



September 27<sup>th</sup>, 2017

Mr. Bob Koehler  
Colorado Oil and Gas Conservation Commission  
1120 Lincoln St., Suite 801  
Denver, CO 80203

RE: Aquifer Exemption Request

SandRidge Exploration & Production LLC  
**Bighorn 0780 1-17**  
**API No. 05-057-06585**  
SHL: 325' FNL & 1938' FWL (NENW)  
Sec. 17 T7N R80W  
BHL: 325' FNL & 1938' FWL (NENW)  
Sec. 17 T7N R80W  
Jackson County, Colorado  
Surface: Fee Mineral Lease: Fee

Dear Mr. Koehler,

SandRidge Exploration & Production LLC (Sandridge) has submitted a UIC Permit Application for the Bighorn 0780 1-17 located in Jackson County, Colorado. In conjunction with the UIC Permit Application, Sandridge requests an Aquifer Exemption pursuant to Colorado Oil and Gas Conservation Commission (COGCC) Rule 324B.

SandRidge asserts that the requested Entrada Aquifer Exemption meets the criteria of COGCC Rules 324B.a.(1) and 324B.a.(2).B as the Entrada Formation "does not currently serve as a source of drinking water" and "cannot now, and will not in the future, serve as a source of drinking water because it is situated at a depth (~9000'+) and its location (over 15 miles away from the town of Walden) makes recovery of water for drinking water purposes economically or technologically impractical" under current practice. The cost of drilling a well to this depth, cleaning the water to drinkable standards and then pipelining it to the nearest city of Walden would be estimated at a cost of ~ 15 million dollars. This technical and economic challenge would be too great for the town of Walden (population of ~ 608) and/or any individual in this area.

The nearby Vaneta 1-32D and Judy 1-30, both owned and operated by SandRidge, were granted an Aquifer Exemption for the Dakota/Lakota aquifer in 2014 & 2016 on a similar basis as stated above. The basis in which it was approved, still holds true (and even stronger due to the deeper depth of this well and higher TDS of the water in this formation) for the Bighorn 0780 1-17.

September 28, 2017

The Entrada formation is found at a depth of over ~9000 feet. The Entrada formation water quality was determined from analyses performed on water/fluid swabbed from the wellbore and contained approximately 7,500 mg/L of total dissolved solids. The water quality of other formations not considered underground sources of drinking water are above 10,000 mg/L, and therefore, to contaminated to be used as quality water and we feel the Entrada formation water is relatively the same poor quality.

Because of the depth of the Entrada target formation, drilling a water well to that depth would be uneconomical and technically impractical. Approximate costs to drill a water well to the Entrada formation would exceed two million dollars and to clean, pipeline and process would exceed 15 million dollars. Information found on the Colorado Division of Water Resources database show the deepest water well within three (3) miles of the Bighorn, was drilled to 455' (Water Well Permit 266649). However, typical wells were drilled to 100' and above. No water wells are utilizing the Entrada in this county. Therefore, the Entrada aquifer does not now, nor will it in the future, be used as a source of drinking water.

Jackson County, Colorado is a sparsely populated county in North West Colorado with 1,356 residents, and its largest town with a population of approximately 608 residents according to the United States Census Bureau. Population trends do not indicate that Jackson County will have a significant increase in population, they've actually show reduction over the last census and would not need additional water resources for the population.

The injected fluids will be confined to the Aquifer Exemption boundary because SandRidge will limit injection rates to 8,000 bbl/day with a surface injection pressure range from 1,500 – 4,000 psi. There is no indication that the injected fluid would reach any known large fault.

Please contact me at 405-420-8415 or at [slaird@sandridgeenergy.com](mailto:slaird@sandridgeenergy.com) if there are any questions. Thank you.

Sincerely,



Spence Laird