U.S. Army Corps of Engineers
Alaska District

Erosion Information Paper - Gustavus, Alaska

Current as of October 30, 2007

Community Information

Gustavus (gus-TAY-vuhs), population 441, is at the ban of the Saint Elias Mountains on the north shore of Icy Passage at the mouth of the Salmon River, 48 miles northwest of Juneau. The community is incorporated as a 2nd class city in the unorganized borough. Gustavus is surrounded on 3 sides (east, north, and west) by Glacier Bay National Park and Preserve and by the coastal waters of Icy Passage to the south.

Description of Erosion Problem

Gustavus reports periodic erosion caused by riverine processes associated with the Salmon River where it flows through the community. Primary causes of erosion are natural physical processes and daily flows of the river. Water flow can become amplified during in spring and fall. The river is eroding inland at an estimated average of 6 feet per year. The erosion problems are primarily in 3 locations along a 12-foot-high bluff. Two of these areas are just north (upstream) of the Salmon River Bridge. Each is approximately 800 feet long. The 3rd area is farther upstream, about a ¼ mile north of the Salmon River Bridge, and extends approximately 400 linear feet.

The river erosion processes are exacerbated by the tidal flow up the river which on large tides may reach more than a mile north of the mouth of the Salmon River. There is an amplification of erosion during high river flow during fall heavy rains and spring thaws. The river is eroding at cut bank meanders as much as 6 feet per year but that would be a maximum amount. The erosion problems are taking place in four locations, three of which involve land the City of Gustavus owns or soon will own. One is the meander near the city hall parking lot and city park immediately north of the Salmon River Bridge and the roadway into city hall; one is slightly upstream from the city hall in an area used as a ball diamond and the third is approximately ¼ mile north of the bridge. The fourth location is approximately 250 yards south of the Salmon River Bridge. This fourth location is now owned by the city, a gift from a previous owner who had installed sheet pile into the land to prevent the eventual erosion of his property. The erosion at the sheet pile location is rather severe and is presently etching away at the base of the now exposed sheet pile. This pile should be pulled but immediately below it is a residential house which may eventually be taken by the river. It is a dilemma for the city which would like to have the pile pulled but only with assurances by an engineer/hydrologist that the pulling of the pile will not exacerbate the erosion toward that residence.

Potential Damages

The community survey indicates erosion along the Salmon River in the community is less than 100 feet away from a road. Erosion also is approaching 2 parks and the city hall. No erosion protection measures have been undertaken.

The roadway into the city hall was approximately 15 feet from the river three years ago and is now a mere 4 feet from the river bank. The city hall itself is not in immediate danger nor is the park; the roadway to the city hall is in danger but not immediate. The City Council was told by Department of Natural Resource officials that it would be cheaper to move the road than to try to abate the erosion.

Photos and Diagrams

No photos depicting the extent of erosion have been provided by the city or other sources. A diagram showing the linear extent of erosion is attached.

References

City Council of Gustavus, citycouncil3@gustavus-ak.gov

DNR. 2005. *GUSTAVUS Strategic Plan.*Compiled by the Gustavus Strategic Planning Committee and Alaska Department of Natural Resources, www.dnr.state.ak.us

IHCA. 2000. *Agency Report: Alaska-Pacific River Forecast Center*. Prepared by the Interagency Hydrology Committee of Alaska.

Rural Sanitation Services. **1985**. *Survey of Rural Sanitation.*

USFWS. 2007. *Lower Salmon River Bank Stabilization, Gustavus.*

USACE. 2007. *Alaska Community Erosion Survey, OMB approved number 07100001*, expires September 30, 2009 administered to Mayor Ken Klawunder, on October 29, 2007.

Additional Information

This information paper, as well as those for other communities, can be accessed on the internet at 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

Figure 1: Looking upstream at Town Hall Site

Figure 2: Sand 'piping' from tidally charged riverbank

Figure 3: Upstream end scour of sheet pile

Figure 4: Downstream end failure of sheet pile

2 Erosion areas immediately north of Salmon River Bridge
and another 400 foot-long erosion area 1/4 mile north of bridge
(not shown on photo).

Flow

SALMON RIVER

Date of Aerial Photo: 8 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

	Alaska District Corps of Engineers Civil Works Branch	Extent of Erosion		N	Alaska Baseline Erosion Gustavus, Alaska