

**3R - 420**

**WORKPLANS**

**4/10/2007**

***BLAGG ENGINEERING INC.***

P.O. Box 87, Bloomfield, New Mexico 87413

Phone: (505)632-1199 Fax: (505)632-3903

SENT VIA USPS CERTIFIED

April 10, 2007

Mr. Glenn von Gonten, Hydrologist  
New Mexico Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

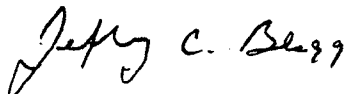
Re: BP America Production Company  
Transmittal of Abatement Plan  
GCU 204E: (I) Sec. 34 - T28N - R12W, San Juan County, NM

Dear Mr. vonGonten:

On behalf of BP America Production Company, Blagg Engineering, Inc. (BEI) is submitting the attached Abatement Plan for the GCU 204E, (I) Sec. 34 - T28N - R12W, San Juan County, New Mexico pursuant to our correspondence dated March 2, 2007. The plan has been prepared to meet the requirements stipulated in NMOCD Rule 116D.

We welcome your feedback on this plan. If you have questions or need additional information, please contact either myself at (505)632-1199 or Mr. Larry Schlotterback of BP at (505)326-9200.

Respectfully:  
***Blagg Engineering, Inc.***



Jeffrey C. Blagg, P.E.  
President

cc: Bill Freeman - NNEPA Shiprock  
Brandon Powell - NMOCD Aztec  
Larry Schlotterback - BP SJ Op. Ctr.

File: GCU204E.gwplan.xmt

# **BP America Production Company**

## **ABATEMENT PLAN**

### **GCU 204E**

#### **(I) Sec. 34 – T28N – R12W**

#### **San Juan County, New Mexico**

##### **I. Introduction**

A release of hydrocarbons affecting groundwater was discovered at the GCU 204E during investigation of the vertical extent of soil impacts at an abandon historical waste pit site. During this investigation groundwater was encountered at a depth of approximately 14.5 feet below ground surface. A monitor well was set and sampling on November 14, 2006 identified groundwater impacts exceeding New Mexico Water Quality Control Commission (NMWQCC) standards for volatile hydrocarbons.

The location is in a remote area with no immediate residents, down-gradient surface waters or water wells within a 1-mile radius that could be influenced.

BP intends to investigate and remediate source area soils and groundwater to minimize impacts to the environment. Outlined below is an abatement plan designed to meet the requirements of the New Mexico Oil Conservation Division (NMOCD) Rule 116D.

##### **II. Site Investigation/Abatement**

Site investigation and abatement is proposed to be conducted concurrently using excavation equipment to remove all identified impacted soils known to exceed NMOCD standards, beginning from the ground surface and extending to below the water table found at approximately 14.5 feet below grade. During this work, soil type, groundwater depth and the extent of impacts will be investigated.

Water wells within a 1-mile radius of the site will be identified. Any wells that may be impacted by the release will be sampled and tested for impacts, pending well owner authorization.

Following remedial actions, a minimum of three (3) groundwater monitoring wells will be installed for testing water quality and identifying gradient. Additional wells may be installed to insure that adequate monitoring points are placed up-gradient, in the original source area and down-gradient from the source area.

Initial well testing will be for volatile organics (BTEX) by an appropriate laboratory analytical procedure (U.S. EPA 8021 or 8260) and for cation/anion analysis. If a product sheen is identified during the initial sample event, polynuclear aromatic hydrocarbons (PAH's) will be included in the laboratory testing.

If initial testing indicates an absence of contaminants in all wells, site closure with no further sampling may be requested. However, if contaminants are detected in any well, additional testing will be conducted until consecutive tests indicate residual contaminants are below standards for any given monitoring point.

Quality assurance/quality control (QA/QC) will include following standard SW 846 procedures for well development, sample collection, storage and delivery to the laboratory. Chain-of-custody documentation will be included with each sample. Only qualified laboratories with adequate QA/QC processes that follow U.S. EPA protocol will be selected for sample analysis.

Following remediation efforts and initial well sampling, a report summarizing site activities will be prepared and submitted for NMOCD approval. Included with this report will be:

- a. The results of the initial investigation including identification of the water well inventory, a description of the applicable surface and groundwater hydrology and water flow relationships.
- b. Geologic/lithologic logs and well construction diagrams.
- c. Geologic cross sections, as appropriate
- d. Water table contour maps, including the location pertinent site features, depicting the magnitude and direction of the hydraulic gradient
- e. Isopleth maps, as appropriate
- f. Summary tables of water quality testing, including laboratory test reports with QA/QC.
- g. Waste disposition.
- h. Recommendations for future actions, including a schedule for future monitor well sampling and a reporting schedule.

### III. Summary

BP intends to initiate remedial actions at the GCU 204E on a proactive basis to minimize potential impacts to the environment. If subsequent monitoring and testing indicates that these actions will not adequately address remediation of groundwater impacts, a revised abatement plan will be submitted for NMOCD approval.

**Hall Environmental Analysis Laboratory**

Date: 10-Jun-03

**CLIENT:** Blagg Engineering  
**Lab Order:** 0306025  
**Project:** GCU #204E Blow Pit  
**Lab ID:** 0306025-02

**Client Sample ID:** 2 @ 11'  
**Collection Date:** 6/3/2003 8:00:00 AM  
**Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: JMP
Diesel Range Organics (DRO)	6200	100		mg/Kg	20	6/10/2003 3:16:54 PM
Motor Oil Range Organics (MRO)	1600	1000		mg/Kg	20	6/10/2003 3:16:54 PM
Surr: DNOP	99.6	60-124		%REC	20	6/10/2003 3:16:54 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: NSB
Gasoline Range Organics (GRO)	1800	250		mg/Kg	50	6/5/2003 6:51:21 PM
Surr: BFB	149	74-118	S	%REC	50	6/5/2003 6:51:21 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: NSB
Benzene	4.9	1.3		mg/Kg	50	6/5/2003 6:51:21 PM
Toluene	48	1.3		mg/Kg	50	6/5/2003 6:51:21 PM
Ethylbenzene	12	1.3		mg/Kg	50	6/5/2003 6:51:21 PM
Xylenes, Total	120	1.3		mg/Kg	50	6/5/2003 6:51:21 PM
Surr: 4-Bromofluorobenzene	110	74-118		%REC	50	6/5/2003 6:51:21 PM

**Qualifiers:** ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits  
B - Analyte detected in the associated Method Blank  
\* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits  
E - Value above quantitation range

# BP AMERICA PROD. CO. GROUNDWATER LAB RESULTS

SUBMITTED BY BLAGG ENGINEERING, INC.

GCU # 204E

UNIT I, SEC. 34, T28N, R12W

REVISED DATE: FEBRUARY 6, 2007

FILENAME: ( GDK-4Q06.WK4 ) NJV

								BTEX EPA METHOD 8021B ( ppb )			
SAMPLE DATE	WELL NAME or No.	D.T.W. (ft)	T.D. (ft)	TDS (mg/L)	COND. umhos	pH	PRODUCT (ft)	Benzene	Toluene	Ethyl Benzene	Total Xylene
30-Jan-07	MW #1	18.57	27.00	584	1,100	7.33		ND	3.0	2.3	13
14-Nov-06	MW #2	16.69	27.50	924	1,400	6.80		1,000	3,900	1,100	9,700
30-Jan-07		16.97			1,200	6.89		900	1,600	1,400	12,000
30-Jan-07	MW #3	13.92	25.00	620	1,000	7.00		8.2	ND	71	120
NMWQCC GROUNDWATER STANDARDS								10	750	750	620

NOTES : 1) RESULTS IN BOLD RED TYPE INDICATE EXCEEDING NMWQCC STANDARDS .

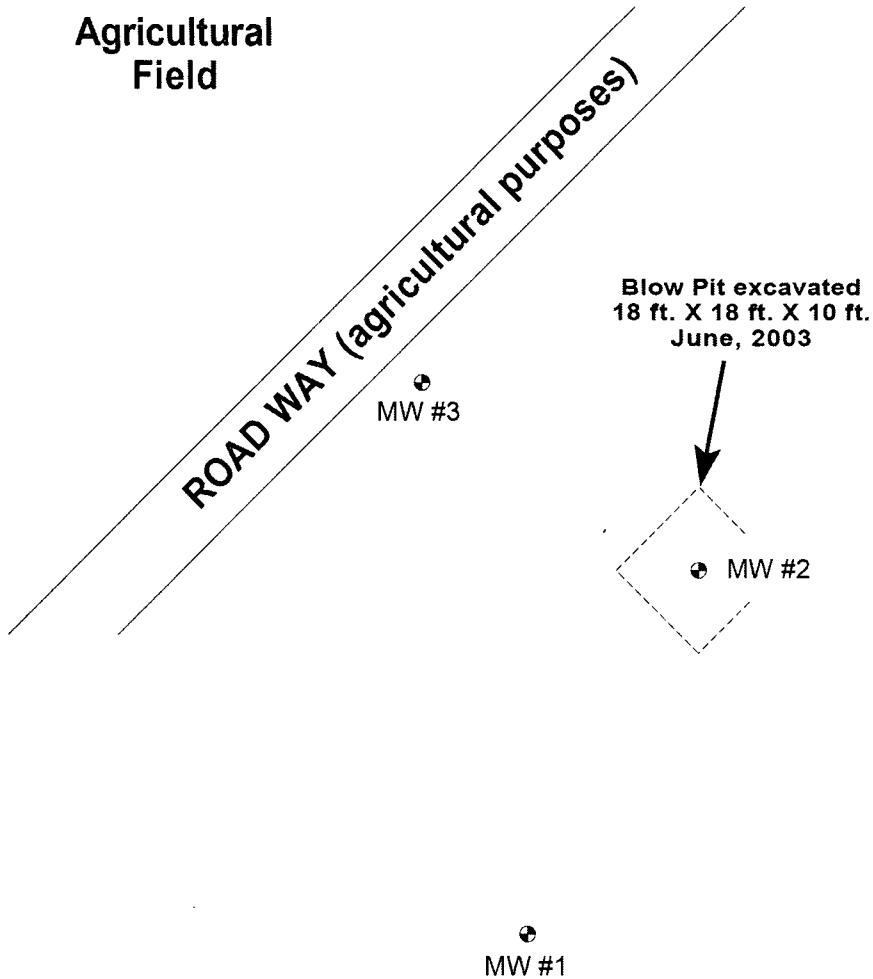
**GENERAL WATER QUALITY**  
**BP AMERICA PRODUCTION COMPANY**

**GCU # 204E**

Sample Dates : Nov. 14 , 2006 & Jan. 30 , 2007

PARAMETERS	MW # 1 01/30/07	MW # 2 11/14/06	MW # 3 01/30/07	Units
LAB pH	7.12	7.08	7.10	s. u.
LAB CONDUCTIVITY @ 25 C	1,110	1,310	1,090	umhos / cm
TOTAL DISSOLVED SOLIDS @ 180 C	584	924	620	mg / L
TOTAL DISSOLVED SOLIDS (Calc)	574	918	617	mg / L
SODIUM ABSORPTION RATIO	1.4	5.4	1.4	ratio
TOTAL ALKALINITY AS CaCO <sub>3</sub>	254	420	369	mg / L
TOTAL HARDNESS AS CaCO <sub>3</sub>	331	300	394	mg / L
BICARBONATE as HCO <sub>3</sub>	254	420	369	mg / L
CARBONATE AS CO <sub>3</sub>	< 0.1	< 0.1	< 0.1	mg / L
HYDROXIDE AS OH	< 0.1	< 0.1	< 0.1	mg / L
NITRATE NITROGEN	10.8	3.9	0.8	mg / L
NITRITE NITROGEN	0.484	0.43	0.082	mg / L
CHLORIDE	42.2	192	96.2	mg / L
FLUORIDE	0.57	1.00	0.69	mg / L
PHOSPHATE	1.2	0.6	0.8	mg / L
SULFATE	180	142	90.0	mg / L
IRON	0.006	0.672	0.001	mg / L
CALCIUM	102	84.5	108	mg / L
MAGNESIUM	18.8	21.7	30.3	mg / L
POTASSIUM	3.48	2.82	3.39	mg / L
SODIUM	60.4	214	63.0	mg / L
CATION / ANION DIFFERENCE	0.03	0.11	0.02	

# FIGURE 1



1 INCH = 30 FT.

0 30 60 FT.

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE & BEARING FROM THE WELL HEAD (TAPE MEASURE, LASER RANGE FINDER, & BRUNTON COMPASS). ALL OTHER STRUCTURES DISPLAYED ON THIS MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

BP AMERICA PRODUCTION CO.

GCU #204E

NE/4 SE/4 SEC. 34, T28N, R12W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: MW INSTALL.

DRAWN BY: NJV

FILENAME: GCU 204E-SM.SKF

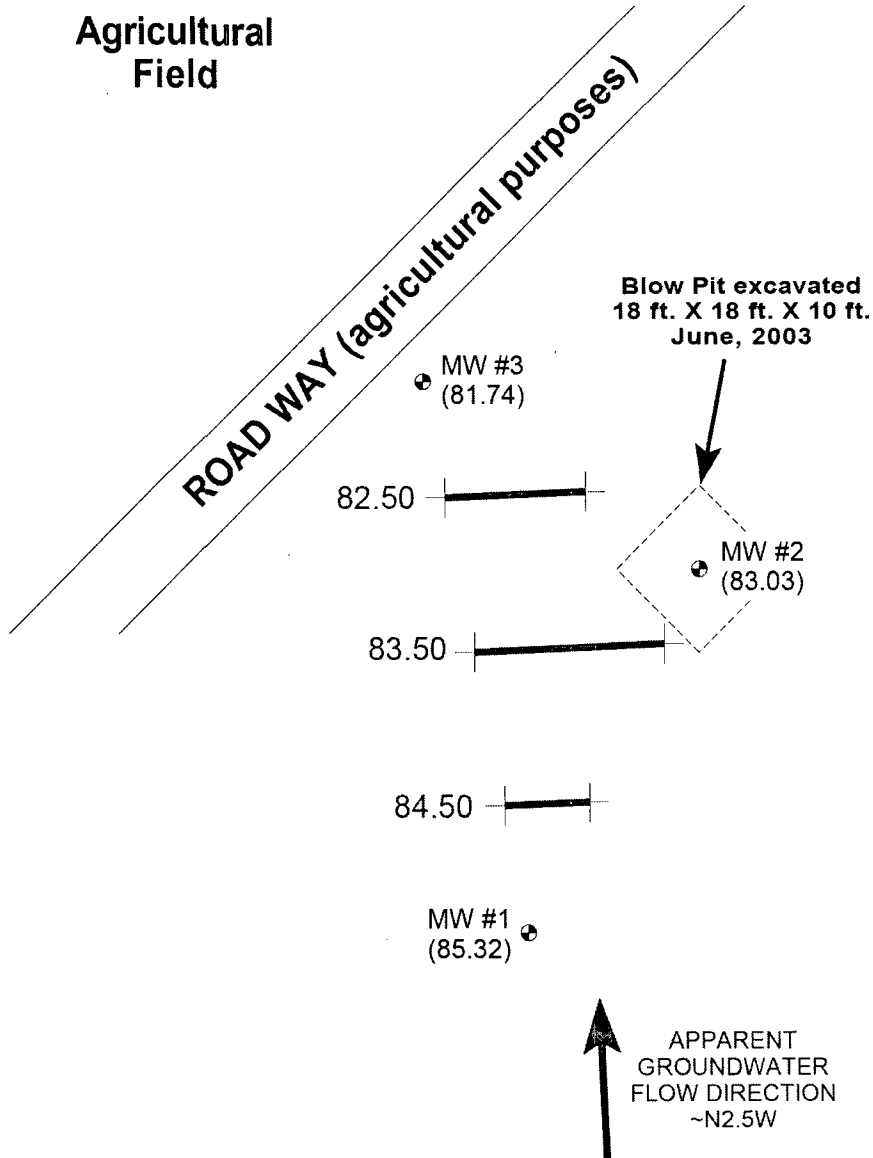
DRAFTED: 01-30-07 NJV

SITE  
MAP

01/07



# FIGURE 2 (1st 1/4, 2007)



1 INCH = 30 FT.

0 30 60 FT.

	Top of Well Elevation
MW #1	(103.89)
MW #2	(100.00)
MW #3	(95.66)
MW #1	Groundwater Elevation as of 1/30/07.
(85.32)	

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE & BEARING FROM THE WELL HEAD (TAPE MEASURE, LASER RANGE FINDER, & BRUNTON COMPASS). ALL OTHER STRUCTURES DISPLAYED ON THIS MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

BP AMERICA PRODUCTION CO.

GCU #204E

NE/4 SE/4 SEC. 34, T28N, R12W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: MW SAMPLING

DRAWN BY: NJV

FILENAME: 01-30-07-GW.SKF

DRAFTED: 01-31-07 NJV

GROUNDWATER

CONTOUR

MAP

01/07

# BLAGG ENGINEERING, Inc.

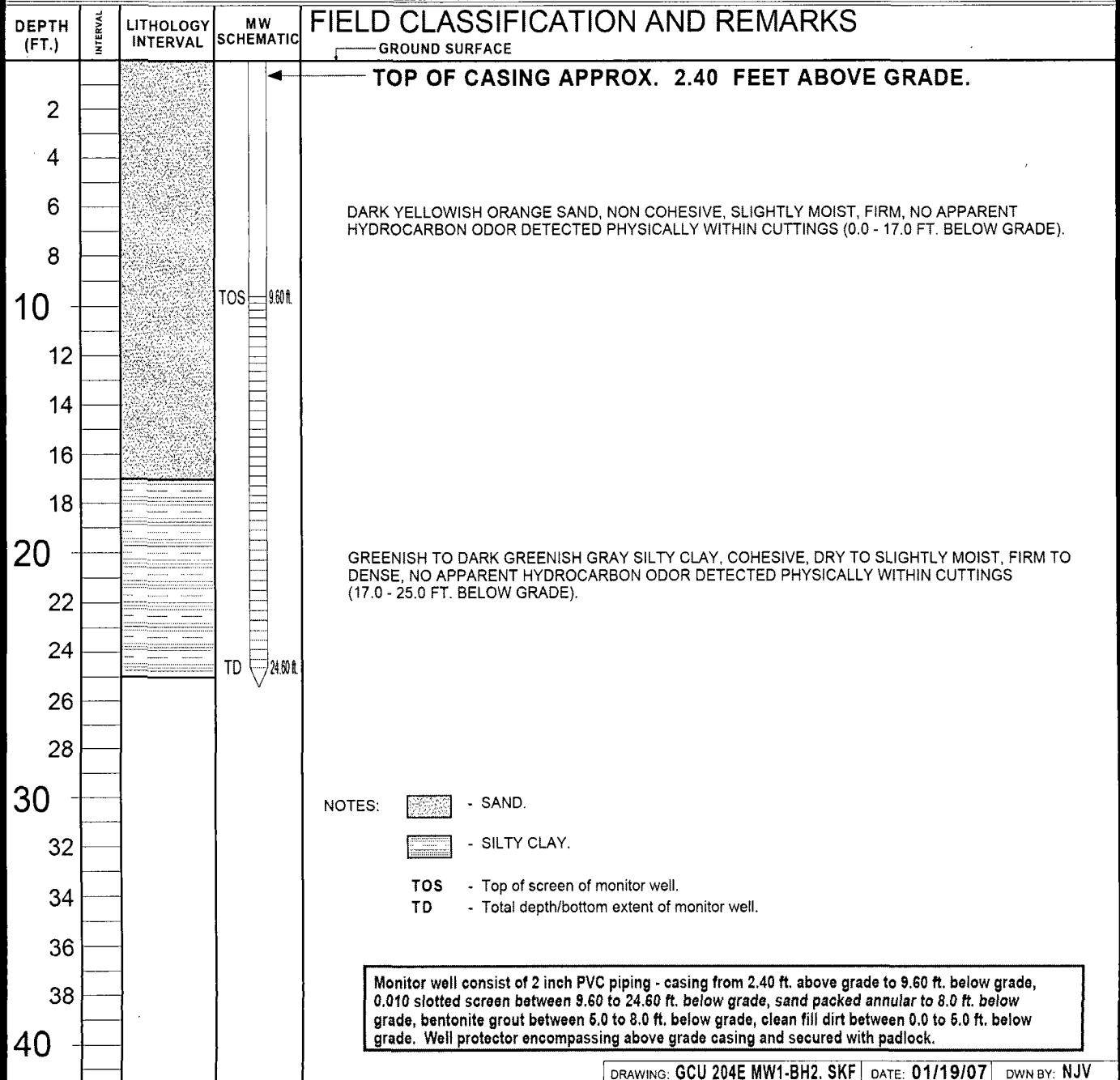
P.O. BOX 87  
BLOOMFIELD, NM 87413  
(505) 632-1199

## MW #1

# BORE / TEST HOLE REPORT

CLIENT: BP AMERICA PRODUCTION CO.  
LOCATION NAME: GCU #204E UNIT I, SEC. 34, T28N, R12W  
CONTRACTOR: BLAGG ENGINEERING, INC. / ENVIROTECH, INC.  
EQUIPMENT USED: MOBILE DRILL RIG (CME 75)  
BORING LOCATION: 61.5 FEET, S25.5W FROM MW #2.

BORING #..... BH - 2  
MW #..... 1  
PAGE #..... 1  
DATE STARTED 01/18/07  
DATE FINISHED 01/18/07  
OPERATOR..... DP  
PREPARED BY NJV



# BLAGG ENGINEERING, Inc.

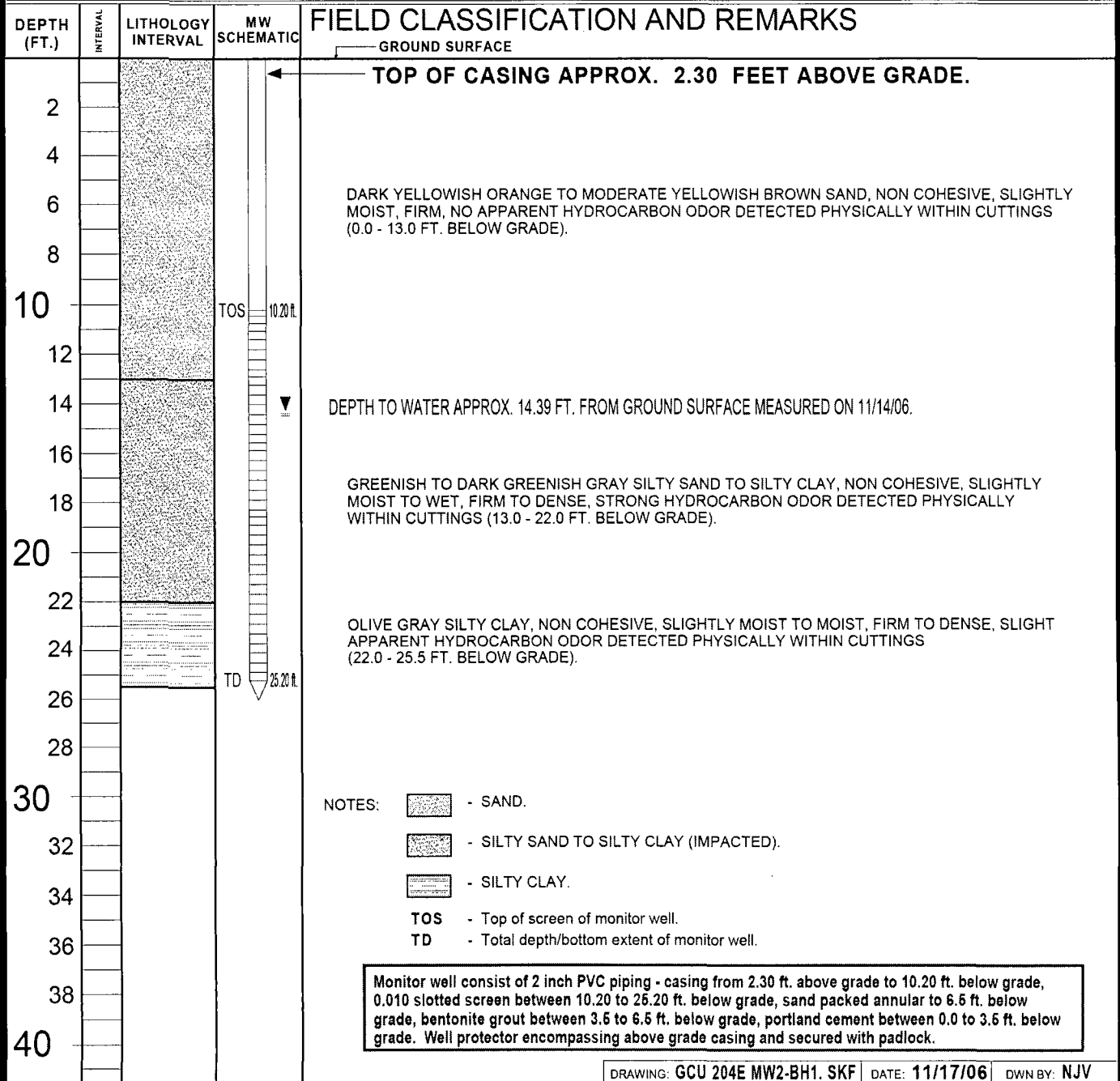
P.O. BOX 87  
BLOOMFIELD, NM 87413  
(505) 632-1199

## MW #2

# BORE / TEST HOLE REPORT

CLIENT: BP AMERICA PRODUCTION CO.  
LOCATION NAME: GCU #204E UNIT I, SEC. 34, T28N, R12W  
CONTRACTOR: BLAGG ENGINEERING, INC. / ENVIROTECH, INC.  
EQUIPMENT USED: MOBILE DRILL RIG (CME 75)  
BORING LOCATION: 531 FEET, N3W FROM WELL HEAD.

BORING #..... BH - 1  
MW #..... 2  
PAGE #..... 2  
DATE STARTED 11/1/06  
DATE FINISHED 11/1/06  
OPERATOR..... DP  
PREPARED BY NJV



DRAWING: GCU 204E MW2-BH1. SKF DATE: 11/17/06 DWN BY: NJV

# BLAGG ENGINEERING, Inc.

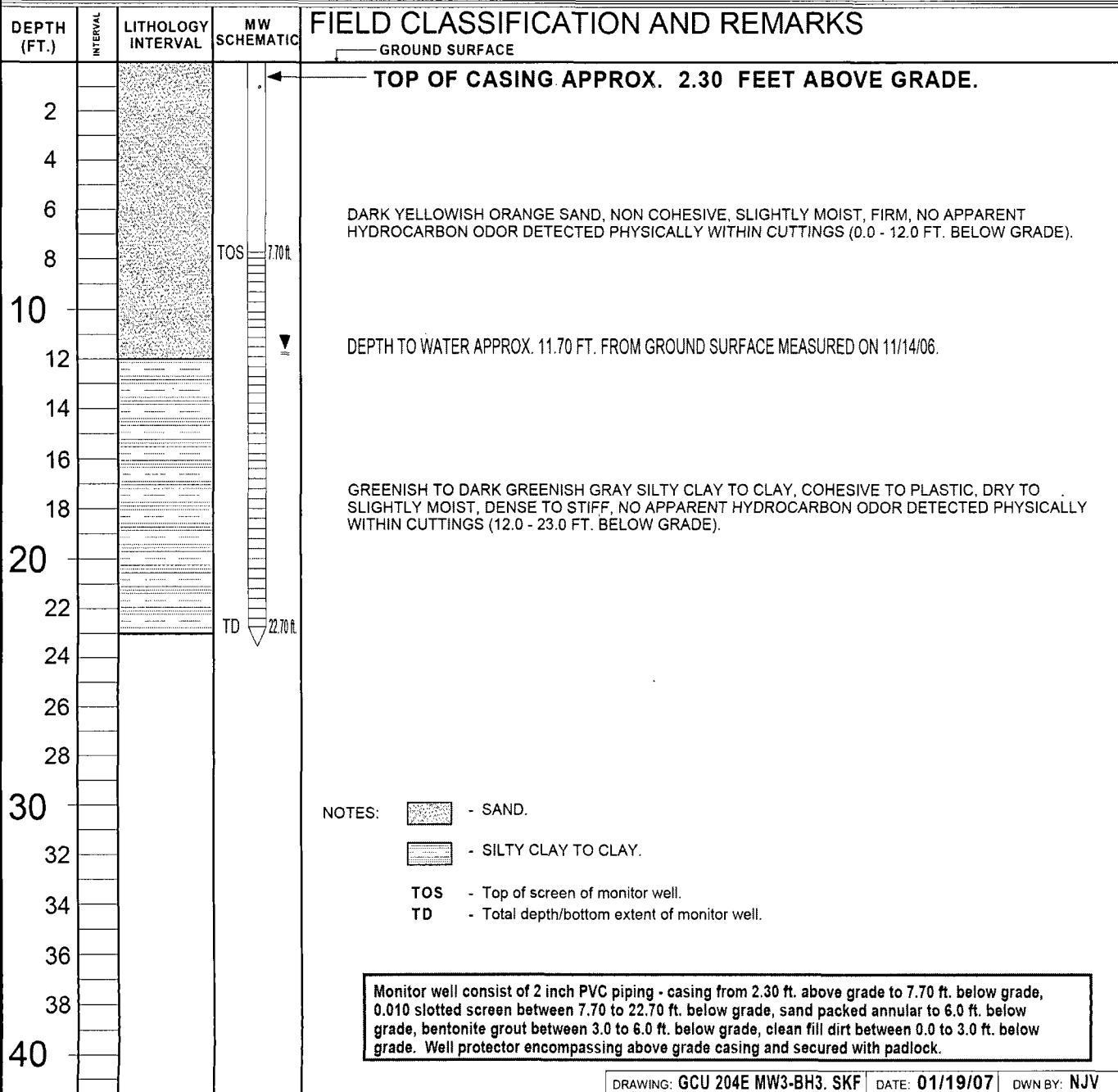
P.O. BOX 87  
BLOOMFIELD, NM 87413  
(505) 632-1199

MW #3

## BORE / TEST HOLE REPORT

CLIENT: BP AMERICA PRODUCTION CO.  
LOCATION NAME: GCU #204E UNIT I, SEC. 34, T28N, R12W  
CONTRACTOR: BLAGG ENGINEERING, INC. / ENVIROTECH, INC.  
EQUIPMENT USED: MOBILE DRILL RIG (CME 75)  
BORING LOCATION: 51.5 FEET, N56W FROM MW #2.

BORING #..... BH - 3  
MW #..... 3  
PAGE #..... 3  
DATE STARTED 01/18/07  
DATE FINISHED 01/18/07  
OPERATOR..... DP  
PREPARED BY NJV



**BLAGG ENGINEERING, INC.**  
MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : BP AMERICA PROD. CO.

CHAIN-OF-CUSTODY # : N / A & 14714

GCU # 204E - BLOW PIT  
UNIT I, SEC. 34, T28N, R12W

LABORATORY (S) USED : HALL ENVIRONMENTAL

ENVIROTECH

Date : November 14, 2006

SAMPLER : N J V

Filename : 11-14-06.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
MW - 2	-	-	16.69	27.50	1105	6.80	1,400	13.1	6.00

INSTRUMENT CALIBRATIONS =

7.00      2,800

DATE & TIME =

11/14/06      0945

NOTES : Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$ .  
(i.e. 2" MW  $r = (1/12) \text{ ft. } h = 1 \text{ ft.}$ ) (i.e. 4" MW  $r = (2/12) \text{ ft. } h = 1 \text{ ft.}$ )

Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2 "

Excellent recovery . Slight greenish tint in appearance , wisp of a sheen observed on purged  
water surface within disposal bucket . Collected samples for BTEX and major anions / cations  
analyses .

Top of casing MW # 2 ~ 2.30 ft. above grade .

## Hall Environmental Analysis Laboratory, Inc.

Date: 21-Nov-06

CLIENT:	Blagg Engineering	Client Sample ID:	MW-2
Lab Order:	0611181	Collection Date:	11/14/2006 11:05:00 AM
Project:	GCU #204E	Date Received:	11/15/2006
Lab ID:	0611181-01	Matrix:	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	1000	40		µg/L	40	11/20/2006 12:52:12 PM
Toluene	3900	40		µg/L	40	11/20/2006 12:52:12 PM
Ethylbenzene	1100	40		µg/L	40	11/20/2006 12:52:12 PM
Xylenes, Total	9700	300		µg/L	100	11/20/2006 3:25:01 PM
Surr: 4-Bromofluorobenzene	102	70.2-105		%REC	40	11/20/2006 12:52:12 PM

Qualifiers:	* Value exceeds Maximum Contaminant Level	B Analyte detected in the associated Method Blank
	E Value above quantitation range	H Holding times for preparation or analysis exceeded
	J Analyte detected below quantitation limits	MCL Maximum Contaminant Level
	ND Not Detected at the Reporting Limit	RL Reporting Limit
	S Spike recovery outside accepted recovery limits	

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## CATION / ANION ANALYSIS


Client: Blagg / BP  
Sample ID: MW #2  
Laboratory Number: 39150  
Chain of Custody: 14714  
Sample Matrix: Water  
Preservative: Cool  
Condition: Cool & Intact

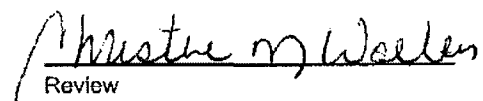
Project #: 94034-010  
Date Reported: 11-17-06  
Date Sampled: 11-14-06  
Date Received: 11-14-06  
Date Extracted: N/A  
Date Analyzed: 11-15-06

Parameter	Analytical Result	Units		
pH	7.08	s.u.		
Conductivity @ 25° C	1,310	umhos/cm		
Total Dissolved Solids @ 180C	924	mg/L		
Total Dissolved Solids (Calc)	918	mg/L		
SAR	5.4	ratio		
Total Alkalinity as CaCO3	420	mg/L		
Total Hardness as CaCO3	300	mg/L		
Bicarbonate as HCO3	420	mg/L	6.88	meq/L
Carbonate as CO3	<0.1	mg/L	0.00	meq/L
Hydroxide as OH	<0.1	mg/L	0.00	meq/L
Nitrate Nitrogen	3.9	mg/L	0.06	meq/L
Nitrite Nitrogen	0.43	mg/L	0.01	meq/L
Chloride	192	mg/L	5.42	meq/L
Fluoride	1.00	mg/L	0.05	meq/L
Phosphate	0.6	mg/L	0.02	meq/L
Sulfate	142	mg/L	2.96	meq/L
Iron	0.672	mg/L	0.02	meq/L
Calcium	84.5	mg/L	4.22	meq/L
Magnesium	21.7	mg/L	1.79	meq/L
Potassium	2.82	mg/L	0.07	meq/L
Sodium	214	mg/L	9.31	meq/L
Cations			15.38	meq/L
Anions			15.40	meq/L
Cation/Anion Difference			0.11%	

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

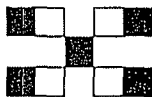
Comments: GCU #204E Grab Sample.

  
Analyst

  
Review

## HALL ENVIRONMENTAL ANALYSIS LABORATORY

4901 Hawkins NE, Suite D  
Albuquerque, New Mexico 87109  
Tel. 505.345.3975 Fax 505.34  
[www.hallenvironmental.com](http://www.hallenvironmental.com)

[illegible]



14714

san juan reproduction 5/8-129

**BLAGG ENGINEERING, INC.**  
MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : BP AMERICA PROD. CO.

CHAIN-OF-CUSTODY # : N / A & 14691

GCU # 204E - BLOW PIT  
UNIT I, SEC. 34, T28N, R12W

LABORATORY (S) USED : HALL ENVIRONMENTAL

ENVIROTECH

Date : January 30, 2007

SAMPLER : N J V

Filename : 01-30-07.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
MW - 1	103.89	85.32	18.57	27.00	1420	7.33	1,100	12.5	4.25
MW - 2	100.00	83.03	16.97	27.50	1115	6.89	1,200	13.5	5.25
MW - 3	95.66	81.74	13.92	25.00	1035	7.00	1,000	11.9	5.50

INSTRUMENT CALIBRATIONS =

7.00      2,800

DATE & TIME =

01/30/07      0830

NOTES : Volume of water purged from well prior to sampling:  $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$ .  
(i.e. 2" MW  $r = (1/12) \text{ ft. } h = 1 \text{ ft.}$ ) (i.e. 4" MW  $r = (2/12) \text{ ft. } h = 1 \text{ ft.}$ )

Ideally a minimum of three (3) wellbore volumes:

2.00 " well diameter = 0.49 gallons per foot of water.

Comments or note well diameter if not standard 2 "

Excellent recovery all MW's . All contained olive gray appearance . Strong hydrocarbon odor  
detected physically within purged water from MW #2 . Collected BTEX from all MW's &  
major anions / cations from MW #1 & #3 .

Top of casing MW #1 ~ 2.40 ft. , MW #2 ~ 2.30 ft. , MW #3 ~ 2.30 ft. above grade .

## Hall Environmental Analysis Laboratory, Inc.

Date: 05-Feb-07

CLIENT: Blagg Engineering  
Project: GCU #204E

Lab Order: 0702006

Lab ID: 0702006-01

Collection Date: 1/30/2007 2:20:00 PM

Client Sample ID: MW #1

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: LMM
Benzene	ND	1.0		µg/L	1	2/1/2007 10:46:31 PM
Toluene	3.0	1.0		µg/L	1	2/1/2007 10:46:31 PM
Ethylbenzene	2.3	1.0		µg/L	1	2/1/2007 10:46:31 PM
Xylenes, Total	13	3.0		µg/L	1	2/1/2007 10:46:31 PM
Surr: 4-Bromofluorobenzene	87.1	70.2-105		%REC	1	2/1/2007 10:46:31 PM

Lab ID: 0702006-02

Collection Date: 1/30/2007 11:15:00 AM

Client Sample ID: MW #2

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: LMM
Benzene	900	100		µg/L	100	2/2/2007 5:56:50 PM
Toluene	1600	100		µg/L	100	2/2/2007 5:56:50 PM
Ethylbenzene	1400	100		µg/L	100	2/2/2007 5:56:50 PM
Xylenes, Total	12000	300		µg/L	100	2/2/2007 5:56:50 PM
Surr: 4-Bromofluorobenzene	87.4	70.2-105		%REC	100	2/2/2007 5:56:50 PM

Lab ID: 0702006-03

Collection Date: 1/30/2007 10:35:00 AM

Client Sample ID: MW #3

Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: LMM
Benzene	8.2	1.0		µg/L	1	2/2/2007 7:59:50 PM
Toluene	ND	1.0		µg/L	1	2/2/2007 7:59:50 PM
Ethylbenzene	71	1.0		µg/L	1	2/2/2007 7:59:50 PM
Xylenes, Total	120	3.0		µg/L	1	2/2/2007 7:59:50 PM
Surr: 4-Bromofluorobenzene	91.2	70.2-105		%REC	1	2/2/2007 7:59:50 PM

Qualifiers: \* Value exceeds Maximum Contaminant Level  
E Value above quantitation range  
J Analyte detected below quantitation limits  
ND Not Detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits

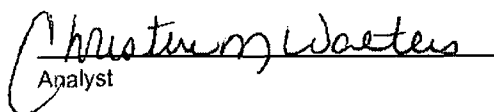
B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
MCL Maximum Contaminant Level  
RL Reporting Limit

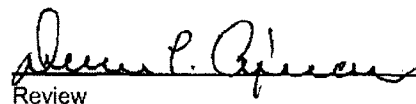
Client:	Blagg / BP	Project #:	94034-010
Sample ID:	MW #1	Date Reported:	01-31-07
Laboratory Number:	39876	Date Sampled:	01-30-07
Chain of Custody:	14691	Date Received:	01-30-07
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	01-31-07
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		
pH	7.12	s.u.		
Conductivity @ 25° C	1,110	umhos/cm		
Total Dissolved Solids @ 180C	584	mg/L		
Total Dissolved Solids (Calc)	574	mg/L		
SAR	1.4	ratio		
Total Alkalinity as CaCO3	254	mg/L		
Total Hardness as CaCO3	331	mg/L		
Bicarbonate as HCO3	254	mg/L	4.16	meq/L
Carbonate as CO3	<0.1	mg/L	0.00	meq/L
Hydroxide as OH	<0.1	mg/L	0.00	meq/L
Nitrate Nitrogen	10.8	mg/L	0.17	meq/L
Nitrite Nitrogen	0.484	mg/L	0.01	meq/L
Chloride	42.2	mg/L	1.19	meq/L
Fluoride	0.57	mg/L	0.03	meq/L
Phosphate	1.2	mg/L	0.04	meq/L
Sulfate	180	mg/L	3.75	meq/L
Iron	0.006	mg/L	0.00	meq/L
Calcium	102	mg/L	5.09	meq/L
Magnesium	18.8	mg/L	1.55	meq/L
Potassium	3.48	mg/L	0.09	meq/L
Sodium	60.4	mg/L	2.63	meq/L
Cations			9.35	meq/L
Anions			9.35	meq/L
Cation/Anion Difference			0.03%	

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

Comments: GCU #204E Grab Sample

  
Analyst

  
Review

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## CATION / ANION ANALYSIS

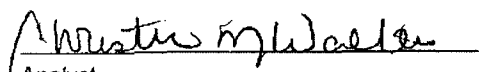
Client: Blagg / BP  
Sample ID: MW #3  
Laboratory Number: 39877  
Chain of Custody: 14691  
Sample Matrix: Water  
Preservative: Cool  
Condition: Cool & Intact

Project #: 94034-010  
Date Reported: 01-31-07  
Date Sampled: 01-30-07  
Date Received: 01-30-07  
Date Extracted: N/A  
Date Analyzed: 01-31-07

Parameter	Analytical Result	Units		
pH	7.10	s.u.		
Conductivity @ 25° C	1,090	umhos/cm		
Total Dissolved Solids @ 180C	620	mg/L		
Total Dissolved Solids (Calc)	617	mg/L		
SAR	1.4	ratio		
Total Alkalinity as CaCO3	369	mg/L		
Total Hardness as CaCO3	394	mg/L		
Bicarbonate as HCO3	369	mg/L	6.05	meq/L
Carbonate as CO3	<0.1	mg/L	0.00	meq/L
Hydroxide as OH	<0.1	mg/L	0.00	meq/L
Nitrate Nitrogen	0.8	mg/L	0.01	meq/L
Nitrite Nitrogen	0.082	mg/L	0.00	meq/L
Chloride	96.2	mg/L	2.71	meq/L
Fluoride	0.69	mg/L	0.04	meq/L
Phosphate	0.8	mg/L	0.03	meq/L
Sulfate	90.0	mg/L	1.87	meq/L
Iron	0.001	mg/L	0.00	meq/L
Calcium	108	mg/L	5.39	meq/L
Magnesium	30.3	mg/L	2.49	meq/L
Potassium	3.39	mg/L	0.09	meq/L
Sodium	63.0	mg/L	2.74	meq/L
Cations			10.71	meq/L
Anions			10.71	meq/L
Cation/Anion Difference			0.02%	

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

Comments: GCU #204E Grab Sample

  
Analyst

  
Review



14691

san juan reproduction 578-129

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: <u>BP AMERICA PROD. CO.</u> Telephone: <u>(505)-326-9200</u> e-mail address: _____		
Address: <u>200 ENERGY COURT, FARMINGTON, NM 87410</u>		
Facility or well name: <u>GCU #204E</u> API #: <u>30-045- 25262</u> U/L or Qtr/Qtr <u>I</u> Sec <u>34</u> T <u>28N</u> R <u>12W</u>		
County: <u>SAN JUAN</u> Latitude <u>36.61615</u> Longitude <u>108.09146</u> NAD: 1927 <input type="checkbox"/> 1983 <input checked="" type="checkbox"/> Surface Owner Federal <input type="checkbox"/> State <input type="checkbox"/> Private <input type="checkbox"/> Indian <input checked="" type="checkbox"/>		
<b>Pit</b> Type: Drilling <input type="checkbox"/> Production <input checked="" type="checkbox"/> Disposal <input type="checkbox"/> <u>BLOW</u> Workover <input type="checkbox"/> Emergency <input type="checkbox"/> Lined <input type="checkbox"/> Unlined <input checked="" type="checkbox"/> Liner type: Synthetic <input type="checkbox"/> Thickness _____ mil Clay <input type="checkbox"/> Pit Volume _____ bbl	<b>Below-grade tank</b> Volume: _____ bbl Type of fluid: _____ Construction material: <u>N/A</u> Double-walled, with leak detection? Yes <input type="checkbox"/> 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) <b>20</b>
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) <b>0</b>
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) <b>0</b>
<b>Ranking Score (Total Points)</b>		<b>20</b>

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 you are burying in place) onsite ☒ offsite ☐ If offsite, name of facility \_\_\_\_\_. (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 14.5 ft. and attach sample results. (5) Attach soil sample results and a diagram of sample locations and excavations.

Additional Comments: <u>PIT LOCATED APPROXIMATELY 531 FT. N3W FROM WELL HEAD.</u>
<u>PIT EXCAVATION: WIDTH 18 ft., LENGTH 16 ft., DEPTH 10 ft.</u>
<u>PIT REMEDIATION: CLOSE AS IS: <input type="checkbox"/>, LANDFARM: <input checked="" type="checkbox"/>, COMPOST: <input type="checkbox"/>, STOCKPILE: <input type="checkbox"/>, OTHER <input type="checkbox"/> (explain) <u>MONITORING</u></u>
Cubic yards: <u>100</u>
<u>ESTABLISH VERTICAL EXTENT. GROUNDWATER IMPACTED.</u>

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 alternative OCD-approved plan ☒.

Date: 12/01/06

PrintedName/Title Jeff Blagg - P.E. # 11607 Signature Jeffrey C. Blagg

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:

BP

**BLAGG ENGINEERING, INC.**  
P.O. BOX 87, BLOOMFIELD, NM 87413  
(505) 632-1199

LOCATION NO:

81221

COCR NO:

10880  
12166  
N/A**FIELD REPORT: PIT CLOSURE VERIFICATION**

PAGE No: 1 of 1

LOCATION: NAME: GCM WELL #: 204E TYPE: Blow

DATE STARTED: 6/3/03

QUAD/UNIT: I SEC: 34 TWP: 28N RING: 12W PM: NM CNTY: SJ ST: NM

DATE FINISHED:

QTR/FOOTAGE: 170'S/425'E DEISE CONTRACTOR: FUNT (BEN)

ENVIRONMENTAL  
SPECIALIST: NV

EXCAVATION APPROX. 18 FT. x 16 FT. x 10 FT. DEEP. CUBIC YARDAGE: 100

DISPOSAL FACILITY: ON-SITE

REMEDICATION METHOD:

LANDFARM

LAND USE: NARI - SURF. LSE. -

NAVAJO

LEASE: NAVAJO

FORMATION: DR

**FIELD NOTES & REMARKS:**

PIT LOCATED APPROXIMATELY 531 FT. N3W FROM WELLHEAD.

DEPTH TO GROUNDWATER: &lt;50' NEAREST WATER SOURCE: &gt;1000' NEAREST SURFACE WATER: &gt;1000'

NMOC D RANKING SCORE: 20 NMOC D TPH CLOSURE STD: 100 PPM

**SOIL AND EXCAVATION DESCRIPTION:**

OVM CALIB. READ. = 53.8 ppm  
OVM CALIB. GAS = 100 ppm RF = 0.52  
TIME: 8:12 PM DATE: 6/3/03

SOIL TYPE: SAND / SILTY SAND / SILT / SILTY CLAY / CLAY / GRAVEL / OTHER

SOIL COLOR: OK. YELL. ORANGE TO BLACK

COHESION (ALL OTHERS): NON COHESIVE / SLIGHTLY COHESIVE / COHESIVE / HIGHLY COHESIVE

CONSISTENCY (NON COHESIVE SOILS): LOOSE / FIRM / DENSE / VERY DENSE

PLASTICITY (CLAYS): NON PLASTIC / SLIGHTLY PLASTIC / COHESIVE / MEDIUM PLASTIC / HIGHLY PLASTIC

DENSITY (COHESIVE CLAYS &amp; SILTS): SOFT / FIRM / STIFF / VERY STIFF / HARD

MOISTURE: DRY / SLIGHTLY MOIST / MOIST / WET / SATURATED / SUPER SATURATED

DISCOLORATION/STAINING OBSERVED: YES NO EXPLANATION: LT. GRAY TO BLACK (SEE PIT PROFILE)

HC ODOR DETECTED: YES NO EXPLANATION: EXCAVATED SOIL &amp; OVM SAMPLES.

SAMPLE TYPE: GRAB COMPOSITE - # OF PTS.

ADDITIONAL COMMENTS: VERTICAL EXTENT NEEDS TO BE ESTABLISHED.

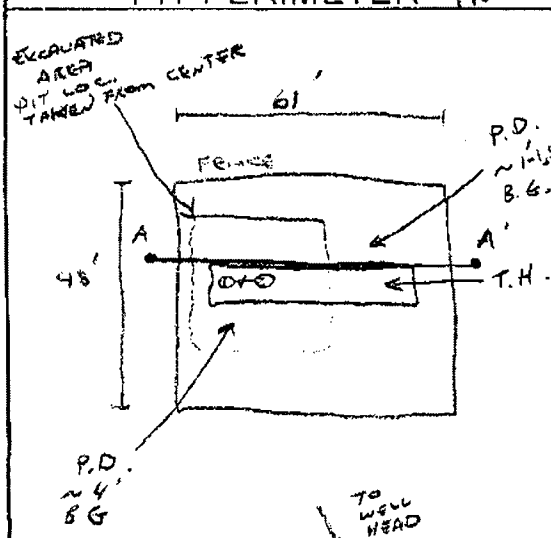
**FIELD 418.1 CALCULATIONS**

SCALE



0 FT

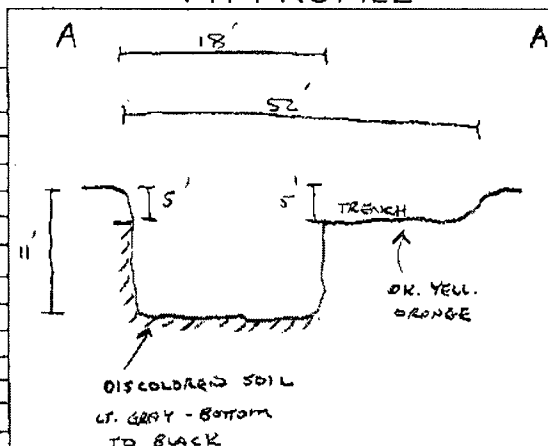
SAMP. TIME	SAMP. ID	LAB NO.	WEIGHT (g)	mL FREON	DILUTION	READING	CALC. (ppm)

**PIT PERIMETER****OVM  
READING**

SAMPLE ID	FIELD HEADSPACE (ppm)
1 @ 7'	1096
2 @ 11'	1005
3 @	
4 @	
5 @	

**LAB SAMPLES**

SAMPLE ID	ANALYSIS	TIME
10 @ 7'	TPH & BTEX	0750
2 @ 11'	TPH & BTEX	0800

**PIT PROFILE**

P.D. = PIT DEPRESSION; B.G. = BELOW GRADE; B = BELOW  
T.H. = TEST HOLE; - = APPROX.; T.B. = TANK BOTTOM

TRAVEL NOTES:

CALLOUT: 6/2/03 - AFTER. ONSITE: 6/3/03 - MORN.

# ENVIROTECH LABS

**PRACTICAL SOLUTIONS FOR A BETTER TOMORROW**

## EPA METHOD 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

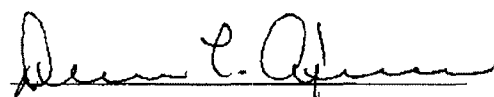
Client:	Blagg / BP	Project #:	94034-010
Sample ID:	1 @ 7'	Date Reported:	06-04-03
Laboratory Number:	25777	Date Sampled:	06-03-03
Chain of Custody No:	10880	Date Received:	06-03-03
Sample Matrix:	Soil	Date Extracted:	06-03-03
Preservative:	Cool	Date Analyzed:	06-04-03
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

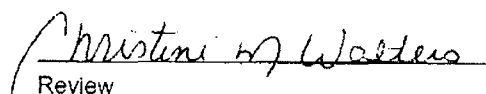
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	723	0.2
Diesel Range (C10 - C28)	759	0.1
Total Petroleum Hydrocarbons	1,480	0.2

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: GCU #204E Blow Pit Grab Sample.

  
Analyst

  
Review

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / BP	Project #:	94034-010
Sample ID:	1 @ 7'	Date Reported:	06-04-03
Laboratory Number:	25777	Date Sampled:	06-03-03
Chain of Custody:	10880	Date Received:	06-03-03
Sample Matrix:	Soil	Date Analyzed:	06-04-03
Preservative:	Cool	Date Extracted:	06-03-03
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	291	1.8
Toluene	1,730	1.7
Ethylbenzene	1,520	1.5
p,m-Xylene	989	2.2
o-Xylene	1,760	1.0
Total BTEX	6,290	

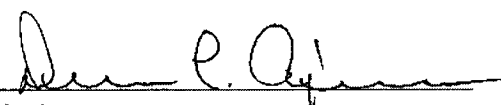
ND - Parameter not detected at the stated detection limit.

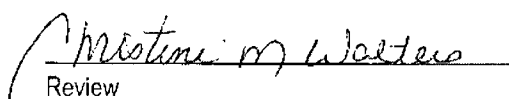
Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	98 %
	1,4-difluorobenzene	98 %
	Bromochlorobenzene	98 %

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

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: GCU #204E Blow Pit Grab Sample.

  
Analyst

  
Review

**Hall Environmental Analysis Laboratory**

Date: 10-Jun-03

**CLIENT:** Blagg Engineering  
**Lab Order:** 0306025  
**Project:** GCU #204E Blow Pit  
**Lab ID:** 0306025-01

**Client Sample ID:** 1 @ 7'  
**Collection Date:** 6/3/2003 7:50:00 AM  
**Matrix:** SOIL

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015B: DIESEL RANGE</b>						Analyst: JMP
Diesel Range Organics (DRO)	8100	100		mg/Kg	20	6/10/2003 2:48:10 PM
Motor Oil Range Organics (MRO)	1800	1000		mg/Kg	20	6/10/2003 2:48:10 PM
Surr: DNOP	86.4	60-124		%REC	20	6/10/2003 2:48:10 PM
<b>EPA METHOD 8015B: GASOLINE RANGE</b>						Analyst: NSB
Gasoline Range Organics (GRO)	1600	250		mg/Kg	50	6/5/2003 6:18:09 PM
Surr: BFB	139	74-118	S	%REC	50	6/5/2003 6:18:09 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: NSB
Benzene	3.1	1.3		mg/Kg	50	6/5/2003 6:18:09 PM
Toluene	57	1.3		mg/Kg	50	6/5/2003 6:18:09 PM
Ethylbenzene	12	1.3		mg/Kg	50	6/5/2003 6:18:09 PM
Xylenes, Total	130	1.3		mg/Kg	50	6/5/2003 6:18:09 PM
Surr: 4-Bromofluorobenzene	112	74-118		%REC	50	6/5/2003 6:18:09 PM

**Qualifiers:** ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits  
B - Analyte detected in the associated Method Blank  
\* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits  
E - Value above quantitation range

612 E. Murray Drive  
Farmington, NM 87499

Off: (505) 327-1072  
FAX: (505) 327-1496

*iiná bá*

P.O. Box 3788  
Shiprock, NM 87420

Off: (505) 368-4065

## ANALYTICAL REPORT

Date: 17-Jun-03

CLIENT:	Blagg Engineering	Client Sample Info:	BP - GCU #204E
Work Order:	0306008	Client Sample ID:	1 @ 7ft.
Project:	BP - GCU #204E Blow Pit	Collection Date:	6/3/2003 7:50:00 AM
Lab ID:	0306008-001A	Matrix:	SOIL

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
<b>DIESEL RANGE ORGANICS</b>		<b>SW8015B</b>				Analyst: JEM
T/R Hydrocarbons: C10-C28	8650	250		mg/Kg	10	6/6/2003
<b>GASOLINE RANGE ORGANICS</b>		<b>SW8015B</b>				Analyst: JEM
T/R Hydrocarbons: C6-C10	1720	180		mg/Kg	1000	6/4/2003
<b>AROMATIC VOLATILES BY GC/PID</b>		<b>SW8021B</b>				Analyst: DWC
Benzene	4800	2500		µg/Kg	2500	6/12/2003
Ethylbenzene	18000	2500		µg/Kg	2500	6/12/2003
m,p-Xylene	160000	5000		µg/Kg	2500	6/12/2003
o-Xylene	37000	2500		µg/Kg	2500	6/12/2003
Toluene	85000	5000		µg/Kg	2500	6/12/2003

Qualifiers:	ND - Not Detected at the Practical Quantitation Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below Practical Quantitation Limit	R - RPD outside accepted precision limits
	R - Analyte detected in the associated Method Blank	E - Value above Upper Quantitation Limit - UQL
	* - Value exceeds Maximum Contaminant Level	

Page 1 of 1

MAINTAINING HARMONY BETWEEN MAN AND HIS ENVIRONMENT