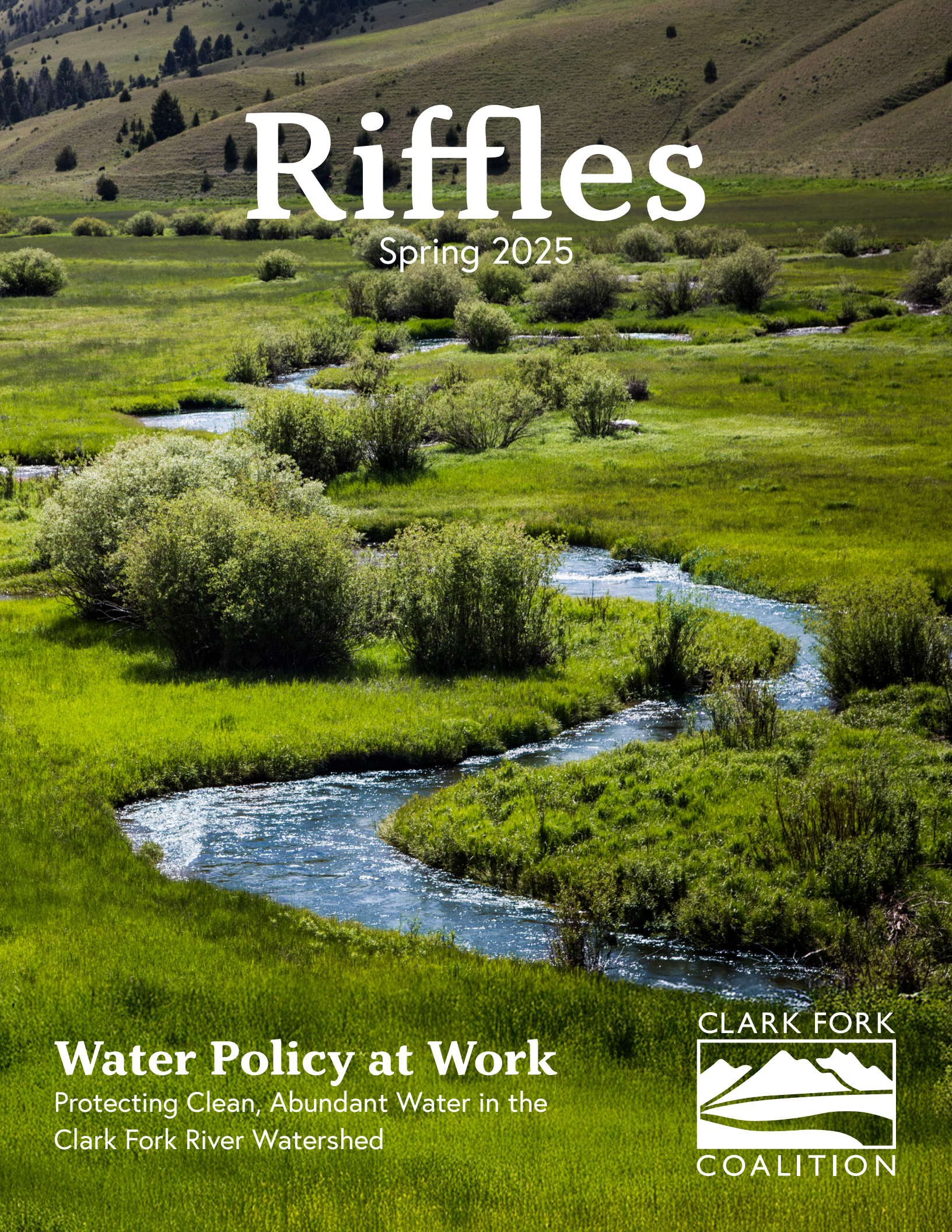


Riffles

Spring 2025

Water Policy at Work

Protecting Clean, Abundant Water in the Clark Fork River Watershed

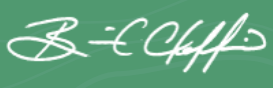
CLARK FORK COALITION

Watchdogs for Clean Water

A Note From Brian

Hello CFC friends and supporters—welcome to spring in western Montana! The Clark Fork River is swelling with recent rainfall and the first hints of spring runoff, migratory birds are returning to and passing through the watershed, and there is a buzz in the air—of birdsong, awakening insects, and that human cacophony that is the Montana Legislative session! One of the core ways in which we fulfill our mission here at CFC is by advocating for sound, protective, and forward-thinking water policies at the state and local levels. This work has been the backbone of our organization since our founding 40 years ago. We proudly continue this work today in part through our ***Water Watchdogs*** program (see below, right) which provides public-facing resources including an online water bill tracker, real-time action alerts, and virtual and in-person updates throughout the session. Science-informed water policy is the cornerstone of protecting the quality waters we enjoy in western Montana and is also essential for creating public programs charged with monitoring and then restoring our water bodies if they become dewatered and/or degraded. In this issue of *Riffles*, we highlight our state-level water policy work around two important and timely issues in Montana: exempt wells and nutrient regulations. I sincerely hope you enjoy this deep dive into the science and policy of these often overlooked, but extremely important issues for protecting water quality and quantity both in the Clark Fork River watershed and across Montana.

See you on the river. Best, Brian.



Brian Chaffin, Ph.D.
Executive Director
Clark Fork Coalition

Embracing Uncertainty

CFC's Approach to Tackling Climate, Growth, and Threats to Clean Water

by Andrew Gorder, Clark Fork Coalition Policy & Legal Director

In 2023, we surveyed our members and partners, representing a diverse cross-section of individuals working and living in the Clark Fork River basin to weigh in on the state of our watersheds, to identify threats and challenges, and to opine on where CFC should target our efforts over the next 5 years. This input—the foundation of our most recent strategic plan—revealed several interconnected macro-level trends that are intensifying across the greater watershed including the known challenges associated with a changing climate, and the legacy of lingering contamination from mining and industry. At the same time, this constituent feedback identified two additional challenges facing our watershed: 1) the outdated framework of laws, regulations, and policies that govern water use in Montana and often threaten our ability to protect clean water; and 2) the rapid growth, development, and sprawl occurring across the basin and the related water quantity and quality challenges this growth creates.

So how does CFC approach these threats? We employ a variety of tools to combat the challenges identified in our strategic plan, including grassroots advocacy and policy reform. We bring policy expertise and science-informed recommendations to all issues impacting water, and we participate in state and local groups that develop and oversee laws and regulations to help push for better, more protective policies. If all other avenues have been exhausted, we may use litigation to protect irreplaceable water resources or to challenge policies that degrade or deplete our waters; however, our primary goal is to collaborate with water users, state agencies, local governments, and the myriad individuals and organizations with whom we partner to protect and restore the Clark Fork River watershed together.

Guarding Our Groundwater

The Future of Montana's Exempt Well Policy

by Andrew Gorder, Clark Fork Coalition Policy & Legal Director

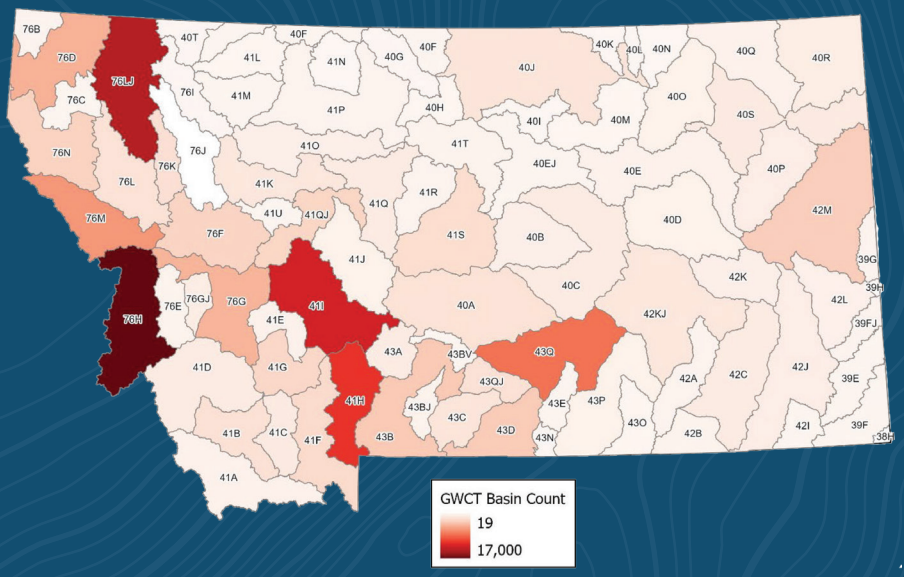
In Montana, no one *owns* water. Instead, state laws determine who can obtain rights to *use* water, and the state also administers, controls, and regulates those rights. Water rights were first established in Montana in the Gold Rush days under a doctrine of "first in time, first in right." That is, whoever diverted water first from a stream had first right to use it. Over time, numerous court rulings, laws, and policies were needed to resolve disputes as more users made claims on both surface and groundwater.

In 1973 the Montana Legislature passed the Water Use Act (WUA), which created a process for permitting new water rights. To reduce permitting burdens on small, individual users, it exempted groundwater use for "domestic, agricultural, or livestock purposes." This allowed applicants to avoid the burdensome permitting process to prove that the water was physically and legally available and that the new use would not adversely affect those with senior water rights. These exempt wells are limited to a flow rate of 35 gallons per minute (GPM) and a total volume of 10 Acre-Feet of water per year. However, if two or more wells are drilled in the same aquifer and exceeds this total volume, this is considered a "combined appropriation" and requires a permit.

At the time this policy was enacted, Montana was still a largely rural state. But fast-forward to the late 1990s, and the groundwater exemption was being exploited by developers to drill permit-exempt wells for each "individual" home they built. The loophole gave developers the green light to build countless homes without so much as a water impact study or any notice to existing water users about potential impacts to their water rights. The result: hundreds of thousands of exempt wells have been drilled across Montana over the last decades, depleting local water tables, reducing flow in nearby creeks, and reducing water available for senior water rights holders. Worse yet, exempt wells often feed sprawling subdivisions that are built outside of municipal boundaries.

CFC has been entrenched in the exempt well debate for nearly 20 years, and as both a conservation organization and senior water right holder, we have a strong interest in ensuring that exempt well policies protect both public water resources and the rights of senior users. CFC was among a coalition of advocacy groups and water users that won a Montana Supreme Court decision in 2016 (*Clark Fork Coalition v. Tubbs*) that ordered the state to close this loophole to protect water supplies and water rights.

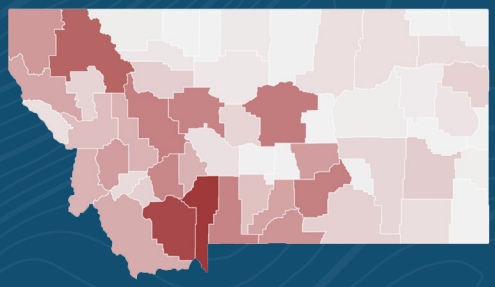
[1]Count of Exempt Wells Per Administrative Basin: 1973-2023



The Clark Fork/Kootenai watersheds include the administrative basins beginning with the number 76 and have a combined total of 57,047 exempt wells:

- 76H includes Ravalli County, with a total of 16,811 exempt wells.
- 76LJ includes Flathead County, with a total of 13,828 exempt wells.
- 76M includes Mineral County, with a total of 6,074 exempt wells.

In sum, exempt wells are responsible for a **total diverted volume exceeding 150,000 Acre-Feet of groundwater per year** in the Clark Fork/Kootenai basins. This is enough water to **irrigate approximately 60,000 acres** of pasture grass.



[2]Acres of Open space Converted to Housing, 2000-2021

From 2000 to 2021, **56% of single-family homes** in Montana were built outside of incorporated areas, and 41% were built in neighborhoods where lot sizes exceed 10 acres. This pattern of development is caused by an over-reliance on exempt wells, which drives housing further into undeveloped lands, and encourages the development of large lots to take maximum advantage of the exemption.

Data Source: Montana Department of Revenue, Property Assessment Division

[1] Montana DNRC Stakeholder Working Group. 2023. "Exempt Wells, Water Planning, and Growth Data Comprehensive Water Review Statkeholder Working Group Working Document." https://dnrc.mt.gov/_docs/water/Comprehensive-Water-Review/meeting-materials/Statewide-Exempt-Well-Data-Working_Doc-Updated-10.26.pdf

[2]Headwaters Economics. 2024. "Montana Losing Open Space." https://headwaterseconomics.org/economic-development/montana-home-construction/

Since then, we've defeated numerous attempts to re-open the loophole or codify it into Montana law. Despite these successes, exempt well problems have persisted and regulators have continued to allow numerous exempt wells—often for large-scale subdivision developments—without any analysis of the cumulative impacts to neighboring water resources or senior water users.

For example, in February of 2024, a District Court struck down a proposed subdivision development in Broadwater County that sought to divide a 435-acre tract into 41 lots, with each lot serviced with its own exempt well. These 41 wells constituted a "combined appropriation" that would have drastically exceeded 10 Acre-Feet; therefore, the wells should have required a permit. Instead, the DNRC approved the project's use of exempt well by arbitrarily limiting its review to whether each proposed *phase* of the subdivision would exceed the maximum allowable volume. The reviewing District Court ruled that DNRC's actions were plainly contrary to the protections of the Montana Water Use Act and the Montana Supreme Court's ruling in *Clark Fork Coalition v. Tubbs*, which previously chastised DNRC for ignoring the law and allowing Montana's groundwater resources to be exploited for development purposes.

What's Next: Exempt wells are once again a topic of discussion in the 2025 Legislative Session. While it's too early to tell what bills (if any) will pass, we've already seen efforts from some interest groups seeking to loosen exempt well laws or codify loopholes to benefit the unfettered development of our groundwater resources. CFC and our partners are advocating for common sense reform focused on ensuring that Montana's groundwater appropriation policies are consistent with the prior appropriation doctrine, the Montana Water Use Act and our Constitution's directive that Montana's water resources be protected from "unreasonable depletion." To learn more and get involved, sign up for our Water Watchdog team at clarkfork.org.

Clean Water, Clear Standards:
The Case for Effective Nutrient Regulations

by Dr. Sam Carlson, Clark Fork Coalition Staff Scientist

Nutrients are required by all forms of life, but excessive amounts of nutrients are one of the most common pollutants in Montana's streams, lakes, and rivers. The two major nutrients, nitrogen and phosphorus, come from natural sources as well as human activities including agriculture, wastewater, fossil fuel combustion, and industrial processes. Not only are these sources common across populated areas, but nutrients move across landscapes through aquatic, biological, and even atmospheric pathways. Nutrient pollution is widespread across Montana's waterbodies, although the degree of pollution and the environmental consequences are highly variable.

The most visible effect of excessive nutrient pollution is the dramatic algae blooms that we see on rivers and lakes in the summer. This ecological response highlights the paradox of nutrient pollution: although nutrients are required for plant and algal growth, elevated nutrient levels fuel rapid growth rates and create a harmful imbalance in aquatic ecosystems. The rapid growth of algae and aquatic plants creates a slimy (and sometimes toxic) mess, and this imbalance can also deplete the oxygen in rivers and lakes at night (when photosynthesis stops) or when algae and plants die and decompose. Depleted oxygen levels can stress or kill fish, and the broader effects of nutrient pollution are felt across all levels of the aquatic food web. (*See figure on page 6.*)

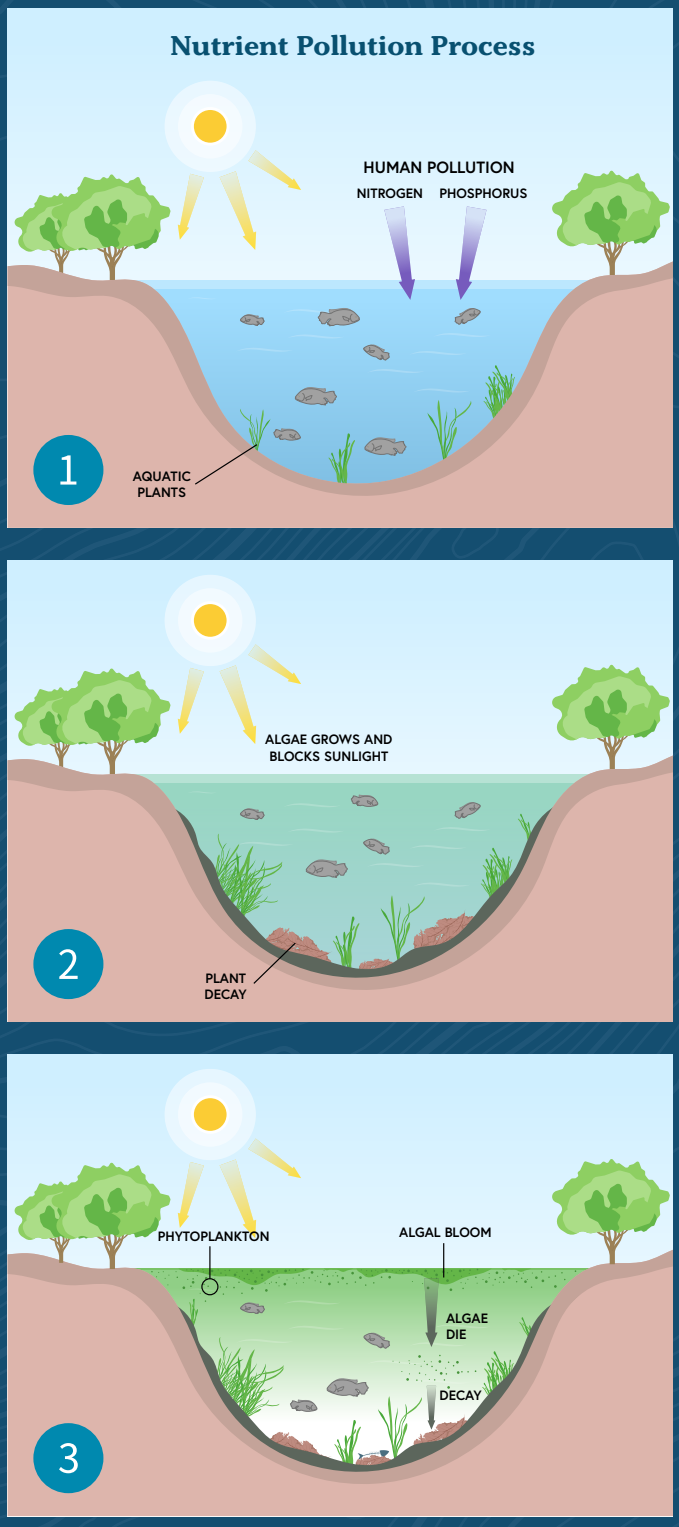
Montana's waterbodies belong to all citizens of the state, and our state constitution along with state and federal laws provide a mandate to protect our aquatic ecosystems. Although nutrient pollution will never be eliminated due to the fundamental connections with human activities, this mandate requires regulation to effectively balance the environmental and economic costs and benefits associated with nutrient pollution.

Managing Nutrient Pollution

There are many treatment and management options that can reduce nutrient pollution, but implementing these solutions is an ongoing challenge for both scientists and policymakers. Sources of nutrient pollution can be highly variable across space and time, and the effects of this pollution on aquatic ecosystems are complex and inconsistent.

The many pathways by which nutrients enter streams, lakes, and rivers are often grouped into point and non-point sources. Point sources are those where the pollutant enters the aquatic ecosystem at a single location, such as discharge from a factory or a municipal wastewater plant. Non-point sources are those where the nutrients are dispersed as they move into the aquatic ecosystem, such as the movement of fertilizer from a farm field into a nearby stream, or nitrogen from fossil fuel combustion moving through the atmosphere before being deposited 1000s of miles away. While nutrient loads from point sources can be easily measured and interpreted, nutrient loads from non-point sources are much more difficult to measure.

Treatment of point source nutrient pollution can be highly effective, but water treatment is not an easy or comprehensive solution for all nutrient pollution issues. The Missoula wastewater system provides a good example of a modern and efficient treatment system that reduces nutrient pollution from a large point source, removing



(1) Nutrient pollution increases the growth of algae and aquatic plants. (2) Excessive growth chokes the waterbody, covering the bed and blocking sunlight from penetrating to deeper water. (3) Algae and aquatic plants produce oxygen when they photosynthesize, but they consume oxygen at night and when they die and decompose. As nutrient pollution increases, this dynamic creates oxygen-depleted 'dead zones' that kill fish and accumulate decaying biomass.

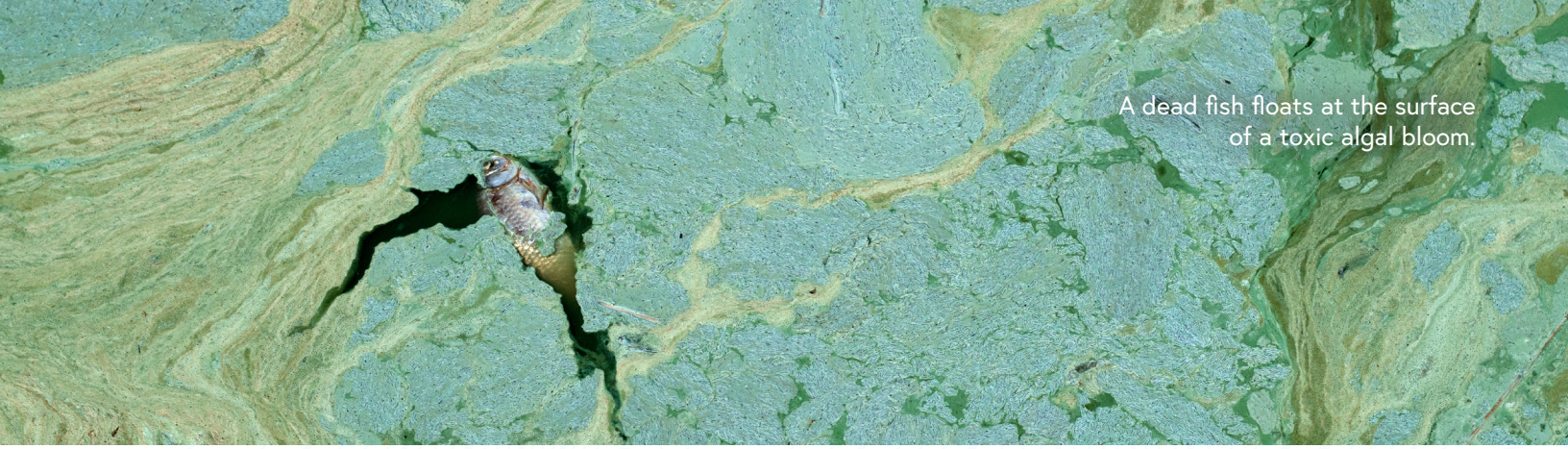
around 93% of the phosphorus and 80% of the nitrogen from Missoula's wastewater before it is released back into the river. This advanced system is impressive and has resulted in clear benefits for the Clark Fork River, but the performance of this system also reveals the scope of the problem. The remaining ~7% of the phosphorus and ~20% of the nitrogen from Missoula's wastewater still represents a large source of pollution to the river. This system is also very expensive, and the success of the system is difficult to replicate for all point sources and communities. Still, improved treatment of point sources can substantially improve water quality, and the benefits of point source treatment can be extended by combining more non-point sources into treated point sources (e.g., connecting septic systems to a municipal sewer line).

Some non-point sources of nutrients can be minimized through beneficial management practices. Nutrient loads from agricultural systems can be reduced through precise application of fertilizers, as well as by leaving a buffer of riparian vegetation between farm fields and surface water. Regular maintenance of septic systems can also reduce nutrient pollution. Additionally, tighter emissions standards for vehicles, power plants, and even wood stoves, can help to reduce the atmospheric deposition of nitrogen. These improvements provide massive opportunities to decrease pollution, although achieving widespread results requires commitment and investment across all corners of our society.

Narrative Approaches to Nutrient Regulation

Regulation of nutrient pollution is necessary to avoid a 'tragedy of the commons' situation and degradation of Montana's aquatic resources. Regulatory standards that restrict nutrient pollution in response to visible degradation of a waterbody (e.g., excessive algal growth or a fish kill) rather than by measuring the amount of nutrients present in waterbodies are known as ***narrative standards.*** Narrative standards are attractive in their apparent simplicity, but in practice there are many difficulties associated with using narrative standards to protect water quality and aquatic health. We need our regulatory system to prevent the degradation of aquatic resources, but narrative standards are more suitable for responding to observed degradation, rather than anticipating it.

Narrative standards are also challenged by the difficulty of identifying a clear threshold for degradation. Although a slimy, algae-choked river or a lake which is no longer habitable for fish due to the depletion of oxygen provides a clear example of degraded conditions, the degree of degradation may be subjective or difficult to interpret in other cases. How much algal growth is too much? What is the appropriate baseline for comparison? How much alteration of an aquatic food web is acceptable? A protective set of narrative nutrient standards requires a comprehensive answer to each of these questions.



A dead fish floats at the surface of a toxic algal bloom.

Further, the visibility of a waterbody's response to nutrient pollution is highly variable, and the lack of an apparent response to nutrient pollution at one location or time does not mean that the pollution will not cause degradation at other downstream locations or at other times. For example, nutrient pollution may cause little ecological response in a small mountain stream where the growth of algae and aquatic plants is limited by shade or cold water temperature. However, this stream would still deliver the nutrient pollution downstream, causing degradation in sunnier and warmer downstream waterbodies. Many other physical, chemical, and biological characteristics could also limit the immediate visibility of an ecosystem's response to nutrient pollution. We can't always see the consequences of a particular nutrient pollution source immediately, but the absence of evidence of immediate and localized visible impacts is not evidence for the absence of degradation entirely.

To successfully protect aquatic health and beneficial uses of Montana's lakes, streams, and rivers, a narrative approach needs to prevent degradation rather than respond to it, define thresholds for degradation that capture the whole range of ecological responses to nutrient pollution, and assess watershed-scale connections between sources of nutrient pollution and effects in downstream waterbodies. Incorporating these necessities expands the simple concept of a narrative standard into a complex and difficult set of rules that create regulatory and environmental uncertainty.

Numeric Approaches to Nutrient Regulation

Numeric approaches can be used to simplify the evaluation of nutrient pollution sources and the regulation of water quality. ***Numeric standards*** directly regulate the concentrations of nutrients in waterbodies and the load of nutrients from different sources. This numeric approach makes it easy to understand pollution sources, and how multiple sources contribute to nutrient loads at different scales. Rather than relying solely on the evaluation of visible impacts to waterways, numeric nutrient regulations set clear, easily measurable limits on the allowable amounts of nutrient pollution.

Numeric nutrient standards in Montana are based on concentration limits developed by evaluating the ecological response to nutrient pollution. Recognizing that a one-size-fits-all solution does not work across the diversity of our waterbodies, individual limits are defined for different ecoregions, rivers, and streams across the state. These numeric standards provide a clear way to understand and regulate nutrient pollution from point and non-point sources and effectively protect local and downstream waterbodies from excessive nutrient pollution.

Narrative and numeric nutrient standards are founded on the same fundamental idea: identify the amounts of nutrient pollution that degrade our waterbodies and keep loads of pollutants below that amount. A narrative approach relies on observations of waterbody conditions to achieve this goal, while a numeric approach adds clarity by actually measuring nutrient concentrations. Although the overall negative impacts of nutrient pollution are clear, the relationships between individual sources of nutrient pollution and the resulting degradation are often complex and difficult to interpret. Measuring nutrient concentrations is much easier than anticipating ecosystem response, and numeric standards provide clear regulatory targets that can be adjusted and interpreted for all waterbodies.

The release of nutrients from municipal, agricultural, and industrial sources presents an ongoing threat to the health and quality of Montana's precious waterbodies. We need a regulatory system that can balance the costs and benefits of economic development and environmental protection. Although logical at first glance, narrative approaches to nutrient regulation create confusion, uncertainty, and allow environmental degradation across Montana's watersheds. Extending the concept of narrative nutrient standards by incorporating direct measurements of nutrient concentrations and loads into a numeric regulatory framework reduces this confusion and uncertainty, and provides a clear, robust, and reasonable approach that can balance environmental and economic costs and benefits.

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Dear Friend of the Clark Fork,

The Clark Fork Coalition has always believed in the power of individual action to create meaningful and lasting change. From CFC's grassroots beginnings to our status today as a nationally respected watershed conservation organization, one constant remains: *the generosity of individual donors like you still fuels our mission to protect Montana's waters.* **Simply put, we couldn't do it without you.**

In 2025, Montana's waterways face critical challenges that threaten our water quality, quantity, and the legal protections that ensure public access and accountability. CFC's legislative priorities this session are focused on addressing these threats and seizing opportunities to safeguard our most precious resource: clean, cool, and abundant water. During this year's legislative session, we are advocating for common-sense exempt well reform to prevent overuse of depleted aquifers, formalized funding sources to restore chronically dewatered streams, and Montanans' right to clean water and a healthy environment as enshrined in our state's Constitution. These efforts are vital to ensuring that Montana's rivers and streams continue to sustain our communities, economies, and ecosystems for generations to come.

Central to our strategy is the Water Watchdogs program, a grassroots initiative that empowers citizens to engage directly with the legislative process. Water Watchdogs are on the front lines, monitoring proposed legislation, raising public awareness, and ensuring that decision-makers prioritize the health of Montana's waterways. This year, we're expanding the program to foster a core group of highly engaged advocates who will speak up for our rivers in critical moments—whether by contacting legislators, attending hearings, or rallying their communities.

Your support makes all of this possible. Every donated dollar helps us develop the tools, resources, and expertise needed to engage communities and hold decision-makers accountable. Your gift will help CFC defend Montana's waters during this pivotal legislative year. Additionally, we encourage you to subscribe to our Water Watchdogs newsletter, where we'll share updates, calls to action, and opportunities to get involved.

We can ensure that the laws protecting Montana's waters remain strong and that future generations inherit clean, thriving rivers and vibrant riparian ecosystems.

Montana's rivers and streams need our collective strength now more than ever, so let's protect what we love—together.

With much hope and gratitude,

Jess Walter, Development Director

Scan to support our work today!