



**BioMost, Inc.**  
**Mining and Reclamation Services**  
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Date: June 5, 2014

To: Huntingdon County Conservation District  
10605 Raystown Road  
Huntingdon, PA 16652-9603

Re: **System Leak Repair Plan**  
**Miller Run #1 AMD Remediation System**  
**Carbon Twp., Huntingdon Co., PA**  
BMI Miller Run Repair Plan.doc

The above noted site was inspected on 08/19/2013 by Cliff Denholm, BioMost, Inc. (BMI) and Andy Patterson, Huntingdon County Conservation District (HCCD) to evaluate if the limestone-filled pond (Limestone Pond) was leaking. Water samples of the raw water and two seeps located below the Pond were collected and a dye test was conducted. The characteristics of the raw water and seeps were found to be similar, indicating a leak. Approximately 1 hour after adding dye to the influent of the limestone pond, dye was observed at seep 1 and thirty minutes subsequent, at seep 2.

After review of the site conditions and available information, BMI recommends that the limestone be temporarily removed from the Limestone Pond and a geosynthetic clay liner (GCL) be installed. Based on the 06/22/11 OM&R Schematic Plan, there is approximately 400 tons of limestone in the Limestone Pond.

As the site was installed in 2007, removal and replacement of the limestone is expected to help refresh the limestone and an increase in system performance should be realized after the proposed repair effort. Washing of the limestone could result in a further potential performance enhancement; however, there does not appear to be a nearby pond or other source of water, other than Miller Run readily available.

As a general observation, installation of a settling pond down gradient of the Limestone Pond could be beneficial to overall system performance and assist with long-term operation and maintenance. Though a down-stream settling pond would provide removal and storage of sediments discharged and flushed from the Limestone Pond, it is understood that site conditions and other constraints may prohibit the installation of an additional pond.

During the system repair, it may be advantageous to install a 6" or 8" PVC pipe in the intake channel to allow influent flow measurements with a bucket a stop watch. Alternatively a weir could be installed in the intake channel.

**Recommended Scope of Work**

1. Remove ~400 tons of limestone and temporarily stockpile on periphery of system. Note, limestone removal may need to be phased by using a portion of the Limestone Pond as a stockpile area depending on availability of adjacent useable area – one option could include temporarily stockpiling limestone on the State Game Land #67 access road if a temporary road closure would be acceptable to the PA Game Commission.
2. Cut the 8" pipe approximately flush with the inside slope of the Pond and remove.
3. Over-excavate 1' of material from the bottom and inside slopes of the Pond and temporarily stockpile (for later placement on top of GCL)
4. Excavate "notch" around the 8" pipe and place granular bentonite around 8" pipe.
5. Place GCL liner (CETCO Claymax 200R or equivalent). Two 15' x 150' rolls will be needed. Install in accordance with manufacturer's recommendations. Typically, longitudinal seams (long side) are overlapped 12" and granular bentonite is placed between the layers of GCL within the overlapped area. End seams should not be needed at Miller Run #1 based on the dimensions of the Limestone Pond. GCL should extend to top of the pond. The Pond is relatively shallow (~6' deep) and based on the relatively small scope and scale of the project, an anchor trench should not be needed.
6. Place granular bentonite on GCL around 8" pipe and install secondary GCL "collar" around the 8" pipe on top of the primary GCL liner.
7. Carefully replace 1' soil on top of GCL and restore bottom and inside slopes to pre-repair conditions taking special care not to damage liner.
8. Carefully replace the ~400 tons of limestone taking special care not to damage liner.
9. Remove Riprap from intake channel.
10. Over-excavate 1' of soil.
11. Place GCL on bottom and sides of intake channel.
12. Place 1' of soil on GCL within intake channel.
13. Replace R-4 riprap.
14. Revegetate affected areas as needed.

Note: Any liner damage should be repair in accordance with manufacturer's recommendations.

Enclosed are the following:

Item	Pages	Orig.	Copies
"Sketch Plan"	1	-	1
GCL Brochure	12	-	1
GCL Installation Guidelines	16		
Cost Opinion	1	-	1

Please do not hesitate to contact me with any questions or comments.

Thank you!

From: BioMost, Inc.



By: Timothy P. Danehy, QEP

Sent: via email

Copy: sri@streamrestorationinc.org