



U.S. Army Corps
of Engineers
Alaska District

ALASKA BASELINE EROSION ASSESSMENT

Erosion Information Paper – Hooper Bay, Alaska

Current as of September 9, 2007

Community Information

Hooper Bay (HOO-pur) Native name Naparyarmiut, population 1,157, is on the Bering Sea coast of western Alaska, 170 miles by air northwest of Bethel and 500 miles by air west of Anchorage in the Yukon-Kuskokwim Delta. Hooper Bay is a 2nd class city in the unorganized borough. The city has two sections: a heavily built-up town site on gently rolling hills and a newer section on the lowlands. Hooper Bay is surrounded by National Wildlife Refuges and marshy tundra dotted with numerous ponds. The beach and Hooper Bay is about 1 mile south of the city center. The beach provides access to the Bering Sea. The shoreline and banks on the south side are used for numerous community activities, including barge access, fishing and hunting, beachcombing, and driftwood collection.

Description of Erosion Problem

The erosion problems in the community are primarily the result of coastline erosion on the Bering Sea, about 1 mile to the south of the community. Based on the community survey, primary causes of erosion are storm surges, and wind and wave action. A contributing factor in the erosion is instability of the beach and banks of the shoreline caused by community activities involving ATVs and pedestrians in these areas. The erosion area is currently estimated at 6,000 feet in length and 15 feet in height. In addition, the river in front of the community on the banks is moving towards the northwest and the community predicts that in about 10 to 20 years the community will become an island during high tides.

Four major erosion events reported in the last 20 years have resulted in a combined loss of nearly 100 feet of shoreline. The current rate of on-going erosion in the community is estimated at 10 feet per year. Major storms in 1979 and 2004 eroded away part of the airstrip by destroying sand-filled barrels used as shore protection and an interlocking concrete wall used to protect the airstrip.

Potential Damages

The airstrip, near the coast about 1.5 miles north from the community, is generally protected from erosion by sand dunes along the Bering Sea, however, storm waves pound into and overtop the small sand dunes and can cause considerable damage.

Protective measures have been taken by the community in recent years to limit the damage from erosion. One measure involved placing interlocking concrete blocks to slow the damage to the shoreline and protect the airport. However, this measure failed because wave action and sand erosion caused the blocks to become unstable. Another measure involved driving metal sheets into the sand to protect the west end of the airport from storm surges. To date, this approach seems to be working, based on the community survey. The community survey did not provide costs of these erosion control measures, or if any repairs or maintenance have been performed. However, *State Legislative Appropriations for Flood and Erosion Control, 1972-1991*, collected by the Department of Commerce, Community and Economic Development, Division of Community Advocacy (DCA), indicate Alaska Legislative Appropriations totaling \$303,400 were granted to Hooper Bay for “erosion control and airport embankment repair” in

1985 and 1988. DCA's on-line *Capital Projects Database* indicates in a Rural Development survey of villages that Hooper Bay's preference is to relocate the airstrip.

Based on the community survey, erosion occurring along the shoreline and banks on the south side of the community threatens the access road to the airstrip, the runway and related facilities, and several outbuildings and sheds. These structures are reported to be currently less than 100 feet from the coastline, however no specific measurements have been provided. Loss of the access road or airstrip, even temporarily, could cause considerable social and economic stress to the community. At present, there is a plan by the state and the federal government to replace the threatened airstrip and expand the air transport facilities by summer 2009; but the project is not yet funded. Additionally, there is a plan to replace infrastructure, including walkways and docks, that have been damaged by erosion and flooding.

One of the top priority goals in the City's 2006 *Community Plan* is to use their land "in the best possible way in development considerations and to control the effects of erosion". The City notes in the Community Plan that a Land Use Plan is in development to guide future development, and lists physical limitations to development as the presence of permafrost, surface drainage problems, wind direction, erosion, and flooding. The Land Use Plan intends to address steps to control erosion damage. The stated purpose of this erosion control is to avoid having to move the community in the future. The community is drafting a Hazard Management Plan that will address erosion.

Photos and Diagrams

Photos of erosion following an October 2004 coastal storm, provided by Alaska Department of Transportation and Public Facilities, are attached. A diagram showing the linear extent of erosion is also attached.

References

Alaska Department of Community and Regional Affairs. 1979. *Hooper Bay.*

DCCED, DCA. 1994. *State Legislative Appropriations for Flood and Erosion Control, 1972-1991*, collected by Floodplain Management Program intern.

DCCED, DCA. 2007. *Capital Projects Database.* Web accessible database.

http://www.commerce.state.ak.us/dca/commdb/CF_RAPIDS.cfm

Native Village of Hooper Bay and the Sea Lion Corporation. 2006. *Hooper Bay Community Plan.*

USACE. 1990. *Hooper Bay, Alaska Beach Erosion Control Preliminary Reconnaissance Report.* Alaska District, U.S. Army Corps of Engineers.

USACE. 2007. *Alaska Community Erosion Survey, OMB approved number 07100001*, expires September 30, 2009 submitted by the City of Hooper Bay by facsimile on July 30, 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



Photo 1: Flood Debris on Airport Runway, following October 2004 Storm.



Photo 2: Failed Interlocking Concrete Block Erosion Protection, following October 2004 Storm.



Photo 3: Sheet Pile Erosion Protection, following October 2004 Storm.



Photo 4: Sheet Pile Erosion Protection, following October 2004 Storm.



Failed interlocking concrete block erosion control and sheet pile erosion control protecting West End of Airport

Flow

Date of Aerial Photo: 27 June 05

BERING SEA

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



Alaska Baseline Erosion
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