

State of Alaska

Department of Natural Resources
Division of Mining, Land, and Water

Kadashan River Reservation of Water

Reach A – LAS 28372; Reach B – LAS 28373; Reach C – LAS 28374

Hook Creek Reservation of Water – LAS 28375

Tonalite Creek Reservation of Water – LAS 28376

Applications by the Alaska Department of Fish and Game for the
Reservation of Water, Under AS 46.15, the Alaska Water Use Act

Findings of Fact, Conclusions of Law, and Decision

INTRODUCTION

On January 6, 2012, the Alaska Department of Natural Resources (ADNR, Department) received five applications from the Alaska Department of Fish and Game (ADF&G) under Alaska Statute (AS) 46.15.145 and Title 11 Alaska Administrative Code (AAC) Section 93.141, to reserve specified portions of the river flows within three distinct reaches of Kadashan River, one reach within Hook Creek, and one reach within Tonalite Creek, (all reaches within the Kadashan watershed) near Tenakee Springs, Alaska.

The reservations of water requested are for the purpose of protecting fish and wildlife habitat, migration, and propagation. Under 11 AAC 93.141 (1), “protection of fish and wildlife habitat, migration, and propagation...means the quantity or level of water necessary to maintain suitable habitat conditions for the various life stages of fish, other aquatic organisms, and wildlife, including waterfowl and mammals, and their habitat, including water quality, depth, velocity, and temperature, substrate, or streamside vegetation.”

Holders of water rights junior to an established reservation of water as well as other users may be unable to divert or withdraw significant amounts of water when stream flows fall below those required by the reservations. Any senior water right holders will remain unaffected by a junior reservation.

These reservation applications have adequately described and quantified the requested flows. Public and agency notice of the applications were given consistent with the requirements of 11 AAC 93.145, 11 AAC 93.080, and AS 46.15.133. Below, the proposed reservations are summarized and specific findings of fact and conclusions of law are described.

DESCRIPTION OF PROPOSED RESERVATIONS

LAS 28372 – Kadashan River, Reach A

Proposed Reach Description: Kadashan River, Reach A beginning at the downstream end of the Kadashan River at mean lower low water and extends upstream 2.8 miles to the confluence with Tonalite Creek (Maps 1-2). Said portion of the proposed Kadashan River, Reach A is located within Township 48 South, Range 63 East, Sections 4, 9, 16, and 21; all within the Copper River Meridian.

Requested Reservation Flows:

Month	Proposed Flow Request (cfs*)
January	54
February	62
March	76
April	180
May	387
June	281
July	111
August	72
September	146
October	323
November	168
December	100

*cfs = cubic feet per second

LAS 28373 – Kadashan River, Reach B

Proposed Reach Description: Kadashan River, Reach B beginning just upstream of Reach A and extends upstream 1.8 river miles to the confluence with Hook Creek (Map 3). Said portion of the proposed Kadashan River, Reach B is located within Township 48 South, Range 63 East, Sections 21, 27, and 28; all within the Copper River Meridian.

Requested Reservation Flows:

Month	Proposed Flow Request (cfs*)
January	26
February	35
March	40
April	87
May	191
June	145
July	58
August	33
September	65
October	132
November	79
December	40

*cfs = cubic feet per second

LAS 28374 – Kadashan River, Reach C

Proposed Reach Description: Kadashan River, Reach C beginning just upstream of Reach B and extends upstream 1.6 miles to the Township 48S and 49S boundary (Map 4). Said portion of the proposed Kadashan River, Reach C is located within Township 48 South, Range 63 East, Sections 27 and 34; all within the Copper River Meridian.

Requested Reservation Flows:

Month	Proposed Flow Request (cfs*)
January	27
February	26
March	29
April	56
May	85

June	51
July	22
August	19
September	47
October	81
November	52
December	40

*cfs = cubic feet per second

LAS 28375 – Hook Creek

Proposed Reach Description: Hook Creek beginning at the downstream end of Hook Creek and extends upstream 0.75 miles to the upper extent of Anadromous Water Catalog stream number 112-24-10250-2009 (Map 5). Said portion of the proposed Hook Creek is located within Township 48 South, Range 63 East, Sections 27 and 34; all within the Copper River Meridian.

Requested Reservation Flows:

Month	Proposed Flow Request (cfs*)
January	10
February	13
March	15
April	33
May	73
June	53
July	22
August	13
September	26
October	58
November	37
December	16

*cfs = cubic feet per second

LAS 28376 – Tonalite Creek

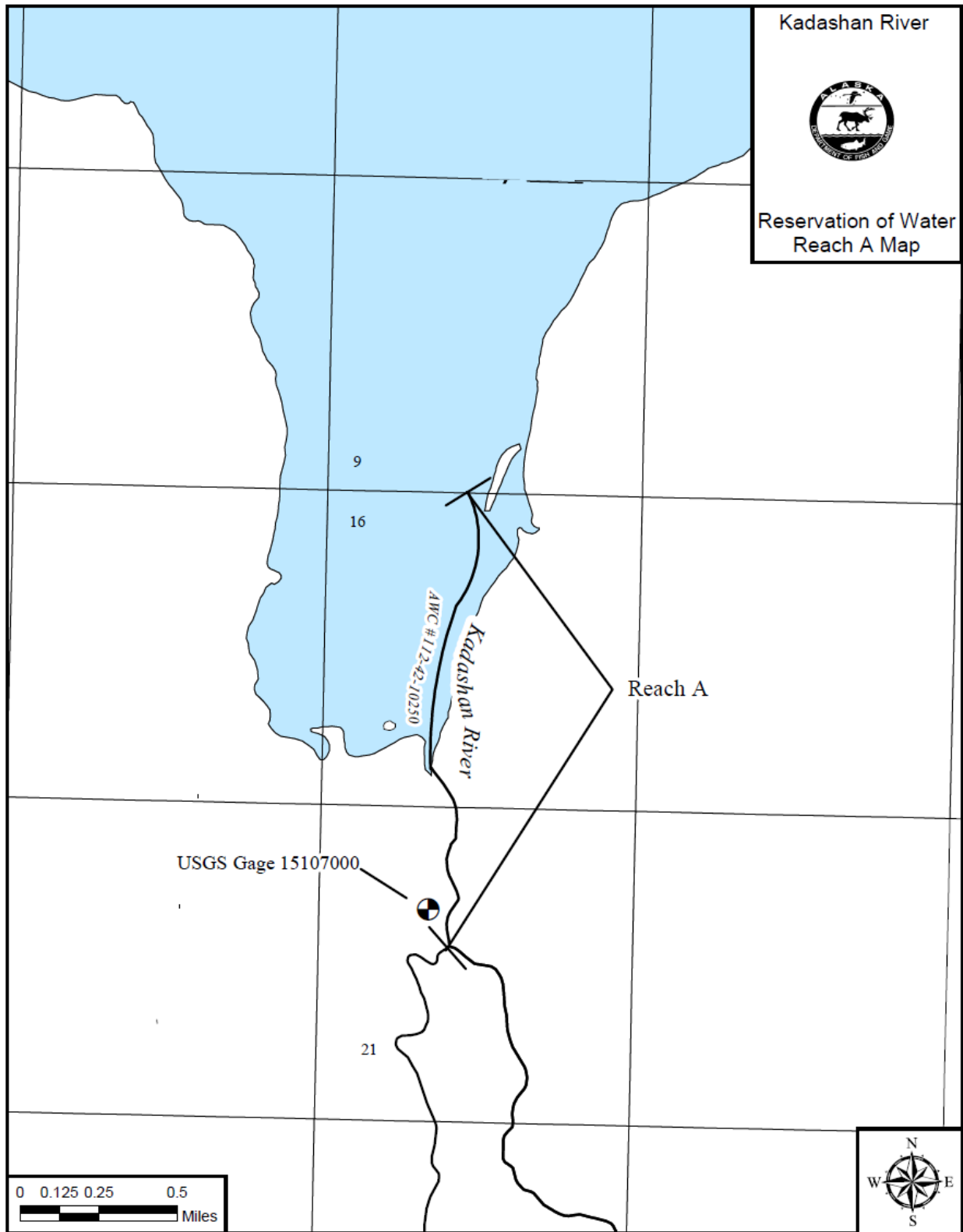
Proposed Reach Description: Tonalite Creek beginning at the downstream end of Tonalite Creek and extends upstream approximately 2.4 miles to the boundary between Township 48S, Range 63E, sections 29 and 32 (Map 6). Said portion of the proposed Tonalite Creek is located within Township 48 South, Range 63 East, Sections 21, 28, and 29; all within the Copper River Meridian.

Requested Reservation Flows:

Month	Proposed Flow Request (cfs*)
January	35
February	35
March	40
April	73
May	136
June	95
July	38
August	32
September	58
October	124
November	67
December	42

*cfs = cubic feet per second

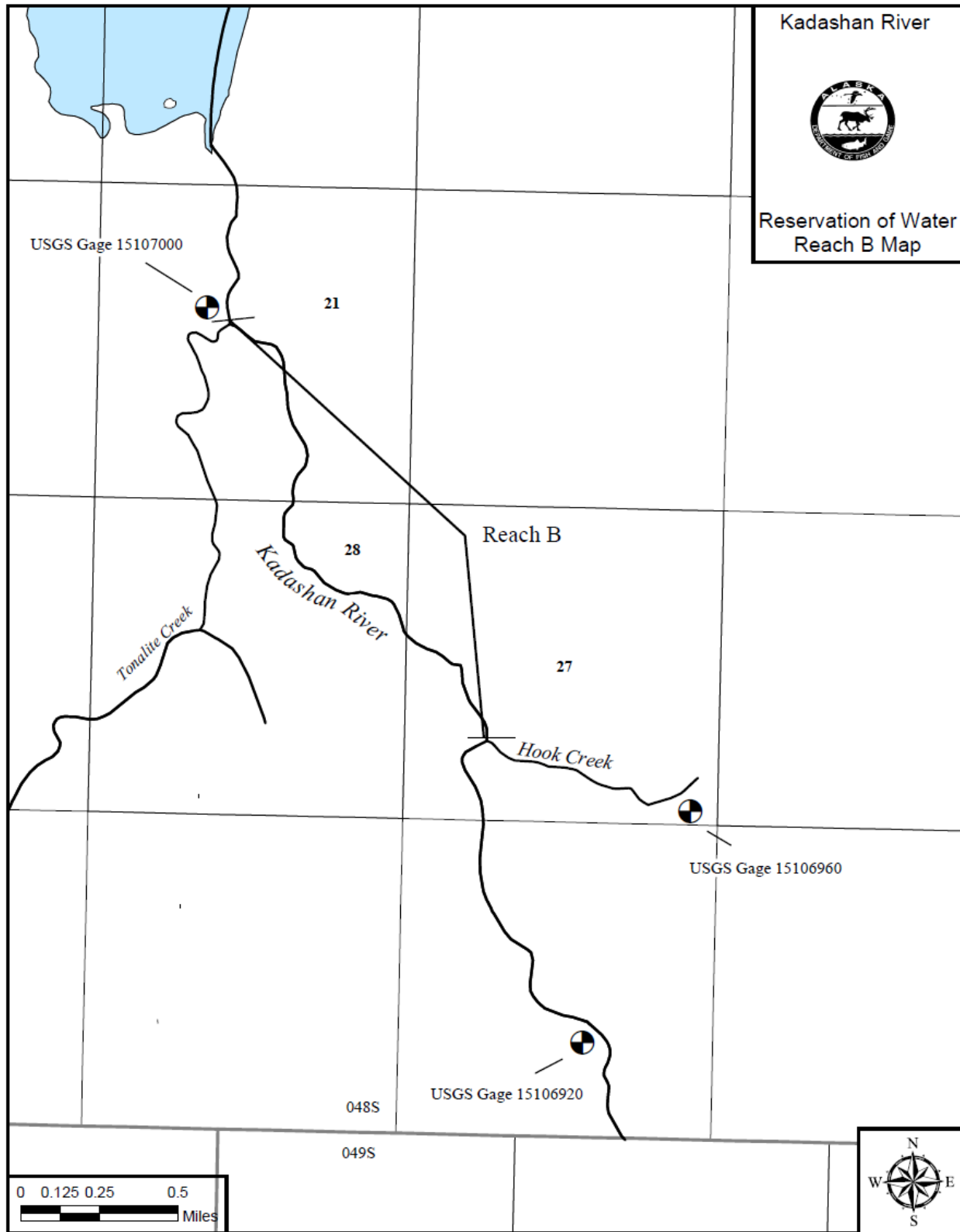
Map 1. Kadashan River, Reach A reservation of water application reach map (See 'Reach Description' for specific reach location).



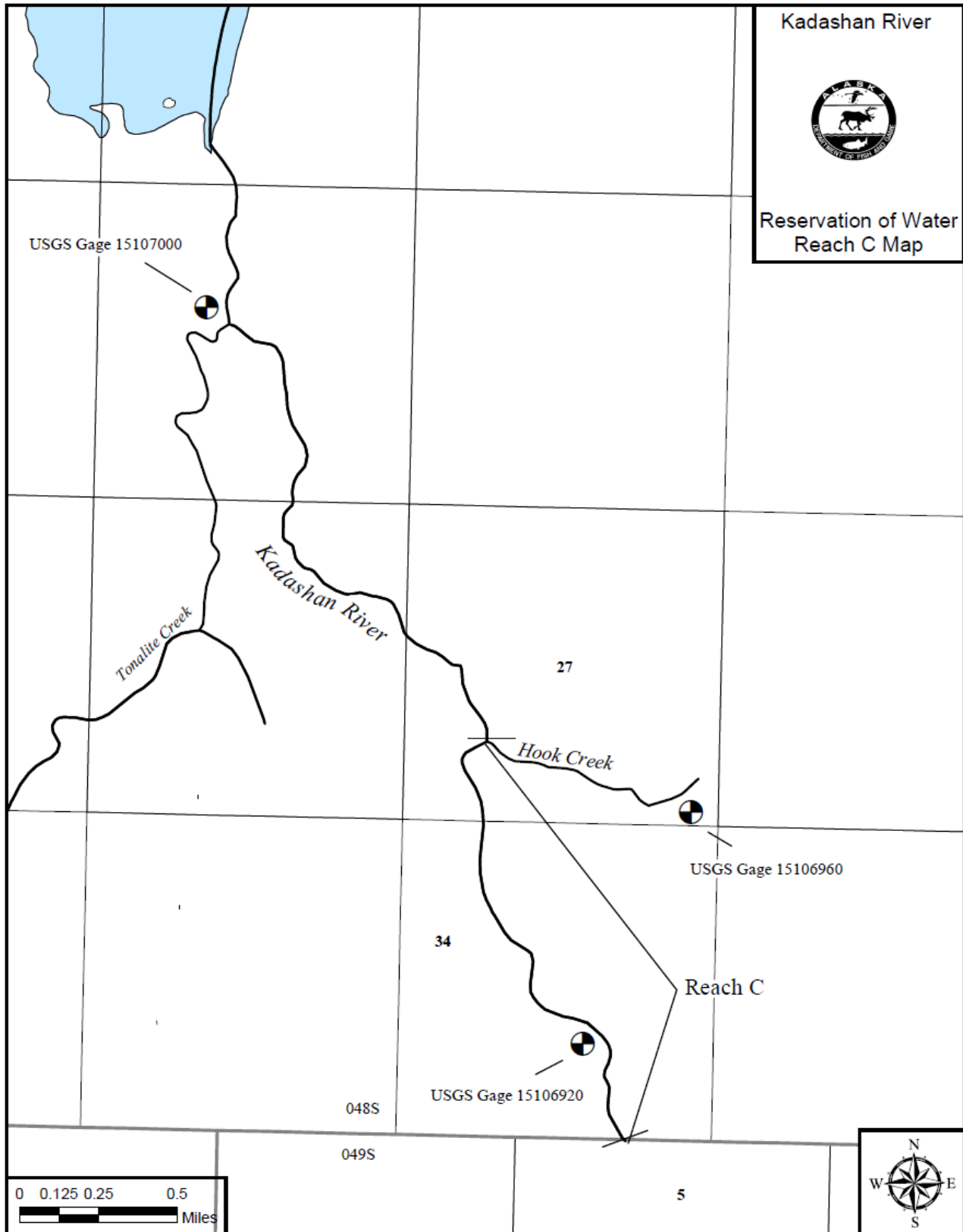
Map 2. Kadashan River, Reach A reservation of water application reach showing the current and accurate image (Google Earth Image ©2017 DigitalGlobe) of the mouth of Kadashan River.



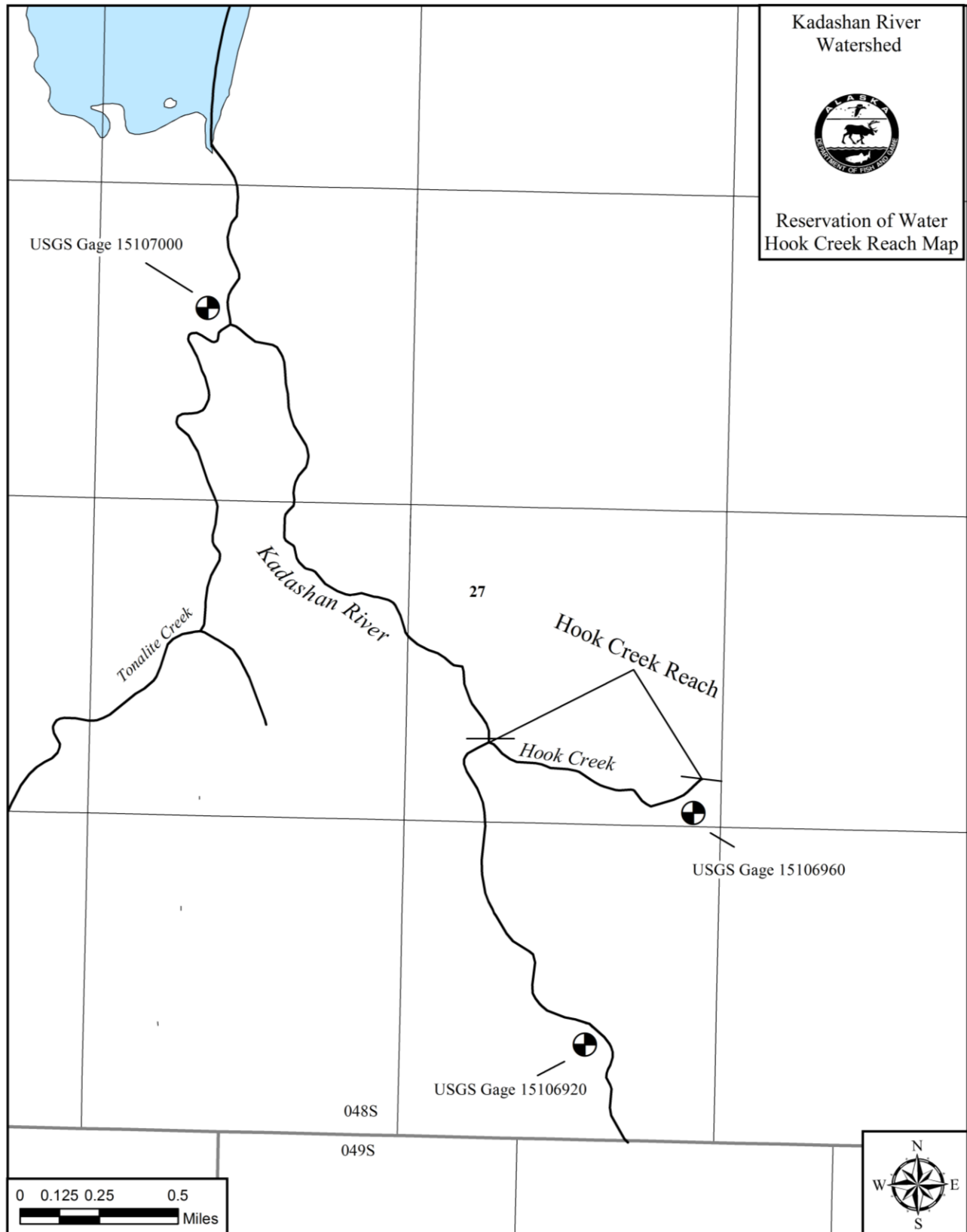
Map 3. Kadashan River, Reach B reservation of water application reach map (See 'Reach Description' for specific reach location).



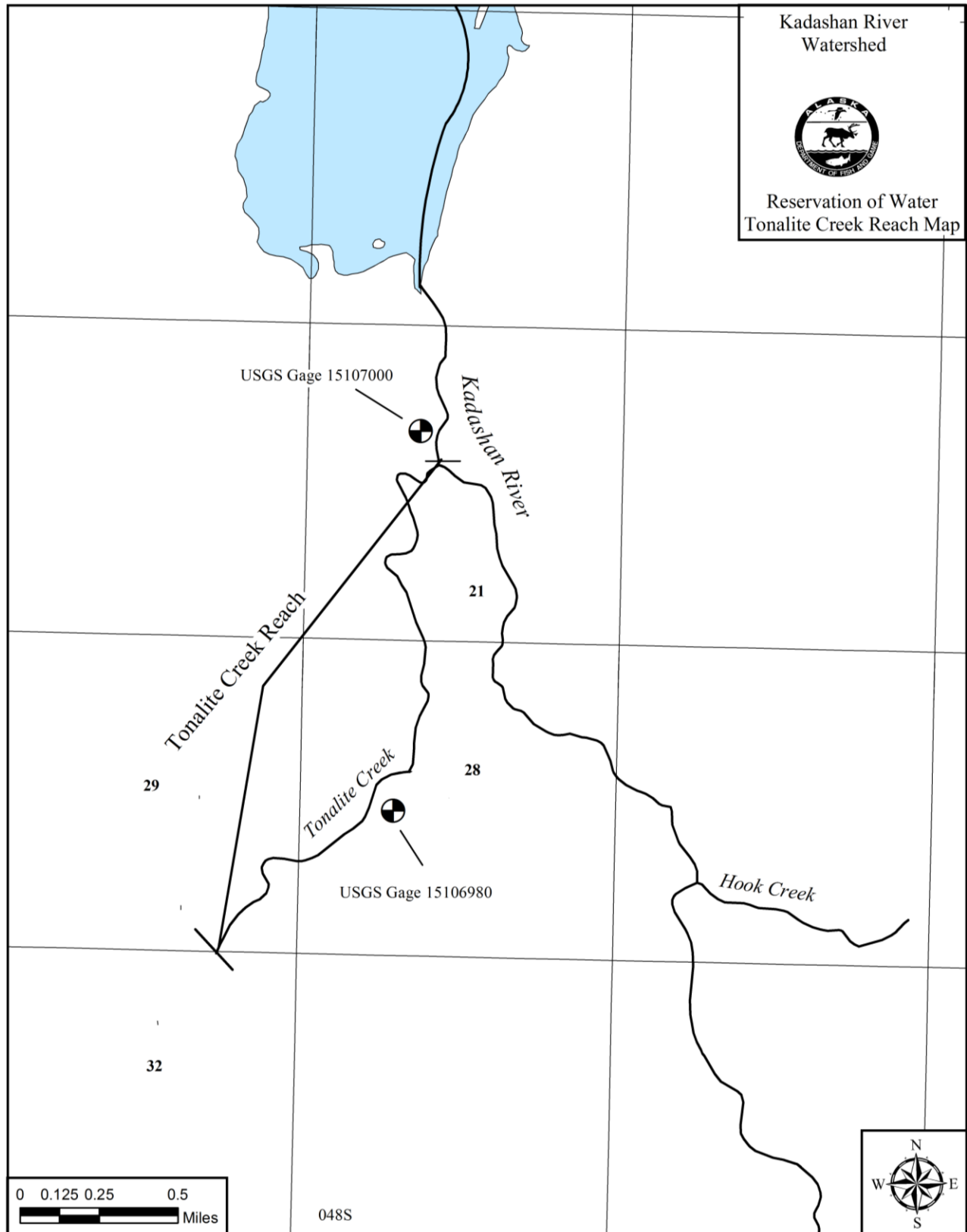
Map 4. Kadashan River, Reach C reservation of water application reach map (See 'Reach Description' for specific reach location).



Map 5. Hook Creek reservation of water application reach map (See 'Reach Description' for specific reach location).



Map 6. Tonalite Creek reservation of water application reach map (See 'Reach Description' for specific reach location).



Discussion: The applicant's requested reservation flows and corresponding time periods are based on their review and analysis of data pertaining to the periodicity of the many species of fish in the area and the effects of that flow level on fish and wildlife habitat, migration, and propagation. The following research represents the numerous reasons for the need for such flow requests.

According to the Instream Flow Councils 'Instream Flows for Riverine Resource Stewardship'¹,

Typically, providing a healthy aquatic community involves attention to the magnitude and duration of the natural flow regime's seasonal patterns (Poff et al. 1997). Flow conditions that vary in a manner similar to natural conditions will establish a variety of habitats and diverse fish communities. Different flow needs can be met by providing them all-separated by time. Variable conditions allow different species to flourish at different times. A temporal and spatial mosaic is a necessary component of riverine ecosystem integrity.

River ecosystems are complex and require variable flows. For example, high flows form and maintain the shape and characteristics of the river channel and floodplain, flush sediment from spawning gravels, maintain riparian vegetation and stream bank stability, provide habitat critical to the life history of certain fishes, and provide cues that initiate fish migration and spawning. The life history of all aquatic organisms have adapted to naturally occurring seasonal flow regimes.

Providing suitable hydraulic habitat for aquatic organisms is a necessary part of any instream flow prescription...Habitat defined through hydraulic characteristics (such as water depth and velocity) and channel characteristics (such as substrate, cover, stream width) is sometimes referred to as hydraulic habitat. Aquatic organisms select habitat based, in part, on the physical characteristics of their surroundings. To evaluate existing hydraulic conditions as they relate to aquatic organisms, the relation of stream flow to habitat must be quantified over time.

The objective of an instream flow prescription should be to sustain, rehabilitate, or restore ecosystem processes through inter- and intraannual variable flow regimes to the greatest extent possible. Instream flow prescriptions should provide inter- and intraannual variable flow patterns that mimic the natural hydrograph (magnitude, frequency, duration, timing, rate of change) to maintain or restore processes that sustain natural riverine characteristics.

Determining instream flow reservations is a balancing act between science and the law. Biologists use the best available data to determine, in their professional judgement, conservative quantities of flow required for different species of fish. In many cases, the flows can be based on a specific species that require more water for different activities throughout the life stages (i.e. adult/smolt passage, rearing, etc.). Flows can also be based on species that have specific requirements of habitat. Select flows maintain the water temperature, water quality, sediment transport, and much more to help create optimum habitat. As described below, winter flows are an important and necessary aspect of northern rivers/streams for many important reasons.

¹ Annear, T., I. Chisholm, H. Beecher, A. Locke, and 12 other authors. 2004. Instream flows for riverine resource stewardship, revised edition. Instream Flow Council, Cheyenne, WY. Pp. 9, 22, 23, 101.

According to the Technical Memorandum from a 2013-2014 Instream Flow Winter Study of the Susitna-Watana Hydroelectric Project²,

Winter habitat conditions in Alaskan Rivers can be severe for juvenile and adult fish species. Extreme low water temperature is a primary factor affecting overwintering fish, as reduced temperature can affect fish metabolism, feeding, diel behavior, swimming ability, and predator avoidance (Beamish 1978, Brown et al. 2011). Ice formation on the channel margins, substrate, and water surface can also affect fish habitat in terms of channel constriction and reduced habitat area, decreased light penetration into the water, and alteration of water quality conditions (e.g., dissolved oxygen concentration) (Prowse 2001). Suspended frazil ice can cause direct injury or mortality to fish by plugging or abrading gills, while anchor ice and ice dams can eliminate or modify aquatic habitat to the extent that it becomes unsuitable for fish (Brown et al. 1993, Brown et al. 2011).

Nearly all juvenile and adult fish species exhibit physiological and/or behavioral adjustments in response to seasonal changes in habitat conditions from summer to winter. During fall, many fish will move to winter habitats. Suitable winter habitats allow fish to minimize energy expenditure while providing a stable environment that is protected from environmental extremes (Brown et al. 2011). Winter habitat can be characterized by the presence of groundwater upwelling, structural complexity (e.g., large wood), coarse substrate, low current velocity, deep pools, and off-channel areas protected from more extreme main channel hydrologic conditions (Muhlfeld et al. 2001, Mitro and Zale 2002, Harper and Farag 2004, Brown et al. 2011).

Based on Brown et al. (2011)³ research “A Primer on Winter, Ice, and Fish: What Fisheries Biologists Should Know about Winter Ice Processes and Stream-Dwelling Fish”,

Water temperature has a substantial effect on fish because they are poikilothermic⁴ and their body temperatures vary with the external environment. At a given water temperature, the body temperature of freshwater fish is almost precisely the temperature of the water (Diana 1995). As body temperature changes, so do metabolic processes. When water temperature declines from fall into winter, metabolic processes slow down and the abilities of fish to swim, feed, avoid predators, and defend their locations decline (Beamish 1978; Parsons and Smiley 2003). At winter water temperatures (i.e., about 1° C or less under ice), most freshwater fish have little ability to respond to changes in their environment, such as changes in flow, or to avoid predators, such as mink (Mustela vison).

From the start of freeze-up, ice can occlude fish habitat and influence fish behavior. Laboratory studies have shown that super-cooled water temperatures and frazil ice can stress fish (Brown et al. 1999). In addition, stationary ice can form in habitat that was available during summer and be very dynamic, making otherwise suitable habitats unusable either temporarily or for most of the winter (Chisholm et al. 1987; Brown and Mackay 1995; Jakober et al., 1998; Brown, 1999; Lindstrom and Hubert 2004a; Barrineau et al. 2005). As winter progresses, stationary ice cover can increase in thickness until it excludes large portions of habitats used by wintering fish in streams and rivers (Chisholm et al. 1987;

² R2 Resource Consultants, Inc. (R2). 2014b. 2013-2014 Instream Flow Winter Studies. Susitna-Watana Hydroelectric Project, FERC No. P-14241 Submittal: September 17, 2014, Attachment H, Study 8.5 Technical Memorandum. Prepared for Alaska Energy Authority, Anchorage, Alaska.

³ Richard S. Brown, Wayne A. Hubert & Steven F. Daly (2011) A Primer on Winter, Ice, and Fish: What Fisheries Biologists Should Know about Winter Ice Processes and Stream-Dwelling Fish, Fisheries, 36:1, 8-26, DOI: 10.1577/03632415.2011.10389052

⁴ Defined as a creature whose internal temperature may vary in connection with the temperature of the environment.

Berg 1994; Scruton et al., 1997). An extreme example occurs in the Arctic where most streams and rivers freeze to the bottom of the channel because surface ice can grow to a thickness of more than 2 m (Mueller et al. 2006). Consequently, fish must reside in the deepest parts of rivers in pockets of unfrozen water or in areas influenced by groundwater (Craig 1989; West et al. 1992; Reynolds 1996; Brown et al. 2010).

Several researchers have observed that fish are forced to make larger numbers of movements when influenced by frazil ice or anchor ice. Fish often shift habitats as the water temperatures decrease in the fall (Brown and Mackay 1995; Jakober et al. 1998) and may spend the entire winter at these new locations. However, if these new habitats are unstable due to the influence of ice, the fish may be forced to make multiple movements as ice occludes these habitats.

Forced movements during frazil ice and anchor ice events can be energetically costly to fish and increase the probability of mortality. Because frazil ice and anchor ice form in stream sections that do not have stationary ice cover, fish in moderately cold climates may be forced to make more ice-related movements than fish in colder climates.

Suitable winter habitats for fish in streams and rivers are locations that allow fish to minimize energy expenditures while maximizing protection from environmental variation (Cunjak 1996; Bonneau and Scarnecchia 1998; Lindstrom and Hubert 2004a). Complex mixes of habitat features can provide suitable winter habitat for fish (Jakober et al. 1998; Harvey et al. 1999; Ford and Lonzarich 2000; Mitro and Zale 2002). Such habitats are generally the result of natural fluvial processes that maintain connections and create habitat diversity allowing full expression of life history traits and processes influencing dispersal and survival of fish (Muhlfeld and Marotz 2005). In general, microhabitat features needed by stream-dwelling fish include low-velocity water and protection from predation (Hiscock et al. 2002; Beechie et al. 2005; Gillette et al. 2006), but specific habitat needs within these general features can vary among species (Dare and Hubert 2003).

If habitat is stable, fish are not forced to move, seek new areas of residence, expend more energy, or experience greater predation risk (Brown and Mackay 1995; Brown et al. 2000; Lindstrom and Hubert 2004a). There is substantial natural variation in the stability of stream and river habitat during winter.

During winter, fish are vulnerable to numerous threats to their survival. Protecting or creating suitable winter habitat in temperate climates is critical because fish spend a large part of the year in these habitats.

Wilson et al. (1977)⁵ in a research paper titled 'Winter water availability and use conflicts as related to fish and wildlife in Arctic Alaska: a synthesis of information' states,

...human and industrial activities in Alaska's Arctic require water to meet community needs or requirements of petroleum exploration and development year-round. However, use of this water during biologically sensitive times of year, which for most aquatic habitats in the Arctic are during mid-to late winter, the month following breakup, and the months preceding freeze-up, may have serious

⁵ Wilson, William J., Buck, E. H., Player, G. F., and Dreyer, L. D., 1977, Winter water availability and use conflicts as related to fish and wildlife in arctic Alaska: a synthesis of information: U.S. Fish and Wildlife Service.

consequences to organisms concentrated in or around unfrozen waters for spawning, feeding, or overwintering. During these periods disruption of freshwater habitats may become critical.

Eggs, juveniles, and adults of fall spawning fish populations all may occupy a small area of a stream throughout winter (Craig and McCart 1974). Any activity which detrimentally affects water quality or quantity in such an area may have serious consequences for the entire population.

HYDROLOGIC BACKGROUND

Stream: Kadashan River⁶ (including Hook Creek and Tonalite Creek; all within the Kadashan watershed)

Stream Basin Area: Kadashan River is a small sized river system on Chicagof Island in Southeast Alaska that flows in a northly direction into Tenakee Inlet. The watershed is approximately six miles southwest of the town of Tenakee Springs and 50 miles southwest of Juneau. The total basin area is 39.4 mi² and is mainly cover by evergreen forest⁷. The creek originates in the Moore Mountains at 3,075 feet.

Lakes: There are no major lakes within the Kadashan watershed.

Table 1. United States Geological Survey (USGS) Gage Locations and Information

Gage and Station ID	Latitude (NAD27)	Longitude (NAD27)	Elevation (ft NGVD 29)	Drainage Area (mi ²)	Period of Operation
KADASHAN R NR TENAKEE AK (15107000)	57°41'43"	135°12'59"	3	38.3	1964-09-01 1979-09-29
KADASHAN R AB HOOK C NR TENAKEE AK (15106920)	57°39'46"	135°11'06"	100	10.3	1968-01-01 2007-09-29
HOOK C AB TR NR TENAKEE AK (15106940)	57°40'39"	135°07'42"	300	4.5	1967-08-01 1980-09-29
HOOK C NR TENAKEE AK (15106960)	57°40'22"	135°10'40"	180	8.0	1966-12-01 1980-09-29
TONALITE C NR TENAKEE AK (15106980)	57°40'42"	149°05'30"	50	14.8	1968-06-01 1988-09-29

Map Coverage: USGS 1:63,360 Sitka C-4

Channel Description: Kadashan River flows 8.2 miles in a north westerly direction where it empties into Tenakee Inlet. Kadashan River morphology is a single channel. At USGS gage 15106920 [Kadashan R AB Hook C NR Tenakee], the average width is 35.7 feet, with an average depth of 0.8 feet. The average gradient is 47.7 feet per mile.

Adjudicated Reach Description: Kadashan River from the Ordinary High Water Mark (OHWM) of the outer bank (of the outside braid, where braided) of the left bank up to the OHWM of the outer bank (of the outside braid, where braided) of the right bank, including any sloughs, braids, or channels which carry water and are an integral part of the river:

⁶ Completed by Terry Schwarz, Alaska Hydrologic Survey, DNR, 11/1/2017

⁷ NLCD 2011 Land Cover Alaska, USGS, 2015, https://www.mrlc.gov/nlcd11_data.php

Kadashan River, Reach A: beginning at the river mouth of Kadashan River at the closing line (river mile 0), extending upstream approximately 2.2 river miles to the confluence with Tonalite Creek.

Kadashan River, Reach B: beginning at the confluence of Kadashan River with Tonalite Creek, upstream approximately 1.8 river miles to the confluence of Hook Creek with Kadashan River.

Kadashan River, Reach C: beginning at the confluence of Hook Creek with Kadashan River, extending upstream approximately 1.6 river miles to the Township 48 South and 49 South boundary (Range 63 East, Copper River Meridian).

Hook Creek/Tonalite Creek from the Ordinary High Water Mark (OHWM) of the outer bank (of the outside braid, where braided) of the left bank up to the OHWM of the outer bank (of the outside braid, where braided) of the right bank, including any sloughs, braids, or channels which carry water and are an integral part of the creek:

Hook Creek: beginning at the confluence of Hook Creek with Kadashan River, extending upstream approximately 0.75 river miles to the upper extent of Anadromous Waters Catalog stream #112-42-10250-2009.

Tonalite Creek: beginning at the confluence of Tonalite Creek with Kadashan River, extending upstream approximately 2.4 river miles to the boundary between Sections 29 and 32 of Township 48 South, Range 63 East, Copper River Meridian.

These descriptions do not limit the quantity of water (flow rate) reserved by this decision and certificates to quantities (flow rates) within said OHWM boundaries.

Climate: Kadashan River is within the maritime climatic zone characterized by mild temperatures and prodigious precipitation. The nearest National Weather Service COOP weather station is in Tenakee Springs located six miles northeast of the Kadashan River and summarized in Table 2⁸.

⁸ Cooperative Climatological Data Summaries, Western Regional Climate Center, 2016 <http://www.wrcc.dri.edu/summary/Climsmak.html>

Table 2. Climate summary for Tenakee Springs station 509121 from 01/01/1969 to 01/12/1983.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Max. Temperature (F)	33.4	37.6	42.4	48.3	56.1	62.4	65.9	65.9	58.9	49.6	40.7	34.7
Average Min. Temperature (F)	22.2	25.1	28.9	31.4	37.6	43.7	48.7	48.7	43.8	37	29.9	25.1
Average Total Precipitation (in.)	5.11	5.36	4.44	3.75	3.69	2.88	3.74	4.72	7.87	13.07	7.28	6.07
Average Total SnowFall (in.)	28.8	20.8	11.5	4.6	0.4	0	0	0	0	0.2	7.6	22.6
Average Snow Depth (in.)	14	14	7	3	0	0	0	0	0	0	1	6

Available Streamflow Data: The USGS has operated 5 stream gages on the Kadashan River and its tributaries summarized in Table 3. Tables 4-8 summarizes the monthly and annual flow statistics for each of the gages within the watershed.

Table 3. Summary of USGS gages utilized for reaches within the Kadashan Watershed.

<i>USGS Gage Station #</i>	<i>Reach</i>
<i>15107000</i>	Kadashan River, Reach A
<i>15106920 & 15106960</i>	Kadashan River, Reach B
<i>15106920</i>	Kadashan River, Reach C
<i>15106980</i>	Hook Creek
<i>15106960</i>	Tonalite Creek

Table 4. Monthly and annual stream flow statistics at USGS gage 15107000 Kadashan River near Tenakee, September 1, 1964 to September 29, 1979. [Monthly mean in ft³/s = cfs = cubic feet per second]

<i>Time Period</i>	Minimum (cfs)	Mean (cfs)	Maximum (cfs)
<i>January</i>	20	104	256
<i>February</i>	22	122	363
<i>March</i>	37	121	267
<i>April</i>	101	226	374
<i>May</i>	224	424	672
<i>June</i>	117	301	487
<i>July</i>	48	132	214
<i>August</i>	38	122	231
<i>September</i>	69	259	522
<i>October</i>	189	501	959
<i>November</i>	58	282	516
<i>December</i>	35	164	274
<i>Annual</i>	173	231	293

Table 5. Monthly and annual stream flow statistics at USGS gage 15106920 Kadashan River above Hook Creek near Tenakee, AK from January 1, 1968 to September 29, 2007. [Monthly mean in ft³/s = cfs = cubic feet per second]

<i>Time Period</i>	Minimum (cfs)	Mean (cfs)	Maximum (cfs)
<i>January</i>	6	48	147
<i>February</i>	6	49	118
<i>March</i>	9	45	129
<i>April</i>	23	67	118
<i>May</i>	38	98	182
<i>June</i>	15	63	151
<i>July</i>	6	30	60
<i>August</i>	6	32	79
<i>September</i>	18	77	141
<i>October</i>	51	115	234
<i>November</i>	18	78	152
<i>December</i>	8	66	147
<i>Annual</i>	44	64	81

Table 6. Monthly and annual stream flow statistics at USGS gage 15106940 Hook Creek River above a tributary near Tenakee, AK from August 1, 1967 to September 29, 1980. [Monthly mean in ft³/s = cfs = cubic feet per second]

<i>Time Period</i>	Minimum (cfs)	Mean (cfs)	Maximum (cfs)
<i>January</i>	3.2	9.8	27.1
<i>February</i>	2.3	16.2	56.6
<i>March</i>	4.4	12.6	23.1
<i>April</i>	6.7	26.7	42.7
<i>May</i>	28.4	57.8	78.2
<i>June</i>	14.7	43.9	74.6
<i>July</i>	5.9	19.6	33.7
<i>August</i>	3.5	13.2	25.4
<i>September</i>	18.6	29.3	45.2
<i>October</i>	21.7	56.2	139.9
<i>November</i>	7.7	34.9	63.5
<i>December</i>	4.5	18.6	39.7
<i>Annual</i>	19.2	28.3	40.2

Table 7. Monthly and annual stream flow statistics at USGS gage 15106960 Hook Creek near Tenakee, AK from December 1, 1966 to September 29, 1980 [Monthly mean in ft³/s = cfs = cubic feet per second]

<i>Time Period</i>	Minimum (cfs)	Mean (cfs)	Maximum (cfs)
<i>January</i>	5	17	40
<i>February</i>	4	25	81
<i>March</i>	8	22	49
<i>April</i>	11	41	75
<i>May</i>	41	82	123
<i>June</i>	24	58	105
<i>July</i>	9	27	47
<i>August</i>	7	20	40
<i>September</i>	22	45	97
<i>October</i>	30	94	213
<i>November</i>	12	63	120
<i>December</i>	9	30	63
<i>Annual</i>	35	44	59

Table 8. Monthly and annual stream flow statistics at USGS gage 15106980 Tonalite Creek near Tenakee, AK from June 1, 1968 to September 29, 1988. [Monthly mean in ft³/s = cfs = cubic feet per second]

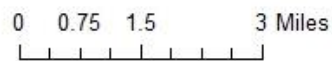
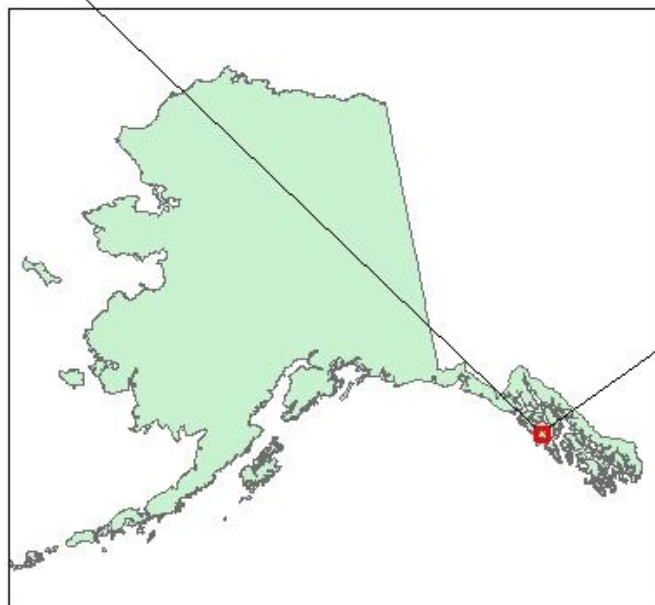
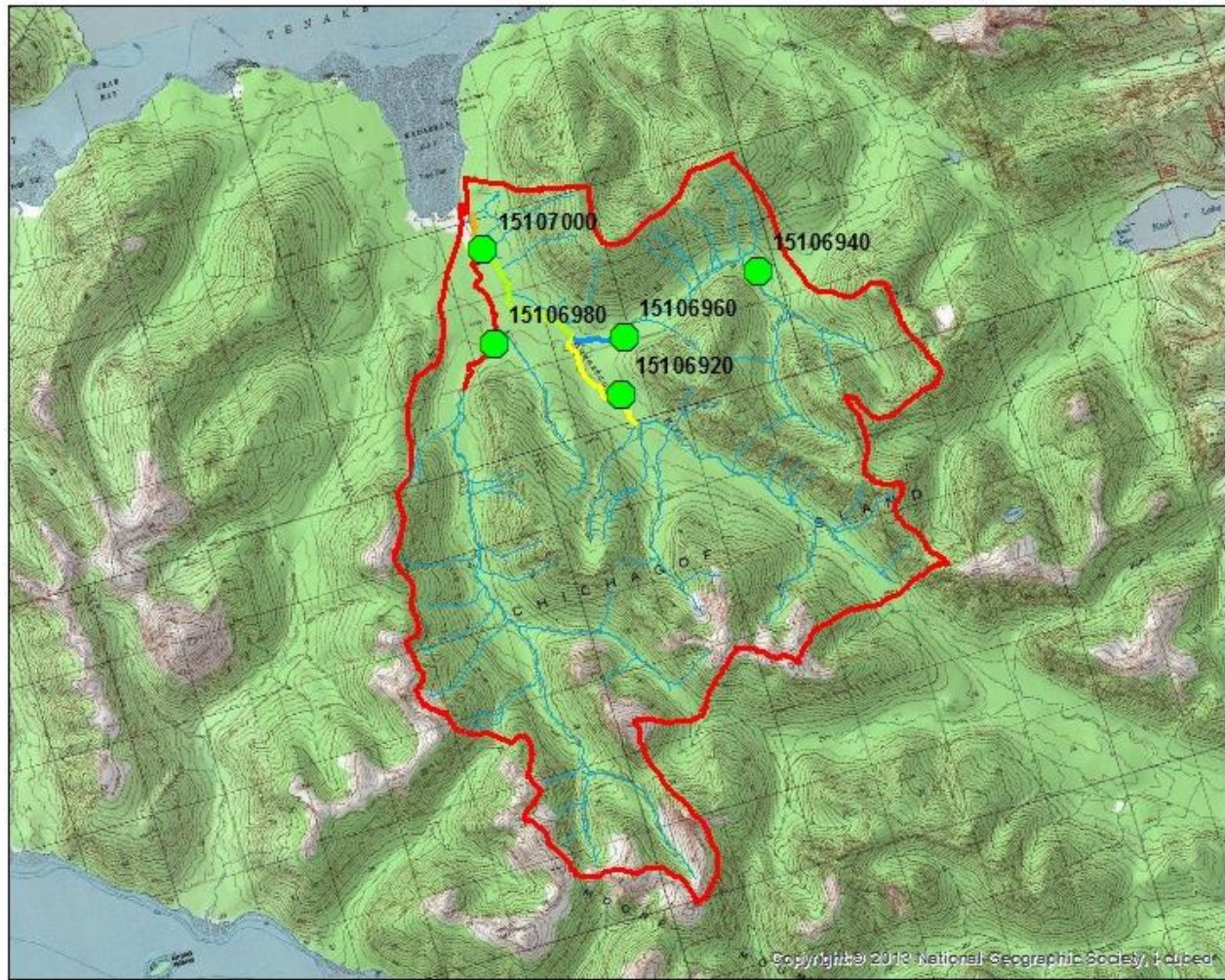
<i>Time Period</i>	Minimum (cfs)	Mean (cfs)	Maximum (cfs)
<i>January</i>	10	71	217
<i>February</i>	10	69	205
<i>March</i>	17	52	129
<i>April</i>	31	89	151
<i>May</i>	63	161	286
<i>June</i>	34	110	223
<i>July</i>	17	51	93
<i>August</i>	14	51	134
<i>September</i>	33	113	286
<i>October</i>	89	213	496
<i>November</i>	26	120	210
<i>December</i>	14	77	207
<i>Annual</i>	68	98	120

Data Adequacy: The streamflow record of five years is considered adequate to adjudicate the reservation of water applications for Kadashan River, Hook Creek, and Tonalite Creek.

Navigability: The Kadashan River, Hook Creek, and Tonalite Creek are undetermined for navigability according to the State of Alaska (for Title purposes). Please contact the Alaska Department of Natural Resources, Division of Mining, Land, and Water’s Public Access, Assertion, and Defense Unit for more information.⁹

⁹ Alaska Department of Natural Resources, Navigable Waters Web Map. <http://navmaps.alaska.gov/navwatersmap/>

Map 7. Map of Kadashan River watershed.



- USGS Gages
- ROW reach A
- ROW reach B
- ROW reach C
- ROW reach D
- Row reach E
- Kadashan Watershed



All locations represented are approximate. Symbols and base maps are projected in NAD 27 Alaska Albers. Base maps were provided by the ESRI USA Topo Maps, hydrography and watershed boundaries provided by the National Hydrography Dataset Gage locations from the USGS and ADF&G. Map created by Terry Schwarz

Mean Annual Temperature (1971-2000)

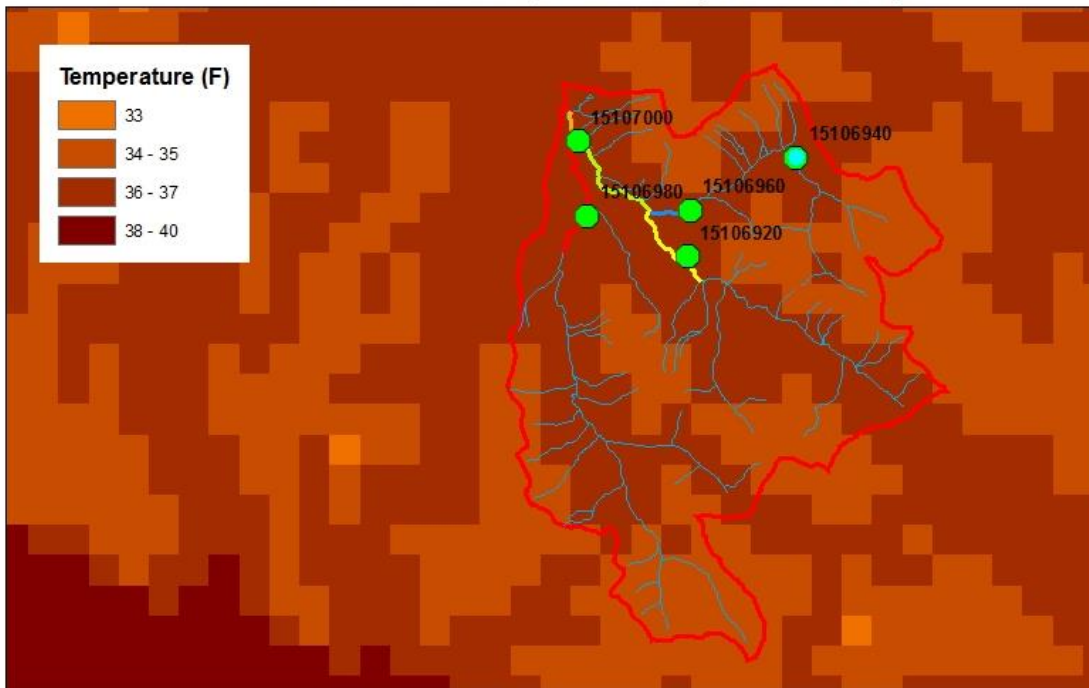
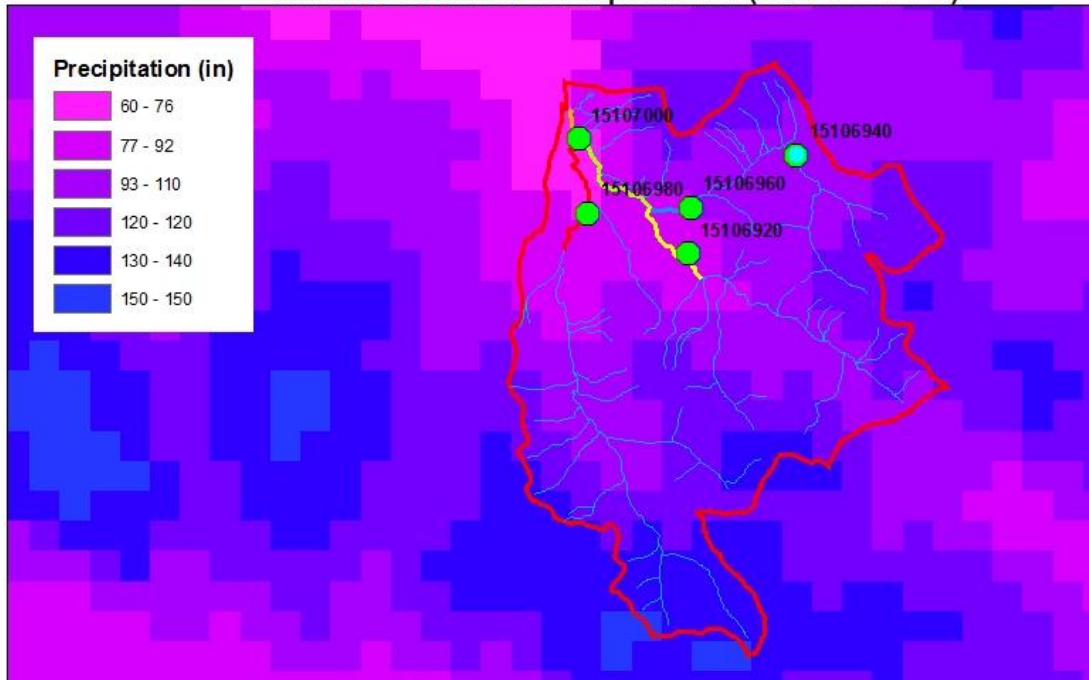


Figure 1. Mean annual temperature from 1971-2000 in the Kadashan watershed based on PRISM data

Mean Annual Precipitation (1971-2000)



Figures 2. Mean annual precipitation from 1971-2000 in the Kadashan watershed based on PRISM data

EXISTING LAND PLANS, VALUES, AND USES

Discussion: Staff reviewed management, area, and comprehensive plans for any recommendations provided in these documents for consideration in determining if the flows and time periods for the reservation of water requests are in the public interest. ADNR uses the criteria in AS 46.15.080 and AS 46.15.145 to help determine the appropriate balance of the proposed reservations with those of other existing and potential users. These plans help ADNR have a better understanding of potential future water needs.

There was one document used in the Kadashan River watershed which was used to better assess current and future water use:

1. *Land and Resource Management Plan, Tongass National Forest (December 2016)* – U.S. Forest Service, Alaska Region

The lands within the Kadashan watershed are owned primarily by the U.S. Forest Service within Tongass National Forest. Kadashan River, along with the mouths of Hook Creek and Tonalite Creek, have designations within the Tongass National Forest Plan (TNFP) of ‘Wild, Scenic, and Recreational Rivers’, specifically scenic river which means that the segment of river (Kadashan), according to the “1997 Record of Decision (ROD), including the segment classifications, have been recommended to Congress for inclusion in the National Wild and Scenic Rivers System”¹⁰ The desired condition under “Scenic River” is

Scenic Rivers and river segments are in a generally unmodified, free-flowing condition. Ecological processes and changes may be somewhat affected by human uses. The outstandingly remarkable values for which the river was designated remain outstanding and remarkable. Recreation and tourism users have the opportunity for experiences ranging from Primitive to Roaded Natural in a natural-appearing setting. Resource activities within the river corridor are not visually evident to the casual observer. Interactions between users are moderate. Facilities and structures are rustic in appearance, and promote semi-primitive recreation experiences and/or public safety.¹¹

Under the plan (TNFP), Hook Creek is designated as ‘Land Use Designation II’ (LUD II), where the desired conditions are,

Areas in this LUD are characterized by extensive, generally unmodified natural environments, and retain their wildland character. Ecological processes and natural conditions are only minimally affected by past or current human uses or activities. Users have the opportunity to experience a high-to-moderate degree of independence, closeness to nature, solitude, and remoteness, and may pursue activities requiring self-reliance, challenge, and risk. Interactions between users are infrequent. Recreational facilities and structures are primitive.¹²

The TNFP states that Tonalite Creek is designated both as LUD II and as ‘Research Natural Area’, where the desired conditions for ‘Research Natural Area’ are,

¹⁰ Land and Resource Management Plan, December 2016; US Forest Service, Alaska Region; p. J-2

¹¹ Land and Resource Management Plan, December 2016; US Forest Service, Alaska Region; p. 3-83

¹² Land and Resource Management Plan, December 2016; US Forest Service, Alaska Region; p. 3-70

All Research Natural Areas (RNAs) on the Tongass National Forest are characterized by essentially unmodified environments in which natural ecological processes prevail. They remain undisturbed by human uses or activities, and provide quality opportunities for non-manipulative scientific research, observation, and study. The RNA network is representative of the predominant vegetation types, wildlife habitats, and aquatic communities of the Tongass. The “National Hierarchical Framework of Ecological Units” is used to identify sites to be represented in the RNA network. RNAs are used as monitoring reference areas to evaluate other lands where management activities are undertaken to assess the effectiveness of various standards, guidelines, and mitigation measures in reducing or preventing adverse environmental effects.¹³

While other plans were reviewed to determine if the flows from the reservations of water would impact any potential near future projects, it was found there was no discussion of the Kadashan River watershed use or impacts that may occur. However, subsistence, sportfishing, and commercial fishing are recognized as important elements within the area.

¹³ Land and Resource Management Plan, December 2016; US Forest Service, Alaska Region; p. 3-33

FINDINGS OF FACT AND CONCLUSIONS OF LAW

Under Article VIII of the Alaska Constitution and Alaska Statute AS 46.15.030, naturally occurring water, except mineral and medicinal waters, is reserved to the people for common use and is subject to appropriation and beneficial use; AS 46.15.030 and AS 46.15.145 further provides for the reservation of instream flows in rivers and water levels in lakes. The Alaska Water Use Act, AS 46.15, and Title 11, Chapter 93 of the Alaska Administrative Code, contains the statutes and regulations under which ADNR manages the State's water resources.

A reservation of water is issued pursuant to the following authorities, including but not limited to:

Under AS 46.15.145 (c),

"The commissioner shall issue a certificate reserving the water applied for under this section if the commissioner finds that,

- (1) The rights of prior appropriators will not be affected by the reservation;
- (2) The applicant has demonstrated that a need exists for the reservation;
- (3) There is unappropriated water in the stream or body of water sufficient for the reservation; and
- (4) The proposed reservation is in the public interest."

Under 11 AAC 93.146 (a),

"The commissioner will issue a certificate of reservation of water if the commissioner finds that the reservation meets the requirements of AS 46.15.145."

Under 11 AAC 93.145 (d),

"The commissioner's decision to grant, conditionally grant, or deny an application for a reservation of water will be summarized by written findings of fact and conclusions of law, including justification of any special conditions to which the reservation is subject. In determining whether the proposed appropriation is in the public interest, the commissioner will consider the criteria set out in AS 46.15.080 (b)."

ADNR makes the following findings of fact and conclusions of law in response to the above requirements:

AS 46.15.145 (c)(1): The rights of prior appropriators will not be affected by the reservation.

Discussion and Determination: Based on a search of ADNR's water rights records, there are no prior appropriators for water from Kadashan River, Tonalite Creek, and Hook Creek within the specified reaches or for water from Kadashan River, Hook Creek, or Tonalite Creek upstream of the specified reaches.

A reservation of water established by the Department's decision and certification does not affect other valid water rights with a senior priority date including water rights with senior priority dates that may be issued after the date the certificate reserving water is issued.

AS 46.15.145 (c)(2): The applicant has demonstrated that a need exists for the reservation.

Discussion: Under Title 16 of the Alaska Statutes, ADF&G is the state agency charged with managing Alaska's fish and wildlife. The mission statement of ADF&G is "To protect, maintain, and improve the fish, game, and aquatic plant resources of the state, and manage their use and development in the best interest of the economy and the well-being of the people of the state, consistent with the sustained yield principle." The purpose of these reservation of water applications is for the protection of fish and wildlife habitat, migration, and propagation. ADF&G has staff who are dedicated to the research, development and implementation of priority (i.e. need-based) applications for reservation of water. Before ADF&G even files an application for reservation of water on a particular stream, river, or lake, it has evaluated the need for the reservation of water using criteria that includes but is not limited to: the existence of water use conflicts with the potential to affect fish and wildlife; waterbodies where likely changes in land use or development have the potential to create these conflicts in the future; the importance of the fishery resources at risk; whether other mechanisms (e.g. fish habitat permits, special use permits, fish hatchery permits, recommendations for Federal, State, and local permit conditions) would provide better or more cost effective protection. ADF&G has limited resources to cover the costs of going through the application for reservation of water process, so ADF&G, as the state agency charged with managing Alaska's fish and wildlife, has determined a need for the reservation of water before it files an application, and it supports that need with the fishery and flow data that it submits with an application for reservation of water. An indication of the selective, need-based approach that ADF&G follows before submitting an application for reservation of water is shown by the fact that to date ADF&G has submitted over 350 applications for reservation of water (which number includes separate applications for different reaches of the same stream/river) since 1984, and there currently are almost 20,000 streams, rivers, or lakes listed in Alaska's Catalog of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes and its associated Atlas. As part of this process, ADF&G staff identified the Kadashan River watershed as a priority for establishment of reservations of water. Further, the applications have provided credible information that demonstrates the granting of these reservations of water are needed to help protect and maintain fish production within the Kadashan River watershed. Kadashan River, Tonalite Creek, and Hook Creek serves as a fish passage corridor between the marine environment and other portions of its watershed utilized for fish production.

The purpose of the reservation applications is for the protection of fish and wildlife habitat, migration, and propagation. ADF&G has staff who are dedicated to the research, development and implementation of priority applications for Reservation of Water. As part of this process, ADF&G staff identified Kadashan River, Hook Creek, and Tonalite Creek as a priority for establishment of reservations of water. Further, the applications have provided credible information that demonstrates the granting of these reservations of water is needed to help protect and maintain fish production within the Kadashan River watershed. Kadashan River, Hook Creek, and Tonalite Creek serves as a fish passage corridor between the marine environment and other portions of its watershed utilized for fish production.

The Kadashan River watershed supports coho salmon (*Oncorhynchus kisutch*), pink salmon (*O. gorbuscha*), chum salmon (*O. keta*), Dolly Varden (*Salvelinus malma*), steelhead/rainbow trout (*O. mykiss*), and cutthroat trout (*O. clarki*) for a portion of, or all of their spawning, incubation, rearing, and passage life phases.

Kadashan River is cataloged within the Anadromous Waters Catalog (AWC) as #112-42-10250, Hook Creek is cataloged as AWC #112-42-10250-2009, and Tonalite Creek is cataloged as AWC #112-42-10250-2004.

Kadashan River, Hook Creek, and Tonalite Creek, along with other area watershed rivers/creeks, is considered an important source for fish and contributes to commercial, subsistence, and sport fish use. In the judgment of the state's fish and wildlife management agency, the proposed reservations are needed to help maintain fish production within the Kadashan River watershed and will aid ADF&G in carrying out its duty of managing and protecting the states fish and wildlife. The State of Alaska's policy for management of sustainable salmon fisheries provides that salmon spawning, rearing, and migratory habitats "should not be perturbed beyond natural boundaries of variation."¹⁴ It further provides that "all essential salmon habitat in marine, estuarine, and freshwater ecosystems and access of salmon to these habitats should be protected."¹⁵ A reservation of water can protect fish production while still allowing for other appropriation of river flows in excess of the reservation amounts.

Additionally, the experience of other western states demonstrates the importance of protecting necessary instream flows for fish production early to ensure that these flows – and the uses that depend on these flows – are fully considered while unappropriated water is available, rather than later when water may be more scarce.¹⁶ "Fish and wildlife agencies face several critical underlying challenges to effectively manage water for fish and wildlife. The primary challenge is the fact that in the majority of situations (*except Alaska* and parts of Canada) most stream and lake water has already been committed to uses other than fish and wildlife."¹⁷

In the International Instream Flow Program Initiative's (IIFPI) 'Protecting and Restoring Rivers and Lakes in North America' Summary, Estes states:

*Alaska is at a stage of development where the rest of America was approximately 170 years ago. When water was initially extracted from mighty rivers like the Colorado, dammed on the Columbia, and confined between levees on the Mississippi, our predecessors had little idea what was going to happen to fish and wildlife. But just as development pressures have taken and continue to take their toll on rivers and lakes in the lower 48 states, Alaska is in danger of moving along a similar path if preventative actions aren't taken.*¹⁸

The required finding of need in AS 46.15.145(c)(2) is evaluated relative to the purpose for which an application for reservation of water is submitted. In this LAS 29870 application the purpose is for protection of fish and

¹⁴ 5 AAC 39.222(c)(A)(i).

¹⁵ 5 AAC 39.222(c)(a)(iv).

¹⁶ Annear, T., I. Chisholm, H. Beecher, A. Locke, and 12 other authors. 2004. Instream flows for riverine resource stewardship, revised edition. Instream Flow Council, Cheyenne, WY.

¹⁷ Annear, T., D. Lobb, C. Coomer, M Woythal, C. Hendry, C. Estes, and K. Williams. 2009. International Instream Flow Program Initiative, A status Report of State and Provincial Fish and Wildlife Agency Instream Flow Activities and Strategies for the Future, Final Report for Multi-State Conservation Grant Project WY M-7-T. Instream Flow Council, Cheyenne, WY

¹⁸ Madson, C., T. Annear, and D. Lobb. Protecting and Restoring Rivers and Lakes in North America: Trends, challenges, and opportunities for doing a better job. <http://www.instreamflowcouncil.org/node/65>.

wildlife habitat, migration, and propagation. In the wording of AS 46.15.145(c)(2) regarding a finding that the applicant has demonstrated that a need exists for the reservations, this subsection does not set forth any time element as to how imminent a potential or future conflict (conflict with the purpose of a submitted application for reservation of water) needs to be to support the finding. It is also noted that in making a required finding pursuant to AS 46.15.145(c)(4) that a proposed reservation is in the public interest, ADNR is only required to consider, pursuant to 11 AAC 93.145(d) and AS 46.15.080(b)(5), the effect of loss of alternate uses of water that might be made within a reasonable time if not precluded or hindered by the proposed appropriation. Therefore, potential or future conflicts with the purpose of the requested reservation of water are addressed as one of the eight criteria considered in making a finding that a proposed reservation is in the public interest.

AS 46.15.145(c)(2) specifies a finding that the “applicant” has demonstrated that a need exists for the reservation. 11 AAC 93.144(a) gives ADNR discretion to investigate any aspect of a submitted application for reservation of water. Therefore, a finding that a need exists for a reservation of water does not necessarily have to be limited to the contents of the application itself. ADNR has discretion in determining whether an applicant has demonstrated that a need exists for a requested reservation of water. Considering the above-described criteria that ADF&G is known to apply in determining which stream, river, or lake it will submit an application for reservation of water for, it is also appropriate for ADNR to give due respect to ADF&G’s assessment of the need for a reservation of water that it requests.

Determination: In light of the above factors, it is determined that ADF&G, as applicant, has demonstrated that a need exists for the proposed reservations of water and that these reservations of water will assist ADF&G in fulfilling its duties as State of Alaska’s manager of the fisheries and wildlife resources.

AS 46.15.145 (c)(3): There is unappropriated water within the stream or body of water sufficient for the reservation.

Discussion: The gage records for Kadashan River, Hook Creek, and Tonalite Creek have been analyzed to help determine whether there are sufficient unappropriated stream flows to accommodate the proposed reservations.

The following tables show the flows available after the proposed reservation flows are met for the specified reach, during each listed period of the year:

See next page.

Table 9. Flow Table [cfs = cubic feet per second; gpd = gallons per day]

Kadashan River, Reach A

Time Period	Mean Flow Discharge (cfs)	ADF&G Requested Flows (cfs)	Adjudicated Reservation Flows (cfs)	Remaining Flows (cfs)	Remaining Flows (gpd)
January	104	54	39	65	42,007,680
February	122	62	53	69	44,592,768
March	121	76	59	62	40,068,864
April	226	180	140	86	55,579,392
May	424	387	315	109	70,443,648
June	301	281	216	85	54,933,120
July	132	111	78	54	34,898,688
August	122	72	55	67	43,300,224
September	259	146	98	161	104,049,792
October	501	323	266	235	151,873,920
November	282	168	135	147	95,001,984
December	164	100	79	85	54,933,120

* For perspective, 1 cubic foot per second is approximately 646,272 gallons per day. An average family of four (for domestic use) is allotted 500 gallons per day.

Table 10. Flow Table

Kadashan River, Reach B

Time Period	Mean Flow Discharge (cfs)	ADF&G Requested Flows (cfs)	Adjudicated Reservation Flows (cfs)	Remaining Flows (cfs)	Remaining Flows (gpd)
January	46	26	19	27	17,449,344
February	67	35	27	40	25,850,880
March	56	40	25	31	20,034,432
April	104	87	69	35	22,619,520
May	211	191	160	51	32,959,872
June	154	145	108	46	29,728,512
July	69	58	45	24	15,510,528
August	53	33	27	26	16,803,072
September	119	65	47	72	46,531,584
October	204	132	103	101	65,273,472
November	130	79	62	68	43,946,496
December	76	40	28	48	31,021,056

Table 11. Flow Table

Kadashan River, Reach C

Time Period	Mean Flow Discharge (cfs)	ADF&G Requested Flows (cfs)	Adjudicated Reservation Flows (cfs)	Remaining Flows (cfs)	Remaining Flows (gpd)
January	49	27	20	29	18,741,888
February	48	26	20	28	18,095,616
March	44	29	21	23	14,864,256
April	66	56	43	23	14,864,256
May	98	85	71	27	17,449,344
June	63	51	36	27	17,449,344
July	30	22	17	13	8,401,536
August	32	19	14	18	11,632,896
September	78	47	31	47	30,374,784
October	114	81	64	50	32,313,600
November	80	52	41	39	25,204,608
December	66	40	29	37	23,912,064

Table 12. Flow Table

Hook Creek

Time Period	Mean Flow Discharge (cfs)	ADF&G Requested Flows (cfs)	Adjudicated Reservation Flows (cfs)	Remaining Flows (cfs)	Remaining Flows (gpd)
January	18	10	8	10	6,462,720
February	25	13	10	15	9,694,080
March	22	15	10	12	7,755,264
April	41	33	25	16	10,340,352
May	82	73	61	21	13,571,712
June	58	53	39	19	12,279,168
July	27	22	17	10	6,462,720
August	20	13	10	10	6,462,720
September	45	26	20	25	16,156,800
October	94	58	44	50	32,313,600
November	63	37	28	35	22,619,520
December	30	16	13	17	10,986,624

Table 13. Flow Table

Tonalite Creek

Time Period	Mean Flow Discharge (cfs)	ADF&G Requested Flows (cfs)	Adjudicated Reservation Flows (cfs)	Remaining Flows (cfs)	Remaining Flows (gpd)
January	74	35	24	50	32,313,600
February	69	35	25	44	28,435,968
March	52	40	29	23	14,864,256
April	89	73	59	30	19,388,160
May	161	136	115	46	29,728,512
June	110	95	72	38	24,558,336
July	51	38	30	21	13,571,712
August	51	32	25	26	16,803,072
September	113	58	44	69	44,592,768
October	213	124	99	114	73,675,008
November	120	67	53	67	43,300,224
December	77	42	31	46	29,728,512

Reservation of Water Applications within Kadashan River, Hook Creek, and Tonalite Creek (Kadashan Watershed)
Findings of Fact, Conclusions of Law, and Decision **LAS 28372, 28373, 28374, 28375, & 28376**

Table 14. Duration chart showing the percent of time streamflows are equaled or exceeded and the mean monthly flow in cubic feet per second.

Kadashan River, Reach A

% Time exceeded	January	February	March	April	May	June	July	August	September	October	November	December
0	1,600	2,000	895	1,000	1,500	1,170	1,420	1,500	2,920	4,490	3,120	1,500
5	320	438	375	538	849	649	293	396	859	1,520	826	500
10	200	264	249	421	700	532	249	256	598	1,070	594	366
15	170	198	198	352	610	452	209	204	437	830	475	290
20	130	160	160	326	539	415	182	167	352	723	366	225
25	110	130	140	296	495	380	168	146	284	600	304	200
30	95	110	124	276	458	362	150	122	236	508	272	172
35	80	91	111	240	440	340	138	103	210	447	230	150
40	71	80	100	215	422	319	129	90	188	400	200	135
45	62	70	89	199	400	296	117	80	165	362	181	120
50	54	62	76	180	387	281	111	72	146	323	168	100
55	48	59	66	169	365	260	98	66	126	295	150	90
60	40	54	60	150	341	243	87	60	107	267	136	80
65	35	48	55	140	315	216	78	55	98	239	122	70
70	33	42	50	130	298	190	71	49	85	207	111	62
75	30	33	46	116	271	170	65	42	74	183	95	56
80	26	28	43	106	257	147	57	38	67	158	81	50
85	22	26	37	96	233	120	53	35	58	131	70	45
90	20	25	33	82	213	98	49	31	49	102	60	37
95	18	16	28	66	195	81	42	28	36	80	44	29
100	14	14	22	28	132	53	28	23	21	49	28	19
Mean	104	122	121	226	424	301	132	122	259	501	282	164

Reservation of Water Applications within Kadashan River, Hook Creek, and Tonalite Creek (Kadashan Watershed)
Findings of Fact, Conclusions of Law, and Decision **LAS 28372, 28373, 28374, 28375, & 28376**

Table 15. Duration chart showing the percent of time streamflows are equaled or exceeded and the mean monthly flow in cubic feet per second.

Kadashan River, Reach B

% Time exceeded	January	February	March	April	May	June	July	August	September	October	November	December
0	463	794	426	421	787	408	495	594	1,007	1,716	1,214	926
5	150	233	167	233	393	317	161	165	416	588	364	242
10	100	150	116	198	343	275	131	120	277	469	267	172
15	85	119	90	168	294	243	110	83	203	368	219	141
20	67	96	80	147	268	222	94	69	167	282	171	110
25	55	78	70	133	246	204	84	58	136	237	148	88
30	48	66	61	120	233	186	77	49	114	211	124	80
35	40	55	55	108	221	174	72	44	92	188	110	68
40	36	47	49	98	210	163	66	39	82	169	101	58
45	30	42	44	92	201	153	64	36	76	149	88	51
50	26	35	40	87	191	145	58	33	65	132	79	40
55	23	31	32	80	182	136	56	31	58	119	72	33
60	20	28	26	75	174	125	49	29	51	104	63	29
65	17	25	25	69	160	108	45	27	47	99	56	26
70	16	21	23	64	152	95	41	24	43	86	52	24
75	14	16	20	57	144	90	36	20	40	77	47	22
80	13	15	17	52	135	81	31	18	37	68	41	20
85	11	13	16	44	118	64	27	17	32	58	33	18
90	9.5	11	15	34	108	49	25	15	25	50	28	16
95	8.5	11	14	26	92	38	22	14	18	38	19	14
100	7.0	8.8	12	23	57	28	13	11	13	24	15	10
Mean	46	67	56	104	211	154	69	53	119	204	130	76

Reservation of Water Applications within Kadashan River, Hook Creek, and Tonalite Creek (Kadashan Watershed)
Findings of Fact, Conclusions of Law, and Decision **LAS 28372, 28373, 28374, 28375, & 28376**

Table 16. Duration chart showing the percent of time streamflows are equaled or exceeded and the mean monthly flow in cubic feet per second.

Kadashan River, Reach C

% Time exceeded	January	February	March	April	May	June	July	August	September	October	November	December
0	800	583	400	361	452	350	311	375	740	1,010	889	841
5	173	154	128	147	200	155	80	105	254	309	229	208
10	115	110	96	120	163	126	63	70	182	230	160	148
15	85	84	76	107	143	109	50	51	147	198	131	112
20	70	69	65	97	130	97	43	41	115	168	110	92
25	58	56	54	89	120	86	36	34	95	145	94	80
30	47	47	46	80	111	79	33	30	81	127	85	67
35	40	40	41	74	103	71	29	26	70	113	74	59
40	33	35	36	67	97	65	27	23	60	100	66	51
45	30	30	32	62	91	57	25	21	53	90	59	46
50	27	26	29	56	85	51	22	19	47	81	52	40
55	24	24	25	51	80	45	20	17	41	73	46	35
60	21	21	22	46	76	41	18	15	36	65	42	30
65	18	19	20	43	71	36	17	14	31	59	38	25
70	17	17	17	39	67	31	15	12	28	54	32	22
75	15	15	15	35	62	27	14	11	24	48	29	19
80	13	13	13	31	59	24	12	10	21	43	25	17
85	11	12	12	27	52	20	11	8.9	18	38	21	15
90	8.9	10	9.7	23	45	17	9.4	7.8	14	32	18	12
95	6.0	7.8	8.0	18	38	14	7.5	6.1	11	24	13	9.0
100	3.8	4.0	5.2	10	20	7.7	3.2	3.6	4.5	9.4	9.0	4.5
Mean	49	48	44	66	98	63	30	32	78	114	80	66

Reservation of Water Applications within Kadashan River, Hook Creek, and Tonalite Creek (Kadashan Watershed)
Findings of Fact, Conclusions of Law, and Decision **LAS 28372, 28373, 28374, 28375, & 28376**

Table 17. Duration chart showing the percent of time streamflows are equaled or exceeded and the mean monthly flow in cubic feet per second.

Hook Creek (Kadashan watershed)

% Time exceeded	January	February	March	April	May	June	July	August	September	October	November	December
0	200	352	176	220	335	190	184	233	440	905	660	230
5	50	92	60	102	160	126	67	60	147	299	211	89
10	39	57	45	84	135	101	50	40	98	200	130	67
15	32	42	38	71	115	95	42	32	73	164	100	54
20	26	36	30	60	105	85	36	26	60	134	84	43
25	22	30	26	52	98	77	33	22	50	111	70	37
30	19	23	22	47	92	70	30	20	44	93	58	33
35	16	20	20	41	85	66	28	18	36	82	53	28
40	15	17	18	39	80	60	25	16	31	71	48	24
45	12	15	16	36	77	57	23	15	29	62	42	20
50	10	13	15	33	73	53	22	13	26	58	37	16
55	9.0	11	13	30	70	48	20	13	23	50	33	14
60	8.0	10	10	28	66	43	18	11	21	45	29	13
65	7.0	9.0	10	25	61	39	17	10	20	39	27	12
70	6.3	7.0	9.4	24	58	35	15	9.0	18	35	24	11
75	5.8	6.0	8.5	21	55	32	13	8.3	16	32	21	10
80	5.3	5.3	7.5	17	51	27	12	7.5	15	28	19	9.4
85	5.0	5.0	7.0	14	48	24	11	6.8	13	25	16	8.6
90	4.3	4.5	6.0	11	43	19	9.7	6.1	8.8	21	13	7.6
95	3.2	3.4	5.0	8.4	36	14	6.8	5.2	6.7	18	9.0	6.0
100	2.5	2.6	3.6	4.0	15	7.0	3.4	4.3	4.6	11	6.0	4.0
Mean	18	25	22	41	82	58	27	20	45	94	63	30

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Table 18. Duration chart showing the percent of time streamflows are equaled or exceeded and the mean monthly flow in cubic feet per second.

Tonalite Creek (Kadashan watershed)

% Time exceeded	January	February	March	April	May	June	July	August	September	October	November	December
0	1,210	969	410	599	834	389	660	747	1,400	2,270	1,220	1,200
5	283	234	131	209	347	249	123	151	400	700	390	253
10	190	150	107	170	275	209	94	96	261	450	250	180
15	127	115	88	141	230	180	79	80	190	375	202	128
20	97	91	76	125	207	156	70	66	143	305	163	108
25	77	79	66	109	190	143	61	55	110	259	142	90
30	68	67	60	98	174	133	55	49	98	207	115	77
35	55	58	55	90	162	122	50	42	87	186	101	66
40	46	45	49	84	155	116	45	39	75	161	89	59
45	40	40	45	78	148	107	41	35	65	140	76	50
50	35	35	40	73	136	95	38	32	58	124	67	42
55	30	30	34	68	129	85	35	30	53	111	61	38
60	25	26	30	64	123	78	33	27	49	100	54	32
65	23	23	26	59	115	72	30	25	44	91	48	28
70	20	19	24	54	109	63	29	23	39	82	44	25
75	18	16	22	49	104	54	26	21	35	73	37	22
80	15	13	20	44	97	49	25	18	32	65	32	19
85	13	11	18	37	91	41	22	16	28	58	27	16
90	9.5	10	14	30	82	34	19	14	24	49	22	14
95	8.0	9.0	12	23	66	25	15	10	18	38	19	12
100	6.0	6.8	8.9	12	45	14	7.4	6.2	8.7	24	13	7.6
Mean	74	69	52	89	161	110	51	51	113	213	120	77

The data described in Tables 9-13 shows flows in each reach which support the amount of water for the reservation applications. While almost any allocation of water may experience periods of time during which the natural variability in flow will result in unavailability of water, there will be a reasonable proportion of time Kadashan River, Hook Creek, and Tonalite Creek flows will be sufficient for the proposed reservations.

Determination: It is determined that there exists unappropriated water within Kadashan River, Hook Creek, and Tonalite Creek sufficient for the reservation requests. Further, the adjudicated reservation flows stated in Tables 9-13 are reasonable amounts for these reservations. Based on the applications and ADF&G's professional judgment,

'Sufficient flows are needed to support riverine habitats used by fish and to provide fluvial processes that maintain these habitats. To maintain seasonal uses of habitats by each life history stage,' the applicants recommend 'maintaining a flow regime that mimics the magnitude and timing of the natural flow regime. This approach is necessary to meet the needs of species life history stages that have coevolved and exhibited biological adaptations to the rivers flow regime.'

Reserved flows leave water available for ADNR to allocate to new applicants, and are set at an amount that will contribute to maintenance of the fish and wildlife habitat based on available information, as described by ADF&G in their applications.

For the adjudication process, the applicants submitted flow recommendations that as stated previously, mimic the natural hydrologic variability to meet the needs of species life history stages. ADNR reviewed these flows and took into consideration the requested flows along with current and future impacts. This includes any senior water appropriations and potential near future uses that may benefit the people of the State. ADNR then adjusts flows that account for any prior appropriators and maintains necessary flow for habitat maintenance and passage. If a future water use is of a significant quantity and competes with an existing reservation, then a review of the purpose and findings for the reservation of water can be performed. Lower flows, (which would be available a greater percent of the time [see Tables 14-18]), are considered by the applicant and ADNR to be inadequate, but would be subject for review upon challenge of a competing applicant.

AS 46.15.145 (c)(4) and 11 AAC 93.145 (d): The proposed reservation is in the public interest, considering the criteria set out in AS 46.15.080 (b).

AS 46.15.080 (b)(1): The benefit to the applicant resulting from the proposed appropriation.

Discussion: ADF&G has the statutory responsibility of managing the fish and wildlife resources of the State of Alaska. The applicant applied for these reservations for the purpose of protecting fish and wildlife habitat, migration, and propagation in Kadashan River, Hook Creek, and Tonalite Creek. ADF&G indicates that these reservations will assist in the management of fish resources within the river/creeks. The proposed reservations of water would contribute significantly to ensuring the continued viability of this resource.

Determination: The proposed reservations will benefit ADF&G in the fulfillment of its statutory responsibility to protect and manage Kadashan River, Hook Creek, and Tonalite Creek fish populations, a resource reserved to the people under the Alaska Constitution. The proposed reservations will contribute to the maintenance of Kadashan River watershed fish populations by providing the appropriate quantities of water needed for fish habitat, migration, and propagation.

AS 46.15.080 (b)(2): The effect of the economic activity resulting from the proposed appropriation.

Discussion: The Kadashan River watershed supports commercial, sport fishing, and subsistence uses. Sport fishing provides significant economic benefits to Alaska. The American Sport Fishing Association estimated that the expenditures for sport fishing in Alaska in 2007 generated 15,879 jobs, and \$545 million in wages and salaries. Anglers in Alaska spent nearly \$1.4 billion on fishing trips, fishing equipment, and development and maintenance of land used primarily for the pursuit of sport fishing in Alaska.¹⁹

Kadashan River, Hook Creek, and Tonalite Creek provide the basis for subsistence, sport, and commercial fishing harvest in the watershed area. As reported by the plans and studies, this enables area residents to sustain their subsistence activities as well as stimulate elements of the local and regional economy.

Determination: While no detailed breakdown of the economic impacts of the Kadashan River watershed fishery has been submitted by the applicant, the protection of this fishery is of economic importance to the region. The proposed reservations will help protect this resource.

AS 46.15.080 (b)(3): The effect on fish and game resources and on public recreational opportunities.

Discussion: As previously described, Kadashan River, Hook Creek, and Tonalite Creek supports Pacific salmon species as well as other resident fishes. The purpose of these reservations is to protect the habitat, migration, and propagation of these fish. Reservation flows were allocated specifically to provide for the needs of fish populations at the times those populations utilize the river for their various life stage activities of spawning, incubating, rearing, and passage (See Table 19).

Table 19. Kadashan River, Hook Creek, and Tonalite Creek Fish Periodicity Chart²⁰

Based on professional judgement of ADF&G biologists

Smolt/fry passage is for juvenile or fry emigration to estuarine/marine environment

Adult passage for salmon is immigration for trout, char, and other species, immigration and emigration.

Incubation life phase includes time of egg deposition to fry emergence

DV and CT smolt defined as those fish undergoing initial emigration

X = life phase has been observed or documented

¹⁹ Economic Impacts and Contributions of Sportfishing in Alaska (ADF&G, 2007)

²⁰ Reservation of Water Application

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Coho Salmon	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Smolt Passage			XX	XXXX	XXXX	XX						
Adult Passage								XXXX	XXXX	XXXX	XX	
Spawning								XX	XXXX	XXXX	XXXX	XX
Incubation	XXXX	XXXX	XXXX	XXXX				XX	XXXX	XXXX	XXXX	XXXX
Rearing	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

Chum Salmon	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Fry Passage			XX	XXXX	XXXX	XX						
Adult Passage							X	XXXX	XXXX	XX		
Spawning								XXXX	XXXX	XXX		
Incubation	XXXX	XXXX	XXXX	XXXX				XXXX	XXXX	XXXX	XXXX	XXXX
Rearing				XXXX	XX							

Pink Salmon	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Fry Passage			XX	XXXX	XXXX	XX						
Adult Passage							XXXX	XXXX	XXXX			
Spawning							XX	XXXX	XXXX	XX		
Incubation	XXXX	XXXX	XXXX	XXXX	XX		XX	XXXX	XXXX	XXXX	XXXX	XXXX
Rearing				XXXX	XX							

Dolly Varden	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Smolt Passage*			XXXX	XXXX	XXXX							
Adult Passage			XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	
Spawning									XX	XXXX	XX	
Incubation	XXXX	XXXX	XXXX	XXXX	XX				XX	XXXX	XXXX	XXXX
Rearing	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

Steelhead Trout	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Smolt Passage				XX	XXXX	XXXX						
Adult Passage				XXXX	XXXX	XXXX	XX					
Spawning				XX	XXXX	XXXX	XXXX	XXXX				
Incubation	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
Rearing				XX	XXXX	XXXX						

Rainbow Trout	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Resident Adult Passage			XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX		
Spawning			X	XXXX	XXXX	XXXX						
Incubation			X	XXXX	XXXX	XXXX	XXXX	XXXX				
Rearing	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

Cutthroat Trout	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Smolt Passage*			XXXX	XXXX	XXXX							
Adult Passage			XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	
Spawning				XXX	XXXX	XX						
Incubation				XXX	XXXX	XXXX	XXXX	XX				
Rearing	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

Specific reservation quantities were requested and recommended by ADF&G. They mimic the natural hydrologic and biologic requirements for Kadashan River, Hook Creek, and Tonalite Creek by combining statistical analyses of hydrologic variability and fish species periodicity (See Tables 14-19).

ADNR’s decision to grant the specific water quantities and time periods provided for in this decision is based on and consistent with the current level of hydrologic and biologic knowledge, as well as consideration of current water right appropriations and potential near future uses. Reservation flows granted will contribute to fish habitat, migration, and propagation within each reservation reach.

While the purpose of the proposed reservations is to protect fish and wildlife habitat, migration, and propagation, reservations of these flows will help preserve quantities necessary for sport fishing, hunting, and other recreational opportunities as well.

Determination: The proposed reservations will benefit the protection of fish resources and will help sustain public recreational activities.

AS 46.15.080 (b)(4): The effect on public health.

Discussion: Maintaining flow quantities will help retain water quality and has a positive health impact. There are no known surface water withdrawals from Kadashan River, Hook Creek, or Tonalite Creek for drinking water purposes. Significant use of the water and waterway of the Kadashan River watershed occurs by residents who live in and around the requested reservation areas.

These reservations of water will help maintain the quality of water in the Kadashan River watershed, and may provide positive public health impacts in the future. Maintaining these flows will regulate water temperature and dilute contaminants in the system.²¹

Determination: The proposed reservations will generally contribute to the maintenance and protection of water quality by helping to ensure the instream flows of a volume of water that can buffer extreme temperature changes and dilute concentrations and thus reduce impacts of any pollutants or contaminants that may enter the river. Therefore, there should be a positive impact on public health attributable to granting these reservations.

²¹ Annear, T., I. Chisholm, H. Beecher, A. Locke, and 12 other authors. 2004. Instream flows for riverine resource stewardship, revised edition. Instream Flow Council, Cheyenne, WY.

AS 46.15.080 (b)(5): The effect of loss of alternate uses of water that might be made within a reasonable time if not precluded or hindered by the proposed appropriation.

Discussion: At this time, research by ADNR has not identified any imminent proposed alternative uses of water or alternative uses which may be made within a reasonable amount of time. By establishing these reservations of water, the amounts described will be withdrawn from the amount available for appropriation or for temporary water use authorizations. Further, while the reservations allow for economic and recreational development activities compatible with the primary uses, any future development that depends upon water withdrawals may be limited if the amount of water available is not sufficient to meet reservation flows and any other senior water right holders during specified time periods. Future water right applicants may need to consider other options such as off-river storage and/or development of alternative water sources in order to bridge the periods of flow equal to or less than reservation flows.

Nevertheless, if a junior applicant applies for a new, competing, water right for waters from Kadashan River, Hook Creek, and/or Tonalite Creek, the law provides for a review of the water system usage, and allows an applicant to present additional information for a review of the reservations.²² The intent of a reservation is not to prevent future applicants from developments which will need a water right, but rather to give the necessary quantities of water for protection of the purpose given, in this case, habitat, migration, and propagation of fish. Once a reservation is certificated, it is subject to AS 46.15.145 (f) and 11 AAC 93.147 (a) and (b), which provide for review and the potential to make changes based on “a finding that the purpose, or part or all of the findings no longer apply to the reservation.” ADNR may issue a revocation or amendment of a certificate of reservation in appropriate circumstances, after public notice, and a hearing if appropriate, and a written determination that the revocation or amendment is in the best interests of the state.

Determination: Based on reservation amounts and remaining amounts of water for appropriation, the reservation quantities granted here leave a quantity of unappropriated flows throughout the year, shown in Tables 9-13, that ADNR believes is adequate for other uses that currently can be anticipated. Further, if the amounts of unappropriated water were to be found inadequate for any future uses of water, statutory provisions for review of the reservations could be implemented per 11 AAC 93.147. Therefore, it is determined that, at this time, there are no existing or planned alternative uses of water that might be precluded or hindered by the proposed reservations.

AS 46.15.080 (b)(6): Harm to other persons resulting from the proposed appropriation.

Discussion: ADNR received seven timely comments and one untimely comment during both the regular and extended public and agency notices. It was determined that there should not be any potential harm as a result of the proposed reservations.

Reservations of water for instream flow purposes do not preclude the simultaneous use of that water for other purposes compatible with the reservations, and the proposed reservations are likely to reinforce the current uses of Kadashan River, Hook Creek, and Tonalite Creek. Under 11 AAC 93.920 (b), reserved water may be used in an emergency for the protection of life and property.

²² Should such a development alternative arise, 11 AAC 93.147 provides authority for review of a reservation of water if circumstances warrant.

Determination: The proposed reservations are not expected to harm other persons.

AS 46.15.080 (b)(7): The intent and ability of the applicant to complete the appropriation.

Discussion and Determination: The applicant adequately described, justified, and quantified the proposed reservations and no further action on the part of the applicant is required to complete these reservations.

AS 46.15.080 (b)(8): The effect upon access to navigable or public water.

Discussion and Determination: The proposed reservations are not expected to have any negative effect on access to navigable or public water.

AS 46.15.080: Public interest determination.

Water rights are subject to preferences among beneficial uses, and where there are applications for competing uses of water and there is not enough water for all uses, ADNR is required to balance the interests involved and give preference to the most beneficial use under AS 46.15.090. Here, as shown by the discussion and record described herein, there is a preponderance of evidence of public benefits, and unappropriated water is available.

The applicant will also be required to defend and indemnify the State against and hold it harmless from any and all claims, demands, legal actions, loss, liability and expense from injury to or death of persons and damages to or loss of property arising out of or connected with the exercise of any water right granted. Therefore, in light of the entire record, the proposed Kadashan River, Hook Creek, and Tonalite Creek reservations of water are determined to be in the overall public interest of the state.

11 AAC 93.146 Issuance of a certificate of reservation of water (Standard Conditions)

In accordance with 11 AAC 93.146 (c) and (d), the following standard conditions are applied to all certificates of reservation as of September 11, 1983, and any additional special conditions will be addressed:

1. This certificate may not be voluntarily abandoned, conveyed, transferred, assigned, or converted to another use, in whole or in part, unless required as a result of review under 11 AAC 93.147.
2. This certificate does not authorize the Certificate Holder or any other person to prevent access to, on, or through the water reserved by the certificate, or to prohibit the use of the reserved water for other compatible purposes set out in AS 46.15.145(a).
3. This certificate does not grant any inherent water management duties or authorities held by the Alaska Department of Natural Resources, through the Division of Mining, Land and Water, Water Resources Section (ADNR) to the Certificate Holder. To request ADNR to pursue curtailment, or take other

administrative action, the Certificate Holder must formally request ADNR to curtail or otherwise impose limits on potentially conflicting uses and must provide ADNR with data or other proof that the reservation of water is not being met, and that the proximate cause is from conflicting uses. Whether ADNR will pursue any administrative or judicial proceedings against users of water is within the sole discretion of ADNR.

4. ADNR may require the Certificate Holder to install and maintain measuring devices of a type and at a location approved by ADNR to monitor and report on the reserved instream flow or level of water. ADNR is not responsible for monitoring the reserved instream flow or level of water.
5. The Certificate Holder may participate in any administrative or judicial proceedings pursued by ADNR that may impact this certificate.
6. This certificate shall be subject to review as required under AS 46.15.145(f) and 11 AAC 93.147.
7. Pursuant to AS 46.15.145(f) and 11 AAC 93.147, this certificate may be amended to reduce the flows and/or water level reserved under this reservation of water but this certificate cannot be amended to increase the reserved flows and/or water level.
8. The Certificate Holder shall comply with all the applicable requirements of AS 46.15.010 – 46.15.270 and 11 AAC 93.010 – 11 AAC 93.970, now effective or as they might in the future be amended.
9. The Certificate Holder shall notify ADNR of any change of address.
10. Except for claims or losses arising from the sole negligence of the State, the Certificate Holder shall defend and indemnify the State against and hold it harmless from any and all claims, demands, legal actions, loss, liability and expense from injury to or death of persons and damages to or loss of property arising out of or connected with the exercise of the water right granted by this certificate.

Special Conditions: No special conditions are required.

RESPONSE TO AGENCY AND PUBLIC NOTICE

Agency and public notice were provided as required by 11 AAC 93.145, 11 AAC 93.080, and AS 46.15.133. Notice was published in the Juneau Empire on November 7, 2017, with an extension (requested by the Alaska Miners Association) of the notice published on November 22, 2017. Both notices were published on ADNR's public notice online website. Notices were also sent to the Alaska Department of Fish and Game, Alaska Department of Environmental Conservation, U.S. Fish and Wildlife Service, U.S. Bureau of Land Management, U.S. Forest Service – Tongass National Forest, City and Borough of Sitka, Tenakee Springs Post Office, as well as all interested parties that requested notification.

Eight total comments were received on the proposed Kadashan River, Hook Creek, and Tonalite Creek Reservations of Water. Seven of the comments were timely. The first of seven comments addressed several issues of concern regarding all the reaches of the reservations; the second commenter was from the only citizen with property in the Kadashan watershed and he applauded and supported the agencies for the

proactive work with these reservations; the third and fourth commenter was a local organization that strongly supported the need for these reservations; the fifth comment was from the mayor of nearby town that strongly support the reservations through general comments; and the sixth and seventh comments where general information comments and those of support. The Department acknowledges the comment and further states that the comments have been taken into consideration within this decision.

DECISION

These case files have been found to be complete and the requirements of all applicable statutes have been satisfied. Further, upon recommendation of the Natural Resource Specialist who has adjudicated these files, and after consideration of the above analysis, by authority delegated from the Commissioner of the Alaska Department of Natural Resources, I hereby find that the Alaska Department of Fish and Game has satisfied the requirements of AS 46.15.145 with respect to the applications for reservation of water within Kadashan River - Reach A (LAS 28372), Kadashan River - Reach B (LAS 28373), Kadashan River - Reach C (LAS 28374), Hook Creek (LAS 28375), and Tonalite Creek (LAS 28376). Therefore, pursuant to 11 AAC 93.145 (a), ADNR will issue five Certificates of Reservation in the amounts, for the time periods, and for the reach descriptions as described below:

LAS 28372 – Kadashan River, Reach A

Applicant: Alaska Department of Fish and Game

Granted Reservation of Water Flows with a priority date of January 6, 2012:

Time Period	Granted Reservation Flows (cfs)
January	39
February	53
March	59
April	140
May	315
June	216
July	78
August	55
September	98
October	266
November	135
December	79

cfs = cubic feet per second

Kadashan River, Reach A Reservation of Water Reach Description: Kadashan River, Reach A from the Ordinary High Water Mark (OHWM) of the outer bank (of the outside braid, where braided) of the left bank up to the OHWM of the outer bank (of the outside braid, where braided) of the right bank, including any sloughs, braids, or channels which carry water and are an integral part of the river beginning at the river mouth of Kadashan River at the closing line (river mile 0), extending upstream approximately 2.2 river miles to the confluence with Tonalite Creek. This description does not limit the quantity of water (flow rate) reserved by this decision and certificate to quantities (flow rates) within said OHWM boundaries.

Said portions of Kadashan River, Reach A are located within Township 48 South, Range 63 East, Sections 9, 16, and 21. All within the Copper River Meridian, Sitka Recording District, First Judicial District, State of Alaska.

LAS 28373 – Kadashan River, Reach B

Applicant: Alaska Department of Fish and Game

Granted Reservation of Water Flows with a priority date of January 6, 2012:

Time Period	Granted Reservation Flows (cfs)
January	19
February	27
March	25
April	69
May	160
June	108
July	45
August	27
September	47
October	103
November	62
December	28

cfs = cubic feet per second

Kadashan River, Reach B Reservation of Water Reach Description: Kadashan River, Reach B from the Ordinary High Water Mark (OHWM) of the outer bank (of the outside braid, where braided) of the left bank up to the OHWM of the outer bank (of the outside braid, where braided) of the right bank, including any sloughs, braids, or channels which carry water and are an integral part of the river beginning at the confluence of Kadashan River with Tonalite Creek, upstream approximately 1.8 river miles to the confluence of Hook Creek with Kadashan River. This description does not limit the quantity of water (flow rate) reserved by this decision and certificate to quantities (flow rates) within said OHWM boundaries.

Said portions of Kadashan River, Reach B are located within Township 48 South, Range 63 East, Section 21, 27, and 28. All within the Copper River Meridian, Sitka Recording District, First Judicial District, State of Alaska.

LAS 28374 – Kadashan River, Reach C

Applicant: Alaska Department of Fish and Game

Granted Reservation of Water Flows with a priority date of January 6, 2012:

Time Period	Granted Reservation Flows (cfs)
January	20
February	20
March	21
April	43
May	71
June	36
July	17
August	14
September	31
October	64
November	41
December	29

cfs = cubic feet per second

Kadashan River, Reach C Reservation of Water Reach Description: Kadashan River, Reach C from the Ordinary High Water Mark (OHWM) of the outer bank (of the outside braid, where braided) of the left bank up to the OHWM of the outer bank (of the outside braid, where braided) of the right bank, including any sloughs, braids, or channels which carry water and are an integral part of the river beginning at the confluence of Hook Creek with Kadashan River, extending upstream approximately 1.6 river miles to the Township 48 South and 49 South boundary (Range 63 East, Copper River Meridian). This description does not limit the quantity of water (flow rate) reserved by this decision and certificate to quantities (flow rates) within said OHWM boundaries.

Said portions of Kadashan River, Reach C are located within Township 48 South, Range 63 East, Sections 27 and 34. All within the Copper River Meridian, Sitka Recording District, First Judicial District, State of Alaska.

LAS 28375 – Hook Creek (Kadashan Watershed)

Applicant: Alaska Department of Fish and Game

Granted Reservation of Water Flows with a priority date of January 6, 2012:

Time Period	Granted Reservation Flows (cfs)
January	8
February	10
March	10
April	25
May	61
June	39
July	17
August	10
September	20
October	44
November	28
December	13

cfs = cubic feet per second

Hook Creek Reservation of Water Reach Description: Hook Creek from the Ordinary High Water Mark (OHWM) of the outer bank (of the outside braid, where braided) of the left bank up to the OHWM of the outer bank (of the outside braid, where braided) of the right bank, including any sloughs, braids, or channels which carry water and are an integral part of the creek beginning at the confluence of Hook Creek with Kadashan River, extending upstream approximately 0.75 river miles to the upper extent of Anadromous Waters Catalog stream #112-42-10250-2009. This description does not limit the quantity of water (flow rate) reserved by this decision and certificate to quantities (flow rates) within said OHWM boundaries.

Said portions of Hook Creek are located within Township 48 South, Range 63 East, Section 27. All within the Copper River Meridian, Sitka Recording District, First Judicial District, State of Alaska.

LAS 28376 – Tonalite Creek (Kadashan Watershed)

Applicant: Alaska Department of Fish and Game

Granted Reservation of Water Flows with a priority date of January 6, 2012:

Time Period	Granted Reservation Flows (cfs)
January	24
February	25
March	29
April	59
May	115
June	72
July	30
August	25
September	44
October	99
November	53
December	31

cfs = cubic feet per second

Tonalite Creek Reservation of Water Reach Description: Tonalite Creek from the Ordinary High Water Mark (OHWM) of the outer bank (of the outside braid, where braided) of the left bank up to the OHWM of the outer bank (of the outside braid, where braided) of the right bank, including any sloughs, braids, or channels which carry water and are an integral part of the river beginning at the confluence of Tonalite Creek with Kadashan River, extending upstream approximately 2.4 river miles to the boundary between Sections 29 and 32 of Township 48 South, Range 63 East, Copper River Meridian. This description does not limit the quantity of water (flow rate) reserved by this decision and certificate to quantities (flow rates) within said OHWM boundaries.

Said portions of Tonalite Creek are located within Township 48 South, Range 63 East, Sections 21, 28, and 29. All within the Copper River Meridian, Sitka Recording District, First Judicial District, State of Alaska.

These applications are recommended for approval as described in the above Decision:

Kimberly Sager

Kimberly Sager
Natural Resource Specialist III, Water Resource Section
Reservation of Water Program Lead
Division of Mining, Land, and Water
Alaska Department of Natural Resources

August 20, 2020

Date

Applications granted for the priority dates, time periods, reservation flows, and reach descriptions as described above in the Decision for Kadashan River - Reach A (LAS 28372), Kadashan River - Reach B (LAS 28373), Kadashan River - Reach C (LAS 28374), Hook Creek (LAS 28375), and Tonalite Creek (LAS 28376). Certificates to be issued to the applicant, Alaska Department of Fish and Game, on the 31st day after the decision; or, if any, after completion of all timely appeals, affirming the decision:

Tom Barrett

Tom Barrett, CPG
Chief, Water Resources Section
Division of Mining, Land, and Water
Alaska Department of Natural Resources

August 20, 2020

Date

A person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of issuance of this decision, as defined in 11 AAC 02.040 (c) and (d), and may be mailed or delivered to Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska, 99501; faxed to 907-269-8918, or sent by electronic mail to dnr.appeals@alaska.gov. Under 11 AAC 02.030, appeals and requests for reconsideration filed under 11 AAC 02 must be accompanied by the fee established in 11 AAC 05.160(d)(1)(F), which has been set at \$200.00 under the provisions of 11 AAC 05.160 (a) and (b).

If no appeal is filed by the appeal deadline, this decision becomes a final administrative order and decision of the department on the 31st calendar day after issuance. An eligible person must first appeal this decision in accordance with 11 AAC 02 before appealing this decision to superior court. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources.