



Shell Exploration & Production

Shell Frontier Oil & Gas Inc.
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Houston Texas 77082-3101

FED EX Tracking # 7985 0612 7650

April 28, 2014

Ms. Sarah Roberts
US EPA Region 8
UIC Technical Enforcement Program
Mail Code: 8ENF-UFO
1595 Wynkoop St.
Denver, CO 80202-1129

RECEIVED
APR 29 2014
GRAND JUNCTION FIELD OFFICE
DIVISION OF
RECLAMATION MINING & SAFETY

SUBJECT: Shell Frontier Oil & Gas Inc., UIC Area Permit No. CO32210-00000, Submittal of 1st Quarter 2014 Report, ERDD Project, Rio Blanco County, Colorado.

Dear Ms. Roberts:

Per the requirements of Part II Section D and specified in Appendix D of the above referenced UIC permit, Shell Frontier Oil & Gas Inc. (SFOGI) is submitting this quarterly monitoring report for data collected from January 1, 2014 through March, 2014 (4th quarter). This includes data associated with the monitoring wells and injection wells, mining interval development, subsidence monitoring, and the groundwater monitoring. This report will not include the 1st quarter radioactive marker log for wells OB02 and OB04 and its interpretation since it was previously submitted on April 15, 2014.

Also, well circulation was discontinued on September 25th, 2013, due to cancellation of the project. Therefore, there is no injection and production data available for the 1st quarter.

If you have any questions regarding the information in this submittal, please contact me at 281-544-7990.

Sincerely,

Florentino Vuelvas
Staff Environmental Engineer

Attachments (4)

Cc: **FED EX Tracking # 7985 0572 6551**

Paul Daggett

Bureau of Land Management – White River Field Office

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Travis Marshall

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Attachment 1
Injection Well Data

Attachment 2

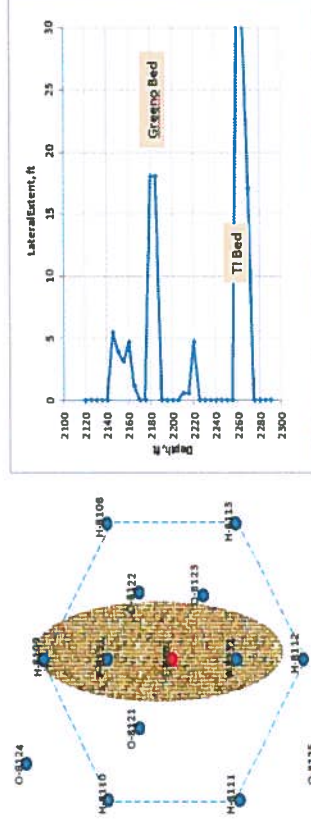
Mining Interval Development

40

Mining Interval Development - Q1 2014

January 2014

Top View



See cross section inset for a vertical view of mined zone.

February 2014

No changes in cavity dimensions

March 2014

No changes in cavity dimensions

Attachment 3

Subsidence Monitoring

Subsidence Monitoring - Q1 2014

Radioactive Marker Logs in OB02 and OB04

Radioactive marker logs were previously submitted on April 15, 2014.

Differences between current readings and reference readings for cable OW-8122 (OB02) have been less than +/-0.065 rho which corresponds to a subsurface deformation within the range of 0 and 0.5 inch (12 mm). The maximum difference of 0.065 rho occurred on 3/31/2014 at a depth of 21 to 26 feet, and is associated with intermittent changes in impedance at a splice. These differences are similar to those noted on 9/30/2013.

Table A.1 Cable OW-8122

Date of Reading	Date of Reference	Maximum Difference (rho)	Depth (ft)	Minimum Difference (rho)	Depth (ft)	Average Difference (rho)
7/29/13	6/21/13	0.022	1847	-0.031	1701	0.0036
			1851		1706	
8/12/13	8/1/13	0.005	1274	-0.027	1687	-0.0083
8/19/13	8/4/13	0.026	8	-0.018	218	0.0011
9/8/13	8/4/13	0.029	10	-0.022	1620	-0.0016
9/30/13	8/4/13	0.034	8	-0.014	1620	0.0072
			21			
10/30/13	8/4/13	0.059	400	-0.069	197	-0.0004
			415			
12/31/13	8/4/13	0.036	21	-0.033	1617	0.0001
3/31/14	8/4/13	0.065	21	-0.037	1617	0.0070
			26			

TDR in OB02 (coaxial cable to 2,074 feet).

Attachment 4

Groundwater Monitoring

Groundwater Monitoring - Q1 2014

Water levels have been measured frequently with pressure transducers and periodically with "tapes" since March 2010 through March 2014. Below is a list of dates of tape measurements of the observed water levels.

EDD Ground Water Monitoring Frequency - Water Level Measurements									
138-4-298-UT	138-4-298-A	138-4-298-B	138-4-298-L5	138-4-298-L4	135-4-298-L4				
3/9/2010	3/9/2010	3/9/2010	3/9/2010	3/9/2010	6/8/2011				
4/9/2010	4/9/2010	4/9/2010	4/9/2010	4/9/2010	8/23/2011				
4/20/2010	4/20/2010	4/20/2010	4/20/2010	4/20/2010	10/19/2011				
6/7/2010	6/7/2010	6/7/2010	6/7/2010	6/7/2010	3/27/2012				
8/16/2010	8/16/2010	8/16/2010	8/16/2010	8/16/2010	5/15/2012				
11/8/2010	11/8/2010	11/8/2010	11/8/2010	11/8/2010	11/27/2012				
3/21/2011	3/21/2011	3/21/2011	3/21/2011	3/21/2011	2/21/2013				
8/1/2011	8/1/2011	8/1/2011	8/1/2011	6/3/2011*	6/27/2013				
11/15/2012	11/15/2012	11/15/2012	11/15/2012	8/22/2011*	9/12/2013				
5/16/2013	5/16/2013	5/16/2013	5/16/2013	10/17/2011*	10/24/2013				
6/24/2013	6/24/2013	6/24/2013	6/24/2013	8/1/2012*	11/15/2013				
9/12/2013	9/12/2013	9/12/2013	9/12/2013	5/16/2013*	12/16/2013				
12/2/2013	12/2/2013	12/2/2013	12/2/2013	6/24/2013*	1/6/2014				
2/7/2014	2/7/2014	2/7/2014	2/7/2014	9/12/2013*	2/7/2014				
				12/2/2013*	3/7/2014				
				2/7/2014*					
				* deepened					

Hydraulic Head (ft. water)

With the exception of a temporary and short-term rise in the water level in the 135-L4 well in October 2010, which was rectified by re-furbishing that well, water levels (water level elevations) have shown only the minor fluctuations characteristic of water levels of the monitored hydrostratigraphic intervals everywhere in the basin. These tape measurements, as well as the more frequent transducer measurements, do not indicate any abnormal pressure/water level changes over the period of record.

The current ground water quality data consists of data collected from five wells on Pad 138, covering the time period from March 2010 through March 2014, and the data for the well on Pad 135, covering the period from June 2011 through March 2014. There are nine samples from the final configuration of the Pad 138 wells and fourteen from the Pad 135 well. In addition, the initial and shallower 138-L4 well was also sampled three times prior to recompletion as the current, deeper, 138-L4 well. These two sets of 138-L4 measurements are listed with distinguishing annotations in the table below.

EDD Ground Water Monitoring Frequency - Water Quality Sampling						
138-4-298-UT	138-4-298-A	138-4-298-B	138-4-298-L5	138-4-298-L4	135-4-298-L4	
3/10/2010	3/10/2010	3/10/2010	3/10/2010	3/10/2010	6/8/2011	
6/8/2010	6/8/2010	6/8/2010	6/8/2010	6/8/2010	8/23/2011	
8/18/2010	8/18/2010	8/18/2010	8/17/2010	8/17/2010	10/19/2011	
11/10/2010	11/9/2010	11/9/2010	11/9/2010	11/10/2010*	3/27/2012	
3/23/2011	3/22/2011	3/22/2011	3/22/2011	3/24/2011*	5/15/2012	
6/25/2013	6/26/2013	6/26/2013	6/26/2013	6/6/2011*	11/27/2012	
9/25/2013	9/25/2013	9/25/2013	9/18/2013	8/24/2011*	2/21/2013	
12/3/2013	12/4/2013	12/18/2013	12/4/2013	10/18/2011*	6/27/2013	
2/18/2014	2/12/2014	2/11/2014	2/12/2014	6/25/2013*	9/16/2013	
				9/18/2013*	10/24/2013	
				12/3/2013*	12/16/2013	
				2/11/2014*	1/7/2014	
					2/10/2014	
				*deepened	3/10/2014	

Fluid Sampling Results Summary

Comparison of the individual analyte data indicate that concentrations have varied as expected for background with no abnormal temporal trends. There have been no concentration increases that approached the numeric protection levels at Pad 138 or the early-indication levels at the 135-L4 well. The consistency of the measured concentrations demonstrate that the Project activities, which involved only installation of production facilities and partial dissolution of sodium bicarbonate mineral in the target zone, have had no effect on measured ground water concentrations. Upon examination of all the data, the water quality measured in all samples for the period of record continues to represent and define unaffected ambient water quality.