U.S. Army Corps of Engineers
Alaska District

Erosion Information Paper - Koyuk, Alaska

Current as of November 6, 2007

Community Information

Koyuk (KOY-yuck), population 368, is at the mouth of the Koyuk River, at the northeastern end of Norton Bay on the Seward Peninsula, 90 air miles northeast of Nome. The community is incorporated as a 2nd class city in the unorganized borough. Barge access, fishing, hunting, processing catch, beachcombing, cultural and social events, and driftwood collection are community activities using the shorelines.

Description of Erosion Problem

Koyuk reports riverbank erosion along the Koyuk River and coastal erosion along the Norton Bay shoreline. Storm surges, high tides, wind, and waves are conditions causing and contributing to the coastal erosion. The riverbank erosion is caused by natural riverine processes of the Koyuk River. A 1984 *Task Force on Erosion Control Final Report* prepared by the Alaska Department of Transportation and Public Facilities (DOT&PF) indicates the primary erosion was at the beach adjacent to the east end of the community. Wave action was reported to be washing into a low lying, relatively flat area between the beach and the base of the hillside, and the erosion was extending the active beach toward the hillside. A site visit by DOT&PF reports the eroding face was about 350 feet long and up to 3 feet high. The erosion was cutting into the properties along the beach but not threatening structures.

Based on the community survey, most of the dwellings and other structures are outside of the 100-year floodplain. The community is subject to coastal flooding (and likely associated erosion) about every 10 years, caused primarily by wind-driven waves. This type of flooding occurred in 1917, 1945, 1947, 1966, 1973, and 1974, but no damages have been recorded. The 1974 record event flooded 2 homes but no public facilities. The only serious problem with storm surges is damage to local fishing boats.

Potential Damages

Outbuildings, sheds, food storage areas, drying racks, smokehouses, a retail store, boat launches, and structures utilized for boat storage and repair are facilities and structures less than 100 feet from the erosion areas. First Avenue, adjacent to Koyuk Inlet and the main road to the barge landing, is reported to washout every year. Many permanent structures are on the landward side of this road.

The 1984 and 1986 DOT&PF reports indicate the beach in front of the eroding bank was utilized as a road, and was the only “roadway” connection between the community streets and a road running several miles up the Koyuk River. DOT&PF suggested that a road/berm project

landward of the eroding beach could protect property and improve roadway access between the community streets and the road upriver. DOT&PF suggested the road be built of gravel from Iron Creek on a 5:1 slope toward the water. It is not known if this recommendation has current applicability. The *Capital Projects Database* maintained by the State indicates a Bureau of Indian Affairs funded project to reconstruct a gravel source access road (1.5 miles) was completed in summer 2004. It is not known if this is the same alignment of the DOT&PF recommended beach road.

The local economic development plan (2005-2010) indicates erosion is a threat to economic and community development in Koyuk. Roads and the airport were listed as erosion control priorities. The only protective measure to control or stop erosion was installation of a berm in front of a retail store. According to the conversation with the IRA council staff, this measure has not stopped damage.

Photos and Diagrams

Photos of erosion provided by community are attached. A diagram depicting the linear extent of erosion in Koyuk is also attached.

References

DCCED, DCRA. 2007. *Capital Projects Database.* Department of Commerce, Community and Economic Development, Division of Community and Regional Affairs.
http://www.commerce.state.ak.us/dca/commdb/CF_RAPIDS.htm

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ESL. 1980. *Koyuk.* Prepared by Environmental Services Limited.

Kawerak, Inc. 2004. *Local Economic Development Plan, Koyuk 2005-2010.* Prepared for the Community of Koyuk and the Bering Straits Development Council by Kawerak, Inc.

USACE. 1986. *Village Information Form: Koyuk, Alaska.* Alaska District, U.S. Army Corps of Engineers.

USACE. 1993. *Navigation Improvements Preliminary Reconnaissance Report Section 107 Koyuk, Alaska.* 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 IRA council via facsimile to the Corps of Engineers in October, 2007; and a conversation with Arlene Charles, IRA council staff, on November 6, 2007.

Additional Information

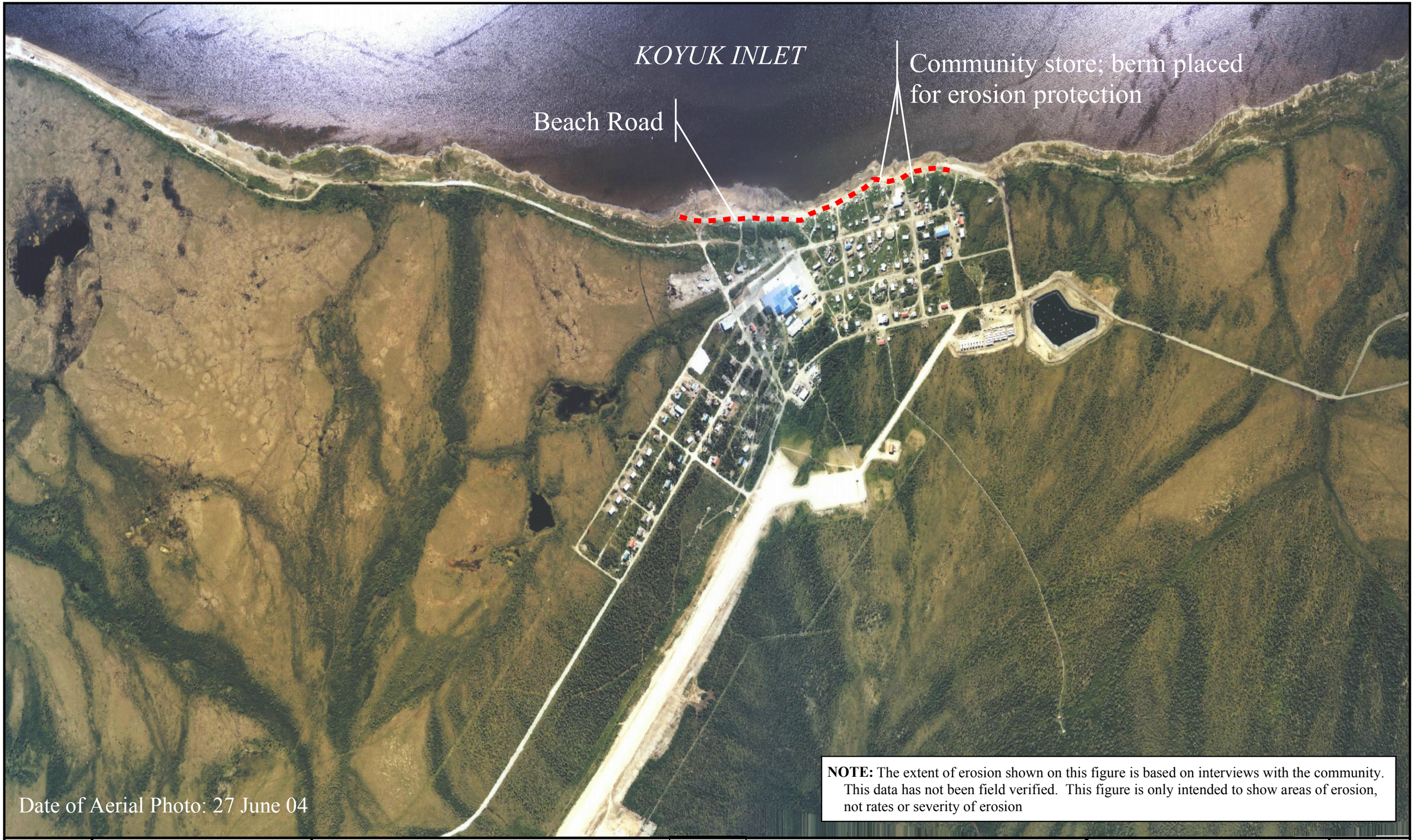
This information paper, as well as those for other communities, can be accessed on the internet at www.alaskaerosion.com. For more information please contact the Corps of Engineers, project manager at (907) 753-5694 or email Alaska.Erosion.POA@usace.army.mil

Photo 1: Koyuk coastline during fall storm, Sept. 2005

Photo 2: Koyuk storm surge, Sept. 2005.

Photo 3: Wind driven waves causing flooding and erosion in Koyuk, Sept. 2005.

Photo 4: Koyuk shoreline structures during fall storm, Sept. 2005.



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Linear Extent of Erosion

Alaska Baseline Erosion

Koyuk, Alaska