ALASKA DISTRICT TRIP REPORT

Project: Noorvik Mooring Points Evaluation for Denali Commission

Description: Noorvik Trip Report

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On July 14th, 2011 three representatives of the Corps of Engineers (Jason Norris, Merlin Peterson, and Kelly Eldridge) and two representatives of the Denali Commission (Tessa DeLong and Mike McKinnon) traveled to the community of Noorvik, Alaska. The purpose of the trip was to conduct a site visit and scoping meeting related to potential installation of barge mooring points in the community. Following is a summary of the information learned during the site visit.

Four barge landing sites were investigated during the site visit for the mooring points investigation. An overview of the community is show in Figure 1. Barge landing sites, and possible mooring point locations are shown in Figure 2.

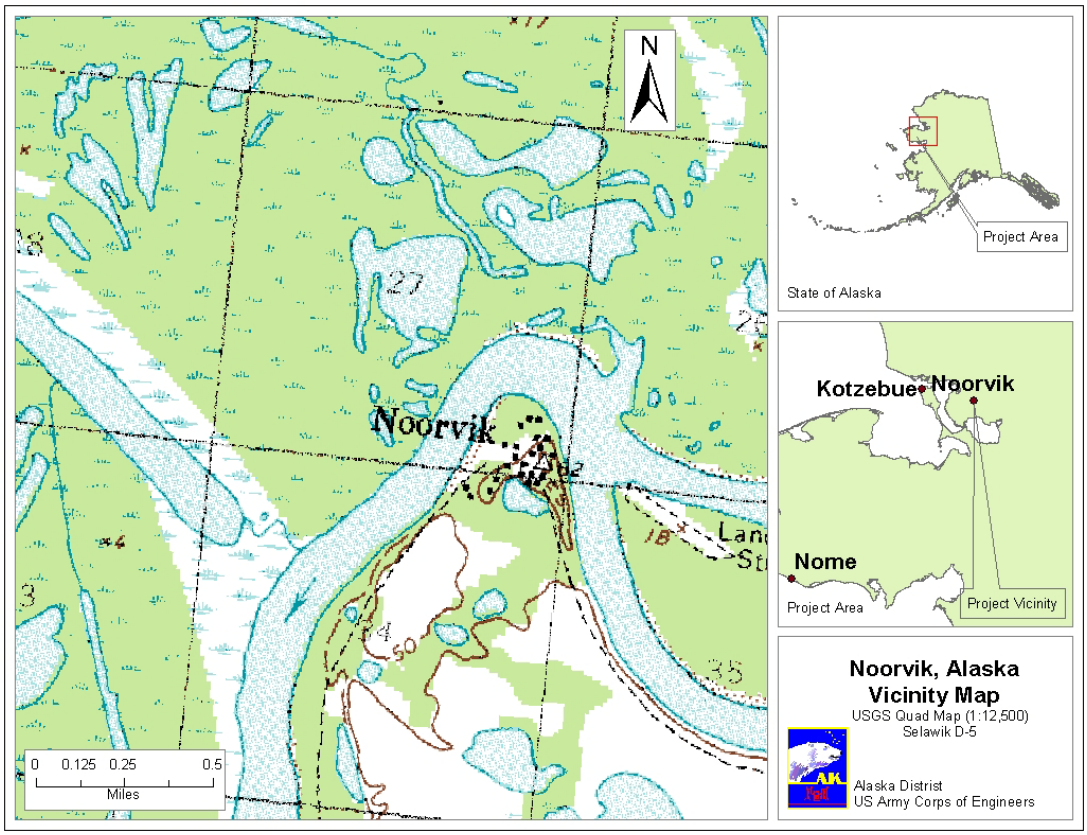

Figure 1. Location of Noorvik.

PRE-VISIT INVESTIGATION

Prior to visiting the community, we spoke with Northland Services and Drake Construction, (who operate barges into Noorvik). Northland stated that they were more interested in staging area and landing improvements than mooring points. Drake stated that the mooring points at the freight landing should be shifted downstream approximately 200 feet to avoid skiffs that are usually moored near the current landing. After our visit we were able to contact Tyler Peterson, Tug Captain, Crowley Marine-Kotzebue. He stated that Crowley installed a deadman at the site named here as "Fuel 2" and that if we were to install a deadman at that site it should be adjacent to the one they just installed.

PUBLIC MEETING

While there we were able to meet with Sarah Tebbits, City Administrator.

SITE DESCRIPTION

Noorvik is located on the Kobuk River, 40 air miles east of Kotzebue, and 500 miles northwest of Anchorage (Figure 1). While there we investigated four separate landing sites. They are described in the following section from upstream to downstream. Figure 2 gives an overview of the sites investigated during the visit.

Figure 2. Overview of Noorvik and investigated sites.
Source: Google Earth with USACE edits

"FUEL 1" SITE

The most upstream landing site (Figure 4) is located at the upstream end of the community and is composed of a beach composed of silts and sands. The size of the landing area is approximately 150 feet by 50 feet. Surrounding vegetation generally consists of thick willows and grasses and begins approximately 50 feet from shore. The near shore bank slope is a 1V:1.5H. The shoreline meanders in the area and the elevation of the top of bank varies, presenting an uneven shoreline for landing purposes. Erosion within the landing area appears to be minimal but the area directly upstream appears to be experiencing erosion.

Figure 3. Location of Decommissioned Fuel Tanks relative to "Fuel 1".
Source: Google Earth with USACE Edits

This site was once used to fill the elementary school's fuel tanks, located approximately 550 feet inland. However, due to the construction of a bulk fuel storage facility, (located approximately one-half road mile south of the site), these tanks have been decommissioned. Because of this, Fuel Site 1 no longer receives fuel barges.

No moorings are proposed for Fuel Site 1 due to the existing state of the decommissioned tanks. There is no expected future use of this site.

Figure 4. "Fuel 1" Landing.

Figure 5. Decommissioned Fuel Tanks at "Fuel 1" site.

"FUEL 2" SITE

The next landing, ("Fuel 2"), is located approximately 1,000 feet downstream of "Fuel 1". It is composed of a wide, flat, silty beach. The bank is vertical at the water's edge. The vertical drop to the water surface varies from 1 to 3 feet at this site. Vegetation along the shore at this site is minimal to non-existent. Willows and grasses can be found roughly 50-75 feet back from the top

of bank. There is a fuel header located approximately 600 feet inland that serves the bulk fuel storage facility.

This site is occasionally used for landing equipment and freight, however, the beach is ill-suited for this activity as shown by the deep tire marks present during our visit (Figure 7). However, given the main use of this site is related to fuel deliveries, the condition of the beach should not disqualify this site from being a candidate for installation of mooring points. One archaeological test pit was excavated at this site. No archaeological or cultural artifacts were found (Figure 8).

Figure 6. "Fuel 2" Site.

Figure 7. Tire tracks in the beach at "Fuel 2".

Figure 8. Archaeological test pit at "Fuel 2" site.

During our visit the beach showed signs of erosion. A local account stated that the river channel migrates during the open-water season and that the beach actively accretes and erodes depending on the time of year. The scope of this investigation did not include an erosion estimate of this beach. This beach is dynamic and composed of highly-erodible material. A 75-foot offset appears to be sufficient based on judgment and information available at this time.

Figure 9. Erosion at "Fuel 2" Site.

Given the information available at this time, it is proposed that two below-grade moorings be placed 100 feet upstream and downstream of the center of the landing and offset 75 feet shoreward from the top of the bank. GPS points for the proposed mooring point locations were obtained and are shown below.

<u>GPS Points for the Proposed Moorings at Fuel Site 2:</u>

Upstream mooring N66° 50' 16.0" W161° 02' 39.3"

Downstream mooring N66° 50' 14.5" W161° 02' 42.3"

"FUEL 3" SITE

This site was identified in the initial proposal as the landing used to fill the secondary school's fuel tanks. According to Sarah Tebbits, fuel barges do not use this site as fuel is trucked to the school's tanks from the freight landing located 1,500 feet downstream. Use of this site as a fuel barge landing would be very difficult given the near vertical bank at the water line, poor vehicle and pedestrian access, and heavily vegetated bank conditions (Figure 10 and Figure 11). DCRA maps show the bank as Municipal Reserve; however any path from the river to the tanks would cross what appears to be private land containing a dog yard and a fenced dog pen. There is no need for mooring points at this location and GPS points were not taken.

Figure 10. Bank conditions at "Fuel 3".

Figure 11. Looking upstream toward "Fuel 3".

FREIGHT LANDING

The freight landing is composed of a wide beach located approximately 1,500 feet downstream of "Fuel 3" and 100 yards downstream of a section of bank that is being protected by an articulated concrete mat (ACM) revetment (Figure 12 & Figure 13). The barge landing shows no sign of erosion, likely due to the ACM revetment upstream and gravel fill at the landing.

Figure 12. Articulated concrete mat upstream of freight landing.

Figure 13. Near vertical bank can be seen at site "Fuel 3", beyond the skiff.

The landing has a large, flat staging area approximately 300 ft x 150 ft and an access road (Figure 14). The bank at the landing site has been improved with local gravel fill (Figure 16). Bank slope is approximately 1V:3H to 1V:5H. The natural material away from the filled area is

fine sand and silt. One archaeological test pit was excavated at this site. No archaeological or cultural artifacts were found.

Drake Construction recommended installing mooring points 250 feet downstream of the current landing to avoid skiff traffic (Figure 18). This location was also investigated during the site visit. The suggested downstream landing would be located downstream of a set of bleachers on the bank that could restrict access unless they are relocated during every delivery. The bank at the suggested downstream site is unimproved and does not have gravel fill. This location would also be adjacent to and downstream of the aforementioned staging area. Given that there is an established landing filled with good material and located near an access road it is recommended that mooring points not be installed at the site recommended by Drake.

It is proposed that two below-grade moorings be placed 100 feet upstream and downstream of the road/path leading to the landing and offset 50 feet shoreward from the top of the bank. GPS points for the proposed mooring point locations were obtained and are shown in the table below.

<u>GPS Points for the Proposed Moorings at Freight Landing.</u>

Upstream mooring N66° 49' 48.9" W161° 03' 15.7"

Downstream mooring N66° 49' 47.2" W161° 03' 18.2"

Figure 14. Current staging area, access road in background behind containers.

Figure 15. Current landing area.

Figure 16. Stockpile of local gravel.

Figure 17. Archaeological test pit at freight landing site.

Figure 18. Drake Construction's suggested site.

RECOMMENDATIONS

It is recommended that no mooring points be installed at the “Fuel 1” or “Fuel 3” sites. Interviews with the barge companies indicated that these sites are no longer used and there is no evidence of other barge use of these sites.

It is recommended that two mooring points be installed at the “Fuel 2” site at the indicated GPS points. These moorings should be the below-grade type, spaced 200 feet apart, centered on the landing access, and set back no less than 75 feet from the top of the bank due to potential for erosion.

It is recommended that two mooring points be installed at the existing freight landing. These moorings should be the below-grade type, and center on the landing, spaced 200 feet apart, centered on the landing access, and set back 50 feet from the top of bank. It is also recommended that no mooring points be installed at the site recommended by Drake.