



## ANTHC Portable Alternative Sanitation System (PASS)

The Portable Alternative Sanitation System (PASS) provides basic sanitation needs: handwashing, clean drinking water, safe human waste disposal, and quality of life improvements in the home. It is not a replacement for, nor provides the same capabilities, as a piped water system.

### Portable

The biggest drawback of a typical piped water and sewer system is that it is not portable. Many Alaska communities are vulnerable to flooding and erosion; therefore, some funding agencies have been reluctant to invest in infrastructure. The portable alternative sanitation system can be disassembled and reassembled as needed.

### Alternative

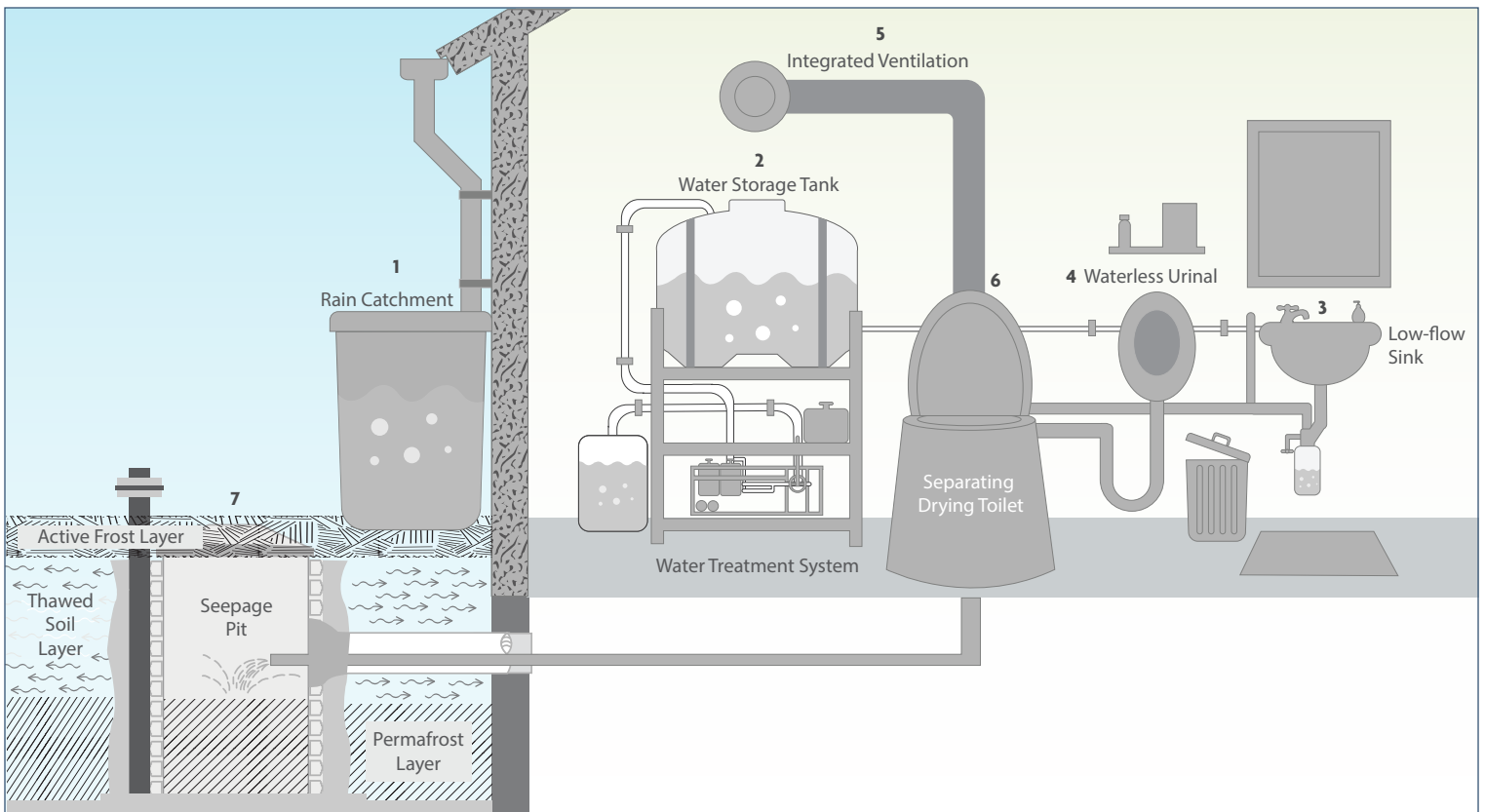
The Alaska Native Tribal Health Consortium and partners – Cold Climate Housing Research Center, Lifewater Engineering and Camp Water Industries – have designed and implemented a low-cost sanitation alternative for communities impacted by climate change and lack of sanitation services. The PASS systems allow homeowners a safe, effective approach to water treatment and sanitation without the high operations and maintenance costs associated with piped infrastructure.

### Sanitation

The PASS has been implemented in three Tribal health regions: Maniilaq, Tanana Chiefs Conference and Yukon-Kuskokwin Delta. These regions currently have communities that use self-haul, honey bucket systems. Exposure to raw sewage places community members at risk for waterborne pathogens. This innovative system vastly improves hauling by limiting exposure to waste, minimizing odor, and reducing frequency and weight of hauls.

### System

The system is entirely homeowner-based, designed to address the most basic sanitation needs and can be moved with the individual or community. The systems are stand-alone models; as homes are moved to the new village site away from the eroding coastline, residents can bring their clean water and safe sewer systems with them.



## Typical PASS system layout and components

### 1. Rain catchment

For an 800-square-foot home located in the Northwest Arctic Borough with a catchment area of approximately 1,200 square feet, it is possible to recover nearly 3,000 gallons or more of rain each year to supplement the quantity of water hauled to the home.

### 2. Water storage

The 50-gallon and 100-gallon gravity-fed tanks do not require electricity. Provides filtered potable water storage.

### 3. Low-flow sink

The sink conserves water while providing for better hygiene by eliminating the wash basin.

### 4. Waterless urinal

The urinal provides a separate waste option for liquid waste.

### 5. Integrated ventilation

An energy-efficient combined ventilation system dries the solid waste, reduces odors, and ventilates the home.

### 6. Separating drying toilet

Waste is separated into liquid and solid components where the liquid is disposed of into a seepage pit and dried solids are disposed of. This toilet provides the option to capture urine in a container or to revert to a vented honey bucket.

### 7. Water treatment system

The water treatment system incorporates membranes and chlorination for point-of-use treatment to ensure safe, pathogen-free drinking water. Typical raw water sources: rain catchment, rivers, springs, community watering points and snow and/or ice.