

THE LC20D PASSIVE TREATMENT SYSTEM, LITTLE COON RUN, CLARION COUNTY, PA¹

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Abstract: A common pollution problem in Clarion, Venango, and Jefferson Counties is the artesian flow of acidic Fe-contaminated water from abandoned wells. The Little Coon Run watershed in Farmington Township (Clarion County) contains numerous well discharges that substantially degrade stream quality. A passive treatment system was installed in spring 2007 for LC20D, the largest source of acidity and Fe in the watershed. The discharge is located in a remote location on PA State Game Lands 24. The 60 gpm artesian flow had pH 6.2 with 197 mg/L acidity, 121 mg/L Fe, 15 mg/L Mn, <1 mg/L Al, and 710 mg/L sulfate. The discharge is next to the stream and there was limited space for a treatment system. The passive system consists of a 1,700 ton anoxic limestone drain followed by a 15,000 ft² settling pond and 10,000 ft² wetland. The project required the installation of a 4,000 ft access road and the removal about 100 tons of iron sludge. The influent to the settling pond is distributed by a trough constructed from vinyl sheet piling. The system has been monitored since May 2007. The ALD discharges water with 160-170 mg/L alkalinity which is not enough to generate a net alkaline discharge. This deficiency is a consequence of geochemistry, not inadequate limestone tonnage or a construction problem. In 2009 the system's final effluent was pH 4.1 with 20 mg/L acidity, <1 mg/L Fe, 15 mg/L Mn, <1 mg/L Al, and 505 mg/L sulfate. Loadings of acidity and Fe to the stream have been decreased 80 and 99%, respectively. Little Coon Run downstream is markedly improved downstream and is able to maintain pH 5.5-6.5 with signs of biological restoration. The poster will present the system's design, construction, and treatment results.

Additional Keywords: acid mine drainage, passive treatment

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