

## **Release of Report of Investigation into Public Concerns of Water Quality and Water Level Issues in the Vicinity of the City of Gillette's Madison Wellfield, Crook County, Wyoming**

Today, July 2, 2019, the Gillette-Madison Wellfield Advisory Group released its final report of investigation into low pH and low water level conditions reported in the vicinity of the City of Gillette's Madison Wellfield in Crook County.

Following the construction of five Madison Aquifer water-supply wells for the City of Gillette north of Moorcroft, Wyoming in 2011-2017, water level and low pH problems were observed for select domestic water wells in the adjacent area in July 2017 and reported to the Wyoming Department of Environmental Quality (WDEQ) in August 2017. The WDEQ conducted a detailed water-quality sampling program and began hydrogeologic investigations in Fall 2017. The low pH condition in the domestic wells was determined to not be associated with the hydrochloric acid used to stimulate Madison Aquifer production, but is consistent with the in-situ oxidation of native iron pyrite, producing local occurrences of sulfuric acid. Hydraulic relationships between the Madison Aquifer and the much shallower water-bearing strata utilized by domestic wells (Lakota and Sundance Formations) were found to preclude negative water-level impacts associated with the construction of the Madison wells. Low pH conditions were identified in domestic wells and springs both adjacent to and remote from the City wells. Potential sources of groundwater oxygen available for pyrite oxidation include long-term natural recharge, natural and pumping-induced fluctuations in groundwater levels, local impacts of domestic well construction, and locally enhanced recharge from the drilling and testing discharges of the City wells.

The Advisory Group, consisting of an Executive Committee and three Working Groups was established in December, 2017 to develop and implement workplans and schedules to undertake and complete an investigation into the cause of those conditions, initially associated with a small number of private water supply wells located in the vicinity of the City's wellfield. The Executive Committee consists of one representative each from the Wyoming Department of Environmental Quality, Water Development Office, State Engineers Office, Oil and Gas Conservation Commission, and the City of Gillette. Working Groups consist of representatives from each of these entities, in addition to the Wyoming State Geological Survey. Members of the public were invited to attend and provide comment at meetings held by each group. Under the direction of the Executive Committee, DEQ contracted with an independent consultant (Hinckley Consulting) to assist with data review, investigate potential causes of water quality and water quantity concerns, and assist with development of this final report. Funding for the investigation was provided by the DEQ, Water Development Office, Oil and Gas Conservation Commission, and the City of Gillette.

The final report and supporting documentation can be found on the WDEQ Gillette-Madison Well Field Project website at: <http://deq.wyoming.gov/wqd/gillette-madison-well-field-project/>

A second report of investigation into the integrity of five new City of Gillette wells is currently under review and will be released once finalized.

For additional information, contact Nicole Twing, Geological Supervisor, WDEQ at 307-777-8275, or [Nicole.Twing@wyo.gov](mailto:Nicole.Twing@wyo.gov)