bp

Margaret J. Lowe

Senior Environmental Engineer
Permian Asset

BP America Production Company
600 N. Marienfeld
Suite 869
PO Box 1610
Midland, TX 79701

February 24, 2006

Larry Johnson
Environmental Engineer Specialist
NM Oil Conservation Division
1625 N. French Dr.
Hobbs, NM 88240

Reference: Flounder State # 1
Section 30, TS 17S, R 35E

API# 30025 36623 0000

Dear Mr. Johnson:

Thank you for your understanding and response to BP's recent circumstances. We greatly appreciate the deadline extension.

On April 22, 2004, BP reported a release of approximately 820 barrels of brine and 5000 barrels of fresh water from the reserve pit at the Flounder State # 1 in Lea County, NM. In order to vertically and horizontally delineate the chloride release, the following actions have been taken.

Two boreholes were drilled in June 2004 to the south and southeast of the pit with all chloride levels below 130 ppm. An additional five boreholes (BH-1, BH-3, BH-4, BH-5 and BH-6) were drilled to the east, north, west and northwest of the reserve pit in September 2005. Chloride concentrations in Borehole # 3 (west side of pit) ranged from 1104 ppm at 15 feet below ground surface (BGS) with an immediate reduction to 336 ppm at 20 feet BGS to a low of 32 ppm at 45 feet BGS. All samples from Boreholes 1, 4, 5 and 6 (north, east and northwest of pit) were less than 113 ppm.

In October and November, 2005, a deep-bury trench was dug for the reserve pit cuttings along the north and east side of the reserve pit. After the cuttings and the liners were moved from the reserve pit into the deep trench, chloride contamination was evident in the underlying caliche. This caliche was removed until the chloride concentrations were less than 1000 ppm as Mr. Jerry Brian discussed with you.

When the excavation was complete, two temporary monitoring wells were drilled and completed. Monitoring well 1 (BH-2) in the brine section of the pit and monitoring well 2 (BH-4) on the outside northwest corner of the pit were completed and sampled at 100 feet BGS. Depth to groundwater was 96 feet in both wells. The wells were drilled to 111 feet BGS; the screen interval was 91 to 106 feet BGS. The wells were sampled for chlorides on November 22, 2005. BH-2 contained 120 ppm chlorides; BH-4 contained 100 ppm chlorides.

In response to your recent letter, BP submits the following information.

1. *The information submitted indicates only where the chloride contamination is not located. The purpose of delineation is to establish the actual location so a viable plan can be constructed.* After removing the cuttings and the pit liner from the reserve pit area, an

application - pPAC0614628104
RP# 900

additional 3200 cubic yards of soil was removed. This soil ranged in chloride concentrations from less than 1000 ppm to 17,828 ppm. Based on composite sampling of the 2000 cubic yards of material stockpiled on location, the average concentration was 6628 ppm. The remaining 1200 cubic yards that are in the deep-bury trench were the soil immediately below the lining and would likely have higher chloride concentrations. Using a conservative 7000 ppm concentration for this soil, approximately 43,300 lbs of chlorides have been removed from the impacted area. Based on known concentrations and volumes of the original release, about 51,800 lbs chlorides were released to the environment. Through the excavation effort approximately 83 per cent of the chlorides have been removed. Calculations are shown in Attachment 1.

2. *Only one borehole was conducted inside the pit area, with the rest on the outside perimeter.* In the delineation plan dated August 3, 2005, Jerry Brian, Ocotillo Environmental, acting as BP's agent, stated that we would drill one borehole/monitoring well inside the reserve pit area. In the email of August 8, 2005, the New Mexico Oil Conservation Davison approved this plan. See proposed work plan below.
3. *The area is scarce in natural impervious soil matrix layers. Reports during the excavation process indicated various "fractured areas". This demonstrates presence of potential vertical preferential pathways to the underlying ground waters.* BP agrees that this would likely be true for the Caliche to the 15 foot depth that was excavated.
4. *Groundwater gradient was not established as directed.* In reviewing all the correspondence between the OCD and BP, BP was not able to find any discussion of determining the groundwater gradient. We propose to determine the hydraulic gradient near the reserve pit (See proposed work plan below).
5. *No documentation of lab testing nor chain-of-custody was provided.* BP intended to submit this data with the January 10, 2006, letter, and unfortunately neglected to attach them. All lab results and chain-of-custody are included in Attachment 2.

The following is a work plan to assess the residual chlorides remaining in the soil and the potential impact to groundwater.

Task 1 - Determine the hydraulic gradient at the site: One additional well will be installed at the site to the northeast of borehole 5. (See Attachment 3.) The new well and the two existing wells will be surveyed relative to one another and water level data provided by these wells will be used to establish the hydraulic gradient within the aquifer near the reserve pit location.

Task 2 – Determine site specific hydraulic conductivity: Aquifer slug tests will be conducted in each of the three monitoring wells to determine an average hydraulic conductivity for the site.

Task 3 – Evaluation of potential chloride impact to the aquifer: Using the data collected in tasks one and two and the field data regarding chlorides excavated from the pit and underlying soils, an estimate of potential aquifer impact will be prepared. This estimate will be prepared as follows:

- The mass of chlorides determined to have been lost from the spill will be determined in a fashion similar to that described in response note 1 above.
- This mass will be assumed to have conservatively migrated to the aquifer in the water that escaped from the reserve pit.
- The time for this spill to percolate through the vadose zone will be estimated using the USGS vadose zone simulator VS2D (or similar).
- Using the time developed in the step above and site specific data from tasks one and two, a mixing zone calculation will be performed.

- The results of the mixing zone calculation will be used to determine an initial chloride concentration that may have existed in the aquifer beneath the reserve pit as a result of the release.
- This concentration will then be used as the source term for a simulation (either analytical (Domenico eqn. based) or numerical (MODFLOW based)) to determine the likely current state of any chloride impact.

Task 4 – Install two additional down-gradient wells: Using the information obtained during task three, an estimate of the current location of chloride impact will be made. If it is deemed necessary by the Oil Conservation Division and BP, BP will install two additional wells. This would be an attempt to locate any chloride impacted water that may have migrated from the site. When the results from task three have been evaluated, it may be appropriate to have a meeting with OCD and BP personnel to determine what additional steps need to be taken.

If you need additional information, please contact me by telephone at (432) 688-5799 or by e-mail at lowemj1@bp.com.

Sincerely,

Margaret J. Lowe
Sr. Environmental Engineer

Attachments:
1. Lab results and chain-of-custody
2. Spreadsheet showing calculations of chloride released and chlorides removed
3. Flounder State #1 Plot Plan

cc: R. Anderson/OCD Santa Fe
C. Williams/OCD Hobbs
G. Martin/MIO
Well File
File 43C1

ATTACHMENT 1
CHLORIDE MASS BALANCE

FLOUNDER STATE # 1 CHLORIDE CALCULATIONS

Input Data

Input Parameter	*Data*	*Units*	*Source of Data*
Volume of Fresh Water Released	5000.00	bbls	Delivery tickets
	794,920.00	liters	
Volume of Released Brine	820.00	bbls	Delivery tickets
	130,366.88	liters	
Chloride concentration in Fresh Water	84.00	mg/L	Analysis of water source
Chloride concentration in Brine	180,000.00	mg/L	Analysis of brine source

Calculations of Chlorides Released and Removed by Excavation

66,773,280	mg Cl in Fresh water	2000 cu yds excavated soil stockpiled on surface
23,466,038,400	mg Cl in Brine water	1200 cu yds excavated soil in deep bury trench
23,532,811,680	mg Cl total released	
23,533	kg	6638 ppm Cl composite of stockpiled soil
51,772	**lb Cl total released**	7000 ppm Cl estimate of soil in trench

(cu yd * 2000 lb/cu yd * ppm) =

26552 lbs Cl *stockpiled*
16800 lbs Cl in trench
43352 lbs Cl removed from under reserve pit

83.74 percent Cl removed

ATTACHMENT 2
LAB RESULTS AND CHAIN OF CUSTODY

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
OCOTILLO ENVIRONMENTAL
ATTN: JERRY BRIAN
414 N. TURNER
HOBBS, NM 88240
FAX TO: (505) 393-6374

Receiving Date: 09/09/05
Reporting Date: 09/13/05
Project Number: BP-05-003
Project Name: FLOUNDER #1
Project Location: LEA COUNTY, NM

Analysis Date: 09/12/05
Sampling Date: 09/08/05
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Cl⁻ (mg/L)
H10173-1	BH #1-15' BGS	48
H10173-2	BH #1-20' BGS	96
H10173-3	BH #1-25' BGS	64
H10173-4	BH #1-30' BGS	112
H10173-5	BH #1-35' BGS	80
H10173-6	BH #1-40' BGS	96
H10173-7	BH #1-45' BGS	96
H10173-8	BH #1-50' BGS	64
H10173-9	BH #1-55' BGS	64
H10173-10	BH #1-60' BGS	80
H10173-11	BH #3-15'BGS	1104
H10173-12	BH #3-20'BGS	336
H10173-13	BH #3-25'BGS	240
H10173-14	BH #3-30'BGS	96
H10173-15	BH #3-35'BGS	64
Quality Control		1000
True Value QC		1000
% Recovery		100
Relative Percent Difference		0
METHOD: Standard Methods		4500-ClB

Note: Analyses performed on 1:4 w:v aqueous extracts.

Amy Hill
Chemist

9/13/05
Date

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
OCOTILLO ENVIRONMENTAL
ATTN: JERRY BRIAN
414 N. TURNER
HOBBS, NM 88240
FAX TO: (505) 393-6374

Receiving Date: 09/08/05
Reporting Date: 09/13/05
Project Number: BP-05-003
Project Name: FLOUNDER #1
Project Location: LEA COUNTY, NM

Analysis Date: 09/12/05
Sampling Date: 09/08/05
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Cl⁻ (mg/L)
H10173-16	BH #3-40' BGS	128
H10173-17	BH #3-45' BGS	32
H10173-18	BH #3-50' BGS	80
H10173-19	BH #3-55' BGS	80
H10173-20	BH #3-60' BGS	64
H10173-21	BH #5-15' BGS	112
H10173-22	BH #5-20' BGS	48
H10173-23	BH #5-25' BGS	32
H10173-24	BH #5-30' BGS	32
H10173-25	BH #5-35' BGS	48
H10173-26	BH #5-40' BGS	32
H10173-27	BH #5-45' BGS	32
H10173-28	BH #5-50' BGS	32
H10173-29	BH #5-55' BGS	32
H10173-30	BH #5-60' BGS	48
Quality Control		1000
True Value QC		1000
% Recovery		100
Relative Percent Difference		0

METHOD: Standard Methods	4500-Cl B

Note: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

9/13/05
Date

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
OCOTILLO ENVIRONMENTAL
ATTN: JERRY BRIAN
414 N. TURNER
HOBBS, NM 88240
FAX TO: (505) 393-6374

Receiving Date: 09/08/05
Reporting Date: 09/13/05
Project Number: BP-05-003
Project Name: FLOUNDER #1
Project Location: LEA COUNTY, NM

Analysis Date: 09/12/05
Sampling Date: 09/07/05
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Cl⁻ (mg/L)
H10173-31	BH #6-75' BGS	32
H10173-32	BH #6-80' BGS	48
H10173-33	BH #6-85' BGS	32
H10173-34	BH #6-90' BGS	64
H10173-35	BH #6-120' BGS	48
Quality Control		1000
True Value QC		1000
% Recovery		100
Relative Percent Difference		0
METHOD: Standard Methods		4500-ClB

Note: Analyses performed on 1:4 w:v aqueous extracts.

Amy Hill
Chemist

9/13/05
Date

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 (915) 673-7001 Fax (915) 673-7020
101 East Marland, Hobbs, NM 88240 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page ___ of ___

Company Name:	Ocotillo Env
Project Manager:	J Brian
Address:	414 W. Turner
City:	Hobbs
State:	NM
Zip:	88240
Phone #:	393-6371
Fax #:	393-6374
Project #:	BP-05-003
Project Owner:	BP America
Project Name:	Flounder #1
Project Location:	Lea County NM

BILL TO	
PO #:	
Company:	
Attn:	
Address:	
City:	
State:	
Zip:	
Phone #:	
Fax #:	

LAB I.D. (FOR LAB USE ONLY)	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	MATRIX: WASTEWATER	MATRIX: SOIL	MATRIX: OIL	MATRIX: SLUDGE	MATRIX: OTHER:	PRES.: ACID:	PRES.: ICE / COOL	PRES.: OTHER:	SAMPLING: DATE	SAMPLING: TIME	ANALYSIS REQUEST: Cl												
H10173-1	BH #1 - 15' BGS	/				/							9/8/05	10:15 AM	✓												
-2	" 20' "	↓				↓								10:25	↓												
-3	" 25' "	↓				↓								10:35	↓												
-4	" 30' "	↓				↓								10:45	↓												
-5	" 35' "	↓				↓								10:55	↓												
-6	" 40' "	↓				↓								11:05	↓												
-7	" 45' "	↓				↓								11:30	↓												
-8	" 50' BGS	↓				↓								11:55	↓												
-9	" 55' "	↓				↓								12:00	↓												
-10	" 60' BGS	↓				↓								12:20	↓												

Sampler Relinquished: J Brian	Date: 9/9/05 Time: 2:30	Received By:	Phone Result: ☐ Yes ☐ No Additional Fax #:
Relinquished By:	Date: Time:	Received By: (Lab Staff) Amy Hill	Fax Result: ☐ Yes ☐ No
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No	CHECKED BY: (Initials)

REMARKS:

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page ____ of ____

Company Name:	Ocotillo Env.	BILL TO	PO #:
Project Manager:	J Brian	Company:	
Address:	414 N. Turner	Attn:	
City:	Hobbs State: NM Zip: 88240	Address:	
Phone #:	393-6371	City:	
Fax #:	393-6374	State: Zip:	
Project #:	BP-05-003 Project Owner: BP America	Phone #:	
Project Name:	Hawdy #1	Fax #:	
Project Location:	Lea County, NM		

ANALYSIS REQUEST

FOR LAB USE ONLY				MATRIX						PRES.			SAMPLING	
LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID:	ICE / COOL	OTHER :	DATE	TIME
H10173-11	BH #3 - 15 BBS	G	1			X							9/8/05	1:40 PM
-12	-20' "	G	1											1:45
-13	25' "	G	1											2:00
-14	30' "													2:10
-15	35' "													2:20
-16	40' "													2:35
-17	45' "													2:50
-18	50' "													3:10
-19	55' "													3:20
-20	60' "													3:30

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished:	Date: 9/9/05	Received By:	Phone Result: ☐ Yes ☐ No Additional Fax #:
	Time: 9:30		Fax Result: ☐ Yes ☐ No
Relinquished By:	Date:	Received By: (Lab Staff)	REMARKS:
	Time:		
Delivered By: (Circle One)		Sample Condition: Cool ☐ Yes ☐ No Intact ☐ Yes ☐ No	CHECKED BY: (Initials)
Sampler - UPS - Bus - Other:			

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page ____ of ____

Company Name:	Ocotillo Env.	BILL TO PO #:	
Project Manager:	J Brian	Company:	
Address:	414 W Turner	Attn:	
City:	Hobbs State: NM Zip: 88240	Address:	
Phone #:	393-6371	City:	
Fax #:	393-6374	State: Zip:	
Project #:	BP-05-003 Project Owner: BP America	Phone #:	
Project Name:	Flounder #1	Fax #:	
Project Location:	Lea County, NM		

FOR LAB USE ONLY				MATRIX						PRES.			SAMPLING		ANALYSIS REQUEST
LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID:	ICE / COOL	OTHER :	DATE	TIME	BTEX
H10173-21	BH#5 - 15 BDS	D				X							9/8/05	7:35 AM	X
-22	20' "													8:00 "	
-23	25' "													8:10 "	
-24	30' "													8:30 "	
-25	35' "													8:40 "	
-26	40' BDS													8:45 "	
-27	45' "													8:55 "	
-28	50' "													9:10 "	
-29	55' "													9:35 "	
-30	60' "													9:39 "	

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other basis whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collection, including attorney's fees.

Sampler Relinquished:	Date: 9/9/05	Received By:	Phone Result: ☐ Yes ☐ No	Additional Fax #:
	Time: 9:30		Fax Result: ☐ Yes ☐ No	
Relinquished By:	Date:	Received By: (Lab Staff)	REMARKS:	
	Time:			
Delivered By: (Circle One)	Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No	CHECKED BY: (Initials)		
Sampler - UPS - Bus - Other:				

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 (915) 673-7001 Fax (915) 673-7020
101 East Marland, Hobbs, NM 88240 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page ____ of ____

Company Name: Castillo Eng.	PO #:
Project Manager: J Brown	Company:
Address: 414 N. Turner	Attn:
City: Hobbs State: NM Zip: 88240	Address:
Phone #: 393-6371	City:
Fax #: 393-6374	State: Zip:
Project #: BH-05-003 Project Owner: BP America	Phone #:
Project Name: Hounder #1	Fax #:
Project Location: Lea County NM	

FOR LAB USE ONLY				MATRIX						PRES.			SAMPLING		ANALYSIS REQUEST
LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID:	ICE / COOL	OTHER:	DATE	TIME	1 Cl
H10173-31	BH #6 - 75 BBS	C	1			X							9/7/05	12:30 PM	
-32	80' "												"	1:00	
-33	85' "												"	1:30	
-34	90' "												"	8:45	
-35	120' "												"	5:20	

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished: J Brown	Date: 9/9/05	Received By:	Phone Result: ☐ Yes ☐ No Additional Fax #:
	Time: 9:30		Fax Result: ☐ Yes ☐ No
Relinquished By:	Date:	Received By: (Lab Staff)	REMARKS:
	Time:		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition: Cool ☐ Yes ☐ No Intact ☐ Yes ☐ No	CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
OCOTILLO ENVIRONMENTAL
ATTN: JERRY BRIAN
414 N. TURNER
HOBBS, NM 88240
FAX TO: (505) 393-6374

Receiving Date: 09/07/05
Reporting Date: 09/08/05
Project Number: BP-05-003
Project Name: FLOUNDER #1
Project Location: LEA COUNTY, NM

Analysis Date: 09/07/05
Sampling Date: 09/08/05
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: NF
Analyzed By: HM

LAB NUMBER	SAMPLE ID	Cl^- (mg/Kg)
H10158-1	BH #4-5'BGS	80
H10158-2	BH #4-10'BGS	16
H10158-3	BH #4-15'BGS	32
H10158-4	BH #4-20'BGS	32
H10158-5	BH #4-25'BGS	16
H10158-6	BH #4-30'BGS	48
H10158-7	BH #4-35'BGS	16
H10158-8	BH #4-40'BGS	32
H10158-9	BH #4-45'BGS	48
H10158-10	BH #4-50'BGS	16
H10158-11	BH #4-55'BGS	32
H10158-12	BH #4-60'BGS	32
H10158-13	BH #4-65'BGS	16
H10158-14	BH #4-70'BGS	48
Quality Control		1000
True Value QC		1000
% Recovery		100
Relative Percent Difference		2.0

METHOD: Standard Methods	4500-ClB

Note: Analyses performed on 1:4 w:v aqueous extracts.

Amy Hill
Chemist

9/8/05
Date

H10158

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page ____ of ____

Company Name:	Dorfillo	BILL TO	PO #:
Project Manager:	J. Brian	Company:	
Address:	414 N. Turner	Attn:	
City:	Hobbs State/Zip: NM 88240	Address:	
Phone #:	505 393-6371	City:	
Fax #:	393-6374	State:	Zip:
Project #:	BP-05-003 Project Owner: BP	Phone #:	
Project Name:	Flounder #1	Fax #:	
Project Location:	Lea County NM		

ANALYSIS REQUEST

Cl

FOR LAB USE ONLY LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRES.: ACID:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME
H10158-1	BH #4 - 5 BDS	X				X							9/6/05	1:35PM
H10158-2	BH #4 - 10' BDS	X				X							"	1:45
-3	" - 15' BDS	X				X							"	1:50
-4	- 20' BDS	X				X							"	2:00
-5	25' BDS	X				X							"	2:10
-6	30' BDS	X				X							"	2:20
-7	35' BDS	X				X							"	2:30
-8	40' BDS	X				X							"	2:40
-9	45' BDS	X				X							"	3:00
-10	50' BDS	X				X							"	3:15

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collection, including attorney's fees.

Sampler Relinquished:	Date: 9/7/05 Time: 7:15 Am	Received By:	Phone Result ☐ Yes ☐ No Additional Fax #:
Relinquished By:	Date: Time:	Received By: (Lab Staff)	Fax Result: ☐ Yes ☐ No REMARKS:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

CARDINAL LABORATORIES, INC.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

Page ____ of ____

Company Name:	Ocotillo	BILL TO	PO #:
Project Manager:	J Brian	Company:	
Address:	414 N Turner	Attn:	
City:	Hobbs State: NM Zip: 88240	Address:	
Phone #:	393-6371	City:	
Fax #:	393-6374	State:	Zip:
Project #:	BP-05-003 Project Owner: BP	Phone #:	
Project Name:	Flounder #1	Fax #:	
Project Location:	Lea County		

ANALYSIS REQUEST

FOR LAB USE ONLY LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRES.: ACID:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	BTEX 8021B
H10158-11	BH #4 - 55 BGS	C	1			X							9/6/05	3:30 PM	
-12	" 60 BGS	C	1			X							"	3:45	
-13	" 65 BGS	C	1			X							"	4:05	
-14	" 70 BGS	C	1			X							"	4:25	X

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collection, including attorney's fee.

Sampler Relinquished: J Brian	Date: 9/7/05 Time: 7:15 AM	Received By:	Phone Result ☐ Yes ☐ No Additional Fax #:
Relinquished By:	Date: Time:	Received By: (Lab Staff)	Fax Result: ☐ Yes ☐ No REMARKS:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)	

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

ARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
OCOTILLO ENVIRONMENTAL
ATTN: JERRY BRIAN
414 N. TURNER
HOBBS, NM 88240
FAX TO: (505) 393-6374

Receiving Date: 11/23/05
Reporting Date: 11/28/05
Project Owner: BP AMERICA
Project Name: FLOUNDER #1
Project Location: LEA COUNTY, NM

Analysis Date: 11/28/05
Sampling Date: 11/22/05
Sample Type: GROUNDWATER
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: HM

LAB NUMBER	SAMPLE ID	Cl^- (mg/L)
H10446-1	BH#4 -TMW#2	100
H10446-2	BH#2 -TMW#1	120
Quality Control		980
True Value QC		1000
% Recovery		98
Relative Percent Difference		2.0

METHOD: Standard Methods	4500-ClB

Chemist

11-28-05
Date

H10446

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(325) 673-7001 Fax (325) 673-7020 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page ____ of ____

Company Name:	Cactillo Env	BILL TO	
Project Manager:	Jerry Boim	P.O. #:	
Address:	414 W. Turner	Company:	
City:	Hobbs State: NM Zip: 88240	Attn:	
Phone #:	393-6371 Fax #: 393-6374	Address:	
Project #:	BP-05-001 Project Owner: BP America	City:	
Project Name:	Flounder #1	State: Zip:	
Project Location:	Lea County NM	Phone #:	
Sampler Name:	Jerry Boim	Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	
H10446-1	BH #4 - TMW #2	C	3	X									11/22/05	4:00 PM	X
-2	BH #2 - TMW #1	C	3	X									11/22/05	2:30 PM	X

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished: Jerry Boim	Date: 11/23/05 Time: 10:45 Am	Received By:	Phone Result: ☐ Yes ☐ No
Relinquished By:	Date: Time:	Received By: (Lab Staff) Burgess W. Cook	Fax Result: ☐ Yes ☐ No
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition: Temp, °C: Cool; Intact? ☒ Yes ☐ No	Checked By: (Initials)	REMARKS:

† Cardinal cannot accept verbal changes. Please fax written changes to (325) 673-7020.

CARDINAL LABORATORIES

PHONE (325) 673-7001 · 2111 BEECHWOOD · ABILENE, TX 79603
PHONE (505) 393-2326 · 101 E. MARLAND · HOBBS, NM 88240

ANALYTICAL RESULTS FOR
OCOTILLO ENVIRONMENTAL
ATTN: J. BRIAN
414 N. TURNER
HOBBS, NM 88240
FAX TO: (505) 393-6374

Receiving Date: 01/31/06
Reporting Date: 02/01/06
Project Number: BP-005-001
Project Name: FLOUNDER #1
Project Location: LEA COUNTY, NM

Analysis Date: 02/01/06
Sampling Date: 01/27/06
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: LB

LAB NUMBER	SAMPLE ID	Cl⁻ (mg/Kg)
H10682-1	S.P. #1	6636
Quality Control		460
True Value QC		500
% Recovery		92
Relative Percent Difference		6.0
METHOD: Standard Methods		4500-ClB

NOTE: Analysis performed on a 1:4 w:v aqueous extract.

Chemist

02-03-06
Date

H10682

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page ____ of ____

Company Name:	Ocotillo Env	PO #:	
Project Manager:	S Bimm	Company:	
Address:	414 N. Turner	Attn:	
City:	Hobbs State: NM Zip: 88240	Address:	
Phone #:	393-6371	City:	
Fax #:	393-6374	State: Zip:	
Project #:	BP-005-001 Project Owner: BP America	Phone #:	
Project Name:	Blounton #1	Fax #:	
Project Location:	Lea Cnty		

ANALYSIS REQUEST

FOR LAB USE ONLY				MATRIX							PRES.			SAMPLING		
LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID:	ICE / COOL	OTHER:	DATE	TIME		
H10662-1	SP #1	G	1			X							1/27/06	10:00 AM	X	

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

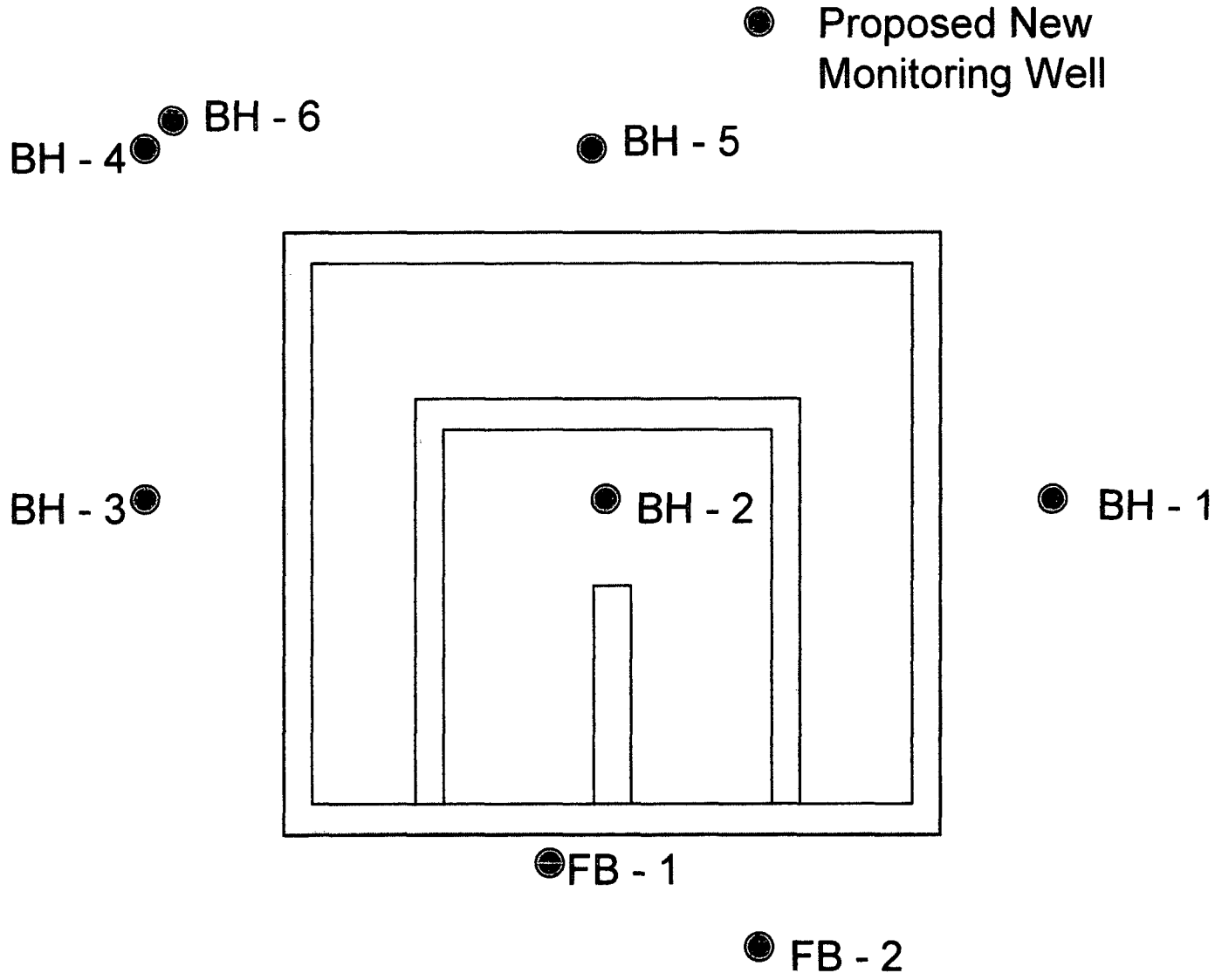
Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 2% per month from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished:	Date: 1/31/06	Received By:	Phone Result: ☐ Yes ☐ No	Additional Fax #:
	Time: 1:20 Am		Fax Result: ☐ Yes ☐ No	
Relinquished By:	Date:	Received By: (Lab Staff)	REMARKS:	
	Time:			
Delivered By: (Circle One)		Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No	CHECKED BY: (Initials)	
Sampler - UPS - Bus - Other:				

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

ATTACHMENT 3

FLOUNDER STATE #1 PLOT PLAN



BP America Production Company
Flounder State #1
Lea County, NM

Pumping Unit

Well Head

Not to Scale