

Alaska Water Sewer Challenge Phase 3

Monthly Progress Report #11

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

Submission Date: June 5th, 2017

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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. No video is included now as it is under development, it has been delayed to better capture the final treatment system.

System Overview for May 2017

May was a busy month at our system. We completed three team based challenges, mopping the cabin with pinsol and pouring it in the kitchen sink, daily urination in the shower and oil/gasoline washed into the kitchen sink. The urination and pinesol challenges were free of upset on any front, water quality or operations. The oil/gasoline challenge appeared to negatively impact membrane flux as anticipated. Samples were collected daily for 14 days after oil/gas was added and are to be analyzed for benzene, toluene, ethylene, and xylene. We also received our autopsy report. The report showed that the membrane had been fouled by “hydrocarbons.” After discussion with the autopsy company we are convinced that this is soap and not hydrocarbons in its oil/gas sense. Further, they were unable to clean the membrane while maintaining membrane integrity. From a phone call they stated that their strongest cleaning chemical worked but appeared to harm the membrane surface. They suggested that our NF270 (a drinking water membrane) was not robust enough. We have ordered three other membranes to test before turning off, we are confident that an industrial membrane will be able to be cleaned.

Considerations for June 2017 and Future

In June we will test the system without a 0.2 um cartridge filter and perform the whole home illness test. We will be challenging the system during the whole home illness experiment under reduced operations (turning ozone and one of the two UV disinfection systems off). Due to the membrane autopsy report we will forgo operating the system at village desired flows, this aspect of operation will be modeled on paper.

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

We have been working with our communities for a June visit. Kipnuk, AK visit is planned for early June. We have been having logistical challenges with Koyukuk, AK.