

A measure and process for improving human excreta disposal practice in rural Alaska villages

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Background

Permanent settlements in rural Alaska developed largely based on the establishment of trading centers, churches and schools. As the nomadic indigenous people became settled in permanent villages the need to address sanitation issues related to population concentration became evident. For decades factors such as remoteness, geography, permafrost, and cost have presented a challenge to villages and service providers in achieving sanitation improvements. The state and federal government continue to work with tribal and city governments to fulfill their responsibility to protect human health through the provision of safe water and adequate sanitation to villages in rural Alaska.

Introduction

A significant number of people in rural Alaska live without piped water and sewer. At this time approximately 15 - 20% of rural Alaska households lack piped water and sewer or an equivalent system. "Honey buckets" (5 gallon plastic buckets) are used for human excreta collection, transport and disposal. A wide gap exists in villages through out Alaska between the highest level of sewage disposal practice (piped water and sewer) and the lowest level of sewage disposal practice (honey buckets) and there are few resources to address health threats at the lowest levels.



Image 1. Honey buckets awaiting disposal

Image 3. Honey bucket hopper



Image 2. Honey bucket disposal site



Image 4. Honey bucket haul trailer and all terrain vehicle (4-wheeler)



Images 5 and 6. Emptying honey bucket haul trailer at disposal site

Problem statement

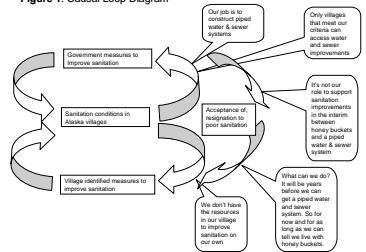
Why are there limited resources to improve human excreta disposal in rural Alaska villages in the interim between the use of honey buckets and the delivery of piped water and sewer?

The federal and state water and sewer service providers are the gate keepers for villages to access improved systems. Scollon and Scollon¹ in *Interethnic Communication* define gatekeepers as, "individuals who have the authority to make decisions that will affect the mobility of others. They...(decide) daily whether to open the gate and let people through or keep them out." The water and sewer service providers define the village capacity required to gain water and sewer improvements as well as what type of improvements can be funded.

People in rural Alaska living without proper sanitation want water and sewer improvements for a number of reasons including improved health status and conveniences. There are, however, many cultural, social, and economic concerns that strain the available human and financial resources of the villages. In villages where poor sanitation conditions persist and resources are limited it is possible for people to lose sight of the associated public health threat and to perceive poor sanitation as part of the background.

The reasons for the identified problem are complex, but two beliefs prevail. The resignation of the water and sewer service providers that they are doing all they can within existing constraints and the acceptance of the villages that there is little they can do to change things. The dynamic system described is presented in the language of Systems Thinking² in Figure 1. Causal Loop Diagram.

Figure 1. Causal Loop Diagram



Project description/objectives

Project Goal

To reduce human exposure to disease through implementation of improved sanitation in rural Alaska villages

Health Problem

In rural Alaska households that lack piped water and sewer exposure to human excreta increases the risk of infection from disease.

Outcome Objective

By December 31, 2010 villages that primarily use honey buckets for human excreta collection, transport and disposal will reduce exposure to disease associated with these practices by 50% of baseline.

Determinant

The number and frequency of person contact points with human excreta in collection, transport and disposal resulting in exposure to disease.

Impact Objective

By December 31, 2010 villages that primarily rely on honey buckets for human excreta collection, transport and disposal will cut in half the number and frequency of person contact points with human excreta.

Process Objectives

By June 1, 2008 work with 50% of villages that primarily use honey buckets for human excreta collection, transport and disposal to assign a sanitation practice index score. The index score will reflect the number and frequency of potential person contact points with human excreta in the collection, transport and disposal in each village.

By August 1, 2008 complete sanitation practice questionnaires with 50% of villages that primarily use honey buckets for human excreta collection, transport and disposal.

By October 15, 2008 10% of villages that primarily use honey buckets for human excreta collection, transport and disposal identify community based measures to improve sanitation in the interim between the use of honey buckets and the completion of a piped water and sewer project, and two pilot project villages will have begun to implement their measures.

By February 15, 2009 partnerships between villages and service providers will fund implementation of community based measures to improve sanitation in the interim between the use of honey buckets and the completion of a piped water and sewer project in 10% of the villages that primarily use honey buckets for human excreta collection, transport and disposal.

By December 31, 2010 villages that primarily rely on honey buckets for human excreta collection, transport and disposal will have identified community based measures to improve sanitation in the interim between the use of honey buckets and the completion of a piped water and sewer project. All of the villages will have begun to implement their measures with the assistance of service providers.

Methodology

Develop a metric for human excreta disposal practice between the use of honey buckets and the delivery of piped water and sewer systems. See Figure 2. Draft Sanitation Practice Index.

Develop and implement a questionnaire to elicit information from villages regarding sanitation practice, general level of concern regarding sanitation practice, perceived barriers to improving sanitation practice, and possible solutions to improve sanitation practice.

Implement a participatory process with villages to identify community based measures to improve sanitation in the interim between the use of honey buckets and the completion of a piped water and sewer project.

Establish a coalition of service providers to make resources available for the implementation of community based measures to improve sanitation in the interim between the use of honey buckets and the completion of a piped water and sewer project.

The measure

Figure 2.

INDEX	Draft Sanitation Practice Index	Notes: Present Contact with Human Waste
10	Water bucket with toilet and sewer (person in house)	Water bucket with toilet and sewer (person in house)
9	Water bucket with toilet and sewer (person in house)	Water bucket with toilet and sewer (person in house)
8	Water bucket with toilet and sewer (person in house)	Water bucket with toilet and sewer (person in house)
7	Water bucket with toilet and sewer (person in house)	Water bucket with toilet and sewer (person in house)
6	Water bucket with toilet and sewer (person in house)	Water bucket with toilet and sewer (person in house)
5	Water bucket with toilet and sewer (person in house)	Water bucket with toilet and sewer (person in house)
4	Water bucket with toilet and sewer (person in house)	Water bucket with toilet and sewer (person in house)
3	Water bucket with toilet and sewer (person in house)	Water bucket with toilet and sewer (person in house)
2	Water bucket with toilet and sewer (person in house)	Water bucket with toilet and sewer (person in house)
1	Water bucket with toilet and sewer (person in house)	Water bucket with toilet and sewer (person in house)

Footnote: * If the score is 10, 9, 8, 7, 6, 5, 4, 3, 2, or 1, the score is 10, 9, 8, 7, 6, 5, 4, 3, 2, or 1 respectively. If the score is 10, 9, 8, 7, 6, 5, 4, 3, 2, or 1, the score is 10, 9, 8, 7, 6, 5, 4, 3, 2, or 1 respectively.

The process

"All villages in Alaska fall along a continuum of (capacity) to manage, operate, and maintain services and infrastructure. Some villages have greater capability and some less capability. For most villages this is a dynamic continuum. Changes in variables such as leadership, personnel, and local economy can result in immediate and dramatic movement along the continuum in either direction.

(This)... approach in working with villages acknowledges the dynamic described above. The approach is based on the following reasoning: 1) capability can be built starting at any point along the continuum; 2) the best place to start is at a point the village identifies; and, 3) a village identified starting point is more likely to lead to a sustainable outcome."

Sarcone and Miller, ANHB, O&M Demonstration Project Final Report, 2000³

Literature cited

- 1 Scollon R, Scollon S, *Interethnic Communication*. Alaska Native Language Center, 1980
- 2 Senge PM, Kleiner A, Roberts C, Ross RB, Smith BJ, *The Fifth Discipline Fieldbook*. Doubleday, 1994: 87-189
- 3 Sarcone J, Miller N, *Rural Sanitation Facilities Operation and Maintenance Demonstration Project Final Report*. Alaska Native Health Board, 2000