

United States Department of the Interior



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In Reply Refer To:
2651 (941)

JUN 06 2017

To: DSD, Division of Lands and Cadastral

From: Navigable Waters Specialists

Subject: Supplement to Navigability Report Dated April 10, 2002, for the Knik River in Southcentral Alaska

Introduction

On August 11, 2016, the State of Alaska (State) submitted evidence¹ that it believes supports its contention that the Knik River is navigable, in its entirety. On April 19, 2017, the State filed a complaint, State of Alaska v. United States of America, case 3:17-cv-00090-HRH, in the United States District Court for the District of Alaska over the navigability of a portion of the Knik River.

Over the years, the Bureau of Land Management (BLM) has issued several navigability determinations calling the Knik River navigable in its lower reaches and non-navigable in the upper part of the river, leading to the Knik Glacier. In light of the state's submission of additional evidence and the BLM's lack of information regarding the river's physical character, the agency agreed to re-examine its earlier finding of non-navigability.² In doing so, it was determined that a field examination would be necessary in order to better assess the river's susceptibility to being navigable.

The Knik River originates at the Knik Glacier, approximately 45 miles northeasterly of Anchorage, Alaska. From there the river flows generally in a northwesterly direction to its mouth at Cook Inlet. The stretch where the river flows under the lower Glenn Highway Bridge is generally considered the river mouth at Knik Arm, approximately 30 miles northeasterly of Anchorage.

¹ Knik River Float Trip Field Report – Spring 2016, State of Alaska, DNR

² Memorandum, Brown C. Michael, Navigability of Knik River, Southcentral Alaska, April 10, 2002

Background

In its most recent navigability determination, dated April 10, 2002, the BLM examined historical records relating to uses of the upper Knik River, specifically where it flows through Townships (T) 15 and 16 N., Range (R). 4 E., Seward Meridian (SM), Alaska. The report was prepared in response to concerns from the Division of Cadastral Survey that some of the islands in this heavily braided stretch of river may have emerged from the riverbed after the date of statehood. The islands and adjacent uplands were selected by Eklutna, Inc. in 1974, pursuant to its Alaska Native Claims Settlement Act (ANCSA) land entitlements. If the river was navigable at the time of statehood, the riverbed, including the emerged islands, belong to the State. Conversely, if the river was non-navigable, the islands, and riverbed would be subject to conveyance to the village corporation.

The 2002 report focused on the historical use of the Knik River in Tps. 15 and 16 N., R. 4 E., SM, which is generally the stretch of river upstream of Friday Creek to the Knik Glacier. The report concluded that the Knik River in the aforementioned townships was not historically a highway of commerce and that there was no evidence that it was susceptible to use as a highway for travel, trade and commerce on January 3, 1959, Alaska's statehood. Accordingly, the report concluded that the Knik River was non-navigable.³

Authority

Typically, the BLM may reconsider the navigability of a river if additional evidence warrants it. The exception to this policy occurs when a BLM navigability determination becomes finalized through incorporation into a conveyance action pursuant to ANCSA. The "Alaska Submerged Lands Act of 1988 (SLA 1988)"⁴ subsection (c)(1) provides:

The execution of an interim conveyance or patent, as appropriate, by the Bureau of Land Management which conveys an area of land selected by a Native or Native Corporation which includes, surrounds, or abuts a lake, river, or stream, or any portion thereof, shall be the final agency action with respect to a decision of the Secretary of the Interior that such lake, river, or stream is or is not navigable, unless such decision was validly appealed to an agency or board of the Department of the Interior on or before December 2, 1980.

To date, the agency has not finalized its proposed conveyance actions in the subject lands and therefore, still has the authority to amend or alter its 2002 navigability determination if additional information warrants it.

³ As part of the Alaska Land Transfer Program, the BLM has reviewed the navigability status of the Knik River several times. In 1985, the agency concluded the Knik River was susceptible to use as a highway of commerce from its mouth upstream to and through T. 16 N., R. 3 E., SM.

⁴ Public Law 100-395.102 Stat. 979, 43 U.S.C. § 1631.

Land Status

The aforementioned submerged and contested lands aside, much of the rest of the Knik Valley has been conveyed out of federal ownership. The uppermost two townships⁵ at the Knik Glacier are owned by the State. Numerous patented small parcels dot the uplands below the upper bridge and Goat Creek.⁶ Below Goat Creek, Eklutna Village Corporation owns most of the uplands with the lands below the lower highway bridge being predominately in State ownership.

Past Navigability Determinations

In support of the Land Conveyance Program, the BLM determined the Knik River in Tps. 15 & 16 N., R. 5 E., SM (at the head of the river at the glacier) non-navigable in 1984. In 1985, the BLM determined that the lower Knik River was susceptible to commerce from the mouth to and through T. 16 N., R. 3 E., SM. Finally, in 2002, the BLM issued its determination of non-navigability for the two contested townships.

Although U.S. Coast Guard (USCG) determinations for admiralty purposes have no bearing on title, the USCG issued its own determination in 1986 when it determined the Knik River not navigable from the upper bridge to the Knik Glacier. In 2010, the USCG reversed its 1986 determination by declaring the Knik River navigable in its entirety. In subsequent reviews, the USCG has affirmed its 2010 finding.⁷

Physical Character

In support of a potential amendment of the 2002 navigability determination, the agency conducted field examinations of the Knik River on August 9, 2016 and May 9, 2017. The field examination of August 9, 2016 coincided with a high water event where the Knik River was flowing at a very high water flow of approximately 43,000 cubic feet per second (cfs). Unfortunately, schedules could not be changed by members participating in the field examination and any data collected that day was rendered useless due to high water. Therefore, the BLM determined that another field examination was necessary. The goal for the field examination in 2017 was to try to simulate the flow level, as close as possible, that the State representatives experienced in their field trips from April 6 and May 5, 2016, which were 2440 and 3167 cfs respectively.⁸ The BLM monitored the USGS National Water Information System web interface, which documents flow data from a gage located in the Knik River near the older upstream bridge to assess the best time to conduct its field examination. May 9, 2017 was scheduled because the flow levels observed on the web interface of the USGS for early May

⁵ Tps. 15 & 16 N., R. 5 E., SM.

⁶ Sec. 9, T. 16 N., R. 2 E., SM

⁷ The US Coast Guard issues navigability determinations to determine whether it has jurisdiction over the waterway per 33 CFR § 2.45.

⁸ Knik River Float Trip Field Report – Spring 2016, State of Alaska, DNR

2017 showed flow levels of approximately 3000 cfs, close to what the State documented in its trips.

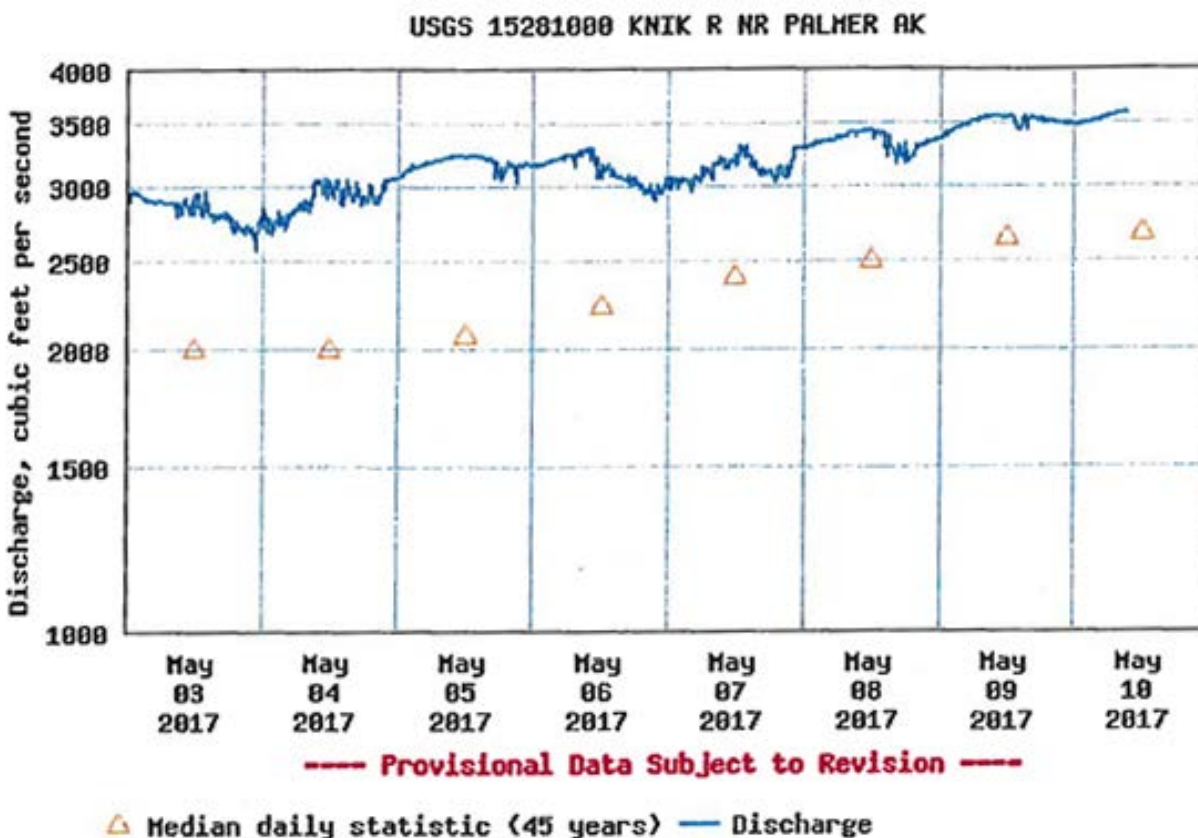


Figure 1: Flow data reported for the Knik River by USGS on their National Water Information System: Web Interface. BLM's field examination was conducted on May 9, 2017.

The purpose of the trip was to assess the river's physical character by taking depth and width measurements at three locations. These approximate locations were: the west township line, midpoint, and east township line of T. 16 N., R. 4 E., SM, all within the area contested by the State in its complaint. Accompanying navigable waters specialists Jack Frost and Ralph Basner were hydrologist Ben Stratton and biologist Merlyn Shelske. An airboat operator was hired⁹ and BLM personnel traveled the entire length of the Knik River from tidewater up to the glacier. The study area included the river reach upstream of the township line separating T. 16 N., Rs. 4 and 5 E., SM, (approximate river mile 15.5, going upstream¹⁰) up to the glacier. Friday Creek is a readily identifiable landmark that empties into the Knik River, just upstream a short distance of where the township line crosses the river.

Flowing from its head at the enormous Knik Glacier, the sediment-laden Knik River courses through a single, somewhat roily channel as it brushes up against the Chugach Mountains before

⁹ Joe Tate of *Bearly Wounded Charters*

¹⁰ Based upon river mile calculations provided by the State of Alaska, DNR (Map created March 2, 1017)

settling down and turning northerly across its two-mile wide flood plain. The rocky and boulder strewn riverbed eventually transitions to cobble and then a more sandy, gravelly bottom with extensive braids and sand bar islands for approximately the next 12 miles. In the lowest two miles before the upper bridge, the riverbed constricts to a single channel and the flood plain narrows considerably.¹¹ The lower eight miles of river between the upper and lower bridge (Glenn Highway) contain several large islands (especially near tide water) but are otherwise unremarkable, save for a few sweepers. The lowest 1.5 miles show obvious signs of tidal influence.¹²



Figure 2: Ben Stratton (foreground) and Merlyn Shelske (background) taking measurements of the Knik River at the eastern township line of T. 16 N., 4 E., SM. The airboat operator, Joe Tate, and his boat are also pictured. Ben Stratton noted that the depth at this location was in excess of three feet deep.

According to preliminary calculations provided by Stratton, the river gradient drops approximately 21.5 feet per mile, with the steepest part occurring along the upper five miles of river. No rapids exist on the Knik River; only fast moving riffles mostly along the uppermost stretch. Water flow in the Knik River for May 9, was calculated at approximately 3570 cfs, a

¹¹ Approximate River mileage calculated from *Google Earth* measuring tool

¹² Exposed tidal mud.

flow deemed close to typical for the Knik River at this time of year.¹³ Ben Stratton noted that ordinary flows for the Knik River during the summer are approximately 20,000 cfs. Even at the volume of water flow the BLM party experienced on May 9, we were easily able to determine that the water depth was mostly three feet or deeper from the township line all the way to the glacier. Notably, at the flow levels experienced, the main channel was obvious except for a short stretch near Wolf Point where the maze of braided channels caused our airboat operator to veer by mistake into a short, dead-end channel. Upon realizing his mistake, he quickly corrected course and returned to the main part of the river. At higher water levels, with the numerous submerged sand bars and islands, it could be easy for anyone unfamiliar with this river to stray from the deeper main channel and encounter water depths unsuitable for kinds of watercraft that were traditional and ubiquitous throughout Alaska at statehood. These crafts were typically propeller-driven boats, approximately 18-24 feet in length and capable of carrying a commercial load of at least 1000 pounds.¹⁴



Figure 3: Merlyn Shelske, recording the depth of the Knik River at a location near the western township line of T. 16 N., R. 4 E., SM. The depth noted on the survey rod shows approximately 3 feet.

¹³ The Knik River USGS gage (15281000-- Knik R near Palmer) was at about 3570 cfs from 0800-1200 today (Stratton).

¹⁴ Nation & Kandik Rivers, ANCAB RLS 76-2



Figure 4: Ben Stratton measuring the depth of the Knik River at the midpoint stop in T. 16 N., R. 4 E., SM. The depth was nearly 3 feet deep.



Figure 5: Picture taken near the Knik glacier. The river is now a deep single channel as we approach the glacier.

Criteria

The Federal test of navigability is found in *The Daniel Ball*, 77 U.S. (10 Wall.) 557 (1870). There, the U.S. Supreme Court stated: “Those rivers must be regarded as public navigable rivers in law which are navigable in fact. And they are navigable in fact when they are used, or are susceptible of being used, in their ordinary condition, as highways for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water.”

In assessing the navigability of inland water bodies, the BLM relies upon this test as well as federal statutes, federal case law, and the advice of the Department of the Interior’s Office of the Solicitor. Relevant Federal statutes include the Submerged Lands Act of 1953 and the Submerged Lands Act of 1988. The Supreme Court’s most recent decision on title navigability, *PPL Montana, LLC v. Montana*, 132 S. Ct. 1215 (2012), summarizes and explains the proper interpretation of *The Daniel Ball* criteria. Additional guidance is provided in *Alaska v. Ahtna, Inc.*, 891 F.2d 1401 (9th Cir. 1989), *cert. denied*, 495 U.S. 919 (1990) [Gulkana River]; *Alaska v. United States*, 754 F.2d 851 (9th Cir. 1983), *cert denied*, 474 U.S. 968 (1985) [Slopbucket Lake];

and *Appeal of Doyon, Ltd.*, Alaska Native Claims Appeal Board RLS 76-2, 86 I.D. 692 (1979) [Kandik and Nation Rivers].

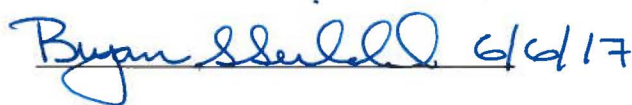
Conclusion

In 1985, the BLM determined that the lower Knik River was susceptible to commerce from the mouth to and through T. 16 N., R. 3 E., SM. The field examination of May 9, 2017 documented that the depth of the Knik River upstream of T. 16 N., R. 3 E., SM to the glacier was similar to what we found in the lower river. We found the main channel to be three-feet or deeper along the entire length of the river, including the contested stretch. The channel is wide-open and no obstructions were observed. Since water levels are typically "low" during the early part of May, the presumption is that higher flow rates will occur with increased glacial melt as the summer boating season progresses. The main channel, although more difficult to follow during periods of high water, will only become deeper making travel with commercial craft typical at the time of statehood even more feasible. Accordingly, we find the Knik River is navigable based on physical character and its susceptibility for use as a highway for travel, trade, and commerce from the western township line of T. 16 N., R. 4 E., SM upstream to the Knik Glacier. This determination replaces the previous non-navigable determination for the Knik River dated April 10, 2002.

I concur (sign and date):

 6/6/17

Branch Chief Lands & Realty (AK941)

 6/6/17

Supervisory Land Surveyor (AK940)

cc:

State of Alaska
Department of Natural Resources
Division of Mining, Land and Water
550 West Seventh Avenue, Suite 1070
Anchorage, Alaska 99501-3579

Eklutna, Inc.
16515 Centerfield Drive, Suite 201
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Cook Inlet Region, Inc.
Attn: Land and Resources
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Anchorage, Alaska 99509-3330

Attachments:

Knik River Field Trip, May 9, 2017

Knik Field Data Map (May 9, 2017) Figure 6

Knik River Hydrologic Field Observation

Knik River Field Trip, May 9, 2017

Participants: Joe Tate, Air Boat Operator, Bearly Wounded Charters
 Ben Stratton, Hydrologist (010)
 Merlyn Schelske, Biologist (010)
 Jack Frost, Navigable Waters Specialist (941)
 Ralph Basner, Navigable Waters Specialist (941)

Trip Log (All river miles are approximate and are based upon information submitted by DNR)

Departure: 8:00 AM. Put in at the Lower Knik River Bridge. Temperature: approximately 50 degrees and overcast. Water flow measured at about 3570 CFS.¹⁵ Water clarity: running mostly clear, minor clouding due to light sediment.

RM 0 through 9: Channel was deep (greater than 3 feet). River width about 100 yards with a well-defined channel. Based on my observation of exposed tidal mud transitioning to gravel and cobble, BLM's call of upper extent of tidal influence (approximately 1¼ above the highway bridge) appeared reasonably accurate (this observation based on writers opinion only).

RM 6.5: Passed under upper bridge at 8:25 AM. Single channel, water clarity: semi cloudy.

RM 9: Deep, well defined channel, 100 yards wide. Many exposed gravel/cobble bars.

RM 10: Deep Channel

RM 11: Well defined channel. Still deep.

RM 12: 150 feet wide (approximate), possibly 3-4 feet deep.

RM 13: Well defined channel. In excess of 3 feet deep.

RM 14: Approximately 80 feet wide.

RM 15.5: Approximate township boundary (T. 16 N., R. 4 E., SM, and beginning of the contested stretch). We stopped here and hand-measured water depth. At a distance of 20 feet from the water's edge, the water depth measured at a couple inches shy of 3 feet deep. The channel was deeper farther out towards the middle. The channel measured at approximately 84 yards wide. At 9:30 AM, we resumed our ascent of the river.

RM 16: Approximately 100 yards wide and the depth appeared to be consistent (>3 feet)

RM 17: Consistent depth and approx. 150 yards wide.

¹⁵ Knik River USGS gage (15281000 – Knik R. near Palmer) 0800-1200, per Ben Stratton email May 10, 2017.

RM 17.5: Steep cut bank left side (going up river), consistently deep.

RM 18: Steep cut bank left side (going up river), river was greater than 3 feet deep, forested with mature trees (spruce and alders). Sweepers were common along the north bank.

RM 19: Steep cut bank left side (going up river), consistent depth in excess of 3 feet. Approximate location of Wolf Point. More channelization and braiding.

RM 20: Short, shallow stretch, but still easily passible. Sidetracked into a dead-end channel requiring a rapid 180-degree turn. Tate found side channel that led us back into the main channel. Heavily braided in this stretch.

RM 21: Back in main channel. Shallower, but still around three feet (or slightly more).

NOTE: At this stage of the trip, we reached the upper extent of the river mileage gradients provided by the state. The reference points hereinafter were township lines (per the GPS) and physical landmarks.

T. 15 N., R. 4 E., SM (north township line): From Wolf Point the river abruptly turns southerly flowing across its flood plain to the base of the Chugach Mountains, just upstream of the Big Timber Creek tributary. This was our second stop. The river here is approx. 3 feet deep, not far from shore (deeper out in middle). Increased water velocity. Large rock outcropping along south side (left bank). Cobble begins to give way to larger boulders and a few jagged rocks.

Sec. 34 Section Line: Well-defined channel with riffles but deep.

Big Timber Creek Confluence: Rocky outcroppings common along south bank. Water is very roily through this stretch with greater velocity. River is approx. 80 – 100 yards wide. Depth appears to be uniformly >3 feet deep. Alternating stretches of flat water and riffles. Large boulders and sharp rocks predominate.

Knik Glacier: We arrived at the large terminal moraine that runs northeasterly from the river to the flood plain where Metal Creek's effluent dumps into the lake at the foot of the Knik Glacier. The glacier face lies immediately to the southeast across the narrow lake. We pulled to shore at the very southwestern tip of the moraine for lunch. The lake at the foot of the glacier is deep. There is a dock on the moraine that we tied to during our Aug. 9, 2016 trip. Back then, the dock was submerged under a couple inches of water. Today the dock was approximately 10 feet above the water line. After 45 minutes of lunch and exploration of the alder covered terrain, we boarded the airboat and commenced the return leg of the trip.

Return, heading downstream

Sec. 34 Section Line: This is where the river turns more northerly across the breadth of its flood plain. The sharp rocks give way to big boulders and ultimately to large cobble along the riverbanks.

Fourth Stop – near the base of Wolf Point (Sec. 15, T. 16 N., R. 4 E., SM): Steep cut bank right side (going down river, sufficient depth.): River estimated to be 55 yards wide. River depth, in excess of 3 feet and was measured at 3 feet 25 feet from the water line. Lots of braiding in the area but the main

channel remains well defined. Fifteen to twenty Dall sheep were observed across the exposed cliffs above Wolf Point.

Sec. 18 (in line with of confluence of Friday Creek): Well-defined channel, 3 feet or deeper. River velocity slower than the upper part of the river. Decrease in river cobble size, giving way to coarse gravel and some sand.

T. 16 N., R. 4 E., SM township line: Braided, but well-defined channel, with consistent depth at 3 feet or greater. Below township line, more islands, some of them vegetated. Many stumps, driftwood littering the sand/gravel bars.

T. 16 N., R. 4 E., SM township line to put-in at (lower) Knik River bridge: Uneventful. Slight deviations from upstream leg of journey. As we progressed downstream the cobble eventually gave way to gravel, followed by sand/gravel and finally mud as tidal influence is approached. The trip was concluded at about 1:05 PM.

End of Trip.

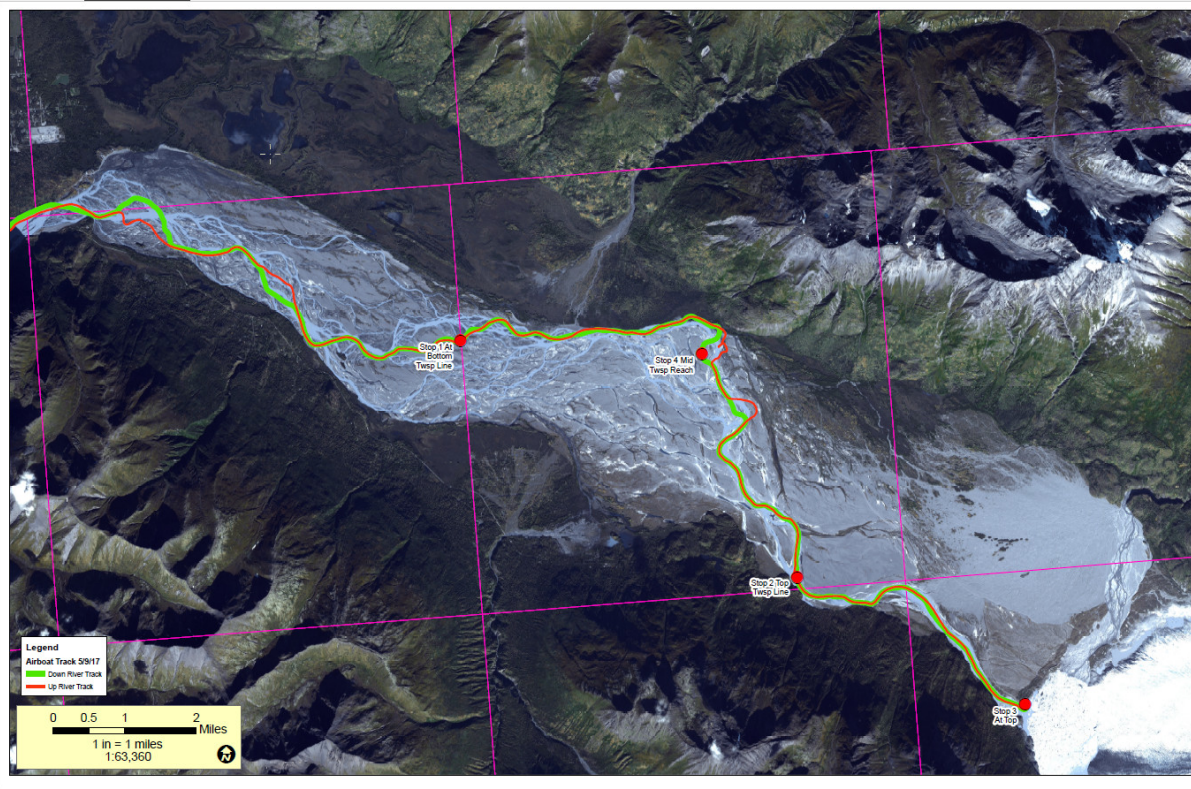


Figure 6: Knik River Field data map from May 9, 2017 that displays the gps track upstream to the glacier and downstream to the upper bridge that the BLM traveled.

Knik River Hydrologic Field Observation

Ben Stratton, AFO Hydrologist

19 May 2017

Summary:

A field visit was conducted during low flow conditions on the Knik River to assess if the hydrology of the systems supports navigation. On 9-May-2017 the entire length of the river, from its tidally influenced terminus into the Knik arm of Cook's inlet to its headwaters at the toe of the Knik glacier was accessed using an airboat. The ordinary high water or normal summer flow rate between June 1 and Aug 31, for the Knik is about 20,000 cfs. The flow during the field visit was less than 20% of the ordinary high water, about 3500 cfs according to USGS Gage 1528100. Three locations were surveyed during the field visit to assess if a boat with 3' of draft could navigate the system. The first location was at the lowest extent of BLM lands along the Knik at the approximate location of the boundary of T16N R3E and T16N R4E. The second location was a reach that was likely the most limiting to navigation within the BLM managed lands. The third location was at the upper extent of the BLM lands at the approximate location of the boundary of T16N R4E and T15N R4E. Measurements of current water depth along with interpretation of geomorphic indicators of normal high water were surveyed at each of the three sites. It was concluded that the current hydrology of the sites surveyed adequately characterizes the hydrology of the survey area and should allow passage of a boat with 3ft draft during ordinary high water conditions. The current navigability conditions are likely to persist. However, the system is dynamic and may need to be reassessed in the future if there are significant changes to the river's sediment or water supply as contributions from their source, the Knik glacier, continue to change over time.

Stream Gage Analysis:

The USGS has maintained a gage site on the Knik River near the Old Glenn Hwy Bridge. Gage 15281000 "Knik River near Palmer Alaska" has been in operation since 1 October 1959. A normal high water discharge measured in cubic feet per second (cfs) was estimated to be about 20,000 cfs using 44 years of daily average flow data for summer conditions (Figure 1). Measures of the central tendency (both median and mean) of both the median and average of the daily average flow data for 1-June to 31-August for the available data reasonably agree on about 20,000 cfs. The central tendency of the minimum flow for these data is about 7,500 cfs.

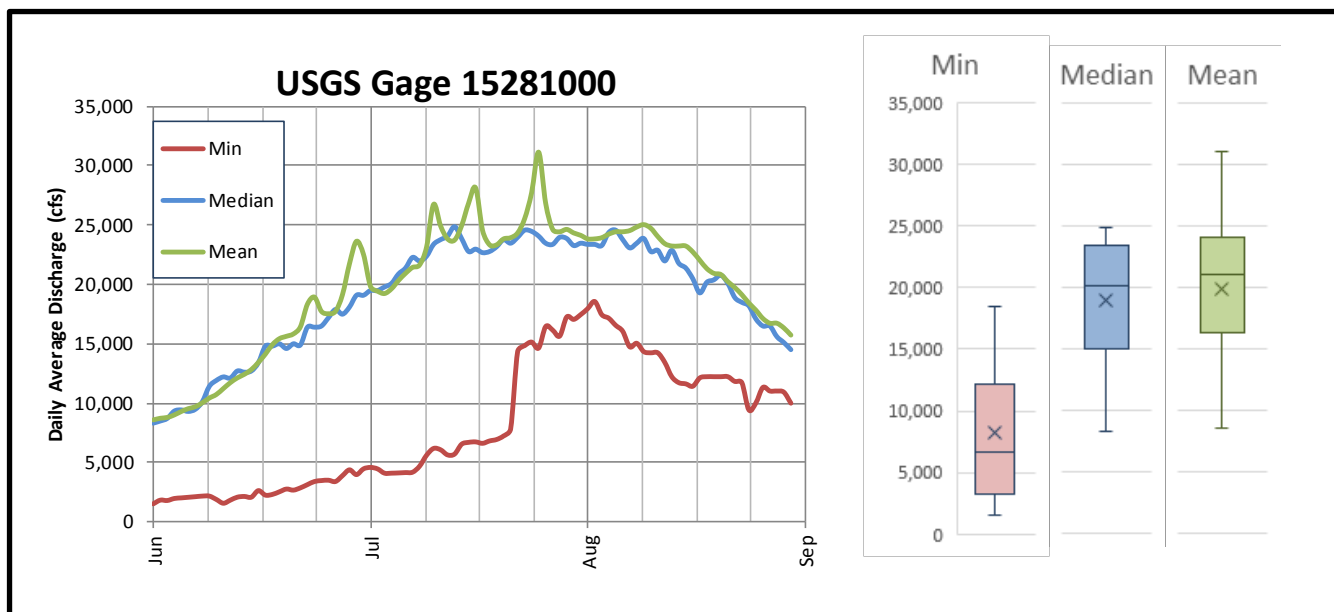


Figure 1 – Summary of 44 years of daily average flow data for Knik River USGS Gage 15281000.

Field Observations:

The stream was surveyed at three sites (see-attached map). All observations were made on the main channel of the river. The first location (Stop 1 on the map) was at the lowest extent of BLM lands along the Knik at the approximate location of the boundary of T16N R3E and T16N R4E. The second location (Stop 4 on the map) was a reach that is likely the most limiting to navigation within the BLM managed lands. The third location (Stop 2 on the map) was at the upper extent of the BLM lands at the approximate location of the boundary of T16N R4E and T15N R4E.

At each site, the depth of the main channel was confirmed to be greater than 3' deep using a stadia rod (Figure 2). The elevation of normal high water was estimated using geomorphic indicators of bankfull flows. Bankfull indicators observed included the flat top of point bars and other depositional features; rock staining, and vegetation gradients (green line). The vertical distance from the current water surface to bankfull elevation was measured with a surveyor's level and stadia rod. This measurement represents the expected river elevation during normal high water. All three sites were found to have at least 3' of water at the time of the low flow (approximate 3500 cfs) field visit (Figure 3). In addition to the minimum of the 3' of water measured at the time of survey, Stop 1 is estimated to be 2' deeper during normal high flow, Stop 2 is estimated to be 4.5' deeper, and Stop 2 is estimated to be 1.5' deeper.

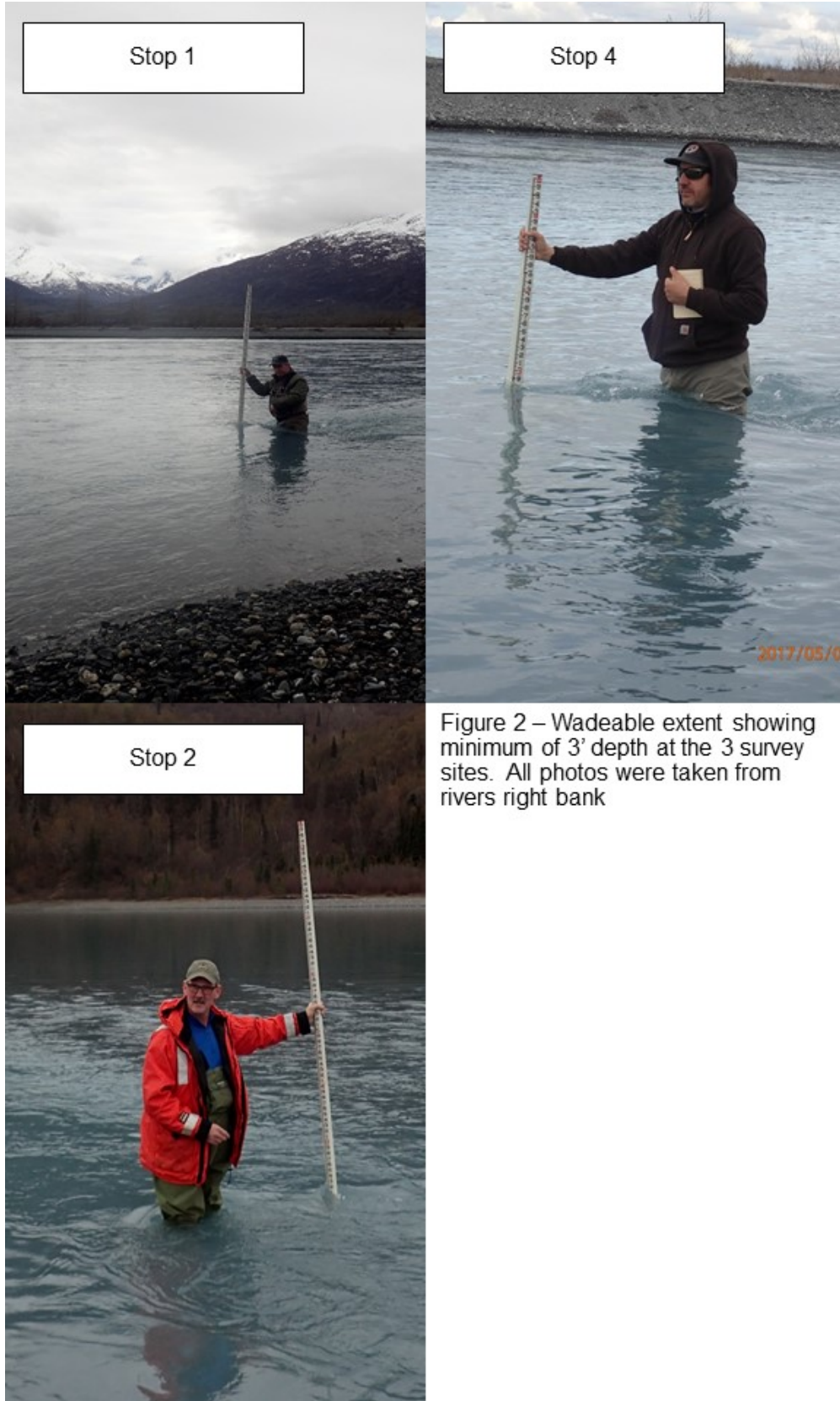


Figure 2 – Wadeable extent showing minimum of 3' depth at the 3 survey sites. All photos were taken from rivers right bank

