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The Friends of the Teton River is dedicated to understanding and improving ground and surface water resources in the Teton Basin. including the Teton River, its tributaries and wetlands. We will further this mission by conducting scientific research about the Teton waters hed, effectively communicating this information to the public, and implementing on-the-ground improvement projects. In carrying out this mission we will actively cooperate and collaborate with all other groups, agencies and individuals working for the welfare of the Teton Basin.

WATER LINES

A QUARTERLY NEWSLETTER PUBLISHED BY FRIENDS OF THE TETON RIVER

Reservoir recharge revisited

Demonstration project will utilize flood irrigation in an attempt to recharge declining groundwater levels

t the turn of the century, as the Teton Valley was settled, dramatic changes in the waterscape took place. Early pioneers recognized the water wealth running out of the Teton and Big Hole Mountain Ranges and set about making it usable. In order to make agriculture viable, the quick flush of spring run off needed to be contained and the water stored for use later in the season. In other basins in Eastern Idaho this was done by building storage reservoirs; however, in the Upper Teton Basin the geologic setting didn't permit construction of a dam. Instead, the practice of flood irrigating farmland with generous amounts of early spring runoff was instituted and a large natural underground storage reservoir resulted. An extensive system of canals and ditches was built to deliver water to cultivated fields and water was turned out onto those fields as it reached the valley floor.

The changes that occurred in the hydrology of the Teton Valley were remarkable. Tributary streams no longer carried large amounts of water to the Teton River in the springtime; this water was dispersed into the canal system and into the ground. The flood peak for the Teton River was attenuated (spread out over time) and, just as interestingly, groundwater levels





(Top) Berkeley Stone (left) and Michael Nicklin pour over irrigation maps. (B ottom) Mark Trupp (left) and Boyd Moulton introduce a presentation about aquifer recharge.

throughout the valley began to rise. Additionally, late summer flows in the Teton River were higher because water was released slowly from the aquifer into springs that feed the Teton River. The landscape also changed. On the eastern fringe of the Teton River, the flow in spring creeks increased and existing wetlands were augmented by the higher groundwater. This hydrologic setting persisted through much of the twentieth century.

In the 1970s, however, irrigation technology advanced and farmers

→see RECHARGE on Page 3



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> LAYOUT & DESIGN BY MARY LOUHANSEN

Electrofishing highlights changing fish population



Tom Fenger FTR President of fish and where they live!

hen Idaho Fish & Game called me to assist them in their electrofishing trout population survey I was elated. Not only could I participate in an important population census, I would also get to see a bunch

If you are unfamiliar with this technique for estimating fish populations, here is a brief description. Two boats, equipped with electrical generators, float down the river covering the banks and the middle. On command from the operator, an electric current is sent into the water, which temporarily stuns the fish. Interestingly, it takes less power to stun larger fish due to their increased surface area. The fish are then netted and put into a live well (such as a garbage can full of water). Netting is both fun and challenging. The entire surface of the water can be covered with fish, but you have only a few seconds to distinguish between whitefish and trout and scoop up the trout before they recover and swim away.

Once the live well has been filled, the fish are anesthetized, species and size are recorded and a small hole is punched in the tail to mark the fish. Then they are released and we make sure they all swim away. One week later we return and do it over again, also recording trout previously marked and identifying them as "recaptures." The number of fish captured and recaptured is plugged into a formula and the population estimate is made. Electrofishing is a safe and effective way to estimate fish populations and is essential to sound fisheries management.

While we were conducting the survey, I realized how important willows and macrophytes are in providing trout cover and habitat in the Teton River. Unfortunately, I also witnessed that out of the hundreds of trout sampled, only a handful were native Yellowstone Cutthroat trout. Over the past four years the ratio of rainbow "Out of the to cutthroat trout has hundreds of trout greatly increased and the that we sampled, number of cutthroat trout only a handful were native Yellowstone has greatly decreased. As Cutthroat trout." the electrofishing day

continued, I understood more clearly than ever the importance of FTR's efforts to address declining trout numbers and other problems facing our watershed.

2003 was a great year for FTR, beginning with the award of a Federal Congressional appropriation to fund the Upper Teton Watershed Plan and ending with significant habitat restoration projects on the Teton River and its tributaries. Important other research efforts like the juvenile trout study, the recharge demonstration project, and the habitat assessment study-are now underway so we can better understand problems in our watershed.

In an exceptional year filled with many accomplishments, we all have much to celebrate. With the survival of Yellowstone Cutthroat trout in the Teton River currently in question, I am asking you to further your support of FTR. If you're not already a member, please join us in preserving and restoring the water resources of Teton Valley. If you are a member, please consider making a special year-end tax-deductible contribution. Together we can work to save the Yellowstone Cutthroat trout.

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Teton River Habitat Assessment

his fall FTR's seasonal research associate Mike Lien completed a second season of habitat assessment and channel surveying on the Teton River. Last year, Mike surveyed sites between Teton Creek and Rainey Fish and Game access, which led to bank restoration on five sites (shown on pages 4-5); this year we focused surveying efforts



between Fox and Teton Creeks.

This section of the river is low gradient, very wide, and has a considerable amount of silt on the bottom of the river. The interdisciplinary group who floated the river together earlier in the summer had questions about historic river width, bank vegetation, and sediment transport. Before we started surveying, we looked at aerial photographs from 1984-2002 for this section of the river, and talked with individuals who have lived and worked on the river. to see what changes have occurred over the past 30 years. We found that channel shape has changed and islands have formed and grown in response to high flow events such as

(Left) Lyn Benjamin extracts herself from the silt while helping Mike Lien to survey the Upper Teton. (Right) Mike Lien motoring up the Teton after a long, windy day spent surveying. the 1997 runoff. We established 11 sets of cross-sectional surveys (five cross sections in each set) at tributary streams and islands and are currently in the process of analyzing the data for channel geomorphology, instream habitat, riparian vegetation, and bank stability. We will use this information to plan restoration efforts in the Upper Teton River.



RECHARGE from page 1

began to use sprinkler instead of flood irrigation, which enabled them to irrigate larger areas of ground with less water.

Again, the hydrology of the basin changed but this time more slowly. Now, in 2003, as more land is taken out of agriculture and developed, and after five years of drought, we are just realizing how dramatic the effects of this second change in water use have been. Low flow days, below 150 c.f.s., on the Teton River have increased since 1980, spring creeks are declining, and wetland areas are decreasing. Foster Slough that used to transport boats is no longer easily navigable; ground where waders were once needed is now traversed in sneakers. Since Teton Valley natural reservoir is not being used as much as it was, groundwater levels are dropping.

Boyd Moulton, Randy Berry, Lyle Kunz and others have long believed that replenishing groundwater—aquifer recharge—is a critical component of restoring the health of Teton Valley's fisheries and wetlands. FTR is currently working with them, and a growing group of farmers, to reintroduce aquifer recharge to areas of the

valley where it is still feasible. We have had a series of meetings with farmers and ranchers to discuss recharge and related water rights. Attendance at these meetings has been excellent and discussions candid and productive.

Dr. Michael Nicklin, the groundwater hydrologist from Bozeman who produced the original Teton Basin aquifer model, has played a critical role in the process. He has spent countless hours talking with irrigators and FTR staff and visiting potential

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wetlands.

recharge sites. Equally importantly, he has generously attended community meetings and made presentations about his work. He has put together a recharge demonstration project and monitoring plan that will be implemented in the spring of 2004. The

project includes flood irrigation in the Fox Creek area and a gravel pit recharge effort near Trail Creek.

We at FTR are very excited to be participating in a project that we believe will start to provide solutions to problems that are occurring has a result of declining groundwater levels in the Teton Basin. We greatly appreciate the time and effort that so many stakeholders have taken to discuss these issues and look forward to continuing the dialogue.

FRIENDS OF THE TETON RIVER I





estoration work on the Teton River started on Toni Hill's Conser-✓ vation Easement property below the Bates Bridge on the Teton River. Although the stream banks have been fenced and cattle watered from tanks for 15 years, the banks had continued to erode with little reestablishment of native vegetation. FTR is currently stabilizing and revegetating these banks. Arlin Grimes (Photo 1), of Western Watersheds and Intermountain Aquatics, recontoured and terraced the site. After the bank recontouring was completed, rolls of erosion control matting were used to create two terraces (Photo 2).

On Oct. 16 FTR volunteers helped restoration efforts on Toni Hill's property by planting containerized willows (Photos 3 & 4), harvesting and trimming dormant willow cuttings (Photo 5); and planting willow cuttings using a device called the stinger, on loan from the Natural Resources Conservation Service. The "stinger," demonstrated by John Siverd (Photo 6) and operated by Liza Berry (Photo 7), is a large water gun that makes a deep hole in which to plant willow cuttings.

The following dather Tetonia 4th graand Intermountai Wilson's property to willows, operate the willow cuttings. Rug Madsen (Photo 8) were helping harvest willow Benjamin ferried stuand Gary Nick Breacross the river to comment of the state of the state

A streambank (Photo 10) has been Board member Dave V Teton River. Note to sedges next to the riof willows.

Restoration work
was completed on Or
fences installed arou
In July and August
planted with native
will be placed over
matting and all disc
seeded with native
restored areas withroughout the sum







PAGE 4

RESTORATION ACTIVITIES, 2003

y Barb Agnew and de class joined FTR n Aquatics at Bob o help dig holes for stinger," and harvest ger Hansen and Joe re two of the students llow cuttings. Lyn ıdents Jose Figueroa ckenridge (Photo 9) ut and trim willows. restoration project completed at FTR Nork's property on the he healthy fringe of ver and the bundles

k at the three sites ctober 21, 2003 with and all of the willows. 2004, wetland sod, sedges and grasses, the erosion control turbed areas will be grasses. All of the will be irrigated mer. any thanks to Katie Salsbury, Arlin Grimes and the awesome InterMountain Aquatics field crew who completed this first phase of the restoration work in record time.

Many thanks also to our volunteers—Tom and LeAnne Talbot, Phyllis Anderson, Georgina Worthington, John Greenwood, John Siverd, Liza Berry, and Tom Fenger—who met at the FTR offices on a gloomy Thursday morning and worked hard on the river all day amidst laughter, water fights, sweat and dirt. The day ended with beautiful sunshine and a good time was had by all who participated. FTR's success is a result of the involvement and commitment of volunteers like you!

A final huge thank you to Barb Agnew and her intrepid 4th Graders and their parents who have studied Spring Creek for much of the fall and who were enthusiastic, hard-workers for a long morning on the river ("I'm really, really hungry!!!)

Funding for this restoration work was provided by the U.S. Fish and Wildlife Service, The Donald C. Brace Foundation, The Arthur B. Schultz Foundation, The Upper Snake River Fly Fishers Foundation, The Five Star Challenge Grant Program, The One Fly Foundation, and the Peninsula Community Foundation. Our thanks to all of you.













Thanks to our Generous Donors

OLD BILL'S FUN RUN 2003

Thankstoyour generosity, FTR received a total of \$32,339 through this year's Old Bill's Fun Run. These funds comprise a large percentage of our annual operating budget. We offer a special thanks to the staff and board of the Community Foundation of Jackson Hole for orchestrating this amazing event. We deeply appreciate the support of the following individuals and businesses:

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THANK YOU to the following members, donors and foundations for their contributions during August, September & October 2003.

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FRIENDS OF THE TETON RIVER



FTR T-SHIRTS NOW AVAILABLE

Thanks to the generosity and talent of Elisa Davis and RiverTime Designs, FTR has a beautiful new T-Shirt. Colors are mauve, sandstone and celery and come in a variety of sizes. Short or long sleeve shirts are available for a \$15 or \$25 donation respectively. Please contact Bonnie at 208-354-3871 if you are interested.



Jeff Navlor, Lyn Benjamin and Barb Agnew (right) look through FTR's photo album during the Oct. 9 House Warming and Art Viewing at FTR's new office at 36 East Little Avenue in Driggs.

Please visit our new office

ver 70 people attended the Oct. 9th Friends of the Teton River House Warming and Art Viewing celebration. For those of you who missed the event, please stop by anytime to see our new home and Teton River Gallery at 36 East Little Avenue in Driggs. FTR would like to give a special thanks to the following volunteers and talented artists who made the event a success and to Dale Burr for his original idea.

Barbara Agnew's Tetonia 4th Grade Phyllis Anderson Rusty Anderson Broulims Dale Burr Dan Burr

Elisa Davis Marge Edwards Michele Farrier Tom Fenger Grand Teton Brewing Co. A.D. Maddox Alan McKnight

Miso Hungry Stephen O'Connor Elaina Oliver O'Rourkes Sports Bar & Grille

Chuck & Twing Pitman Sam & Joyce Pole

Bo Ross Dr. Gill O. Sanders, M.D. Smokin' Star Sue Tyler Patty Wallace Georgina Worthington Greg Yaskot

Strategic planning retreat

as it Katie's rich cho colate mousse or the realization that I had agreed to serve on the Fund Raising committee? For some reason I woke at 3:30 a.m. to rethink about the Strategic Planning Retreat that the Friends of the Teton River board had held the previous day (Oct. 25).

Tom Fenger brought the meeting to order by congratulating the staff and board on a job well done, and reminded us that FTR is just three years old. In that short time, we have moved from a volunteer-based organization to one with three paid employees and several consultants. Bill Kelly added that FTR has undertaken many complex projects—another pat on the back. We recognized that dedicated staff and board members, successful grant proposals, and generous donations have allowed this growth.

As the meeting continued, we asked ourselves: "Where do we go from here? How fast do we go? Are we on the right track?" Since we are working on several multi-year projects, Sam Pole suggested proceeding with caution to avoid physical and financial burnout. Karen Scheid read the FTR mission statement and we agreed that the work being done is indeed in line with our mission. We are on the right track. Our discussion next addressed how we should proceed to make FTR a stronger organization. The main themes we talked about included:

In order to continue to grow we must increase our fund raising efforts since grant monies do not cover all of our expenses. The newsletter, office computers and administrative overhead costs are examples of expenditures that need donation support.

**We need to increase the number of board members



FTR Board and Staff

and seek out people with backgrounds in specialized areas and long-time residents of the valley.

**We created committees made up of board members to delve into areas of concern. Committees include: Nominating, Web Site, Research, Fundraising, Legal and Education and Outreach.

will provide increased information and data by sponsoring public forums to make our accomplishments and data available to the citizens of the valley.

We will further develop our education program beyond our current work with two local classrooms by hiring a part-time staff educator.

We will secure a scientific advisory board to monitor and review our projects and reports, to provide credibility for our research.

**We created a realistic budget so we can begin 2004 with a definite set of goals.

We developed an agenda and calendar for the coming year that will include board meetings, yearly events and activities.

That's a big list of items for the coming year. Most of these challenges, if not all, require money. Please give me a call if you have suggestions on ways to proceed. After all, I'm on the fundraising committee! Phyllis Anderson

Please consider a year-end gift to protect the Teton watershed

s my first Teton Valley winter approached, I had two expectations: The ground would be covered with feet of snowand activity at Friends of the Teton River would eventually slow down. As I write this letter in early November, I'm still waiting for both.

Just as field work in the Teton Basin occurred daily all summer, it continued intensely through October and November. Taking advantage of the sunny days, I left the confines of FTR's new home at 36 East Little Avenue to see what was going on outside of my administrative realm. As expected, I was utterly impressed.

As Administrative and Development Director, I realize that none of these projects would be happening without the continued financial support of both the local and extended community. The office at FTR is busy because of your memberships, special donations, event attendance, in kind contributions and volunteer time. Since all of our

projects are so dependent on funding from individuals, I cannot personally thank you enough. Your support makes it all possible.

Though FTR has come a long way, there are still considerable challenges and a multitude of needs that lie ahead. FTR is making great strides but the Teton River is still confronted with declining Cutthroat Trout numbers and increasing impacts on water quality. As FTR plans the agenda for 2004, I realize just how much money we need to continue our efforts—a proposed budget of \$500,000.

As 2003 draws to a close and you consider how to direct your year-end charitable giving, please consider helping the Teton River by sending a special, tax-deductible year-end gift to FTR. Special donations play a vital role in determining the work that we can get done.

With warmest regards and best wishes for your health and happiness in 2004, Bonnie Berger.

Stream Study on Spring Creek

Every September and October Tetonia 4th Grade teacher, Barb Agnew, runs a "Stream Study" program for her students. The kids learn about stream ecology and geomorphology, and participate in streambank restoration projects. Lyn Benjamin, FTR, participates by spending time in the classroom and on Spring Creek working with the kids and parent volunteers. This year the class helped harvest willow cuttings and plant willows on FTR's Teton River restoration project. Below are quotes from their experience.

"I LIKED PLANTING the willows. To plant the willows we had to use a stinger. A stinger is a long, powerful water gun that you push into the ground and it makes holes for the willow branches."

-Jake Kaufman

"THE APPEARANCE OF the water at Spring Creek isn't too appealing. There're old tires and garbage littered throughout the stream. We studied the water appearance by comparing one section to another and making observations with our eyes. The water quality is good in some spots. We found a whole lot of bugs that need good water like Stonefly nymphs."

-Joe Madsen

"SPRING CREEK IS one of the best places I've been to. The water is cold. (I like coldness.) Cold water is healthy. All the living creatures like cold water more than hot water. There's silt in the bottom of the stream, bugs and interesting rocks, when they're wet. Rocks shine more when they are wet. The water is so cold, it's like you want to go back to Spring Creek everyday. Our group's leader was my dad (Jeff Naylor). He likes water.

-Anna Naylor

"LEARNING ABOUT critters at Spring Creek was fun. I liked finding macroinvertebrates that were under the rocks. We

also used a kicknet. To

use a kicknet you kick

dirt into the net. Then you pick the underwater bugs out of the net and put them on a tray. Next we put them in ice containers full of water. Now, sort and count the critters."

-K.J. Patterson

"VELOCITY WAS FUN to learn about. Velocity is a word that describes how fast something is moving. We studied velocity by dropping pine cones into Spring Creek, after starting the stop watch. David Amador timed the pine cones to see how long it took for the pine cones to travel five meters. Then I found that the stream was faster in some spots and not so fast in others. I like to get wet."

-Robert Hansen

"I LIKED PLANTING willows. I like to use the stinger 'cause it shot out water. My favorite part about stream study was cutting the branches off the willows."

-Ruger Hansen





(Top) Carole Reid enjoys a moment in the sun with Mikyla Ringle, Brandee Olivas and Taylor Burnside.

(Lower left) Jeff Naylor counts macrophytes with Anna Naylor, Jake Kaufman, Keegan West and Mick Grandy.

(Lower right) Barb Agnew helps Kade Lewis, David Amador, Rick McKinney and Robert Hansen collect aquatic insects.

Friends of the Teton River

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Dedicated to understanding and improving the water resources of Teton Basin.