



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
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In Reply Refer to:
Wolf Creek 12 (CON040)

April 23, 2018

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REM 7909
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RETURN RECEIPT REQUESTED

Black Hills Energy
Susan Bailey, VP Colorado Gas Operations
7060 Alegre Street
Fountain CO 80817

Dear Ms. Susan Bailey,

After soil remediation and years of water-quality monitoring, as summarized in the following, the U.S. Forest Service and Bureau of Land Management (BLM) hereby notify Rocky Mountain Natural Gas LLC (RMNG) that no further water-quality monitoring is required at the Wolf Creek 12 well pad. Consequent to the discontinuation of seep monitoring, RMNG shall remove and properly abandon the eight piezometers in accordance with Colorado Division of Water Resources standards.

In June 2013, Rocky Mountain Natural Gas LLC (RMNG) discovered a historical release at the Wolf Creek 12 well pad during a facility upgrade. In order to identify the type and extent of contamination, soil and water-quality samples were collected and analyzed within or near the former building footprint that housed a dehydration unit and line heater. Twenty-four vertical boreholes were drilled to collect soil samples. Nine of the boreholes were converted to temporary piezometers for water-quality sampling. Hydrocarbon contaminated soil was observed beneath the former building footprint. Soil and water-quality samples were collected and submitted to ALS Environmental in Holland, Michigan. The samples were analyzed for diesel range organics (DRO), gasoline range organics (GRO), glycols, methanol, as well as benzene, toluene, ethylbenzene, and xylenes (BTEX). Certain soil samples had concentrations of total petroleum hydrocarbons (TPH, which is the sum of DRO and GRO) in exceedance of Colorado Oil and Gas Conservation Commission's (COGCC's) Table 910-1 standards. Certain water-quality samples had ethylene glycol and benzene concentrations in exceedance of COGCC's Table 910-1 standards and/or Colorado Department of Public Health and Environment's (CDPHE's) Colorado Soil Evaluation Values (CSEV) Table 1 standards.

Consequently, in July 2013, RMNG excavated and hauled the contaminated soils to a licensed disposal facility. The excavated soil was replaced with new fill material. The temporary piezometers were destroyed during the soil remediation. Hence, five permanent monitoring wells (MW 01 to MW-05) were installed in July 2014.

Three additional monitoring wells were installed in September 2015 to evaluate water quality down-gradient of the pad and assess potential off-site migration of contaminants. Soil samples were collected from each boring and were below COGCC's Table 910-1 standards and CDPHE's CSEV standards.

Water-quality monitoring was conducted from July 2014 to September 2017. MW-01 to MW-05 were sampled from July 2014 to June 2016. MW-06 to MW-08 were sampled from September 2015 to November 2016. The water-quality samples were analyzed for the same parameters as before – DRO, GRO, glycols, methanol, and BTEX. Two samples had standard exceedances. Samples collected from MW-06 in June and August 2016 had benzene concentrations of 8.4 micrograms per liter ($\mu\text{g/L}$) and 5.4 $\mu\text{g/L}$, respectively, which exceed COGCC's Table 910-1 standard of 5 $\mu\text{g/L}$.

In June 2016, additional samples from MW-02, MW-06, MW-07, and MW-08 were collected for fingerprint analysis to determine the likely origin(s) of detected hydrocarbons. The MW-02 sample analysis had a biogenic pattern consistent with plant-based materials (e.g., wood tar) and was *not* indicative of petrogenic materials (gasoline, diesel fuel, lubricating oil, etc.). Samples from MW-06, MW-07, and MW-08 were analyzed but did not have obvious petrogenic, pyrogenic, or biogenic signatures and could not be further characterized.

On June 6, 2017, the BLM issued Written Order WRNF-WC-2017-1 to RMNG for further monitoring and reporting in order to fully characterize contamination from oil and gas activities at the site and, if necessary, identify potential remediation techniques. In accordance with the Written Order, RMNG conducted 1 year of water-quality sampling from MW-04, MW-05, and MW-06. The samples were collected in July and September 2017, and analyzed for DRO and BTEX. MW-04 was dry at both sampling events. In the MW-05 samples, only one parameter was detected; benzene was detected in the July sample at 1.5 $\mu\text{g/L}$ (below the 5 $\mu\text{g/L}$ standard). In the MW-06 samples, DRO was non-detect; benzene and m,p-xylene were detected (at 1.0 to 1.2 $\mu\text{g/L}$ and at 3.1 to 4.9 $\mu\text{g/L}$, respectively) but below the standards.

Black Hills Energy submitted two sampling reports for RMNG's Wolf Creek 12 pad in 2017, the *Wolf Creek 12 Quarterly Groundwater Sampling, Summary Report – Summer 2017* on August 11 and the *Wolf Creek 12 Quarterly Groundwater Sampling, Summary Report – 3rd Quarter 2017* on December 11. After review of the reports, the U.S. Forest Service and Bureau of Land Management have concluded that no further monitoring is required at the Wolf Creek 12 well pad. In accordance with Written Order WRNF-WC-2017-1, RMNG completed one year of monitoring. The concentrations of analyzed parameters are below the Colorado Oil and Gas Conservation Commission Table 910-1 standards, which protect public health, safety, and welfare and prevent significant environmental impacts. Furthermore, results of 2016 fingerprint analyses are either indicative of biogenic materials or not indicative of any obvious petrogenic, pyrogenic, or biogenic materials.

Please contact Jason Gross (970.876.9046 or jrgross@fs.fed.us), Carmia Woolley (970.876.9063 or cwoolley@blm.gov), or me (970.876.9006 or sficklin@blm.gov) with any questions.

Sincerely,



Steve Ficklin
Program Manager

cc: Mitch Pebley, Brenda Zehr, Donald Green, Tom Warnes, Carlos Lujan