

Here is the story of our efforts to create and seal the first of two small ponds in southwest Washington.

May 2019: My husband Brad and son Adam decided to dig a pond, located downslope from our garage, where it gets runoff from the garage, west side of house, and driveway. The soil is "silt loam," overlying clay--which in a few areas is exposed by erosion or excavation but here, the soil drains readily. We had researched pond building a fair amount, including in permaculture courses.



Adam dug and dug, damaged a couple roots from nearby Douglas Firs, dug down under the dam site, packed in clay, built the dam--bringing in clay from another location, packed it with the

tractor, then built a dam across the upper side, for a more shallow reed bed to handle grey water from the house. We followed Toby Hemenway's reed bed design in Gaia's Garden.



We had learned about gleying to seal a pond, but hogs or other hooved animals were too much work, expense, and smell to take on. But we had read of using green foliage. So: we mowed and mowed, brought loads of grass clippings until they were 8 inches deep--per Bill Mollison's Permaculture. A Designer's Manual page164. We packed the grass with lots of stomping,



Then we covered the grass with a huge sheet of plastic, and filled the pond with water for weight--all to foster an anaerobic condition for gleying. How long should this have taken? The Permaculture, A Designer's Manual says "In cold areas, ferment can take a week or two." I searched hard for other sources and details on gleying with plant material but found no records of the authors' personal experiences, besides Bill Mollison's few paragraphs. Sources would mention the "European" or "Russian" practice of gleying, and give brief descriptions. Earth Ponds p. 124 by Tim Matson, cites New Alchemy Institute in East Falmouth MA, from which I found an article. The gleying method included waste from a hog pen and did not specify sealing from air.



We completed the greywater reed bed setup and drainage from gutters to the pond, and waited for gleying to proceed.

June 2019: Mosquitoes found the pond, so we decided to add goldfish. I don't clearly recall efforts to find out whether gleying had occurred. I think we tried pulling back the plastic, finding decaying grass but no discernable "gel," we might have seen the water level drop but were now into the dry season which made it hard to tell and mosquito larva were rampant. So...we added



goldfish.



Most died. We also didn't know how long it takes for a reed bed to grow and mature enough to clean grey water. So we diverted greywater to a mulch pit downslope and added more goldfish. They ate the mosquito larva, grew and 8 survived for over a year.



We enjoyed our pretty little pond, the growing reed bed and goldfish.

Until September 2019. The plastic bulged, and bulged, and bulged. We think the decaying grass produced large amounts of methane--which we kept releasing out from under the plastic, until floating bog-like mats simply lifted the plastic so much that the fish had little water left.



So in October (5 months after creating the pond), we removed the plastic and tried to move the fish. Then we raked out wheelbarrows and tractor buckets full of stinky decayed grass. It smelled like fresh horse manure.



Did the pond seal, even without its thick layer of decayed grass? No: it filled with rain and snow, lowered until the next precipitation or until we would finally add well water.



Once again, we had a pretty little pond, however.



It was home to fish, frogs, water insects and salamanders. The reed bed did fill in, did mature, did quit stinking.



Until one day in the fall of 2020, a great blue heron ate the remaining fish. But the pond never did seal and hold water. We quit adding well water. This year it has grown lovely Wapatos.





Maybe it will just be a nice wetland, a nice cleansing stage for the grey water, a little rainy-season pond.

Why didn't it seal? Maybe channels from tree roots. Maybe the slopes on the dams were too steep for gleying. (Bill Mollison says slopes should be gentle, a 1:4 slope). But there never was apparent water seepage on the outside or base of the dam. And the other sides of the pond were definitely gentle slopes.

But gleying with anaerobically decaying green plant material? Nothing I'd read predicted a methane-lifted bog. I'd say that gleying in the manner we tried did not seal the pond.

Coming next: 2nd pond saga--grass-gleying attempt then bentonite and ducks.