



U.S. Army Corps  
of Engineers  
Alaska District

## **ALASKA BASELINE EROSION ASSESSMENT**

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

Current as of January 18, 2008

### **Community Information**

Fairbanks, population 30,552, is in Alaska's Interior on the banks of the Chena River in the Tanana valley. Fairbanks is about 360 miles north of Anchorage and 100 miles south of the Arctic Circle. The city is incorporated as a home rule city in the Fairbanks North Star Borough. The Chena River supports a variety of year round community and recreational activities, parks, picnic areas, hotels, camp grounds, restaurants, gravel pits, schools, homes, private marinas, boat launches, activity centers, churches, and utility plants.

### **Description of Erosion Problem**

The Chena River is a clear, spring/groundwater fed stream with its headwaters in the mountains east of Fairbanks. It travels through the Tanana River floodplain, which includes Fairbanks, to its confluence with the Tanana River. Bank erosion occurs along most of the Chena River with the banks being rated from stable to highly unstable (active erosion occurring). River flow, changing water levels, freeze-thaw cycles, ice jams, spring break up, new channels cut by high river stages, boat wakes, and land development resulting in loss of riparian vegetation are all contributing to erosion. Erosion is most prevalent along the river during the 2 annual peaks in discharge – spring snowmelt runoff, and late summer precipitation. Major recorded flood events with resulting erosion occurred in 1905, 1937, and 1967.

### **Potential Damages**

The only currently threatened structures are the city's Chena River storm water outfalls, which are subject to scouring beneath their inverts. Homes, businesses and new developments along the banks of the Chena River have at various times become vulnerable to erosion. Most developments, residences, and businesses have stabilized or would like to stabilize the banks on their property according to the *Chena River Bank Stabilization* pamphlet published in 2000 by the Alaska Department of Fish and Game.

The Moose Creek Dike was constructed between 1938 and 1941, about 20 miles east of Fairbanks, marking the 1st major river re-engineering project in the Fairbanks area after years of ravaging floods culminated in the flood of 1937, according to the *Historical Development of the Chena River Waterfront*, published in 1998. It was designed to prevent Tanana floodwaters from entering the Chena River and endangering Fairbanks. The Chena River channel was blocked off with an earthen dike constructed between Moose Creek Bluff and the Tanana River, effectively reducing water flow to Fairbanks by about 75 percent. The Chena River Lakes Flood Control Project and Tanana River Levee were constructed between 1973 and 1979 to further control flood

waters following a major flood in 1967 that resulted in an estimated \$80 million in damages. They remain functional.

Erosion protection measures along the Chena River, within and just outside the city limits, have often coincided with development and been undertaken in a piecemeal fashion. The measures have comprised of riprap gabions, sandbags, concrete block retaining walls, log berms, earthen berms, and bioengineered stabilization. Naturally occurring vegetation may provide a degree of erosion control in some areas where erosion control measures have not been undertaken. The 1997 Corps *Chena Watershed Study* suggested the increase of erosion control efforts by inserting live willow posts to retrofit existing concrete rubble and rock revetments with overhanging vegetation. The strict bioengineered protection measures implemented in the Fairbanks area have been effective in controlling erosion and in providing environmental benefits, according to the report.

### **Photos and Diagrams**

Attached are photos of Fairbanks provided by U.S. Fish and Wildlife Service (USFWS) and Summit Consulting Services Inc. No diagram of the community has been prepared at this time.

### **References**

- Bowers and Gannon. 1998.** *Historical Development of the Chena River Waterfront, Fairbanks, Alaska: An Archaeological Perspective.* Department of Transportation & Public Facilities.
- FNSB, SOA, USDA, USACE, DOI. (No date)** *Lower Chena River Watershed Permit Application for Bank Stabilization Projects Within the Lower Chena River Watershed.*
- Post. 1998.** *Lower Chena River Watershed Management Strategies and Information Needs.* Roger Post.
- SOA, ADFG. 2000.** *Chena River Bank Stabilization.* Dept of Fish and Game, Habitat Restoration Division.
- USACE. 1984.** *Chena River Lakes Flood Control Project.* Alaska District, U.S. Army Corps of Engineers.
- USACE. 1997.** *Chena River Watershed Study.* Alaska District, U.S. Army Corps of Engineers.
- USACE. 2008.** *Alaska Community Erosion Survey, OMB approved number 07100001,* expires September 30, 2009 administered to Jackson Fox, City of Fairbanks environmental manager, January 17, 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: Bio-engineered restoration of rapidly eroding bank of the Chena River at River Bend Estates included placing a log berm at the toe with willow-staked riprap upslope, and planting birch and juniper trees at the top of the bank. Photo courtesy of the USFWS, No photo date.**



**Photo 2: Summit Consulting engineered a 400-foot double tiered retaining wall along the north side of the Chena River to prevent erosion at the Riverbend Condominiums site at Doyon Estates; Photo courtesy of Summit Consulting Services, Inc. 2005.**