

Dear Teton County Board of County Commissioners,

The following letter was prepared by a partnership between the Teton Conservation District (TCD), the Teton County Health Department (TCHD), and the Teton County District Board of Health. The purpose of this letter is to provide an update to the Board of County Commissioners on the drinking water concerns in the Hoback Junction area.

Introduction

In Wyoming, the United States Environmental Protection Agency (EPA) and the Wyoming Department of Environmental Quality (WYDEQ) regulate public water supplies by requiring regular testing and public reporting. While privately-owned wells are not subject to any government-mandated testing, the results of voluntary water tests offered to property owners by the TCD and TCHD offer insight into the water quality of such drinking water sources throughout Teton County. By observing both of these sources of data, it has come to the attention of TCD, TCHD, and the Teton District Board of Health that significant water quality issues exist within the Hoback Junction area. Nitrate concentrations have at times exceeded the EPA's drinking water standards for public systems. The TCHD has observed frequent positive bacteriological tests from private and public systems in the area. Other problems affecting drinking water in the Hoback area include the presence of sulfur in many private systems and poor or inconsistent well productivity. These water quality issues have created concern for the public's health and warrant continued exploration for suitable water sources and governmental support.

Concerns of Nitrate in Drinking Water

The presence of nitrate in drinking water is of concern for several reasons:

- 1) Nitrate can be an indicator of human-caused contamination. In the Hoback area, the observed nitrate is suspected to originate from wastewater sources such as septic systems. This could indicate a cross-connection between wastewater and drinking water systems, suggesting that other potentially harmful contaminants such as cleaning products and pharmaceutical drugs could enter the drinking water. Routine testing of public and private water systems does not include screening for many such chemicals.
- 2) High concentrations of nitrate in drinking water have been associated with a condition known as methemoglobinemia, or 'blue baby syndrome', wherein hemoglobin in the blood is modified and its ability to transport oxygen is reduced, resulting in hypoxia. Infants and young children are particularly susceptible to this condition.
- 3) Other human health effects of nitrate are not currently well-understood. While some epidemiological research has observed an association between nitrate in drinking water and certain cancers and birth defects, other research has demonstrated no such correlation. The degree of risk posed by nitrate in this regard remains uncertain. Further research is needed on these subjects. TCHD will continue to monitor and

review the scientific literature as it is published and update any recommendations as necessary to best protect public health.

Presence of Nitrate in the Hoback Area

While naturally occurring, nitrate does not typically occur at concentrations above 2 mg/L in undisturbed surface or groundwater. Concentrations in excess of this are often indicative of human-caused contamination. Testing from the Hoback Junction area has often revealed concentrations significantly above the expected naturally occurring level. Concentrations at or exceeding 10 mg/L (the EPA's maximum allowable level for public systems) have also been observed.

Records from public water systems provide the most robust data source on this issue and indicate that nitrate contamination is a growing problem in the area. Routine monitoring from public systems such as the J-W Subdivision demonstrate a steady increase in nitrate concentrations in some areas over several years. *Figure 1* shows nitrate concentrations in that system from 1984 to 2016.

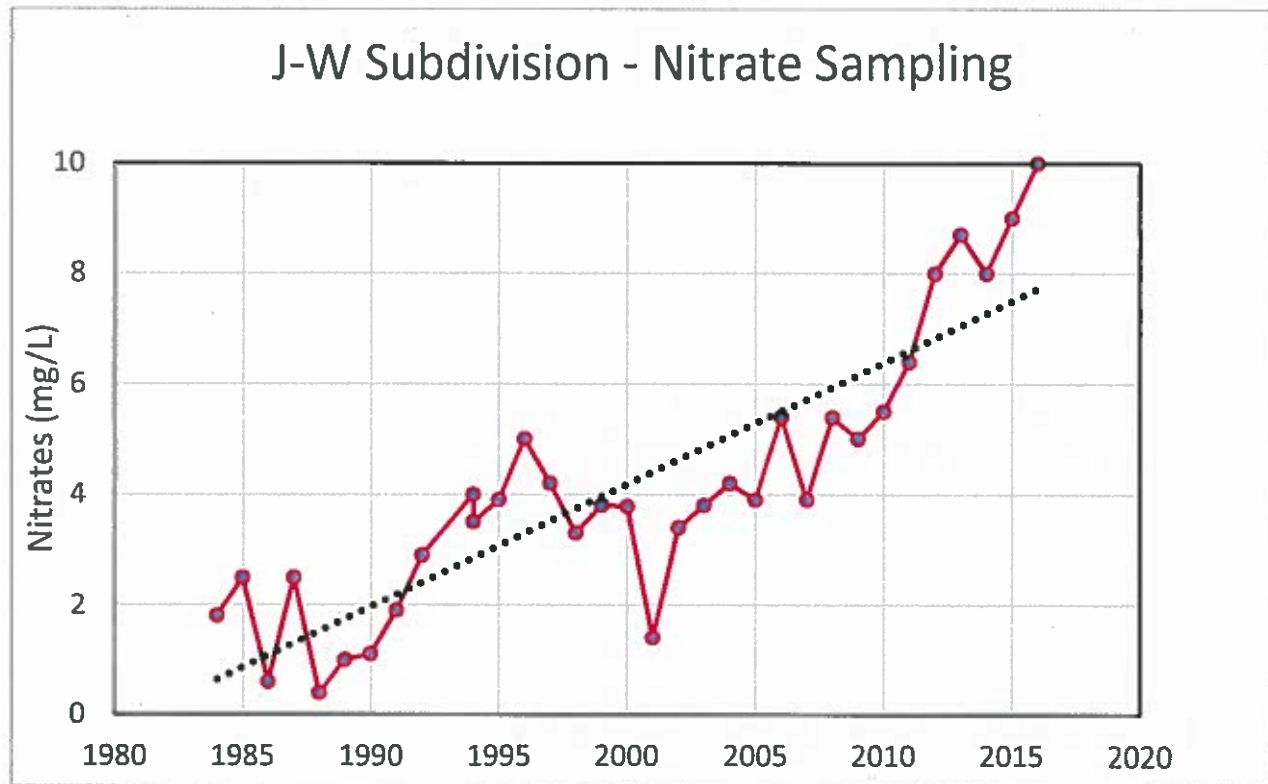


Figure 1. Nitrate concentrations from J-W Subdivision water supply from 1984-2016, James Brough.

Other public water supplies in the area have already exceeded the drinking water standard for nitrate. In 2004, testing of the water from the Hoback Market system measured nitrate at 57.4

mg/L and 59.4 mg/L. Hoback RV Park began approaching the regulatory limit as early as 1995, testing at 9.8 mg/L, and exceeded it for the first time in 1997. Such systems that would otherwise consistently exceed 10 mg/L are now required to treat the water prior to its use.

Data from these systems and from the J-W system clearly demonstrate that the area immediately north of the Hoback River/Snake River confluence has a persistent and, in places, growing problem with nitrate in drinking water. Private well data from the vicinity also demonstrate a similar trend to that seen in J-W and other public systems, with several homes increasing over time or already exceeding 10 mg/L.

Based on the available information, concerning nitrate concentrations have been observed in the area North of the Snake River/Hoback River confluence to roughly the HWY 89 Snake River Bridge at Henry's Road. The primary focus, however, is on the immediate Hoback Junction area as seen in *Figure 2*. This problem has persisted for over twenty years and while there have been attempts at mitigation, progress has been limited and halting. However, there has been and remains interest in more comprehensive solutions. In 2006, the Wyoming Water Development Commission funded a Level One Water Supply Study. More recently, TCD and TCHD hosted an agency/stakeholder meeting on September 13th, 2018. This was followed by a public meeting to build common knowledge about this issue. A survey was conducted at the meeting to assess public interest in receiving governmental assistance in addressing this issue. A strong majority of respondents supported such assistance.

While public systems that are approaching or exceeding the nitrate maximum contaminant level should also be addressed, particular attention should be paid to private systems. Such wells and springs are primarily owned and managed by homeowners and are not subject to any required testing or mitigation. Efforts should be made to ensure those on private wells are educated as to the need for periodic water testing. Alternative water sources for owners and other forms of assistance should be provided.

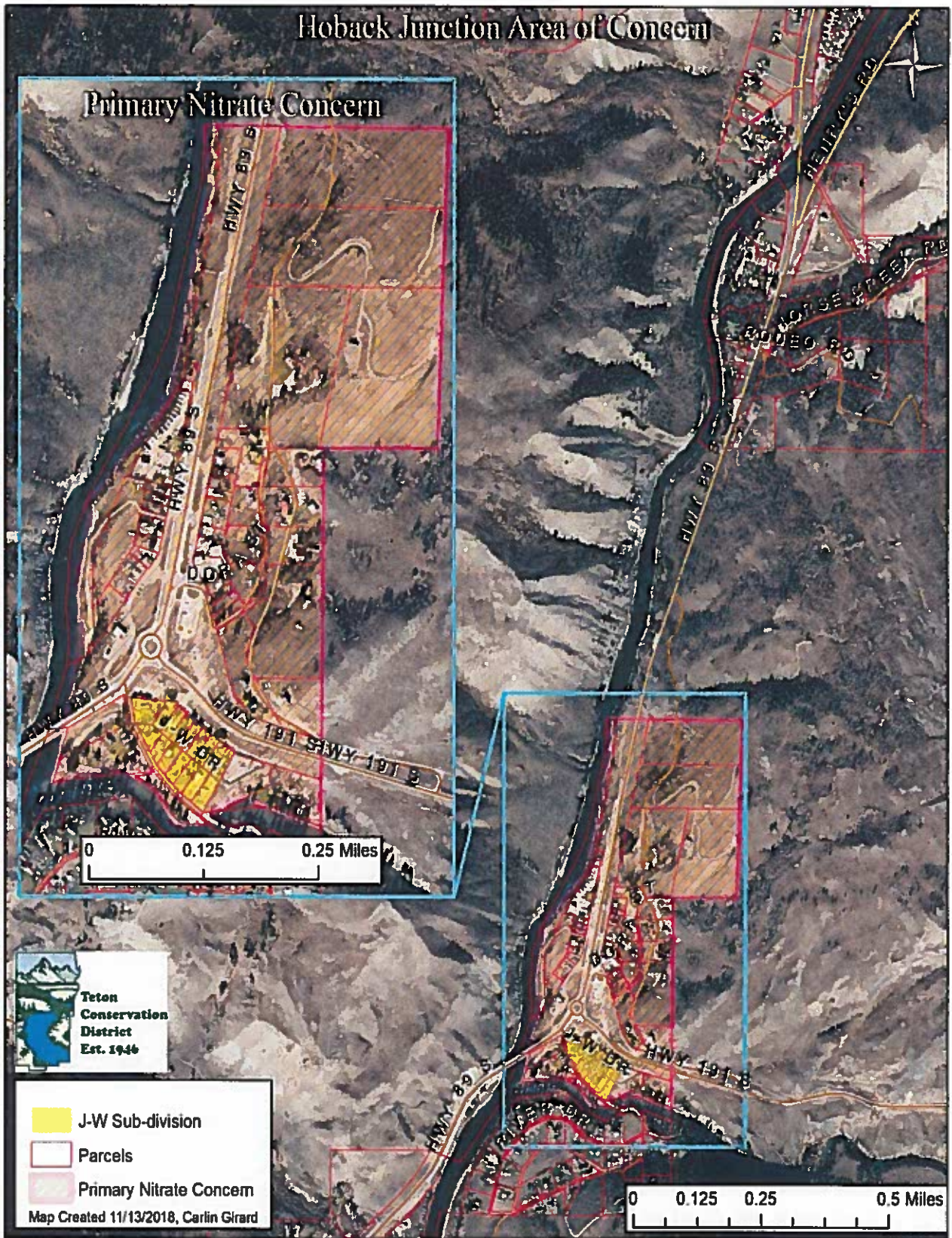


Figure 2. Map of Hoback Junction Area with insert of Hoback Junction.

Questions regarding nitrate concentrations and distribution within the Hoback area can be directed to the Teton Conservation District at (307) 733-2110. Further information, including the basis for much of this memorandum, can also be found at <https://www.tetonconservation.org/news/2018/8/27/hoback-junction-drinking-water-meeting>.

Questions regarding the health effects of nitrate can be directed to the Environmental Health Division of the Teton County Health Department at (307) 732-8490.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Dan Forman', with a long horizontal flourish extending to the right.

Dan Forman, DVM
Teton District Board of Health
Chairman