

Parameter Package Guide

- 1) Basic Domestic Analysis:** basic test for people who haven't tested in recent years or ever
Alkalinity, Bacteria (coliform + E. coli), Conductivity, Nitrate + Nitrite as N, pH
- 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, estimated from major ions), Zinc
- 3) Total Iron Analysis:** iron testing may be useful 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.
Total Iron
- 4) Basic Annual Analysis :** minimum test recommended for all private well owners to 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) Suitability of Water for Livestock:** test of basic parameters which can deter livestock from drinking and/or cause health or performance issues
Nitrate + Nitrite as N, Sulfate, Molybdenum, Selenium, Sodium, Total Dissolved Solids (TDS)
- 6) Classification of Water for Irrigation:** parameters which can inhibit crop growth and/or impact soil quality
Calcium, Conductivity, Magnesium, Sodium, Sodium Adsorption Ratio
- 7) 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, Fluoride, Lead, Manganese, Mercury, Nitrate, Selenium, Sulfate, Thallium, Uranium

Visit our Statewide Guidance by County webpage for testing recommendations and parameters of concern in your area.

https://waterquality.montana.edu/well-ed/testing/statewide_countyguidance.html

Parameter Glossary

Bold indicates a parameter with a health risk. Non-bold parameters are of interest for aesthetic quality.

Alkalinity -	Ability of water to buffer changes in pH; higher alkalinity means water is less likely to experience big changes in acidity.
Aluminum -	Naturally occurring metal; can produce color in water.
Antimony -	Naturally occurring metal; can cause cholesterol and blood sugar problems.
Arsenic -	Naturally occurring metalloid; can cause skin damage, circulatory problems, and increased risk of cancer.
Bacteria -	(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.
Barium -	Naturally occurring metal; can cause increased blood pressure.
Beryllium -	Naturally occurring metal; can cause intestinal lesions.
Cadmium -	Naturally occurring metal; can cause kidney damage.
Calcium -	Naturally occurring metal; essential nutrient in human diet; primary contributor to hardness of water.
Chloride -	Common natural salt in groundwater; can impart salty taste; high quantities can cause gastrointestinal distress in people unaccustomed to water.
Chromium -	Naturally occurring metal; can cause allergic skin inflammation.
Conductivity-	The amount of electricity that water conducts; can be used to estimate total dissolved solids (TDS).
Copper -	Naturally occurring metal; in water systems typically comes from pipes; may cause metallic taste; may cause blue-green stains on sinks or fixtures; can cause liver or kidney damage after long term exposure at concentrations over standard.
Fluoride -	Naturally occurring; promotes dental health at appropriate concentrations; can cause tooth discoloration and bone disease at high levels.
Hardness -	Primarily from calcium and magnesium compounds; can cause scaling in pipes/water heaters; decreases lather and effectiveness of soap and detergent.
Iron -	Naturally occurring metal; essential nutrient in human diet; can give water a metallic taste; can cause red-brown stains on fixtures or clothing at high concentrations. Iron bacteria may also be present, which do not pose health concern but may cause aesthetic issues.
Lead -	Naturally occurring; in water systems typically comes from pipes; may retard development in children; may cause blood pressure/kidney problems.
Magnesium -	Naturally occurring metal; important in human diet; contributes to the hardness of water.
Manganese -	Naturally occurring metal; essential in human diet; can give water a bitter taste; can cause black staining on fixtures or clothing at high concentrations. While there is no drinking water standard, research suggests high levels can cause cognitive issues in children.
Mercury -	Naturally occurring metal; can cause kidney damage.
Nitrate -	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 groundwater 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.
pH -	Measure of acidity; as pH values move away from 7 (below 6.5 or above 8.5) metals in the soil or pipes may be released into the water.
Potassium -	Common in groundwater; essential in human diet; can impart salty taste; high levels can cause gastrointestinal distress if unaccustomed to the water.
Selenium -	Naturally occurring nonmetal; essential in human diet; can cause problems with skin and hair, numbness in fingers and toes, or circulatory problems at high levels.
Sodium -	Common in groundwater; can impart salty taste; contributes to hypertension; high levels can cause gastrointestinal distress if unaccustomed to 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 -	Common salt in groundwater; can impart salty taste; high levels can cause gastrointestinal distress in people unaccustomed to the water.
Thallium -	Naturally occurring metal; can cause hair loss; changes in blood; kidney, intestine, or liver problems.
TDS -	Total dissolved Solids; the sum of all minerals dissolved in water; sometimes estimated using major ions or conductivity.
Uranium -	Naturally occurring radio-active element; can cause cancer as well as have toxic effects on the kidneys.
Zinc -	Naturally occurring metal; essential in human diet; can impart a metallic taste.