



Memo:

To: Travis Marshall, DRMS
From: Crystal Fletcher, OSMI
Date: June 19, 2017
Subject: Passive Treatment System – Potential Recommendations for Improvement

As we watch this system through low flow to high flow we have identified areas that could be improved on with some potential recommendations. We had an algal bloom and weren't sure how the system would handle the algae. We believe that it caused some restricted flow through the system. With the addition of high flows into the pond, we chose to divert the flow from the vault to the middle of the pond using a series of piping. We amended the top surface with peat moss to keep infiltration where we wanted it to go, while simultaneously providing a reducing, bacteria rich environment. We see potential improvement with the addition of three recommendations made to the system to improve the efficiency and mitigate some of the challenges.

1. Flow through the membrane - The clay topsoil and the geotextile membrane seem to reduce flow through the membrane from what we can predict. We cleaned a small section off top soil away from the membrane and identified the potential challenge. By creating holes in the membrane, we will allow a better vertical flow through the membrane to the surface as was intended.
2. Amend the topsoil in the pond - By amending the top soil this summer we can minimize the current sealing effect that the current top soil and membrane are creating while simultaneously improving the vegetation areas. Amendment would be a high carbon mulch.
3. Seal between the pond and the stream channel - The pond and the channel are very close to one another and there is a pre-existing spring that was found upon construction of the leachfield. We backfilled over the spring and placed the clay liner on top of the backfill. The flow current from the spring into the creek appears to be similar to the flow prior to the leachfield system installation in 2016. However, to assure no mingling of leachfield water with the spring we will look at either a grout curtain or a slurry trench.

With the following recommendations, we anticipate that the system will have improved functioning and will provide a better environment for vegetation to grow and further enhance the biological activity in the system. Water Sampling was completed this week for second quarter including a Mine Water Pond Inlet sample. We will continue to monitor flow, through the system and water sampling results from the groundwater wells and the Mine Water Pond Inlet.

Regards,


Crystal Fletcher