



Susan K. Duffy, Chair  
Shari Feist Albrecht, Commissioner  
Dwight D. Keen, Commissioner

Laura Kelly, Governor

## FIRST QUARTER REPORT

**To:** Susan K. Duffy, Chair  
Shari Feist Albrecht, Commissioner  
Dwight D. Keen, Commissioner

**From:** Ryan A. Hoffman, Director, Conservation Division

**Date:** 5/18/2020

**Re:** Docket No. 20-CONS-3219-CINV

### **BACKGROUND**

On February 6, 2020, the Commission opened an investigative docket for the purpose of “(1) keeping the public and the Commission apprised of the investigation of Commission Staff into the causes of increased seismic activity occurring in Rooks County; and (2) providing a forum by which the Commission may take any advisable action as it relates to increased seismic activity in Rooks County.”<sup>1</sup> This is the initial report, originally due March 31, 2020<sup>2</sup>; however, due to the ongoing public health emergency, the Commission extended Staff’s filing deadline to May 18, 2020.<sup>3</sup>

### **REPORT**

#### A. Injection Volumes

This first quarter report will provide more specific information than the previous update provided to the Commission. The data provided in the presentation to the Commission focused on all Class II disposal wells within the counties listed; however, the maps filed in this docket contain specific wells. This report contains information specific to the wells located within the 15-mile investigation area. Commission Regulation K.A.R. 82-3-408 requires injection information from the prior calendar year to be filed by March 1 of the following year. This means that final 2019 data was due to the Commission March 1, 2020. Staff has compiled the following information from annual volume reports.<sup>4</sup>

<sup>1</sup> Docket No. 20-CONS-3219-CINV, ¶A, p. 2.

<sup>2</sup> *Id.*, ¶C, p. 2.

<sup>3</sup> Docket No: 20-GIMX-393-MIS, ¶9(g), p. 5.

<sup>4</sup> Staff is in the process of performing quality control on the data for calendar year 2019.

<b>Cumulative Class II Arbuckle* Disposal Volume in Rooks County Area</b>	
<b>Reporting Year</b>	<b>Barrels</b>
2015	95,709,075
2016	88,684,405
2017	82,948,988
2018	86,299,798
2019	86,263,502

\* As mentioned by Staff in its earlier presentation to the Commission, the investigation area contains wells that penetrate and/or likely penetrate the base of the Arbuckle formation and inject into the Granite Wash.

The data above suggests that the overall downward trend for the counties presented previously to the Commission is also true for the smaller subset of wells within the investigation area. Staff anticipates the decrease in volume will be larger for calendar year 2020 based on the impact of the pandemic on the oil and gas industry. As noted earlier, the Class II injection well volume reports for calendar year 2020 are not due until March 1, 2021; however, Staff anticipates requesting a partial report for a future Quarterly Report in this docket.

#### B. Earthquakes

Data in the table below is from the KGS earthquake database for the investigation area in the first quarter of 2020.

<b>Local Date and Time</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Magnitude</b>	<b>County</b>
JAN-01-2020, 03:09:21 AM	39.2669	-99.359	2.5	Rooks
FEB-01-2020, 12:32:47 PM	39.2661	-99.431	2.4	Rooks
FEB-04-2020, 08:41:05 PM	39.212	-99.428	2	Rooks
MAR-03-2020, 01:42:53 AM	39.2164	-99.448	2	Rooks
MAR-03-2020, 09:25:35 PM	39.1366	-99.227	2	Rooks
MAR-05-2020, 04:47:26 AM	39.2244	-99.447	2	Rooks
MAR-06-2020, 04:50:59 AM	39.186	-99.266	2.3	Rooks

The earthquakes listed above are the only ones that occurred during the first quarter of calendar 2020 within the counties subject to the investigation. Staff would note that there were no earthquakes listed in the KGS earthquake database in Ellis, Graham, or Trego Counties for the first quarter of calendar year 2020. The seismic activity for Rooks County alone, indicates a possible decrease in the number of earthquakes. For calendar year 2019, Rooks County experienced at least 88 KGS recorded earthquakes, including the magnitude 4.8 earthquake on June 22, 2019 that is at the center of Staff's 15-mile radial investigation. KGS recorded seven earthquakes in Rooks County for the first quarter of calendar year 2020.

### C. Additional Information

Staff would note that it has participated in several meetings of a group formed by Governor Kelly to study the Arbuckle. During these meetings the group has primarily discussed different data needs and made the decision to focus its initial efforts on the South Central Kansas region. This does not mean that Staff will abandon its investigation into this area. Staff will engage with experts at the KGS and elsewhere as necessary.

Additionally, as Staff noted during its initial presentation on this matter, this investigation area is the most unique area studied because of the number of variables present. There are no other classes of injection wells present in this investigation area. The investigation area is the only area to date where there has been both Arbuckle formation disposal and production, disposal below the base of the Arbuckle formation, and naturally occurring earthquakes prior to oil and gas activity. The complexity of the factors which may be influencing the seismicity in this area will take a great deal of time to understand.

### **Recommendation**

At this time, Staff makes no recommendation for further Commission action related to the seismicity in Rooks County based on the data available. Staff will continue to monitor the injection and earthquake activity within the 15-mile investigation area. Should either of these activities require immediate action, Staff will request the Commission take such action if the Commission does not take the action on its own motion. Finally, Staff will update the information contained herein and supplement it as necessary on a quarterly basis as contemplated by the Commission's order in this docket.