

Agency: Commerce, Community and Economic Development**Grants to Municipalities (AS 37.05.315)****Grant Recipient: Northwest Arctic Borough****Federal Tax ID: 920116661****Project Title:****Project Type: Maintenance and Repairs**

Northwest Arctic Borough - Selawik Glycol Rehabilitation Project

State Funding Requested: \$670,000**House District: 40 / T**

One-Time Need

Brief Project Description:

The funding will be used in Selawik to rehabilitate the sewer glycol system which will save Selawik residents \$200,000 a year.

Funding Plan:

Total Project Cost:	\$670,000
Funding Already Secured:	(\$0)
FY2012 State Funding Request:	<u>(\$670,000)</u>
Project Deficit:	\$0

Funding Details:

None

Detailed Project Description and Justification:

The City of Selawik joined the Alaska Rural Utility Collaborative (ARUC) in 2009. Jointly they began to work on the continuing freeze up problem the community had been suffering from. ARUC and the community spent several months repairing and replacing parts in the sewer system. Despite these efforts the glycol system for the three sewer loops did not work last winter. To keep the lines open ARUC had to use electric heat tape and spend many hours attempting to thaw sewer lines and keep sewer service in as many homes as possible. The costs associated with this effort were high at \$200,000, which is seven to eight times more than similar sewer systems in comparable villages. Unfortunately, the emergency electrical heat trace didn't provide enough heat to keep the entire sewer main thawed. Sewer mains furthest from the plant stayed frozen for around three months and six homes had no sewer service for longer periods of time. The health impacts to residents of those homes are high with reports of lung and bladder infections and other reported health problems. Additionally with the severe temperatures in northern climates the failure of home heating and sewer systems poses life, health, and safety issues for the residents.

After analyzing the system, it has been determined that the design of the glycol system in Selawik is outdated and does not compensate for thermal expansion, air-logging, or glycol gelling if a glycol leak occurs. Once a leak occurs, the system fails and can't be recovered until air temperatures warm. These problems are especially pronounced in long glycol lines. Alaska Native Tribal Health Consortium recently constructed a new design in Kipnuk that has been effective. The cost of designing and constructing a similar glycol system in Selawik is \$670,000. The residents of Selawik will see a positive return of this investment in less than 3 years, as the glycol problems are currently costing the community \$200,000 a year. Additionally, the sewer problems are creating health and safety issues.

Project Timeline:

Money will be expended this spring and summer

Entity Responsible for the Ongoing Operation and Maintenance of this Project:

City of Selawik and Alaska Rural Utility Collaborative

Grant Recipient Contact Information:

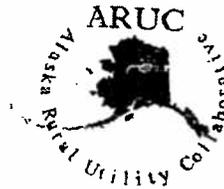
Name: Glenn Skin
Title: Project Manager
Address: P.O. Box 11100
Kotzebue, Alaska 99752
Phone Number: 442-2500
Email: gd_skin@hotmail.com

Has this project been through a public review process at the local level and is it a community priority? Yes No

For use by Co-chair Staff Only:

10:26 AM 5/27/2011

Alaska Rural Utility Collaborative
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January 27, 2011

To ANTHC Selawik project engineer:

Re: Selawik glycol rehabilitation project

The City of Selawik joined the Alaska Rural Utility Collaborative (ARUC) in August, 2009. ARUC assumed responsibility for management and operations of the Selawik water/sewer system at that time. The City of Selawik was nearing bankruptcy due to spending huge amounts of time and money trying to keep the system from freezing each winter, so ARUC and ANTHC spent several months repairing and replacing non-operational parts of the sewer glycol system.

Despite these repairs, the glycol system for three sewer loops did not work last winter. This caused ARUC to operate the emergency electrical heat trace and to spend many man-hours attempting to thaw sewer lines to keep sewer service to as many homes as possible. The costs of doing so were huge: annual electricity costs in Selawik are \$192,000 which is seven to eight times more than similar water/sewer systems in Kotlik and Savoonga. Similarly, annual labor costs in Selawik are over \$165,000 of which \$50,000 is due to thawing lines because of the glycol problem. Total electrical and labor costs caused by the failed glycol system are over \$200,000 per year.

Unfortunately the emergency electrical heat trace doesn't provide enough heat to keep the entire sewer main thawed. Sewer mains furthest from the sewer plant stayed frozen for around three months. Six homes had no sewer service for long periods of time. The health impacts to residents of these homes are high; residents of these homes reported urine infections, lung infections and other health problems.

After analyzing the system, ANTHC has determined that the design of the glycol system in Selawik is outdated and does not compensate for thermal expansion, air-logging, or glycol gelling if a glycol leak occurs. Once a leak occurs, the system fails and cannot be recovered until air temperatures warm above freezing in the spring. These problems are especially pronounced in long glycol lines over 1,000 feet long. ANTHC recently constructed a new design in Kipnuk which has proven to deal effectively with these problems, and Selawik requests funds to rehabilitate the glycol system. The cost of designing and constructing this rehabilitation for three glycol loops in Selawik is \$670,000. The residents of Selawik will see a positive return on this investment in less than 3 years, as the glycol problems are currently costing \$200,000 per year.

Sincerely,

John Nichols, P.E.
ARUC Manager

Attachment: Project Estimate

Total Cost Estimate to Redesign and Fix Selawik glycol system for vacuum sewer

	Total Cost
Outside the sewer plant	\$99,161
Inside the sewer plant	\$124,955
Grand total, per glycol loop	\$224,115
W-2A glycol loop	\$224,115
W-2B glycol loop	\$224,115
W-1B glycol loop	\$224,115
Grand Total, Selawik Glycol Project	\$672,346
Rounded Grand Total, Selawik Glycol Project	\$670,000

Outside the sewer plant estimate
Cost Estimate for each loop of Selawik Glycol System

Equipment	Quantity	Each	Total
Thermofusion machine	1	\$4,550.00	
Glycol 60/40 Propylene 55 gallon drum	10	\$750.00	

Material only costs in total to right.
 Freight/Handling **Material Total** **\$12,512.00**
 Freight and handling will equal equip cost, due to bulk **Freight Total** **\$12,512.00**

<u>Labor estimate to construct</u>	Hours	Burdened hourly rate		
Onsite superintendant	120	\$ 128.98	\$	15,477.60
Construction Manager	40	\$ 104.11	\$	4,164.40
Local water plant operator	360	\$ 40.00	\$	14,400.00
Housing, Per diem, Mob/demob			\$	6,000.00

Subtotal **\$65,066.00**
 Contingency (20%) **\$13,013.20**
 ANTHC Indirect (27%) **\$21,081.38**

Total work, inside the plant, per glycol loop **\$99,160.58**

Inside the sewer plant estimate
Cost Estimate for each loop of Selawik Glycol System

Equipment	Quantity	Each	Total
Expansion Tank (model # 241, 150, 200, 250, 300)		\$1,724.05	
Viking Pumps (2) @ \$ 1,500.00 each	1	\$1,724.05	\$1,724.05
3000 GPM, 100 PSI, 1150 GAL, 4 W/50 PSI, 100 PSI, 100 PSI, 100 PSI		\$654.12	
HX Heat Exchanger - Doucette Industries (See Specs for Size)	1	\$654.12	\$654.12
10 - 1 1/2" ProPress Ball Valves @ \$ 100.00 ea.		\$185.00	
1 1/2" Air Separator Taco Vortech	1	\$185.00	\$185.00
Honeywell 16008A1993 Remote bath Aquastat (FSL-901)		\$847.00	
FCI 12-64B (FSL-901)	1	\$847.00	\$847.00
W96992 - 1" Face liquid filled, lower conn. (DPI-901)		\$49.99	
Weiss DVU35 Digital Vari-angle Solar Thermometer (TI-901-904)	1	\$49.99	\$49.99
Anderson Midwest Model 300, 1 1/2" (FI-901)		\$94.00	
Anderson Midwest Model 300, 1", (FI-902)	1	\$94.00	\$94.00
Griswold Isomax valve (1") (FCV-901A)		\$540.00	
Griswold Automizer flow control valve package (1") (FCV-901B)	1	\$540.00	\$540.00
Watts Pressure Relief Valve 1" (PRV-901)		\$38.00	
W9767070 2.5" Face liquid filled, 1/2" back conn. (PI-901)	1	\$38.00	\$38.00
(2) 1" copper ProPress unions @ \$ 10.00 ea.		\$2.04	
(10) 1 1/2" copper ProPress 90 degree Ell @ \$ 2.04 ea.	10	\$2.04	\$20.39
(1) 1" copper ProPress 90 degree Ell @ \$ 10.00 ea.		\$0.86	
(2) 1/2" copper ProPress 90 degree Ell @ \$ 10.00 ea.	2	\$0.86	\$1.72
(1) 1" copper ProPress Tee @ \$ 10.00 ea.		\$2.37	
(4) 1 x 1/2" ProPress Tee @ \$ 10.00 ea.	4	\$2.37	\$9.46
(2) 1/2" Hose Bibb Caps @ \$ 10.00 ea.		\$0.80	
(2) 1/2" Hose Bibb Caps @ \$ 10.00 ea.	2	\$0.80	\$1.61
(5) 1 1/2" Male x 1 1/2" ProPress Adaptor @ \$ 10.00 ea.		\$3.91	
(5) 1 1/2" Male x 1 1/2" ProPress Adaptor @ \$ 10.00 ea.	5	\$3.91	\$19.54
(2) 1 1/2" x 1/2" x 1 1/2" ProPress Tee @ \$ 10.00 ea.		\$14.55	
(2) 1 1/2" x 1/2" x 1 1/2" ProPress Tee @ \$ 10.00 ea.	2	\$14.55	\$29.10
(4) 1/2" ProPress Ball Valve @ \$ 10.00 ea.		\$3.98	
(4) 1/2" ProPress Ball Valve @ \$ 10.00 ea.	4	\$3.98	\$15.91
(4) 1/2" ProPress Air Vent # 73 @ \$ 10.00 ea.		\$8.02	
(4) 1/2" ProPress Air Vent # 73 @ \$ 10.00 ea.	4	\$8.02	\$32.07
30 feet Type L Copper, 1 1/2" @ \$ 10.00/ft		\$8.02	
30 feet Type L Copper, 1 1/2" @ \$ 10.00/ft	30	\$8.02	\$240.60
30 feet Type L Copper, 1" @ \$ 10.00/ft		\$1.71	
10 feet Type L Copper, 1" @ \$ 10.00/ft	10	\$1.71	\$17.10

Material only costs in total to right.
 Freight/Handling
 Freight and handling will equal equip cost, due to bulk

Material Total \$13,763.48
 Freight Total \$13,763.48

	Hours	Burdened hourly rate	
Labor estimate to construct			
Onsite plumber	80	\$ 125.55	\$ 10,044.00
Onsite electrician	40	\$ 126.40	\$ 5,056.00
Construction Manager	40	\$ 104.11	\$ 4,164.40
Local water plant operator	130	\$ 40.00	\$ 5,200.00
Housing, Per diem, Mob/demob			\$ 10,000.00
Design (mechanical engineers, travel, and CAD techs)			\$ 20,000.00
Subtotal			\$81,991.36
Contingency (20%)			\$16,398.27
ANTHC Indirect (27%)			\$26,565.20
Total work, inside the plant, per glycol loop			<u>\$124,954.84</u>