

Alaska Water Sewer Challenge Phase 3

Monthly Progress Report #5

Reporting Period: November 1st, 2016 – November 30th, 2016

Submission Date: December 6th, 2016

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.

System Overview for November 2016

The system operated for the entire month of November with no outages. Further during November, “Power/Equipment Failure” and “Wash Vacation” stress scenarios defined by the state were performed. These two challenges simulated periods of outage (2 and 7 days, respectively) at varied household water usage. During the “Power/Equipment Failure” our system had a coinciding failure of the shower drain system. Therefore, additional hardware failures were simulated and this failure was repaired during outage, repair was to resolder a wire that because unattached on the controller circuit. System restarted without issue during both periods of no operation, note that ozone system remained on during this time to ensure wash water integrity (this would be our recommendation for all outages where water remains in the system). Average weekly water input (rain water) was 34 gallons per week and withdraw of greywater concentrate was 26 gallons per week. Wash Water quality was high, no total coliform or e.coli were detected, total organic carbon concentrate was 0.88 mg-C/L (average), turbidity was 0.10 NTU (average) and UV transmittance was 99.8% (average).

Considerations for December 2016 and Future

No changes are planned for December 2016. Parts have started to arrive for the new skid mounted treatment system as well as commercially manufactured circuit boards to replace prototype board for home fixtures. December will complete the contract delineated challenge tests, ending with our system freeze starting December 16th and lasting until early January (note the system will be drained of water), during this time a haul keg will be frozen to evaluate integrity per our team delineated stress. Finally, we anticipate to have a revised QAPP produced for review in January 2017 to take us through the end of the demonstration period. Finally, we will not be cleaning the membranes during this demonstration. We will send our membranes fouled in our final design to a company for autopsy and determination of cleaning protocol.

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://www.reusewaterak.com/data_AWSC/daily_photos

Direct link to data:

http://www.reusewaterak.com/data_AWSC

End-User Interaction

Our team continues to work with our end-user groups to schedule a site visit during January 2017. Our team was accepted to give a presentation at the Alaska Forum on the Environment in February 2017.