NRCS
Natural Resources Conservation Service
590 University Ave. Suite B
Fairbanks, AK 99709
907-479-2657
fax 907-479-6998
web site www.ak.nrcs.usda.gov

Subject: ENG-Trip Report
Akiak EWP Visit
Akiak, Alaska

Date: June 24, 2019

To: Joanne Kuykendall, North Hub Leader
Brett Nelson, State Conservation Engineer

File Code: 210-7

Location: The Village of Akiak is located approximately 23 air miles East of Bethel on the Kuskokwim River.

Purpose: The community of Akiak requested NRCS assistance through the Emergency Watershed Protection (EWP) Program, due to erosion related to spring snowmelt runoff threatening homes.

Participants: Ryan Maroney, NRCS Alaskan Native Technical Liaison, Jeff Oatley, NRCS CE, several community leaders including Ivan Ivan, Mike Williams, David Gililia, many members of the community, and consultant Joel Neimeyer.

Background/Findings: NRCS is familiar with Kuskowkim River erosion near Akiak, Alaska. In 2013, NRCS engineers were tasked with developing a structural solution to the erosion issue at Akiak. After completing a channel survey and investigating channel morphology using historical imagery of this reach of the river it was determined that an engineering design and/or construction project aimed at mitigating erosion at Akiak was beyond the scope and resources of the NRCS. Rather than producing a preliminary design of a structural solution a scoping report (*An Assessment of Streambank Erosion and a Revetment Concept Design on the Kuskokwim River at Akiak, Alaska*) was produced.

The report documents severe hydraulic conditions adjacent to the community and presents a conceptual rock riprap revetment 2600-feet long and with a ROM cost of $80M. This approach contrasted sharply with a similar, but much smaller-scale project which was previously presented by USACE.

Erosion in Akiak was pronounced during the recent break-up in May of 2019. The community has stepped up efforts to mitigate the erosion by shaping streambanks and covering the slopes with a geotextile fabric; using soil, sandbags, and driven post to try to hold the fabric in place. These efforts could offer some resistance to wave action erosion at higher water levels, primarily associated with fall storms. However, given the channel depth and high likelihood that the root of the erosion problem is occurring at the toe of the slope, the efforts are not likely to significantly slow the overall rate of erosion.

Ryan and I arrived in Akiak at approximately 1:30 on May 30th and attended a community meeting. Leadership from the Tribal Council, the City of Akiak, and the Village Corporation were all present at the meeting, as well as Joel Neimeyer, a consultant who is acting on behalf of the community, and many members of the community.

During the meeting community leadership spoke about the erosion situation, how it is impacting the

community, and explained the ongoing efforts to mitigate the problem. They voiced a preference for a plan to mitigate the erosion rather than continuing to slowly migrate the community away from the eroding riverbank. Through the course of the meeting several people referenced 50 to 70-foot estimates of the lateral erosion during break up this year.

Ryan and I were then given an opportunity to discuss the potential for Akiak to receive assistance from NRCS through the EWP program. We referenced the scope of the erosion mitigation project outlined in the 2013 NRCS report. We reiterated that a project of that scope would fall under the authority of the USACE, not NRCS, but that we could seek EWP assistance if they want to continue to relocate structures. Although there was no discussion related to how many, or which specific structures the community was interested in relocating, they indicated they want to pursue a home relocation project with NRCS.

After the group discussion Ryan and I left the meeting to allow them to continue to discuss matters privately while we performed our assessment of the erosion and identified threatened structures.

We used a handheld GPS to record the top of bank location. We then measured the distance from the top of the bank to each structure. Figure 1 shows the results of this effort. This figure also illustrates how the bank erosion at Akiak has progressed from 1957 to 2019. Table 1 summarizes the data with the measured distance to the top of the bank.

It appears that the active erosion at the downstream end of the community observed on May 30, 2019 is now worse than it was in 2013. Figure 1 reinforces that impression and shows that most significant erosion between 2017 (the date of the image) and 2019 has occurred in the lower 1/3 of the image. With the largest amount of erosion adjacent to a home (Identified as #554) where almost 100 feet of land has eroded between July 2017 and May 2019.

During the meeting we were asked to look at the erosion in the slough channel on the inside of the bend just downstream from the community. Local reports indicate this slough has increased in depth and width in the last decade. Although active erosion exists along both banks of the slough for much of its length, the erosion is not currently threatening any structures.

Overall the erosion situation that we observed on this trip reinforces the conclusion of the 2013 investigation. The hydraulic conditions of the Kuskokwim River at Akiak are severe. There are planform geomorphic changes ongoing in this reach of the river that represent a threat to several structures in the community.

Recommendations/Follow-Up: Several homes are immediately threatened. The data presented in Figure 1 and Table 1 show that the closest home to the top of the bank is approximately 50 linear feet, and that there are five homes that are within approximately 100 feet of the top of the bank. A high-water event could easily erode 50 feet of land in a single day. The current trend appears to be towards more erosion at this location.

Ryan and I are continuing to work with the community to define the scope of a potential EWP project. We arranged a meeting with community leaders in Akiak on June 18th and presented copies of the map in Figure 1 and requested guidance on developing a cost estimate. Akiak Native Community indicated they would provide NRCS with a letter identifying the structures the Tribe would like to relocate or demolish should EWP funds become available.

Figure 1. This 2017 image shows the approximate location of the top of the bank in 2019, as well as the top of bank location for 1957, 1973, 1984, 1995, and 2007. Also identified are the homes and other features identified during the May 30th, 2019 site visit.

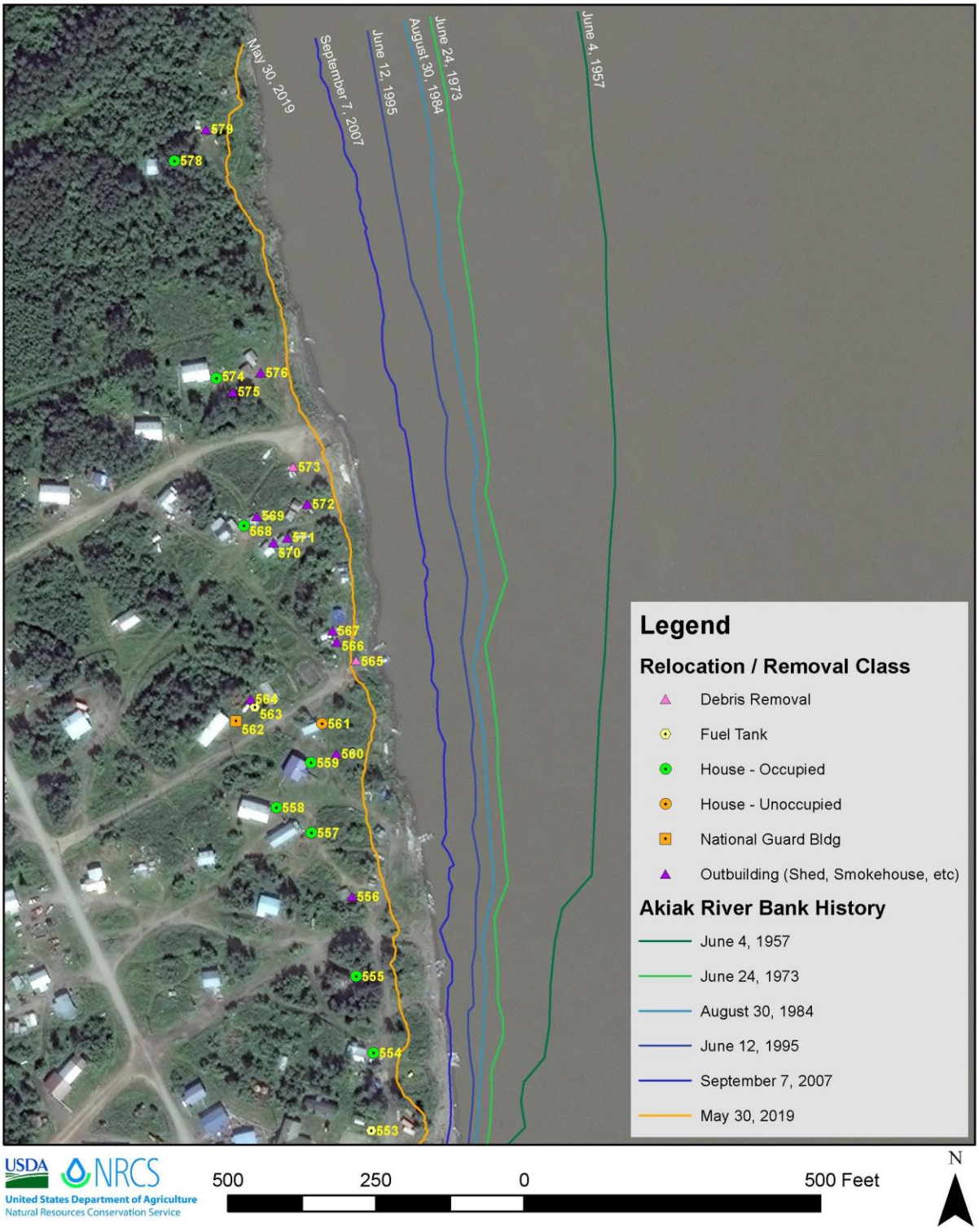

Table 1. Summary of data collected during the site assessment in Akiak, Alaska on May 30, 2019. The GPS Point # corresponds to the numbers presented in Figure 1.

GPS Point #	Description	Distance to top of River Bank (feet)
553	5,000 Gallon Gasoline storage tank (School District?)	100
554	House	50
555	House	65
556	Smokehouse	60
557	House	95
558	House	160
559	House	90
560	Small Shed	60
561	Abandoned House	85
562	National Guard Building	220
563	3000 Gallon Heating Oil Tank	180
564	20 ft Connex	180
565	Abandoned wellhead	-5
566	Shed on barrels	25
567	Shed on ground	28
568	House - probably not movable	155
569	Steam bath	115
570	Drying rack	115
571	Shed	90
572	Shed	50
573	Truck/dead	
574	House	125
575	Shed (not movable)	100
576	Shed (not movable)	50
577	Fuel header (no current issues)	90
578	House	90
579	Steam bath (not moveable)	40

Training provided: There was no training provided during this trip.

Jeff Oatley
Civil Engineer - Fairbanks FO

Cc: Ryan Maroney, Alaskan Native Technical Liaison