

The Use of Advanced Membrane Filtration as an AMD Remediation Method¹

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Abstract: Acid Mine Drainage, or AMD, constantly poses a challenge to mine operators and state / federal regulators around the country. Specific to Pennsylvania, while mine operators are required to treat AMD, many more discharges exist that are defined as abandoned and have no treatment. While passive or active chemical treatments are always chosen for remediation of such AMD sources, significant capital costs tend to keep the total number of projects to a minimum. Additionally, active systems tend to fall to disrepair due to high operational and maintenance costs. To combat this problem, InnoH2O Solutions partnered with a local coal company to solve these complex remediation problems. InnoH2O spent 5 months evaluating and testing different types of AMD to evaluate the effectivity of advanced membrane filtration on the remediation of AMD. InnoH2O was able to achieve very significant results with significant reductions of Iron, Aluminum, and Manganese along with tremendous Sulfate reductions. Net acidic flows were stripped of their dissolved metal load, without the use of any chemicals or additions, and then adjusted to meet NPDES requirements for pH. Typical metal reductions exceeding 99 percent were achieved along with 85 percent reductions in sulfates; conductivity was reduced by greater than 95 percent. Overall water recovery rates of 99.5 percent were achieved during the course of testing. Laboratory testing of the process has been completed and field trials will be beginning in early to mid-2019.

Additional Key Words: acid rock drainage, net acidic water remediation.

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