

Alaska Water Sewer Challenge Phase 3

Monthly Progress Report #9

Reporting Period: March 1st, 2017 – March 31th, 2017

Submission Date: April 10th, 2017

Prepared by

University of Alaska Anchorage

Per the professional services agreement, monthly progress reports will include a one page overview of how the monitoring and testing of the prototype is progressing and how the system is working. All major changes done to the system in the ending month and any changes planned for the following month will be disclosed. In addition to a progress report for this period, this report will also include the “Interim End User Report” per the professional services agreement. No video is included now as it is under development, it has been delayed to better capture the final treatment system.

System Overview for March 2017

March was a busy month of trial and error associated with the new system. While we anticipated smooth operation we learned quite a bit about how the system operated differently in the previous three tank arrangement versus a newer four tank arrangement. During this month we evaluated 3 types of different cartridge filter arrangements, settling on a 1 µm melt blown filter, 0.45 µm pleated filter and a 0.2 µm pleated filter. We evaluated influence return of concentrate to cause particle aggregation in the greywater tank, this worked but was problematic and discontinued. We have also shifted to a dust vendor specified dust that appears to better mimic literature studied greywater. We also finally, determined a manner to manage bubbles with a piston pump, a final design configuration is currently under way. By mid-March we installed a new nanofiltration membrane and will run this membrane until failure where it will be sent to autopsy where a cleaning protocol will be determined. Our monthly certified sample collected, even with challenging pre-treatment configurations, remained high quality with low organics, high ultraviolet transmittance and no detectable microbial constituents.

Considerations for April 2017 and Future

We look forward to submitting an amended QAPP once the new prototype is in stable operation and we can plan the next water quality based stress scenarios. We will begin team derived challenges when the stable operation period is complete.

General Notice of Data Sharing

All of our data (raw and processed) are being posted publicly as well as all progress reports.

Direct link to website resources: http://reusewaterak.com/?page_id=10

Direct link to photos of water samples: http://reusewaterak.com/data_AWSC/?dir=daily_photos
(photos now taken only intermittently)

Direct link to data: http://www.reusewaterak.com/data_AWSC

End-User Interaction

During this month one of our team members visited Kipnuk where she performed a willingness to pay survey. We are currently compiling this data.