3R-431

AGWR
2005

Date:
4/7/2006

BURLINGTON RESOURCES Annual Ground Water Report 2005

Howell K-1

SITE DETAILS

Location: Unit Letter K, Section 21, Township 31N, Range 8W; San Juan County, New Mexico
Land Type: FEE

RECENT ACTIVITIES

In August 2005, Burlington Resources (Burlington) excavated approximately 4000 cubic yards of impacted soil from an area southwest of the wellhead. The impacted soils were discovered in the area during below grade tank removal activities. The excavation went to a depth of 36 feet and soils were still impacted at this depth. During the excavation work ground water was encountered at approximately 34 feet. The excavation of soil stopped at the practical limit of the machinery to operate safely in the excavation. The excavation (i.e., approximately 70 feet by 50 feet by 36 feet deep) was backfilled.

March 2006 one ground water well was placed in the middle of the backfilled excavation. A water sample was collected from the well and analyzed for BTEX, TPH, and general water quality parameters. The analytical results are pending.

CONCLUSIONS

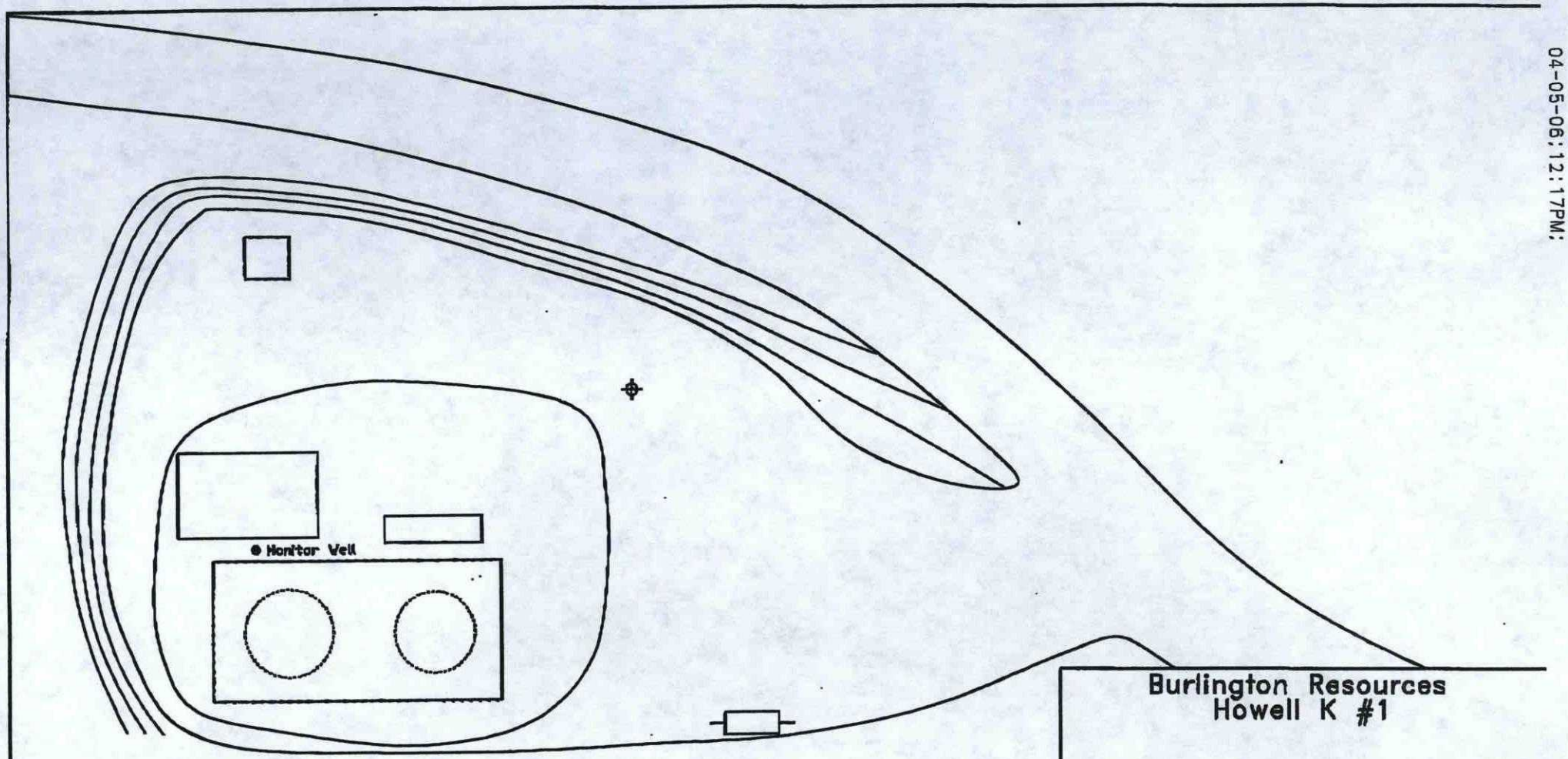
The petroleum contaminated soils were removed from this location to the extent practical and safe. A ground water sample was collected and submitted for laboratory analysis. Thee results of the ground water sampling will be reviewed and reported.

RECOMMENDATIONS

Burlington Resources will base recommendations after the results of the sampling have been reviewed.

Attachments: Figure 1 - Site Map
Field Pit Closure Report
Well Completion Diagrams

Figure 1
Howell K-1 Site Map



Burlington Resources
Howell K #1

SCALE: NTS	FIGURE NO.	REV
PROJECT NM2115-021-091		

REVISIONS

NO.	DATE	BY	DESCRIPTION

MAP DRWN			BASE DRWN		

ENVIRONMENTAL SCIENTISTS & ENGINEERS
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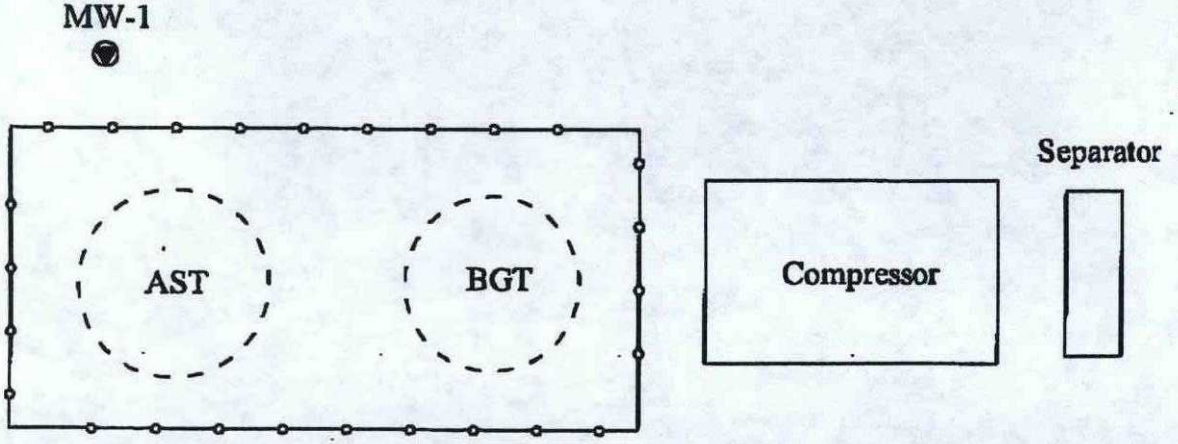


Burlington Resources
Howell K No. 1
Unit K, Sec 21, Twp 30N, Rng 8W
San Juan County, New Mexico

SCALE: NTS	FIGURE NO. 1	REV
PROJECT NO.92115-058		

REVISIONS

NO.	DATE	BY	DESCRIPTION
MAP DRWN	MPM	4/5/06	BASE DRWN MPM 4/5/06

ENVIRONMENTAL SCIENTISTS & ENGINEERS
ENVIROTECH
5796 U.S. HIGHWAY 64, FARMINGTON, NM 87410 505-632-0615

Field Pit Closure Report

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-144
June 1, 2004

For drilling and production facilities, submit to appropriate NMOCD District Office.
For downstream facilities, submit to Santa Fe office

Pit or Below-Grade Tank Registration or Closure

Is pit or below-grade tank covered by a "general plan"? Yes ☒ No ☐
Type of action: Registration of a pit or below-grade tank ☐ Closure of a pit or below-grade tank ☒

Operator: Burlington Resources Telephone: (505) 326-9841 e-mail address: LHasely@br-inc.com
Address: 3401 East 30th Street, Farmington, New Mexico, 87402
Facility or well name: Howell K No. 1 API #: 30045093130000 U/L or Qtr/Qtr K Sec 21 T 30N R 8W
County: San Juan Latitude 36.79505 Longitude -107.68474 NAD: 1927 ☒ 1983 ☐
Surface Owner: Federal ☒ State ☐ Private ☐ Indian ☐

Pit	**Below-grade tank**		
Type: Drilling ☐ Production ☐ Disposal ☐ Workover ☐ Emergency ☐ Lined ☐ Unlined ☐ Liner type: Synthetic ☐ Thickness ____mil Clay ☐ Pit Volume ____bbl	Volume: 40 bbl Type of fluid: Produced Water and Incidental Oil Construction material: Fiberglass. Double-walled, with leak detection? Yes ☒ If not, explain why not.		
Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water.)	Less than 50 feet 50 feet or more, but less than 100 feet 100 feet or more	(20 points) (10 points) (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 No	(20 points) (0 points)	0
Distance to surface water: (horizontal distance to all wetlands, playas, irrigation canals, ditches, and perennial and ephemeral watercourses.)	Less than 200 feet 200 feet or more, but less than 1000 feet 1000 feet or more	(20 points) (10 points) (0 points)	10
	Ranking Score (Total Points)		30

If this is a pit closure: (1) Attach a diagram of the facility showing the pit's relationship to other equipment and tanks. (2) Indicate disposal location: (check the onsite box if your are burying in place) onsite ☐ offsite ☒ If offsite, name of facility Same Lease, Crouch Mesa. (3) Attach a general description of remedial action taken including remediation start date and end date. (4) Groundwater encountered: No ☐ Yes ☒ If yes, show depth below ground surface 34 ft. and attach sample results.
(5) Attach soil sample results and a diagram of sample locations and excavations.

Additional Comments:
Potassium permanganate solution used to treat walls.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. **I further certify that the above-described pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.**

Date: _____
Printed Name/Title Mr. Ed Hasely, Environmental Advisor Signature _____

Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or otherwise endanger public health or the environment. Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations.

Approval:
Printed Name/Title _____ Signature _____ Date: _____

CLIENT: Burlington Resources

ENVIROTECH INC.

ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64-3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

LOCATION NO: _____
C.O.C. NO: _____

FIELD REPORT: CLOSURE VERIFICATION

PAGE No: 1 of 1

LOCATION: NAME: Howell K WELL #: 1 PIT:
QUAD/UNIT: K SEC: 21 TWP: 30N RNG: 8W PM: NMPM CNTY: SJ ST: NM
QTR/FOOTAGE: 1750' S 1650' W CONTRACTOR: L&R / M&M

DATE STARTED: 7/26/05
DATE FINISHED: 8/18/05
ENVIRONMENTAL SPECIALIST: MPM

EXCAVATION APPROX. 70 FT. x 50 FT. x 36' FT. DEEP. CUBIC YARDAGE: 4000 est.
DISPOSAL FACILITY: Sams Lease & Crouch Mesa REMEDIATION METHOD: _____
LAND USE: _____ LEASE: SF 078587-A FORMATION: _____

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY 52' FT. 255° FROM WELLHEAD.
DEPTH TO GROUNDWATER: 20 NEAREST WATER SOURCE: 0 NEAREST SURFACE WATER: 10
NMOCD RANKING SCORE: 30 NMOCD TPH CLOSURE STD: 100 PPM

CHECK ONE:
___ PIT ABANDONED
✓ STEEL TANK INSTALLED

SOIL AND EXCAVATION DESCRIPTION:

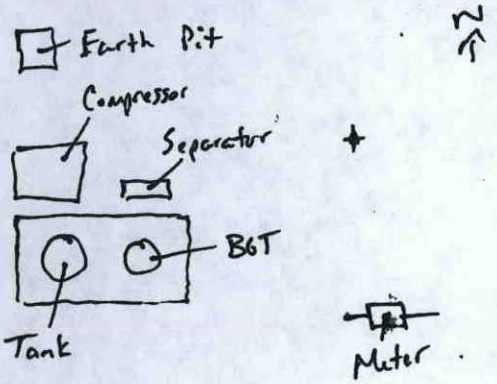
Beneath removed BGT, soil failed inital tests. Groundwater was encountered at approximately 34' depth. Excavation continued until it reached parimeter of location pad. Near water / soil interface, visible contamination still exists. Treated with 600 total gallons of potassium permanganate solution.

FIELD 418.1 CALCULATIONS

TIME	SAMPLE I.D.	LAB No:	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm
	SEE	418.1	Analysis		Log		

SCALE
0 FT

PIT PERIMETER



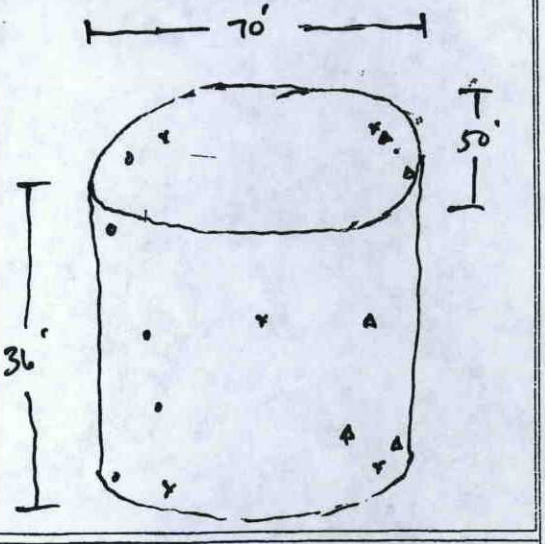
OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)
1 3' below	746 ppm
2	
3	
4 N. Area	1
5 E. Area	2
W. Area	0
S. Area	0

LAB SAMPLES

SAMPLE ID	ANALYSIS	TIME

PIT PROFILE



TRAVEL NOTES: CALLOUT: _____ ONSITE: _____

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Method 418.1 Analysis Log
Total Petroleum Hydrocarbons

Date 8/11/05 Analyst MPM

Location Howell K No. 1 Instrument Foxboro

Job No. 92115-021-091

Date	Sample No.	Sample Description	Sample Wt. (g)	Volume Freon (mL)	Dilution Factor	Abs. Reading	TPH (mg/kg)	OVM
8/11	1	North Area 5 Pt Comp	5	20	1	0.011	76.3	1
8/11	2	East Area 5 Pt Comp	5	20	1	0.0056	38.9	2
8/18	3	West Area 5 Pt Comp	5	20	1	0.0054	37.5	0
8/18	4	South Area 5 Pt Comp	5	20	1	0.0098	68.1	0

Infrared Spectrophotometer Calibration

New Freon _____

Date Standards Prepared _____

Standard Concentration (mg/L)	Absorbance	
100	_____	8/18
200	8/11 0.120	0.122
500	_____	
1000	_____	

I-CAL RF: 1735 C-CAL RF: 1769

RSD: _____ % % Difference: _____ %

QA/QC Acceptance Criteria: I-CAL RSD +/- 20% C-Cal Difference +/- 10%

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ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Client:	Burlington Resources	Project #:	92115-021-091
Sample No.:	1	Date Reported:	8/23/2005
Sample ID:	North Area, 5 Pt. Composite	Date Sampled:	8/11/2005
Sample Matrix:	Soil	Date Analyzed:	8/11/2005
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**76.3**	**5.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Wate and Waste, USEPA Storet No. 4551, 1978.

Comments: **Howell K No. 1, 40 bbl BGT**

Analyst

Review

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ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Burlington Resources	Project #:	92115-021-091
Sample No.:	2	Date Reported:	8/23/2005
Sample ID:	East Area, 5 Pt Composite	Date Sampled:	8/11/2005
Sample Matrix:	Soil	Date Analyzed:	8/11/2005
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**38.9**	**5.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Wate and Waste, USEPA Storet No. 4551, 1978.

Comments: **Howell K No. 1, 40 bbl BGT**

Analyst

Review

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ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Burlington Resources	Project #:	92115-021-091
Sample No.:	3	Date Reported:	8/23/2005
Sample ID:	West Area, 5 Pt Composite	Date Sampled:	8/18/2005
Sample Matrix:	Soil	Date Analyzed:	8/18/2005
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**37.5**	**5.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Wate and Waste, USEPA Storet No. 4551, 1978.

Comments: **Howell K No. 1, 40 bbl BGT**

Analyst

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ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Burlington Resources	Project #:	92115-021-091
Sample No.:	4	Date Reported:	8/23/2005
Sample ID:	South Area, 5 Pt Composite	Date Sampled:	8/18/2005
Sample Matrix:	Soil	Date Analyzed:	8/18/2005
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**61.1**	**5.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Wate and Waste, USEPA Storet No. 4551, 1978.

Comments: **Howell K No. 1, 40 bbl BGT**

Analyst

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ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 418.1
TOTAL PETROLEUM HYROCARBONS
QUALITY ASSURANCE REPORT

Client:	Burlington Resources	Project #:	92115-021-091
Sample ID:	QA/QC	Date Reported:	8/23/2005
Laboratory Number:	01-24-TPH.QA/QC	Date Sampled:	N/A
Sample Matrix:	Freon-113	Date Analyzed:	1/24/2005
Preservative:	N/A	Date Extracted:	1/24/2005
Condition:	N/A	Analysis Needed:	TPH

Calibration	I-Cal Date	C-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
	05-22-04	1/24/2005	1,735	1,667	3.9%	+/- 10%

Blank Conc. (mg/Kg)	Concentration	Detection Limit
TPH	ND	5.0

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
TPH	2,471	2,352	4.8%	+/- 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept Range
TPH	2,471	2,000	5,030	112.5%	80 - 120%

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis os Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **QA/QC for Howell K No. 1, 40 bbl BGT**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Burlington Resources	Project #:	92115-001-15329
Sample ID:	Maddox Com 1B	Date Reported:	01-26-06
Laboratory Number:	35846	Date Sampled:	01-20-06
Chain of Custody No:	15329	Date Received:	01-20-06
Sample Matrix:	Soil	Date Extracted:	01-24-06
Preservative:	Cool	Date Analyzed:	01-25-06
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Landfarm (2005 BG Proj) PID = 1.7 (from Howell K 1).**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Burlington Resources	Project #:	92115-001-15329
Sample ID:	Howell K 4B	Date Reported:	01-26-06
Laboratory Number:	35844	Date Sampled:	01-20-06
Chain of Custody No:	15329	Date Received:	01-20-06
Sample Matrix:	Soil	Date Extracted:	01-24-06
Preservative:	Cool	Date Analyzed:	01-25-06
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Landfarm (2005 BG Proj) PID = 1.1**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Burlington Resources	Project #:	92115-001-15329
Sample ID:	Howell K 4	Date Reported:	01-26-06
Laboratory Number:	35843	Date Sampled:	01-20-06
Chain of Custody No:	15329	Date Received:	01-20-06
Sample Matrix:	Soil	Date Extracted:	01-24-06
Preservative:	Cool	Date Analyzed:	01-25-06
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Landfarm (2005 BG Proj) PID = 3.3**

Analyst

Review

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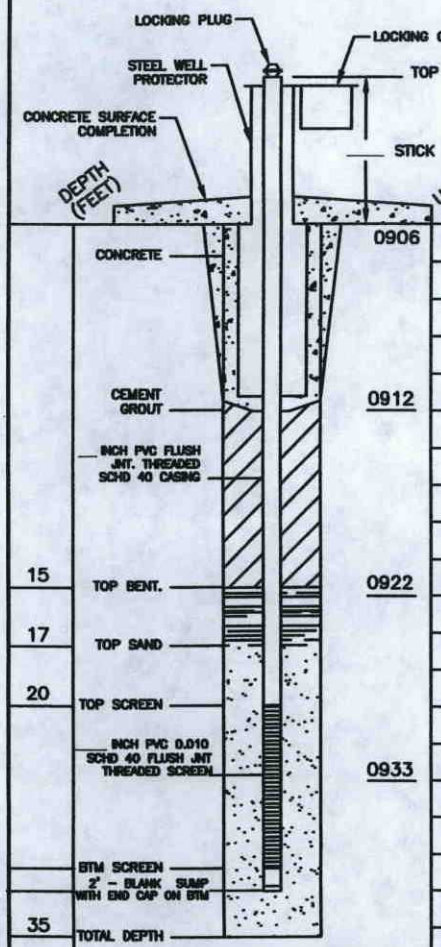
Well Completion Diagrams

ABOVE GRADE WELL COMPLETION DIAGRAM / LITHOLOGY LOG

MW 1

SB



DEPTH (FEET)	USCS	SAMPLE TYPE	HEADSPACE (PPM)	LITHOLOGY	SAMPLE DESCRIPTION	DEPTH (FEET)
					0906	
					0912 Fill / sand / brown / dry / no odor / fine	10'
					0922 Fill / sand / brown / dry / no odor / fine	20'
					Fill / sand / brown / dry / no odor / course	
		SS	4.7		0933 Clay / olive gray / wet / slight odor / soil-water interface	30'
					TD = 35'	40'

Well Materials Used:

12 Sks 10-12 Silica Sand
1 Sks Bentonite Chips
___ Sks Class "A" Cement
___ Sks Quickcrete
20 Ft Blank Casing
15 Ft Screen

Well Development:
4 Volumes Bailed
___ Pumped
1 Gallons of Water

Remarks:
Well developed by ETECH

DRILLER: Thurman Benally
HELPER: Farrell Chee
DRILLING COMPANY: Envirotech
DRILLING METHOD: Auger

BIT SIZE: 7 7/8
TOTAL BORING DEPTH: 35'
DATE STARTED: 3 / 10 / 06
SAMPLER TYPE: Split Spoon (SS)

LOCATION: Howell K No. 1
ELEVATION:
DATE COMPLETED 3 / 10 / 06
GEOLOGIST: Michael Marquez

Burlington Resources

ENVIROTECH INC.

ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64
FARMINGTON, NEW MEXICO 87401
(505) 632-0615
AbvGrdlog.dwg

REVISIONS
BY ___ DATE ___
BY ___ DATE ___

JOB # 92115-058-003

DATE 3/28/06 DRAWN MPM
SCALE NTS APPROVED CJC

PAGE 1 OF 1