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GOVERNOR

State of Louisiana
DEPARTMENT OF NATURAL
RESOURCES
OFFICE OF CONSERVATION

THOMAS F. HARRIS
SECRETARY

RICHARD P. IEYOUB
COMMISSIONER OF CONSERVATION

November 2, 2018

**THIRD SUPPLEMENTAL AND AMENDING
DECLARATION OF EMERGENCY AND DIRECTIVE**

Pursuant to the authority granted to the Commissioner of Conservation and Assistant Secretary of the Louisiana Department of Natural Resources under La. R.S. 30:1, et seq., particularly La. R.S. 30:6.1;

It is hereby declared that thermogenic natural gas has been detected in, reported to have entered into, and currently remains present in the Carrizo-Wilcox aquifer (aquifer) in Sections 22, 27, 28 and 34 of Township 13N, Range 15W in DeSoto parish. Natural gas has also been reported to be present in the Wilcox aquifer in Section 26, Township 13N, Range 15W, DeSoto Parish.

It is hereby declared that gas may have migrated laterally and may be present in one or more water-bearing zones above the Midway Shale in the aquifer in at least Sections 21, 23, 33 and 35 of Township 13N, Range 15W, DeSoto Parish.

It is hereby declared that Comstock Oil & Gas, LLC (C332), Covey Park Gas, LLC (C3020), Indigo Minerals, LLC (60005), Nelson Energy, Inc. (N054), and XTO Energy, Inc. (X004) (hereinafter collectively referred to as "Operators") have permitted oil and gas wells in at least one of Sections 21, 22, 23, 26, 27, 28, 33, 34 and/or 35 of Township 13N, Range 15W, DeSoto Parish (Smyrna EMER18-003 Area of Investigation or "AOI") that one or more may be the source and/or migration pathway for thermogenic natural gas to enter into and charge the water-bearing zones of the aquifer in the AOI.

It is hereby declared that any existing or abandoned oil or gas wellbore in the AOI may be a source and/or migration pathway for thermogenic or other natural gas to enter into and charge the water-bearing zones of the aquifer in the AOI.

It is hereby declared that with the recent delivery of the Weatherford Laboratories September 2018 OilTracers Updated Report No. 18-2242 (Report), the following summary represents what is reported and known at this time about the origin of the stray gas discovered in the aquifer at the Hanson 31-5054z aquifer relief well (Hanson RW):

1) Natural gas sampled and tested from the Hanson RW "appears most closely related to the overmature gas produced from the Sampson Est 33 #1 well", Serial No. 229084, a Hosston Formation gas producing well in the nearby vicinity of the Hanson RW.

2) “Maturity of the Hosston Formation strata in the study area are in the early ($VR_e = 0.55$ to 0.7%) to peak ($VR_e = 0.7$ to 1.0%) oil window, thus the produced gas collected from the Sampson Est. 33 #1 must have a significantly deeper source. Indeed, the $VR_e \sim 2.5\%$ interpreted for the Sampson Est. 33 #1 gas produced from the Hosston Formation in this well indicates that the hydrocarbons were generated in the dry gas window as implied in Figures 6 and 7. Only Smackover Formation attained this level of thermal maturity in the study area (Nunn, 2012).”

3) The Sampson Est. 33 #1 gas sample “is the most thermally mature produced gas in the data set ($VR_e \sim 2.5\%$; Figure 9).” The Sampson Est. 33 #1 gas “is most likely sourced from the Smackover Formation” as detailed in the Report.

4) “Fractures associated with the Louann Salt tectonics and the Sabine uplift must be a major control on the distributions of hydrocarbons in the Lower Cretaceous reservoirs in DeSoto Parish (Bartberger and others, 2002).”

It is hereby declared that recent AOI well location case studies provided by Indigo Minerals, LLC received on or after September 17, 2018, by the Office of Conservation included gamma ray log information below the Midway Shale indicating the presence of a fault or faults in the vicinity of wells studied in sections 27 and 28 in the western reaches of the AOI.

It is hereby declared that the Smackover Formation is an older and deeper formation than the Haynesville Shale Formation and other natural gas formations explored here to date for oil and gas development and production in the AOI and surrounding sections of DeSoto Parish. Therefore, there are no known exploration and production penetrations in this area extending to the depth of the Smackover Formation.

It is hereby declared that the earliest report to the Office of Conservation of the presence of natural gas in the aquifer in the AOI associated with EMER18-003 dates back to 2014.

It is hereby declared that the Office of Conservation issued the Second Supplemental and Amending Declaration of Emergency and Directive on October 23, 2018, to Indigo Minerals, LLC requiring the delivery of work plans for geophysical investigation to determine whether or not a fault or faults exist within or near the vicinity of the AOI that is, or could be, the source of migration or contributing pathway for thermogenic natural gas to enter and charge the aquifer in the AOI.

It is hereby declared that on November 1, 2018, Indigo Minerals, LLC provided information in response to the Second Supplemental and Amending Declaration of Emergency and Directive that seismic data existed covering an area of over 1,800 square miles in northwest Louisiana (that included the Bethany-Longstreet fault located just to the north and west of the AOI), of which is commercially available through licensing contract agreements.

Further asserted was that portions of said data (not specifically in or near the AOI previously viewed by Indigo Minerals, LLC) are believed to be of sufficient quality to meet the objective of the geophysical investigation. Indigo Minerals, LLC further expressed safety, subsurface stabilization, operational and access concerns for acquiring new seismic data employing energy sources such as subsurface explosives, surface thumper trucks and/or vibroseis techniques in the AOI with charged aquifer conditions.

In consideration of all information and issues considered, in the interest of public safety, welfare and environment, all efforts within the authority of the Office of Conservation shall be focused on obtaining the use (and/or review) of existing seismic data in lieu of obtaining new seismic data in the AOI to meet the stated objective (i.e. to determine whether or not a fault or faults exist within or near the vicinity of the AOI that is, or could be, the source of migration or contributing pathway for thermogenic natural gas to enter and charge the aquifer in the AOI).

It is hereby declared that for the reasons stated above, the response provided by Indigo Minerals, LLC satisfies the requirements incumbent upon Indigo Minerals, LLC and addresses to the satisfaction of the Office of Conservation the directives 1 and 2 of the Second Supplemental and Amending Declaration of Emergency and Directive.

It is hereby declared that the presence of natural gas in formations and sands shallower than the Midway Shale and in the aquifer of the AOI has the potential to cause harm to people, environment, property and operations, sites and facilities under the regulatory authority of the Commissioner of Conservation.

It is hereby declared that to date, the Hallwood – Mason #1 Well (SN 158546) has been determined to be a local pathway for natural gas to enter into and charge the aquifer, but at this time no other migration pathway of the gas in the aquifer in the AOI has been reported or identified, nor has the thermogenic source(s) of the gas entering and charging the aquifer underlying the well SN 158546 site and other extent within the AOI been reported or identified.

It is hereby declared that this is an emergency that requires immediate action by the Office of Conservation to protect the environment and the health, safety and welfare of the general public.

THEREFORE, IT IS HEREBY DECLARED that the Operators, Comstock Oil & Gas, LLC (C322), Covey Park Gas, LLC (C3020), Indigo Minerals, LLC (60005), Nelson Energy, Inc. (N054), and XTO Energy, Inc. (X004), be specifically directed and ordered to perform all of the following:

1) Provide on or before Wednesday, November 14, 2018:

a. A written description of all data, information, reports and/or other materials they may have possession of, or have access to, which may be relevant or pertinent to determine whether or not a fault or faults exist within or near the vicinity of the AOI that is, or could be, the source of migration or contributing pathway for thermogenic natural gas to enter and charge the aquifer in the AOI. Specifically to include, but not limited to; seismic data, micro-seismic surveys or data, Measurement While Drilling (MWD) surveys, and other geophysical, geological and scientifically derived information, including scholarly geophysical studies or other professionally acceptable research specific to the area of the AOI;

b. To the extent not prohibited from doing so by a license agreement, confidentiality agreement or other similar agreement or arrangement, provide copies of all such data, information, reports and other materials to the Office of Conservation; and

c. If prohibited for the reasons above, provide a written explanation for the prohibition(s).

2) Provide on or before Friday, December 28, 2018:

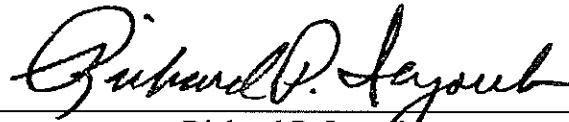
a. A written report containing the results, findings and conclusions of the geophysical evaluation of the information available addressing whether or not a fault or faults exist within or near the vicinity of the AOI;

b. Further, said report shall address whether any such fault(s) identified could be a source of migration or contributing pathway for thermogenic natural gas to enter and charge the aquifer in the AOI; and

c. Finally, the report shall be certified by a qualified professional.

It is further declared that, consistent with La. R.S. 30:6.B, if any Operator fails to comply with the actions set forth herein by respective deadlines set herein and hereafter, orders demanding compliance and civil penalties may be issued to respective non-compliant parties. R.S. 30:1, et seq.

SO DECLARED, ORDERED, AND DONE this 2ND day of November 2018 at Baton Rouge, Louisiana.



Richard P. Ieyou
Commissioner of Conservation