

What's Up With My Water?

Where Does My Water Come From?

Our drinking water starts as rain or snow which falls to the ground and runs off into streams or lakes. It also seeps down through the soil and rock into underground aquifers. Streams and irrigation channels can leak into underground aquifers. Water can also move up from the underground aquifers back into a stream. This constant mixing back and forth can carry contaminants into streams and wells too.

More than 2,000 new wells were drilled in the Helena Valley between 2000 and 2012.

Groundwater aquifers are the primary source of water for private and small public water supply wells in the District. Wells are drilled into the ground. Water that is trapped in the soil and even in cracks in the bedrock then flows into the well. The water is pumped out of the well and used for homes, businesses, irrigation, and

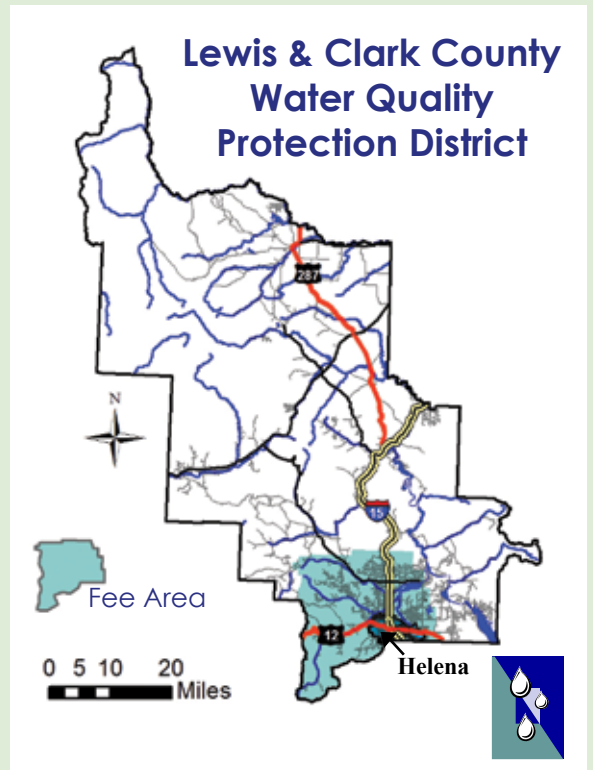
livestock watering. Some people also use lake, creek, or spring water.

Land Use

Land use within the District continues to change, both geographically and over time, from mining and logging to areas of irrigated agriculture, livestock grazing, industrial use, and residential and commercial development. Extensive and continuing mining of metals has occurred in the area since the 1860's. Many inactive or abandoned mine sites remain. Storm water runoff from streets and lawns flows into Tenmile and Prickly Pear Creeks. Wastewater effluent from the Helena and East Helena treatment plants is released under permit into Prickly Pear Creek.

Septic Systems

Improperly treated sewage from septic systems can cause groundwater contamination. Sewage



in groundwater poses a threat to human health because it can contain chemicals and human pathogens which can cause diseases and infections in people.

Some septic systems are old and may not work properly. Inspect your septic system regularly;

it has the potential to contaminate groundwater.

Local septic systems discharge about two million gallons of wastewater into our groundwater each day.

Failing septic systems can cause serious health hazards for everyone who relies on groundwater from wells for drinking, irrigating, washing, and other purposes.



What's in My Water?

Unlike distilled water you buy in a store, water in nature is not pure. While rain water is very nearly pure, when it falls on the ground or seeps into the soil or bedrock, it picks up traces of minerals, salts, and other substances that are naturally present. These things dissolve in the water and can affect the taste or usefulness of the water.

Some of the things that water can pick up in our area include minerals, metals, salts, bacteria, and plant nutrients.

Minerals and Salts: Natural minerals like fluoride can protect teeth in small quantities, but can stain teeth brown in high concentrations. In small quantities, some minerals like manganese are necessary nutrients. In larger concentration, manganese can cause black stains and a bitter, metallic taste.

Too much calcium, magnesium, or other minerals can make the water "hard". Hard water can leave water spots on dishes, or even shorten the life of plumbing and appliances by creating a whitish crusty scale or coating on pipes and valves.

Hard water can also deposit sediment in the water system and result in restricted or blocked water flow. Sulfur can make water smell bad, like rotten eggs.

Salt may cause water to be undrinkable and it can kill plants.

Metals: We live in a metal rich area. Metals like lead, arsenic, copper, uranium, and cadmium can leach (dissolve) into our water. Most metals are poisonous to fish, animals, and people. Sample your water to learn more about what metals may be present.

Bacteria: Bacteria are found everywhere in nature. They live in the soil and are found in human and animal waste. Some bacteria, like iron bacteria, are mostly a nuisance. Other bacteria, like fecal coliform, can cause disease in people.



Local Types of Groundwater Aquifers

Groundwater aquifer sources are as diverse as different streams. In the our area we have:

Shallow sand and gravel aquifers in the Helena valley.

Bedrock aquifers on the valley margins.

Small sand and gravel aquifers held in clay-rich soils east of the valley and south of East Helena.



Secure Wellhead



Unsafe Wellhead

How Do I Protect My Water?

You can protect your water by following these guidelines:

- 1. Protect** your water source from these potential contamination sources:
 - Overusing or spilling fertilizers and pesticides can result in excess chemicals running off or seeping into your water supply.
 - Livestock and manure piles near your wellhead can result in contamination of ground and surface water.
 - Wellheads in drainages or low spots can be contaminated by storm water. Elevate your wellhead if you are drilling a new one. For older wells, construct a mound of soil around the wellhead so water is more likely to move away from the pipe, rather than seep down alongside of it.
- 2. Inspect** your water source at least every year:
 - Install a tight-fitting, screened, vermin-proof well cap to prevent contaminants, insects, and rodents from entering the well.
 - Inspect the grouting and well casing to see that there are no cracks; check the cap to see that it is tight and vermin-proof.

- 3. Test** your well water annually:

- Test for total coliform bacteria and total nitrates for all surface water and groundwater supplies.
- Specific conductivity and total dissolved solids test for minerals that affect water taste.
- Arsenic and uranium are naturally present in this area and are harmful to human health. Test your well for both.
- Other types of tests can be useful in certain circumstances.

The District can supply sterile sampling containers for many water tests. Once you have the results of your tests the District or the laboratory that processed your water can help you understand the results.

Keep a record of your annual test results for reference.

Plant Nutrients: Nitrogen and phosphorus are plant nutrients can cause algae to grow out of control in creeks and lakes. In large concentrations, nitrogen can cause illness in people.

Is My Water Safe to Drink?

Most of the water in our area is safe to drink, but the only way to know for sure is to take a sample and have it tested.

Helena and East Helena are required to meet US EPA drinking water standards. The cities routinely sample and treat their water so it is safe to drink. You can obtain a copy of a Consumer Confidence Report from both cities and learn what they have sampled for and the results.

Public water supplies serving large subdivisions, some businesses and schools are also required to meet drinking US EPA water standards. All public water supplies sample their water, and some also use treatment methods to make it safer to drink. Like cities, they are required to offer their customers annual Consumer Confidence Reports.

Private wells and spring water are not regulated by any governmental agency. The only way to know if the water is safe to drink is if the well owner samples it. We recommend annual sampling, because water quality can change over time.

If you aren't sure where your water comes from or what to sample it for, call us at (406) 457-8584 and we'll help you find out more about your water.



Find Out More

The Water Quality Protection District can help you find out more about any water related topic. In addition, the following sources of information are recommended to learn more about clean drinking water.

City Drinking Water Quality

East Helena, ask for Public Works: (406) 227-5321
Helena Water Treatment Division: (406) 457-8511

Public Water Supply Information

Montana Drinking Water Watch: deq.mt.gov/wqinfo/pws/montanadrinkingwaterwatch.mcpx

Ground Water & Wells

Bureau of Mines & Geology GroundWater Information Center (GWIC): (406) 496-4336, mbmgwic.mtech.edu/
Well-Educated Program, MSU Extension: (406) 994-7381
waterquality@montana.edu



Wellhead Maintenance



Water Sampling

Where Can I Get My Water Tested?

Water Quality Protection District
(406) 457-8584
water@lccountymt.gov

The District has sample bottles, can advise you on the appropriate tests, and help you understand the test results for your well.

Alpine Analytical, Inc.
1315 Cherry Ave
Helena Montana 59601
(406) 449-6282

Energy Laboratories, Inc
3161 East Lyndale Ave
Helena MT 59601
(406) 442-0711

Montana Environmental Laboratory
Department of Public Health & Human Services
1400 Broadway
Helena, MT 59601
(406) 444-2642

Is My Well Water Safe? Find Out.

The only way to find out if your well water is clean is to test it. Everyone with a well should conduct the tests in Tier I. Tier II tests should be completed as circumstances warrant. Other tests may be advisable. Ask the District staff for help to determine if you need more specialized tests.

Tier I

These tests are recommended for everyone with a drinking water well. Results within a normal range indicate the water is safe from these contaminants.

Test Every Year

- Coliform and E. coli bacteria
- Total nitrates/nitrites
- Specific conductivity or total dissolved solids
- pH

Test Once

- Arsenic
- Uranium

Tier II

The following tests are important under specific conditions. These tests are usually conducted only once, unless the results show the need for further testing.

Fluoride

If you have children, your dentist will want to know the level, since supplemental fluoride may be needed if the naturally occurring level is not high enough.

Cadmium Selenium

If you live in the Scratchgravel Hills, Rimini area, south of Helena or in other old mining areas, testing for metals is strongly recommended. Since sediment from the hills runs downstream, all well users should consider testing at least once.

Copper Lead

If you have an old house, test these once to see if the metals from old plumbing are leaching into your drinking water. A special test is required.

Hardness

Have Questions? Contact the District

(406) 457-8584
water@lccountymt.gov
Web site: lccountymt.gov/health/water
Fax: (406) 447-8398

Visit the Water Quality Protection District
Lewis & Clark County
316 N Park, Room 220
Helena, MT 59623

100% of Lewis & Clark County Residents Require Clean Water.



What's in the water?

Is my water safe to drink? How do I find out?

Where does my water come from?

How do I protect my water?

What do I do if my water isn't safe?

The average Montanan uses about 78 gallons of potable water each day. In this county, we consume around 4.9 million gallons of clean water every day for drinking, bathing, and cleaning.



Lewis & Clark County
Water Quality Protection District
316 N Park, Room 220
Helena, MT 59623



The Water Quality Protection District's mission is to preserve, protect and improve water quality within District boundaries.
www.lccountymt.gov/health/water

WATER MATTERS

2014

Drinking Water

Lewis & Clark County
Water Quality
Protection District

(406) 457-8927
water@lccountymt.gov
www.lccountymt.gov/health/water

