

# Home & Heart



Kathleen Jarschke-Schultze

©2000 Kathleen Jarschke-Schultze

**T**his November, Bob-O was gone for two weeks on a dad/lad camping trip with his son, Allen. I was left in charge at Chateau Schultze. I wanted to live up to Bob-O's admission that I was no longer "marginally mountain," but had graduated to "more or less mountain." I was doing okay without him until the first snowfall.

## Murphy's Hydro

For some reason (I suspect Murphy's Law and Bob-O's absence), a PVC connection about 20 feet above the hydro turbine decided to come apart. I got home from taking the dog for her annual exam when I discovered it. As I got out of the car, I could hear the creek being very loud. Living next to a creek, you get used to the sounds it makes. This was an alarmingly unusual noise.

From a distance, I could see that there was a problem with the pipe. I came back to the house and grabbed the first pair of gum boots that I found, thinking they were mine. As I shoved my feet into them, I realized that they were Bob-O's, and way too big for me. But it was too late. I was on a mission, and climbed down to the creek in the snow. As I stepped into the ice water, I realized that the gum boots that I had chosen leaked.

I could see where the pipe had come out of the connection. It seemed like I might be able to line up the pipe again. I stood on one foot and pressed my other foot onto the wayward pipe and pushed with all I had. Never underestimate hydraulic power. The pipe realigned alright, with an eighth inch gap between it and the connector. This gap caused a blasting pinwheel of icy water to drench me from face to foot, and knocked me backwards onto my butt, waist deep on the rocks.

Emma, my 92 pound Airedale dog daughter, thought it great fun that Mom was going to play in the creek with her. She began grabbing fallen branches and jumping around me. I could see I wasn't going to win over Murphy, so I retired to the house to get warm and dry.

## Creek Rescue

I called Karen at *Home Power* Galactic Central, hoping I could prevail upon some of the crew to rescue me. Not long after dark, Joe Schwartz, Eric Hansen, and Jason Powell showed up. As I led them down to the creek to view the problem, my flashlight went dim. I went back to the house for more flashlights, as we always have several on hand that use rechargeable batteries. By the time I got back, the guys had surveyed the problem and had a plan.

Carla Emery once said, "The hero of the morning is the one who gets the fire going." Well, the hero of the hydro is the buddy who gets on his river sandals and wades into the creek in the dark and in the snow to fix your hydro pipe. This is just what Eric did. While he held one end of the pipe, Joe and Jason lifted and shoved the other end up past the connection.

Then Eric lifted the two ends and realigned them into one pipe again. Water still shot out of the connection, but I had enough getting through that I didn't have to run the engine generator. The guys then piled big rocks on and around the pipe to hold it in place until Bob-O got home.

The real fix came later. First we pulled the intake out of the creek to drain the pipe run. Bob-O then pulled the lower section of pipe up past the connection by about 6 inches (15 cm). He first moved the threaded PVC ring, and then the rubber ring, higher on the up-creek pipe. I held it up, steady, and in alignment, so we were able to reattach the two sections of the connector. We used a big adjustable wrench to tighten the fitting, and we were done.

## Hydro His Story

When I first met Bob-O fifteen years ago, he was living on a gold claim and using microhydro power. He had been living on hydro power for fourteen years already. I quickly learned to climb the mountain behind the cabin up to the water ditch. It was one of the mine's water ditches used for ground sluicing for gold in the past. Once there, I would grab the MacLeod (a tool used for scratching fire lines), and walk the ditch cleaning out the fallen forest debris.

In the summer, I didn't have to climb the mountain much. In the spring, fall, and winter, the trip was sometimes daily. In the forest, a lot of leaves fall. Once, a bear pawed a lot of dirt from the bank into the ditch while digging for some sort of food.

The intake of a microhydro system is all-important, and must be kept clean and free to take in all the water it can. The walk to clean the intake can be enjoyable at best and a downright miserable nuisance at worst. But it's a very real part of using microhydro power.

### Pipe Dreams

Our system here on the creek uses an Energy Systems and Design Stream Engine. Our penstock is about 800 feet (240 m) of 6 inch PVC pipe on the upper end, and 130 feet (40 m) of 5 inch PVC pipe on the lower end.

Of course, we worked up to this present configuration through the years. When we first moved to the creek, all the pipe was 3 and 4 inch, and only about a 600 foot (180 m) run. It takes two things to make a hydro plant run—head (vertical drop) and water. If you have a lot of one you can get by with not very much of the other. But our total head is only 32 feet (9.7 m), which is not very much. So to make the system work well, we had to use more water than the small pipe could efficiently carry. Hence the upgrade.

It is normal for the water to travel through the intake into a spring box. In our case, we don't have a lot of head to start with. We were loathe to lose any at all in feeding a spring box, so we chose to put the hydro intake right into the creek. Bob-O has tried a number of pipe intake designs, mostly of his own do-it-yourself ingenuity. A little over a year ago, he came up with a really swell design. We have been through all four seasons with it, and it is the best yet.

### Assembly

To assemble the intake, he used one 3 foot (0.9 m) length of six inch PVC pipe, a 45 degree elbow, a PVC end cap, and a 3/8 inch (10 mm) diameter drill bit. First he marked lines 1-1/2 inches (38 mm) apart down the pipe segments. The next step was to drill 3/8 inch holes every inch down the drawn lines. He assembled the pieces into one unit (see photo), and then attached the whole unit onto the upper end of the hydro pipe.

The first time he tried it, he put 1/4 inch (6 mm) hardware cloth around the outside of the last 3 feet of the pipe. It was a real pain in the neck to clean. We found that a toilet brush worked best. After a while, he realized that the screening wasn't necessary. With the system as it is now, the leaves brush right off of the smooth pipe. He says that he figured the size of the holes by figuring half the diameter of the smallest nozzle we might use.

When the leaves are falling, we clean the intake about once a week. If the wind has been blowing hard, we check it twice a week. Other than that, it can be months



**Bob-O's home-built intake made from drilled-out 6 inch PVC pipe.**

before we get up the creek to clean it. It just doesn't need very much attention. It works because with all the small holes instead of one big sucker, the leaves usually float by on the water. Simple and effective—just the way we like it.

### Access

Kathleen Jarschke-Schultze is enjoying an occasional walk to clean her head at her home in Northernmost California, c/o Home Power, PO Box 520, Ashland, OR 97520

kathleen.jarschke-schultze@homepower.com

