

**OKLAHOMA
CORPORATION COMMISSION**

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OIL & GAS CONSERVATION DIVISION



Tim Baker, Director

TO:

FROM: Tim Baker, Director, Oil and Gas Conservation Division

RE: Reduction in Volumes for Wells Located in Area of Interest for Induced Seismicity

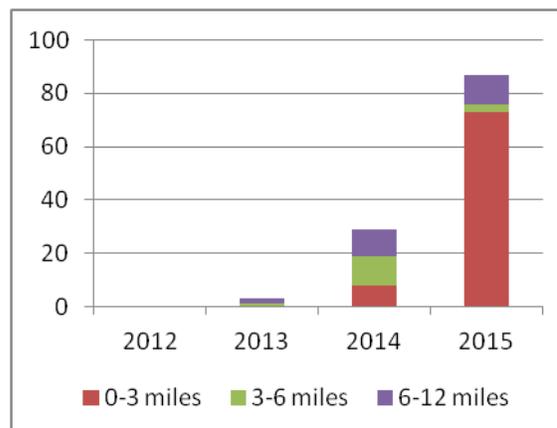
DATE: October 16, 2015

The Commission's Oil and Gas Conservation Division (OGCD) is expanding its efforts to reduce the risk of earthquakes potentially triggered by saltwater disposal wells. The following addresses the reduction of volumes being disposed in the Arbuckle formation within the defined area of interest. Any company that has been identified as operating one or more Arbuckle disposal well(s) located within one of the three zones in the defined area will need to reduce volumes disposed into such well(s) according to the schedule outlined at the end of this letter. The zones are shown on the attached map and are defined from a centrally located point between the two most recent magnitude 4+ earthquakes, as reported by the Oklahoma Geological Survey (OGS), near the town of Cushing, as follows:

- Zero to three miles (0-3 miles)
- Three to six miles (3-6 miles)
- Six to ten miles (6-10 miles).

The area highlighted on the attached map has been designated based upon the dramatic increase in earthquakes within the immediate area. The OGCD has reviewed the earthquake activity of magnitude 2.5 and greater within two miles of the zones of interest, as reported by the Oklahoma Geological Survey (OGS). The earthquake activity from January 1, 2012 through October 16, 2015 below. The attached map shows earthquake activity of the last 30 days.

Earthquake Activity Magnitude 2.5 or Greater				
Year	0-3 mile Zone	3-6 mile Zone	6-12 mile Zone	Total
2012	0	0	0	0
2013	0	1	2	3
2014	8	11	10	29
2015	73	3	11	87



As part of a joint effort to decrease the risk of induced seismicity, you will need to complete reduction of disposal volumes in accordance with the following schedule and as indicated for the wells below. All disposal well volumes shall be calculated on a daily basis. In addition, gauges and flow meters should be placed on such wells on or before Monday, November 2, 2015 so that Commission Field Inspectors can verify pressures and volumes. As has been the practice, pressures and volumes for such wells should continue to be supplied every Monday to the Commission, on a weekly basis, at ogvolumes@occemail.com.

The following schedule applies to all wells within the defined zones in the Area of Interest:

- Zero to three miles (0-3 miles):
 - A shut-in of wells on or before October 23, 2015.
- Three to six miles (3-6 miles):
 - On or before November 2, 2015, daily volumes should be reduced by thirteen percent (13%) of the daily average of the total volume reported reported to the Commission on the weekly volume reports through October 12, 2015.
 - On or before November 16, 2015, daily volumes should be reduced by an additional twelve percent (12%), for a total volume reduction of twenty-five percent (25%) of the daily average of the total volume reported reported to the Commission on the weekly volume reports through October 12, 2015.
- Six to ten miles (6-10 miles):
 - Maintain current levels at this time. This letter shall serve as notification that future seismic activity might result in an expanded area for reductions to include these wells.

If you have any questions contact the OCGD:

Charles Lord
(405) 522-2751

or

Jim Marlatt
(405) 522-2758

c.lord@occemail.com

j.marlatt@occemail.com

Thank you in advance for your continued cooperation and attention to this matter.

Sincerely,



Tim Baker, Director
Oil and Gas Conservation Division

The wells in this area operated by your company, and the volume reduction schedule are listed below:

Volume data from March 23rd to October 12th 2015 weekly reports

Company	Well Name	Status	Average of Daily Volume	Sum of Daily Volume	Updated Max Allowed Volume	% Reduction	Buffer Zone
Hightower Energy	Caldwell-Lionel Harris 1	Maintain current	40	8040	Permit	0%	6 to 10
American Energy Woodford	Calyx 35-2	Shut in	7118	1452076	0	100%	0 to 3
American Energy Woodford	Ethridge 35-2	Shut in	1991	406071	0	100%	0 to 3
American Energy Woodford	Wilson 11-1	Shut in	651	132825	0	100%	0 to 3
American Energy Woodford	Clay 21-1	25% reduction	3198	652446	2399	25%	3 to 6
American Energy Woodford	Hill 29-1	25% reduction	7436	1517024	5577	25%	3 to 6
American Energy Woodford	Williams 5-1	25% reduction	6895	1406580	5171	25%	3 to 6
American Energy Woodford	Penny 29-1	Maintain current	6650	1356636	Permit	0%	6 to 10
American Energy Woodford	Hildebrand 6-1	Maintain current	85	17418	Permit	0%	6 to 10
American Energy Woodford	Metcalf 24-1	Maintain current	3168	646277	Permit	0%	6 to 10
American Energy Woodford	Mitchell 4-11	Maintain current	2488	507653	Permit	0%	6 to 10
American Energy Woodford	Wheeler 11-1	Maintain current	1574	320997	Permit	0%	6 to 10
American Energy Woodford	Dean 3-1	Maintain current	1429	291448	Permit	0%	6 to 10
American Energy Woodford	Louis 6-3	Maintain current	446	90893	Permit	0%	6 to 10
Crown Energy	Joyce 20 SWD	Shut in	992	202415	0	100%	0 to 3
Crown Energy	Cimarron A1-13 SWD	25% reduction	4730	960165	3547	0%	3 to 6
Crown Energy	Jedi A1-6 SWD	25% reduction	3157	640850	2368	25%	3 to 6
Crown Energy	Hannah Jo A1-10	25% reduction	0	0	0	0%	3 to 6
Crown Energy	Linda	Maintain current	4352	883446	Permit	0%	6 to 10
Meason Petroleum LLC	Donaldson 1-21 SWD	Maintain current	274	55880	Permit	0%	6 to 10
D & J Tank Trucks	Sanders 3 SWD	Maintain current	80	11875	Permit	0%	6 to 10
Devon Energy	HC Ryan 15-18N-6E	Maintain current	2	396	Permit	0%	6 to 10
Cher Oil	State School land 1-16 SWD	25% reduction	246	17206	184	25%	3 to 6
Cher Oil	TUCKER 12-1D	Maintain current	977	198310	Permit	0%	6 to 10
Petrowarrior	Wildhorse #1 SWD	25% reduction	1060	216307	795	25%	3 to 6
FHA Investments	FHA SWD 1-15	25% reduction	1002	203430	752	25%	3 to 6
Becca Oil LLC	MILLER #1	Maintain current	4	896	Permit	0%	6 to 10

