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Montana Department of
ENVIRONMENTAL QUALITY

Brian Schweitzer, Governor

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This letter is in regard to the Rocky Boy's/North Central Montana Regional Water System and the need for this system to be constructed to serve communities in northern Montana. Rural communities that exist along U.S. Highway 2 have struggled for years to find a water supply that is adequate in both quantity and quality. The water systems serving these communities- specifically Hill County Water District, South Chester Water District, Riverview Colony, North Havre County Water District, and Devon Water, Inc.- have struggled over the years to maintain compliance with drinking water regulations. A number of the aforementioned water systems are unfiltered surface water supplies with only one barrier- disinfection with chlorine- for public health protection, and this single barrier is insufficient for public health protection. These systems do not comply with the treatment techniques (such as filtration or two disinfection treatment trains) required in the Surface Water Treatment Rule (finalized in 1993), Long Term 1 Enhanced Surface Water Treatment Rule (finalized in 2002), and the recently promulgated Long Term 2 Enhanced Surface Water Treatment Rule. These rules were developed and finalized by the Environmental Protection Agency (EPA) to address pathogens present in surface water that can cause severe illness and sometimes death when ingested. Pathogens of concern commonly found in surface water supplies are *Cryptosporidium*, *Giardia*, and viruses. The aging infrastructures and updated regulatory requirements have brought to the forefront that the Rocky Boy's/North Central Regional Water System has not progressed expeditiously to serve these rural communities. The Department had allowed systems to operate outside these rules with the assumption the Rocky Boy's/North Central Regional Water Project would be constructed and operational before year 2000. However, the Department must bring these systems into compliance with the above-referenced surface water rules to protect public health.

The problems related to Hill County Water District are numerous, but the most critical issue is the lack of proper treatment of the surface water sources (Fresno Reservoir and Marias River) serving Hill County Water District. The main water supply source is pumped from Fresno Reservoir in order to fill three large ponds located at Kremlin. The main pump facility located at Kremlin pulls water from the ponds where chlorine is injected, and then pumped to Sage Creek, Kremlin, Gildford, Hingham, Rudyard, Inverness, Joplin, and farms to the north and south of these communities for a total

service population of approximately 1,700 users. The lack of filtration at the Kremlin ponds results in the inability to control turbidity levels, protozoas, algae, or other organics in the ponds that is pumped into the faucets of residents in these communities. Under the aforementioned surface water treatment rules, this type of surface water source must also provide filtration to ensure removal of pathogens and other organic material that pose a health threat. In addition, some form of storage is required to provide adequate contact time between the water and point of chlorination to inactivate pathogens remaining in the water after filtration. Neither filtration or adequate contact time exists at the Kremlin facility to ensure safe drinking water for customers in the Kremlin area. As a result, the Department has maintained a permanent Boil Water Order for all people served for a two mile radius around Kremlin. The chlorination that is added to the water is effective on *Giardia* and viruses, but not *Cryptosporidium*. Given the turbidity levels that occur at the Kremlin pump station, *Cryptosporidium* is probably present in the water. The biggest waterborne disease outbreak documented in the United States by the Centers for Disease Control and Prevention was due to *Cryptosporidium* being ingested by individuals served by the Milwaukee, Wisconsin, water system.[1]

The Department placed the entire Hill County Water District system on a Boil Water Order after finding significant sanitary deficiencies, low or no chlorine residuals in the water, and the presence of E. coli bacteria in the water system during a sanitary survey in July, 2005. E. coli bacteria is a pathogen that can result in illness and death, as documented by the Centers for Disease Control and Prevention. The system remained on a Boil Water Order from August 3, 2005, to October 25, 2005. After October 25, 2005, the entire system was placed on a Health Advisory and remains on the Health Advisory. The system was placed on another Health Advisory from September 12, 2006, to October 16, 2006, due to increased turbidity levels measured at Kremlin pump station. In order to ensure public health protection, the Department recommended the chlorine levels be increased to address the higher turbidities. The high levels of chlorine that were being fed to address pathogens in the water resulted in the formation of the regulated disinfection byproducts total trihalomethanes (TTHMs) and haloacetic acids (HAA5s) in excess of the maximum contaminant levels established for these contaminants under the Stage 1 Disinfectants and Disinfection Byproducts Rule. Hill County Water District currently exceeds the maximum contaminant level for HAA5s and has high levels of TTHMs. These regulated disinfection byproducts are carcinogens and recent studies have indicated that pregnant women may be at an increased risk of pregnancy loss during the first 12 weeks due to high levels of disinfection byproducts.

The Kremlin supply is supplemented with an infiltration gallery located 21 miles south of Inverness on the Marias River. This supply is naturally filtered and disinfected with chlorine. The Marias infiltration gallery has been determined to be influenced by surface water. This source does not meet current regulations due to lack of a storage facility to provide adequate contact time between the chlorine and raw water for pathogen inactivation and requires either an additional disinfection treatment train or filtration.

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[1] The Milwaukee water system treats water from Lake Michigan through chemical feed, filtration, and chlorination. The outbreak has been attributed to high turbidities in the finished water due to poorly functioning filters. Over 400,000 people were estimated to have suffered physical symptoms, such a diarrhea and nausea, and over 100 people died.

South Chester Water District is another water system on the Hi-Line that presents health concerns. South Chester Water District serves 55 people on individual farms that depend on the water for farming activities as well as drinking water. South Chester Water District is served by an infiltration gallery on the Marias River that was determined to be a surface water supply in 1999. The supply is influenced by high turbidity water during periods of runoff. Chlorination is provided, but filtration is not provided. The infrastructure is well maintained but the District does not meet current or future regulatory requirements. The Department issued a Boil Water Order on June 6, 2006, for South Chester Water District that is still in effect. The Boil Water Order was issued due to the existing chlorination practices not being insufficient to address all pathogens in the water. This system will require either filtration or an additional disinfection treatment train to be in compliance with all surface water treatment rules.

Riverview Colony's intake is located 20 miles South of Chester on the Marias River. The community has two infiltration galleries and a dug well that are all influenced by changes in the surface water quality during snow melt and runoff. The only form of treatment is disinfection with chlorine, and again, chlorination alone is not sufficient to address all pathogens present in the water during high turbidity conditions. Riverview does not meet the current regulations or future regulations.

North Havre County Water District has been out of compliance for the past year with filtered water turbidity requirements under the surface water treatment rules and Stage 1 Disinfectants and Disinfection Byproducts Rule maximum contaminant levels. The plant is outdated, utilizes chlorine gas, and is in need of costly updates to achieve compliance with current and future regulations. This system serves a farm community of 90 residents, a school, and the Anchor Academy for Boys located 20 miles north of Havre.

Devon Water Inc., is another community that is located South of Highway 2 and is served by the Marias River. The system serves a farming community with 23 hookups. Devon is currently out of compliance with the Stage 1 Disinfectants and Disinfection Byproducts Rule for exceeding the maximum contaminant level for disinfection byproducts.

These systems represent only a small part of the Rocky Boy's/North Central Regional Water System but are in dire need of safe drinking water immediately. These systems will benefit immensely from the Regional Water System.

Please call if you have further questions on the status of these systems.

Sincerely,

Jon Dilliard
Montana Department of Environmental Quality
Public Water and Subdivisions Bureau