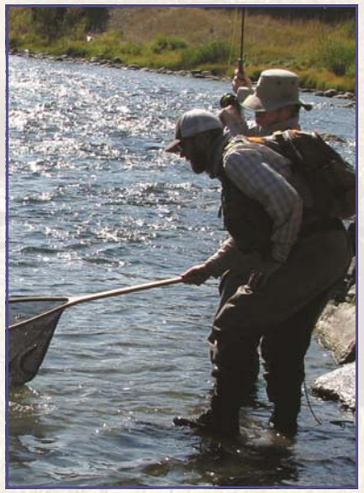
Managing Land Use Impacts on the River

In the Upper Gallatin, a significant amount of nitrogen and sediment come from small sources like:

- Individual septic tanks.
- Yards, corrals and golf courses.
- Culverts, construction sites, unpaved roads, and road sanding operations.

Our Choices Determine the Future

Continuing to grow without changing some of our practices could hurt fisheries and the river, but the good news is that good land practices can mitigate the impact on water quality. Each landowner, making simple choices about things like septic care and landscape design and maintenance can ensure that areas with very clean water stay that way and those areas that are experiencing problems can be improved.



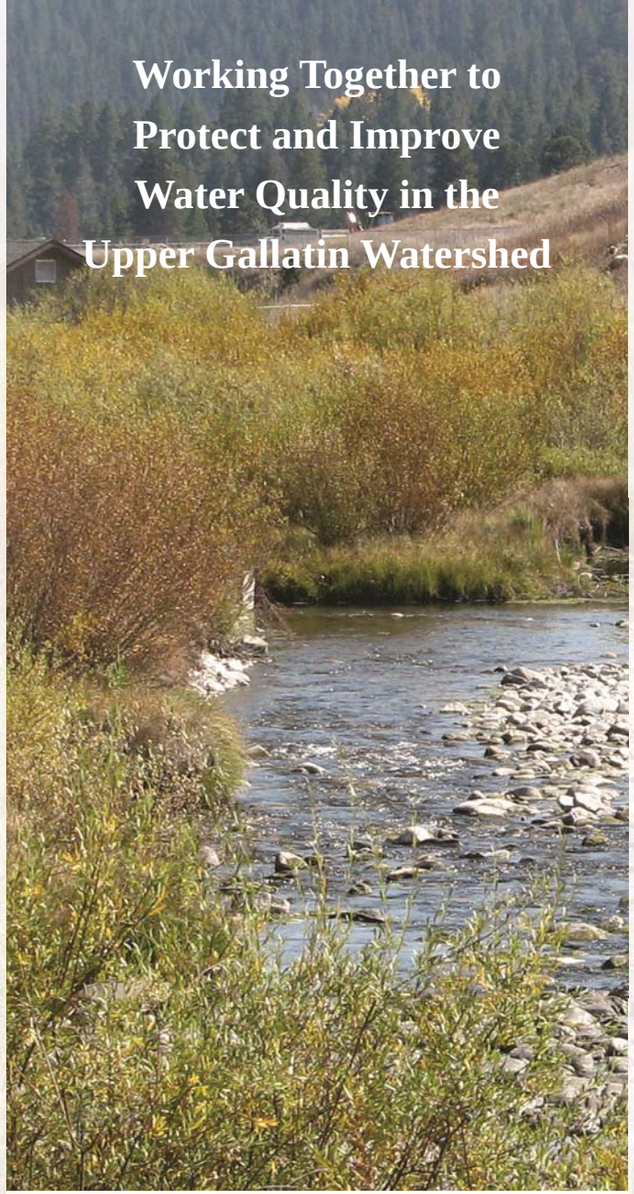
Fishing on the Gallatin

The community of Big Sky and the Upper Gallatin Watershed can continue to grow without damaging the resources we love and depend on for economic prosperity.

P.O. Box 160513
Big Sky, MT 59716

blue water Task Force Gallatin Watershed

Working Together to Protect and Improve Water Quality in the Upper Gallatin Watershed



blue water Task Force Gallatin Watershed

A Guide for Landowners and Those Who Love Big Sky and the Gallatin

Water Quality Concerns in the Upper Gallatin Watershed

Recent, in-depth water quality studies indicate that water quality in the Upper Gallatin is degraded in some areas. Nitrogen, *E.coli*, algae, and sediment levels were higher than Montana state standards.

- In the West Fork, high nitrogen levels were found to have an impact on aquatic insect populations.
- Excess sediment exists in some streams.
- Lower water quality was found in streams that travelled through intensely developed areas.

Clean Water Matters

Many of the most important reasons for living in the Big Sky area rely on clean water. The world class fishery in the Gallatin and its tributaries rely on specific aquatic insects, clean, clear water, and gravel dominated river bottoms. River recreation, wildlife, and aesthetic enjoyment of the area rely on the sparkling waters of the Upper Gallatin.

Excess algal growth in the West Fork

Historically, nitrogen levels have increased as development has increased in the Big Sky area. However, *development does not have to equate to degraded water quality*!

BWTF Commitment to Improving Water Quality

The Upper Gallatin Watershed Restoration Plan

In 2012, the Blue Water Task Force (BWTF) completed a Watershed Restoration Plan (www.bluewatertaskforce.org/docs.php) to address water quality issues in the Upper Gallatin Watershed. In the next three to five years, this plan will guide the BWTF and interested watershed stakeholders in actions to improve water quality and habitat conditions. After this time, the plan will be reviewed and updated by the BWTF and interested watershed stakeholders.

Nitrogen and Sediment Reduction Strategies

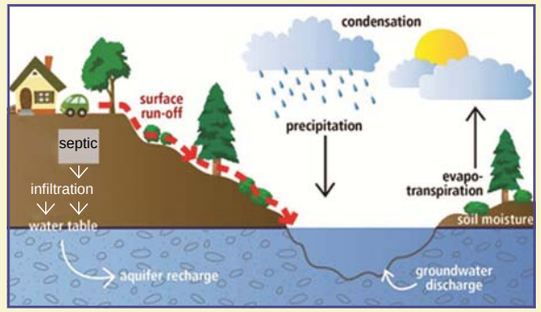
The restoration plan targets two major concerns in the West Fork Watershed: rising nitrogen levels and excess sediment associated with road sanding and undersized culverts.

Reducing Excess Nitrogen

Nitrogen is a necessary nutrient for plants, but too much can cause nuisance algae and reduce oxygen levels required for trout. Excess nitrogen is coming from:

- Wastewater (individual septic tanks and public wastewater)
- Fertilizer run-off
- Animal waste

These non-point sources located throughout the watershed all contribute nitrogen to streams. Since land is connected to streams through ground water, every landowner or manager makes decisions that collectively have large impacts. The BWTF will work with watershed stakeholders (homeowner associations, landscapers, resorts, businesses, golf courses, etc.) to develop strategies to reduce their nitrogen footprint.



Ground water and surface water connections

Reducing Excess Sediment

Trout and other aquatic life depend on clear water and a stream bottom that has little fine sediment in it. Excess sediment is coming from:

- Excess sand from winter road maintenance
- Undersized culverts
- Poorly planned or managed construction sites and unpaved roads

Inappropriate culverts can also impede fish passage. Culverts will be assessed and prioritized to determine those that need replacement.

The Montana Department of Transportation (MDOT), private snow plowers, home builders, and road owners (primarily MDOT and the Forest Service) are the primary entities making management decisions that affect sediment. The BWTF will work with these entities to reduce sediment.

Additionally, MDOT recently changed its percentage of salt in road sand from 5% to 15-20%. The impact of this change in unknown, but salts can be deadly to fresh water fish; therefore, the BWTF has added chloride to its volunteer monitoring program.

Community Action

Everyone has the opportunity to make choices that improve water quality. Many of these choices also enhance property or save money. Together, our choices determine the future of clean water in the Upper Gallatin.

Septic System Care

Septic tanks function best when:

- "Good" bacteria can break down waste products.
- Good drainage ("percolation") is maintained.
- The septic vault is not full of non-degradable items.
- Pipes and other parts are in good repair.

Septic maintenance

Smart Landscaping

- Fertilizer is applied in an amount and time that maximizes uptake by plants and reduces run-off.
- Minimize irrigation to what the soil can absorb.
- Riparian buffers of natural vegetation filter nitrogen run-off and limit sediment.
- Corrals and other activities that expose ground are sited back from streams to keep sediment and nitrogen from entering streams.

Poorly managed riparian area

Animal Waste

- Keeping animal waste away from streams limits nitrogen and *E. coli* run-off.

Things You Can Do to Protect Clean Water

Septic System Care

- ☐ Have a professional inspect your tank annually.
- ☐ Keep fats, oils, bleach and other chemicals out—treat as solid waste.
- ☐ Avoid putting paper towels, tissues, cigarette butts, disposable diapers, sanitary napkins, tampons, or condoms in the toilet.
- ☐ Keep water use even. Run dish washers and wash clothes at times other than wake-up and bedtime.
- ☐ Keep trees out of the drain field.
- ☐ Avoid compacting the soil over a drain field.

Smart Landscaping

- ☐ Test soil chemistry to find out what formula and amount of fertilizer to apply.
- ☐ Avoid fertilizer application before storms.
- ☐ Keep native streamside vegetation undisturbed or restore it.
- ☐ Use more native plants in landscaping.

Horse Corral Management

- ☐ Site corrals away from the stream and wet areas.
- ☐ Have a waste disposal plan.

Pet Waste

- ☐ Pick up after your pet – especially near water bodies.

Join the BWTF

- ☐ Volunteer – we need your help.
- ☐ Become a Member! (See the enclosed form or visit www.bluewatertaskforce.org/support.php)

For More Information and Further Resources:

Blue Water Task Force

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