

Sanitation in rural and remote Alaska

(a presentation to
a joint hearing of the
Arctic Policy Committee and
Tribal Affairs Committee)

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April 22, 2021







CRITERIA

- No buried tanks or leachfield
- Approved by ADEC
- Easy to operate & maintain
- Spare parts & support available in Fairbanks
- Not too expensive
- Work above ground at -60°F



1999



20 years later



4/26/2021

5

Wastewater Treatment Plants

(through the end of March 2021)



LIFEWATER
ENGINEERING COMPANY

Communities with one or more	
Far North Anaktuvuk Atkasuk Bornite Deadhorse Diomedes Kaktovik Nome Nuiqsut Point Lay Point Thomson Prudhoe Bay Sag River Maint. Camp Shaktolik Shishmaref Teller Unalakleet Wainwright Wales	Southcentral Big Lake Bradley Lake Cordova Eagle River Halibut Cove Kashwitna Lake Kenai Kodiak Nikiski Ninilchik Palmer Seldovia Seward Tangle Lakes Valdez Wasilla Willow
Interior Birch Creek Circle Delta Junction Denali Eielson Fairbanks Galena Harding Lake Healy Kantishna Koyukuk Maclaren River North Pole Ruby Tetlin Wiseman	Southwest Dillingham Igiugig Kodiak Mertarvik Quinhagak
	Southeast Juneau Douglas Little Port Walter
	Other Mt. Washington, NH Kluane Lake, Yukon

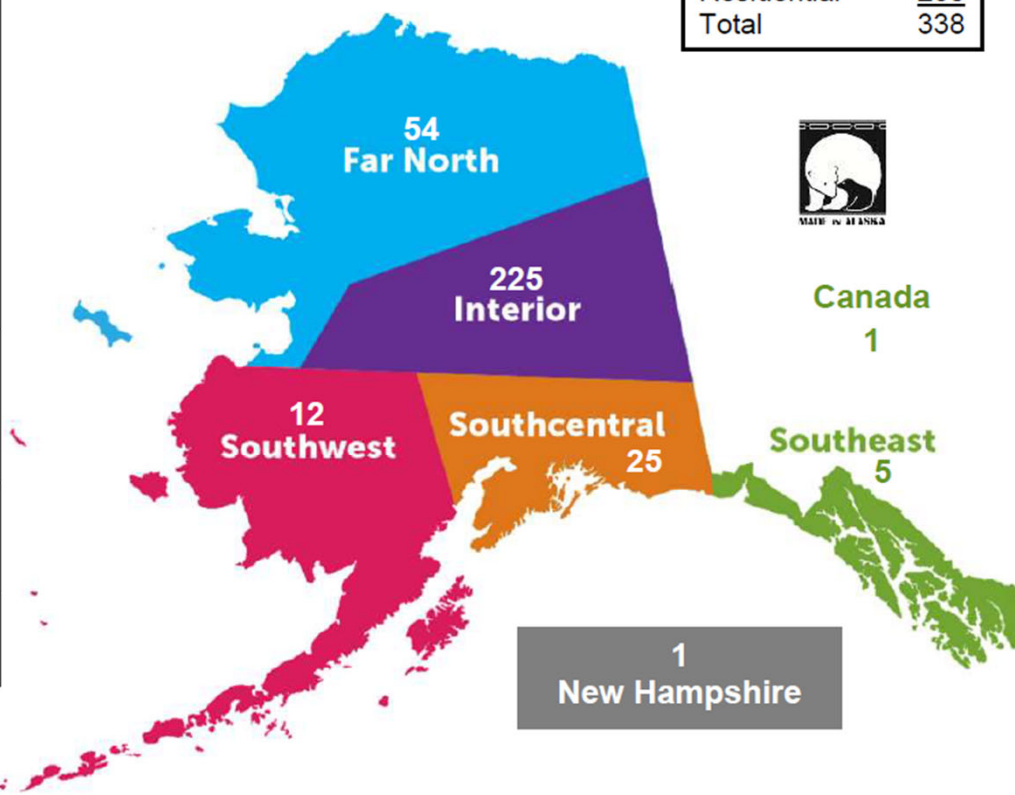
Commercial	58
Residential	280
Total	338



Canada
1

Southeast
5

1
New Hampshire



Map Source: <http://rvalaska.co/regions-of-alaska/>

2014

PASS PARTNERS



Project Leadership

Alaska Native Tribal Health Consortium
www.anthc.org
(907) 563-2662



Drinking Water Systems Design & Manufacturer

CampWater Industries, LLC
jondufendach@gmail.com
www.campwater.com



Breathing Air Tests & Project Support

www.cchrc.org
907-457-3454



Wastewater Systems Design & Manufacture

bob@lifewaterengineering.com
www.lifewaterengineering.com



Parts and Services

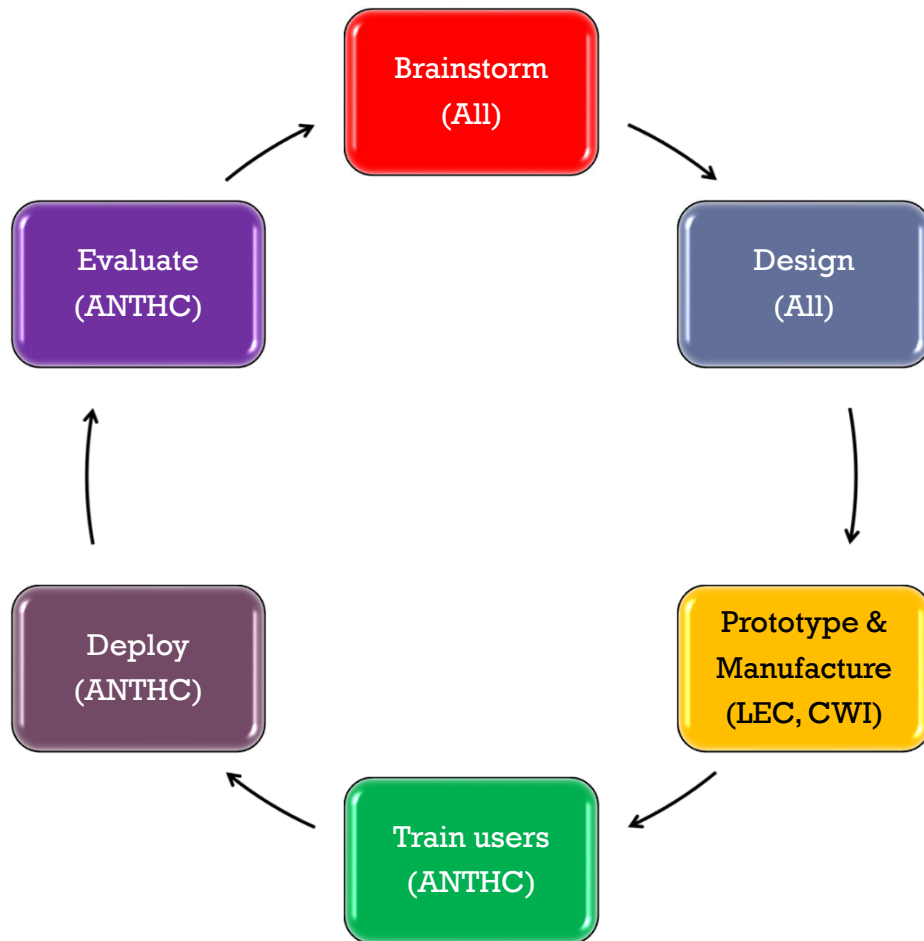
juliahphelan@gmail.com
(907) 895-9800



Needed

- Hygienic way to wash hands in running water
- Sanitary way to collect & dispose of human waste
- Way to ventilate homes





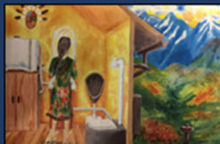
ANTHC = Alaska Native Tribal Health Consortium

LEC = Lifewater Engineering Company

CWI = CampWater Industries

CCHRC = Cold Climate Housing Research Center

SL = Silverline



PASS COMPONENTS

DRINKING WATER

Water Filtration Cabinet with
separate sink/faucet

HANDWASHING

Mini-PASS Handwashing Cabinet
with integrated sink/faucet

WASTEWATER

Three-Mode Commode
Waterless Urinal
Seepage Pit

RAINWATER HARVESTING

Gutter system with first-flush
diverters & collection barrels



for more information:
www.alaskacleanwater.com
(907) 895-9800

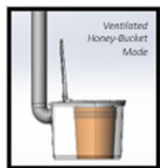
Three-Mode Commode (a versatile, ventilated, waterless toilet) PORTABLE ALTERNATIVE SANITATION SYSTEM (PASS)

DESCRIPTION

Designed by Alaskans to answer wastewater challenges in unserved communities, the waterless Three-Mode Commode brings indoor sanitation and fresh air to homes that do not have running water.

The system can be operated in several different modes according to homeowner preference or space, and none of the modes require water to operate.

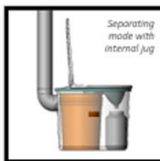
An included fan removes all odors, improves air quality, and eliminates the need for harmful chemicals.



MODE 1: VENTILATED HONEY-BUCKET

The quickest and simplest improvement, this operates as a regular honey-bucket, but with no odors or harmful chemicals. Though installation for this unit requires only an electrical outlet and a vent to the outside, the difference in home air quality alone is significant.

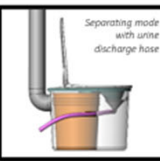
The system can be easily modified into the other modes if desired.



MODE 2: SEPARATING TOILET WITH INTERNAL JUG

This next improvement provides a separating toilet seat which directs solids to the back and liquids to an internal collection jug. By separating wastes, they can each be disposed of much more simply and hygienically; the vent-dried solids can be burned or landfilled in composting bags, and the urine can be surface discharged or diluted for fertilizer.

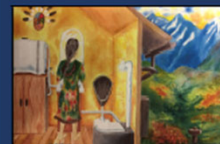
This system greatly reduces handling of human waste, improves the air quality in the home, and can be converted to other modes easily.



MODE 3: SEPARATING TOILET WITH URINE DISCHARGE HOSE
This mode has all the hygiene benefits of separating waste and the clean air from venting, along with greater ease in handling waste as the urine flows directly outside. The system is often coupled with a wall-mounted urinal and a buried PASS seepage pit, which is proven to provide underground drainage year-round – even in Arctic areas of permafrost, unstable soil, and high water table.

Homeowners can work remotely with our engineering team to customize their installation and ensure success of the whole system.

The PASS program is developed by a team of Alaskan researchers and engineers:



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Water Filtration Cabinet with
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WASTEWATER

Mini PASS Vented Honey Bucket
Separating Toilet
Waterless Urinal
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Mini-PASS Handwashing Cabinet PORTABLE ALTERNATIVE SANITATION SYSTEM (PASS)



DESCRIPTION

The Mini-PASS Handwashing Cabinet is specifically designed for areas where families typically use washbasins. Providing a more sanitary way to clean hands is a crucial step in preventing transfer of diseases like COVID-19, and this system operates in areas where there is no running water, with or without electricity.

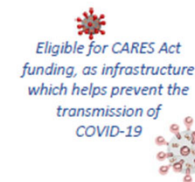
Raw water is pumped into the unit from a barrel or bucket, filtered, and stored in the overhead tank. Water can be disinfected if desired. When the faucet is turned on, water runs down to the sink with gravity, and users can wash their hands in clean, flowing water. Wastewater is collected underneath in a bucket, or can flow outside to waste.

Note: Homeowners are encouraged to draw water from a pre-treated water source such as a washeteria to protect their system and ensure potability. Where pre-treated water is not available, a full PASS drinking water system is recommended.

SPECIFICATIONS

110VAC/5amp 2gpm electric suction pump
In-line 30 µm strainer
Dual stage 25µm / 1µm nominal poly filter
All wetted parts FDA/NSF rated for potable water
Clean water capacity: 20 gallons
Gravity-fed handwashing sink

24" wide x 24" deep x 6'8" high
225 lbs, shipped in two pieces



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