

**THE STATE CORPORATION COMMISSION  
OF THE STATE OF KANSAS**

Before Commissioners:            Shari Feist Albrecht, Chair  
                                         Jay Scott Emler  
                                         Pat Apple

In the Matter of an Order Reducing Saltwater        ) Docket No. 15-CONS-770-CMSC  
Injection Rates into the Arbuckle Formation,        )  
Applicable to Wells in Defined Areas of            ) CONSERVATION DIVISION  
Increased Seismic Activity in Harper and            )  
Sumner Counties.                                            )

**ORDER REDUCING SALTWATER INJECTION RATES**

The above-captioned matter comes before the State Corporation Commission of the State of Kansas (“Commission”) for consideration and determination. Having examined its files and records, and being duly advised in the premises, the Commission makes the following findings:

1. Due to increasing seismic activity in Harper and Sumner Counties, correlating with increasing volumes of saltwater injected in those counties, the Commission finds and concludes its powers under K.S.A. 2014 Supp. 77-536(a) must be exercised to protect the public from immediate danger to health, safety, and welfare. Because individual earthquakes cannot be linked to individual injection wells, this Order reduces injection volumes in areas experiencing increased seismic activity. The Commission retains jurisdiction to amend this Order as new information becomes available.

**I. JURISDICTION**

2. The Commission has the exclusive jurisdiction and authority to regulate oil and gas activities in Kansas,<sup>1</sup> and to regulate the injection of saltwater into wells.<sup>2</sup> The federal Environmental Protection Agency (“EPA”) has delegated primacy of its Class II injection program to the Commission.

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<sup>1</sup> K.S.A. 74-623.

3. K.S.A. 2014 Supp. 77-536(a) provides an agency with authority to act if there is “an immediate danger to the public health, safety or welfare requiring immediate state agency action” or “as otherwise provided by law.” Additional required proceedings shall be concluded “as quickly as feasible” after the Order is issued.<sup>3</sup> K.S.A. 55-162(b) provides the Commission with specific authorization “[i]f it appears to the commission that damage may result if immediate remedial action is not taken.”

## II. FINDINGS OF FACT

4. The United States Geological Survey (“USGS”) has reported the number of earthquakes in Kansas has risen over the past several years.<sup>4</sup> USGS data shows from 1981 through 2010, Kansas experienced 30 recorded earthquakes.<sup>5</sup> In 2013, there were four recorded earthquakes in Kansas. The number of recorded earthquakes reported in Kansas during 2014 increased to 127. From January 1, 2015, to March 16, 2015, Kansas has experienced 51 recorded earthquakes. The majority of the earthquakes have occurred in Harper and Sumner Counties.

5. In response to the increased seismic activity, the Governor formed a Task Force to investigate the issue.<sup>6</sup> The Task Force met several times and put forth a Seismic Action Plan on September 26, 2014, to respond to potentially-induced seismic events. The Task Force revised the plan on January 21, 2015. The plan contains a formula which attaches a Seismic Action Score (“SAS”). When an event registers an SAS of 17 or larger, the Commission is notified by the Kansas Geological Survey (“KGS”) and determines whether regulatory action is necessary.

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<sup>2</sup> K.S.A. 2014 Supp. 55-901.

<sup>3</sup> K.S.A. 2014 Supp. 77-536(e).

<sup>4</sup> The USGS website can be queried at: <http://earthquake.usgs.gov/earthquakes/search/>

<sup>5</sup> Recorded earthquakes are generally those measuring Magnitude 2.0 or higher.

<sup>6</sup> Information on the Task Force can be accessed at: [http://www.kcc.state.ks.us/induced\\_seismicity/index.htm](http://www.kcc.state.ks.us/induced_seismicity/index.htm).

6. The increased number of recorded earthquakes in Kansas coincides with an increase in the number of injection wells and the amounts of injected saltwater in Harper and Sumner Counties. In Harper County, the number of injection wells increased from 44 in 2010 to 71 in 2013, with 18 new permit applications received in 2014. The number of barrels of saltwater injected in Harper County increased from 9,671,655 in 2010 to 51,827,349 in 2013. The number of injection wells in Sumner County increased from 53 in 2010 to 79 in 2013, with 17 new permit applications received in 2014. The number of barrels injected in Sumner County increased from 9,763,265 in 2010 to 10,722,360 in 2013.<sup>7</sup>

7. From January 1, 2014, through March 16, 2015, there were 113 earthquakes in Kansas that had an SAS of 17 or larger. It has not been possible to trace a specific earthquake to a specific injection well based on available data. Commission Staff, in consultation with the KGS, recommended, and the Commission finds, there are areas in Harper and Sumner Counties which are more seismically active and potentially prone to induced seismic events. These areas require immediate action with regard to the operation of Class II injection wells.

8. The Commission finds increased seismic activity constitutes an immediate danger to the public health, safety, and welfare, and the requirements in this Order are narrowly tailored to address the potential harm as required by K.S.A. 2014 Supp. 77-536(a). The Commission finds damage may result if immediate action is not taken, as required by K.S.A. 55-162(b).

### **III. CONCLUSIONS OF LAW**

9. The following restrictions shall govern new and existing Arbuckle injection wells in the affected areas. This Order identifies areas of heightened seismic activities and requires a reduced injection rate and pressure.

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<sup>7</sup> 2014 annual injection data is not required to be reported to the KCC until March 1, 2015, and data entry requires additional time; therefore, 2014 data is not available for inclusion in this Order.

10. The KGS has identified five areas of heightened seismic concern in Exhibit A, which is incorporated by reference into this Order. The centers of these areas are as follows:

- a. A line from 1024 FSL 1269 FEL, Sec. 17-32S-6W, to 2728 FSL 4558 FEL, Sec. 15-33S-5W.
- b. A line from 1056 FSL 3071 FEL, Sec. 23-32S-7W, to 2880 FSL 898 FEL, Sec. 7-34S-6W.
- c. A line from 2401 FSL 1229 FEL, Sec. 2-32S-3W, to 1185 FSL 3692 FEL, Sec. 21-32S-3W.
- d. A line from 4799 FSL 4640 FEL, Sec. 10-34S-3W, to 4162 FSL 630 FEL, Sec. 30-34S-3W.
- e. A line from 1679 FSL 4541 FEL, Sec. 33-33S-4W, to 441 FSL 2890 FEL, Sec. 2-35S-6W.

11. For purposes of this Order, "large volume injection well" shall mean any well that is permitted to inject more than 5,000 barrels of saltwater per day into the Arbuckle formation.

Exhibit B is a listing of large volume injection wells in Harper and Sumner Counties.

12. For each Arbuckle injection well that is located within three miles of any point on the lines described in Paragraph 10 of this Order, the following restrictions shall apply:

- a. Beginning 10 days after issuance of this Order, no operator shall inject more than 16,000 barrels of saltwater per day into any well.
- b. Beginning 55 days after issuance of this Order, no operator shall inject more than 12,000 barrels of saltwater per day into any well.
- c. Beginning 100 days after issuance of this Order, no operator shall inject more than 8,000 barrels of saltwater per day into any well.

- d. The daily injection allowable shall be calculated as a weekly average to accommodate unintentional overages. Any overage of 800 barrels or more in a single day shall be prohibited.
- e. Each well shall be limited to an average daily injection pressure of 250 pounds to overcome any friction in the formation. Short-term errors resulting in a pressure spike of up to 500 pounds shall be allowed to accommodate pump initiation and similar conditions.

13. Beginning 10 days after issuance of this Order, each operator shall measure daily volumes and daily pressures for each large volume injection well for the calendar month and shall report them to the Conservation Division by the end of business on the eighth day of the following calendar month.

14. The period between 101 and 180 days following issuance of this Order, and for so long thereafter as may be needed, shall constitute a monitoring period during which the KGS and Commission Staff will review the available data and make recommendations regarding any further action by the Commission. The Commission shall not be restricted from making any changes to this order at any time for any reason, regardless of whether the full monitoring period has elapsed.

15. In Sumner and Harper Counties, no Arbuckle injection well shall be permitted to inject saltwater in excess of 25,000 barrels per day. All existing Arbuckle injection permits that the Commission has issued in Sumner and Harper Counties to allow the injection of saltwater in excess of 25,000 barrels per day are reduced to allow the maximum of 25,000 barrels per day. After issuance of this Order, the Commission will no longer issue a permit for a large volume

Arbuckle injection well that is located within one-quarter mile of another large volume injection well within Sumner and Harper Counties.

16. Within 30 days of issuance of this Order, all operators of large volume injection wells located within the areas of seismic concern shall measure and report the true vertical depth of each well. Measurements shall be witnessed by Commission Staff and shall indicate the bottom of the Arbuckle. All operators shall, within 30 days of issuance of this Order, submit to the Commission all currently-available mud logs, driller's logs, and any additional geologist logs or reports, for each of the large volume injection wells located within the areas of seismic concern.

17. The results of the tests in Paragraph 16 will be used to identify any wells that have penetrated formations that lie beneath the base of the Arbuckle formation. Within 180 days of issuance of this Order, each operator of any such well shall plug back the well, in the manner and to the depth approved by Commission Staff, to confine injected fluids to the Arbuckle formation.

**THEREFORE, THE COMMISSION ORDERS:**

A. The restrictions described in this Order shall govern the wells subject to this Order. Previously-issued Class II injection permits of all affected wells are hereby amended to comply with the requirements of this Order.

B. Each failure to abide by the restrictions or reporting requirements in this Order may result in a Penalty Order of up to \$10,000 per day of a continuing violation, pursuant to K.S.A. 2014 Supp. 55-164. The Commission Staff is directed to shut-in and seal any well found to be operating in violation of this Order.

C. Any party affected by this Order may file with the Commission a request for hearing. The request for hearing shall be filed within 30 days after service of this Order. If

service of this Order is by mail, three days are added to the deadline. The request for hearing shall be addressed to the Commission and sent to 266 N. Main, Ste. 220, Wichita, Kansas 67202. This matter will be heard and determined as quickly as practicable pursuant to K.S.A. 2014 Supp. 77-536.


D. Any request for a hearing shall not result in a stay of this Order's requirements.

E. The Commission retains jurisdiction of the subject matter and the parties and may enter additional orders as it deems appropriate.

**BY THE COMMISSION IT IS SO ORDERED.**

Albrecht, Chair; Emler, Commissioner; Apple, Commissioner

Date:           MAR 19 2015          

  
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Neysa Thomas  
Acting Secretary

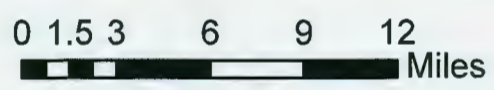
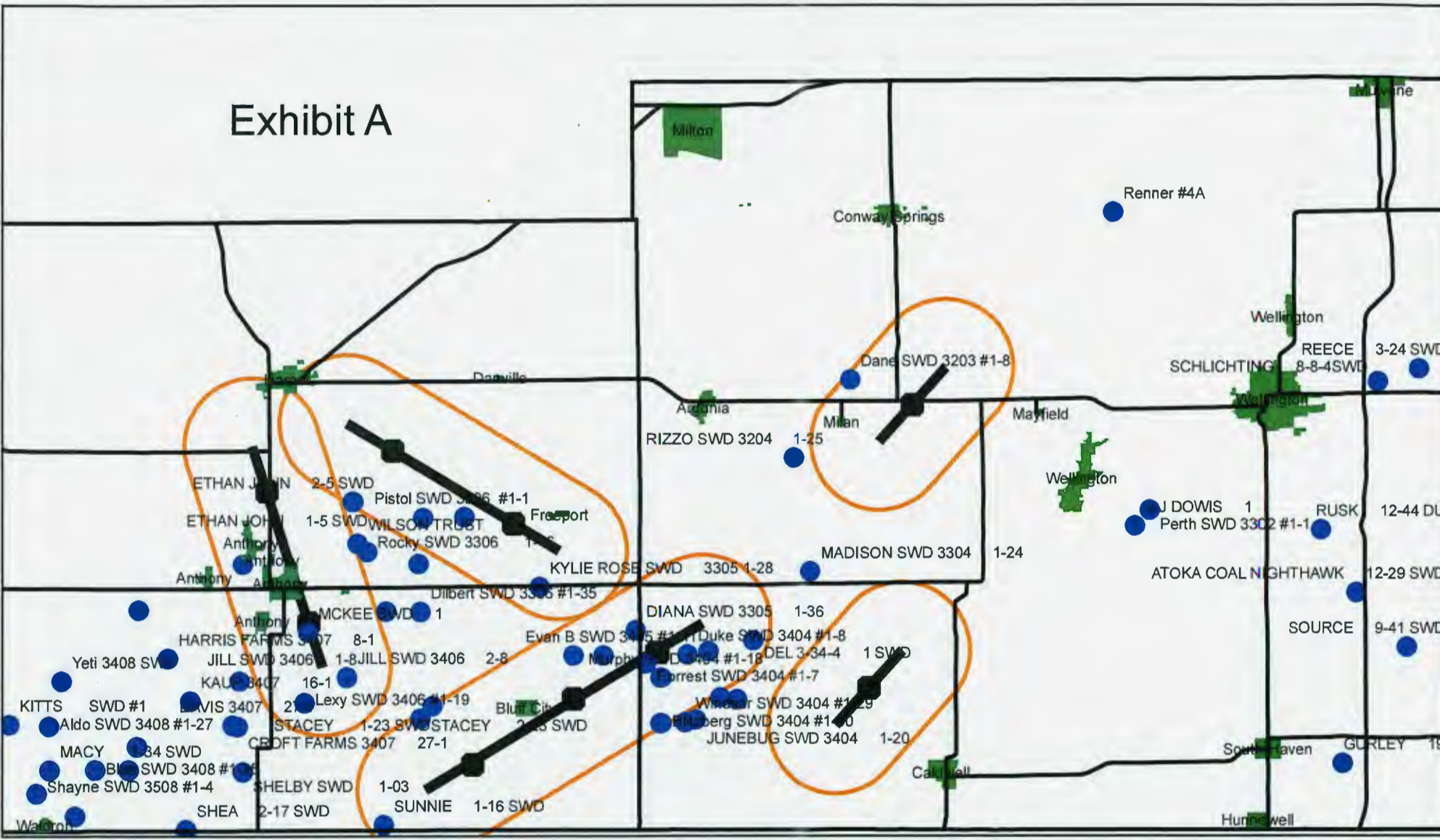
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# Large Volume Arbuckle Injection Wells

Exhibit A



 Large Volume Arbuckle Injection Wells  
Area of Seismic Concern Boundary



API WELL	Well Name	Sec	Twp	Rng	W E	Operator N	WH LAT	WH LONG	Permit Dat	Max_Rate
15-191-21904-00-01	TALLMAN 3-17	17	32	2	E	Irons, Don	37.272861	-97.225594	10/27/1986	7000
15-191-22754-00-00	Renner #4A	35	30	2	W	Jolen Operating Company	37.391147	-97.500271	8/4/2014	7500
15-077-21183-00-01	JOEL SWD	6	33	8	W	AGV Corp.	37.209275	-98.224358	3/19/2010	10000
15-191-22646-00-00	RUSK 12-44 DU	12	33	1	W	Source Energy MidCon LLC	37.189258	-97.367677	8/22/2012	10000
15-191-22601-00-00	SCHLICHTING 8-8-4SWD	8	32	1	E	Source Energy MidCon LLC	37.283486	-97.331121	2/7/2012	10000
15-191-10372-00-01	WENRICH 13A	23	32	2	E	Lario Oil & Gas Company	37.255371	-97.180817	2/10/1955	10000
15-077-00146-00-01	WILSON TRUST 1	16	33	6	W	SandRidge Exploration and Production LLC	37.180595	-97.982793	7/2/2001	12000
15-191-22292-00-01	GURLEY 19	6	35	1	E	M M Energy, Inc.	37.040924	-97.353397	5/4/2005	15000
15-077-21719-00-00	HIBBARD 1 SWD	23	34	9	W	Tapstone Energy, LLC	37.07902	-98.256875	1/28/2011	15000
15-077-01045-00-02	MCKEE SWD 1	31	33	6	W	SandRidge Exploration and Production LLC	37.12431	-98.014473	1/23/2014	18000
15-191-22686-00-00	MADISON SWD 3304 1-24	24	33	4	W	SandRidge Exploration and Production LLC	37.162625	-97.693947	8/23/2013	19900
15-191-01384-00-02	A J DOWIS 1	12	33	2	W	Stratex Oil & Gas Inc.	37.191551	-97.486214	7/30/2013	20000
15-077-21768-00-00	ALBRIGHT CROFT 3407 15-1	15	34	7	W	Tapstone Energy, LLC	37.093263	-98.058396	5/30/2012	20000
15-077-22037-00-00	Aldo SWD 3408 #1-27	27	34	8	W	SandRidge Exploration and Production LLC	37.064451	-98.179812	5/16/2014	20000
15-191-22541-00-01	ATOKA COAL NIGHTHAWK 12-29 SWD	29	33	1	E	Source Energy MidCon LLC	37.149415	-97.344934	9/25/2013	20000
15-191-22721-00-00	Blitzberg SWD 3404 #1-30	30	34	4	W	SandRidge Exploration and Production LLC	37.066302	-97.789255	4/4/2014	20000
15-077-22001-00-00	Blue SWD 3408 #1-35	35	34	8	W	SandRidge Exploration and Production LLC	37.036946	-98.150482	4/23/2014	20000
15-077-21871-00-00	CHAIN LAND 3509 1-1	1	35	9	W	Tapstone Energy, LLC	37.022277	-98.252072	1/30/2013	20000
15-077-21808-00-00	CHAIN LAND 3509 11-1	11	35	9	W	Tapstone Energy, LLC	37.020329	-98.271801	9/26/2012	20000
15-077-21842-00-00	CROFT FARMS 3407 27-1	27	34	7	W	Tapstone Energy, LLC	37.064398	-98.059578	2/19/2013	20000
15-077-21807-00-00	CROFT FARMS 3407 30-1	30	34	7	W	Tapstone Energy, LLC	37.051656	-98.123998	11/16/2012	20000
15-191-22726-00-00	Dane SWD 3203 #1-8	8	32	3	W	SandRidge Exploration and Production LLC	37.284492	-97.668505	5/16/2014	20000
15-077-21792-00-00	DAVIS 3407 27-1	27	34	7	W	Tapstone Energy, LLC	37.065326	-98.063156	8/7/2012	20000
15-077-21988-00-00	DIANA SWD 3305 1-36	36	33	5	W	SandRidge Exploration and Production LLC	37.125517	-97.804947	2/28/2014	20000
15-191-22729-00-00	Duke SWD 3404 #1-8	8	34	4	W	SandRidge Exploration and Production LLC	37.110016	-97.772821	7/2/2014	20000
15-077-22016-00-00	Evan B SWD 3405 #1-11	11	34	5	W	SandRidge Exploration and Production LLC	37.109354	-97.825752	5/16/2014	20000
15-191-22730-00-00	Forrest SWD 3404 #1-7	7	34	4	W	SandRidge Exploration and Production LLC	37.104353	-97.798377	6/9/2014	20000
15-191-22717-00-00	Gaylord SWD 3404 #1-4	4	34	4	W	SandRidge Exploration and Production LLC	37.112078	-97.759527	4/25/2014	20000
15-077-21845-00-00	HARRIS FARMS 3407 8-1	8	34	7	W	Tapstone Energy, LLC	37.107726	-98.104165	11/28/2012	20000
15-191-22639-00-00	HOMER 7-11 SWD	7	33	2	E	Source Energy MidCon LLC	37.015677	-97.240898	5/17/2012	20000
15-077-21884-00-00	KAUP 3407 16-1	16	34	7	W	Tapstone Energy, LLC	37.080626	-98.090015	4/4/2013	20000
15-191-22736-00-00	Kingston SWD 3404 #1-16	16	34	4	W	SandRidge Exploration and Production LLC	37.08257	-97.751798	6/16/2014	20000
15-077-21827-00-01	KITTS SWD #1	20	34	8	W	SandRidge Exploration and Production LLC	37.065781	-98.205166	3/11/2014	20000
15-077-21854-00-00	KOBLITZ 3409 28-1	28	34	9	W	Tapstone Energy, LLC	37.064312	-98.297878	1/25/2013	20000
15-077-22034-00-00	Lexy SWD 3406 #1-19	19	34	6	W	SandRidge Exploration and Production LLC	37.079329	-98.016778	6/9/2014	20000
15-077-21762-00-00	LOCKWOOD FARMS 3307 14-1	14	33	7	W	Tapstone Energy, LLC	37.167428	-98.056283	4/2/2012	20000
15-191-22733-00-00	Murphy SWD 3404 #1-18	18	34	4	W	SandRidge Exploration and Production LLC	37.095295	-97.78918	6/13/2014	20000
15-191-22677-00-00	NEISES TRUST 4-11 DU	4	32	2	E	Source Energy MidCon LLC	37.303072	-97.220769	10/17/2013	20000
15-191-22699-00-01	Perth SWD 3302 #1-1	1	33	2	W	SandRidge Exploration and Production LLC	37.201549	-97.476653	7/16/2014	20000
15-077-22044-00-00	Pistol SWD 3306 #1-1	1	33	6	W	SandRidge Exploration and Production LLC	37.197404	-97.914481	6/16/2014	20000
15-191-22712-00-00	REECE 3-24 SWD	3	32	1	E	Source Energy MidCon LLC	37.29165	-97.304913	1/21/2014	20000
15-191-22722-00-00	Ritter SWD 3404 #1-22	22	34	4	W	SandRidge Exploration and Production LLC	37.08149	-97.741174	5/8/2014	20000
15-191-22682-00-00	RIZZO SWD 3204 1-25	25	32	4	W	SandRidge Exploration and Production LLC	37.235079	-97.704972	8/20/2013	20000
15-077-22014-00-00	Saratoga SWD 3405 #1-10	10	34	5	W	SandRidge Exploration and Production LLC	37.109362	-97.844896	4/4/2014	20000
15-077-21748-00-00	SENF 3308 19-1	19	33	8	W	Tapstone Energy, LLC	37.153626	-98.227977	1/5/2012	20000
15-077-22015-00-00	Shayne SWD 3508 #1-4	4	35	8	W	SandRidge Exploration and Production LLC	37.022114	-98.187777	6/5/2014	20000
15-077-21755-00-00	STARKS & MASNER 3307 30-1	30	33	7	W	Tapstone Energy, LLC	37.138272	-98.12271	6/22/2012	20000
15-191-22739-00-00	Windsor SWD 3404 #1-29	29	34	4	W	SandRidge Exploration and Production LLC	37.06684	-97.774286	6/19/2014	20000

Exhibit B

API_WELL	Well_Name	Sec	Twp	Rng	W_E	Operator_N	WH_LAT	WH_LONG	Permit_Dat	Max_Rate
15-077-22115-00-00	Ralph 36-34-9	36	34	9	W	Tapstone Energy, LLC	37.049912	-98.244346	2/26/2015	20000
15-077-21980-00-00	CRAIG SWD 3306 1-2	2	33	6	W	SandRidge Exploration and Production LLC	37.196817	-97.940819	1/10/2014	30000
15-077-22002-00-00	Dilbert SWD 3306 #1-35	35	33	6	W	SandRidge Exploration and Production LLC	37.137365	-97.942733	4/9/2014	30000
15-077-22121-00-00	Yeti 3408 SWD	15	34	8	W	SandRidge Exploration and Production LLC	37.093324	-98.171632	2/26/2015	30000
15-077-22086-00-01	Rocky SWD 3306 1-16	16	33	6	W	SandRidge Exploration and Production LLC	37.175416	-97.976736	10/20/2014	32000
15-077-21870-00-00	KYLIE ROSE SWD 3305 1-28	28	33	5	W	SandRidge Exploration and Production LLC	37.152997	-97.866601	9/20/2012	40000
15-077-21781-00-00	SHEA 1-17 SWD	17	35	7	W	SandRidge Exploration and Production LLC	36.998828	-98.092543	3/22/2012	40000
15-077-21782-00-00	SHEA 2-17 SWD	17	35	7	W	SandRidge Exploration and Production LLC	36.999172	-98.092547	3/20/2012	40000
15-191-22665-00-00	SOURCE 9-41 SWD	9	34	1	E	Source Energy MidCon LLC	37.114839	-97.312276	2/20/2013	40000
15-077-21767-00-00	STACEY 1-23 SWD	23	34	6	W	SandRidge Exploration and Production LLC	37.077425	-97.934962	2/24/2012	40000
15-077-21777-00-00	STACEY 2-23 SWD	23	34	6	W	SandRidge Exploration and Production LLC	37.069282	-97.942587	7/2/2012	40000
15-077-21779-00-00	SUNNIE 1-16 SWD	16	35	6	W	SandRidge Exploration and Production LLC	37.002071	-97.966124	3/1/2012	40000
15-077-21972-00-00	ASTORIA SWD 3306 1-34	34	33	6	W	SandRidge Exploration and Production LLC	37.137604	-97.964494	12/11/2013	60000
15-191-22625-00-00	DEL 3-34-4 1 SWD	3	34	4	W	Chesapeake Operating, Inc.	37.118951	-97.730976	11/18/2011	60000
15-077-21798-00-00	ETHAN JOHN 1-5 SWD	5	33	6	W	SandRidge Exploration and Production LLC	37.207183	-97.985532	3/14/2012	60000
15-077-21799-00-00	ETHAN JOHN 2-5 SWD	5	33	6	W	SandRidge Exploration and Production LLC	37.207185	-97.986047	3/26/2013	60000
15-077-21973-00-00	IRON HORSE SWD 3306 1-14	14	33	6	W	SandRidge Exploration and Production LLC	37.167721	-97.943829	1/8/2014	60000
15-077-21910-00-00	JILL SWD 3406 1-8	8	34	6	W	SandRidge Exploration and Production LLC	37.095334	-97.989562	4/11/2013	60000
15-077-21926-00-00	JILL SWD 3406 2-8	8	34	6	W	SandRidge Exploration and Production LLC	37.095746	-97.989558	6/28/2013	60000
15-191-22681-00-01	JUNEBUG SWD 3404 1-20	20	34	4	W	SandRidge Exploration and Production LLC	37.068815	-97.767473	12/3/2013	60000
15-077-21770-00-00	MACY 1-34 SWD	34	34	8	W	SandRidge Exploration and Production LLC	37.036822	-98.179389	4/10/2012	60000
15-077-21848-00-00	ROBIN 36-34-8 SWD 1	36	34	8	W	SandRidge Exploration and Production LLC	37.036965	-98.129163	8/14/2012	60000
15-077-21849-00-00	WRIGLEY 1-11 SWD	11	35	8	W	SandRidge Exploration and Production LLC	37.007494	-98.163243	8/6/2012	60000
15-077-21839-01-00	SHELBY SWD 1-03	3	35	7	W	SandRidge Exploration and Production LLC	37.035736	-98.056466	8/9/2012	80000

Exhibit B