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GEN COR

1999 - 1988

BURLINGTON RESOURCES

SAN JUAN DIVISION

September 10, 1999

Certified Mail: Z 186 732 855

Bill Olson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

RE: Standard Oil Com #1
Unit Letter N, Section 36, Township 29N, Range 9W
Notification of Groundwater Impact

Dear Mr. Olson:

As per the e-mail notification dated August 31, 1999 (Mr. Hasely to Mr. Olson), this letter is Burlington Resources' (BR) written notification of groundwater impact at the subject location. The final analytical results and final paperwork from the consultant did not make it to my attention until recently.

Due to El Paso having groundwater impacts at this location, BR conducted an initial assessment of an earthen pit that was no longer in use on the Standard Oil Com #1 location. The former separator/tank drain earthen pit had levels above closure standards and BR excavated soils to 31 feet below ground surface. Groundwater seeped into the excavation at this depth. Soil samples from the bottom of the excavation were collected and tested above pit closure standards. Clean overburden was pushed into the excavation to partially backfill the hole. The excavated soils were landfarmed until the soils tested below cleanup standards, and then the landfarmed soils were used to finish backfilling the excavation. BR conducted vertical extent determination in the center of BR's former earthen pit and encountered groundwater at approximately 26 feet. BR installed a temporary groundwater monitoring well. After developing the well and allowing it to stabilize for one week, the well was purged and sampled on August 18, 1999. The sample results are as follows:

Benzene	1500 ppb
Toluene	135 ppb
Ethylbenzene	106 ppb
Total Xylenes	586 ppb

Included with this letter are the original Pit Remediation and Closure Reports for the BR earthen pit along with the analytical results of the soil testing. Also attached are the groundwater lab analysis, the drilling log, the monitoring well installation record, and a location diagram.

3535 East 30th St., 87402-8801, P.O. Box 4289, Farmington, New Mexico 87499-4289, Telephone 505-326-9700, Fax 505-326-9833

The temporary monitoring well will be completed as permanent. BR will conduct future activities at the site pursuant to Burlington Resources' Groundwater Management Plan, and it is our intention to work in conjunction with El Paso to assure proper assessment and closure. If you have questions or additional information is needed, please contact me at (505) 326-9841.

Sincerely,

Ed Hasely
Sr. Staff Environmental Representative

Attachments: Pit Remediation and Closure Report
Drilling Log/Wellbore Diagram
Analytical Results - Groundwater
Location Diagram

cc: Denny Foust - NMOCD Aztec
Sandra Miller - El Paso
Ken Raybon
Ward Arnold
Bruce Gantner
Facility File
Correspondence

S: / grndwatr/GW-Sites/StandardOil/999ocd.doc

Pit Remediation and Closure Report

District I
P.O. Box 1980, Hobbs, NM
District II
P.O. Drawer DD, Artesia, NM 88211
District III
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBMIT 1 COPY TO APPROPRIATE DISTRICT OFFICE AND 1 COPY TO SANTA FE OFFICE

(Revised 3/9/94)

PIT REMEDIATION AND CLOSURE REPORT

Operator: Burlington Resources Telephone: (505) 326-9700

Address: 3535 E. 30th Farmington NM 87402

Facility Or: Standard Oil Com #1
Well Name

Location: Unit or Qtr/Qtr Sec N Sec 36 T 29N R 9W County San Juan

Pit Type: Separator X Dehydrator ___ Other Tank Drain

Land Type: BLM ___, State X, Fee ___, Other ___

Pit Location: (Attach diagram)

Pit dimensions: length 20, width 10, depth 1

Reference: wellhead X, other ___

Footage from reference: 60 ft

Direction from reference: 75 Degrees X East North ___ of ___ West South X

Depth To Ground Water: (Vertical distance from contaminants to seasonal high water elevation of ground water)	Less than 50 feet (20 points) 50 feet to 99 feet (10 points) Greater than 100 feet (0 Points)	20
Wellhead Protection Area: (Less than 200 feet from a private domestic water source, or; less than 1000 feet from all other water sources)	Yes (20 points) No (0 points)	0
Distance To Surface Water: (Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet (20 points) 200 feet to 1000 feet (10 points) Greater than 1000 feet (0 points)	0
	RANKING SCORE (TOTAL POINTS):	20

Date Remediation Started: 12/10/98 Date Completed: _____

Remediation Method: (Check all appropriate sections) Excavation X Approx. cubic yards 1140

Landfarmed X Insitu Bioremediation ___

Other _____

Remediation Location: (ie. landfarmed onsite, name and location of offsite facility) Onsite X Offsite Standard Oil Com #1A - E Sec 36 - 29N - 9W

General Description Of Remedial Action: Soils were removed to an approximate depth of 31 ft which was practical extent. Soil samples were collected. Groundwater seeped into excavation. The excavation was partially backfilled with clean overburden, the completely backfilled with the remediated landfarm soil. A groundwater monitoring well was installed in the center of the former excavation.

Ground Water Encountered: No ___ Yes X Depth 31 ft

Final Pit: Closure Sampling: (if multiple samples, attach sample results and diagram of sample locations and depths)

Sample location Bottom of excavation

Sample depth 31 ft

Sample date 12/~~10~~14/98 Sample time 2:30 pm

Sample Results

Benzene(ppm) 1.7

Total BTEX(ppm) 126.9

Field headspace(ppm) 321

TPH 2160

Ground Water Sample: Yes ___ No X (If yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 9/8/99

SIGNATURE Ed Hasely

PRINTED NAME AND TITLE Ed Hasely Sr. Staff Environmental Rep.

PHILIP SERVICES CORP

PRODUCTION PIT REMEDIATION FORM

WELL NAME: Standard Oil Com #1 WELL NO.: _____ DP NO.: _____

OPERATOR NAME: Burlington Resources P/L DISTRICT: _____

COORDINATES: LETTER: N SECTION: 36 TOWNSHIP: 029N RANGE: 009W

PIT TYPE: DEHYDRATOR: X LOCATION DRIP: _____ LINE DRIP: _____ OTHER: _____

FOREMAN NO.: ~~Wayne Ritter~~ Ward Arnold AREA: Largo Canyon

INITIAL REMEDIATION ACTIVITIES

DATE: 12-10-98 TIME: 7:00

GROUND WATER ENCOUNTERED? ☒ Y / N

INSIDE NMOCD ZONE

FINAL EXCAVATION DIMENSIONS: LENGTH: 53 WIDTH: 41 DEPTH: 31

APPROX. CUBIC YARDS: 2,642 FINAL PID READING: 321 ppm

REMEDIATION METHOD: ONSITE LANDFARM X 840 cu.yd

OFFSITE LANDFARM X LOCATION: Standard Oil Com #1A 300 cu.yd

OTHER_

LANDFARM DIMENSIONS: LENGTH: _____ WIDTH: _____

OUTSIDE NMOCD ZONE

FINAL SAMPLE DEPTH: _____ FINAL PID READING: _____

EXCAVATION SAMPLING INFORMATION

IF PID READINGS ARE LESS THAN 100 PPM, SAMPLE TAKEN DURING EXCAVATION)

SAMPLE DATE: _____ SAMPLE NOS _____ _____

SAMPLE ANALYSIS: TPH METHOD 8015 MODIFIED

IF PID READINGS ARE GREATER THAN 100 PPM, NO SAMPLE WILL BE TAKEN DURING EXCAVATION. THE EXCAVATION WILL BE SAMPLED PRIOR TO BACKFILLING (SEE ADDITIONAL SAMPLING SECTION).

REMARKS: TPH - Bottom 1103 ppm
TPH - Composite 241 ppm
Contaminated Soil = 1,140 cu.yd.
Clean Soil = 1,502 cu.yd.

SIGNATURE: Robert Thompson **DATE:** 12/10/98

ADDITIONAL REMEDIATION ACTIVITIES

SOIL TILLING

DATE: _____ PID READING: _____ SIGNATURE: _____

REMARKS: _____

DATE: _____ PID READING: _____ SIGNATURE: _____

REMARKS: _____

DATE: _____ PID READING: _____ SIGNATURE: _____

REMARKS: _____

DATE: _____ PID READING: _____ SIGNATURE: _____

REMARKS: _____

ADDITIONAL SAMPLING INFORMATION

EXCAVATION SAMPLING(IF REQUIRED)

IF NO SAMPLE WAS TAKEN DURING EXCAVATION, THE EXCAVATION WILL BE SAMPLED BEFORE BACKFILLING).

SAMPLE DATE: _____ SAMPLE NOS_____ _____

SIGNATURE:_____

IF PID READINGS ARE LESS THAN 100 PPM , SAMPLE ANALYSIS: TPH METHOD 8015 MODIFIED

IF PID READINGS ARE GREATER THAN 100 PPM, SAMPLE ANALYSES: BTEX METHOD 8020 AND TPH METHOD 8015 MODIFIED

SOIL REMEDIATION VERIFICATION SAMPLE

SAMPLE DATE: _____ SAMPLE NOS_____ _____

SIGNATURE:_____

SAMPLE ANALYSIS: TPH METHOD 8015 MODIFIED

BACKFILLING INFORMATION

DATE: _____ TIME:_____

BACKFILL SOURCE: ONSITE LANDFARM: _____

OFFSITE SOURCE:_____ APPROX. VOLUME:_____

REMARKS:_____

_____

_____

SIGNATURE: **DATE:**

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Certificate of Analysis No. 9812099-01a

Philip Environmental Services
4000 Monroe Road
Farmington, NM 87401
Attn: Robert Thompson

		Date:	12/29/98
Project:	BR Pits	Project No:	20440
Site:	Farmington	Matrix:	Soil
Sampled By:	R. Thompson	Date Sampled:	12/14/98
Sample ID:	Standard Oil COM #1-BOT	Date Received:	12/15/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Benzene	1700	1000 (P)	µg/Kg
Toluene	23000	1000 (P)	µg/Kg
Ethylbenzene	9200	1000 (P)	µg/Kg
Total Xylene	93000	1000 (P)	µg/Kg
Total Volatile Aromatic Hydrocarbons	126900		µg/Kg

Surrogate	% Recovery
1,4,Difluorobenzene	100
4-Bromofluorobenzene	127

Method 8020A***
Analyzed by: AA
Date: 12/19/98

ND-Not Detected MI-Matrix Interference (P)-Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Comments: Sample contains petroleum hydrocarbons from C10 - C24 that do not resemble a diesel pattern. (C10 - C24)RR

Billy G. Rich, Lab Director

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Certificate of Analysis No. 9812099-01b

Philip Environmental Services
4000 Monroe Road
Farmington, NM 87401
Attn: Robert Thompson

		Date:	12/29/98
Project:	BR Pits	Project No:	20440
Site:	Farmington	Matrix:	Soil
Sampled By:	R. Thompson	Date Sampled:	12/14/98
Sample ID:	Standard Oil COM #1-BOT	Date Received:	12/15/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Gasoline Range Organics	2000	100 (P)	mg/kg
Surrogate	**% Recovery**		
1,4,Difluorobenzene	83		
4-Bromofluorobenzene	223MI		
Method 8015B*** for Gasoline			
Analyzed by: AA			
Date: 12/19/98			
Total Petroleum Hydrocarbons-Diesel	160	10 (P)	mg/kg
Surrogate	**% Recovery**		
n-Pentacosane	96		
Method 8015B*** for Diesel			
Analyzed by: RR			
Date: 12/18/98			

MI-Matrix Interference (P)-Practical Quantitation Limit ND-Not Detected

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Comments: Sample contains petroleum hydrocarbons from C10 - C24 that do not resemble a diesel pattern. (C10 - C24)RR

Billy G. Rich, Lab Director

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Certificate of Analysis No. 9812099-02a

Philip Environmental Services
4000 Monroe Road
Farmington, NM 87401
Attn: Robert Thompson

		Date:	12/29/98
Project:	BR Pits	Project No:	20440
Site:	Farmington	Matrix:	Soil
Sampled By:	R. Thompson	Date Sampled:	12/14/98
Sample ID:	Standard Oil COM #1-WALL	Date Received:	12/15/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Benzene	ND	5.0 (P)	µg/Kg
Toluene	5.5	5.0 (P)	µg/Kg
Ethylbenzene	44	5.0 (P)	µg/Kg
Total Xylene	540	5.0 (P)	µg/Kg
Total Volatile Aromatic Hydrocarbons	589.5		µg/Kg

Surrogate	% Recovery
1,4,Difluorobenzene	100
4-Bromofluorobenzene	133

Method 8020A***
Analyzed by: AA
Date: 12/16/98

ND-Not Detected MI-Matrix Interference (P)-Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Comments: Sample contains petroleum hydrocarbons from C10 - C24 that do not resemble a diesel pattern. (C10 - C24) RR

Billy G. Rich, Lab Director

807 S. CARLTON AVE.
FARMINGTON, NEW MEXICO 87401
PHONE (505) 326-2588
FAX (505) 326-2875

Certificate of Analysis No. 9812099-02b

Philip Environmental Services
4000 Monroe Road
Farmington, NM 87401
Attn: Robert Thompson

		Date:	12/29/98
Project:	BR Pits	Project No:	20440
Site:	Farmington	Matrix:	Soil
Sampled By:	R. Thompson	Date Sampled:	12/14/98
Sample ID:	Standard Oil COM #1-WALL	Date Received:	12/15/98

Analytical Data

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Gasoline Range Organics	12	0.5 (P)	mg/kg
Surrogate	**% Recovery**		
1,4,Difluorobenzene	93		
4-Bromofluorobenzene	533MI		
Method 8015B*** for Gasoline			
Analyzed by: AA			
Date: 12/16/98			
Total Petroleum Hydrocarbons-Diesel	190	10 (P)	mg/kg
Surrogate	**% Recovery**		
n-Pentacosane	80		
Method 8015B*** for Diesel			
Analyzed by: RR			
Date: 12/18/98			

MI-Matrix Interference (P)-Practical Quantitation Limit D-Diluted, limits not applicable

Notes:
*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th Ed
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

Comments: Sample contains petroleum hydrocarbons from C10 - C24 that do not resemble a diesel pattern. (C10 - C24) RR

Billy G. Rich, Lab Director

PHILIP

Chain of Custody Record

4000 Monroe Road
Farmington, NM 87401

(505) 326-2262 Phone
(505) 326-2388 FAX

COC Serial No. C 2327

Project Name	BR PITS
Project Number	20440 Phase . Task 4000 . 77
Samplers	ARCHULETA
Laboratory Name	SPL
Laboratory Location	FARMINGTON, NM

Sample Number (and depth)	Date	Time	Matrix	Total Number of Bottles	TPH 8015 MODIFIED 3510-680 (B)	BTEX 8020 (A)											Comments
STANDARD OIL COM #1-BOT	12/11/98	1439	SOIL	1	X	✓											1178 PPM
STANDARD OIL COM #1-WALL	12/14/98	1152	SOIL	1	X	X											321 PPM

Relinquished by:

Signature	Date	Time
[signature]	12/15/98	0700
[signature]	12/15/98	1110AM

Received By:

Signature	Date	Time
[signature]	12/15/98	11:04 AM
[signature] – SPL	12/15/98	11:10 AM

Samples Iced: ☒ Yes ☐ No

Preservatives (ONLY for Water Samples)
- ☐ Cyanide .... Sodium hyroxide (NaOH)
- ☐ Volatile Organic Analysis .... Hydrochloric acid (HCl)
- ☐ Metals .... Nitric acid (HNO_3)
- ☐ TPH (418.1) .... Sulfuric acid (H_2SO_4)
- ☐ Other (Specify) ______
- ☐ Other (Specify) ______

Carrier:

Airbill No.

Shipping and Lab Notes:

PE-176 4/95

PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 12-14-98
Operator: PAUL R Archuleta
Location: Stanolind Oil Com #1

Calibration Time/Date: 200 12-14-98
Calibration Temperature: 37.5

No.	Sample ID	Weight	Time/Date	Reading (ppm)	DF[1]	RF[2]	Actual (ppm)	Comments
1	#1	10g	2:10	241 ppm				Composite Sample
2	#2	10g	2:20	1103 ppm				Bottom Sample
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

[1]DF = Dilution Factor, e.g., for 5 gram soil sample DF=10g/5g=2, and actual concentration equals reading times DF (reading (ppm) x DF = actual concentration).

[2]RF = Response Factor, selected for the hydrocarbon contamination at the site.

PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 12/10/98 Calibration Time/Date: 10:30 12/10/98

Operator: Calibration Temperature: 23.5 C

Location: Standard Calc #1

No.	Sample ID	Weight	Time/Date	Reading (ppm)	DF[1]	RF[2]	Actual (ppm)	Comments
1	1	10g	12:17 12/10/98	285 ppm				error Grabs then 10° between Calibration and the sample.
2	2	10g	13:17 12/10/98	1276 ppm				
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

[1]DF = Dilution Factor, e.g., for 5 gram soil sample DF=10g/5g=2, and actual concentration equals reading times DF (reading (ppm) x DF = actual concentration).

[2]RF = Response Factor, selected for the hydrocarbon contamination at the site.

PHILIP ENVIRONMENTAL

SITE SKETCH

Serial No. SS- _____ Title _____

Project Name BR PITS Project No. 20440

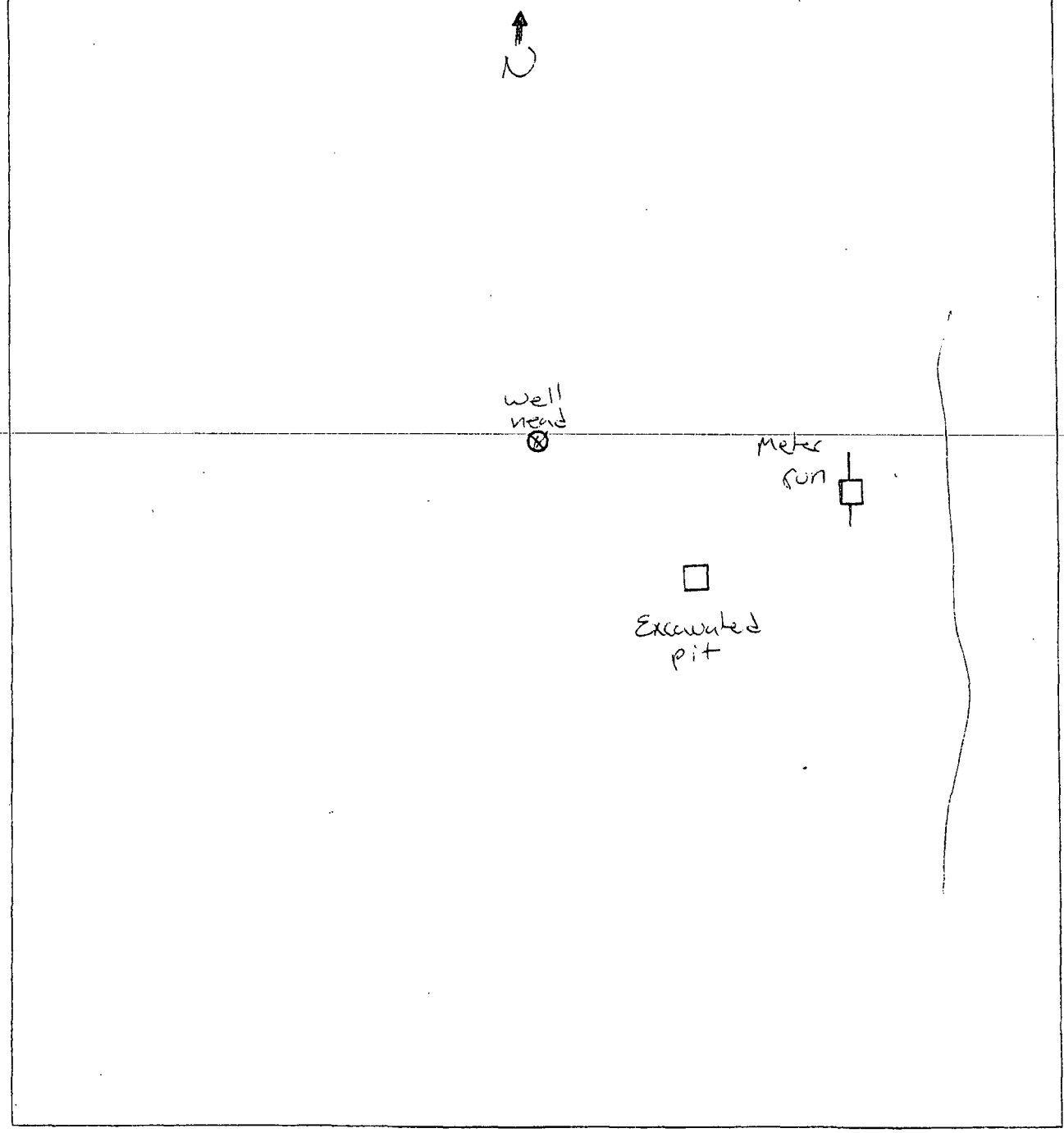
Project Manager Robert Thompson Phase.Task No. 4000.77

Client Company Burlington Resources

Site Name Standard oil Com #1

Site Address _____

(Include north arrow and scale or dimensions. If available, preprint CAD drawing of site on this form.)



Sketched by (signature) _____ Date _____

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

AGRA Earth & Environmental, Inc.
2060 Afton Place
Farmington, NM 87401
Tel: (505) 327-7928
Fax: (505) 326-5721

December 15, 1998
AEE Project No. 8529-000203

Philip Environmental Services Corp.
4000 Monroe Road
Farmington, New Mexico 87401

Attention: **Mr. Robert Thompson**

Regarding: **Environmental Cleanup Excavation**
Burlington Resources Oil and Gas Company
Standard Oil Com # 1 Well Site
1090 Feet FSL and 1850 Feet FWL
Section 36 Township 29 North, Range 9 West, N.M.P.M.
Lease No. B-111221 - Elevation 5683
San Juan County, New Mexico

Ladies and Gentlemen:
In accordance with the request of Mr. Robert Thompson of Philip Environmental, AGRA Earth and Environmental, Inc. (AEE) personnel visited the referenced site on Friday, December 11, 1998. The purpose of this visit was to observe the existing excavation and provide guidelines for expanding the excavation. The excavation was about 31 feet deep at the time of our site visit. It is understood that the excavation will be expanded laterally until the contaminated soil is removed.

The soils observed consisted of a fairly loose silty sand which exhibited signs of sloughing in the open excavation. The west side of the excavation appeared to be sandstone. It is recommended that in all areas, where equipment will be working in the excavation, the sides of the excavation in the soil be laid-back at an angle not to exceed 2:1 (horizontal to vertical). The sandstone side of the excavation should be laid back at an angle not to exceed ¾:1 (horizontal to vertical). The equipment should not enter into the excavation any deeper than is absolutely necessary. In areas where existing facilities prevent the 2:1 layback, the sides may be benched at a minimum of 8 feet horizontal to 8 feet vertical. Work in areas where the benching is used should be for short periods of time as the instability of these areas will increase as the soils begin to dry. Spoils and equipment should be kept away from the edge of the excavation a distance at least equal to the depth of the excavation. The edges of the excavation should be checked regularly for tension cracks or other signs of possible slope failure. Any areas showing signs of slope failure should be repaired prior to personnel or equipment entering the excavation.

We appreciate the opportunity to be of service on this project. If you should have any questions, please do not hesitate to contact the undersigned.

Respectfully submitted,
AGRA Earth & Environmental, Inc.

Kim M. Preston, P.E.
Four Corners Area Manager

Copies: Addressee (3)

Drilling Log/Wellbore Diagram

ENVIROTECH INC.

FIELD BORING/LITHOLOGY LOG **MW-1**

Soil Boring #	PROJECT #:	CLIENT NAME: **Burlington Resources**	Page
MW-1	9219701	Standard Oil Com. #1	1 of 2

Date Started:	08/11/99	Location:	Largo Canyon, Blanco, New Mexico		
Date Completed:	08/11/99	Elevation:	TOC:		
Type of Drill:	Mobil B-61	Driller:	Matt Cain	Geotech:	James Cowles
Bit Size:	7" Hollow Stem Auger	Helper:	Donn Eisenhaure	Proj. Mg.:	James Cowles

Depth ft.	Completion MW	Sample Type	TPH ppm (8015)	OVM PPM	Lithology	Description
0.0		A				0.0 - 1.0' fill dirt/ material
		A				
		A				
2.0		A				
		A				brown sand and silt, moist, loose, no odor.
		A				
		A				
4.0		SS		0.0		
		SS				
		A				
6.0		A				
		A				
		A				
		A				
		A				
8.0		A				
		A				
		SS		0.0		brown sand and silt, moist, loose, no odor.
		SS				
10.0		A				
		A				
		A				
		A				
12.0		A				
		A				
		A				
		A				
14.0		SS		4.0		brown sand and silt, moist, loose, no odor.
		SS				
		A				
		A				
16.0		A				
		A				
		A				
		A				
18.0		A				
		A				
		A				
		SS		0.0		brown sand and silt, moist, loose, no odor.
20.0		SS				
		A				
		A				
		A				
22.0		A				
		A				
		A				
		A				
24.0		SS				brown sand and silt, very moist, loose, no odor.
		SS				
		A				
		A				
26.0		A				
		A				
		A				
		A				Native Soil, clayey sands, very moist, gray-black, odor.
28.0		A				loose, sandy clay
		SS		320.0		
		SS				
30.0						
32.0						

Legend

A	Auger Samples
SS	Split Spoon
CS	Continuous Sampler
AR	Air Rotary Cuttings

Lithology: Fill, Cobble, Sand, clay, silt

Monitor Well Completion: Cement Grout, Screen PVC, Blank PVC Screen, Sand Pack, Bentonite Seal

Note: All depths are below ground level

ENVIROTECH INC.

FIELD BORING LITHOLOGY LOG **MW-1**

Soil Boring #	PROJECT #	CLIENT NAME:		Page
MW-1	9219701	Burlington Resources Standard Oil Com. #1		2 of 2
Date Started:	08/11/99	Location:	Largo Canyon, Blanco, New Mexico	
Date Completed:	08/11/99	Elevation:	TOC:	
Type of Drill:	Mobil B-61	Driller:	Matt Cain	Geotech: James Cowles
Bit Size:	7" Hollow Stem Auger	Helper:	Donn Eisenhaure	Proj. Mg.: James Cowles

Depth ft.	Completion: MW	Sample Type	TPH ppm (8015)	OVM PPM	Lithology	Description
32.0		A				
		A				
		A				
34.0		SS				Native Soil, clayey sands, dry, gray, no odor,
		SS				hard sandy clay
		A				
		A				
36.0		A		27.0		
		A				
		A				
		A				
38.0		A				
		A				TD 39', Native Soil, clayey sands, dry, gray, no odor.
39.0		SS				very hard

Legend:

Sample type:
- A Auger Samples
- SS Split Spoon
- CS Continuous Sampler
- AR Air Rotary Cuttings

Lithology
- Fill:
- Cobble
- Sand
- clay
- silt

Monitor Well Completion
- Cement Grout
- Screen PVC
- Blank PVC Screen
- Sand Pack
- Bentonite Seal

Note: All depths are below ground level

Analytical Results - Groundwater

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Burlington	Project #:	219701
Sample ID:	WS - 1	Date Reported:	08-19-99
Chain of Custody:	7285	Date Sampled:	08-18-99
Laboratory Number:	F932	Date Received:	08-18-99
Sample Matrix:	Water	Date Analyzed:	08-19-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**1,500**	**10**	**1.8**
Toluene	**135**	**10**	**1.7**
Ethylbenzene	**106**	**10**	**1.5**
p,m-Xylene	**409**	**10**	**2.2**
o-Xylene	**177**	**10**	**1.0**
Total BTEX	**2,330**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**99 %**
	Bromofluorobenzene	**99 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **Standard Oil Com #1.**

Analyst

Review

5796 U.S. Highway 64 • Farmington, NM 87401 • Tel 505 • 632 • 0615 • Fax 505 • 632 • 1865

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	08-19-BTEX QA/QC	Date Reported:	08-19-99
Laboratory Number:	F932	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	08-19-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc.	Detect. Limit
Benzene	3.6219E-001	3.6335E-001	0.32%	ND	0.2
Toluene	2.7867E-002	2.7872E-002	0.02%	ND	0.2
Ethylbenzene	4.1931E-002	4.1981E-002	0.12%	ND	0.2
p,m-Xylene	3.6569E-002	3.6576E-002	0.02%	ND	0.2
o-Xylene	3.1955E-002	3.2051E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	1,500	1,430	4.7%	0 - 30%
Toluene	135	130	3.8%	0 - 30%
Ethylbenzene	106	102	3.8%	0 - 30%
p,m-Xylene	409	408	0.4%	0 - 30%
o-Xylene	177	170	4.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	%Recovery	Accept Limits
Benzene	1,500	50.0	1,540	99%	39 - 150
Toluene	135	50.0	187	101%	46 - 148
Ethylbenzene	106	50.0	157	101%	32 - 160
p,m-Xylene	409	100.0	507	100%	46 - 148
o-Xylene	177	50.0	228	101%	46 - 148

ND - Parameter not detected at the stated detection limit.

* - Administrative Limits set at 80 - 120%.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photolonization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for sample F932.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client:	Burlington	Project #:	219701
Sample ID:	WS - 2	Date Reported:	08-19-99
Laboratory Number:	F933	Date Sampled:	08-18-99
Chain of Custody:	7285	Date Received:	08-18-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	08-19-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	**7.10**	s.u.		
Conductivity @ 25° C	**16,170**	umhos/cm		
Total Dissolved Solids @ 180C	**8,070**	mg/L		
Total Dissolved Solids (Calc)	**7,930**	mg/L		
SAR	**18.5**	ratio		
Total Alkalinity as CaCO3	**780**	mg/L		
Total Hardness as CaCO3	**1,850**	mg/L		
Bicarbonate as HCO3	**780**	mg/L	12.78	meq/L
Carbonate as CO3	**<1**	mg/L	0.00	meq/L
Hydroxide as OH	**<1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**10.5**	mg/L	0.17	meq/L
Nitrite Nitrogen	**1.72**	mg/L	0.04	meq/L
Chloride	**192**	mg/L	5.42	meq/L
Fluoride	**1.46**	mg/L	0.08	meq/L
Phosphate	**8.6**	mg/L	0.27	meq/L
Sulfate	**4,700**	mg/L	97.85	meq/L
Iron	**0.038**	mg/L		
Calcium	**650**	mg/L	32.44	meq/L
Magnesium	**53.7**	mg/L	4.42	meq/L
Potassium	**8.5**	mg/L	0.22	meq/L
Sodium	**1,830**	mg/L	79.61	meq/L
Cations			116.68	meq/L
Anions			116.61	meq/L
Cation/Anion Difference			**0.06%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Standard Oil Com #1.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 1311
TOXICITY CHARACTERISTIC LEACHING PROCEDURE
TRACE METAL ANALYSIS

Client:	Burlington	Project #:	219701
Sample ID:	WS - 3	Date Reported:	08-19-99
Laboratory Number:	F934	Date Sampled:	08-18-99
Chain of Custody:	7285	Date Received:	08-18-99
Sample Matrix:	Water	Date Analyzed:	08-19-99
Preservative:	Cool	Date Extracted:	N/A
Condition:	Cool & Intact	Analysis Needed:	TCLP metals

Parameter	Concentration (mg/L)	Det. Limit (mg/L)	Regulatory Level (mg/L)
Arsenic	**ND**	**0.001**	**5.0**
Barium	**5.20**	**0.01**	**21**
Cadmium	**ND**	**0.001**	**0.11**
Chromium	**0.05**	**0.01**	**0.60**
Lead	**ND**	**0.05**	**0.75**
Mercury	**ND**	**0.0001**	**0.025**
Selenium	**ND**	**0.001**	**5.7**
Silver	**ND**	**0.01**	**0.14**

ND - Parameter not detected at the stated detection limit.

References: Method 1311, Toxicity Characteristic Leaching Procedure, SW-846, USEPA, December 1996.

Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, December 1996.

Methods 7060, 7080, 7131, 7191, 7470, 7421, 7740, 7761 Analysis of Metals by GFAA and Cold Vapor Techniques, SW-846, USEPA. December 1996.

Note: Regulatory Limits based on 40 CFR part 261 subpart C section 261.24, August 24, 1998.

Comments: **Standard Oil Com #1.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 1311
TOXICITY CHARACTERISTIC LEACHING PROCEDURE
TRACE METAL ANALYSIS
Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	08-19-TCM QA/QC	Date Reported:	08-19-99
Laboratory Number:	F925	Date Sampled:	N/A
Sample Matrix:	TCLP Extract	Date Received:	N/A
Analysis Requested:	TCLP Metals	Date Analyzed:	08-19-99
Condition:	N/A	Date Extracted:	N/A

Blank & Duplicate Conc. (mg/L)	Instrument Blank	Method Blank	Detection Limit	Sample	Duplicate	% Diff.	Acceptance Range
Arsenic	ND	ND	0.001	ND	ND	0.0%	0% - 30%
Barium	ND	ND	0.01	0.20	0.20	0.0%	0% - 30%
Cadmium	ND	ND	0.001	ND	ND	0.0%	0% - 30%
Chromium	ND	ND	0.01	0.01	0.01	0.0%	0% - 30%
Lead	ND	ND	0.05	ND	ND	0.0%	0% - 30%
Mercury	ND	ND	0.0001	ND	ND	0.0%	0% - 30%
Selenium	ND	ND	0.001	ND	ND	0.0%	0% - 30%
Silver	ND	ND	0.01	ND	ND	0.0%	0% - 30%

Spike Conc. (mg/L)	Spike Added	Sample	Spiked Sample	Percent Recovery	Acceptance Range
Arsenic	0.100	ND	0.098	98.0%	80% - 120%
Barium	1.00	0.20	1.20	100.0%	80% - 120%
Cadmium	0.500	ND	0.490	98.0%	80% - 120%
Chromium	0.50	0.01	0.51	100.0%	80% - 120%
Lead	2.00	ND	2.00	100.0%	80% - 120%
Mercury	0.0250	ND	0.0248	99.2%	80% - 120%
Selenium	0.100	ND	0.097	97.0%	80% - 120%
Silver	0.50	ND	0.49	98.0%	80% - 120%

ND - Parameter not detected at the stated detection limit.

References: Method 1311, Toxicity Characteristic Leaching Procedure, SW-846, USEPA, Dec. 1996

Methods 3010, 3020, Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: **QA/QC for samples F925, F928, F931, F934 and F922.**

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CHAIN OF CUSTODY RECORD

7285

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
Burlington	Standard Oil Com #1	
Sampler: James A. Coules	Client No. 92197-01	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	8021 BTEX	Anion/Cation	RCRA 8 Metals				Remarks
WS-1	8-18-99	9:30	F932	Water	2	X						
WS-2	8-18-99	9:35	F933	Water	1		X					
WS-3	8-18-99	9:40	F934	Water	1			X				

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
James Coules	8-18-99	11:00a	Ellen P. Ojeman	8.18.99	11:00
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.

5796 U.S. Highway 64
Farmington, New Mexico 87401
(505) 632-0615

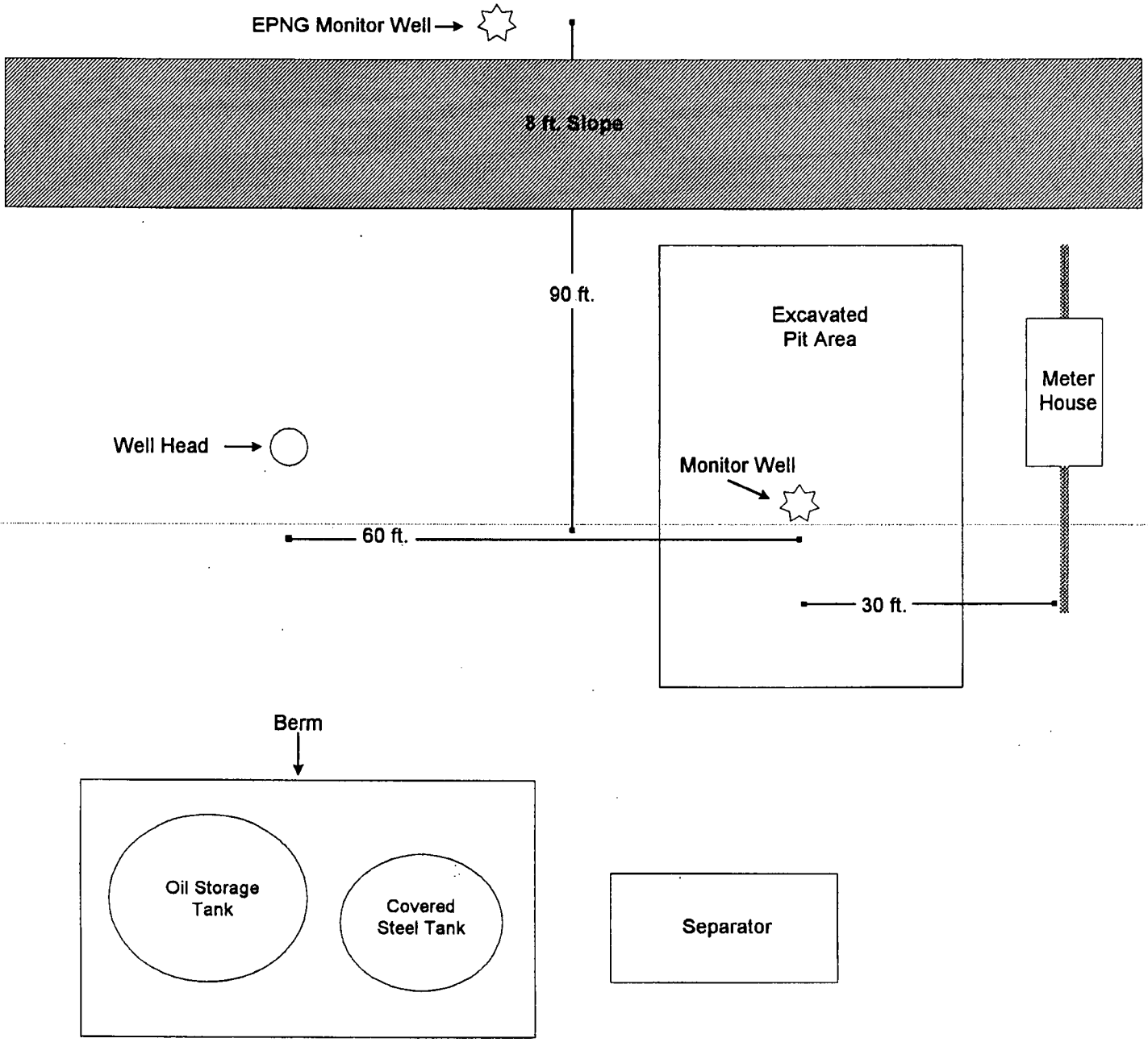
Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

Location Diagram

BURLINGTON RESOURCES

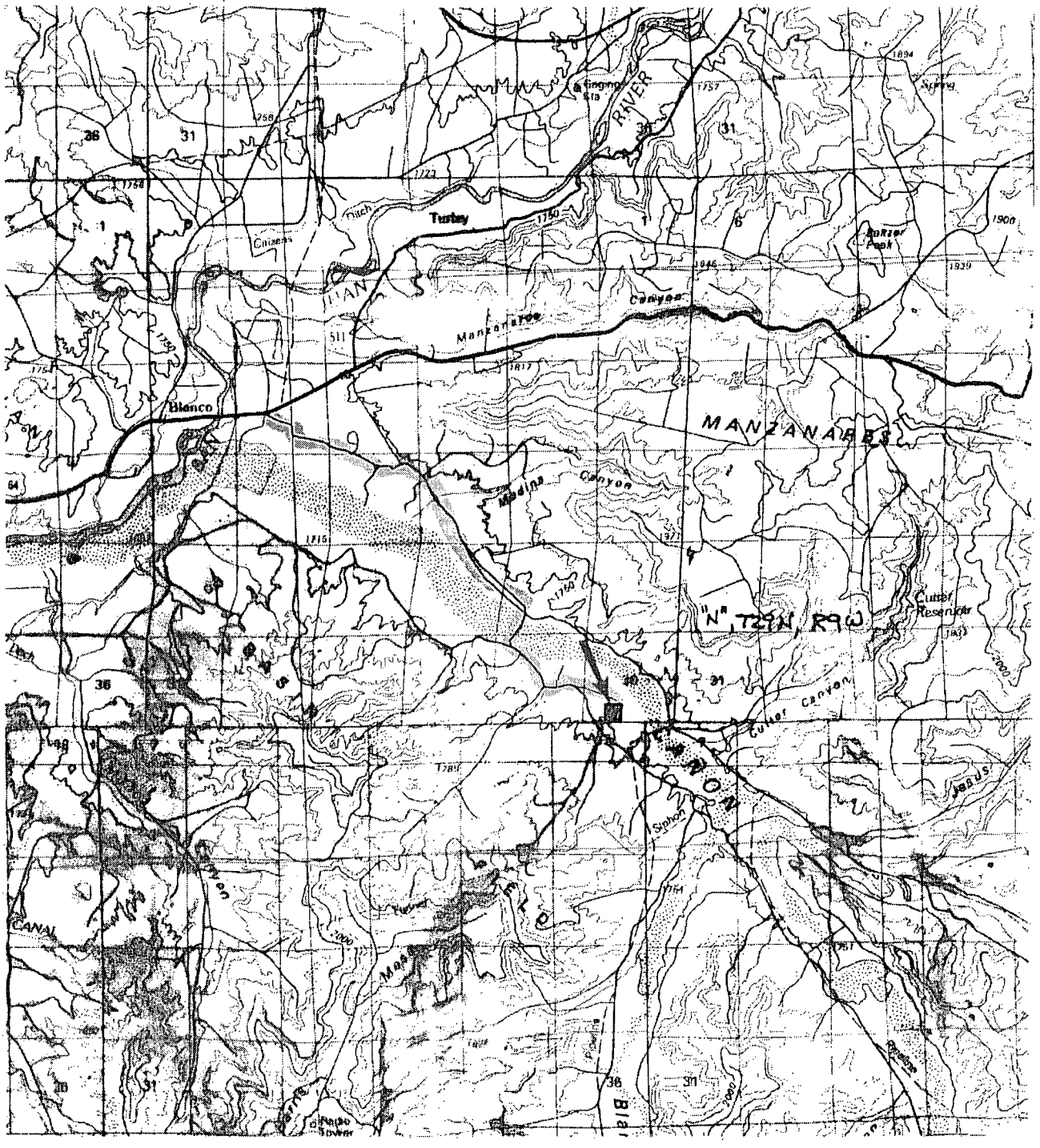
STANDARD OIL COM NO. 1

MONITOR WELL INSTALLATION



Not to scale - distances are approximate

stdoil1.vsd 9/10/99



All angles, directions, and distances determined by sighting and pacing from existing site features. Accuracy of measurements is implied only to the degree of accuracy of method.

Burlington Resources Standard Oil Com #1 Monitor Well Installation Largo Canyon Blanco, New Mexico San Juan County, NM	Envirotech Inc. Environmental Scientists & Engineers 5796 US Highway 64 Farmington, New Mexico	Vicinity Map Figure 1 | Date: 08/99 DRW: JAC | PRJ MGR: JAC
Project No.: 92197-01		

Olson, William

From: Louis Edward Hasely[SMTP:lhasely@br-inc.com]

Reply To: lhasely@br-inc.com

Sent: Tuesday, August 31, 1999 9:54 AM

To: Olson, William

Cc: Bruce Gantner; Jeff Schoenbacher; Ward Arnold

Subject: Groundwater Impact - Standard Oil Com #1

Bill - This is to notify you that groundwater collected from a temporary monitoring well at the Standard Oil Com #1 showed Benzene concentrations above standards. The monitoring well was installed in the center of Burlington Resources' excavation of a former pit.

Location:	Unit Letter N, Section 36 - T29N
Depth:	Groundwater depth was approximately 30 ft.
Lab Results:	Benzene
	Toluene
	Ethylbenzene
	Xylenes

Upon receiving all the final paperwork, I will provide you with a written follow-up including the lab reports, drilling log, and well diagram. Please let me know if you have any questions. Thanks.

Ed Hasely
Environmental, Health & Safety
(505) 326-9841
Email: lhasely@br-inc.com

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

July 9, 1998

CERTIFIED MAIL
RETURN RECEIPT NO. Z-235-437-307

Mr. Ed Hasely
Burlington Resources
P.O. Box 4289
Farmington, New Mexico 87499-4289

RE: SAN JUAN BASIN PIT GROUND WATER SITES

Dear Mr. Hasely:

Information in El Paso Field Services (EPFS) recent annual ground water monitoring report shows the presence of shallow ground at a number of well sites operated by Burlington Resources (BR). Disposal activities at EPFS pits on these locations have resulted in contamination of shallow ground water. These sites also apparently have former unlined production pits operated by BR, some of which appear to be contributing to ground water contamination seen in EPFS monitoring wells.

Due to the presenceof ground water contamination at these sites and the apparent commingling of contaminated waters from EPFS's former unlined dehy pit and BR's former unlined production pits, the OCD requires that BR immediately begin implementation of their previously approved pit closure plan at the sites listed below. Implementation will include investigation and remediation of contaminated soils and ground water at these sites.

1.	Fogelson 4-1 Com #14	Unit P, Sec. 04, T29N, R11W.
2.	Johnston Federal #4	Unit H, Sec. 33, T31N, R09W.
3.	Johnston Federal #6A	Unit F, Sec. 35, T31N, R09W.
4.	Standard Oil Com #1	Unit N, Sec. 36, T29N, R09W.
5.	Turner A #1 PM	Unit K, Sec. 34, T31N, R11W.

Since BR does not have an approved San Juan Basin ground water plan, the OCD also requires that BR submit a comprehensive ground water investigation and remediation plan for all pit closure sites in the San Juan Basin that encounter ground water. The plan will be submitted to the OCD Santa Fe Office by August 14, 1998 with a copy provided to the OCD Aztec District Office. In addition, the OCD requests that BR cooperate with EPFS to investigate and remediate ground water at sites with commingled plumes of contaminated ground water.

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

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Denny Foust, OCD Aztec District Office
Sandra D. Miller, El Paso Field Services
Bill Liess, BLM Farmington Office