

AMD Treatment in the Cheat River & Deckers Creek

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Abstract: Two passive treatment systems were constructed in 2015 which are located in Preston County, West Virginia. The first system, North Fork Greens Run Railroad Passive Treatment System (NFGRR PTS), was implemented for the Friends of the Cheat. This treatment system addresses a relatively low-flow, highly-acidic discharge that emanates from an abandoned underground coal mine site at which land reclamation had previously been completed. The design water quantity and quality data for the NFGRR PTS are: 7 / 29 gallons per minute (avg/design), pH 2.9 SU, acidity 400 mg/L (calculated acid value), total/*dissolved* metals concentrations of iron 104/(53) mg/L, aluminum 61/(35) mg/L, manganese 4/(2) mg/L, and sulfates of 2,000 mg/L. Constraints regarding the allotted construction area, as well as the quality of water to be treated contributed to the challenges involved with the treatment of this water. A variety of passive treatment technologies (including: low-pH iron removal channels; siphon-driven, limestone-only, auto-flushing vertical flow pond; and Jennings-type vertical flow pond) were integrated into this design in order to effectively treat the water prior to discharging to North Fork Greens Run.

The second project, Slabcamp Tributary Passive Treatment System, was implemented for the Friends of Deckers Creek. The Slabcamp Tributary PTS essentially addresses a heavily-impacted stream as well as two discrete discharges (OLC 250 & OLC 300) from an abandoned underground coal mine. The design parameters for OLC 250 are: 154 gallons per minute, pH 3.1 SU, acidity 127 mg/L, dissolved metals concentrations of iron 1 mg/L, aluminum 14 mg/L, manganese 1 mg/L, and sulfates 228 mg/L. OLC 300 has design water quantity and quality data of: 60 gallons per minute, pH 2.8, acidity 247 mg/L, dissolved metal concentrations of iron 9 mg/L, aluminum 23 mg/L, manganese 1 mg/L, and sulfates 330 mg/L. Currently, both discharges and the stream confluence in a 5.4-acre AMD-impacted wetland prior to entering Deckers Creek. Complete construction of the system was restricted due to the available project budget. Additional treatment components for OLC 300 were recommended and approved; however, the recommended components were not built in this construction phase as additional funding needs to be secured.