



U.S. Army Corps  
of Engineers  
Alaska District

## **ALASKA BASELINE EROSION ASSESSMENT**

### **Erosion Information Paper - Ekuk, Alaska**

Current as of February 23, 2009

#### **Community Information**

Ekuk (EE-kuck), population 2 in the winter and around 300 during April through September, is on a spit on the eastern shore of Nushagak Bay, 17 miles south of Dillingham. Ekuk is unincorporated in the unorganized borough. The spit is seaward of steep bluffs that extend to the north and south. Ekuk is visited seasonally by fishing families and workers for the Ekuk cannery. The community of Ekuk comprises a number of fishing shacks, seasonally-occupied residences, the Ekuk Fisheries cannery, a number of gravel roads and a gravel landing strip for light aircraft. The cannery is on the north end of the spit and supports a set-net fishery that extends from Ekuk southward along the shore past Ekuk Bluff to Flounder Flat. Set-net fisheries, both commercial and subsistence, extend from high tide seaward through the intertidal zone of the shoreline into the subtidal zone. The shoreline is also used for small barge access and driftwood collection. Catch is processed at Ekuk Fisheries. Hunters use the shore downstream.

#### **Description of Erosion Problem**

Wind-driven waves from the west and south, and vehicle traffic on the beach are causing and contributing to coastal erosion. An *Ekuk Village Erosion Assessment* prepared by Golder Associates in 2007 reported that Ekuk Bluff had eroded about 125 feet between 1912-1981, and an additional 65 feet from 1981-2006. The data suggests an annual rate of erosion at 2 feet per year from 1912 - 1981, and 2.6 feet per year since 1981. Sediments from Ekuk bluff erosion are continually fed onto Ekuk spit, leading to a growth of the spit at the cannery end.

As Ekuk Bluff erodes, the Ekuk spit shoreline also erodes. The whole shoreline shifts east-northeast at the rate of the prevailing erosion, and the location of the spit adjusts to the shoreline location under Ekuk Bluff. This information, from the Golder 2007 report, is based on an analysis of aerial photos from 1963, 1981, 1993, and 2006. Golder also measured fetch distances from available mapping and estimated the longest fetch to the south 122 miles. Based on an assumed low water elevation of 0 feet at Ekuk, Golder estimated a mean spring tide elevation of 19.5 feet, with storm surges of 10 feet, and an average wave run-up of 5.4 feet.

#### **Potential Damages**

Seasonal use homes, outbuildings/sheds, drying racks, and smoke houses are less than 50 feet from the eroding shore. Structures and facilities less than 100 feet from the eroding shore include the spit access road, a warehouse building, and a cemetery. A water storage tank is approximately 500 feet from the shore.

The airport runway periodically floods, but is not threatened by erosion. In the 2007 report, Golder estimated that many of the seasonal fishing residences could be undercut within the next 10-15 years at the present rate of erosion. Other residences inland on the highest beach ridges are

approximately 300-400 feet inland of the shoreline. Ekuk Fisheries reportedly installed a sheet pile steel wall around the dock area that has been effective in controlling erosion.

The Ekuk survey respondent reported that in an August 29, 2007 meeting with Golder Associates, the primary concern of the community is maintaining vehicle access along the beach because erosion could create a channel between the spit and bluff, cutting off vehicle access to the cannery for the set-net operations along the shoreline of Flounder Flat south of Ekuk.

Another concern is potential for direct loss or loss of access to the seasonally-occupied residences and structures at Ekuk and Etolin Point south of Ekuk. According to Golder, vehicle access along the upper beach would not need erosion protection, although access would be limited to the upland areas during high water storm events, and the two landing strips would likely continue to flood during storm events. The Saint Nicholas Church and the graveyard are on Ekuk Bluff approximately 185 feet inland from the bluff crest. At the present rate of erosion the church and graveyard may be affected by the eroding bluff in 50-100 years.

### **Photos and Diagrams**

Photos of erosion provided by community are attached. Also, attached is a diagram depicting the linear extent of erosion in the community.

### **References**

Golder Associates. 2007. Ekuk Village Erosion Assessment. Golder Associates Inc.  
USACE. 2008. Alaska Community Erosion Survey, OMB approved number 07100001, expires September 30, 2009 administered to Louie Jones, Ekuk village council environmental coordinator on February 20, 2008.

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### **Additional Information**

This information paper, as well as those for other communities, can be accessed on the internet at [www.alaskaerosion.com](http://www.alaskaerosion.com). For more information please contact the Corps of Engineers, project manager at (907) 753-5694 or email [Alaska.Erosion.POA@usace.army.mil](mailto:Alaska.Erosion.POA@usace.army.mil)



**Photo 1: Seasonal buildings used by set-net fisheries at Ekuk, 2007.**



**Photo 2: Eroding shoreline at Ekuk, 2007.**



**Photo 3: Ekuk shoreline, date unknown.**



**Photo 4: Building falling over edge, date unknown.**

NUSHAGAK BAY

Ekuk Fisheries sheetpile erosion containment

Ekuk spit

St. Nicholas Orthodox Chapel,  
a.k.a Santa Claus Church  
circa 1908

Ekuk bluff

Date of Aerial Photo: 6 June 06

**NOTE:** The extent of erosion shown on this figure is based on interviews with the community. This data has not been field verified. This figure is only intended to show areas of erosion, not rates or severity of erosion



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- - - Linear Extent of Erosion



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