ROARING FORK CONSERVANCY
Bringing People Together to Protect Our Rivers ®

RIVER CURRENTS

Winter 2022

Healthy Rivers? Let's Check...

by Heather Lewin, Director of Science & Policy & Chad Rudow, Water Quality Program Manager

What makes a healthy river? The answer is complicated for a lot of reasons, but mainly because not all rivers are created equal. Like people, each river looks and functions a bit differently, therefore the standards for "healthy" may vary from stream to stream. Comparing a healthy river to human health can be a useful analogy to simplify a complex matter. What makes one person healthy may not be the same for another - variables like age, race, genetics, and gender all come into play. In the same way, one cannot expect a headwater stream that is three feet across to function like the Colorado River and vice versa. So, when it comes to defining, and maintaining a healthy river, a variety of factors should be considered. Everything from how much water is in a stream, how clean that water is, and even what surrounds it all play an integral role in stream health. Like assessing personal health, there are certain factors that, if examined regularly, can help elucidate whether a river is in a functional, healthy state. Similar to an annual physical, regularly checking these metrics and how they change (or not) over time, gives further insight into stream health, or alterations that could be impacting proper functioning conditions.

Of these factors, water quality is often the most talked about and documented aspect of river health. According to the U.S. Geological Survey, water quality is defined as a "measure of the suitability of water for a particular use based on selected physical, chemical, and biological characteristics." Notice this definition does not clarify what that water should or should not contain, or how it should or should not look. In a measure of water quality, some use and standard must be applied as a reference, or baseline. Common water uses include aquatic life, recreation, agriculture, and drinking water. Within water quality, a huge variety of parameters can be collected or measured, and then analyzed and interpreted to understand if that river is meeting a particular use standard.

Returning to the analogy of human health, studying water quality corresponds with an annual checkup with a family doctor, where vital signs including temperature, weight, and blood pressure are measured, and a general assessment is conducted. In the same way, Roaring Fork Conservancy (RFC) water quality staff regularly measures temperature, pH, conductivity, and dissolved oxygen levels. Often these "baseline" measurements are taken at each water quality monitoring event, comparable to a person's vital signs taken each time they step into the doctor's office. A variation in one of these baseline measurements can be an indicator of an issue that requires further investigation.

If a baseline indicator or documented concern requires more information, a targeted study may be initiated. This would be like an individual being sent to see a specialist where additional tests, such as bloodwork or stress tests, are taken to better understand a health concern. In both cases, additional information is gathered to better understand the problem, identify the source, and look for potential solutions. Water quality monitoring may look at nutrients, metals, e.coli, or macroinvertebrates as a response to a concern, or to build upon the baseline. Because water quality can be influenced by many factors, targeted studies are individualized for the stream or reach upon which they are focused. These factors may include human-caused point and non-point source pollution, geology, and other natural systems, along with changes over time, such as drought and climate change.

RFC's water quality program includes collecting long-term baseline data (getting an annual checkup) as well as designing targeted studies to better understand and address water quality concerns (visiting a specialist). Both types of monitoring provide valuable data and can be key tools for assessing and addressing stream health and related concerns. Sound science through regular data collection is the key to understanding how water quality influences stream health in the short and long term.

One might argue that water is the most fundamental component of a river. All other things aside, a river cannot be a river without water. The idea of how much water is in a river seems simple enough at first glance, but when one really dives in (not recommended in local rivers) how, where, and when water is flowing plays an integral role in stream health.

continued on page 2

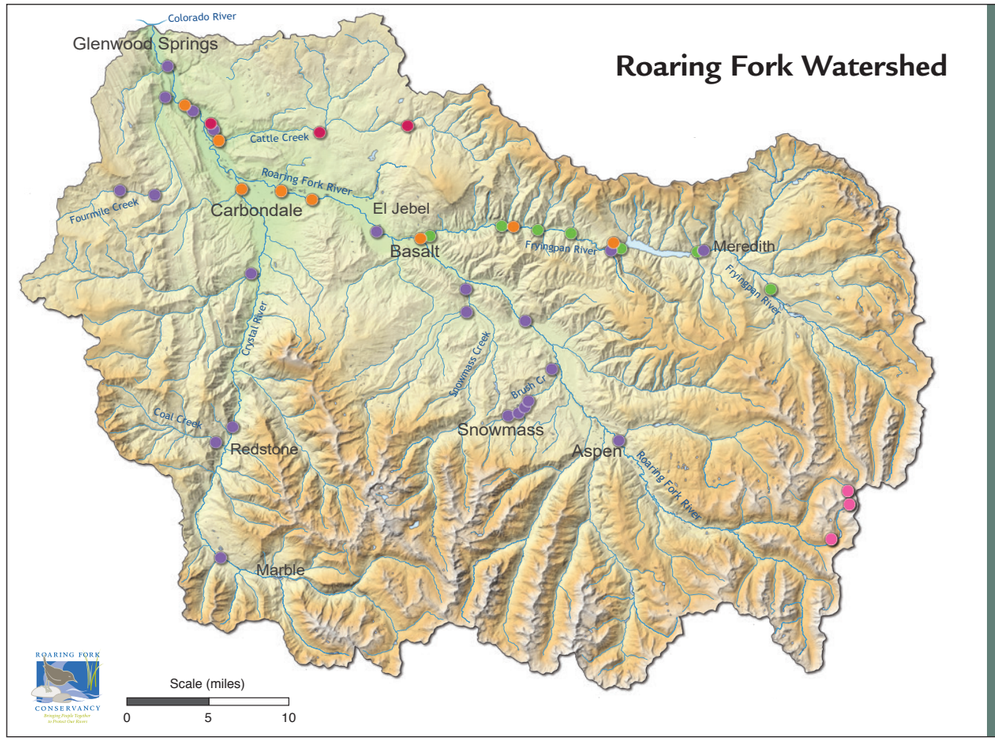
continued from page 1

The amount of water, and the time at which it flows downstream, create the starting point for a healthy river. Returning to the human health analogy, water quantity is analogous to one's "healthy habits" that create a level of strength and resilience in a person's body. Regular exercise, adequate hydration, well-balanced diet, and a good night's sleep set a person up for long-term health. In the same way, a river that has an annual spring flushing flow and maintains adequate base flows throughout the year, creates a foundation for a functioning and resilient ecological system.

Adequate flow allows a river to function, the same way drinking plenty of water benefits overall human health. It flushes the stream free of debris and sediments during high flows in the spring. It provides dilution from toxins and buffers stream temperatures during hot summer months. It creates habitat pools and passage for fish. Ample flows create resiliency during times of stress.

Maintaining water quantity is a priority in preserving stream health. A majority of streamflow is derived from snowpack. As such, climate change is a major threat to water quantity: as snowpack diminishes so does streamflow. This can mean earlier and lower peak flows in the spring, and lower, warmer baseflows in the summer. Like the holidays, when one is stressed and may overindulge in food and drink, drought conditions can create stress in an otherwise healthy river system. When a New Year's resolution to go to the gym, drink more water, and eat a balanced diet is fulfilled, in time, a body's systems restore itself. The same is true for a river. A short period of stress can often be mitigated by a rejuvenating winter of above average snowpack. However, when that New Year's resolution goes by the wayside, and unhealthy habits continue, it takes much longer to lose those pesky ten pounds. In the same way, the longer drought conditions and low flows persist, the longer it will take a stressed stream to recover.

Studying both water quality and quantity together helps provide necessary information in assessing stream health. While the complexity of a healthy river system cannot be fully defined by just water quality and quantity, regular baseline monitoring provides key insights to stream function. Like an annual physical, RFC monitors water quality and quantity throughout the watershed to document healthy conditions and conduct in-depth studies on areas of concern. RFC's baseline water quality monitoring takes place six times a year, often with daily quantity checks. With RFC's staff and dedicated fleet of volunteers' watchful eyes on stream health, one might say the Roaring Fork watershed has the most diligent and proactive medical team in its corner.



Every year RFC conducts a variety of water quality monitoring and stream science field work throughout the Roaring Fork Watershed. This map shows approximate locations of targeted studies and baseline water quality monitoring.

17th annual

Roaring Fork Watershed Photo Contest

Submit photos by November 13

www.roaringfork.org

ROARING FORK CONSERVANCY
Bringing People Together to Protect Our Rivers ®

Do you know we write weekly Snowpack and River Reports?

Receive them in your inbox every Thursday by signing up at www.roaringfork.org/news

Interested in sponsoring these reports? Email Sheryl Sabandal, development director, at sheryl@roaringfork.org

Staff Flows

Cyndy Miller, Watershed Educator Growing up in Colorado, Cyndy was happiest being in the outdoors enjoying nature. It was no surprise then that as a middle school science teacher for the last 15 years, she loved taking students into wild areas to get them excited about nature. Now at RFC, she is looking forward to educating students and sharing her passion for the environment. In her free time you can find Cyndy biking, climbing and skiing in the backcountry.

Eva McDonough, Summer Event Support Eva is an undergraduate student at Bates College in Lewiston, Maine. She joined RFC this summer to help us during our busy summer schedule of events, including our Return to the River dinner series. Eva's hard work, attention to detail, and positive attitude were integral to the success of our events this season. We couldn't be more thankful for her assistance and wish her well as she begins her sophomore year at Bates.

ROARING FORK CONSERVANCY
Bringing People Together to Protect Our Rivers ®
BUSINESS MEMBER

2022 PREMIER BUSINESS MEMBERS

Altitude Advisory, LLC
Barnes, Pearson & Rudow PC
Bristlecone Mountain Sports
Crystal Fly Shop
Incline Ski & Board Shop
Karp Neu Hanlon
K&W Concrete
OpenSnow
Organic Return
Proudline Guided Flyfishing
RJ Paddywacks Pet Outfitter
Sopris Fishing Outfitters
32 Winds Wine
Woody Creek Distillers

2022 STANDARD BUSINESS MEMBERS

Maley Building Corporation
Roaring Fork Fishing Guide Alliance

Thank you for supporting essential river research, education and conservation work!

Current as of September 2022

Collaborating to Protect Healthy Streams

by Chad Rudow, Water Quality Program Manager

In the summer of 2022, RFC joined a collaborative effort to identify eligible streams and rivers in the upper Colorado River Basin as Outstanding Waters (OW). RFC is working closely with numerous partners to collect water quality data and engage in local outreach efforts necessary to qualify streams for OW designation. In late summer, RFC water quality staff collected the first round of two years' worth of water quality data on potential candidate stream reaches within the Roaring Fork Watershed.

What are Outstanding Waters?

Many of Colorado's headwaters streams provide high-quality water that contributes to the overall health and resilience of rivers in the region and by extension the health of the communities, ecosystems, and economies connected to it. OW is a designation awarded to such reaches of streams, rivers, or other bodies of water with high water quality and exceptional recreational or ecological significance, that are deemed worthy of increased protections by the State of Colorado. The intent of the designation is to preserve the high quality of the designated reaches for future generations.

A river or water body that is designated as an OW receives special water quality protections within and upstream of the reach, protecting it from long-term degradation, that is, from deterioration of existing water quality conditions. For a stream or part of a stream to qualify, it must meet specific water-quality criteria gathered across a wide range of measures.

Protection of Colorado's highest quality streams is vital to our state and our way of life. Clean water is not only critical for drinking water for our communities, but also for habitat for fish and other wildlife, farming and ranching, recreation, and the long-term economic development of Colorado's towns.

To learn more visit www.ourcowaters.org/outstanding-waters/.

Provided by American Rivers

The Clean Water Act gives individual states the authority to designate Outstanding National Resource Water protections for waterways with exceptionally high water quality to ensure that their water quality is not degraded. An OW designation is awarded through the Water Quality Control Commission of the Colorado Department of Public Health and Environment. Designation occurs through a three-year rulemaking hearing process that includes three public hearings.

More Ways to Support RFC!

Double your Impact with a Company Match

Many employers will match charitable contributions made by their employees. By taking advantage of a company's matching gift benefit, you may be able to double or even triple the amount of your contribution! Ask your HR department today!

minted™

'FUNDRAISEFORK' at Minted.com

When you shop Minted.com's marketplace of independent artists to find the perfect card, personalized stationery or gift using our code: **FUNDRAISEFORK** - you'll save 20% + Minted.com will donate 15% of your order to Roaring Fork Conservancy!

COMMUNITY FIRST FOUNDATION
COLORADO GIVES DAY
ColoradoGivesDay.org **Dec. 6**

Colorado's largest giving day!

When you donate at ColoradoGives.orgRoaringForkConservancy between November 1 and December 6, your support is amplified by the $1.4M Incentive Fund!

Honor Someone Special with your Gift

Donating in someone's honor or memory is a meaningful way to express gratitude or recognize important life events, while helping ensure a healthy and vibrant Roaring Fork Watershed.

Consider a Charitable Rollover

Individuals over 70½ may donate up to $100,000 per year to charities directly from their IRA, known as a Qualified Charitable Distribution (QCD). QCDs count towards any required minimum distribution (RMD) an account holder must take from their IRA. With a QCD you can benefit your Roaring Fork Watershed, fulfill your RMD requirement, and exclude that amount from your income. Talk to your financial advisor to find out if this is a good strategy to support your rivers!

amazonsmile

amazon smile + your rivers

If you use amazon, go to smile.amazon.com and select Roaring Fork Conservancy as your charity of choice, then every eligible purchase will result in a donation for your rivers!

Connect your City Market Rewards Card

1) Click enroll or log in to your account at www.citymarketcommunityrewards.com
2) Search for Roaring Fork Conservancy or CV113
3) Click Enroll and you're ready to support your rivers while you shop!

1% FOR THE PLANET
– ENVIRONMENTAL PARTNER –

RFC is a 1% for the Planet Environmental Partner

Roaring Fork Conservancy is proud to be a part of the 1% for the Planet network, which connects businesses and nonprofits to protect the planet. If you own a business, consider joining 1% for the Planet, naming RFC as your beneficiary! Learn more at onepercentfortheplanet.org.

Floating into the Watershed Pen Pal Program

by Alexis Hitzeroth, Watershed Educator

Last winter, RFC's educators connected fifth graders from Basalt Middle School to fifth graders at Vista Peak Exploratory in Aurora, CO. Why? To unite two groups of people from both sides of the Continental Divide that share the same water: the Fryingpan River! (You can read more about this program in the 2022 summer issue of *River Currents*.)

This fall, a new cohort of students launched the second year of the Watershed Pen Pal program. To provide a bigger picture of Colorado's waterways, 125 Basalt fifth graders, teachers, and support staff filled 14 rafts and spent a day boating the Colorado River through Glenwood Canyon and observed the Roaring Fork River's confluence with the Colorado River. Participants piled into boats with anticipation and excitement, a quick glance down the beach showed smiles and focused attention, while guides shouted out paddle commands. It was an amazing sight! Defiance Rafting Company and Pitkin County Healthy Rivers generously provided the support to make this experience free!

During the float, RFC educators took turns going from boat-to-boat, teaching students about river ecology and health. Students conducted several water quality tests: pH, temperature, riparian vegetation assessment, and turbidity. Students learned how to read a thermometer and found out at what temperatures trout are most happy. Students also flipped over rocks, looking for macroinvertebrates, and learned how they are indicators of stream health.

This was the first white water rafting experience for most of these students. By floating on the river, students were able to experience the thrill of the rapids that draw so many adventurers out west – they even saw a black bear on the edge of the river! Defiance Rafting guides shared their river knowledge and included many facts they learned during a river ecology guide training provided by RFC staff each spring. One of the items the guides discussed was how sediment affected the turbidity of the Colorado River after the Grizzly Creek Wildfire. The excitement and conversations on this trip underscored how important it is to take learning beyond the walls of a classroom.

Some of the goals of RFC's Watershed Pen Pal program are to increase communication and writing skills through old fashioned letter writing, cultivate students' knowledge and connection to rivers, and build relationships across the divide by valuing a shared water source. Having fun outdoor experiences like this not only creates future river stewards, but also provides good writing material for their pen pals across the divide. Students will now be able to describe rivers on the western slope to their pen pals in Aurora, who often do not know where their water is coming from and rarely get the chance to play in it.

We hope that by sharing real-life river experiences with their counterparts across the divide, a stronger connection to the water we all depend on will be forged.

The Brooksher Watershed Institute

Winter 2023 Presenters

Roaring Fork Conservancy invites you to join us for in-person presentations addressing our most precious resource, water. We'll discuss the most current water-related issues at the local, state and national level, and provide opportunities for one-on-one dialogue with these water leaders.

December 9, 2022
PREDICTING POWDER AND THE SCIENCE OF SNOW WITH METEOROLOGIST JOEL GRATZ

Joel Gratz, Founding Meteorologist of OpenSnow

Joel will discuss how to read weather forecasts and snow reports so that you can plan your perfect days on snow this winter. In addition, Joel will discuss the outlook for the upcoming season, new weather technology that is being developed by OpenSnow, how far out we can trust forecasts, and what shifts that we are (and are not) seeing in the climate. This talk is a fun way to get excited about winter (and it will fulfill your inner geek's desire to learn more about the science of weather).

Presented in partnership with Bristlecone Mountain Sports, FirstBank, Odell Brewing and OpenSnow.

January 5, 2023
A LOWER BASIN PERSPECTIVE ON THE STATE OF THE COLORADO RIVER

Kathryn Sorensen, PhD, Director of Research & Professor of Practice at Kyl Center for Water Policy at Morrison Institute at Arizona State University

The Colorado River water imported into the desert cities of Phoenix and Tucson via the Central Arizona Project canal is low-priority water that is cut first in times of shortage. Next year, Arizona will lose around 40% of this water. Former Phoenix Water Director Kathryn Sorensen will discuss how shortage on the Colorado River impacts cities, tribes, and agriculture in Central Arizona, how the largest cities in Arizona manage their water resources, and how Arizona will continue to write its water future.

Presented in partnership with Basalt Regional Library.

Registration is required for all presentations as seating is limited. Program details can be found at www.roaringfork.org/events.

January 19, 2023
PARTNERING WITH BEAVERS TO RESTORE COLORADO'S MOUNTAIN WETLANDS

Mark Beardsley and Jessica Doran, Founders of EcoMetrics

Wetland riverscapes were severely degraded when beavers, a quintessential keystone species, were hunted to near extinction during the fur trade of the colonial era. Even though the fur trade ended abruptly two centuries ago, beaver populations have been slow to recover and the wetlands remain impoverished. Can we restore these valuable habitats mimicking, promoting, and sustaining the keystone natural aquatic ecosystem engineer? With recent examples from the Colorado mountains, this talk explores how we are learning to partner with beavers to restore wetland riverscapes.

Presented in partnership with Basalt Regional Library.

February 9, 2023
WHERE DO WE FLOW FROM HERE?

Alex Hager, Reporter for the Colorado River Basin and Water in the West at KUNC

The Colorado River starts in our backyard, when it falls as snow in Colorado, but more than 40 million people use its water from Wyoming to Mexico. Where does the water go, and how do we balance the needs of cities, farms, tribes, and ecosystems as we decide how to divvy up the shrinking river going forward? Alex travels the basin covering water issues for National Public Radio stations. He'll share stories of the people and places that depend on the Colorado River, and take a look at how they're shaping its future.

Presented in partnership with Basalt Regional Library.

March 21, 2023
A RIVER OUT OF TIME, MOVIE SCREENING

In 1869, a small group of surveyors lead by John Wesley Powell set out to map the unknown extent of the Colorado River Basin. 150 years later, they followed in Powell's footsteps to reevaluate Powell's legacy, absorb the unquantifiable power of place and articulate what the future may hold for water in the American West.

Presented in partnership with TACAW.











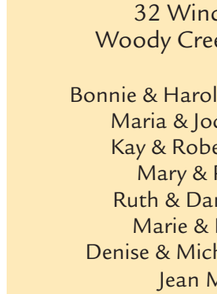
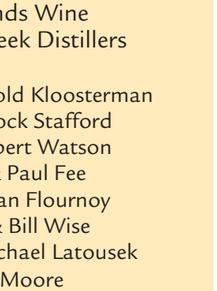

THANK YOU TO OUR SPONSORS!

David & Judy Baum
Carter & Dane Brooksher
Barb & Pat McMahon
Jane & Tim McMahon
Clarisa & Tom McMahon
Cornelia Long
Alpine Bank
32 Winds Wine
Woody Creek Distillers

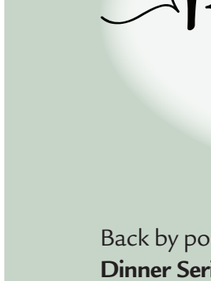
Bonnie & Harold Kloosterman
Maria & Jock Stafford
Kay & Robert Watson
Mary & Paul Fee
Ruth & Dan Flournoy
Marie & Bill Wise
Denise & Michael Latousek
Jean Moore

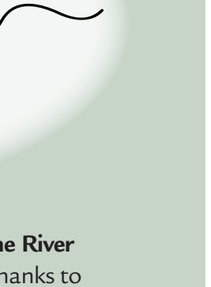
Becky & Doug Walker
Diane Oshin & Sidney Mandelbaum
Marnie & Lee Hogan | Jan & Bob Firth
Betsy & Jim Chaffin | Barb & Karl Friedman
Missy & Dave Hotchkin
Stacey & George Kelly
Judy & Jim Rifkin | Jason Carey
Eleanor Davis | Claudia & Fred Lummis
Kim & William Madden | Timbers Resorts









32 Winds: RFC-ROCKS

When you order from 32 Winds Wine at www.32windswine.com, use the code RFC-ROCKS and 15% of your order will support RFC!




Thank you for returning to the river with us this summer!

Return to the River
DINNER SERIES

Benefitting Roaring Fork Conservancy

Back by popular demand, we hosted our **Return to the River Dinner Series** at the lovely Dallenbach Ranch. Huge thanks to **Tracey Snow of Woody Creek Distillers** and **Mia Mascarin of 32 Winds Wine** for donating all the delicious refreshments for this summer's cocktail and wine dinners!

On the banks of the Fryingpan, attendees enjoyed hors d'oeuvres, learned more about our work from RFC Staff, and connected with fellow watershed supporters. The evenings continued with a highlight of our current projects, music, dancing, live auction, and a delectable dinner by Free Range Kitchen.

FREE RANGE KITCHEN · 32 Winds WINE · WOODY CREEK DISTILLERS

Don't miss out on the fun! *Email Sheryl@roaringfork.org to ensure your email is up to date in our system!*

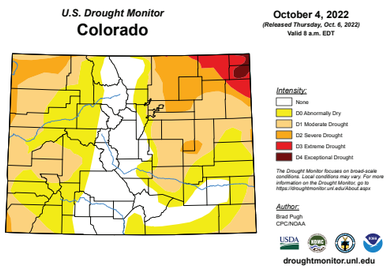
Photos by Stonehouse Pictures



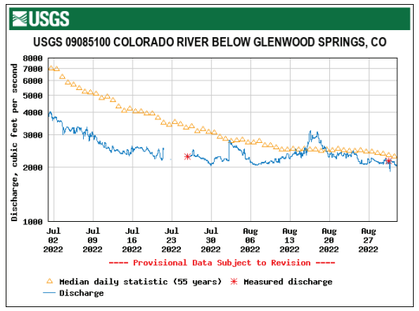
ROARING FORK WATERSHED FINAL REPORT CARD FOR WATER YEAR 2022

October 10, 2022 - In the summer issue of *River Currents*, RFC published the Roaring Fork Watershed Midterm Report Card. Grading was based upon data that included winter snowpack, temperature, and soil moisture. Now that the autumn is upon us, and the 2022 water year has come to a close (recall, water year begins October 1), we can evaluate how this year has shaped up. Conditions at the end of 2022 set up how 2023 begins. The Report Card is a simplified way to break down the components that contribute to watershed conditions throughout the year in a familiar format that can be used annually to track current conditions, as well as changes and trends over time.

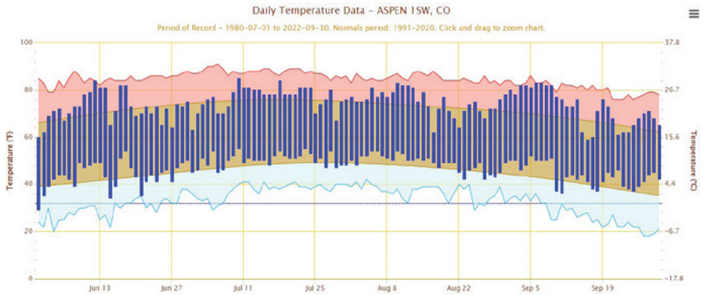
Drought: According to the U.S. Drought Monitor, the Roaring Fork Watershed is experiencing abnormally dry conditions, with little change in local conditions since the spring. However, conditions improved in surrounding areas and statewide. This is the lowest drought intensity the watershed has experienced to start the water year since 2019. **Grade: B+**



Stream Flows: In general, stream flows between June and the end of September were below average. The few short-term exceptions can be contributed to (much appreciated) monsoon rains, that created small spikes which then returned to baseflow levels. The concern with low flows is that it increases water temperature, minimizes the amount of dissolved oxygen, which stresses aquatic life.



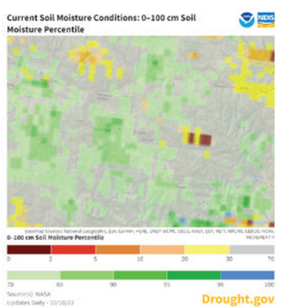
While water temperatures on the lower Roaring Fork River were higher than normal, it did not result in any fishing closures for the first time in several years. **Grade: C**

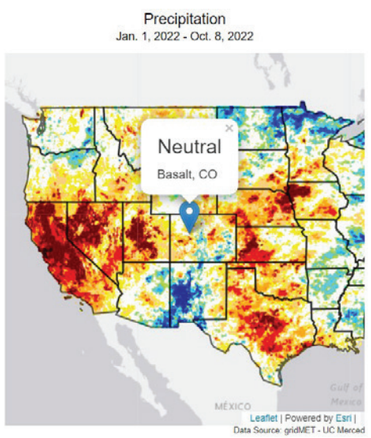


Air Temperature: Since May 1, observed temperatures at Aspen Airport, the only National Weather Service recording station in the watershed, trend slightly above average with notable stretches of high temperature in June and early September. **Grade: B-**

Soil Moisture: The 2022 water year is ending with average or above-average soil moisture throughout the watershed, the highest amount since fall 2019. Higher moisture content in the soil in the fall will translate into more productive runoff in the spring. This is because snow feeds the soil first. Once the soil is saturated, additional water percolates through the ground and feeds the rivers. This bodes well for the summer of 2023 if the snowpack does its part! **Grade: A**

**The caveat here is that soil moisture is a relatively new measurement, so the data is still open to some interpretation.*





Precipitation: After a tough winter, the Roaring Fork watershed has rebounded well this summer. With the return of late summer monsoons, most of the watershed was in the top ten wettest Augusts on record (since 1894). Independence Pass received 10" of precipitation since June 13, while lower elevations from Glenwood Springs to Aspen receiving 5.5-7". This has left the watershed between 90%-110% of average. **Grade: A**

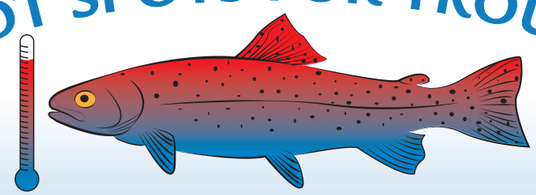
Midterm Grades:		**Final Grades:**	
Drought:	B-	Drought:	B+
Snowpack:	D+	Snowpack:	n/a
Stream Flows:	C	Stream Flows:	C
Soil Moisture:	B-	Soil Moisture:	A
Precipitation:	F	Precipitation:	A
Air Temperature:	A	Air Temperature:	B-
Grade based on cumulative GPA:	**C**	**Final Grade based on cumulative GPA:**	**B**

Final Grade for the 2022 Water Year: C+

Remarks: By most metrics, this is one of the best summers the Roaring Fork Watershed has had in a few years. Above average temperatures were balanced out by above average precipitation. The 2022 Water Year finishes with a C+, which leaves us at just about average. As the persistent drought continues across the west, average looks pretty good. We will continue to hope for an above average winter!

We acknowledge there are factors that impact local rivers that are not taken into consideration here including reservoir management, increased development, and diversions (transmountain and local). Here, for the sake of simplicity, we are looking only at climatological factors. View the Spring 2022 Midterm Report and grading rubrics at www.roaringfork.org/your-watershed/watershed-report-card/.

HOT SPOTS FOR TROUT!



Citizen Science Stream Temperature Monitoring in the Roaring Fork Watershed

We are extremely grateful to the Hot Spots for Trout volunteers that collected and reported over 200 stream temperature readings from July to early October! Thank you!

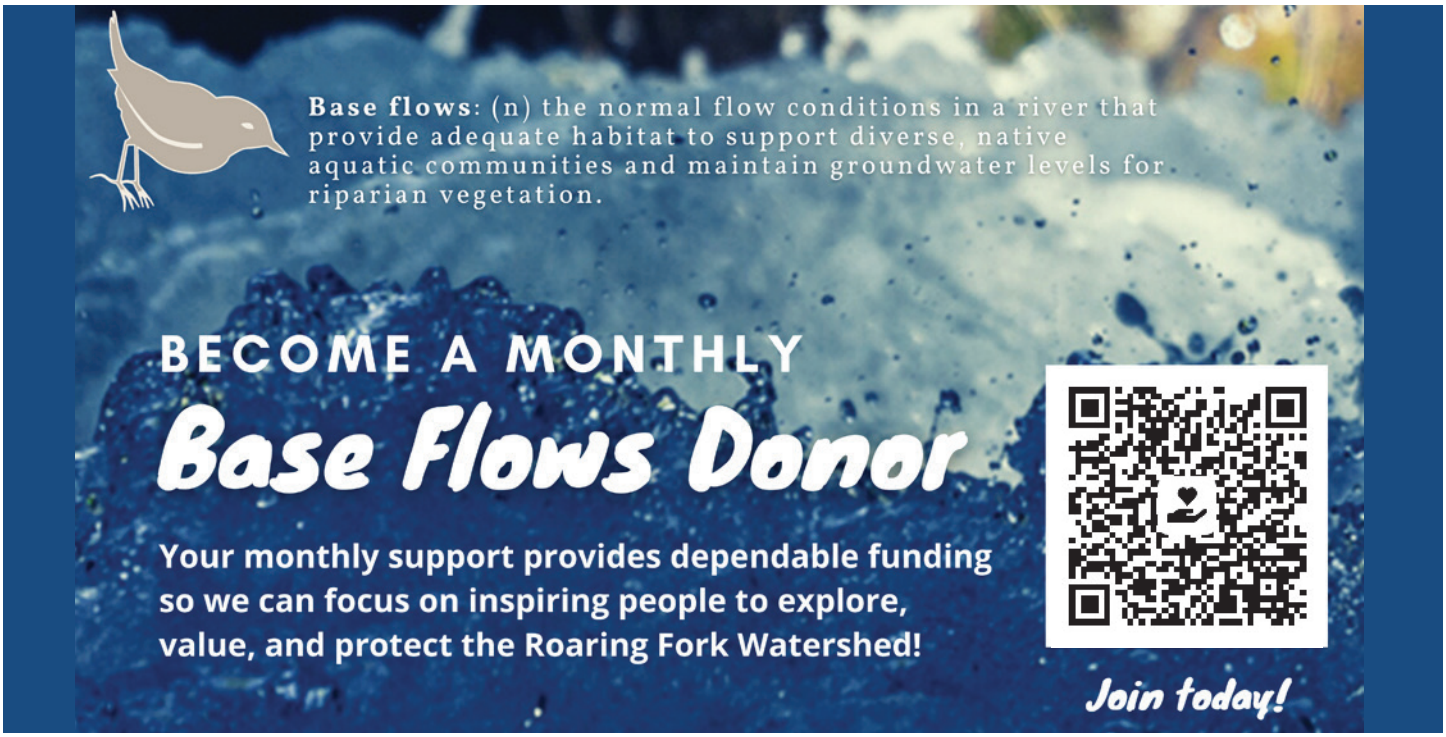
Robb Angier
Ted Behar
Ken Everett
Henry Hurd
Lani Kitching
William Mitchell
Doug Walker
Steve Wilson

A special thank you to John B. Newbury for developing the Hot Spots for Trout database!

RIVER CURRENTS
is published biannually by Roaring Fork Conservancy. Since 1996, Roaring Fork Conservancy has inspired people to explore, value and protect the Roaring Fork Watershed. We bring people together to protect our rivers and work to keep water in the streams, monitor water quality, and preserve riparian habitat. Roaring Fork Conservancy is an independent 501(c)(3) not-for-profit organization registered in the state of Colorado.

ROARING FORK CONSERVANCY
P.O. Box 3349 ~ Basalt, Colorado 81621
(970) 927-1290 ~ www.roaringfork.org

NONPROFIT ORG
U.S. POSTAGE PAID
GLENWOOD SPGS, CO
PERMIT NO. 90



COMMUNITY FIRST FOUNDATION
COLORADO GIVES DAY
1STBANK Community Partner
ColoradoGivesDay.org Dec. 6

When you donate at ColoradoGives.org/RoaringForkConservancy, you bring people together to protect your rivers, monitor water quality, preserve riparian habitat and prepare the next generation of river stewards!