NATIVE VILLAGE OF EKLUTNA

7/14/03

Gary Prokosch
Division of Mining, Land & Water
Water Resources Section
550 West 7th Avenue, Suite 900A
Anchorage, AK 99501-3577

Dear Gary,

Enclosed is Native Village of Eklutna's processing fee of $1,500.00 for the three Eklutna River complex instream flow reservation applications we submitted earlier.

Thank You,

Marc Lamoreaux
Land and Environment Director

26339 Eklutna Village Rd. • Chugiak, Alaska 99567 • (907) 688-6020 • Fax (907) 688-6021

DIVISION OF MINING, LAND & WATER
WATER RESOURCES SECTION

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Alaska Department of NATURAL RESOURCES

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APPLICATION FOR RESERVATION OF WATER

Instructions

- *Complete one application per stream segment or water body – **Incomplete applications will not be accepted***
- *Attach map(s) indicating all sections from the beginning to the end of stream segment **or** for all parts of the lake or water body – **Map must include sections lines***
- *Submit filing fee of $500.00 – **Non-refundable***
- *Attach extra pages for each section, as needed*

Native Village of Eklutna (Tribe)	Marc Lamoreaux
Business Name	Contact Person

26339 Eklutna Village Rd.	Chugiak	AK	99567
Mailing Address	City	State	Zip Code

(907) 688-6020	(907) 688-6021	ave@ mtaonline.net
Phone Number	Fax Number	E-mail Address

Location of Proposed Reservation of Water 25 miles N.E. of Anchorage, AK

Name of the Stream or Water Body in which Water is Proposed to be Reserved Thunderbird Creek, S2

Meridian	Township	Range	Section	Quarter Sections	
Seward	T16N	R1E	31	NE ¼	¼
Seward	T16N	R1W	25	SE ¼	¼
				¼	¼
				¼	¼
				¼	¼
				¼	¼
				¼	¼
				¼	¼
				¼	¼
				¼	¼

Describe the location of the point or points defining the boundary of the proposed reservation of water by river mile index, river mile, geographical or cultural landmark, etc., on the stream or water body.

This is segment 2 of the three Eklutna complex segments we are applying to reserve flow for. It is at the base of Thunderbird Creek, from its confluence with its first major tributary (Draining Mt. Eklutna and Bear Mountain), downstream to Thunderbird's confluence with Eklutna River.

Attach a US Geological Survey map at 1:63,360 scale, or 1;250,000 scale if 1:63,360 scale is unavailable for the area, clearly identifying the following for the proposed reservation of water:

1. Sections, townships, range and meridians
2. The stream or water body in which the reservation of water is proposed
3. Specific point or points defining the boundary of the proposed reservation of water
4. Permanent, temporary or planned locations of water measurement devices (such as gauging stations, weirs, staff gages)
5. Permanent, temporary or planned bench marks

Water Use

Identify the purpose(s) of the proposed reservation of water by checking the appropriate box(es).

[x] Protection of fish and wildlife habitat, migration, and propagation

[ ] Recreation and park purposes

[ ] Navigation and transportation purposes

[ ] Sanitary and water quality purposes

Describe in detail the purpose(s) of the proposed reservation, including, when appropriate; species and life stage, type of recreation, vehicle, or water quality parameter, or other relevant information.

Thunderbird Creek below the falls provides spawning habitat for all five species of Alaska salmon, although red salmon were only observed below this section, in Eklutna River during our 2002 observations (see Eklutna River Fish Periodicity Charts and 2002 Fish Counts, attached). Dolly Varden Char are common, and seem to be permanent residents of this section, and rainbow trout have been observed. Tribal members report "trout" above the falls as well. This segment, including Thunderbird Falls, exhibits extraordinary scenic recreation and park values, and is appreciated by many hikers from the Chugach State Park access on the Old Glenn Highway.

Is the water currently being used for the purpose(s) applied for?

[x] Yes

[ ] No If no, when will use for this purpose begin? Specify approximate date _____

Water Quantity

Water requested to be reserved – ***Check one***

[x] To maintain a specific instream flow rate, measured in cubic feet per second

[ ] To maintain a specific level of surface water, flow or volume, measured in cubic feet or acre feet

[ ] To maintain a specific surface water elevation, measured in relation to a permanent benchmark

Quantify the specific amount of water requested to be reserved. Identify and quantify, as appropriate; flow rates, quantities, surface water elevations, depths, etc., as they relate to the daily duration and months of the year during which the reservation is proposed. Include any flow release schedules from projects upstream of the proposed reservation that would apply.

See Attachment 2A.

Methodology and Monitoring

Attach and submit with this application documentation or reports showing facts to support the following:

(a) The need for the proposed reservation of water, including reasons why the reservation is being requested.

(b) Identify and describe the methodology, data, and data analysis used to substantiate the need for and the quantity of water requested for the proposed reservation of water, including:

1. Name and description of method used
2. Who conducted the study and analysis
3. Schedule of when data collection and analysis occurred
4. Type(s) of instrument(s) used to collect and analysis data
5. Description of data and how the data was collected, including when applicable, (A) selection of stream reach, study site and transect selection, (B) flow, survey, elevation, and depth measurements, (C) pertinent physical, biological, water chemistry and socio-economic data
6. Description of how data was analyzed, and
7. Maps, photos, aerial photos, calculations, and any other documents supporting this application

If there are provisions for monitoring this proposed reservation of water, include the following:

(a) Description of monitoring equipment (such as gauging stations, staff gages, weirs)

(b) Location of monitoring equipment

(c) Provisions for payment of monitoring

(d) Reporting system

The information presented in this application is true and correct to the best of my knowledge.

by: Lee Stephan
Signature

5/29/03
Date

Lee Stephan
Name (please print)

CEO
Title

Attachment 2A
NATIVE VILLAGE OF EKLUTNA
APPLICATION OF RESERVATION OF WATER
THUNDERBIRD CREEK
(SEGMENT 2 of Eklutna Reservation Complex)

Water Quantity

A reservation of 100% of the remaining flow in Thunderbird Creek, Segment 2 (of the Eklutna River Reservation Complex)is requested. Monthly means in cfs, for ice free months, are presented in the attached – 2002 Eklutna River Discharges at Three Sites, under Thunderbird Creek. These were obtained by subtracting NVE Eklutna River above Thunderbird discharge measures for each day available, from USGS daily Eklutna River below Thunderbird measures, and calculating a mean of these daily estimates for each month. The Alaska USGS Supervisory Hydrologist approved this method and reviewed these data. Five years of similar data are requested by USGS to minimally represent discharge variability between years. 2002 was a dry Summer and Fall, although the Spring snow melt seemed more representative, so some of the figures presented may be low relative to longer-term averages.

Methodology and Monitoring

a) The need for the proposed reservation of water, including reasons why the reservation is being requested:

Thunderbird Creek salmonids are a public resource, and a trust resource for the Native Village of Eklutna Tribe, representing Dena'ina Athabascan Natives who have relied on these natural resources since time immemorial.

100% of Thunderbird Creek flows are requested to help mitigate the low flows, with consequent high turbidity, temperature, and ph in summer, and high substrate embededness with deep fines accumulations which occur in the Eklutna River, deprived of flows out of Eklutna Lake, as seen above Thunderbird Creek. Thunderbird contains, and contributes to Eklutna River consistently clear, cool water, at cfs which allow king salmon spawning. Also, the ponds in the lower Eklutna River gravel mines might not be cool enough to support salmon osmoregulatory holding, as they do now, without Thunderbird's input.

b) Identify and describe the methodology, data, and data analysis used to substantiate the need for and the quantity of water requested for the proposed reservation of water, including:
1. Name and description of method used, 2. Who conducted the study and analysis, 3. Schedule of when data collection and analysis occurred, 4. Type(s) of instrument(s) used to collect and analyze data, 5. Description of data and how the data was collected, including when applicable, (A) selection of stream reach,study site and transect section, (B) flow, survey, elevation and depth measurements, (C) pertinent physical, biological, water chemistry, and socio-economic data, and 6. Description of how data was analyzed,

(a) description of monitoring equipment, (b) location of monitoring equipment, (c) provisions for payment of monitoring, and (d) reporting system:

The Thunderbird Creek Segment 2 discharge was not directly measured. Monthly means are estimated by subtraction of Eklutna River discharges above Thunderbird from those below (as described above). Therefore, methods for Segments 1 and 3 are relevant to the production of these results.

Fish periodicity and fish count data tables are attached. These were obtained by walking the river section with data sheets and recording observations of adult fish according to protocols developed for a USF&WS project. The results of this study are confidential to protect the timing, location, and numbers of these sensitive salmon runs. We request that these periodicity tables also not be distributed widely. Actual observations were supplemented by an ADF&G Sport Fisheries Biologist, by comparison with similar local rivers, and best professional judgment (as noted). Minnow trapping was not conducted in this section.

Data for this application is presented in the attached 2002 Eklutna River Complex at Three Sites (in CFS) Excel data table, under the last two columns of data – Thunderbird Creek. The winter discharge measures taken by USGS and NVE at the Eklutna River sites using USGS ice methods, can be used to calculate a winter low discharge reading of 14.23 cfs on 1/17/03 for this Thunderbird Creek segment.

EKLUTNA PERIODICITY TABLE 2

Thunderbird Creek - from an unnamed tributary draining Eklutna and Bear Mountains to the confluence with Eklutna River.

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

Little information for king salmon in this creek. Partially based on Lower Eklutna and Ship Creek

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

Little information for coho salmon in this creek. Partially based on Lower Eklutna and Ship Creek

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

Based on Eklutna 2002 data and Ship Creek. (Some pinks at juncture of Eklutna and Tbird.)

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

Adult chum arrive here later

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

Based on Ship Creek

Rainbow Trout	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Spawning				XX	XXXX	XX						
Incubation				XX	XXXX	XXXX	XXXX	XX				
Rearing	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

Based on Ship Creek

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

Based on our professional judgment.

2002 Eklutna River Complex Discharges at Three Sites (in CFS)

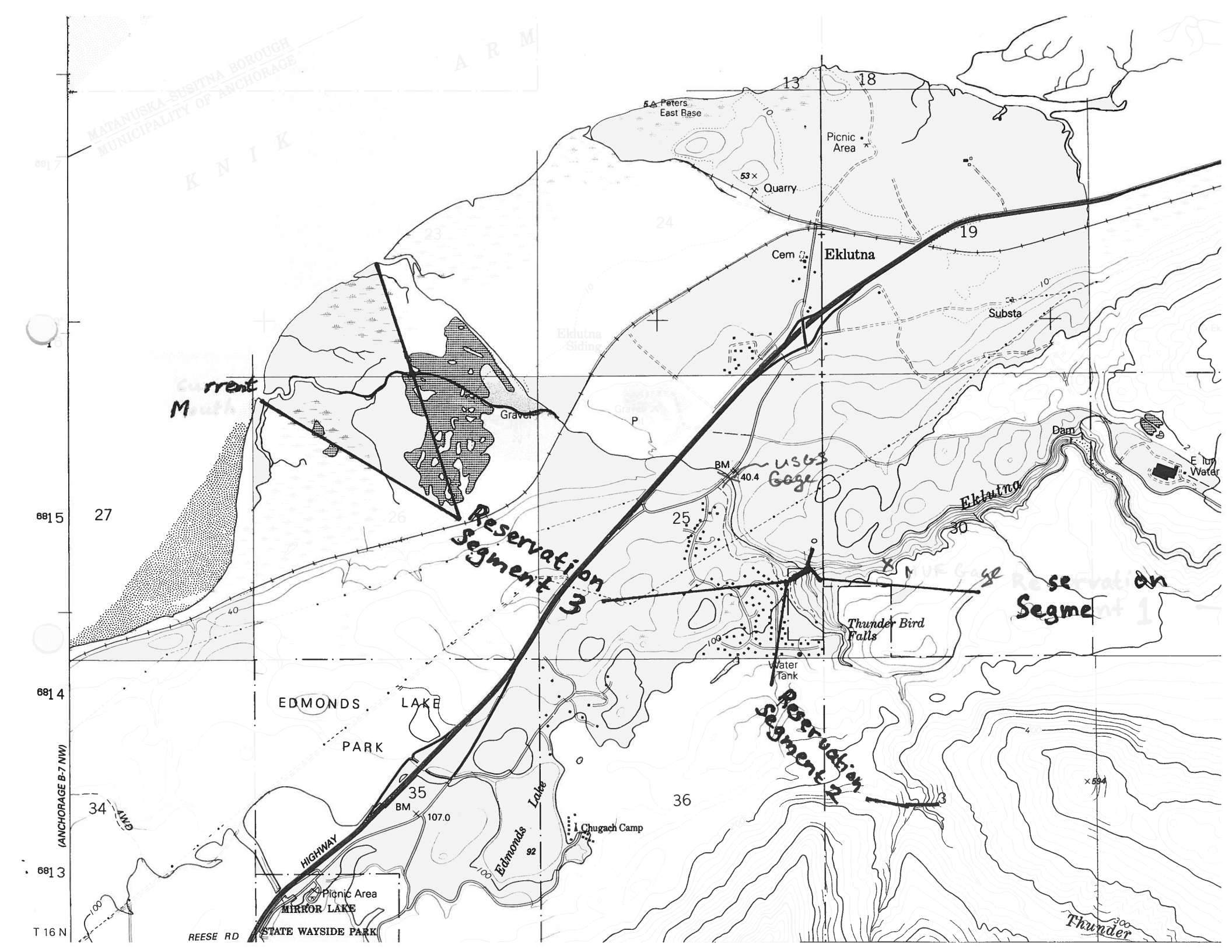
Date		Station 15280200 E. River at Old Glenn		Station 15280100 Eklutna River Above ThunderBird			Thunderbird Creek (by Subtraction)	
		USGS Discharge Daily Mean	USGS Month X	NVE Discharge	NVE Month X	USGS Discharge	Discharge	Month X
20020510				15		13		
20020515		36						
20020516		38						
20020517		42		12			30	
20020518		48						
20020519		53						
20020520		61						
20020521		69						
20020522		72						
20020523		69						
20020524		75		13			62	
20020525		82						
20020526		97						
20020527		104						
20020528		91						
20020529		84						
20020530		87						
20020531		87	70	11	13		76	56
20020601		86						
20020602		85						
20020603		77				9		
20020604		74						
20020605		82						
20020606		82						
20020607		79		11			68	
20020608		80						
20020609		76						
20020610		75						
20020611		71						
20020612		70						
20020613		68						
20020614		74		11			63	
20020615		85						
20020616		90						
20020617		90						
20020618		87						
20020619		82						
20020620		81						
20020621		82		8			74	
20020622		80						
20020623		76						
20020624		74						
20020625		73						

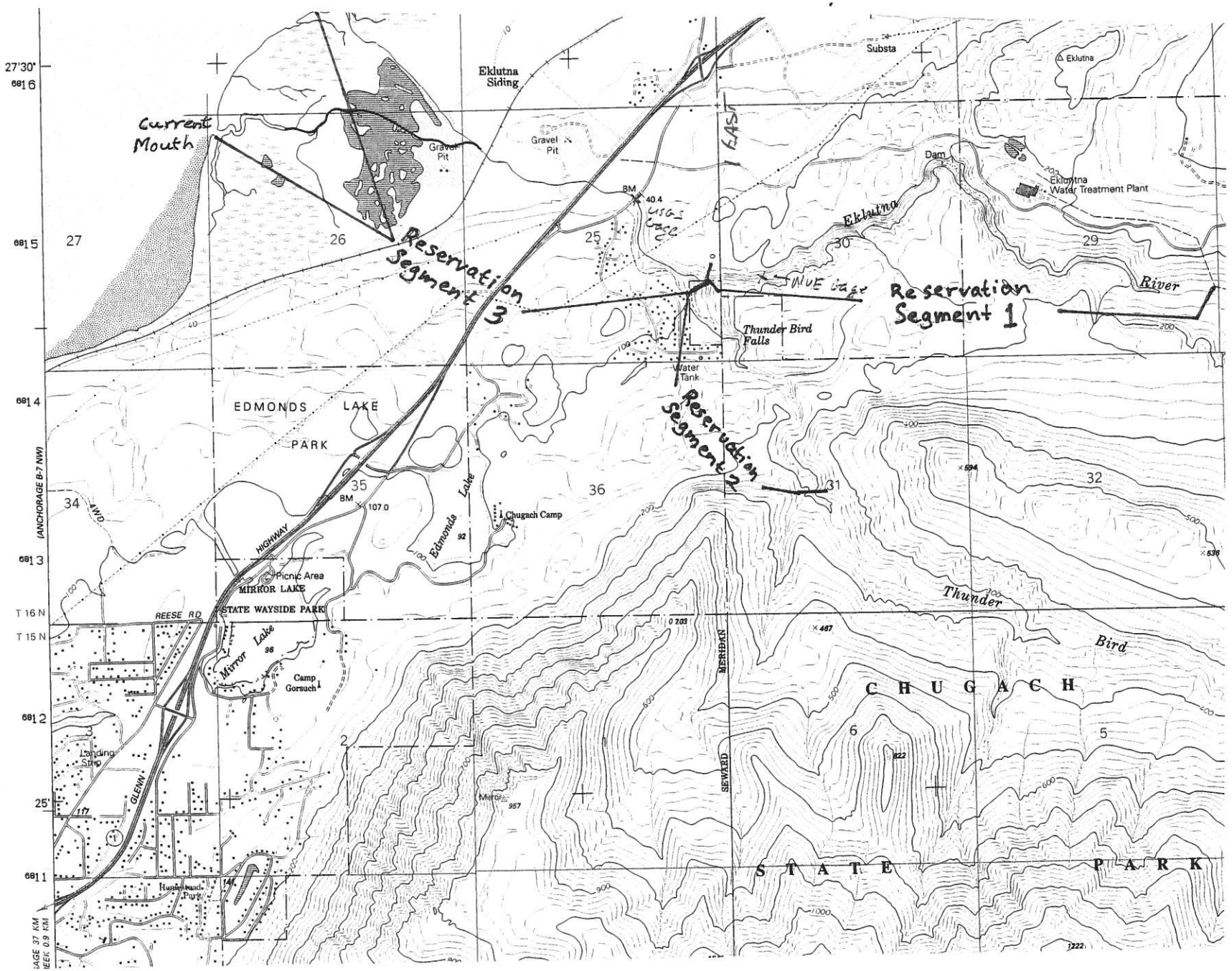
20020626		72						
20020627		70						
20020628		71						
20020629		68						
20020630		66	78		10			68
20020701		62						
20020702		61						
20020703		61						
20020704		59						
20020705		58		8			50	
20020706		57						
20020707		55						
20020708		55						
20020709		55						
20020710		56						
20020711		55		8		8	47	
20020712		54						
20020713		54						
20020714		53						
20020715		53						
20020716		53						
20020717		51						
20020718		53						
20020719		50						
20020720		52						
20020721		49						
20020722		48						
20020723		49						
20020724		51						
20020725		51						
20020726		50						
20020727		52						
20020728		50						
20020729		48		7			41	
20020730		48						
20020731		48	53		8			46
20020801		46						
20020802		47						
20020803		47						
20020804		49						
20020805		48						
20020806		48						
20020807		50						
20020808		52						
20020809		56						
20020810		52						
20020811		55						
20020812		59						
20020813		66		12			54	
20020814		70						
20020815		76						

20020816		76						
20020817		74						
20020818		69						
20020819		69						
20020820		73						
20020821		70						
20020822		71						
20020823		70		9			61	
20020824		76						
20020825		80						
20020826		72						
20020827		68						
20020828		65						
20020829		66						
20020830		68		7		7	61	
20020831		70	63		9			59
20020901		69						
20020902		69						
20020903		67						
20020904		65						
20020905		65						
20020906		76		11			65	
20020907		71						
20020908		70						
20020909		74						
20020910		77						
20020911		77						
20020912		76						
20020913		73		7			66	
20020914		70						
20020915		68						
20020916		66						
20020917		64						
20020918		63						
20020919		61						
20020920		59		7			52	
20020921		57						
20020922		55						
20020923		54						
20020924		53						
20020925		53				7		
20020926		57						
20020927		57		8			49	
20020928		55						
20020929		55						
20020930		56	64		8			58
20021001		71						
20021002		73						
20021003		63						
20021004		63		10			53	
20021005		62						

20021006		61						
20021007		70						
20021008		66						
20021009		65						
20021010		64						
20021011		65						
20021012		64						
20021013		63						
20021014		63						
20021015		64		10			54	
20021016		64						
20021017		64						
20021018		66						
20021019		67						
20021020		68						
20021021		70						
20021022		70						
20021023		68						
20021024		68						
20021025		69		9			60	
20021026		70						
20021027		67						
20021028		67						
20021029		67						
20021030		66						
20021031		65	66		10			56
20021101		63		9			54	
20021102		60						
20021103		57						
20021104		56						
20021105		55						
20021106		55						
20021107		52						
20021108		48		8			40	
20021109		49						
20021110		68						
20021111		74						
20021112		46						
20021113		51						
20021114		44						
20021115		43						
20021116		41						
20021117		43						
20021118		43						
20021119		39						
20021120		38						
20021121		38						
20021122		37		9			28	
20021123		37						
20021124		37						
20021125		36						

20021126		36						
20021127		35						
20021128		34						
20021129		36						
20021130		37	46	11	9		26	37
20021201		34						
20021202		33						
20021203		33						
20021204		32						
20021205		32						
20021206		31						
20021207		30						
20021208		30						
20021209		30						
20021210		30						
20021211		29						
20021212		27						
20021213		29		9			20	
20021214		35						
20021215		28	31		9			20


MATANUSKA-SUSITNA BOROUGH
MUNICIPALITY OF ANCHORAGE
13
18
19
24
25
27
30
35
36
34
5A Peters
East Base
Picnic
Area
53
Quarry
Cem
Eklutna
Substa
Graver
P
Dam
BM
40.4
USGS
Gage
Eklutna
Thunder Bird
Falls
Water
Tank
Reservation
Segment 3
Reservation
Segment 2
EDMONDS LAKE
PARK
BM
107.0
Edmonds Lake
92
Chugach Camp
HIGHWAY
Picnic Area
MIRROR LAKE
STATE WAYSIDE PARK
REESE RD
AWD
Thunder
6815
6814
6813
T 16 N
(ANCHORAGE B-7 NW)


Current Mouth
Reservation Segment 3
Reservation Segment 2
Reservation Segment 1
Eklutna Siding
Gravel Pit
Gravel Pit
Substa
Eklutna
Dam
Eklutna Water Treatment Plant
Eklutna
River
BM 40.4
USGS
Thunder Bird Falls
Water Tank
EDMONDS LAKE PARK
BM 107.0
Edmonds Lake
Chugach Camp
HIGHWAY
Picnic Area
MIRROR LAKE STATE WAYSIDE PARK
REESE RD
Mirror Lake
Camp Gorsuch
Landing Strip
GLENN
Mirror
SEWARD MERIDIAN
Thunder Bird
CHUGACH
STATE PARK
(ANCHORAGE B-7 NW)
T 16 N
T 15 N
27'30"
25'

EKLUTNA RIVER COMPLEX
Highest Monthly Mean Discharges (cfs), 2002-2004

		EKLR-1	TBCR-2	GHWY-3
1	JAN	7	15	21
2	FEB	4	9	22
3	MAR	*no data*	*no data*	16
4	APR	8	13	22
5	MAY	13	56	70
6	JUN	10	83	81
7	JUL	8	61	67
8	AUG	9	59	63
9	SEP	8	58	64
10	OCT	10	56	66
11	NOV	9	37	46
12	DEC	9	20	31
	2002	2003	2004	

EKLR-1=Segment 1, Eklutna River above Thunderbird Creek
TBCR-2=Segment 2, Thunderbird Creek
GHWY-3=Segment 3, Eklutna River below Thunderbird Creek

Eklutna River Complex
Winter (mostly under ice) Discharges

Date	ER Lower	ER Upper	Tbird
1/17/2003	22	7	15
4/7/2003	14	7	7
1/26/2004	16	5	11
2/25/2004	13	4	9
4/25/2004	21	8	13

10/01/02 - 12/31/03 Eklutna River Complex Discharges at Three Sites (in CFS)

Date	Station 15280200 E. River at Old Glenn			Station 15280100 E. River Above T.Bird		Thunderbird Creek (by Subtraction)	
		USGS Discharge Daily Mean	USGS Month X	NVE Discharge	NVE Month X	Discharge	Month X
1/1/2003	e	20					
1/2/2003	e	23					
1/3/2003	e	22					
1/4/2003	e	22					
1/5/2003	e	22					
1/6/2003	e	22					
1/7/2003	e	21					
1/8/2003	e	21					
1/9/2003	e	21					
1/10/2003	e	22					
1/11/2003	e	22					
1/12/2003	e	22					
1/13/2003	e	22					
1/14/2003	e	22					
1/15/2003	e	22					
1/16/2003	e	22					
1/17/2003	e	22					
1/18/2003	e	22					
1/19/2003	e	22					
1/20/2003	e	22					
1/21/2003		22					
1/22/2003	e	21					
1/23/2003	e	21					
1/24/2003	e	20					
1/25/2003	e	19					
1/26/2003	e	19					
1/27/2003	e	19					
1/28/2003	e	20					
1/29/2003	e	21					
1/30/2003	e	21					
1/31/2003		22	21				
2/1/2003		21					
2/2/2003		21					
2/3/2003		22					
2/4/2003		24					
2/5/2003		26					
2/6/2003		23					
2/7/2003		22					
2/8/2003		24					
2/9/2003		25					
2/10/2003		28					
2/11/2003		26					
2/12/2003		25					
2/13/2003		25					

2/14/2003		23					
2/15/2003		23					
2/16/2003	e	22					
2/17/2003	e	21					
2/18/2003	e	20					
2/19/2003	e	19					
2/20/2003	e	19					
2/21/2003	e	18					
2/22/2003	e	18					
2/23/2003	e	19					
2/24/2003	e	20					
2/25/2003	e	21					
2/26/2003	e	21					
2/27/2003		22					
2/28/2003		22	22				
3/1/2003		22					
3/2/2003		23					
3/3/2003		23					
3/4/2003		22					
3/5/2003		23					
3/6/2003	e	22					
3/7/2003	e	21					
3/8/2003	e	18					
3/9/2003	e	12					
3/10/2003	e	7					
3/11/2003	e	7					
3/12/2003	e	10					
3/13/2003	e	12					
3/14/2003	e	15					
3/15/2003	e	16					
3/16/2003	e	16					
3/17/2003	e	16					
3/18/2003	e	16					
3/19/2003	e	15					
3/20/2003	e	15					
3/21/2003	e	14					
3/22/2003	e	14					
3/23/2003	e	13					
3/24/2003	e	13					
3/25/2003	e	14					
3/26/2003	e	14					
3/27/2003	e	15					
3/28/2003	e	15					
3/29/2003	e	15					
3/30/2003	e	15					
3/31/2003	e	15	16				
4/1/2003	e	15					
4/2/2003	e	14					
4/3/2003	e	14					
4/4/2003	e	14					
4/5/2003	e	14					
4/6/2003	e	14					

4/7/2003	e	14					
4/8/2003		15					
4/9/2003		17					
4/10/2003		17					
4/11/2003		20					
4/12/2003		28					
4/13/2003		27					
4/14/2003		28					
4/15/2003		27					
4/16/2003		27					
4/17/2003		22					
4/18/2003		22					
4/19/2003		20					
4/20/2003		20					
4/21/2003		21					
4/22/2003		22					
4/23/2003		25					
4/24/2003		28					
4/25/2003		29					
4/26/2003		29					
4/27/2003		29					
4/28/2003		27					
4/29/2003		24					
4/30/2003		25	22				
5/1/2003		24					
5/2/2003		22		9		13	
5/3/2003		22					
5/4/2003	e	21					
5/5/2003	e	20					
5/6/2003	e	19					
5/7/2003		19					
5/8/2003		19					
5/9/2003		19		8		11	
5/10/2003		19					
5/11/2003		19					
5/12/2003		20					
5/13/2003		19					
5/14/2003		18					
5/15/2003		19					
5/16/2003		20					
5/17/2003		21					
5/18/2003		20					
5/19/2003		19					
5/20/2003		19					
5/21/2003		19					
5/22/2003		20					
5/23/2003		20					
5/24/2003		20					
5/25/2003		22					
5/26/2003		22					
5/27/2003		23					
5/28/2003		24					

5/29/2003		26					
5/30/2003		27		8		19	
5/31/2003		29	21		8		14
6/1/2003		28					
6/2/2003		28					
6/3/2003		27					
6/4/2003		29					
6/5/2003		32					
6/6/2003		35		8		27	
6/7/2003		35					
6/8/2003		38					
6/9/2003		38					
6/10/2003		46					
6/11/2003		55					
6/12/2003		65					
6/13/2003		81		8		73	
6/14/2003		93					
6/15/2003		111					
6/16/2003		104					
6/17/2003		106					
6/18/2003		99					
6/19/2003		99					
6/20/2003		101		9		92	
6/21/2003		102					
6/22/2003		99					
6/23/2003		100					
6/24/2003		108					
6/25/2003		97					
6/26/2003		87					
6/27/2003		80		9		71	
6/28/2003		79					
6/29/2003		77					
6/30/2003		78	72		8.5		66
7/1/2003		81					
7/2/2003		90					
7/3/2003		88		9		79	
7/4/2003		89					
7/5/2003		88					
7/6/2003		84					
7/7/2003		84					
7/8/2003		82					
7/9/2003		78					
7/10/2003		75					
7/11/2003		74					
7/12/2003		66		8		58	
7/13/2003		65					
7/14/2003		57					
7/15/2003	e	60					
7/16/2003		67					
7/17/2003		66					
7/18/2003		62		7		55	
7/19/2003		59					

7/20/2003		59					
7/21/2003		59					
7/22/2003		58					
7/23/2003		57					
7/24/2003		56					
7/25/2003		58		7		51	
7/26/2003		56					
7/27/2003		54					
7/28/2003		53					
7/29/2003		52					
7/30/2003		50					
7/31/2003		50	67		8		61
8/1/2003		49		7		42	
8/2/2003		50					
8/3/2003		47					
8/4/2003		45					
8/5/2003		42					
8/6/2003		40					
8/7/2003		38					
8/8/2003		37		7		30	
8/9/2003		36					
8/10/2003		36					
8/11/2003		37					
8/12/2003		43					
8/13/2003		40					
8/14/2003		38		6		32	
8/15/2003		39					
8/16/2003		39					
8/17/2003		38					
8/18/2003		38					
8/19/2003		38					
8/20/2003		38					
8/21/2003		38					
8/22/2003		39		6		33	
8/23/2003		36					
8/24/2003		37					
8/25/2003		37					
8/26/2003		38					
8/27/2003		37					
8/28/2003		40					
8/29/2003		39		6		33	
8/30/2003		39					
8/31/2003		39	40		6		34
9/1/2003		40					
9/2/2003		39					
9/3/2003		39					
9/4/2003		39					
9/5/2003		35		7		28	
9/6/2003		34					
9/7/2003		34					
9/8/2003		33					
9/9/2003		32					

9/10/2003		32					
9/11/2003		31					
9/12/2003		30		6		24	
9/13/2003		32					
9/14/2003		30					
9/15/2003		29					
9/16/2003		29					
9/17/2003		28					
9/18/2003		28					
9/19/2003		27		6		21	
9/20/2003		27					
9/21/2003		27					
9/22/2003		26					
9/23/2003		26					
9/24/2003		27					
9/25/2003		26					
9/26/2003		26		7	c	19	
9/27/2003		25					
9/28/2003		25					
9/29/2003		26					
9/30/2003		26	30		6.5		23
10/1/2003		26					
10/2/2003		26					
10/3/2003		33		8	c	25	
10/4/2003		37					
10/5/2003		55					
10/6/2003		75					
10/7/2003		62					
10/8/2003		52					
10/9/2003		54					
10/10/2003		47		6	c	41	
10/11/2003		45					
10/12/2003		43					
10/13/2003		41					
10/14/2003		41					
10/15/2003		41					
10/16/2003		40					
10/17/2003		38					
10/18/2003		37					
10/19/2003		37					
10/20/2003		34					
10/21/2003		35					
10/22/2003		37					
10/23/2003		35					
10/24/2003		33		6	c	27	
10/25/2003		34					
10/26/2003		33					
10/27/2003		32					
10/28/2003		30					
10/29/2003	e	29					
10/30/2003	e	32					
10/31/2003	e	30	39		7		31

12/23/2003		16					
12/24/2003	e	16					
12/25/2003	e	16					
12/26/2003	e	16					
12/27/2003	e	16					
12/28/2003	e	16					
12/29/2003	e	16					
12/30/2003	e	16					
12/31/2003	e	16	17				

e = estimated, under ice readings

c = corrected NVE Station 15280100 (Eklutna River above Thunderbird Creek) measures. The callibration of our flow probe was off for these measures, apparently by a consistent amount. Readings were corrected by a factor derived from side-by side measures taken with UGGS.

11/1/2003	e	30					
11/2/2003	e	30					
11/3/2003		29					
11/4/2003		28					
11/5/2003		28					
11/6/2003		27		5	c	22	
11/7/2003		27					
11/8/2003		29					
11/9/2003		27					
11/10/2003		23					
11/11/2003		24					
11/12/2003		28					
11/13/2003		24					
11/14/2003	e	14					
11/15/2003	e	8					
11/16/2003	e	5.5					
11/17/2003	e	7					
11/18/2003	e	10					
11/19/2003	e	19					
11/20/2003	e	26					
11/21/2003	e	27					
11/22/2003	e	29					
11/23/2003	e	30					
11/24/2003	e	30					
11/25/2003	e	28					
11/26/2003	e	26					
11/27/2003	e	24					
11/28/2003	e	22					
11/29/2003	e	22					
11/30/2003	e	21	24		5		22
12/1/2003	e	21					
12/2/2003	e	20					
12/3/2003	e	20					
12/4/2003	e	20					
12/5/2003	e	20					
12/6/2003	e	20					
12/7/2003	e	19					
12/8/2003	e	19					
12/9/2003	e	19					
12/10/2003	e	19					
12/11/2003	e	18					
12/12/2003	e	18					
12/13/2003	e	18					
12/14/2003	e	18					
12/15/2003	e	18					
12/16/2003	e	18					
12/17/2003	e	17					
12/18/2003	e	16					
12/19/2003	e	11					
12/20/2003	e	10					
12/21/2003	e	13					
12/22/2003		16					