



The Problem



"Honey bucket," a plastic bag lined bucket that collects urine and feces.



Plastic bags of feces from honey buckets are disposed of in a sewage lagoon.

- Over 4,500 rural Alaska homes lack running water and a flush toilet. Many more depend on aging and deteriorating piped and haul systems.
- Lack of in-home water and sewer service in rural Alaska contributes to severe skin infections and respiratory illnesses. Residents of Southwest Alaska suffer rates of invasive pneumococcal disease that are among the highest in the world.
- To address this public health problem, agencies have funded conventional, community-wide piped and truck haul systems. These systems work, but they are expensive to construct and many communities cannot afford the high operating costs.
- Funding to build systems has declined severely while costs have risen sharply. The deficit between available funds and needs is over \$660 million.
- Capital and operating costs of traditional approaches have become unsustainable. An innovative approach is needed.

The Solution

The Dept. of Environmental Conservation has initiated a project to spur widespread research to develop innovative and cost effective water and sewer systems for homes in remote Alaska villages.

The project focuses on decentralized water and wastewater treatment, recycling and water minimization. These approaches have a high potential for use in individual homes and housing clusters.

Our goal is to significantly reduce the capital and operating cost of in-home running water and sewer in rural Alaska, so every home can have service.



The Project

- ❖ **Phase 1 (COMPLETED)** Form joint venture teams of engineers, social scientists, innovators, and people with rural Alaska experience.
- ❖ **Phase 2 (ONGOING)** Fund selected teams to research and develop new and sustainable in-home water and sewer systems.
- ❖ **Phase 3 (2015-2016)** Pilot test systems in laboratories.
- ❖ **Phase 4 (2016-2017)** Field test systems in rural homes.
- ❖ **Phase 5 (2017-2018+)** Select successful systems that will be affordable to build, operate and maintain.



Hauling household sewage around Atmauitluak.

The Teams

Cowater Alaska

Lifewater

Dowl Alaska

Summit
Consulting

Tetra Tech

U of Alaska
Anchorage

The six highest ranking teams selected in Phase 1 are currently developing household water and sewer systems to meet specific financial and technical performance targets. Some of these include capital, operating and maintenance costs; quantity of water to be delivered by the system; availability of replacement parts, and capability for freeze/thaw recovery.

Teams will also be scored on how they incorporate innovation and community input. Each team is working with two or more unserved communities from different regions for the purpose of gathering community input.

In summer 2015, each team will present their proposed system to a scoring committee, and up to three teams will be selected to go on to Phase 3 for prototype development and pilot testing in a laboratory.

More information? Visit our website: WaterSewerChallenge.alaska.gov
Or send us your questions: dec.water.ak.ws.challenge@alaska.gov

(Revised January 2015)