

# RELOCATE

KIVALINA BIOCHAR REACTOR



RELOCATE





**Alaska Water and Sewer Challenge**

Re-Locate LLC has been selected, in partnership with **Summit Consulting Services INC** and **Agnew-Beck Consulting** as one of three teams who will



**Archive**

Re-Locate and the City Council, IRA Council, and the Kivalina Relocation Planning Committee are building an online and physical archive of Kivalina's



**Improving Community-Scale Feces Waste Treatment (CSFWT) in Arctic North America**

Re-Locate is partnered with the **Climate Foundation** and Theresa Theuretzbacher



**Re-Lo Magazine**

Re-Locate and Seattle-based design firm **Civilization** are publishing **Re-Lo**—a magazine about the issues underlying situations of climate-displacement and



**Become an Agent of Change**

WochenKlausur invites people from all over the world to team up with people from Kivalina to create small-scale and easy-to-realize ways to overcome site-



**KVAK TV**

Kivalina youth take to the airwaves and to the web with KVAK TV, broadcasting their voice to the world.



**Interactive Web Documentary**

Sharon Daniel is collecting interviews and community generated media for an interactive web documentary that will make Kivalina resident's stories about



**Modeling Kivalina**

The **Modeling Kivalina** project will construct a physical model of the island of Kivalina in Alaska using the shoreline as a focal point to draw out its relationships to



**Kivalina Water Economies, Foreign Affairs Laboratory**

The [spoiled] Foreign Affairs Lab is travelling to Kivalina to collect data on water supply, distribution and



**Kivalina Community Center, Center for Kivalina Territorial Planning, Center for Global Responsibility for Climate Displacement**

For decades, the people of Kivalina have



**A History of Dwelling in the Kivalina Region**

Among other goals, this project places the narrative of relocation on a continuum of inhabitation of the Kivalina region by



**Re-Locate Radio Show**

In 2012, during Re-Locate Camp 1, we hosted a nightly VHF-radio show about relocation related issues. Issues were discussed and documented in a question

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KIVALINA  
BIOCHAR

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How many people live in the houses where you empty honey buckets?

S: 9  
: 0/1  
and : 6

How are you related to the people living in your house?

Mom

Grandma and Grandpa

How are you related to the people living in the houses where you empty honey buckets?

S: Auntie.  
F: I and : Dad's parents  
I and

How many honey buckets are there in your house?

1

How many honey buckets are there in the houses where you empty honey buckets?

S: 1  
F: I and : 1  
:s: 1

How often do you empty the honey bucket(s) in your house?

Once a day.

Where do you put the honey bucket waste that is waiting to be taken to the dump?

In a box.

How often do you empty the honey buckets in house 1, 2, 3, ...?

S: Not often/Sometimes. Just bring to dump.  
d and : When visits.  
S: When she's living here. Once every two days.

Do you always empty honey bucket(s) at the same time each day?

His house: Around the same time each day / when it's full. Morning.  
S: 6 or 7 PM  
d and V : 5 PM  
S:

Who uses or can use the honey bucket(s) in your house?

S: Kids  
F: I and : only visitor from out of town use the honey bucket.  
: Don't know

Do you use the honey bucket at other people's houses?

No.

Do you wear protective clothing (masks, and gloves) when you're handling honey bucket waste?

No. Rubber gloves. Not all the time.

Why do you empty the honey bucket(s) in house 1, 2, 3, ...?

F: I and : Because it's my job. Because I'm living there. He or his uncle : typically empties it. To get pop. And just to be helpful.  
: Because she's my mom.  
i: Because i help him out.

Do you do other chores for the household(s) where you empty honey bucket waste?

I and : Get dirty water out. Get Water. Stove. Dumps. Trash  
: Mom. Anything she asks me to do or when she calls me.  
S: When he asks me.

RELOCATE



- Only others  
once every 2nd  
Mam Kios

once more  
to DUMP

Ant 9  
1 BUCKET

Just Bring to  
DUMP  
- Dumps  
- Latrine  
- 6 at night



- House  
- Dumps  
- 1 BUCKET  
- ONCE  
- DAY

- 2 (Mam)  
- 4 Parents  
- 10 in M

- When (Morning)

- 10  
- 6  
- 1 BUCKET  
- Dad's Parents  
- Every when visit

- Buried  
- 1 Day  
- 6/10/12  
- 5 PM  
- 500

NAME:

SANITATION SURVEYS

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### Biochar Reactor?

Regional and state agencies won't invest in piped systems for Kivalina's current site. They say Kivalina needs to relocate and the investment would be wasteful. Kivalina Councils have signed a joint resolution to fund  $\frac{1}{3}$  of the reactor's cost. Fundraising for the rest is underway. Where does it go?

### Fresh Water

81% of homes collect water from sources other than the tank for drinking.

**Dumps 1 mile**  
\$20 per load of honeybuckets, \$40 with trash.

### Kivalina River Water

Fetching fresh water by boat and sno-go costs about \$12-15 per bucket (\$.50/gallon).

### Community Center

Proposed laboratory for testing new water and waste systems designed specifically for Kivalina

### Wulik River Water

Fetching fresh water by boat and sno-go costs about \$6-\$10 per bucket (\$.25/gallon).

### Tank Water

Households fetch water 2-3 times per week @ \$.05 cents per gallon. Homes with running water haul about 450 gallons of tank water per week using sno-go's and Hondas. Roads in Kivalina are not maintained.

### Unfinished Wastewater Treatment Plant

\$30 million, unused, no plans to finish. There is no wastewater treatment pond in Kivalina. The state has less and less money to spend on infrastructure. "We are under \$100 million in funding...and we are getting close to \$800 million...(in needed work)." Cheryl Rosa, Arctic Research Commission

### Dumps

Honeybucket waste is hauled about 1-2 times per week. Proposed biochar reactor would eliminate dump runs for honeybuckets. Reactor would be in or near Kivalina.

### Kivalina Homes

The lines show the water hauling and honeybucket dumping responsibilities (chores, money, trade) of one Kivalina water system operator. In the Kivalina-specific system proposed, the lines for hauling, and the responsibilities can stay the same. 77% of water haulers are male, their average age is 29.

### Watering Point

supplies pretreated water from the **Wulik River**. Red Dog dumps its effluent into the Wulik. Tank water is used primarily in Kivalina homes for washwater. When used for drinking, it is filtered at home.

### Kivalina Native Store

19% of people we interviewed said they buy bottled water @ about \$7 per gallon.

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PARTNERS:

KIVALINA IRA COUNCIL

KIVALINA CITY COUNCIL

RE-LOCATE LLC

TECK

NANA VILLAGE ECONOMIC DEVELOPMENT

NAPECA

CLIMATE FOUNDATION

BIOMASS CONTROLS

CXT/LB FOSTER

CIVILIZATION

THREE DEGREES WARMER

ARTPLACE AMERICA

CONTRIBUTORS:

GATES FOUNDATION





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SUMMIT TEAM AKWSC

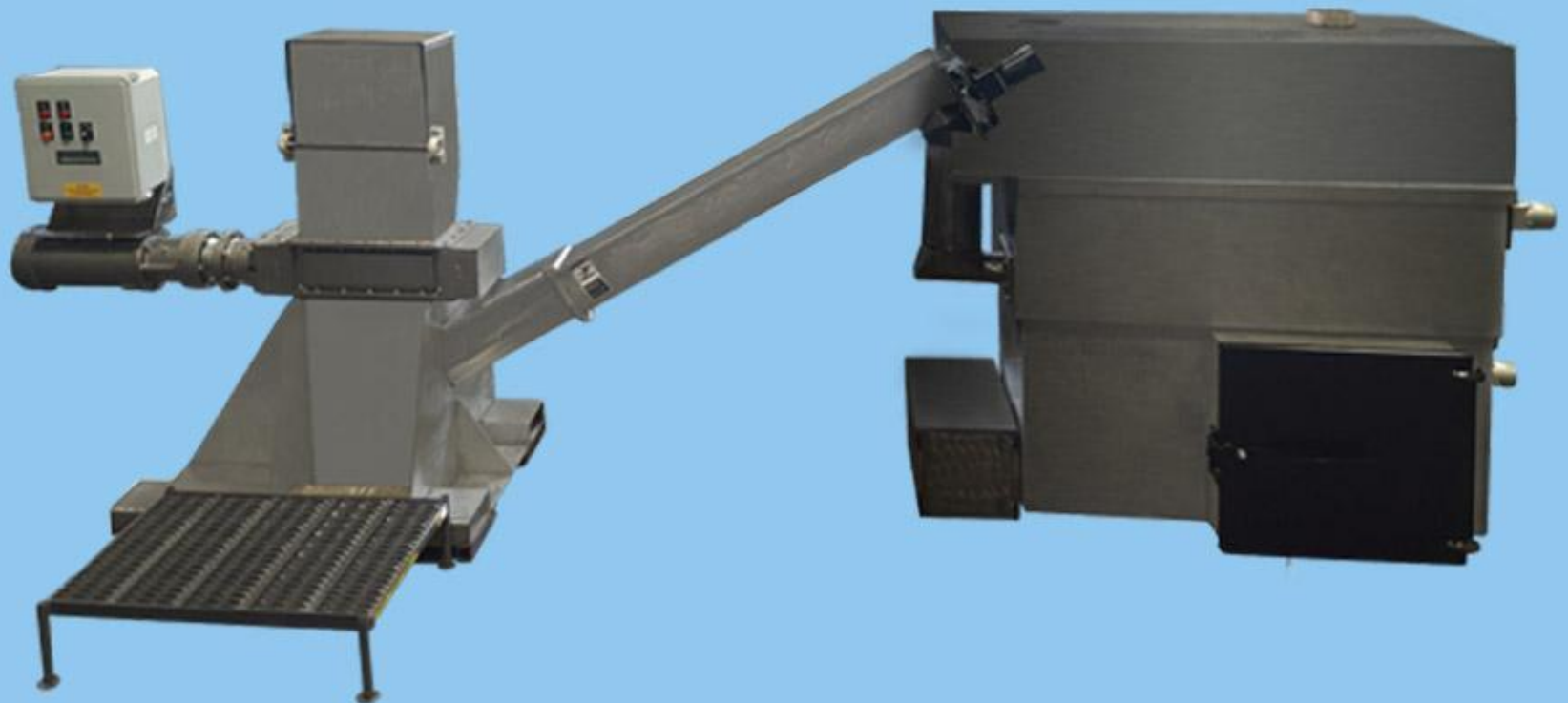
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GRIND

DRY


PYROLIZE



RELOCATE

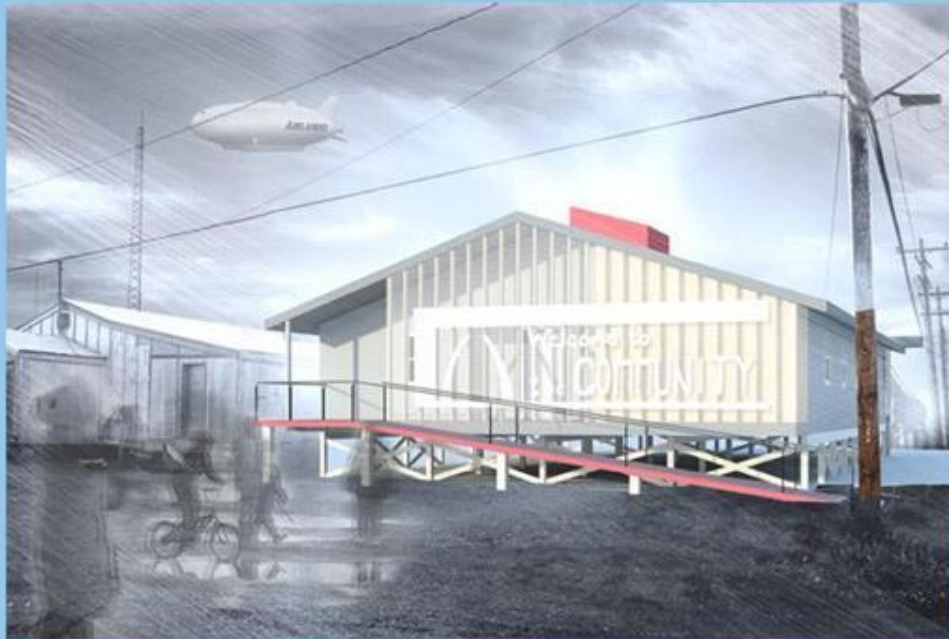






SANITARY ALUMINUM  
ZERO REVEALS  
VENTILATION:  
ODOR, EXHAUST, AMBIENT  
EMERGENCY SHUT OFF  
BUILT-IN TIE DOWNS  
SOLAR PANEL MOUNTING  
FULLY INSULATED  
TOUCH CONTROLS PANEL  
COLD RATED COMPONENTS  
CUSTOM O.S.  
MAN DOOR ACCESS  
LED LIGHTING  
PLUG-IN MULTIPLE POWER SOURCES  
WATER TIGHT/REINFORCED  
OCEAN READY

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