

Larry Hartig
Commissioner

P.O. Box 111800
Juneau, AK 99811-1800

www.dec.alaska.gov



Candice Bressler
Public Information Officer

907.465.5009

candice.bressler@alaska.gov

Press Release

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CONTACT: Bill Griffith, DEC Facility Programs Manager, (907) 269-7601, bill.griffith@alaska.gov

DEC Announces Phase Three in the Alaska Water and Sewer Challenge

(ANCHORAGE, AK) – The Alaska Department of Environmental Conservation (DEC) Village Safe Water Program has announced Phase 3 of the Alaska Water and Sewer Challenge, a research and development effort to find better and more affordable methods for delivering drinking water and sewage disposal services to rural Alaska. The project, which began in 2013, is designed to leverage public funding with resources from the private sector and academia to produce innovative, cost-effective water and sewer technologies that can be constructed and operated in an Arctic climate.

Over 3,300 rural Alaska homes lack running water and a flush toilet. Residents in homes without running water and flush toilets have a significantly higher incidence of acute respiratory infections and severe skin infections than persons with in-home running water. A 2010 study found higher rates of invasive pneumococcal disease (IPD) amongst Alaskan children who did not have access to piped water. IPD is a very serious bacterial infection that can affect the brain, blood, and lungs, and residents of Southwest Alaska suffer rates of IPD that are among the highest in the world. Running water provides the ability to wash hands frequently, which reduces the incidence of disease by interrupting person-to-person spread of the germs that cause these types of illnesses.

Phase 1 of the project began in fall 2013 and involved an international effort to encourage the formation of joint venture teams of engineers, social scientists, innovators, and people with rural Alaska experience. Phase 2 began the following year with six teams being awarded funding by DEC to develop competing proposals for researching and building new and more cost effective in-home water and sewer systems. Now, Phase 3 includes the prototype development and pilot testing in a lab for the top three proposals submitted during Phase 2. Teams are encouraged to augment project funding with their own resources in order to achieve the best possible solutions.

DOWL Alaska, Summit Consulting, and the University of Alaska Anchorage (UAA) are the three teams with proposals selected for the development of working prototypes in Phase 3. DOWL Alaska proposes a system where the water and wastewater holding tanks are located in a small vestibule attached to the house to minimize space requirements in the home and avoid the use of expensive heat trace to a separate holding tank outside the home. DOWL Alaska plans to set up its pilot system in Fairbanks at the Cold Climate Housing Research Center. Summit Consulting proposes treatment of raw water by means of a two-stage cartridge filtration process followed by ultraviolet (UV) disinfection, which allows flexibility to treat a wide range of raw water quality. Summit's pilot system will be set up at their main office complex in Tok. UAA proposes to recycle both graywater and some black water, as well as the use of a modular approach that will allow homeowners to select those in-home components that fit their lifestyles and space available at home. UAA's pilot system will be set up on campus in Anchorage.

Teams will be evaluated on a series of performance targets. While an ideal system would be capable of meeting all targets, a suitable system may meet most targets but not all, and exceed others. Proposed systems should be capable of providing a minimum of 15 gallons of useable water per person per day, comprised of water for drinking and cooking, washing and flushing. Systems with a lower capital and operating costs are preferable. Factors such as extreme temperatures, permafrost, remote locations, off road systems, willingness of end users to accept and use the water and sewer systems, and the requirements of federal and state agencies who will be funding the systems for installation in rural Alaska must be taken into account.

"We are eager to begin the next phase of this important project," said Bill Griffith, DEC facility programs manager. "Our goal is to bring running water and sewer to every home. Traditional systems are too expensive to build and operate in some communities, so innovative approaches will be required in order to achieve this goal." Griffith continued, "We appreciate the continued support of a number of federal and state agencies and tribal organizations in this effort. Personnel from the EPA, the U.S. Department of Agriculture-Rural Development Program, the U.S. Indian Health Service, the U.S. Arctic Research Commission, and the Tanana Chiefs Conference participate on the steering committee for the project. In addition, the EPA has helped fund Phase 3 of the project."

For more information on the Water and Sewer Challenge, visit:
<http://watersewerchallenge.alaska.gov/>.

To download the slides from the December 8th presentation, which includes descriptions of the proposed prototypes, visit:
http://watersewerchallenge.alaska.gov/docs/PublicPresentation_AllSlides.pdf.

Information about the Phase 3 teams:

The University of Alaska Anchorage has assembled a large team that features a variety of expertise ranging from leaders in academia, non-profit institutions, and the private sector. Partners include a University of Colorado-Boulder Principal Investigator working on a "Reinvent the Toilet" grant for innovative sanitation technologies, experts from RES'EAU WaterNET and Dalhousie University who have engaged rural Canadian communities in utilizing the concept of "design thinking," and a patent holder who developed wastewater reclamation and reuse technologies for the U.S. Army and NASA and who is currently associated with the University of Southern California. The team also includes the Alaska Native Tribal Health Consortium, with expertise in evaluating point-of-use (POU) water treatment and safe water storage in rural settings, and a research pioneer from the University of North Carolina, who led the design and construction of an improved POU ceramic pot water filter and portable hand-washing stations.

DOWL Alaska is a large national engineering firm with several offices in Alaska. They have led dozens of international teams in implementing water and sanitation technologies, targeting realistic end user operations and maintenance objectives in underserved communities. Among their team members are the primary author of the Cold Regions Utility Monograph with expertise in development and use of in-home sanitation units for Arctic environments, an international expert in social science techniques for community public health projects, a leader in 'Design Thinking' who has implemented such methods on water and sanitation projects in developing countries, and a cold regions engineer with over 30 years of design and construction experience in remote Alaskan communities.

Summit Consulting is an Alaska engineering firm that assists in the evaluation, planning, design, and construction of water and wastewater systems. Amongst team members are the developer of an automatic air vent for Flush Tank and Haul systems used in some villages, a finalist of the Gates Foundation 'Dry Toilet' competition who developed a prototype reactor to convert human solid waste to biochar without grid power or water, and the principal coordinator at the European Union for funding the implementation of 'resources-oriented' sanitation concepts in Eastern African countries during 2006-2010. Summit has also teamed up with a facilitation firm Agnew::Beck Consulting that has worked for 17 years with rural villages to perform community engagement, assist with 'design thinking,' and evaluate community acceptance of water and sewer technologies at the household level.

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