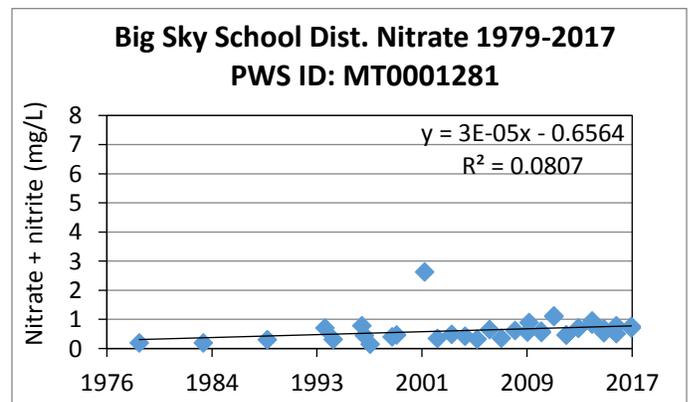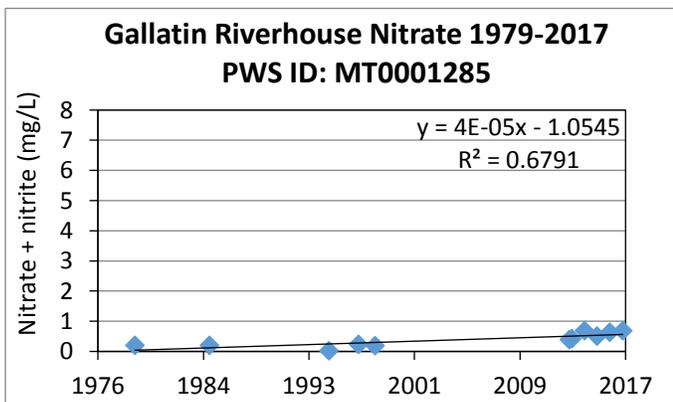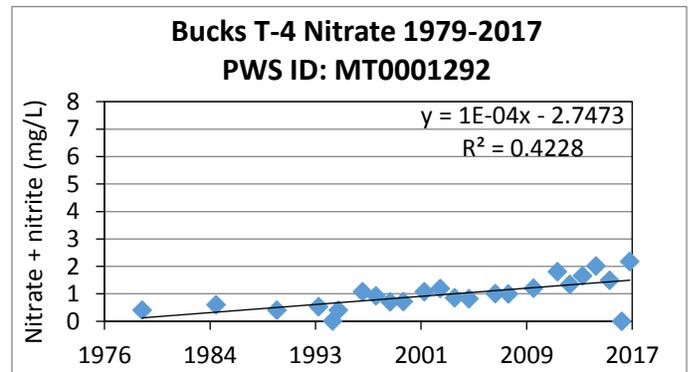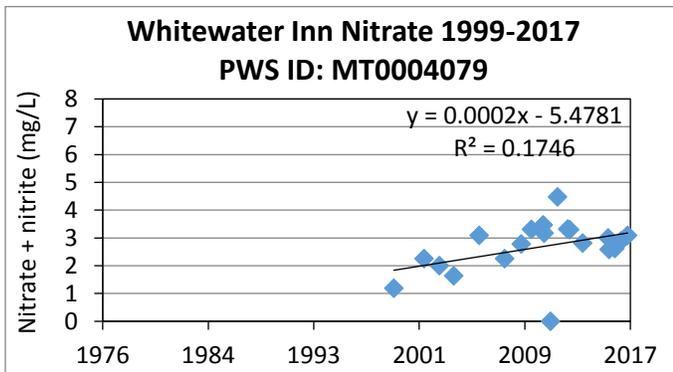# Big Sky Canyon Area: Wells, Septic Systems & Groundwater
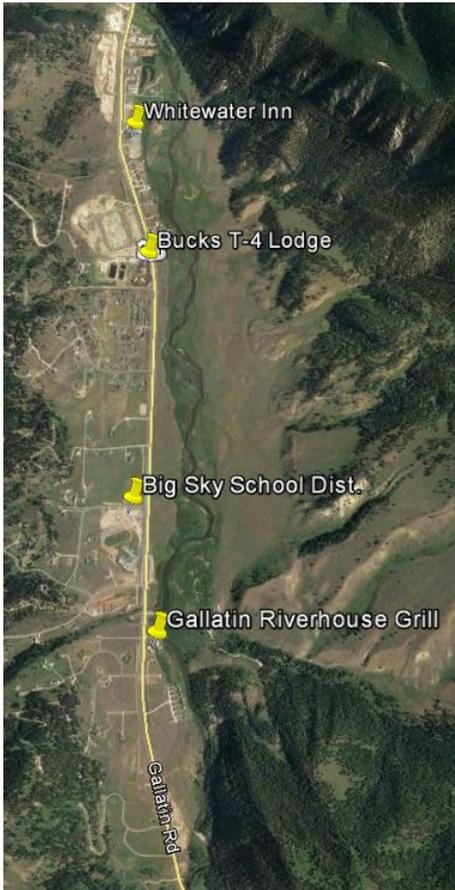
- **Public** water systems are required to test and submit water quality results to Montana Department of Environmental Quality.

- **Private** domestic well owners are <u>not</u> required to test – this is up to the homeowner.

- It is recommended that private well owners **test yearly** for nitrate and bacteria (total coliform and *E. coli*). Also test for arsenic every three years.

  - Nitrate is a form of nitrogen that is a water quality indicator and is also a human health concern when it is found at high levels in groundwater.

  - Sources of nitrate include wastewater, fertilizer, soil organic matter, manure, and others.

  - Nitrogen (as well as phosphorus) can be harmful to surface water resources, causing overgrowth of algae and harm to aquatic life.

- It is recommended that septic system owners pump their systems **every 3-5 years** to ensure proper function and protection of groundwater.

Whitewater Inn Nitrate 1999-2017
PWS ID: MT0004079

$y = 0.0002x - 5.4781$
$R^2 = 0.1746$

Nitrate + nitrite (mg/L)

Bucks T-4 Nitrate 1979-2017
PWS ID: MT0001292

$y = 1E\text{-}04x - 2.7473$
$R^2 = 0.4228$

Nitrate + nitrite (mg/L)

Gallatin Riverhouse Nitrate 1979-2017
PWS ID: MT0001285

$y = 4E\text{-}05x - 1.0545$
$R^2 = 0.6791$

Nitrate + nitrite (mg/L)

Big Sky School Dist. Nitrate 1979-2017
PWS ID: MT0001281

$y = 3E\text{-}05x - 0.6564$
$R^2 = 0.0807$

Nitrate + nitrite (mg/L)

FAQs

Could groundwater nitrate in the canyon area affect the Gallatin River?

- Yes, it is possible. The shallow aquifer in the canyon area and the river are connected and are one resource. Whether the nutrients in groundwater affect nearby waterways depends on whether the river is "gaining" (groundwater is flowing into the river) or "losing" (river water flowing into the nearby groundwater). This can change seasonally.

How high is too high for nitrate?

- Natural background nitrate levels are usually about 2 mg/L. When nitrate rises higher than that level, it usually means there is a contributing source negatively affecting groundwater. 10 mg/L nitrate is the U.S. EPA Maximum Contaminant Level (MCL) for drinking water, however there is research showing that long-term ingestion of drinking water with levels even below the MCL of 10 mg/L can cause health problems. The Public Water Systems nitrate graphs shown on the previous page have mostly low levels, but seem to be increasing over time.

How high is the nitrate in my well?

- If you are on a private domestic well and have not tested recently, you must test the water through a certified drinking water laboratory to find out. If you use drinking water from a public system, this information is in your yearly Consumer Confidence Report, or you can call the water system operator to find out. It is also available online under the Montana Drinking Water Watch website – contact GLWQD at (406) 582-3168 for assistance looking this up if needed.

My well is deep, does this mean it is safe?

- Generally, the shallower the well, the more susceptible it is to contamination. Shallow wells in the canyon area are in alluvial material (coarse gravel and sand) which water moves through very easily. This also means a contamination source such as an unmaintained septic system, heavy fertilizer or pesticide use, or chemical or fuel spills will move through the aquifer easily. Deeper wells are usually less susceptible to nutrient pollution or other contamination, but if they were not grouted properly when drilled, it is possible for surface contamination to reach the groundwater.

What can I do as a homeowner to protect my water and the river?

- Pump your septic system every 3-5 years. Test your well water once a year to ensure that it is safe to drink and to monitor any changes in water quality. Inspect your well and the area around it every year. Use fertilizers and pesticides sparingly and be aware that activities on the land surface can influence groundwater quality. Encourage your neighbors to pump their septic system and test their water.

Where can I find more information?

- The Gallatin Local Water Quality District is the county resource for water quality information and assistance. Please see www.glwqd.org or call (406) 582-3168. The Gallatin City-County Health Department Environmental Health Services department can assist you with information about septic permitting and regulations. Please see www.healthygallatin.org or call (406) 582-3120.