



DIVISIONS
ENERGY
GAS AND OIL
GEOLOGY AND MINERAL
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MINED LAND RECLAMATION
MINERAL MINING
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ADMINISTRATION

COMMONWEALTH OF VIRGINIA

Department of Mines, Minerals and Energy

Russell County Government Center
135 Highland Drive
Lebanon, Virginia 24266
(276) 415-9700 FAX (276) 415-9671
www.dmme.virginia.gov

GUIDANCE MEMORANDUM¹

TO: Gas and Oil Operators in Virginia

FROM: Rick Cooper, Director
Department of Mines, Minerals and Energy (DMME), Division of Gas and Oil

DATE: August 21, 2017

SUBJECT: Fluid Reuse and Recycling

The Virginia Department of Mines, Minerals and Energy (DMME) Division of Gas and Oil's (DGO) responsibilities include regulating the effects of gas and oil operations both on and below the surface, issuing permits, client assistance programs, inspection of well sites and gathering pipelines, reclamation of abandoned well sites, protection of correlative rights, and promotion of resource conservation practices.

In an effort to ensure gas and oil operations are being regulated effectively and efficiently, DMME volunteered for a review of its gas and oil regulatory program by the State Review of Natural Gas Environmental Regulations (STRONGER). STRONGER conducted its review over the course of 2016. A copy of the full report can be found on STRONGER's and DMME's website.² STRONGER found that DGO is "well managed, professional and generally meet[s] the criteria of the 2015 Edition Stronger Guidelines."³

STRONGER also "identified a number of program strengths that warrant special recognition" and "identified specific recommendations for improvements to the programs based on the guidelines."⁴ One of these recommendations was that "DGO develop guidelines that encourage the use of alternative water sources, including recycled water, acid mine drainage and treated wastewater in the hydraulic fracturing process."

¹ This memorandum is to be considered a guideline issued under the authority of [§ 45.1-361.27\(E\)\(5\)](#) which reads: "The Director shall also have the authority to prescribe the nature of and form for the presentation of any information and documentation required by any provision of this article or regulation adopted thereunder."

² <http://www.strongerinc.org/wp-content/uploads/2017/05/2016-VA-Follow-Up-Final-Report-with-2017-DMME-response-050117.pdf>

³ Ibid., 5.

⁴ Ibid.

STRONGER guidelines define reused fluids as “fluids that require only minimal processing to remove suspended solids,” and recycled fluids as “fluids that typically require more advanced treatment or processing to reduce the salinity of the recycled fluid.”⁵ STRONGER guidelines also provide that “reused or recycled fluids can be used for well drilling (generally below the base of protected water), well workover, and completion.”⁶

The purpose of this memorandum is to encourage all operators to recycle and reuse pit and produced water on all drilling, fracturing and workover operations when conditions allow.

Water and waste management present an area of significant opportunity for the industry. Hydraulic fracturing operations in the Commonwealth typically use between 100,000 and 300,000 gallons of water. Fresh water is a precious resource, and operators should consider the development of a program that addresses fluid reuse and recycling. The use of alternatives for the drilling and hydraulic fracturing of wells should be utilized when feasible by the gas and oil operators.

Operators should evaluate the benefits, availability, and feasibility of these technologies in the market to ensure they are utilizing the best tools while operating in the Commonwealth. Operators should also consider water reuse as a possible way to eliminate the need to transport wastewater to disposal wells as water may be able to be treated onsite and reused for the next fracturing job. The DMME encourages industry representatives to develop and submit a plan to the DGO for review.

The financial benefits of reusing and recycling fluids will vary considering the situation of each operator and well. Studies have found that savings vary by region primarily depending on the availability of water and the proximity and number of disposal wells. In other areas of the country, savings have ranged from the tens of thousands to the hundreds of thousands per well.

In recent years, many states have experienced drought conditions, with several western states experiencing severely dry conditions. Some areas of central and southwest Virginia are currently experiencing abnormally dry conditions.⁷ The potential for widespread drought poses a risk to the viability of volume water usage industries such as drilling; however, these risks may be mitigated through proper planning and implementation of water management strategies.

Operators in Virginia are encouraged to develop water and waste management plans that considers reuse and recycling options. These options may allow operators to conserve freshwater resources and provide financial savings depending on the circumstances of the operation. The consideration of water and waste management will be particularly important as innovative technologies enter the market, which could decrease the time, risk, and cost of different water and waste management solutions.

Please direct any questions about this memorandum to DGO’s Division Director at 276-415-9700.

⁵ Ibid., 105-106.

⁶ Ibid., 94.

⁷ <http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?VA>