Rehabilitation of the Reitz #1 Passive Treatment System[1]

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The Shade Creek Watershed Association (SCWA) contacted Stream Restoration Incorporated to rehabilitate the Reitz #1 passive water treatment system near Central City, PA. The bioreactor was emitting a sulfidic odor that was causing nearby residents to complain. It was noted that the bioreactor was no longer working as designed, but instead functioning partially as a surface flow wetland. Faculty and students from Saint Francis University worked with SCWA to evaluate the system and develop a plan for rehabilitation. During seven weeks of work in the context of a sophomore level environmental engineering class, the odor coming from the bioreactor was decreased by increasing the flow through the bioreactor. Other activities included leveling rock baffles to remove preferential flow patterns and removing iron deposits on the Agri Drain stop logs. An island was built in the middle of the bioreactor, using compost, native plants, and logs fastened in place with rebar, to introduce vegetation and improve waterfowl habitat. Furthermore, the substrate in the bioreactor and the vertical flow pond was fluffed using pickaxes, shovels and rakes in order to disrupt preferential flow patterns. Through the completion of these tasks, the group was able to cost-effectively optimize overall system performance. The project was an ideal example of industry-academic partnership for student development, non-profit assistance and, water quality improvement.

Additional Key Words*:* Vertical flow pond, bioreactor, operation and maintenance.

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