

Proposed Design and Installation of New Anoxic Limestone Drain at Clarion County Park

Prepared for Clarion County Conservation District through the Trout Unlimited AMD Technical Assistance Program

June 26, 2018

Scope of Work

Clarion County Conservation District (CCCD) is seeking to rehabilitate the Morrison passive mine water treatment system at the Clarion County Park. The system was installed in 1991 as part of a bond forfeiture settlement and consists of an anoxic limestone drain (ALD), constructed wetlands, vertical flow pond, and settling pond. The system has not provided good treatment for many years due to the excessive accumulation of iron sludge and inadequate generation of alkalinity by the ALD. As a first step in the system's rehabilitation the ALD should be replaced. This document provides a scope of work and budget for the replacement of the existing 500 ton ALD with a 1,200 ton ALD.

The scope of work consists of six tasks.

- 1) Erosion Control and Revegetation The project's disturbance is less than one acre so a construction NPDES is not required. E&S controls identified by CCCD will be installed. The site will be seeded, amended with lime and fertilizer, and mulched after completion.
- 2) Limestone. 1,200 tons of high calcium AASHTO #3 limestone aggregate will be purchased and delivered to the site for placement in the ALD.
- 3) Excavation and Installation This task includes all earthwork and equipment work needed to install the ALD. It includes the following.
 - a. Excavation of the existing ALD;
 - b. Removal of limestone and plumbing;
 - c. Collection of mine water seepage into a single source;
 - d. Enlarging the ALD footprint for the installation of 1,200 tons of limestone;
 - e. Application of bentonite or installation of liner, if determined necessary;
 - f. Installation of influent and effluent plumbing;
 - g. Installation of 1,200 tons limestone;
 - h. Burial of ALD with existing soil and grading of site.
- 4) Contingency This task considers potential problems with water collection, basin leakage, plumbing issues and overall site management. Enlargement of the ALD may encounter spoil or refuse that could lead to leakage. If the soils are considered unsuitable for construction of the ALD, sealing the excavation with bentonite or a liner will be considered. The depth of the excavation will depend on the elevation of the mine water. This will not be known until the existing ALD is uncovered and the mine water is located.
- 5) Design and Construction Oversight. This task involves the system design, bidding, and management of construction activities. A construction plan will be developed that is suitable

for review, bidding, and construction. An E&S Control plan will be developed through consultation with CCCD. The construction process will be managed with regular oversight and inspection. The inspections will include assessments of the suitability of available soils for construction. The plan will be adjusted, as necessary, to reflect conditions encountered during excavation. The ALD will be sampled to assess its performance and an as-built will be prepared. It is assumed that the project will take 1-2 weeks.

- 6) The project will be administered by CCCD. The District requests 2% to cover administrative costs.

Cost Estimate

The cost estimate is shown below. The total cost estimate includes a \$11,500 contingency that is based on the estimated cost to install a synthetic liner. It is hoped that a liner will not be needed and that this cost will be avoided. The contingency can be used to conduct other site work (berm repairs, channel evacuation) as approved.

item	units	# units	unit cost	cost	basis
E&S, revegetation	job	1	\$ 5,000	\$ 5,000	estimate
excavation	CY	2,667	\$ 5.00	\$ 13,333	Limestone volume X 3
AASHTO 3 Vanport	ton	1,200	\$ 22.75	\$ 27,300	Allegheny Mineral quote
contingency	job	1	\$ 11,500	\$ 11,500	Cost estimate for synthetic liner
Design and Construction Management	job	1	\$ 14,000	\$ 14,000	see below
Admin/Project Development, CCCD	Hours	66	\$25.26	\$ 1,667	Approx. 2.3% of project
Total				\$72,800	

Design and Construction Management Detail

Item	Cost
ALD investigation and construction plans	\$5,000
bid and contract assistance	\$ 1,500
construction management and oversight	\$ 6,000
as-built and monitoring	\$ 1,500
Total	\$14,000