

## Parameter Choice Guide

**1) Basic Domestic Analysis:** basic test for people who haven't tested in recent years or ever

*Alkalinity, Bacteria (coliform + E. coli), Nitrate + Nitrite as N, pH, Total Dissolved Solids (TDS)*

**2) Full Domestic Analysis:** fairly comprehensive inventory of water quality covering critical bacteria and nitrate as well as a broad group of parameters effecting aesthetic and nutritional quality of water (tooth discoloration, taste, smell, staining, corrosive, and scaling properties)

*Alkalinity, Aluminum, Bacteria (coliform + E. coli), Calcium, Chloride, Conductivity, Corrosivity, Fluoride, Hardness, Magnesium, Manganese, Nitrate + Nitrite as N, pH, Potassium, Sodium, Sulfate, Total Dissolved Solids (TDS), Zinc*

**3) Total Iron Analysis:** iron testing may be desirable to explain brown-red staining especially if iron treatment is being considered. Iron discoloration accompanied by slime may indicate iron bacteria. A test sample bottle for iron bacteria is available upon request from the lab.

*Iron*

**4) Basic Annual Analysis :** minimum test all private well owners should complete every year, parameters can pose health risks and are good basic indicators of water quality to track through time.

*Bacteria (coliform + E. coli), Nitrate + Nitrite as N*

**5) Select Inorganic Analysis:** parameters posing considerable health risks, which also may occur in Montana ground water

*Arsenic, Cadmium, Copper, Lead, Selenium*

**6) Suitability of Water for Livestock:** test of basic parameters which can deter livestock from drinking and/or cause health or performance issues

*Nitrate, Sulfate, Total Dissolved Solids, Molybdenum, Selenium, and Sodium*

**7) Classification of Water for Irrigation:** parameters which can inhibit crop growth and/or impact soil quality

*Calcium, Conductivity (estimates total dissolved solids), Magnesium, Sodium, Sodium Adsorption Ratio*

**8) Individual Parameters:** a selection of inorganic parameters which can be tested for individually, that occur naturally and can pose health risks

*Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nitrate, Selenium, Thallium, Uranium*

## Parameter Glossary

**Bold text indicates a parameter which poses a health risk.** Regular text indicates a parameter which does not pose a health risk but may impair aesthetic quality.

Alkalinity -	The ability of water to buffer changes in pH. Higher alkalinity means water is less likely to experience big changes in acidity.
Aluminum -	A naturally occurring metal which can produce color in water.
<b>Antimony -</b>	<b>A naturally occurring metal which can cause cholesterol and blood sugar problems.</b>
<b>Arsenic -</b>	<b>A naturally occurring nonmetal which can cause skin damage, circulatory problems, and increased risk of cancer.</b>
<b>Bacteria -</b>	<b>(Coliforms + <i>E. coli</i>) should be tested annually to detect contamination from human or animal feces, or problems with the seal on your well.</b>
<b>Barium -</b>	<b>A naturally occurring metal which can cause increased blood pressure.</b>
<b>Beryllium -</b>	<b>A naturally occurring metal which can cause intestinal lesions.</b>
<b>Cadmium -</b>	<b>A naturally occurring metal which can cause kidney damage.</b>
Calcium -	A naturally occurring metal which is an essential nutrient in the human diet and is the primary contributor to the hardness of water.
Chloride -	A common natural salt in ground water which can impart a salty taste; high quantities can cause gastrointestinal distress in people unaccustomed to the water.
<b>Chromium -</b>	<b>A naturally occurring metal which can cause allergic skin inflammation.</b>
<b>Copper -</b>	<b>Is a naturally occurring metal, but in water systems typically comes from pipes. May give water a metallic taste and cause blue-green stains on sinks or fixtures, and can cause liver or kidney damage after long term exposure when over the drinking water standard.</b>
<b>Fluoride -</b>	<b>A naturally occurring nonmetal which promotes dental health at appropriate concentrations but can cause tooth discoloration and bone disease at high concentrations.</b>
Hardness -	Primarily caused by compounds of calcium and magnesium in water and can result in scaling in pipes/water heaters; it also decreases the lather and effectiveness of soaps and detergents.
Iron -	A naturally occurring metal which is an essential nutrient in the human diet but can give water a metallic taste and cause red-brown stains on fixtures or clothing at high concentrations. Iron bacteria may also be present which does not pose health concerns but may cause aesthetic issues.
<b>Lead -</b>	<b>Is a naturally occurring metal, but in water systems typically comes from pipes. May retard development in children and cause blood pressure and kidney problems in adults.</b>
Magnesium -	A naturally occurring metal important in human diet which contributes to the hardness of water.
Manganese -	A naturally occurring metal essential in the human diet which can give water a bitter taste and cause black staining on fixtures or clothing at high concentrations.
<b>Mercury -</b>	<b>A naturally occurring metal which can cause kidney damage.</b>
<b>Nitrate -</b>	<b>Can occur naturally, from septic tanks/wastewater treatment, or from agricultural practices and causes oxygen deficiency in infants under 6 months of age; nitrates move easily in ground water so increasing nitrate levels can be an early warning that other contaminants are moving toward a well. However, a low nitrate value does not mean other contaminants are absent from your water.</b>
pH -	The measure of acidity of water. As pH values move away from 7 (below 6.5 or above 8.5) metals in the soil or water pipes may be released into the water.
Potassium -	A common salt in ground water and essential in the human diet but can impart a salty taste; high concentrations can cause gastrointestinal distress in people unaccustomed to the water.
<b>Selenium -</b>	<b>A naturally occurring nonmetal which is essential in the human diet at low concentrations but can cause problems with skin and hair, numbness in fingers and toes, or circulatory problems at high concentrations.</b>
Sodium -	A common salt in ground water which can impart a salty taste; sodium contributes to hypertension and high quantities can cause gastrointestinal distress in people unaccustomed to the water.
SAR-	(Sodium Adsorption Ratio) amount of sodium relative to calcium and magnesium in water; high SAR can damage soil and reduce crop productivity.
Sulfate -	A common salt in ground water which can impart a salty taste; high quantities can cause gastrointestinal distress in people unaccustomed to the water.
<b>Thallium -</b>	<b>A naturally occurring metal which can cause hair loss; changes in blood; kidney, intestine, or liver problems.</b>
TDS -	(Total dissolved Solids) is the sum of all minerals dissolved in water.
<b>Uranium -</b>	<b>A naturally occurring radio active element which can cause cancer as well as have toxic effects on the kidneys.</b>
Zinc -	A naturally occurring metal essential to the human diet which can give water a metallic taste at high concentrations.