

THE CATALYST

SLIPPERY ROCK WATERSHED COALITION MONTHLY ACTIVITIES UPDATE

NEXT MEETING: 7 pm on 9/11/16 at Jennings Environmental Education Center, pizza and pop provided. 8/11/16 meeting attendance: Z. Barger, S. Busler, C. Denholm, M. Dunn, V. Kefeli, B. Kuban, F. VanAtta

Electricity Generated from Mine Drainage!?!

Pico-Hydropower Installation Complete at Jennings Environmental Education Center

Research, education programs, and demonstrations of innovative mine drainage treatment and land reclamation technologies have been ongoing at the Jennings Environmental Education Center passive treatment system for over 20 years. **Jennings staff is excited to demonstrate the generation of electricity by a new off-grid, first-of-its-kind, nano/pico-hydropower facility using partially-treated mine drainage!!** The electricity generated, although very limited due to the 15- to 20-gpm mine drainage flow rate, is currently powering light in the Foltz Schoolhouse, which is under renovation by the JEEC for educational programs. **The electricity generated by the hydropower facility is currently the only source of electricity to the historic, one-room, Foltz Schoolhouse.** (See photo at right.)



This project was made possible through **Commonwealth Financing Authority (CFA)** funding via a grant to **Stream Restoration Incorporated**, and partnerships with **Josh Matheny**, a graduate student in mechanical engineering at **West Virginia University**, and **AquaFix Systems, Inc.**, based in Kingwood, WV. Components that would come in contact with the corrosive, partially-treated, abandoned mine drainage were constructed using stainless steel. AquaFix Systems/Preston Machine Inc. facilitated the design, manufacture, and installation of the electricity-generating components, with installation also handled by **BioMost, Inc.** An onsite AquaFix® waterwheel is incorporated into the design of the hydropower facility.

Construction consisted of three main phases: retrofitting the AquaFix® waterwheel with the hydropower generating facilities (**“Trickle Charger”**); diverting water from the Jennings VFP outlet pipe to the AquaFix® waterwheel and returning the water to the passive treatment system; and installing the electric wiring from the hydropower generator to the Foltz Schoolhouse with installation of a switch-operated light fixture. Josh delivered and assisted in assembling and connecting the “Trickle Charger” (See photo at left.) to the AquaFix® System in mid-June of this year. The “Trickle Charger” includes not only the 24-volt generator but also the batteries to be charged by the electricity generated as well as the charge controller, isolation switch, diode, and transformer. Two, 12-volt, batteries continually charged by the “Trickle Charger” are used to provide electricity to the Foltz Schoolhouse. Partially-treated mine water was diverted to the AquaFix® waterwheel by excavating a trench to the existing PVC outlet pipe from the Jennings VFP and installing a “penstock” to the waterwheel. Two, PVC, ball valves were installed to control the flow to the waterwheel. The diverted water operates (spins) the waterwheel to generate electricity. The water is then discharged from the waterwheel into an upgraded rock-lined channel which conveys the flow to a culvert pipe which outlets to the existing channel wetland.

As thousands of people including local students, out-of-state visitors, and international professionals participate in the educational opportunities at the site, JEEC signage and educational programs will be used to demonstrate the generation of electricity by this unique pico-hydropower system!



Jennings staff working with **Josh Matheny**, Aquafix Engineer, and **BioMost, Inc.** personnel to retrofit an existing Aquafix® lime-doser with a 24-volt generator system referred to as a “Trickle Charger”. See article on first page.

Ahoy, Mateys!

Clean Creek Products Set Anchor at Lake Arthur Regatta



Clean Creek Products made its debut at the Regatta at Lake Arthur in **Moraine State Park** over the weekend of August 6th and 7th. **Vicky Michaels, Dan Guy,** and **Margaret Dunn** manned the Clean Creek "yacht" (actually, a well-anchored tent) on the shores of beautiful, breezy, Lake Arthur. Park staff estimate over 12,000 people attended the Regatta, which featured live bands, a car cruise, eco-activities, food and craft vendors, and a laser light show. Many landlubbers stopped by the Clean Creek yacht to investigate the pottery and jewelry, all glazed with nontoxic oxides recovered from our AMD treatment systems. Captain

Margaret and her Mates made sure everyone learned how a portion of all Clean Creek proceeds benefit the ongoing effort of volunteers and watershed groups who work hard to help keep our waterways clean! You can learn more about CCP and browse the beautiful and unique pottery, jewelry, decorative ornaments, tiles and trivets, holiday decorations, and other lovely products (*See photos below.*) for sale at our online “Green Store” www.cleancreek.org. Each piece is created by a local artist, made in part using recycled metals from abandoned mine drainage treatment systems. If you missed the fun at this year’s Lake Arthur Regatta, mark your calendars for next summer’s encore on August 5th and 6th, 2017!





The KIDS Catalyst

SLIPPERY ROCK WATERSHED COALITION FUN ACTIVITY



Fall Harvest Word Search

The end of summer and beginning of autumn is a great time to enjoy the delicious produce made from the hard work of those who like to plant gardens! Maybe you have a vegetable garden in your own backyard, or a neighbor does... maybe your family likes to visit a farm or a farmers market... or even just buy fresh fruit and veggies from the grocery store! The fall harvest offers us many healthy and tasty choices to eat. 15 of these are listed below and hidden in the word search. If you can find them all, circle them, and mail us your paper! We'll give you a \$1 credit to use on Amazon.com (with a parent's email address). Credits can be saved up to buy yourself something really great!

Potato	Pumpkin	Lettuce	Broccoli	Zucchini
Tomato	Corn	Cucumber	Cauliflower	Apples
Onion	Squash	Sunflower	Pepper	Pears

C	I	S	F	R	E	W	O	L	F	I	L	U	A	C	R	K	Z
U	G	V	W	D	F	Y	N	J	I	A	C	Q	U	X	O	B	E
O	N	I	C	Z	W	G	F	N	B	P	R	O	O	C	N	A	P
S	Q	U	A	S	H	T	T	P	E	C	U	T	T	E	L	X	A
F	B	Q	R	H	U	S	F	P	L	O	D	W	A	V	C	H	Z
Z	O	T	P	O	Q	N	P	S	N	F	L	O	M	P	P	E	V
C	U	A	L	I	S	E	F	D	B	A	E	C	O	N	P	A	D
T	F	C	H	A	R	A	S	L	S	Q	P	O	T	A	T	O	H
A	D	M	C	S	H	A	N	U	O	I	S	E	C	U	H	N	I
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P	O	D	S	Q	I	F	L	O	B	C	E	B	Z	R	U	Z	R
C	C	J	I	Y	R	N	T	S	N	O	A	R	U	V	S	Z	E
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S	Y	A	O	P	P	L	V	P	M	E	S	O	A	P	K	B	C
P	E	C	W	N	M	C	O	R	U	N	H	L	U	S	K	E	U
S	Q	U	B	C	S	E	L	P	P	A	R	I	C	M	B	O	C



Slippery Rock Watershed Coalition c/o Stream Restoration Incorporated
A PA Non-Profit Organization
434 Spring Street Ext.
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Save the Dates!

Westminster College Student Presentations at 10/13/16 SRWC Meeting

We are thrilled to announce that students in **Dr. Helen Boylan's Advanced Chemistry class at Westminster College** will share their water sample analyses of mine drainage treated by passive systems in the Slippery Rock Creek Watershed. It's always exciting to have students involved in practical, hands-on learning activities that help us evaluate the health of the watershed. We encourage you to join us for the meeting (which includes free pizza and pop for all!) on **Thursday, October 13th at 7 PM at Jennings Environmental Education Center**. If you've never come to a meeting, this would be a great one to try out! Please come and support the students as they share what they have learned!

Annual Student Symposium on 12/1/16 at Westminster College

Come one, come all! Come to the Annual Student Symposium on **Thursday, December 1st** at Westminster College! Join the Slippery Rock Watershed Coalition, environmental professionals, educators, and watershed organizations for an evening at Westminster College showcasing student research and creative works. The **Student Symposium on the Environment** is held each December to highlight environmental study, research, artistic expression, and service work by students in the region. Students from all disciplines, ranging from high school through graduate school, are encouraged to participate. Research posters, art work, oral presentations, and even performances will be showcased for all interested in learning about and celebrating students' accomplishments. The SRWC is now accepting applications for student presentations. Please contact Cliff Denholm at 724-776-0161 if you would like to present at the Student Symposium. We look forward to seeing the always-excellent presentations by our area's many talented young people!

