APPROVED
By Olivia Yu at 1:08 pm, Apr 13, 2017

April 13, 2017

Delineation workplan for 1RP-1849 is approved.

Ms. Olivia Yu
Environmental Specialist
NMOCD, District 1
1625 N. French Drive
Hobbs, New Mexico 88240

Re: Release Characterization Work Plan - Angell #1 Tank Battery (IRP #1849)

Ms. Yu,

On behalf of BC Operating, Pike Energy Services is pleased to submit this Work Plan for Release Characterization of the Angell #1.

Background

A reported 20 barrels of oil was released as the result of a tank battery overflow that occurred on April 22, 2008. The release was reported to the New Mexico Oil Conservation Division (NMOCD) using *Form C-141* for *Release Notification and Corrective Action*, by BC Operating on April 23, 2008. According to the C-141, the release was contained inside the fire wall of the tank battery and 18 of the 20 barrels released were recovered with a vacuum truck. Vertical delineation of TPH and Chloride was requested by NMCOD with the final C-141. No further information regarding the closure of the site is available from the NMOCD or BC Operating. A copy of the initial report Form C-141 is provided in **Attachment A.**

A site visit was conducted by personnel from BC Operating, NMOCD and Pike Energy Services on March 22, 2017 to observe the current site conditions. Observations made during that visit include: historical staining inside the fire wall, an area of fresh caliche covering stained soil around the circulation pump but inside the firewall, and a possible area of stressed vegetation off the northeast corner of the well pad.

Due to the lack of data regarding the response activities conducted in 2008, and given the current site conditions, the NMOCD has requested that BC Operating characterize the release according to the *Conditions of Approval (COA)* issued by the Environmental Bureau Chief, Jim Griswold in January 2017.

Scope of Work

1. ***Characterization –*** In addition to horizontal and vertical delineation, 3 surface samples will be collected in the pasture northeast of the well pad where NMOCD observed possible stressed vegetation. Samples collected in the pasture may be field screened in lieu of laboratory analysis per NMOCD request during the site visit on March 22, 2017. Field screening of samples may be employed using a photoionization detector for headspace readings and titration test strips for chloride as part of the characterization activities.

    a. *Horizontal Delineation* – Surface samples, will be collected and possibly advanced to depth in each of the four cardinal compass directions inside the perimeter of the firewall. Each sample location will have a corresponding sample located outside of the perimeter of the firewall in effort to collect samples within the impacted area and beyond. Where

contamination is observed in samples collected outside of the firewall, a new sample location will be identified by stepping out laterally from the source area as determined in the field.

b. *Vertical Delineation* – A single soil boring or pothole will be advanced inside the firewall north of the production tanks. Samples will be collected at depth in effort to identify the bottom depth of contaminated soil above concentration limits. A sample will be collected below the bottom of the presumed contamination, and the boring will then be advanced for an additional ten feet in effort to demonstrate at least ten vertical feet of soils with contaminant concentrations at or below the remedial action level. Vertical characterization samples will be taken at depth intervals no greater than five feet apart.

A minimum of two soil samples will be submitted for laboratory analysis from each borehole (highest observed contamination and deepest investigated depth). A lithologic description of encountered soils will be collected and provided with the report. A map depicting the proposed sample locations is provided in **Attachment B**.

2. ***Sampling and Analysis*** - Soil samples will be collected and placed in clean laboratory supplied jars, given a unique code, packed on ice and submitted under chain of custody to an accredited laboratory for analysis of: TPH (DRO/MRO) by EPA method 8015, BTEX and GRO by EPA method 8021, and Chloride by EPA method 9056.

3. ***Groundwater and Surface Water*** – Review of the New Mexico Office of the State Engineer, *New Mexico Water Rights Reporting System* (NMWRRS) online database 2000-meter radius search reported 38 wells with an average depth to water of 75 feet. A copy of the radius search is included in **Attachment C.** The 2005 ChevronTexaco - Lea County Depth to Ground Water, Water Wells, Facilities Map indicates depth to shallowest groundwater for T17S, R36E, Sec. 11, Unit A, is greater than 50 feet. Additionally, distance to nearest body of surface water is greater than 1,000 feet as observed on the USGS Store, Map Locator and Downloader.

4. ***Reporting –*** A report detailing characterization activities will be submitted to the NMOCD for review and recommendations. The report will include site maps, laboratory and field screening summary tables, and laboratory reports with chains of custody.

If approved, field activities will commence the week of April 24th. Please call me if you have any questions, comments, or concerns at (210) 363-2431.

Respectfully Yours,

Frank Engallina

Attachments:
Release Notification and Corrective Action Form C-141
Proposed Sample Location Map
NMWRRS 2000-meter Radius Search

Attachment A
C-141

XDistrict 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-141
Revised October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR

X Initial Report ☐ Final Report

Name of Company BC Operating, Inc	Contact Gary Stevens
Address P O Box 50820 Midland, TX 79710	Telephone No. 432-894-7113
Facility Name Angell #1	Facility Type tank battery

Surface Owner Darr Angell	Mineral Owner	Lease No. 30-025-37902

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	11	17S	36E	660	North	660	East	Lea

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release oil	Volume of Release 20 bbls	Volume Recovered 18 bbls
Source of Release tank overflow at battery	Date and Hour of Occurrence 4/22/08	Date and Hour of Discovery 4/22/08
Was Immediate Notice Given? X Yes ☐ No ☐ Not Required	If YES, To Whom? Mark Whitaker	
By Whom? Pam Botkin	Date and Hour 4/23/08 9:30 am	
Was a Watercourse Reached? ☐ Yes X No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

RECEIVED
APR 28 2008
HOBBS OCD

Describe Cause of Problem and Remedial Action Taken.*

Tank overflow, recovered with vacuum truck

Describe Area Affected and Cleanup Action Taken.*

Spill was contained inside the fire wall at battery. Recovered oil, scooped up dirt, hauled off.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Pam Botkin

Printed Name: Pam Botkin

Title: Engineering Tech

E-mail Address: pbotkin@usaonline.net

Date: 04/23/08 Phone: 432-684-9696 x 216

OIL CONSERVATION DIVISION

Approved by District Supervisor: ENVIRONMENTAL ENGINEER

Approval Date: 4.30.08 Expiration Date: 6.30.08

Conditions of Approval:

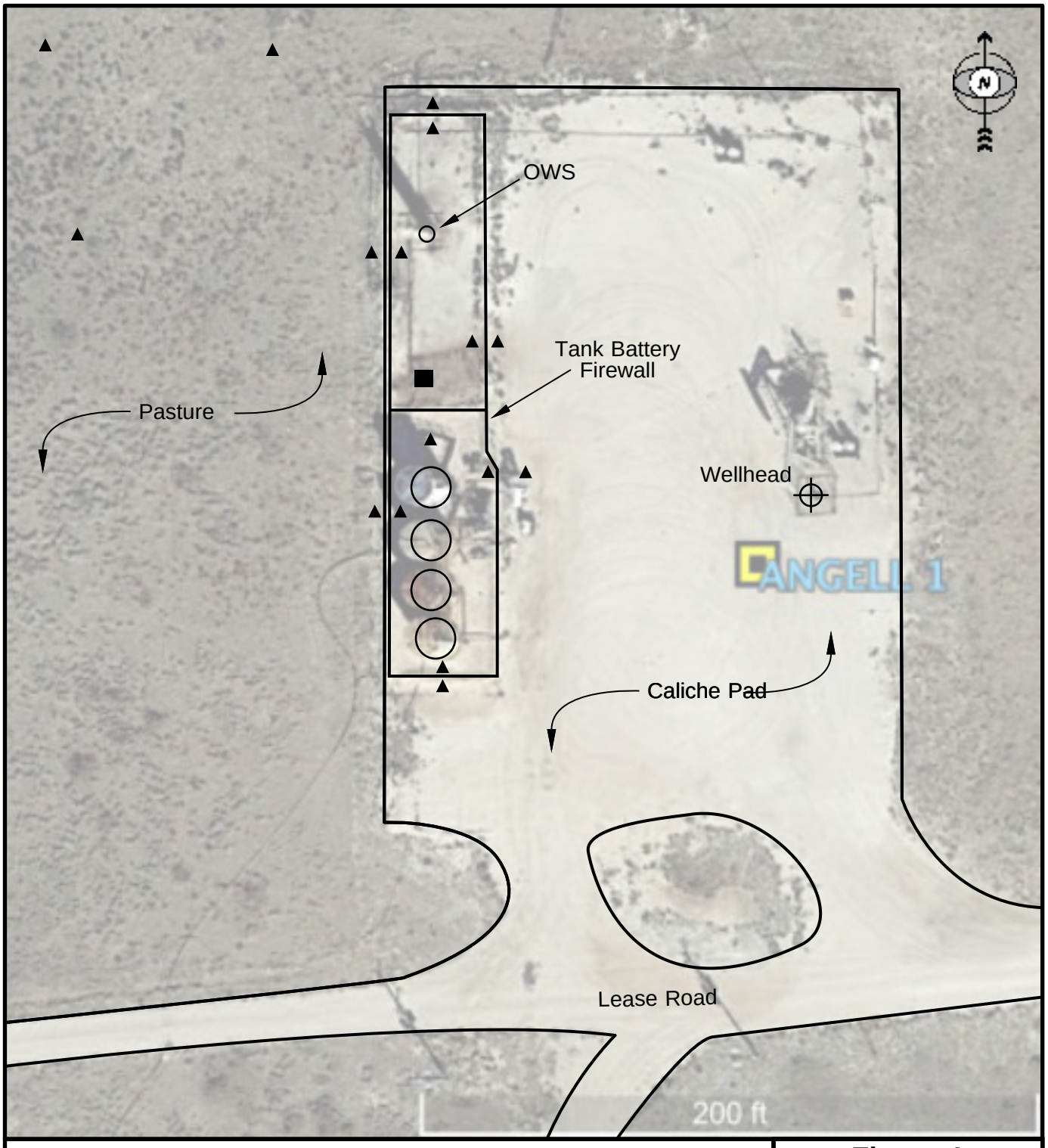
SUBMIT FINAL C-141 W/ VERTICAL DELINEATION REPORT BY (TPH & CHLORIDE) IRP# 1849

Attached ☐

* Attach Additional Sheets If Necessary

fCOH0812731351

Attachment B
Proposed Sample Location Map



LEGEND

▲ Proposed Sample Locations

0 50 100

FEET

Aerial Photo by Google Earth Pro 2/1/2017

Figure 1

Angell #1H
Proposed Sample
Location Map

March 30, 2017

PIKE
ENERGY SERVICES

Attachment C
NMWRRS 2000-meter Radius Search

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
L 02413	L	LE		4	4	02	17S	36E	657318	3636861*	396	90	90	0
L 02426	L	LE		4	4	02	17S	36E	657318	3636861*	396	115	48	67
L 11198	L	LE	3	3	3	01	17S	36E	657620	3636766*	425	186		
L 00379	L	LE	1	2	1	12	17S	36E	658031	3636570*	719	110		
L 02119	L	LE	1	4	3	01	17S	36E	658024	3636973*	868	130		
L 06395	L	LE		4	1	12	17S	36E	658138	3636069*	909	112	47	65
L 01716	L	LE	1	1	4	02	17S	36E	656808	3637357*	1028	145	50	95
L 02481	L	LE	4	4	2	02	17S	36E	657405	3637566*	1104	150	76	74
L 03676	L	LE		4	2	02	17S	36E	657306	3637667*	1202	75	68	7
L 05413	L	LE		3	3	12	17S	36E	657747	3635257*	1281	100	48	52
L 05486	L	LE	2	3	1	01	17S	36E	657808	3637773*	1396	225	62	163
L 01724 S3	L	LE	2	1	3	02	17S	36E	656201	3637343*	1421	140	125	15
L 14187 POD1	L	LE	3	1	3	02	17S	36E	656100	3637215	1431	78		
L 14187 POD2	L	LE	3	1	3	02	17S	36E	656100	3637215	1431	77		
L 14187 POD4	L	LE	3	1	3	02	17S	36E	656100	3637215	1431	80		
L 14187 POD3	L	LE	3	1	3	02	17S	36E	656100	3637246	1448	80		
L 14207 POD2	L	LE	2	4	1	01	17S	36E	658222	3637712	1539	230	101	129
L 10633 POD6	L	LE	3	4	4	01	17S	36E	658832	3636787*	1546	196	80	116
L 10633 POD4	L	LE	1	4	4	01	17S	36E	658832	3636987*	1600	209	80	129
L 02205	L	LE		2	2	12	17S	36E	658939	3636485*	1619	110	45	65
L 02480	L	LE		1	2	02	17S	36E	656897	3638063*	1653	130	58	72
L 01713	L	LE		1	1	01	17S	36E	657703	3638076*	1656	150	72	78
L 04988 S	L	LE	3	2	1	01	17S	36E	658006	3637982*	1665	182	55	127
L 02331	L	LE		4	4	01	17S	36E	658933	3636888*	1668	105	48	57
L 14207 POD1	L	LE	3	3	2	01	17S	36E	658500	3637679	1694	240	100	140
L 01724 S2	L	LE			1	02	17S	36E	656298	3637848*	1719	140	128	12

***UTM location was derived from PLSS - see Help**

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
L 10633 S3		L	LE	4	4	4	01	17S	36E	659032	3636787*	1742	188	80	108
L 05486 POD2		L	LE	2	1	1	01	17S	36E	657802	3638175*	1777	232	83	149
L 10633 POD5		L	LE	2	4	4	01	17S	36E	659032	3636987*	1790	228	120	108
L 10633 S2	R	L	LE			4	13	17S	36E	659032	3636987*	1790	196	80	116
L 10633 S4		L	LE	2	4	4	01	17S	36E	659032	3636987*	1790	204	110	94
L 01584 POD1		L	LE		2	1	01	17S	36E	658107	3638083*	1799	110	48	62
L 10633 S	R	L	LE			4	13	17S	36E	659026	3637189*	1854	228	120	108
L 04359 S		L	LE	3	1	1	07	17S	37E	659242	3636391*	1924	110	82	28
L 11558		L	LE	3	1	1	07	17S	37E	659242	3636391*	1924	216		
L 10633	R	L	LE			4	13	17S	36E	659026	3637389*	1941	209	80	129
L 01557 POD1		L	LE	4	3	3	36	16S	36E	657796	3638374*	1967	110	40	70
L 04058 S19		L	LE	4	3	3	36	16S	36E	657796	3638374*	1967	245	50	195

Average Depth to Water: **75 feet**

Minimum Depth: **40 feet**

Maximum Depth: **128 feet**

Record Count: 38

UTMNAD83 Radius Search (in meters):

Easting (X): 657319.16 **Northing (Y):** 3636464.71 **Radius:** 2000

***UTM location was derived from PLSS - see Help**