Vol 1 Issue 1

Spring

The Montana Steward

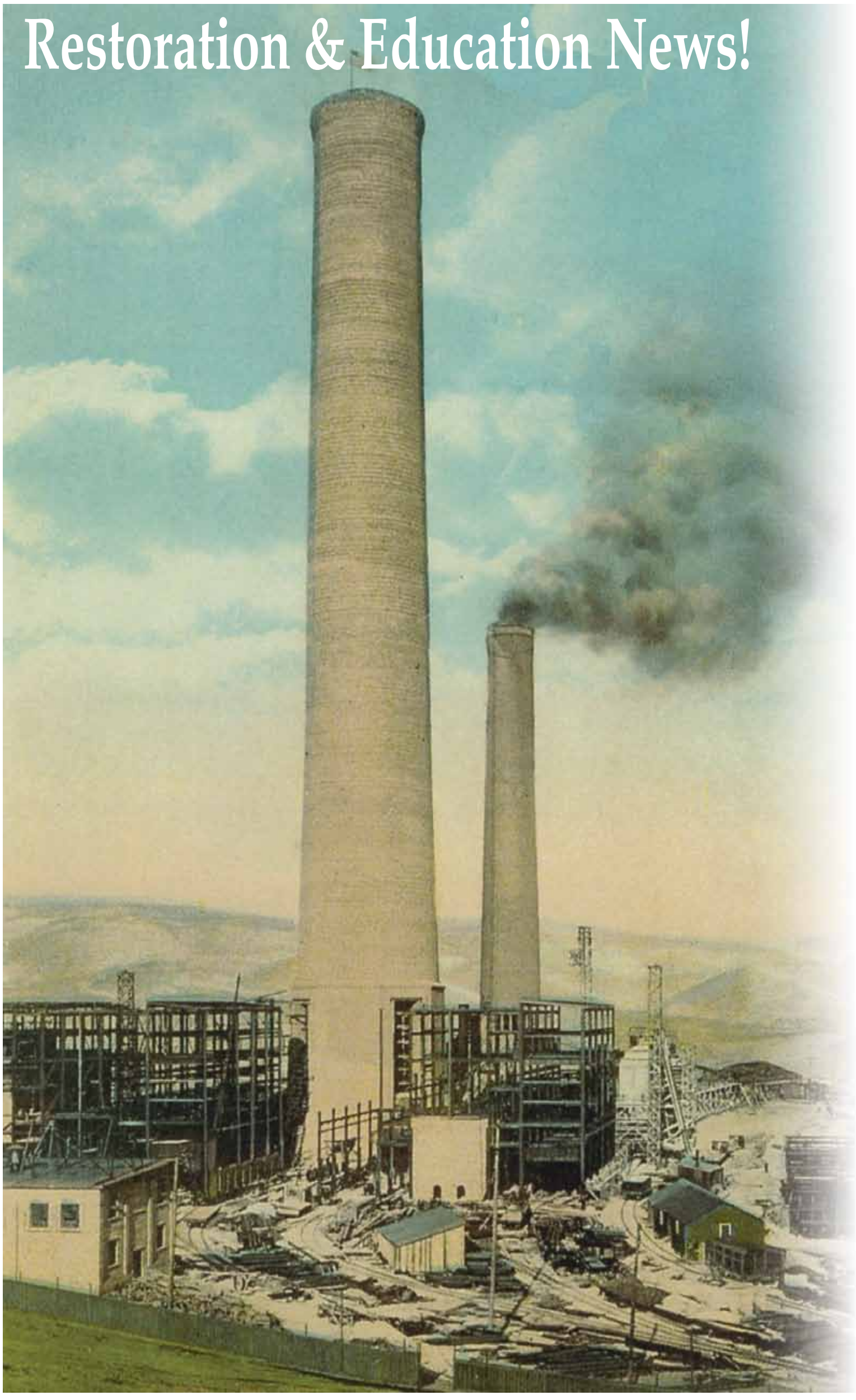
Cfwep.Org

2011

Clark Fork Watershed Education Program

Free

Restoration & Education News!



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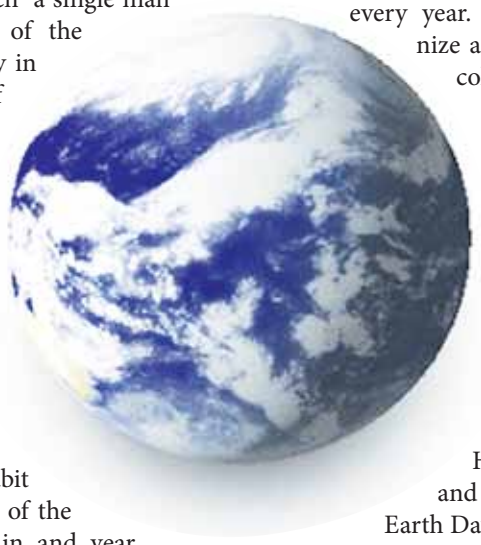
Just One Earth Day?

By Courtney Greyn
Campus Corps Volunteer and
Environmental Engineering Student

Earth Day. Earth Week. Earth Month. All of these sensibly describe either April 22nd, the week leading up to April 22nd or the entire month of April. However, what is the purpose of this celebration? It was not a date in which a single man changed the history of the United States or a day in which thousands of brave men lost their lives in war. Unfortunately, April 22nd is the only day of the entire year recognized as placing an emphasis on the importance of the taking action for environmental movements. Humans inhabit and use the resources of the earth 365 days year in and year out, yet only one day each year is set aside to acknowledge this consumptive use. Shouldn't every day be Earth Day in some way?



Earth Day celebrations don't have to be nationwide projects requiring copious amounts of funding to have a meaningful impact in a community. Individual activities could include walking or biking to work if you live close enough, or organizing a carpool schedule for those who live far from their workplace. If you pack a lunch for work or school, consider purchasing a reusable lunch bag and water bottle instead of using a paper bag and buying plastic bottled water each day. These will not only save you money in the long run, but also reduce the amount of waste you produce every year. As a school, organize a recycling project to collect items such as newspaper, aluminum cans, plastic bottles and of course, paper. What student wouldn't like to finally put their old homework assignments to good use?

However, if planning and executing your own Earth Day didn't happen to fit your schedule this year, there's always 2012!

Contact Cfwep.Org and we would be happy to help you come up with ideas and a plan for action.

Cfwep.Org will be working with Montana Tech to expand its campus-wide Earth Week activities in 2012, so there will also be plenty of opportunities to get on board with one of the activities in the Butte/Clark Fork headwaters area.

First - Annual
Montana Folk Festival

July 8-10, 2011

Come see Cfwep.Org in the family activity area.

www.MontanaFolkFestival.com

Cfwep.Org

Come visit Cfwep.Org at one of the following events…

May 14, 10 a.m. to 2 p.m. Big Hole River Kids Day, Big Hole River Foundation, Meriwether Ranch, Melrose, MT

May 14, 8:30 a.m. to 4:30 p.m., Milltown Education Program Teachers Workshop, Bonner School. Contact Matt Vincent, mvincent@mtech.edu , 496-4832.

May 21, 9 a.m. to 5 p.m., Silver Bow Creek Restoration Planting Day – Public Invited! Contact Matt Vincent, mvincent@mtech.edu , 496-4832

June, Date TBA, Cottonwood Creek Outdoor Education Center Public Dedication, see story inside The Montana Steward.

June 8th, OBSERVANCE (no activity planned) 94th anniversary of the 1917 Granite Mountain-Speculator Mine underground disaster that claimed the lives of 168 men in Butte

June 21, Butte, Montana Tech campus, Southwest Montana Science Partnership Capstone Workshop/Presentations. Contact Rayelynn Connole at (406)-496-4898 for more information.

June 21, 6 to 9:00 p.m., Butte, Cfwep.Org Volunteer Appreciation and Celebration BBQ.
Check www.cfwep.org for more details as the date approaches.

July 8-10, Butte, MT. First-annual Montana Folk Festival

Getting Ready to Tie One On

George Goody, Owner of the Montana Fly Company, Melrose, Montana

By Frank Ponikvar

Photo by Frank Ponikvar

There was a time my friend Monte and I would run up the Blackfoot River after work and fish.

There were only a few people on the river in the 1960's and there was plenty of time to think about one's fishing strategy.

We would walk up the side opposite Highway 200 just up from the Blackfoot Bar and look for water that was ripe for trout.

Fly Fishing was an inexpensive sport except for the flies. I didn't even buy waders at the time.

Well, that was then and so on; I tied my first fly tonight. George Goody, Owner of the Montana Fly Company is teaching the art to beginners and advanced fly tiers.

He has his own tricks of the trade. Using a quick wit and a close up video monitor, George shows the step by step process that makes yarn look like real bugs to hungry fish. It still amazes me that you can reel 'em in with a hook, feathers, thread, and yarn. I don't consider this easy to do. To be as proficient as George you'd have to tie thousands of flies. He told us a story about having to be on his back but he still made money selling flies to the nurses. One thing you will get with George is a background of fishing. He's been to most of the worthwhile holes and he has a story to go with it.

Fly Tying is one of the elements that make fly fishing an enjoyable pursuit. The sweet fresh air, the solitude and the hunt make fishing a top recreational sport. Fly tying is one of those details that you could do without and still enjoy the experience but fly tying is like choosing your golf club, racquet or pool cue. It's a personal choice that enhances and broadens the experience. Now it's on to tying my second fly.

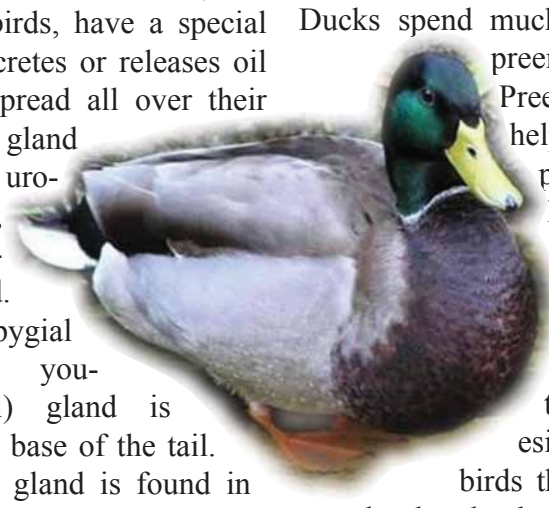
Bitch Creek by Frank Ponikvar

Ask Dr. A

Dr. Arlene Alvarado is Cfwep. Org's Field Coordinator.

Question from Anna M.: Why don't ducks get wet?

What an interesting question, Anna. I bet many young students would like to know that one. Ducks, like many other birds, have a special gland that secretes or releases oil which they spread all over their wings. This gland is called the uropygial gland, or the preening gland. The uropygial (pronounced: you-roe-pie-gee-ul) gland is located at the base of the tail. The preening gland is found in most birds, but is most pronounced in aquatic (water) birds. When ducks preen, which is the act of smoothing or cleaning the feathers with the beak or bill, they spread the oil from their gland all over their bodies, carefully covering each feather, as well as the skin of the legs and feet. Have you seen how oil and water react? Oil repels (keeps away) water. So the preening oil waterproofs the duck's feathers. Underneath this waterproof coat of feathers are fluffy soft feathers which keep the duck warm. Ducks spend much of their time preening to stay dry. Preening also helps to remove parasites, like lice and fleas, and removes scales from new feathers. Some scientists hypothesize that in some birds the oil produced by the gland may have chemical properties that actually kill parasites and harmful bacteria. Many bird experts think that the preen gland may have additional functions in some bird species. Not all birds have a uropygial or preening gland. Some exceptions include the emu, ostrich, cormorants, and bustards. These birds tend to find other ways to stay clean and dry.

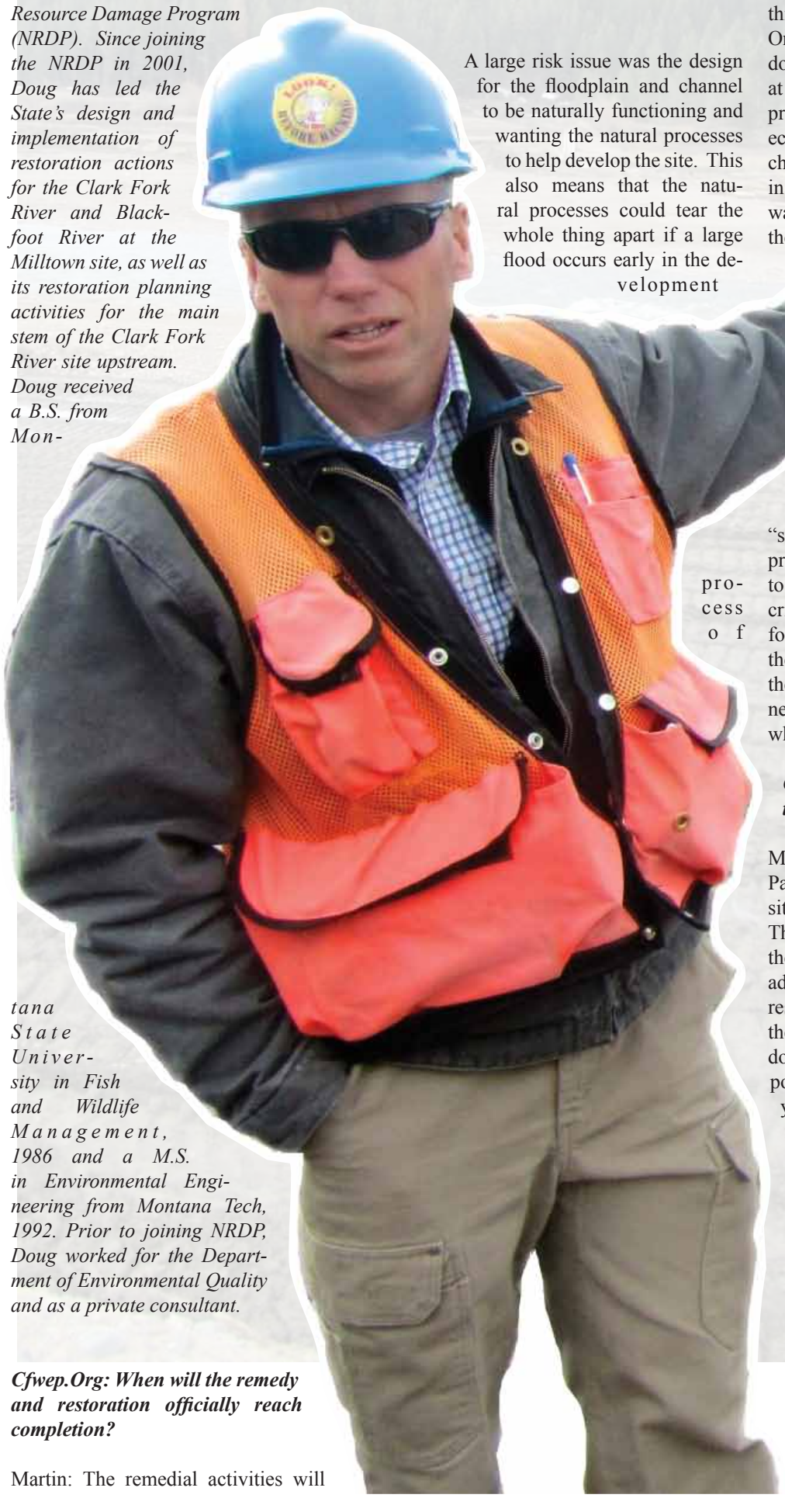


Milltown Restoration Update

An Interview with Montana Tech Environmental Engineering alum, Doug Martin, Milltown Restoration Manager

The Milltown Dam Reservoir and Sediments (a.k.a. Milltown Dam) became a federal Superfund site in 1983, shortly after high levels of arsenic were discovered in area residents' drinking water wells. The final remediation and restoration design began construction in 2005. The combined-project includes removal of the Milltown Dam and powerhouse on the Clark Fork River, removal of the Stimson Dam on the Blackfoot, reconstruction and revegetation of miles of river channel and floodplain and the removal and management of roughly 3 million cubic yards of contaminated sediments. Completion of the project is anticipated by 2012.

Cfwep.Org, which takes around 500 students each year to the restoration site each year, recently caught up with Restoration Manager Doug Martin to discuss this landmark project, perhaps the largest and only restoration project of its kind. Martin works with the State of Montana's Department of Justice- Natural Resource Damage Program (NRDP). Since joining the NRDP in 2001, Doug has led the State's design and implementation of restoration actions for the Clark Fork River and Blackfoot River at the Milltown site, as well as its restoration planning activities for the main stem of the Clark Fork River site upstream. Doug received a B.S. from Montana State University in Fish and Wildlife Management, 1986 and a M.S. in Environmental Engineering from Montana Tech, 1992. Prior to joining NRDP, Doug worked for the Department of Environmental Quality and as a private consultant.



Cfwep.Org: When will the remedy and restoration officially reach completion?

Martin: The remedial activities will be completed once the By Pass Channel is filled in and graded to the State's Grading Plan design and the staging area is reclaimed, which should be sometime this summer/fall. The restoration activities are scheduled to be complete this fall. The whole project is ahead of schedule, which is an amazing achievement because of the complexity of this project.

Cfwep.Org: What do you think the biggest challenge has been to the project?

Martin: I am looking at this from a restoration standpoint only: Dealing with unknowns and managing risk. The site was buried below sediments up to 25 feet deep and we knew very little about what lay beneath these sediments. The restoration design was based on the elevation of the alluvial surface detected from boring logs, but we knew nothing of the historic floodplain surface or the stumps that were discovered as the sediments were removed.

A large risk issue was the design for the floodplain and channel to be naturally functioning and wanting the natural processes to help develop the site. This also means that the natural processes could tear the whole thing apart if a large flood occurs early in the development process of the channel in mind.

It took a diverse team of scientist and engineers to complete the design this way, but it was a floodplain restoration project. You see a lot of "stream restoration" or "river restoration" projects, but actually the floodplain aspect to all stream or river restoration projects is critical and I believe that too many projects focus on the channel aspect only and leave the floodplain to the end. This is evident in the debate on how to restore streams, channel design is the topic most debated, but what about the floodplain?

Cfwep.Org: Have there been any quantified fisheries benefits yet?

Martin: Montana's Fish, Wildlife, and Parks has monitored fish passage at the site since the dam was removed in 2008. There has been confirmed fish passage up the Clark Fork and the Blackfoot rivers. In addition, the northern pike that formerly resided in the Milltown Reservoir and ate the many various trout species migrating downstream are gone. Benefits to the fish populations will not be known for several years, but all evidence points toward positive trends.

Cfwep.Org: What is the combined cost of remediation and combined restoration and redevelopment (land, park, and remediation/restoration features)?

Martin: The agencies do not know the cost of the remedial action as the responsible party, British Petroleum-Atlantic Richfield Corporation (BP-ARCO) does not provide us with their actual costs. In place of BP-ARCOs actual costs we use the estimated costs developed by the agencies to complete this project. Thus, the remedial costs are estimated at $100,000,000. Bridge mitigation was $20,000,000. The restoration costs will end up being $14,000,000. The park costs are estimated to by $6,000,000 (based on a NRDP grant application).

Cfwep.Org: What are your fondest memories on the project so far, or do you have any good stories that you think define the project?

Martin: To be honest the last five years since the construction started have been melted into one. Throughout these years I have had the good fortune of working with some very talented people: engineers, scientists, construction managers, equipment operators, etc.

When I look back on what we have completed I cannot say that "I" did this, I have to say that "we" did this because it was a united effort where many people came together to get the job done. Having the opportunity to work with so many good people and watching this whole project come together has been an exciting experience and very memorable. As far as memories go, I hope the best are yet to come.

It was said that "this is a career project" and I believe that it is a career project as we all got to work on a project that was the first of its kind. I also am hoping that this will be a "career" project for me as I am really looking forward to watching the site develop and change over time, trending towards the goals that were established for the site in 2003.

Cfwep.Org: What do you foresee for the future of the Clark Fork River and the confluence area?

Martin: I foresee a dynamic area. Change will be occurring within the Milltown project area for years to come as the area develops its own floodplain upon the design that we constructed. The Clark Fork River may decide to make major changes in our design or only minor changes, but once the vegetation matures the natural processes will take over and change will (and should) be a constant at the site.

The State Park that is planned will be a great attraction in this area and should provide opportunities for all visitors to learn about the area and enjoy many types of recreational opportunities.

Montana Department of Justice
Natural Resource Damage Program

It's Good To Be a Volunteer

A VISTA's View

Cfwep.Org, Samantha Sheble Win Service Learning Award

By Ashley Makowski
AmeriCorps VISTA - Service-Learning


Samantha Sheble

Cfwep.Org received an award at the 2nd Annual Service-Learning Awards Luncheon at Montana Tech for their service-learning partnership with student Samantha Sheble and the Professional and Technical Communications department at Montana Tech.

Sam started working with CFWEP in the 2009-10 academic year as a Montana Tech Campus Corps service-learner for the Professional and Technical Communications (PTC) department. Campus Corps is a part of the AmeriCorps program Montana Campus Compact, a network of 19 Montana colleges and universities that have made student volunteerism a priority on their campuses.

During Sam's first Campus Corps term, she took videos of CFWEP field trips, which they were then able to use on their website as instructional tools. This year, she has helped Communications Corrdinator, Frank Ponikvar maintain the website.

"Sam is an exceptionally talented individual," said Matt Vincent, Cfwep.Org director. "She never ceases to amaze us and she always does it with a smile on her face."

Also honored at the luncheon was Chad Okrusch, as head of the PTC department.

Kelsey Manchester, Allison McIntosh, and the Belmont Senior Center were given awards representing the Nursing department. Jerrod Haas, Bill Ryan, and Habitat for Humanity were given awards for their service-learning work in the Trades and Technology department.

Group Photos by Amanda Badovinac

Volunteerism:

Getting your feet wet.

By Beverly Plumb
Assistant Field Coordinator
with Cfwep.Org

There are many departments at Montana Tech that most of you have probably heard of such as Chemistry, Environmental Engineering and Petroleum. But have you heard of Technical Outreach and the Clark Fork Watershed Education Program (Cfwep.Org)? Many of you may answer "no," so I would like to tell you about Cfwep.Org. More importantly, I would like to tell you how you can use your expertise to help local area students gain a better understanding of science.

Why volunteer with Cfwep.Org?
Volunteers gain many benefits. By volunteering with Cfwep.Org, you will have the opportunity to:

- connect with students in the local area
- share your knowledge and experience
- learn place-based and inquiry based methods of teaching
- give back to your community
- improve your resume and professional school application
- connect with professionals from many organizations.

Volunteer for what? There are many different events and projects where volunteers are needed. Currently, we need volunteers for the following activities:

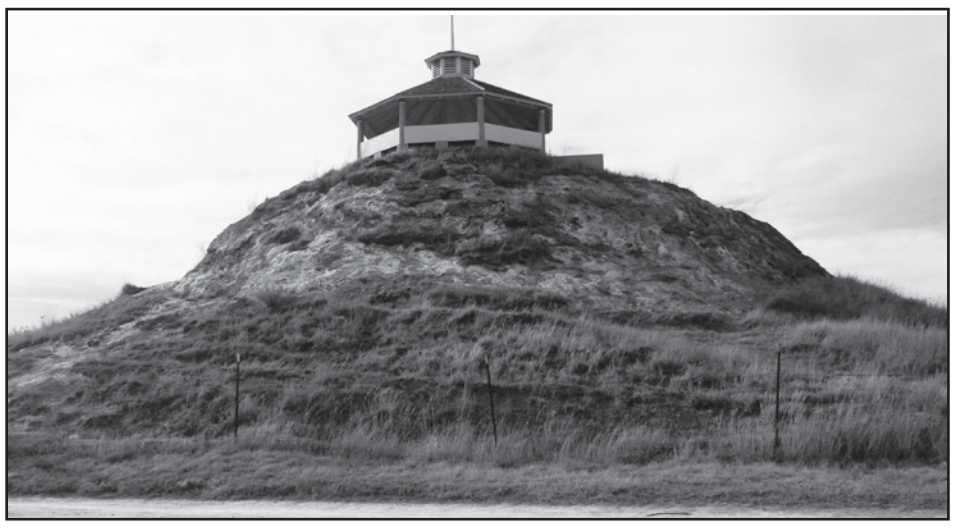
- Science Fair Judges
- Little Digger Day
- Fish Dissections;
- CFWEP field trips.

As a volunteer for a CFWEP field trip, you will assist in one of the following stations: water quality; riparian assessment; or macroinvertebrate identification.

Please email me at bplumb@mtech.edu or call 491-0922 for more information about any of these events.

Want to Volunteer with Cfwep.Org as a Campus Corps / AmeriCorps student? Call 496-4124 for more information.

The Real Deer Lodge


"Lodge of the White Tail Deer" Today *Photo by Frank Ponikvar*

By Matt Vincent

The name "Deer Lodge" comes from non-Indians' abbreviation of the original place name "Lodge of the White-tailed Deer." American Indians used this name to refer to the geothermal mound located about 10 miles south of town. The **"lodge"** is now hidden on the campus of the state hospital at Warm Springs.

Before the towering cottonwood trees were planted at the state hospital, the warm springs mound, which is a 40-foot high geothermal deposit, was the prominent feature in the middle of the valley. Because of its continuous flow of 180o+F water, steam rose out of the top of the mound even during the coldest periods in winter. Its shape and rising steam gave it the resemblance of an Indian lodge. The warmth from the waters kept snow from accumulating and grass growing year-round surrounding the base of the mound. Deer were continually present to eat the grass and lick the salt deposits from the area, thus giving the place its name. There are other familiar locations in the Upper Clark Fork watershed that still bear Indian place names or reference to their former use by original people.

Unfortunately, the conditions for which many places were named are no longer present. For example, the Salish call the confluence or place where the Clark Fork and Blackfoot rivers meet near Bonner "The Place of the Big Bull Trout". Today, the area is the site of the former Milltown Dam, where the State of Montana removed nearly three million truckloads of contaminated mine wastes that washed downstream from Butte and Anaconda. With the dam gone, the confluence of the two rivers has been reconnected, but bull trout have been on the Endangered Species Act's list of threatened species since 1998.

Vol 1 Issue 1 Spring

Montana Steward

Cfwep.Org

Clark Fork Watershed Education Program

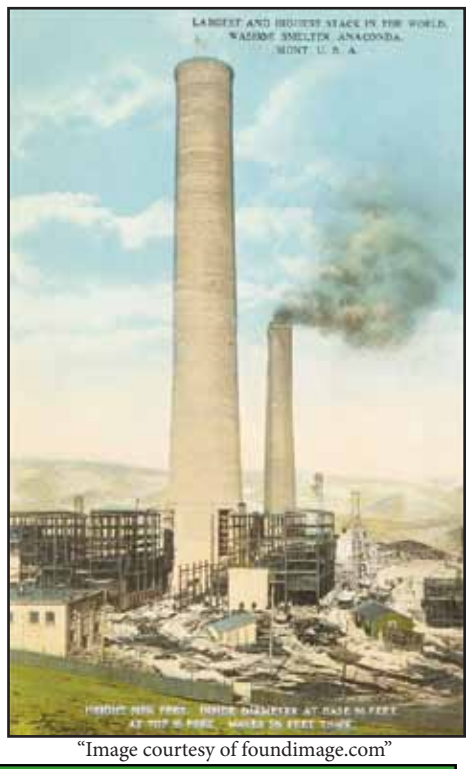
What is Cfwep.org? The Cfwep.org has been a leading provider of environmental and restoration education programs and services in western Montana since 2005. Cfwep.org offers multi-disciplinary science and history programs for schools, teachers, and students in the Upper Clark Fork Basin. We also offer public education and outreach services such as tours, events, and publications that connect the public with the science and history of the amazing landscape of western Montana. Please read our story on page 4 of this issue. Cfwep.Org is physically located in the Main Hall on the campus of Montana Tech in Butte, Montana. Our Mailing address is Cfwep.Org @ Montana Tech
1300 West Park Street Butte, Montana 59701. Cfwep.Org is our web address. Please direct your comments and suggestions to info@cfwep.org or Matt Vincent at MVincent@mtech.edu. The Montana Steward is a quarterly publication of the Clark Fork Watershed Program. The Montana Steward reserves the right to control its own publication schedule. Cfwep.Org is part of the Department of Technical Outreach at Montana Tech of the University of Montana, a 501c3 non-profit educational institution.

On Our Cover

According to the description found on the back of this postcard, the image is circa 1910 (see Editor's note below). At the top of the image it says, "Largest and highest stack in the world, Washoe Smelter, Anaconda, Mont. U.S.A." At the bottom of the image it says, " Height 585 1/8 feet, inside diameter at base 86 feet, at top 60 feet, walls 5 1/2 feet thick."

Editors Note: The Anaconda Stack was completed on May 5, 1919, as the tallest and largest free-standing masonry structure in the world. Coincidentally, a Montana state park -- the smallest in the state -- was constructed in 1986.

"Found Image Press has an archive of over 40,000 vintage images of every place and topic. We custom printthose images on demand in the USA on notecards, postcards and other gift items."



"Image courtesy of foundimage.com"

Thanks

Cfwep.Org ***would like to acknowledge the following members, volunteers and contributors.***

Their support and assistance makes our work possible:

Joe Griffin and Sherry Vogel, Tammy Gordon, Annette Kankleborg, Joe Naughton, Mariah Mayfield, Dave Hagengruber, Mark Sweeney, Jason Lindstrom, Montana FWP, Bill Callaghan, Chris Doyle, Samantha Sheble, Lisa Sullivan, Kehli Kankleborg, Jessie Salix, Rebecca McNamara, U.S. Forest Service, Doug Buskirk, Colleen Elliott, Montana Bureau of Mines and Geology, Julia Spangler, Sabira Farrow, Tony Morasco; Erik and Jami Kalsta; Debbie Kearns at the Hitchin'Post; George Goody, Montana Fly Company (Melrose); Dan Sheppherd, Grizzly Hackle; Joe Daniel, Wild on the Fly; Jessi Kolar, Beyond the Fly magazine; Kim Draper, Josh Vincent, Jeff LeProwse, Water & Environmental Technologies, Josh Lee, Ashley Makowski, Hummingbird Café, Jason and Travis at KMSM FM 107.1, Montana Indian Education Association, Ron Juneau, Carol Juneau, Gordon Belcourt, Germaine White, Tony Incashola, Thompson Smith, Mary Price, Confederated Salish-Kootenai Tribes, Tiffany Hinojosa, Borie's Restaurant, Uptown Café, Kathryn Watson and Montana Watercourse, Linda Brander, Montana Youth Restoration Partnership, Scott Carr and Solution Tree, Andrea Stierle; Lynn Lentz, Gerry O'Brien, Patti Arntson and Steve Biere at The Montana Standard; Doug Coe, Maggie Peterson, Mike Johnson, Joe Figueira, Amy Verlanic; Montana Tech Dining Services; Art Anderson, Mary Durkin, Wayne Stodden and the crew at the Montana Tech Physical Plant; Courtney Greyn; Carol Fox, Kathy Coleman, Doug Martin, Tom Mostad, Greg Mullen, Pat Cunneen and Michelle Golden at the Natural Resource Damage Program; Delena Norris-Tull; Chris and Mandi Axelson at Homestake Lodge; Old Works Golf Course, Anaconda-Deer Lodge City-County, Kate McElroy, Anaconda High School; Pat Bannon, Rick Duncan, Jessica Anderson; Ron Hanson, Brian Bender and Peggy Kerr at Powell County Planning; Powell County Commissioners; Chris Laity; Jake Troyer, Jennifer Titus; Lisa Bickell and the gang at Montana Environmental Education Association; Butte-Silver Bow Public Works, Planning Departments; Frank and Bruce at Butte Metro Sewer; Greenfield Printers, Insty Prints, Gerald Mueller and the Granite Headwaters Watershed Group; Judy Boyle, Hilary Risser, Dr. Vicki Watson; Glenn Granger and Jeremy Whitlock with Butte-Silver Bow Youth Court; Diana Hammer; CTEC; Paul Tash; Ryan Carlisle and Redneck Sprinkling; Butte-Silver Bow GIS; Tom Malloy; Tad Dale, Mike McGivern, Lance Spencer and Mary Brandl at Montana Resources; Steve Larantz with Washington Corporation; Marko Lucich and Cheryl Ackerman at the Butte Chamber of Commerce/Visitors Center; Pioneer Technical Services, Tony Olson with Safety and Health Services; Shawna Page; Keith Kelley, Greg Wright and Suzanne Ferguson at the Montana Department of Labor; Don Kronenberger, George Grant TU; Doug Ardiana and Sean Kiffe at Bonner School; Brian Williams at Montana Natural History Center; David Morris and Lon LaFlamme at Dillanos Coffee Roasters; Rich Prodgers, Bighorn Environmental; Marisa Pedulla; Tim Reilly, Joel Chavez with Montana DEQ; Cody Lillstrom and Brian Christianson with Montana Campus Compact; Mary Ann Bojorni, University of Montana Art; Monte Dollack; Bill and Phyllis Ohrmann; Sam Milodragovich and Northwestern Energy; Heiko Langner, Erick Greene, Avian Science Center, Eric Mason, Shirley Cortwright at Anaconda Job Service; Sally Tibbs; Berkeley Pit Public Education Advisory Committee; Bryce Andrews and Will McDowell at Clark Fork Coalition; Meghan Rorick and EVST graduate/UM students on the Milltown Dam Education Program; Montana Tech TRIO programs; Chris Gammons; Butte Burros Club; Karen Westerberg-Ward, Jeanne Larson; Josh Lee; Shane Talley; George Everett and Josh Peck; Karen Laikala with Powell County Weeds; Carleen Cassidy, Joanne Lee and Colleen Fink at Montana Tech; Dirk Lee and Dave Thomas

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Frank Ponikvar
Communication Coordinator

Who is Cfwep.Org?

Cfwep.Org

After months of careful thought and deliberation, the Clark Fork Watershed Education Program is proud and excited to unveil our organization's new name… Cfwep.Org. Following is an introduction to our new image, which includes some answers to the burning questions you may have:

How do you pronounce it?

SEA FWEP Sound funny? Perhaps, but we aren't concerned. Cfwep.Org prides itself in being a regional leader in place-based education. It's what we do and it's who we are, regardless of how awkward the name might sound. After all, what local watershed organization has an acronym that rolls off the tongue? The BHWC (Big Hole Watershed Committee)? GHWG (Granite Headwaters Watershed Group)? MRWA (Milk River Watershed Alliance)? There just isn't one. Cfwep.Org epitomizes the sound of place-based education, regardless of location. We talk the talk, but more importantly, we walk the walk.

What is Cfwep.Org?

Our new name is simply our old acronym with the added tag "dot Org," to automatically direct our constituents and prospective clients directly to our dynamic website, and to impress upon the same that we are "on line" and with the 21st century of education and technology. Therefore, the acronym still stands for Clark Fork Watershed Education Program. Cfwep.Org is an apolitical, non-advocacy, non-profit organization affiliated with Montana Tech of the University of Montana and the Montana Tech Foundation in Butte. We are housed in and part of the Department of Technical Outreach on Montana Tech's campus.

We receive a majority of our funding through a contract with the State of Montana-Department of Justice's Natural Resource Damage Program, the government entity charged with leading and managing the restoration of the Upper Clark Fork River Basin Superfund complex.

We are dedicated to fostering environmental stewardship and scientific decision making through place-based learning. To further instill this mission, we have added the tagline, "teaching science education at your location!"

Cfwep.Org started in 2005 as a place-based science education organization serving the schools and communities in the Upper Clark Fork Superfund complex. We continue to excel in this area, but have expanded to serve schools and communities on both sides of the Continental Divide and across western Montana.

What is NOT Cfwep.Org?

Again, we are NOT a political nor advocacy group. While our name is similar, we are not the Watershed Education Network (WEN) or the Clark Fork Coalition of Missoula, although we regularly work with both. Want to know more? Cfwep.Org

Cottonwood Creek Outdoor Education Center

DEER LODGE - The Cottonwood Creek Outdoor Education Center is a cooperative project of Powell County, Powell County High School, the Clark Fork Watershed Education Program at Montana Tech of the University of Montana (Cfwep.Org) and the community of Deer Lodge. This outdoor classroom is the featured component of the Johnson Creek Trail System, a first-class recreational non-motorized corridor connecting the City of Deer Lodge to the Upper Clark Fork River.

A final weed-pull, planting day and public dedication of the center is planned for June 2011, so check back at www.cfwep.org for updates, or contact at us at 406-496-4832 for further developments. Funding for the project came from the State of Montana-Department of Justice's Natural Resource Damage Program in 2007. As the project nears completion, it's been a long time coming!

Prior to funding, this site was a vacant lot, filled with debris and infested with a host of noxious and nuisance weed species. Weeds will continue to be a challenge in the short term, but for the first time in decades, the nearly one-acre parcel is now serving a benefit to the Deer Lodge community, its schools and residents. The Cottonwood Creek Outdoor Education Center is designed to provide an educational experience to a number of potential users. Whether you are a teacher, student or just a passer-by on the trail, this site is designed around a series of interpretive/educational signs explaining and urging one to explore and discover the wonders of the environment around us!

A companion study guide developed by Cfwep.Org and its curriculum review team is available for teachers for everything needed to use the Cottonwood Creek Outdoor Education Center for a number of outdoor inquiry studies and activities. Each section of the guide focuses on a particular sign or station at the center.

The Cottonwood Creek Outdoor Education Center owes thanks and its existence to the expertise, dedication, support and enthusiasm from the following entities and individuals: Ron Hanson, retired Powell County Planning Director and Renee Myers with the Watershed Restoration Coalition worked on the project early on up until both of their departures in late 2010. Other dedicated supporters of the project include new Powell County Planning Director Brian Bender; Rick Duncan, Superintendent at Powell County High School and the PCHS maintenance crew; Powell County Maintenance Crew and the County Commissioners; Curriculum Review team, Pat Bannon, Jessica Anderson and Tricia Witt; Lisa Sullivan, a graduate student in Professional and Technical Communications Program at Montana Tech who designed the guide format; Powell County Weed Control Coordinator, Karen Laikala and Keith Edge; Daryl Barton with Clark Fork River Technical Assistance Committee; Sun Mountain Lumber; Lyndel Meikle; Kristi Rydeen; Sandy Salisbury; and the Silver State Post.

Contractors and oversight include Ryan Carlisle with Redneck Sprinklers; Jason Fenhaus of ACME Construction; Kent Watson of Watson and Associates; Chris Laity with Great West Engineering; Tizer Gardens; Glacier Nursery; Montana State Conservation Nursery; Paul Tash and Tash Communications on the signs; and Kathy Coleman with NRDP.

AVIAN SCIENCE CENTER

Come join University of Montana's Avian Science Center for a "bird in the hand" experience!

Bird-banding stations at three locations: Grant-Kohrs Ranch (Deer Lodge); Valley of the Moon access site (Rock Creek near Missoula); and the MPG Ranch (Bitterroot Valley).

Public, young and old, are encouraged to attend!

For more information, contact Megan at 406-243-2035; to check into the possibility of bringing out a summer camp or class, contact Matt at (406) 496-4832.

Teacher Feature; Judy Boyle, Divide School

By Rayelynn Cannole

In each edition of The Montana Steward, we will visit with a teacher who exemplifies excellence in teaching science. Judy Boyle, a teacher from Divide School, in Divide, Montana is featured in our premiere issue. Divide school is a one-room school with students ranging from Kindergarten to 8th grade. Judy recently received the Montana Environmental Education Association's (MEEA) Environmental Educator of the Year. Judy received this honor largely for the on-going project she and her students devised to study the effects of a new diversion dam constructed on the Big Hole River near their school. The project was developed as part of her participation in Cfwep.Org's Southwest Montana Science Partnership (SMSP). Judy's passion for teaching and her love of science and social studies serve as wonderful advice and inspiration for other teachers.

Cfwep.Org: Judy, tell us a bit about your teaching career.

Boyle: I started teaching over 26 years ago in Vermont. I went on to teach in New Hampshire, Idaho, and now Montana, where I have been teaching at Divide for the past five years. Throughout my career, I have taught in a variety of settings, and a variety of subjects. My second teaching job was in a one-room schoolhouse in New Hampshire. The school was built in 1790 and was simply beautiful! Talk about having a different experience… that school was living, breathing history and it was very much fun to reflect about the history of the school itself.

Judy Boyle poses with MEEA's Carolyn Sevier after receiving the Environmental Educator of the Year award in Missoula at the 20th annual MEEA conference.

Cfwep.Org: Can you share with us a few things that you like about teaching in your current "one-room schoolhouse" setting, where you teach the same students throughout their K-8 career?

Boyle: First of all, you have more flexibility with curriculum. You can explore things more in depth because you know that you literally have years with your students. Because I have fewer students to attend to, I can focus on each individual student's needs. I can find the right methods and topics that suit that child so that they are able to maximize their potential. I am not sure that larger classrooms are suited to individualizing curriculum as much. Your schedule is your own. You don't have to worry if you want to take a long day doing a science experiment and eat lunch at a different time. There isn't anyone's schedule that you will upset by changing things.

I find that science and social studies are the backbone of my curriculum as we can use those topics as the framework for everything that we do, giving relevance and real-world examples of why we are learning a particular skill, such as math or reading skills. The advantage of having students for such a long time is that you can cover a topic in depth for one school year and then not touch that topic again for another year or two. I particularly enjoy pursuing a topic in thematic units and ending with a huge celebration and community event. For example, we do a Medieval History unit that we spend a couple of months exploring. The end of the project culminates with a huge feast that our parents help us put on and includes a jousting contest and an archery contest.

Photo by Frank Ponikvar

Cfwep.Org: How do you inspire your students to reach for their goals and push toward excellence?

Boyle: I really try to connect with my kids by letting them know that I am there for them, that I am someone they can trust and who can help them. I especially take time to get to know parents and understand the challenges that kids may come into my room facing. Parents know their children better than any of us, and as teachers, we need to really listen to those parents as they can often help us understand what works with their kiddos. Also, parents bring us many creative ideas and can help us be better teachers if we take time to listen and reflect about our own practice.

Sometimes, I have to really understand where a parent or student is coming from in order to understand how my interactions with that student are helping them to learn or not helping them. Kids come to school with many different things potentially blocking their ability to learn. Over the years, I have learned that we have to dig a bit deeper sometimes and help kids and parents resolve those blocks before the learning can happen.

As teachers, we accept all the children, with all of their strengths and weaknesses. An analogy shared with me by one of my previous principals is the analogy of a potato chip factory. In the factory, if you get a burnt or broken chip, you just throw it out and ensure that your bag of chips is perfect and meets all the standards for potato chip production. In the school, we don't throw out any chips. We keep them all. We love them all. We do our very best to educate them all, burnt or broken. At the end of the day, I hope that I have helped my students smooth out a few of their burnt edges and been able to help them see all the possibilities in life.

Cfwep.Org: What advice do you have to pass along to a person just starting their teaching career?

Boyle: First of all, remain professional at all times. Treat yourself with respect as a professional and expect that your students will be respectful of you at all times. That isn't to say that you shouldn't have fun with kids, rather you need to maintain that firm professional boundary while still being approachable, warm and fuzzy. Kids do need to know that you are human being, but they also need to respect your position of authority. There is a time and a place for everything and school should be regarded as a professional environment at all times. Dress the part, speak with integrity and honesty, role model excellence. Second, engage parents whenever you can. Parents need to be treated very, very well, no matter how they parent. Treat them with respect. Listen to them and be open to their feedback. If you take the time to develop a relationship with the parents of your students, it will always be worth it. The parents will help you engage their kids more readily. You will also have an army of volunteers ready to help you when you need it. Third, never stick to one theory or one methodology for teaching. Different students need different approaches. You need to have a full toolbox ready to try in order to provide the best possible experience for a student. Trends come and go and there will always be the "next best thing" that is going to save education. Just keep your wits about you when it comes to reforms, know that learning a new approach and trying new things are always important, but I guess, keep doing what works and do what works best for each individual student.

Last but not least, hold your standards high. Continue to challenge yourself to learn more and grow in your profession. Be open to trying things and push yourself to learn everything you possibly can about a subject. Expect the best of your students and they will match those expectations. For me, teaching is everything. I love this profession and I cannot imagine doing anything else!

Don't miss out on the 3rd annual Southwest Montana River Rat fly fishing and conservation camp in Summer of 2011!

Are you between the ages of 13 and 17? Do you live in Butte, Anaconda, Deer Lodge, Whitehall, the Big Hole or the surrounding areas of the southwest Montana? Have you always wanted to know more about your area rivers? Wanna learn to catch a trout on a fly?

If you answered "yes" to these questions, then this camp is the one for you. Cfwep.Org, in cooperation with the George Grant Chapter of Trout Unlimited, offers a fully-inclusive instructional and overnight fly fishing and conservation camp for area youth. The program includes fishing on some of the area's best streams and lakes, like the Big Hole River and Georgetown Lake, and a host of expert instructors and mentors. Past camp participants all give rave reviews of the experience. Not only do participants learn effective fly fishing and fly tying techniques, but also the stewardship skills to keep Montana's fisheries "the last best waters." Local businesses and supporters make the camp accessible for all interested parties. For only $50, you can attend the camp. To get more information on the camp, either as a participant, a supporter or a volunteer, look for the advertisement in The Montana Standard and at www.cfwep.org, or contact Matt Vincent, mvincent@mtech.edu or Chris Doyle cmdoyle@mtech.edu for more information.

How Headwaters Begin

9,800 feet high in the Highland Mountains, with Silver Bow County on one side and Madison County on the other.

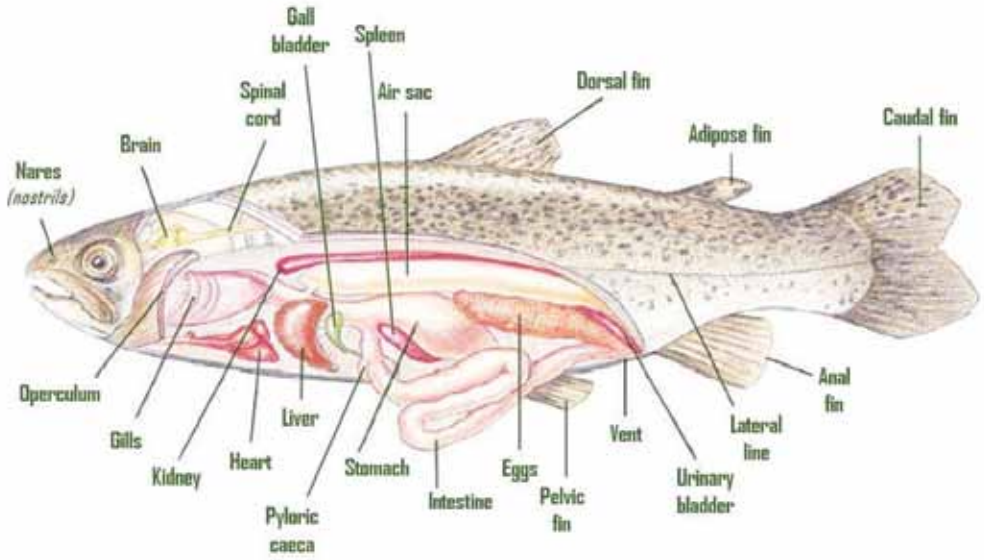
By Colleen Elliott, Ph.D

There is a stark contrast between the smooth slopes of Table Mountain on the left of this photo and the rocky crags of Red Mountain on the right. The cause? Ice. The rocky amphitheater, or *cirque*, on the right was eaten away by the head of a glacier that once surged ten or more miles down Fish Creek toward the Jefferson River. As the ice age waned about 16,000 years ago, the glaciers disappeared, leaving behind mountain lakes, or *tarns*. This is how the headwaters of most of western Montana's river systems were formed.

Colleen Elliott is a research geologist with the Montna Bureau of Mines and Geology.

Dr. Elliott is the former director of Cfwep.Org and still serves on it's board of directors.

What's in a Fish?



Ever wonder how the anatomy of fish is different or similar to our own anatomy? Well, if you are a fisherman or fisherwoman you have probably cut open a fish, but have you done it carefully enough to remove the air sac intact? Or have you held a fish heart or fish brain in your hands? The answer to all of these questions would be yes if you have participated in a Cfwep.Org trout dissection.

Here's how a typical trout dissection goes:

- Dr. Arlene Alvarado briefly goes over what has happened in the Upper Clark Fork watershed and its effect on trout
- She then gives a presentation on fish, fish habitat, fish biology, fish life cycle, and the trout of Montana, and their special habitat requirements
- Next the trout are distributed to students along with a worksheet, dissection kit, tray, trout ID card, and lots of paper towels
- The students are then instructed to carefully study the external anatomy
- Finally the scissors come out and the students carefully dissect the fish indicating body parts on their worksheet.

Sounds like fun? Well, most of the students, even the ones who are at first a little squeamish, love the program. Many students even want to save their fish's heart, brain, eyes, eye lens and air sac.

This program would not be possible without the generous support of the George Grant Trout Unlimited, Natural Resource Damage Program, and the awesome staff at the Washoe Fish Hatchery. Thanks from Cfwep.Org and all the students who get to participate in the program.