINING

WESTON MANAGERS DESIGNERS/CONSULTANTS

FIGURE 5-2

DUBLIN STATION
SITE PLAN

EOTT ENERGY CORPORATION
SPLC PIPELINE ENVIRONMENTAL ASSESSMENT

W.O. NO. : 10326-001-001-0010

H:\DWG\EOTT\SPLC PP

The highest concentrations of BTEX and highest TPH concentrations were found in soils from B-8 advanced near the southwest corner of the site. BTEX and TPH were present in soils to a depth of 92 feet. BTEX and TPH concentrations generally increased with depth. Based on the B-8 results, CURA concluded that additional work is needed to define the volume of hydrocarbon-impacted soil near B-8 and that groundwater contamination was probable near the boring.

Construction data from the nearest well identified by CURA are unknown.

5.3 SITE SAMPLING

After the records review, site inspection and CURA report review, WESTON recommended sampling at Dublin Station to address the following environmental issues:

- potential lead contamination of soil surrounding the tank,
- potential PCB contamination beneath electrical equipment,
- potential PCB contamination of sumps from PCB oils, and
- soil staining inside tank dike.

The sample locations are shown on Figure 5-2. Analytical results are provided in Table 5-1.

SS-01 collected adjacent to the tank contained 7 mg/kg total lead. Background sample SS-03 contained 15 mg/kg total lead. Based on these results, it appears that the ground surrounding tank 396 has not been impacted by lead from past coating operations.

No PCBs were detected in SS-02 collected from beneath the transformers or in SD-01 collected from the pump sump.

Boring SB-01 was advanced in stained soils inside the tank dike. A description of the soils encountered in this boring is as follows:

0 in. - 3 in.	Oil-stained, gray soil
3 in. - 1.5 ft.	Brownish-gray sandy clay
1.5 ft. - 2.5 ft.	Light brown-gray sand
2.5 ft. - 3 ft.	Yellowish sand

Sample SB-01 was collected at a depth between 2.5 and 3.0 feet. No BTEX was detected in sample SB-01. The SB-01 TPH concentration was 33.4 mg/kg.

5.4 COMPLIANCE ISSUES

Air Issues for Tank 396

Based on the available information, an air permit is not required for this tank. If the tank is not operated at a constant crude oil level, then an air permit would probably be required if the tank throughput is greater than 120 million BBL per year. The tank appears to be in compliance with other New Mexico and federal regulations.

5.5 LIABILITY ISSUES

Hydrocarbon Contaminated Soil

The CURA investigation identified an area of hydrocarbon-contaminated soil near the southwest corner of the site. Additional work is needed to identify the horizontal and vertical extent of hydrocarbon-impacted soil and to determine whether or not groundwater contamination exists. Soil remediation is likely to be required by the OCD since the deep soil contamination could potentially contaminate groundwater.

The WESTON soil borings indicated that hydrocarbon contamination exists inside the tank dikes. The extent of the hydrocarbon contamination could not be determined.

Groundwater Contamination

The depth of soil hydrocarbon contamination indicates that groundwater contamination is likely. If the site groundwater contains constituents above the New Mexico water quality criteria concentrations, groundwater remediation to the criteria discussed in Section 2.1.4 will likely be necessary.

Nearby Pits

Several pits or lagoons are visible near the site in a 1967 aerial photograph. A pit measuring approximately 220 feet by 150 feet was located approximately 1800 feet south-southeast of the station. A pit measuring 250 feet by 100 feet was located approximately 3,200 feet east-southeast of the station. Two pits are located approximately 1,200 feet north-northeast of the site. The contents of these pits is unknown. Several pits with unknown contents are also located on industrial property just north of Bennet, approximately 2,800 feet from the station.

Tank batteries surrounded by stained soils are located adjacent to the two pits southeast of the site, suggesting that the pits may be related to oilfield production activities. The pits are a potential source of groundwater contamination.

Regulatory Database Search

The regulatory database search did not confirm any environmental risk sites within the distances given in Section 2.2.1.

TABLE 5-1
DUBLIN STATION ANALYTICAL RESULTS
EOTT ENVIRONMENTAL ASSESSMENT OF THE
SPLC ZONE III PIPELINE

SAMPLE NUMBER: LOCATION: DATE COLLECTED:	SS-01 ADJACENT TANK 6/22/93	SS-02 BENEATH TRANSFORMERS 6/22/93	SS-03 BACKGROUND 6/22/93	SB-01 INSIDE TANK DIKE 6/22/93	SD-01 SUMP 6/22/93
ORGANICS (mg/kg):[1]					
Benzene	NA	NA	NA	<0.0008	NA
Toluene	NA	NA	NA	<0.0008	NA
Ethylbenzene	NA	NA	NA	<0.0008	NA
Total Xylenes	NA	NA	NA	<0.0008	NA
TOTAL BTEX[2]	NA	NA	NA	<0.0008	NA
TPH[3]	NA	NA	NA	33.4	NA
TOTAL PCBs[4]	NA	<0.00081	NA	NA	<1.1
METALS (mg/kg):					
Silver	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA
Lead	7.0	NA	15.0	NA	NA
Selenium	NA	NA	NA	NA	NA

1 "NA" = not analyzed.
2 "BTEX" = total benzene, toluene, ethylbenzene, and xylenes.
3 "TPH" = total petroleum hydrocarbons.
4 "PCBs" = polychlorinated biphenyls.

Shell Oil Company

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

January 21, 1993

New Mexico Oil Conservation Commission
Environmental Bureau
ATTN Mr. Bill Olson
P. O. Box 2088
Santa Fe, NM 87504-2008

Gentlemen:

SUBJECT: SHELL PIPE LINE CORPORATION - SITE ASSESSMENTS OF FIVE CRUDE OIL GATHERING AND TRANSPORTATION LOCATIONS - HOBBS AREA

I contacted Mr. Jerry Sexton of your Hobbs office on December 7, 1992 to advise that we would be conducting site assessments on five locations that we plan to sell in the Hobbs area. These locations are:

Denton Station
Hugh Station
Lea Station
Dublin Station
Anderson Ranch Station

We have completed the initial phase of the site assessments. Contamination was found at each site and we are planning to do additional assessment work to determine the extent of the contamination and other site data. We encountered groundwater at the Lea Station in one boring and installed a monitoring well.

The TPH values of the soil at the five locations ranged between N.D and 15,000 ppm. Benzene concentrations were all less than .001 ppm. The analytical results in ppm of the monitoring well water sample at Lea Station were .44 benzene, .005 toluene, 0.120 ethyl/benzene, .063 xylene, 0.628 total BTEX, 3 TPH and 2,380 TDS.

Your agency will be contacted after the data is compiled.

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

Sincerely,

J. B. Hite

John B. Hite, Engineering Advisor
General Engineering

cc: New Mexico Oil Conservation Department
Jerry Sexton
P. O. Box 1980
Hobbs, NM 88240

CURA, Inc.
Greg C. Walterscheid, R.E.M.
2735 Villa Creek Drive
Building C, Suite 250
Dallas, TX 75234