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# Catalogue of Fish and Stream Resources of Carmacks Area

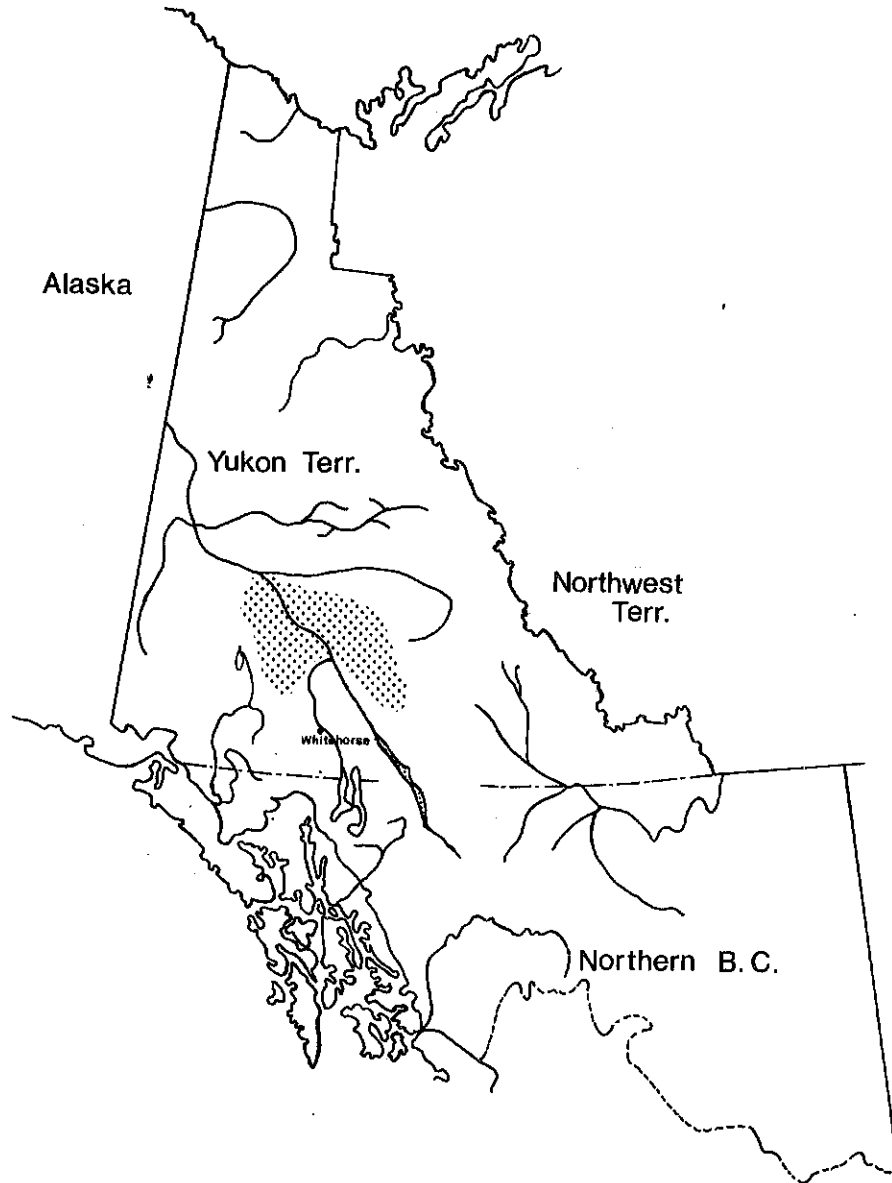
C. E. Walker R. F. Brown D. A. Kato

PAC/T-74-8

Northern Operations Branch  
Pacific Region



# CATALOGUE OF FISH AND STREAM RESOURCES OF CARMACKS AREA



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DEPARTMENT OF THE ENVIRONMENT  
FISHERIES AND MARINE SERVICE  
PACIFIC REGION

VANCOUVER

1974

## FOREWORD.

This catalogue is a historical record and information source concerning fish species and their habitats in the Carmacks area. It has been assembled for the use of those people involved in fisheries management and environmental protection and is a part of a series covering the major drainage basins in the Northern B. C. and Yukon Division.

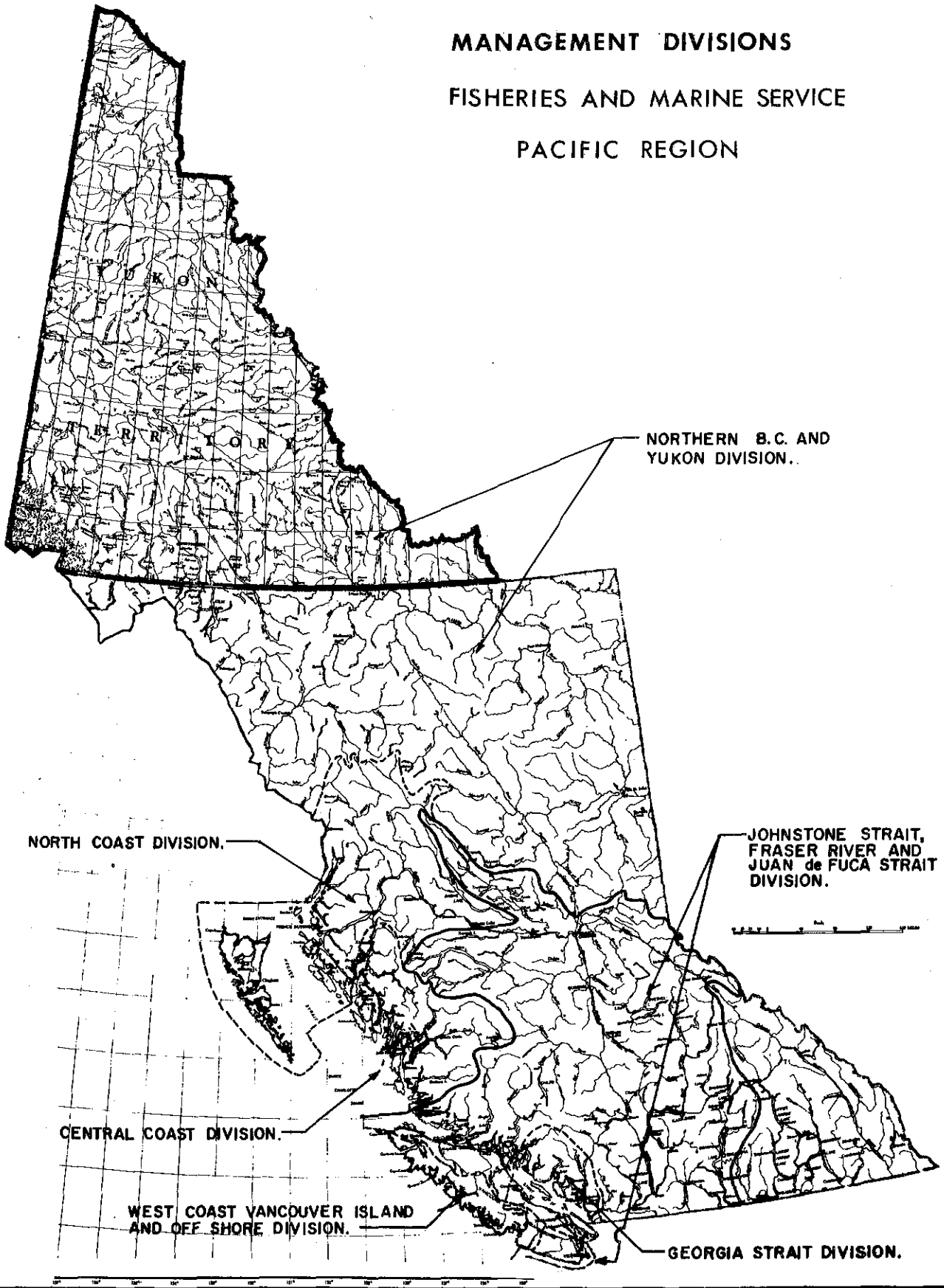
The rapidity with which unnatural change now takes place in the north makes it essential that managers be able to control such developments or changes so that environmental damage is avoided or at least minimized. Harvest of the fishery resources must be controlled by sensible management based on biologically sound facts; this catalogue provides a tool towards these ends.

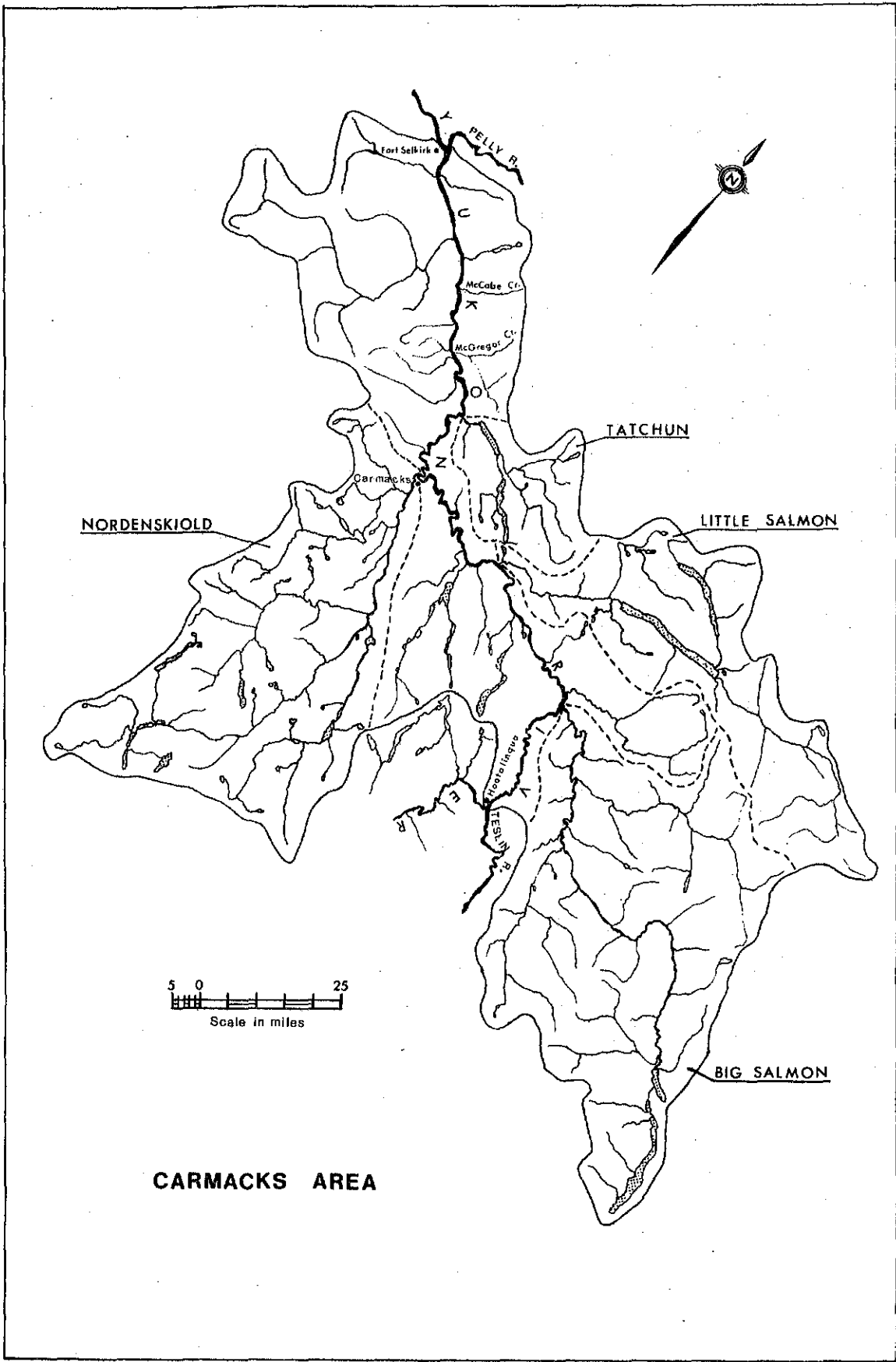
A. Gibson, Chief,  
Northern B. C. and  
Yukon Division.

## ABSTRACT

The Carmacks area represents approximately 12,000 square miles of the Yukon watershed located in the south central area of the Yukon Territory. This catalogue reports on 194 river miles of the Yukon River and four major tributaries, namely, Big Salmon River, Little Salmon River, Norden-skiold River and Tatchun Creek. Fifteen species of fish inhabit the waters of the study area. The chinook and chum salmon are most important for subsistence fisheries at this time. Information on biological critical areas and abundance are unknown except for salmon in which case some spawning areas have been identified and spawner populations enumerated.

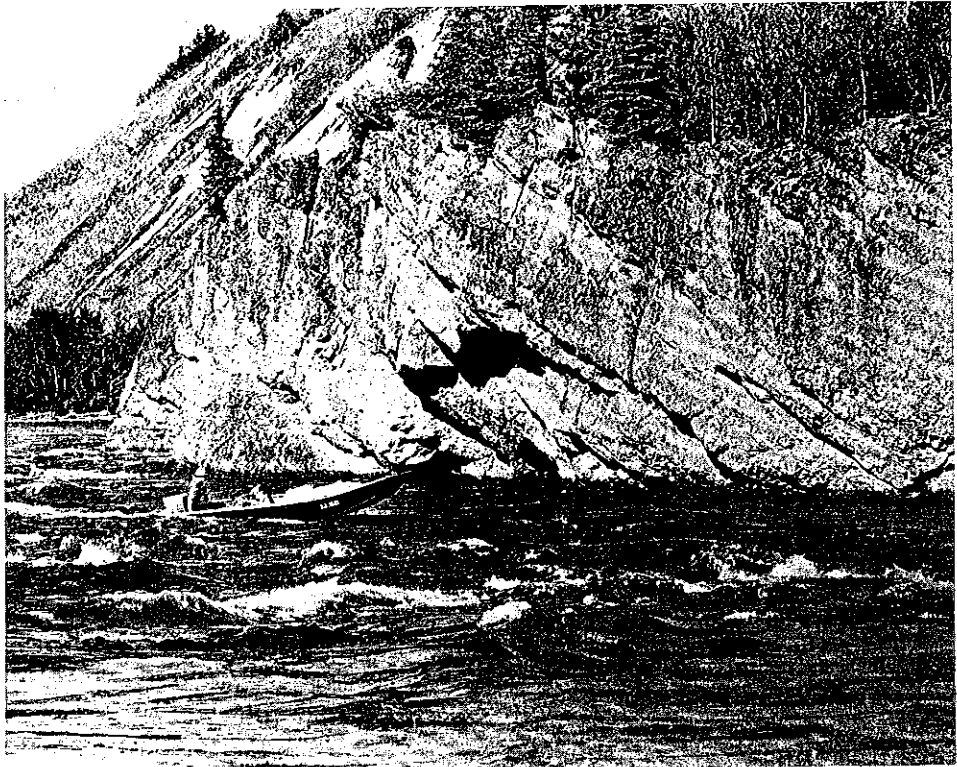
**MANAGEMENT DIVISIONS  
FISHERIES AND MARINE SERVICE  
PACIFIC REGION**



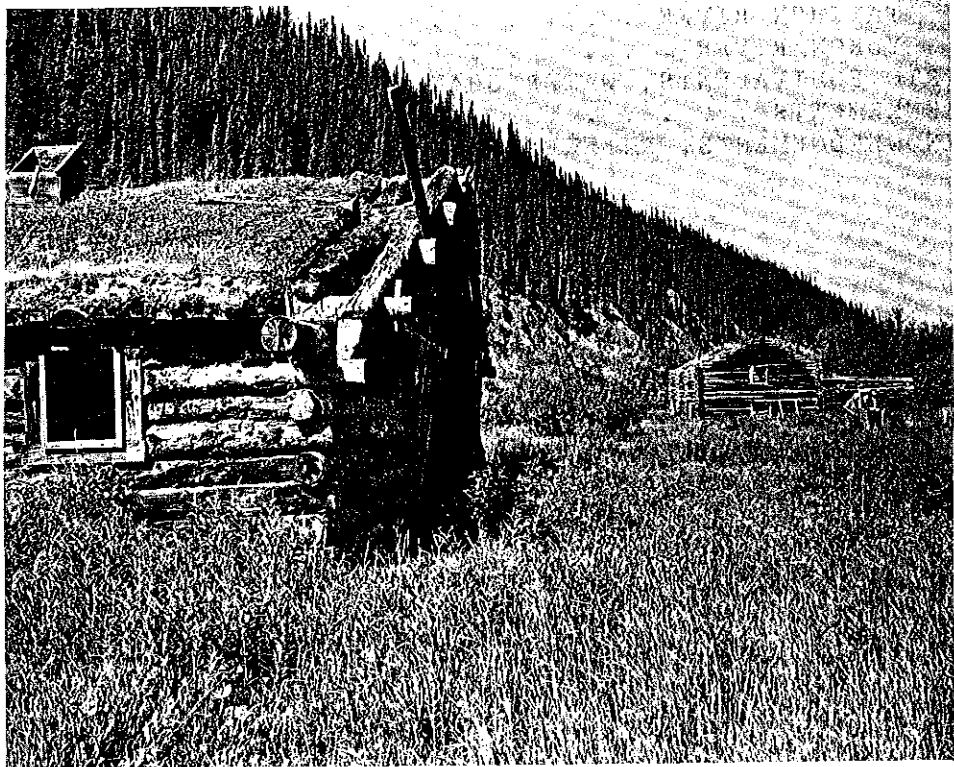


## CONTENTS

Foreward . . . . .	ii
Abstract . . . . .	iii
Management Divisions . . . . .	iv
Map of Carmacks Area . . . . .	v
INTRODUCTION . . . . .	1
STANDARDS USED . . . . .	3
MAP REFERENCE . . . . .	4
STREAM DATA	
BIG SALMON RIVER . . . . .	6
LITTLE SALMON RIVER . . . . .	16
NORDENSKIOLD RIVER . . . . .	24
TATCHUN RIVER . . . . .	34
YUKON RIVER . . . . .	42
METRIC EQUIVALENTS, WATER QUANTITIES AND FLOW MEASUREMENTS . . . . .	53
ACKNOWLEDGEMENTS, REFERENCES . . . . .	55



Five Finger Rapids, Yukon River



Old Stagecoach stop on Yukon River



## INTRODUCTION

The area described in this catalogue is that part of the Yukon River drainage commencing at Hootalinqua and terminating at Fort Selkirk. These points are located approximately 88 and 282 river miles respectively from Whitehorse. Drainage is approximately 12,000 square miles. The Yukon River is the dominant water body in the study area and receives flows from five important tributaries, namely Big Salmon River, Little Salmon River, Nordenskiöld River, Tatchun River and Pelly River. The first four named streams are described in this report; Pelly River will be discussed in a future catalogue.

Prior to the construction of the Klondike Highway the Yukon River was used extensively for commerce as it was the principal arterial route between Whitehorse and various goldfield and mining communities. Today the stream is utilized to a very small degree for commerce but increasingly for boating by summer tourists.

The area is hilly to mountainous with elevation ranging from 1,200 to 6,300 feet ASL. The climate is cold with freezing temperatures prevailing for approximately eight months of the year. The coldest month is January with mean daily maximum and minimum temperatures of  $-11.6$  and  $-31.3^{\circ}\text{F}$  respectively; the warmest month is July at  $71.7$  and  $45.2^{\circ}\text{F}$ . The annual mean air temperature is  $23.6^{\circ}\text{F}$ .<sup>1</sup> Precipitation is in the order of 11 inches annually.

Approximately 250 people live permanently in the study area with the large majority being located at Carmacks, 202 river miles from Whitehorse. The Klondike Highway was completed in 1950 and runs north-south through the area and another major road lies east-west connecting Carmacks with the upper Pelly system. Secondary roads are scarce.

The number of fish species inhabiting the area has been identified at 15, namely:

inconnu	- <i>Stenodus leucichthys</i>	(Family Coregonidae)
humpback whitefish	- <i>Coregonus clupeaformis</i>	"
broad whitefish	- <i>Coregonus nasus</i>	"
least cisco	- <i>Coregonus sardinella</i>	"
round whitefish	- <i>Prosopium cylindraceum</i>	"
Arctic grayling	- <i>Thymallus arcticus</i>	(Family Thymallidae)
lake trout	- <i>Salvelinus namaycush</i>	(Family Salmonidae)
chinook salmon	- <i>Oncorhynchus tshawytscha</i>	"
chum salmon	- <i>Oncorhynchus keta</i>	"
northern pike	- <i>Esox lucius</i>	(Family Esocidae)
longnose sucker	- <i>Catostomus catostomus</i>	(Family Catostomidae)
burbot	- <i>Lota lota</i>	(Family Gadidae)
slimy sculpin	- <i>Cottus cognatus</i>	(Family Cottidae)
Arctic lamprey	- <i>Lampetra japonica</i>	(Family Petromyzontidae)
lake chub	- <i>Couesius plumbeus</i>	(Family Cyprinidae)

Information on abundance, critical areas, survival values and life history of the various species is lacking except for salmon.

<sup>1</sup> 18-year record for Fort Selkirk; Atmospheric Environment Service, Department of the Environment, Canada.

The total population of spawning chinook salmon in the study area is estimated at 3,000-7,000 fish distributed as follows: Big Salmon River 2,000-5,000; Little Salmon River 500-1,000; Tatchun River 100-200 and Nordenskiold River 0-50. Chinook spawning was identified in the Yukon River in 1973 but further work is required to provide an estimate on population magnitude. Time of chinook spawning in the study area is generally late August. Chum salmon spawning has also been observed in the Yukon River but numbers are unknown. Spawning time is generally mid-October which coincides with the formation of ice; therefore, conditions seriously limit observation.

Subsistence fishing for salmon occurs annually along the Yukon River and occasionally in the lower reaches of the major streams. However, small numbers of other species are also captured, notably inconnu and pike. Fishing is carried out by gillnet (6 and 7" stretch mesh). The fishing activity is carried on in four centres, namely Fort Selkirk, Minto, Tatchun and Carmacks. Netting for salmon commences at Fort Selkirk on approximately July 10 and at Carmacks 10 days later.<sup>2</sup> Fishing terminates with the formation of ice in October. In 1973 Fisheries personnel estimated subsistence catches at 1,312 chinook and 499 chum salmon in the study area. The average annual catches in the previous 10 years had been estimated at 2,200 chinook and 1,500 chum salmon. Subsistence fishing occasionally takes place at Quiet Lake (Big Salmon River), Little Salmon Lake (Little Salmon River), Hutshi and Braeburn Lakes (Nordenskiold River) and Tatchun and Frenchman Lakes (Tatchun River) for whitefish and lake trout but numbers caught are unknown. Fishing for commercial purposes is practically non-existent in the Carmacks area. Whitefish and lake trout quotas of 2,000 and 6,000 lbs exist for Hutshi and Quiet Lake respectively; however, there is no indication that commercial fishing occurs consistently in these places. A quota of 6,000 lbs for Little Salmon Lake was eliminated in 1969 to protect lake trout for recreation fishing. Recreation fishing is largely carried out at Little Salmon and Quiet Lakes where lake trout is the most sought-after fish. There is no accurate record of magnitude of catch.

The amount of fish currently utilized in the study area is much lower than formerly because of the lessened dependence on fish by the residents. Also, the population of dogs which consumed fish to a high degree is much reduced.

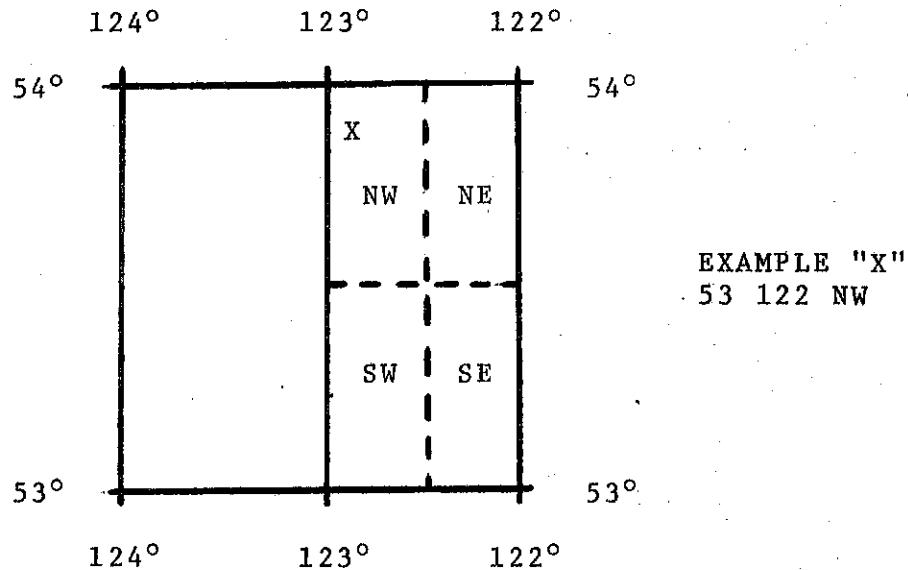
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<sup>2</sup> Wynne-Edwards, V. C. 1947a. The Yukon Territory. In Northwest Canadian fisheries surveys in 1944-45 Bull. Fish. Res. Bd. Canada 72:6-20.

STANDARDS USED

NAME OF STREAM: Name given in Gazetteer of Canada - Yukon; other names are added in lower case type.

LOCATION AND POSITION: Defined by quadrant indexing. Each geographical quadrilateral of the earth's surface of 1 degree in extent in latitude and longitude is divided into the SE, SW, NE and NW quarters. The south-east corner of each quadrilateral gives the initial point for the figures of reference (Gazetteer of Canada).



LENGTH: Mainstem only.

WIDTH: Average width, estimated to nearest foot.

DRAINAGE: Area in square miles of the entire drainage basin feeding the stream

Stream bed category definitions

Bedrock	bedrock
Boulder	>256 mm (>10")
Coarse	50.9 - 256 mm (2 - 10")
Fine	3.37 - 50.8 mm (1/8 - 2")
Sand & Silt	<3.37 mm

Distance references are from mouth of stream, unless stated otherwise.

Abbreviations: MO = Methyl Orange Phenol = Phenolphthalein.  
CF = Canada Fisheries personnel  
ADFG = Alaska Dept. Fish and Game personnel.

## Map Reference

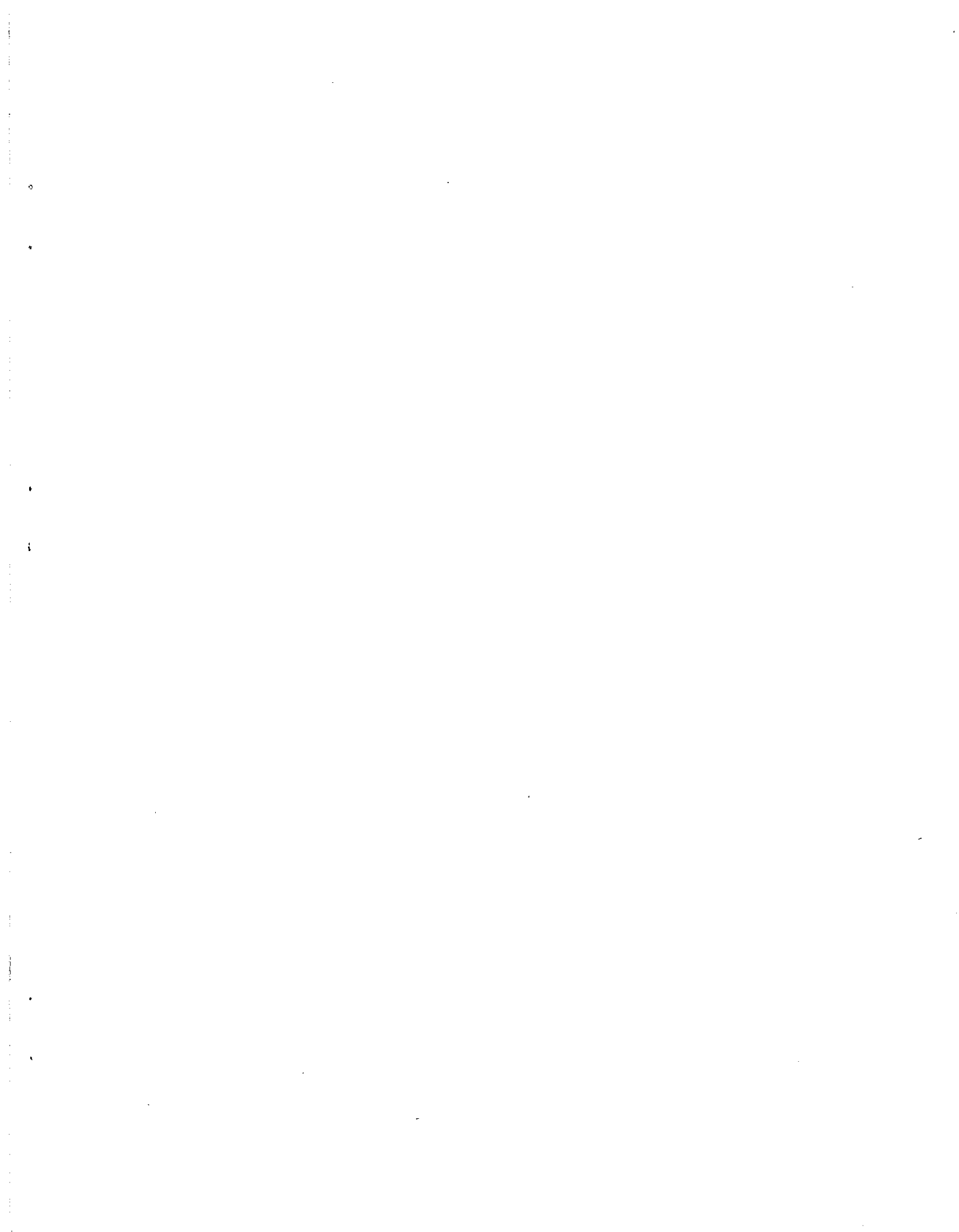
Road, Hard Surface, Heavy Duty.....	3 or more Lanes	Partially completed
" " Hard Surface, Heavy Duty.....	2 Lanes	Route No.
" " Hard Surface, Medium Duty.....	3 or more Lanes	2 Lanes
" " Loose Surface, Graded and Drained.....	3 or more Lanes	Not less than 14 ft. wide
Other Roads.....		Poor condition
Trail.....		
Railway, Double Track.....		
" " Single Track.....	Station	Stop
Boundary, International.....		
" " Provincial.....		
" " County or Land District.....		
" " Reservation, Military, etc.....		
Electric Power Line.....	on Steel Towers	on Wood Poles

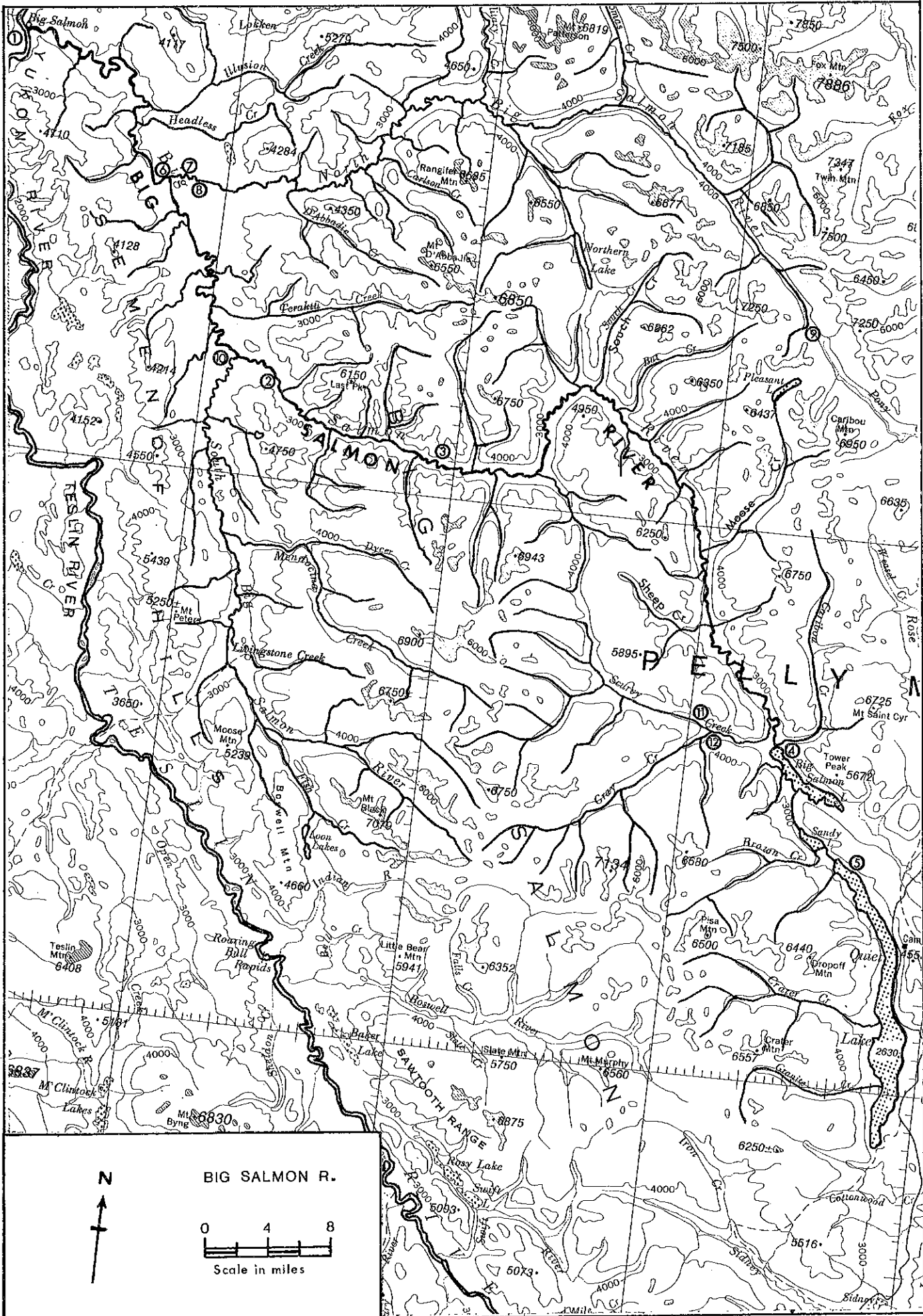
Triangulation Station.....	△	Spot Elevation, in feet.....	. 621
Contours, Elevation.....	1500	Wooded Areas.....	
" " Depression.....	2000	Swamp or Marsh.....	
Form Lines.....			
Stream, Intermittent.....	Cliff	W.L. 631	
Dam.....	Falls	Rapids	Navigation Light
Airfield, Military, El. in feet.....	76.5	Seaplane Base.....	⊕
" " Civil.....		Seaplane Anchorage.....	⊕
" " Auxiliary.....			
Building.....		Fire Lookout Tower.....	↑
Church.....		Bench Mark.....	BM 752
School.....		Telephone, Trunk Route.....	⊕

Road, Hard Surface, All Weather.....	More than 2 Lanes	2 Lanes	Route No.	Less than 2 Lanes
Road, Loose Surface, All Weather.....	2 Lanes or More	Less than 2 Lanes		Dry Weather
Road, Wagon, etc.....	Cart Track	Trail or Portage		
Boundary, International.....		Boundary Mon.....	⊕	
Boundary, Provincial.....		Survey Mon.....	⊕	
Boundary, County or District.....		Bench Mark.....	BM 1514	
Boundary, Indian Reserves, Park.....		Triangulation Sta.....	△	
Surveyed Line.....		Spot Elevation (in feet).....	4390	
Main Electric Power Line.....		Telephone, Trunk Route.....	⊕	
Railway, Standard Gauge.....	Multiple Track	Abandoned	Single Track	Station

Building.....	■	Fire Lookout Tower.....	↑	Contours, Elevation.....	500
School.....	S	Wireless Station.....	⊕	Contours, Approximate.....	2000
Post Office.....	P	Mine.....	⊕	Contours, Depression.....	2800
Church.....	+	Cliff.....		Esker.....	
Stream, indefinite or unsurveyed.....		Wooded Areas.....			
Stream, Intermittent.....		Navigable Canal.....			
Stream, in Dry River Bed.....		Rapids and Falls.....			
Braided Stream.....		Ferry.....	⊕		
Marsh or Swamp.....		Dam.....			
Glacier or Snowfield.....		Lighthouse.....	⊕		
Sand, Gravel or Mud.....		Aerodrome (Elevation in feet).....	2156		
		Seaplane Anchorage.....	⊕		

① ② ③ etc..... Photograph reference





Name of Stream	Tributary to	River System
BIG SALMON RIVER	YUKON RIVER	YUKON

LOCATION: Flows NW into Yukon River, N. of Semenov Hills.

		POSITION	61 134 NW
LENGTH	128 mi.	WIDTH	200 ft @ mouth
		DRAINAGE	2640 sq. mi.

0-24 mi. Riffle area, moderate gradient; streambed estimate  
(mouth - 11% boulder, 64% gravel, and 25% silt and sand;  
N. Big small amount of bedrock base and some flood plain  
Salmon R.) in this section.

24-47 mi. Riffle, moderate gradient; estimate 36% gravel and  
(N. Big Salmon - 64% silt and sand streambed composition.  
S. Big Salmon  
River)

47-128 mi. Riffle, moderate gradient; estimated streambed com-  
(S. Big Salmon position 2% boulder, 38% gravel, and 60% silt and  
R. - Big sand; a relatively lower gradient section with  
Salmon Lake) extreme stream meandering from Gray to Sheep  
Cr.

The headwaters of Big Salmon River are comprised of a chain of lakes (Quiet, Sandy, Big Salmon) and interconnecting streams 28 miles long. From the outlet of Big Salmon L., tortuous meanderings exist for approximately 20 mi., making aerial observations quite difficult. Some other areas of the stream are similar but of much shorter distance. The river is navigable to small boats and excellent for canoeing although one or two log jams have been reported near the lake outlet, necessitating portages. Sweepers are present throughout stream length and care must be taken to avoid boulders in the shallows. The stream generally flows through a forested area with a relatively dense growth of brush and trees along the stream bank. Continually sluffing cutbanks attaining a height of approximately 75' near the mouth generally contain the stream throughout its course. Accessible by boat from the Yukon R. or from the Canal Road and by boat from Quiet Lake.

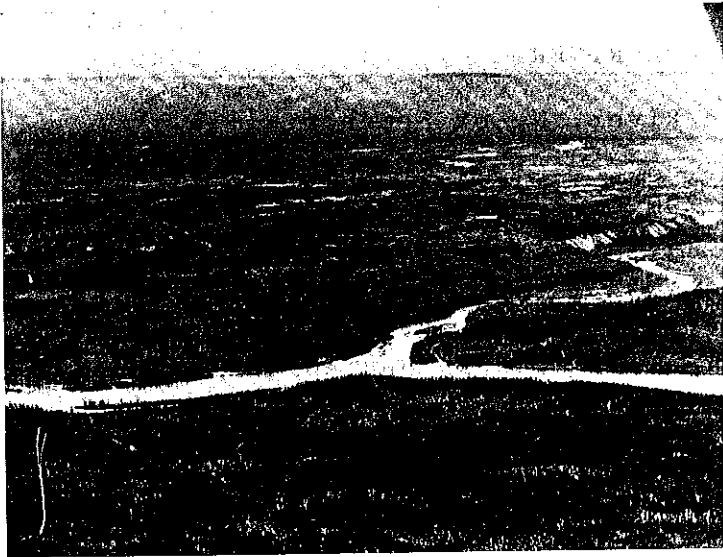
Gradient: Estimated at slightly greater than 1'/000 from the mouth to 97 mi. and < 1'/000 above this point.

Width: 190' at 3 mi., 276' at 4.5 mi., 165' at 70 mi., 130' at outlet of Big Salmon Lake.

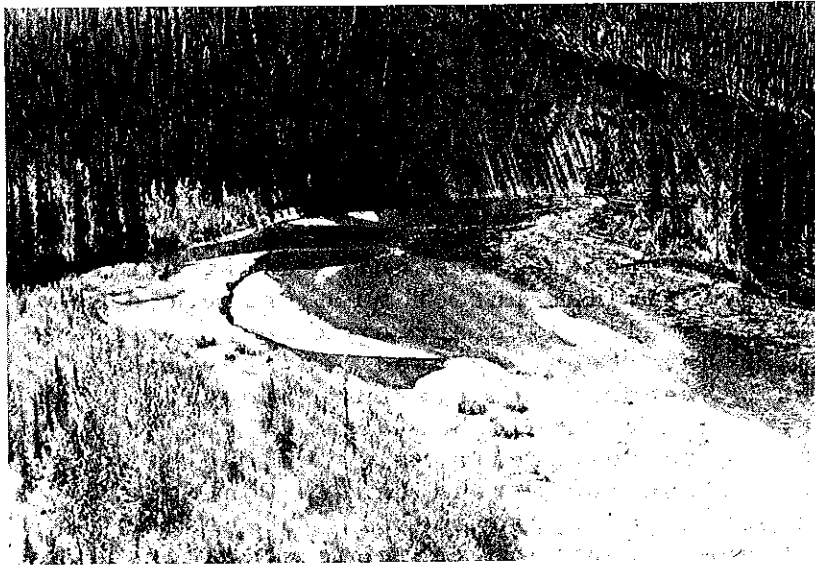
Discharge: mean (5 yr.) 2620 cfs, max. 24200 23/06/62, min. 470 cfs.  
4-12/04/57; est. discharge 770 cfs 19/08/72 at outlet of Big Salmon L., 2650 cfs 11/10/73 at 4.5 mi.

Water temperature: 55°F 19/08/72 at outlet of Big Salmon L.,  
53°F 19/08/72 at 70 mi., 55°F 19/08/72 at 3 mi., 34.5°F 11/10/73.

Water chemistry: 11/10/73 (Hach kit)  
Alkalinity: Phenol 0; MO: 7 gpg  
Hardness: CaCO<sub>3</sub> 8 gpg Acidity: Free 0  
PH: 8.5 DO: 13 ppm



1. Big Salmon River junction with Yukon River - Yukon River in foreground.



2. Big Salmon River - Mile 52.



3. Big Salmon River - Mile 64.



Water normally clear but becomes quite silty from tributary inflows during heavy or prolonged rainfalls and during runoff.

Fish observed:

Chinook salmon, Arctic grayling, round whitefish and longnose suckers were observed on 19/08/72. Burbot, lake trout, and humpback whitefish are probably present as these species are noted elsewhere in the Carmacks area. In 1972, a major concentration of chinook salmon spawners were observed for a distance of eight miles downstream from the outlet of Big Salmon Lake. In 1959 many redds were observed from Scurvy Cr. downstream for 3 miles which is also in this same section. Concentrations of spawners were also observed for a three-mile stretch below Sheep Cr., a 5-mile stretch between Bat and Moose Cr., and a 3-mile stretch below Sough Cr. A survey in 1959 noted a concentration of dead chinook approximately 16 mi. above the confluence of the Big Salmon and South Big Salmon Rivers. In 1971, major concentrations of chinook spawners were observed immediately below Big Salmon Lake. Scattered chinook spawning takes place throughout the Big Salmon R. Some chinook spawning also occurs in North and South Big Salmon Rivers.

Date	Species	Count		Part of system counted	Agency
		live	dead		
- /08/59	Chinook	30	3	junct. of Scurvy Cr. downstream 3 mi.	CF
"	"	1	"sev."	approx. 63 mi.	"
"	"	0	0	S. Big Salmon for a few miles	"
"	"	0	0	N. Big Salmon	"
17/08/68	"	797	30	N. Big Salmon R.-Big Salmon L.	ADFG
"	"	350		Lake outlet - Scurvy Cr.	"
"	"	6		North Big Salmon from Northern L. outlet stream - 20 mi. upstream	"
"	"	0	0	none above Thomas Cr.	"
"	"	33	8	Northern L. outlet stream	"
"	"		3	Scurvy Creek from mouth - 3 mi.	"
"	"	0	0	Moose Cr. mouth - 5 mi.	"
15/08/69	"	77		Big Salmon L. outlet - Scurvy Cr.	"
"	"	209		Scurvy Cr. - Bat Cr.	"
16/08/69	"		5	Northern L. outlet stream from lake - 1/2 mi. downstream	"
13/08/70	"	500		throughout	CF
20/08/70	"	362		Lake outlet - Scurvy Cr.	ADFG
"	"	308		Scurvy Cr. - S. Big Salmon	"
12/08/71	"	200		throughout mainstem	CF
25/08/71	"	150		Immediately below Big Salmon L.	CF
31/08/71	"	200		Outlet Big Salmon L.	"
"	"		25	Mouth - N. Big Salmon R.	"
"	"	50		N. Big Salmon - S. Big Salmon	"
"	"	10		approx. 50 mi.	"
"	"	0	0	Scurvy Cr. 0-6 mi.	"
"	"	0	0	Gray Creek	"
"	"	1	6	N. Big Salmon R.	"
"	"	0	2	S. Big Salmon R. 0-20 mi.	"
"	"	73	24	Lake outlet - 2 mi. downstream	ADFG



4. Big Salmon River -  
outlet of Big Salmon Lake  
(top right).



5. Headwaters of Big  
Salmon River - view from  
Quiet Lake overlooking  
Sandy Lake.



6. North Big Salmon  
River - junction with Big  
Salmon River.

19/08/72	Chinook	412	1	Big Salmon L. - Souch Cr.	CF
"	"	146	2	Souch Cr. - S. Big Salmon	"
"	"	57	1	S. Big Salmon - N. Big Salmon	"
"	"	6	1	N. Big Salmon - mouth S. Big Salmon R.	"
24/08/73	"	72	3	Big Salmon L. - N. Big Salmon	ADFG
05/09/73	"	13	2	Throughout mainstem	"

**Tributaries:**

North Big Salmon River is approx. 64 mi. long and flows NW and WSW from a small headwater lake to its junction with the Big Salmon River at 24 mi. The stream is of moderate velocity, has some good gravel stretches which appear to have good salmon spawning potential. Chinook salmon spawn in this stream but numbers and spawning areas have not been determined to date although 12 redds were observed from the mouth to Carlson Creek in 1971; no chinook were observed above this point. Streambed composition est. 32% boulder, 16% gravel, and 52% silt and sand.

Width near mouth 110', at junction with Twin Cr. 23.5'.

Water temperature 48°F 31/08/71 and 54°F 19/08/72 at mouth, 53°F 31/08/71 at junction with Twin Cr.

Estimated discharge 670 cfs 31/08/71 and 30 cfs at junction of Twin Cr., same date.

- Twin Cr., junction with N. Big Salmon at 52 mi. approximately, water temperature 50 F and est. discharge of 68 cfs 31/08/71. Width at mouth was 40'.
- Northern Creek flows from Northern Lake (3 x ½ mi. approx.) into the N. Big Salmon at approx. 35 mi. The stream is approx. 8 mi. long, the upper 2 mi. of stream is slow-moving through marshy areas. Stream bottom is mostly sand with a few gravel patches in this area. Some beaver dams exist in this stretch. The lower 6 miles is moderately fast-flowing with rapid areas. Stream bottom mostly gravel. Water was clear when checked (Aug./59); no fish were observed.

South Big Salmon R. flows approx. 54 mi. in a northerly direction to its junction with the Big Salmon at 47 mi. The lower few miles of river was clear when flown in August 1959 and no salmon were observed. The stream has a moderate flow velocity and the stream bed is mostly gravel. Aerial observation of the lower 20 miles conducted on 31/08/71 revealed 2 dead chinook. The stream was clear at this time and the streambed composition was estimated at 25% gravel and 40% sand; 35% of the stream was pool and bottom composition could not be determined.

Width near mouth 85', 6 mi. above mouth 70'.

Water temperature 47°F 31/08/71, 50°F 19/08/72.

Est. discharge 160 cfs 31/08/71, 300 cfs 19/08/72.

Scurvy Cr. flows into Big Salmon R. approx. 3 mi. below Big Salmon L. outlet. Observations conducted as far as junction with Gray Cr. (approx. 6 mi.). Streambed composition for this section est. at 90% boulder and 10% gravel. No Salmon were observed.

Width 36' at junction with Grey Cr.

Water temperature 51°F 31/08/71.

Estimated discharge 160 cfs 31/06/71 (junction with Grey Cr.)



7. North Big Salmon River - Mile 1.0.



8. North Big Salmon River - Mile 1.5.



9. North Big Salmon River - headwater lake, downstream view.

- Grey Creek streambed composition estimated 50% boulder and 50% gravel. Measured 42' wide at mouth. Moderately swift-flowing stream, average gradient estimated at 9'/000. Water temperature 50°F 31/08/71. Estimated discharge 160 cfs 31/06/71.

Unnamed Creek at approx. 75 mi. (first major creek downstream from Souch Cr. but on opposite side of river) was measured near mouth and found to be 30' wide. Water was clear (19/08/72). Flows from two small lakes in headwaters. High gradient stream.

Big Salmon Lake (approx. 6 x 1 mi.). Water temperature 57°F 19/08/72. Species present: grayling, lake trout, burbot, round whitefish, humpback whitefish, longnose sucker.

Quiet Lake (approx. 19 x 2 mi.). Accessible by Canol Road. Excellent recreational fishing area for grayling and lake trout. Access point for boat travel down Big Salmon R. Two government campgrounds are situated on the lake shore. At present the lake has a commercial fishing quota of 6,000 lbs of whitefish and lake trout.

Many other tributaries of the Big Salmon R. have not been surveyed to date. Reports indicate that all the tributary creeks have grayling in the mouth areas.



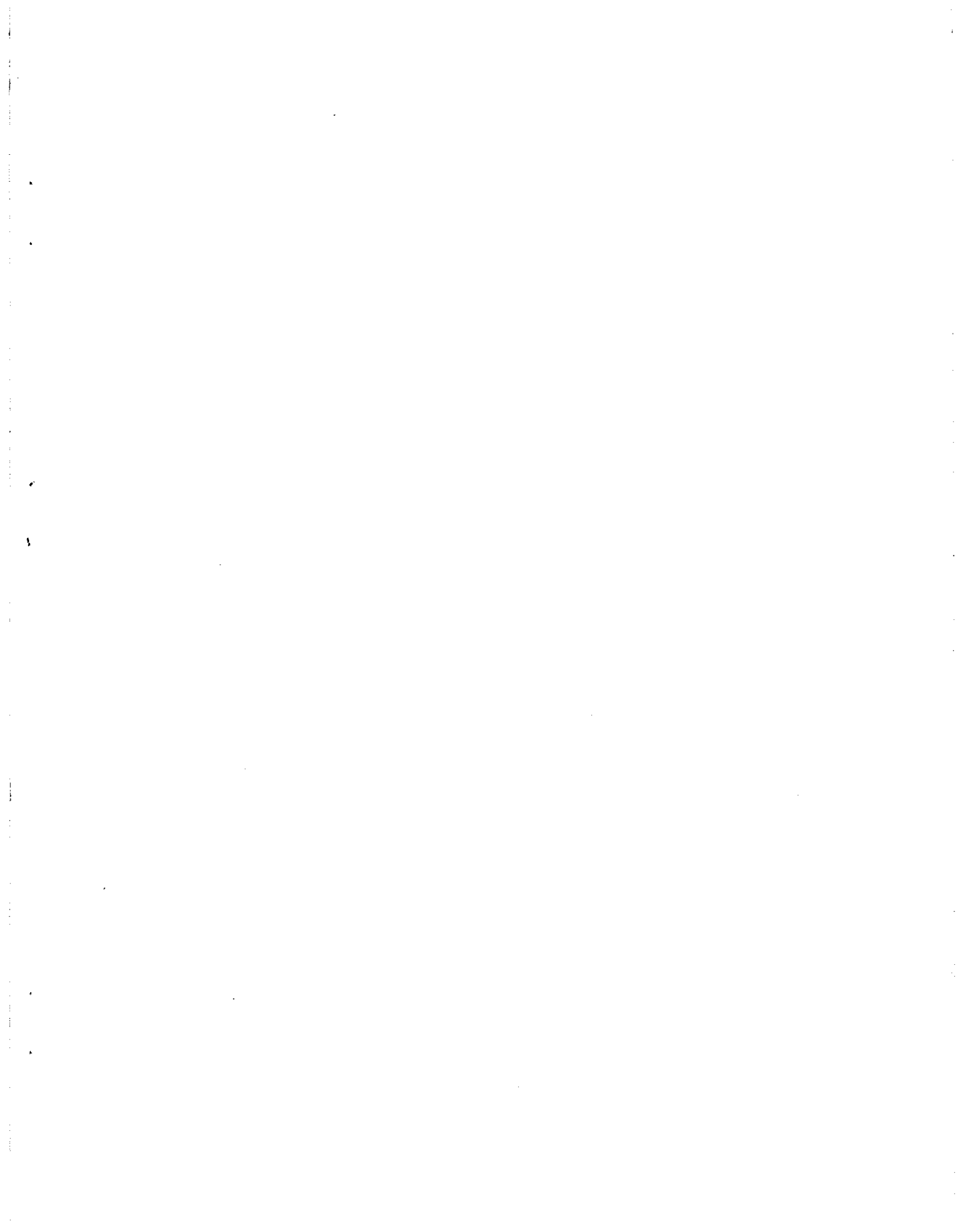
10. South Big Salmon River - upstream view from mouth.



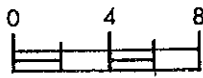
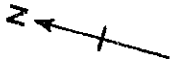
11. Scurvy Creek - looking upstream near Gray Creek junction.



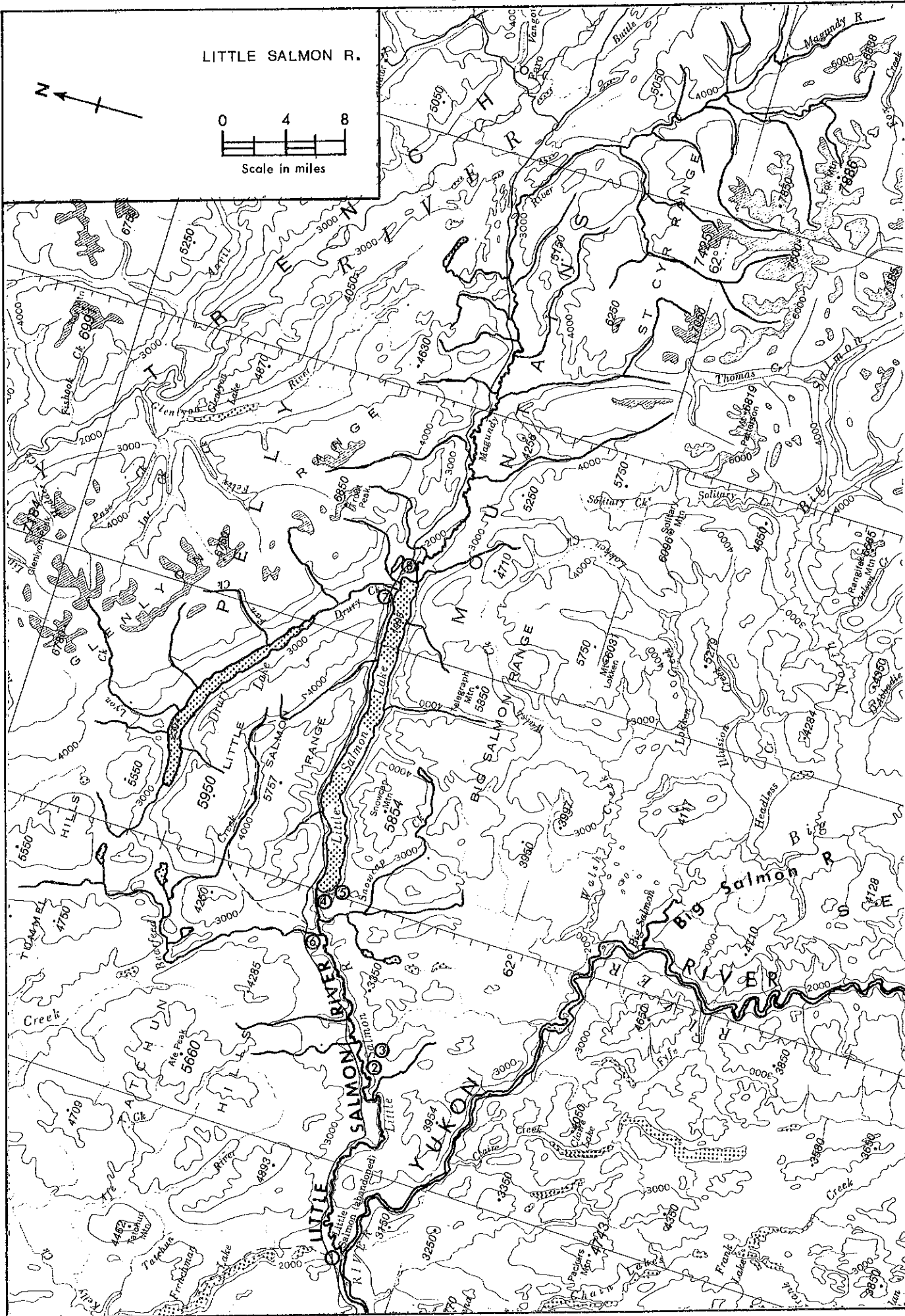
12. Gray Creek - upstream view near junction with Scurvy Creek.



LITTLE SALMON R.



Scale in miles





Name of Stream	Tributary to	River System
LITTLE SALMON RIVER	YUKON RIVER	YUKON

LOCATION Flows SW into Yukon R., E. of Carmacks.

		POSITION	62 135 SW
LENGTH	37 mi.	WIDTH	120 ft. @ mouth
		DRAINAGE	1420 sq. mi.

- 0-4 mi. Moderate velocity, average width 120', estimated streambed composition: 30% boulder, 40% coarse gravel, 15% fine gravel, and 15% silt and sand. Pool riffle stream with an estimated 20% rapids.
- 4-15 mi. Moderately swift velocity, about 40% rapid area. Average width 120'. Estimated bottom composition 50% boulder, 30% coarse gravel, 10% fine gravel, and 10% silt and sand.  
(Camp ground)
- 15-29 mi. Moderate current, slower than lower section with some weedy bottom areas. Average width 140'. Streambed composition estimated 5% boulder, 20% coarse gravel, 25% fine gravel, and 50% silt and sand.
- 29-34 mi. Average width 150', moderate current with about 50% rapids in this area. Estimated streambed composition 5% boulder, 50% coarse gravel, 25% fine gravel, and 20% silt and sand.  
(Bearfeed Cr.)
- 34-37 mi. Wide, relatively deep and slow-moving stream with weedy bottom. Average width 250'. Estimated bottom composition 50% fine gravel and 50% silt and sand.  
(Bearfeed Cr.- L. Salmon Lake)

Navigable by small jet boat. Some areas quite bouldery and care needs to be taken, especially during low water to avoid boulders. Road access points along river from Campbell Highway.

Water temperature: 58°F 26/07/73, 53.5°F 21/08/73 51.5°F 27/08/73.

Estimated discharge: 1020 cfs 27/08/73.

Water chemistry: 27/08/73 (Hach kit)

Alkalinity: Phenol 0; MO 7 gpg

Hardness: CaCO<sub>3</sub> 8 gpg Acidity: Free 0

PH: 8.5 DO: 12 ppm

Water becomes quite turbid during heavy or prolonged rainfalls mainly from silty inflows from Bearfeed and other smaller creeks.

Species present:

Chinook salmon and Arctic grayling juvenile were seined approx. 4 mi. above the confluence of the L. Salmon and Yukon Rivers on 21/08/73. Other species that frequent the stream are chum salmon and humpback whitefish. Reports indicate the presence of round whitefish and northern pike. It is probable that longnose suckers, burbot, and lake trout are also present in this stream as they have been reported in the system. Broad whitefish and inconnu may also be present in the



1. Little Salmon  
River - junction with  
Yukon River.



2. Little Salmon River -  
approximately 14 miles.



3. Little Salmon River -  
approximately 16 miles.

mouth area. The majority of the chinook salmon spawning occurs in the upper stream from the junction of Bearfeed Cr. for a distance of 5 mi. downstream. Some spawning may occur in Bearfeed Cr. as chinook salmon have been observed in this stream. Other chinook and chum salmon spawning may occur in Drury Cr. or Magundy R. as these species have been reported in Little Salmon Lake. A concentration of chum salmon was observed approx. 2 mi. up the Little Salmon R. on 28/09/73. The main chinook salmon spawning period occurs from mid to late August. A commercial fish quota for 3000 lbs of lake trout and whitefish exists on Drury Lake at present. Sport fishing, mainly for grayling, occurs at the lake outlet and at the highway access points.

Date	Species	Count		Part of system counted	Agency
		live	dead		
17/08/68	Chinook	173		Throughout - most in upper half	ADFG
17/08/69	"	120		Throughout	"
26/08/71	"	275		Most in upper half	CF
19/08/72	"	127		Throughout mainstem	CF
27/08/73	"	3	1	Vicinity of Bearfeed Cr.	CF
01/09/73	"	11	3	Throughout	CF
05/09/73	"	27		Throughout	CF
11/09/73	"		1	Bearfeed Cr. (bridge area)	CF
28/09/73	Chum	21		2 mi. up from junction with Yukon R.	CF

#### Tributaries:

Bearfeed Cr.; junction with Little Salmon R. at 34 mi., width near mouth 34'. Streambed composition from mouth to highway bridge ( $\frac{1}{2}$  mi.) estimated 10% boulder, 60% coarse gravel, 20% fine gravel, and 10% silt and sand - from bridge to 1.5 mi. upstream 10% boulder, 40% coarse gravel, 25% fine gravel, and 25% silt and sand. Moderate stream velocity throughout. Road access at M.P. 316.3 on Campbell Highway.

Water temperature: 52°F 26/07/73, 43°F 11/09/73

Estimated discharge 230 cfs 11/09/73

Water chemistry 11/09/73 (Hach kit).

Alkalinity: Phenol 0; MO 8 gpg

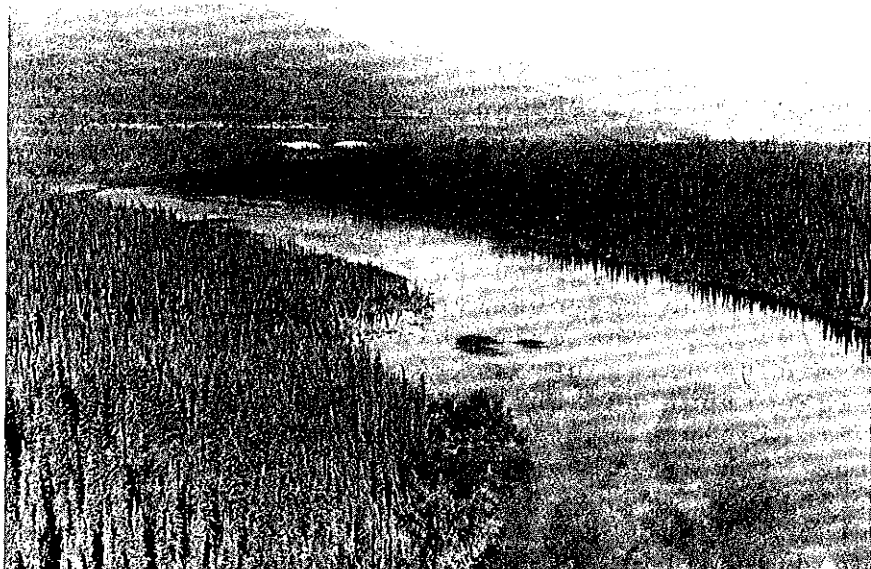
Hardness: CaCO<sub>3</sub> 8 gpg Acidity: Free 0

PH: 8 DO: 11 ppm

Organic coloration on 11/09/73.

Species known present are chinook salmon and Arctic grayling.

Little Salmon Lake, approx. 22 x 1 mi., lies at 37 mi. on the Little Salmon R. The lake is accessible by the Campbell Highway and a government campground is located at Mile Post 315. This is a very picturesque and popular recreational area. A commercial quota of 6000 lbs of whitefish and lake trout was eliminated in 1971 to provide exclusive use for recreational fishing. Species present are lake trout, northern pike, humpback whitefish, round whitefish, Arctic grayling, longnose sucker, burbot and chinook and chum salmon.



4. Little Salmon River -  
near Little Salmon Lake  
outlet (top right).



5. Little Salmon Lake -  
looking east.



6. Bearfeed Creek -  
downstream view from  
Campbell Highway bridge  
Crossing.

- Drury Cr. flows from Drury Lake (15 x 3/4 mi.) for a distance of 8 mi. and empties into the NE end of Little Salmon Lake. The streambed composition from the lake to the highway bridge (0-1.5 mi.) is estimated 10% boulder, 50% coarse gravel, 20% fine gravel, and 20% silt and sand; from bridge to one mile above estimated at 30% boulder, 30% coarse gravel, 20% fine gravel, and 20% silt and sand; from 1-2 miles above bridge 50% boulder, 30% coarse gravel, 10% fine gravel, and 10% silt and sand; 2-2.7 mi. above bridge 70% bedrock and 30% boulder with bad rapids throughout this stretch; at 2.25 mi. above bridge 60% boulder, 20% coarse gravel, 10% fine gravel, and 10% silt and sand. This creek is accessible from the Campbell Highway crossing and is navigable by jet boat for 2 miles above this point. Water temperature 60°F 26/07/73, 50°F 11/09/73 - both measurements taken near bridge crossing.

Water chemistry: 11/09/73 (Hach kit)

Alkalinity: Phenol 0; MO 4 gpg

Hardness: CaCO<sub>3</sub> 4 gpg

Acidity: Free 0

PH: 8

DO: 12 ppm

Water was a greenish color 11/09/73

Chinook salmon have been reported to spawn just below the outlet of Drury L. Grayling are present in the stream. Drury Lake has a commercial fishing quota of 3000 lbs of whitefish and lake trout at present (1973). Species reported to be in the lake are lake trout, northern pike, Arctic grayling, humpback whitefish, round whitefish, longnose sucker and burbot.

- Small unnamed tributary flowing in NE corner of Little Salmon L. is reported to have longnose sucker and lake trout present in its small headwater lake.
- Magundy R., headwatering in the St. Cyr range, flows for 64 mi. before emptying into the east end of Little Salmon L. The Campbell Highway runs along the stream permitting road access. The river is navigable by jet boat but log jams exist in lower eight miles. Estimated composition at approx. 15 mi. was 40% coarse gravel, 40% fine gravel, and 20% silt and sand. Width was 72' at this area.

Water temperature: 50°F 21/08/73

Estimated discharge: 735 cfs 21/08/73

Water chemistry 21/08/73 (Hach kit)

Alkalinity: Phenol 0; MO 8 gpg

Hardness: CaCO<sub>3</sub> 9 gpg

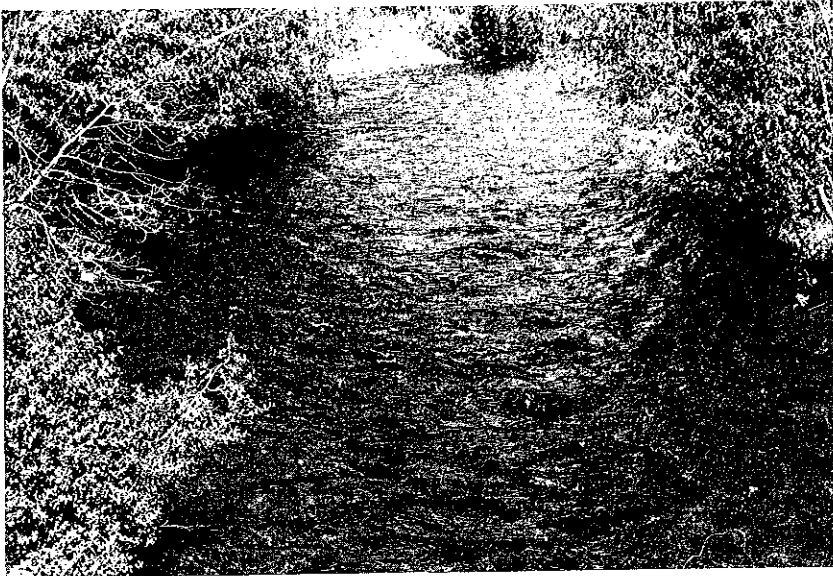
Acidity: Free 0

PH: 8.5

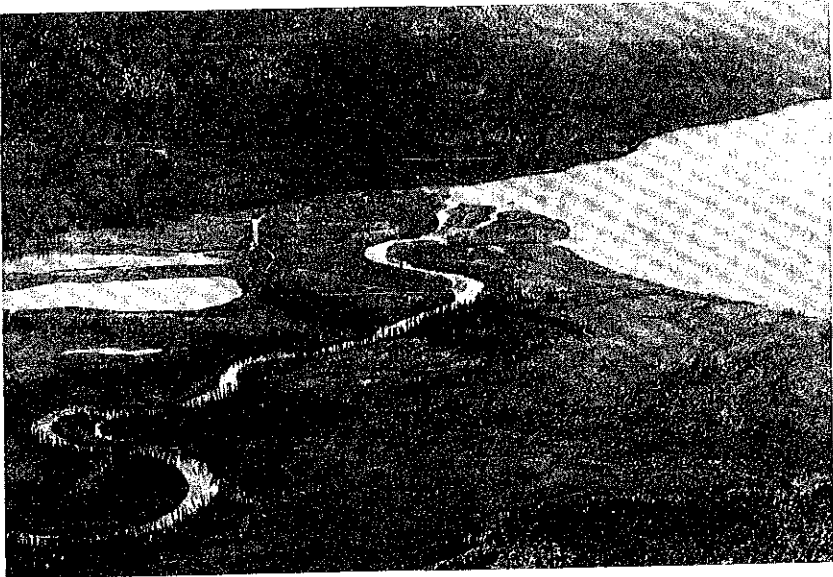
DO: 13 ppm

Water was high and a milky color on 21/08/73

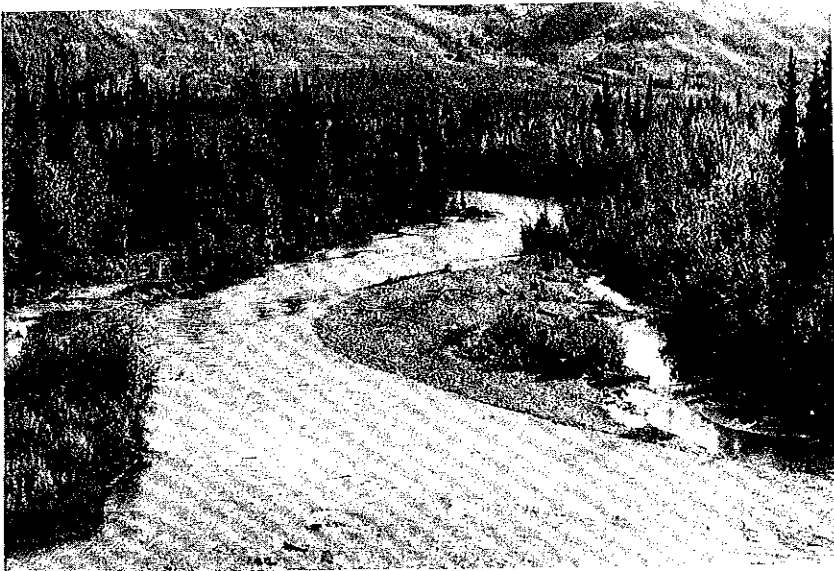
Grayling and whitefish are reported present in this stream.



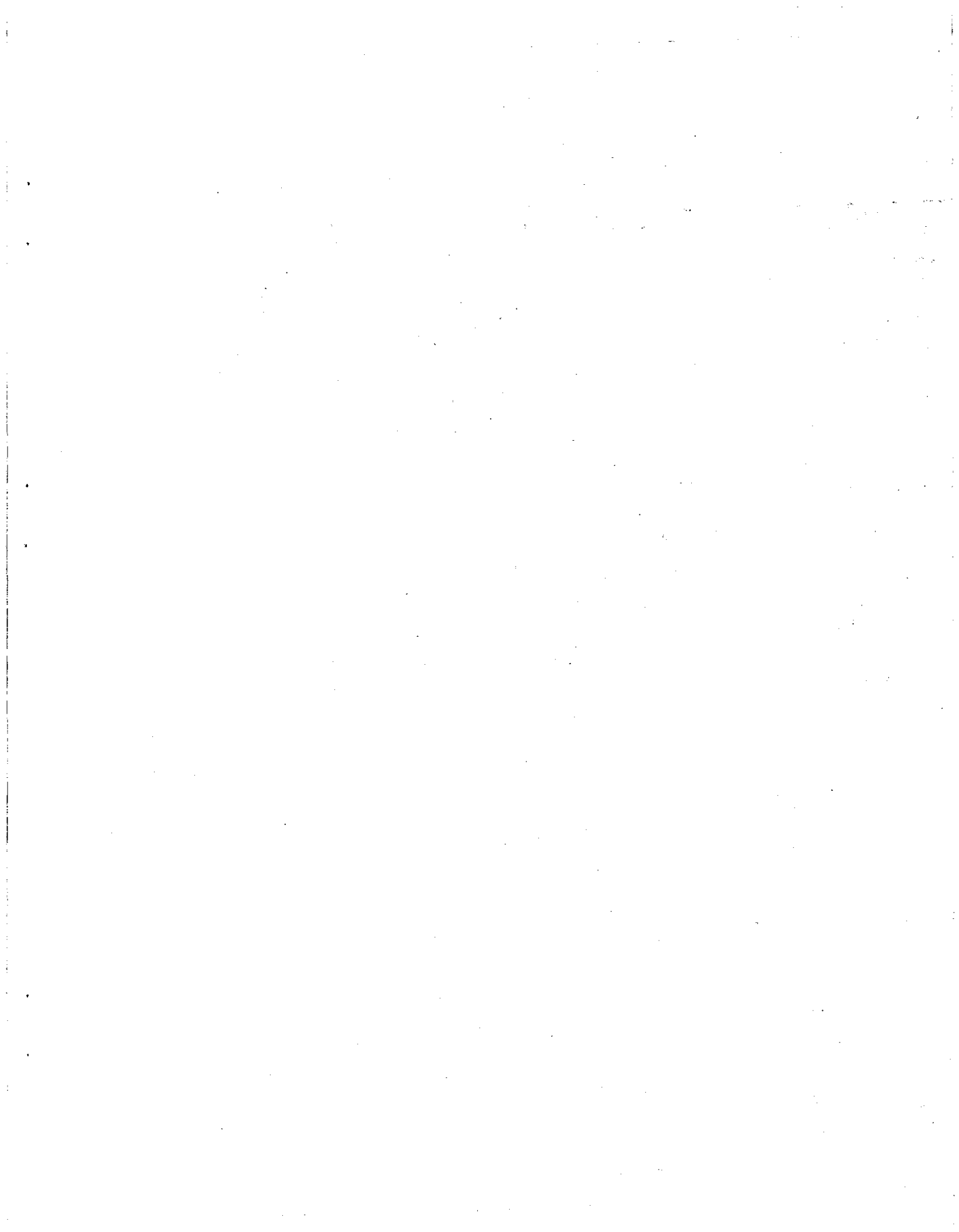
7. Drury Creek - view downstream from Mile Post 291, Campbell Highway.



8. Magundy River - flowing into Little Salmon Lake.



9. Magundy River - view downstream from Mile Post 179, Campbell Highway.

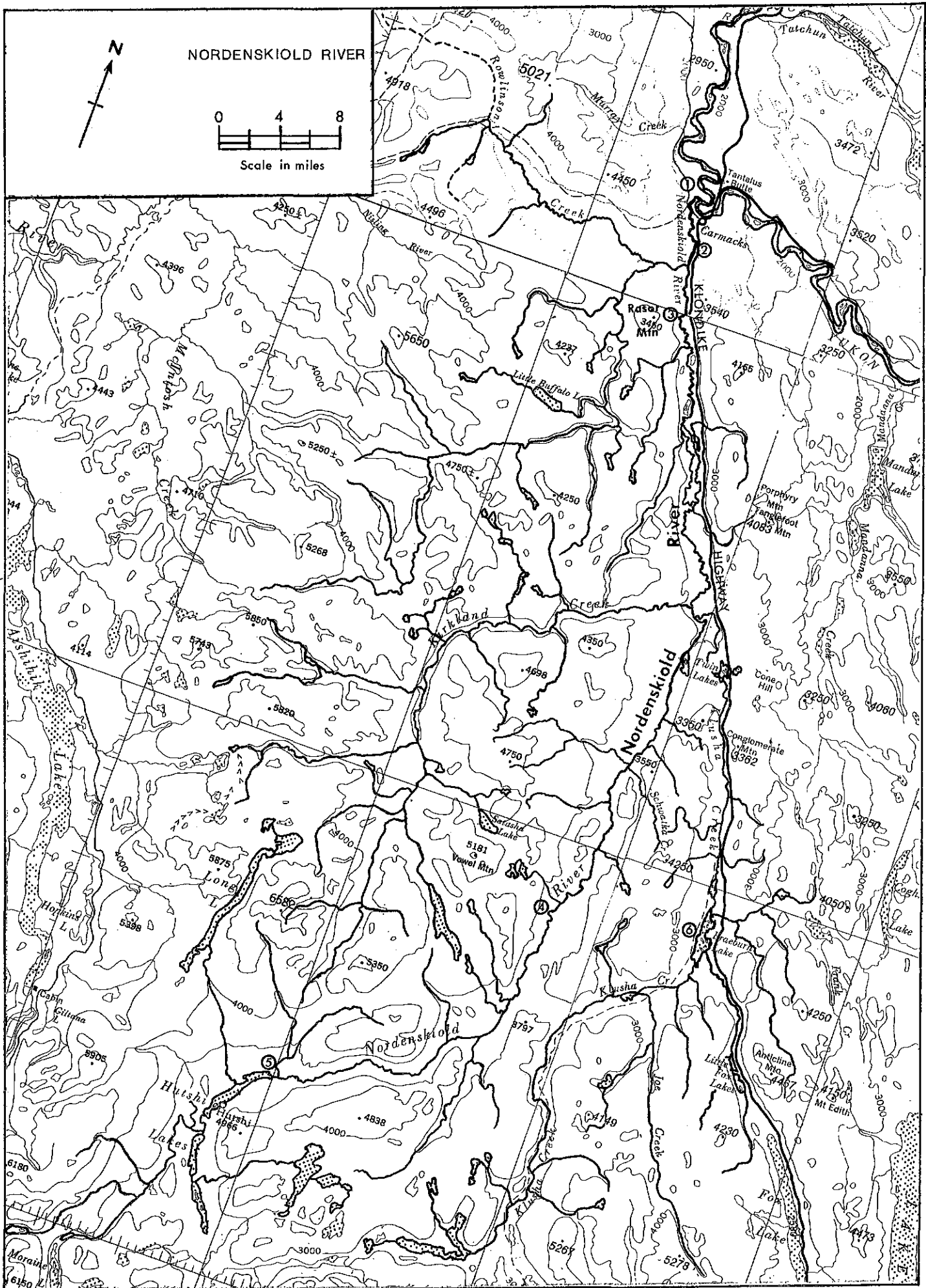




NORDENSKIOLD RIVER



Scale in miles





Name of Stream	Tributary to	River System
NORDENSKIOLD RIVER	YUKON RIVER	YUKON

LOCATION Flows N. into Yukon River near Carmacks.

			POSITION 62 136 SE
LENGTH 120 mi.	WIDTH 90ft.@ mouth	DRAINAGE	2522 sq. mi.

- 0-4 mi. Average width 90'. Streambed composition estimated 40% boulder, 40% coarse gravel, 10% fine gravel, and 10% silt and sand. Rapids throughout this area, moderate velocity.
- 4-30 mi. Average width 90'. Estimated streambed composition 50% fine gravel and 50% silt and sand. At 30 mi. there is some boulder (10%), coarse gravel (70%), fine gravel (10%), and silt and sand (10%). A moderate velocity is also present but other than at this point this section of the stream is relatively slow and fine gravel and sand comprise most of the stream bottom.
- 30-91 mi. Average width 100', slow-moving stream, low gradient area; 50% fine gravel and 50% silt and sand estimated streambed composition.
- 91-101 mi. Average width 100', moderate stream velocity. Estimated (Hutshi L. outlet) streambed composition 10% boulder, 70% coarse gravel, 10% fine gravel, and 10% silt and sand.

The river has a moderate velocity in the very lower and upper sections but is otherwise a quite slow-moving, low-gradient stream, with an extremely meandering area from Kirkland to Rowlinson Cr. (6-45 mi.). The stream is fed from several headwater lakes of which the largest are Long and Hutshi Lakes. Reports indicate that a subsistence fishery for chinook and chum salmon used to exist at approx. 30 mi. and for whitefish and lake trout on Hutshi Lakes. This latter fishery may still be conducted on an irregular basis for whitefish. A commercial fish quota of 2000 lbs exists on Hutshi Lakes at present. Lower part of the stream is accessible from points along the Klondike highway. Non-navigable. Log jams throughout. The settlement of Carmacks is situated near its junction with the Yukon R.

Water temperature: 43°F 12/09/73

Estimated discharge: 610 cfs 12/09/73

Water chemistry: 12/09/73 (Hach kit)

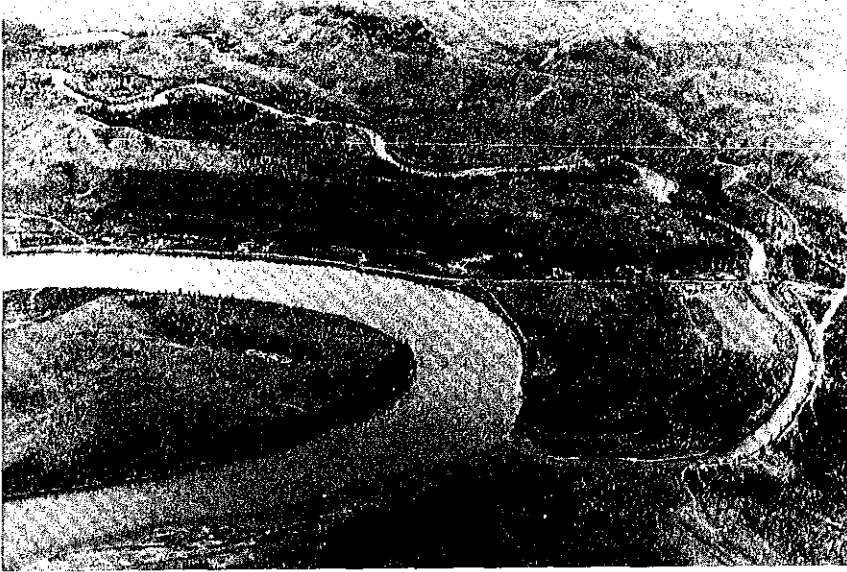
Alkalinity: Phenol 0; MO 9 gpg

Hardness: CaCO<sub>3</sub> 9 gpg Acidity: Free 0

PH: 8.5 DO: 12 ppm

Water organic color 12/09/73

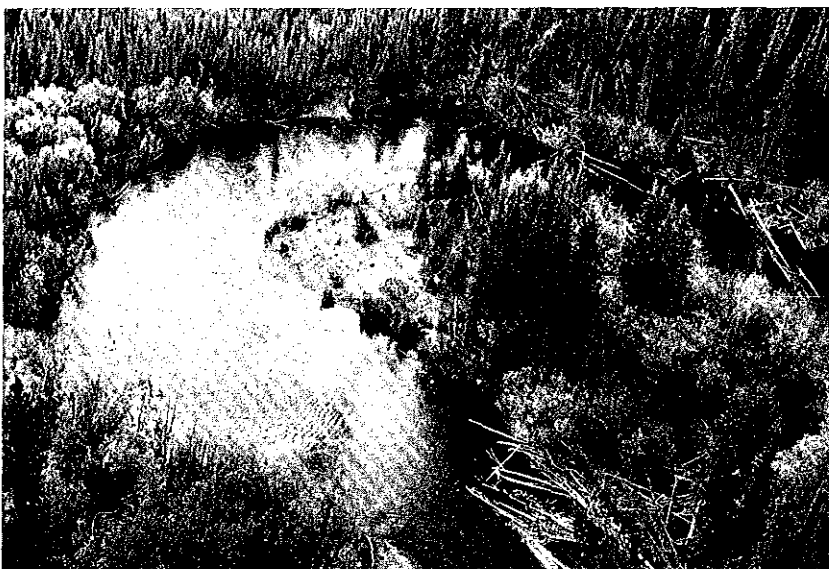
Chinook and chum salmon, northern pike, longnose suckers, Arctic grayling, whitefish, and lamprey are reported to utilize the stream. One spawned-out female chinook salmon was noted at approx. 30 mi., 26/08/73.



1. Nordenskiöld River -  
junction with Yukon River.



2. Nordenskiöld River -  
near Carmacks.



3. Nordenskiöld River -  
vicinity of Rasor Mountain.

Aerial observations on 17/08/69 by ADFG personnel saw no fish from 20 mi. to headquarters; Canadian Fisheries personnel flew the river on 05/09/73 and no fish were observed. Little is known of the salmon resources in this stream at present.

#### Tributaries

Klusha Cr., a relatively small but long creek flows for 50 miles through moderately flat country to its junction with Nordenskiold R. at 46 mi. The stream velocity is moderate and the gradient quite low. Several lakes lie on this branch of the system of which the most notable are Little Fox Lakes, Braeburn Lake, and Twin Lakes. All of these lakes are accessible from the Klondike Highway. The lower two thirds of the creek is also accessible from points along the Klondike Highway.

- Twin Lakes, two small lakes joined by a short stream, are situated in the lower mid-section of Klusha Cr. Lake trout, northern pike, least cisco and Arctic grayling are reported present. Further information of this lake is available in technical report PAC/T-73-12 (Rainbow Trout Planting and Lake Survey Program in Yukon Territory, 1956-1971).
- Braeburn Lake. A survey was conducted on this lake in 1957 in conjunction with the Lake Survey Program to determine suitability for stocking. A summary of the data is presented here.

Accessibility: two side roads from the Klondike Highway near Mile Post 55.

Sounded: 06/06/57. See Fig. 1.

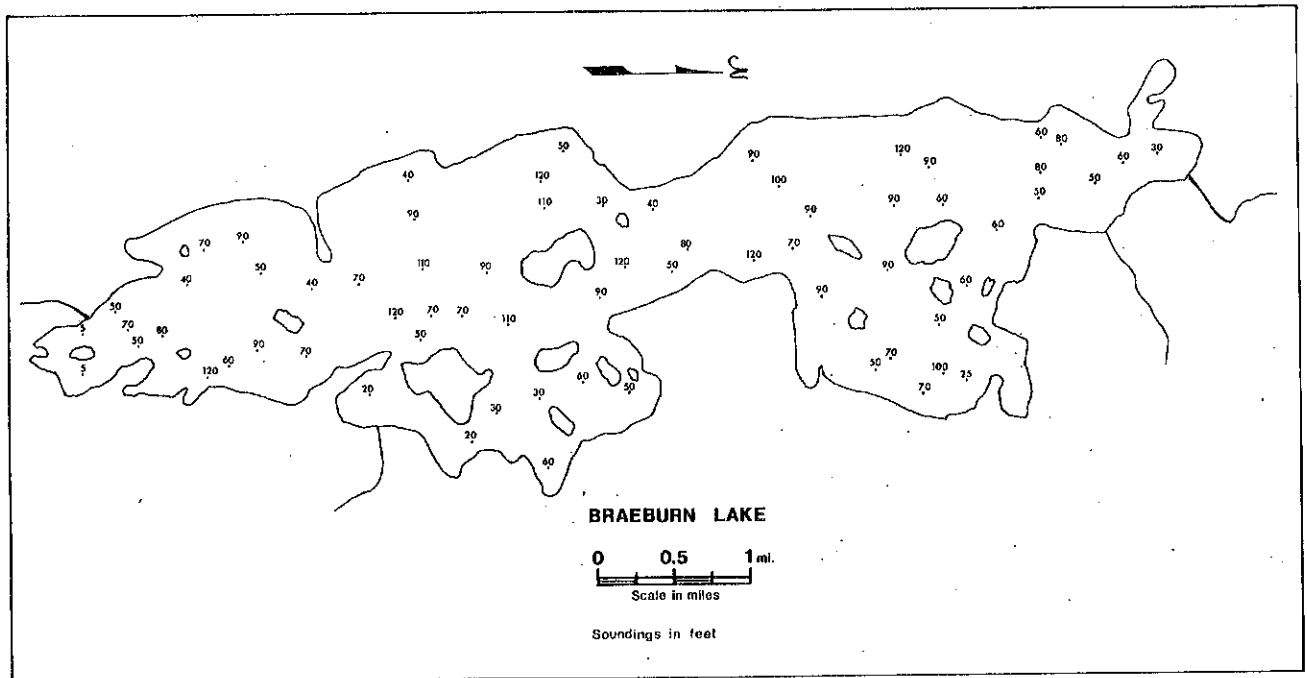
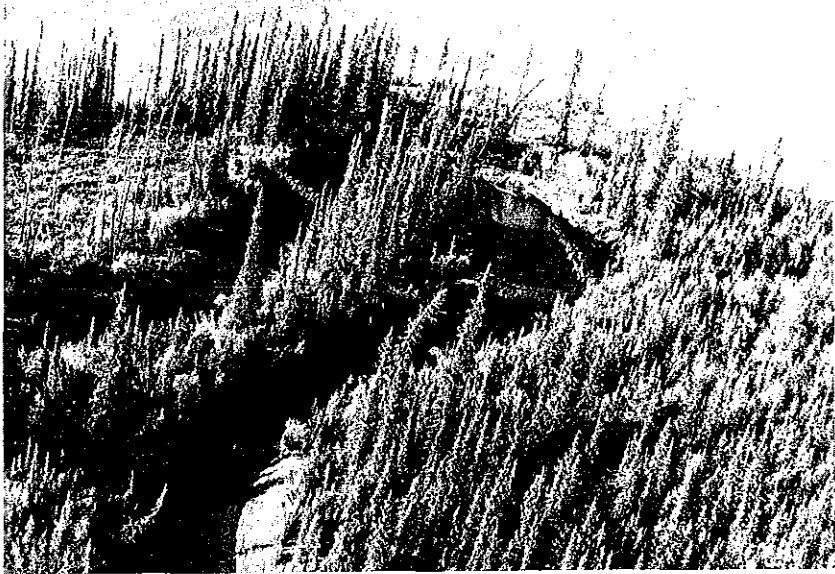


Figure 1. Braeburn Lake soundings

Temperature: 57°F (surface) 07/06/57. See Fig. 2 for depth profile.  
(Bathy thermometer used.)



4. Nordenskiold River -  
slough area vicinity of  
Vowles Mountain.



5. Nordenskiold River -  
outlet from Hutshi Lake.



6. Braeburn Lake -  
looking north.

Secchi disk: 4 M. 07/06/57. TDS: 250 ppm 07/06/57.

Bottom samples: 2 M sandy - 2 samples  
 6 M fine sand - "  
 16 M clay - "  
 30 M clay and ooze - "

Fish toxicant (approx. 5 lbs) was spread in a small bay at extreme southend of lake on 06/06/57; 10 round whitefish and 1 sculpin were recovered after 2 hrs.

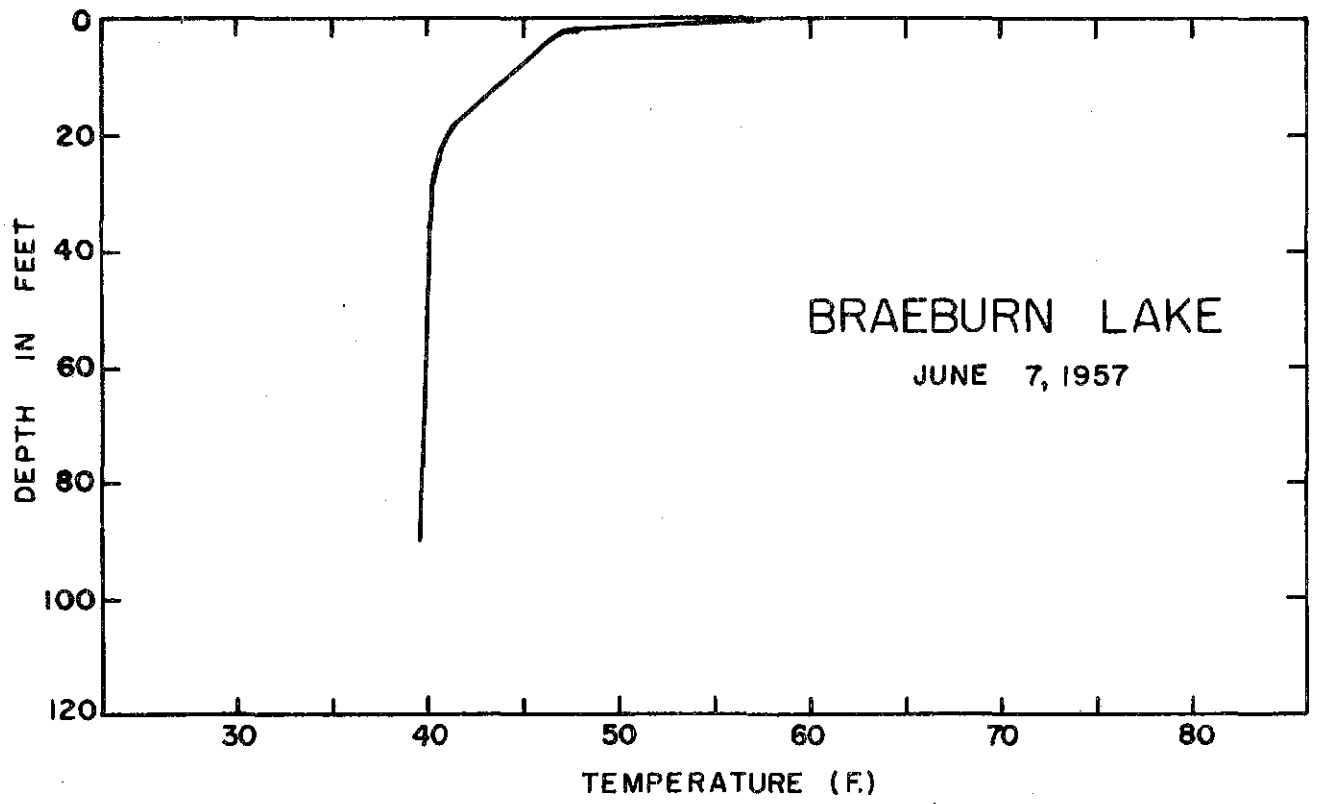
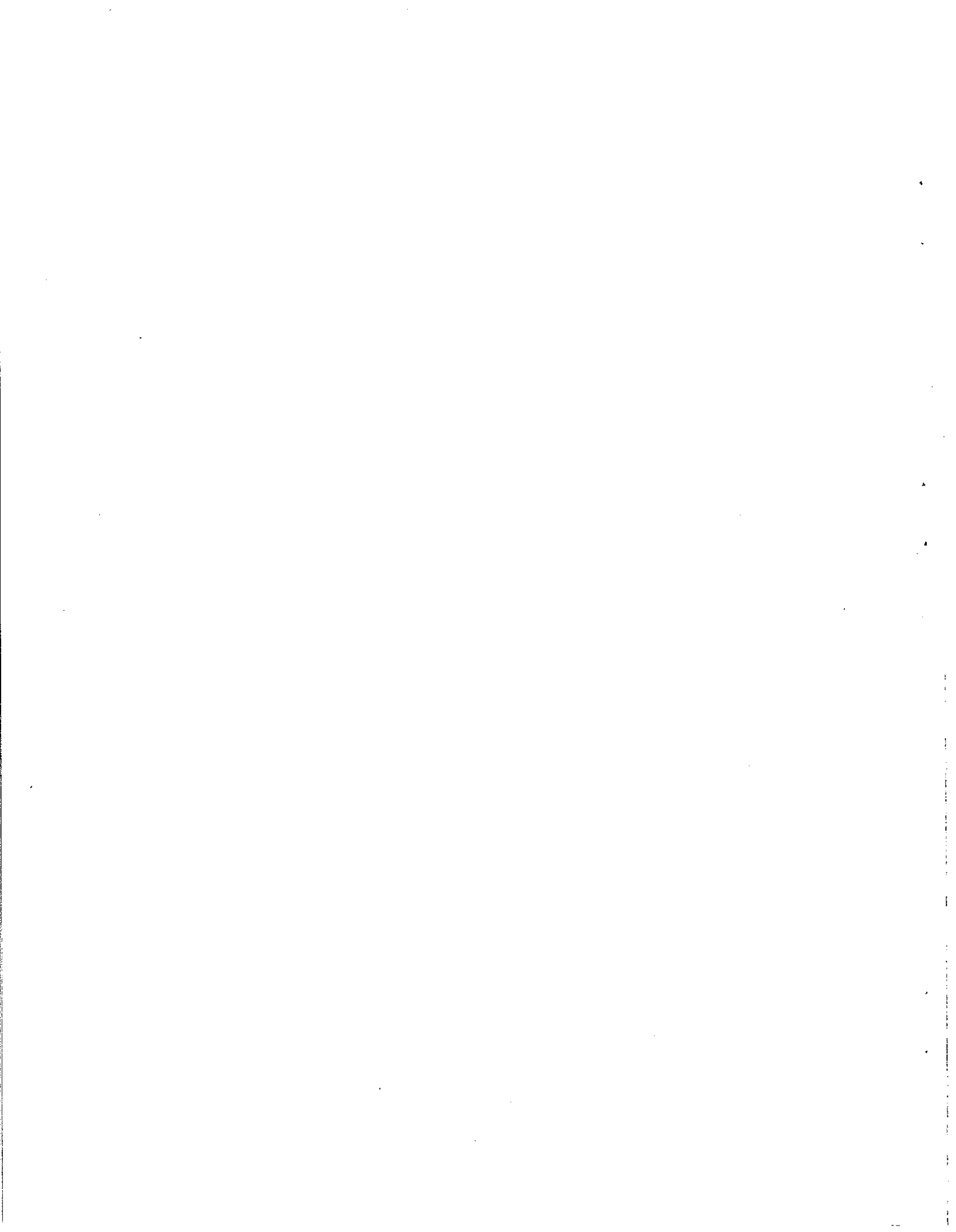


Figure 2. Braeburn Lake water temperature depth profile

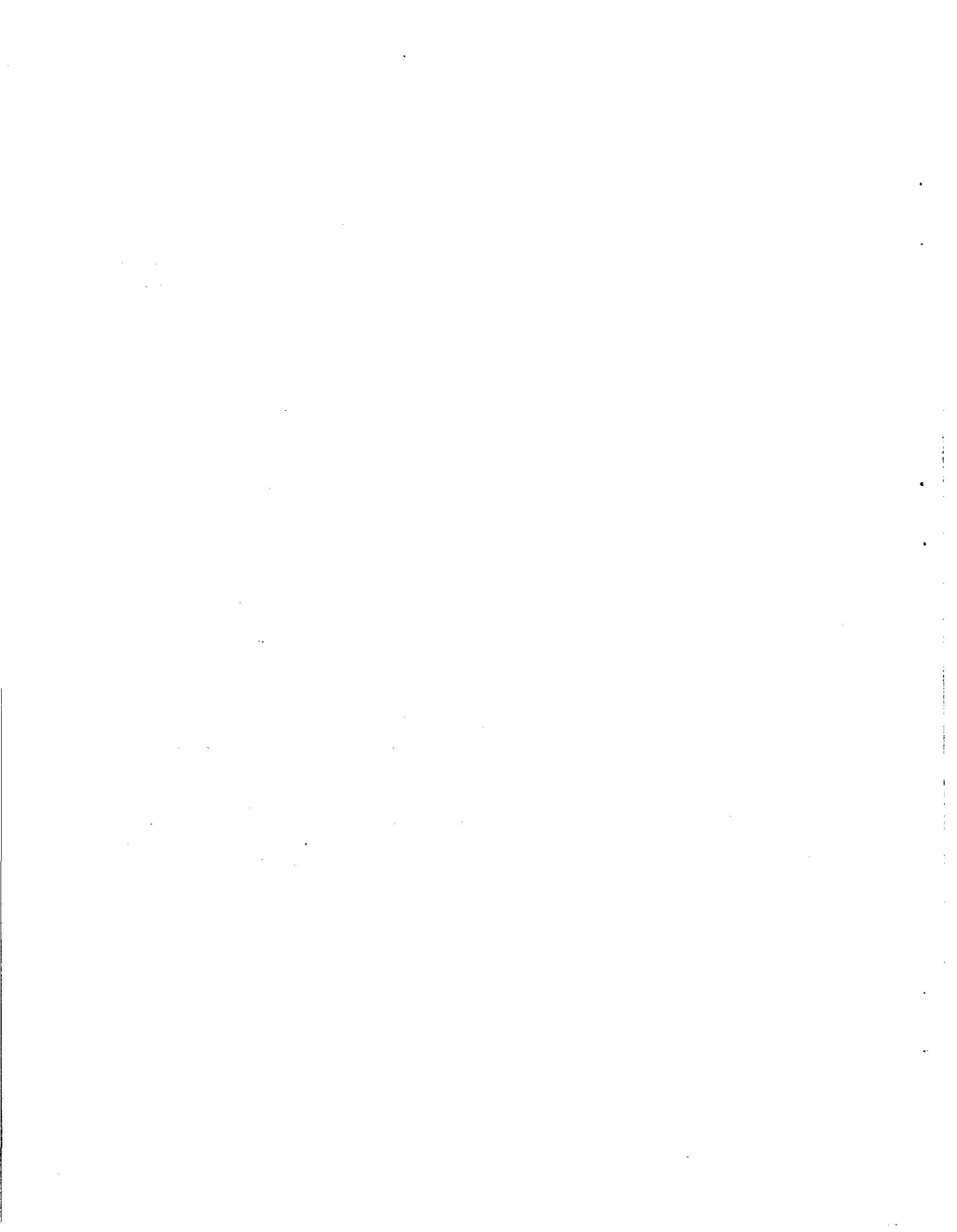
Nets were set on 5, 6/06/57. Fish catch data from all sources is shown in the following table:

Braeburn Lake fish catch data.

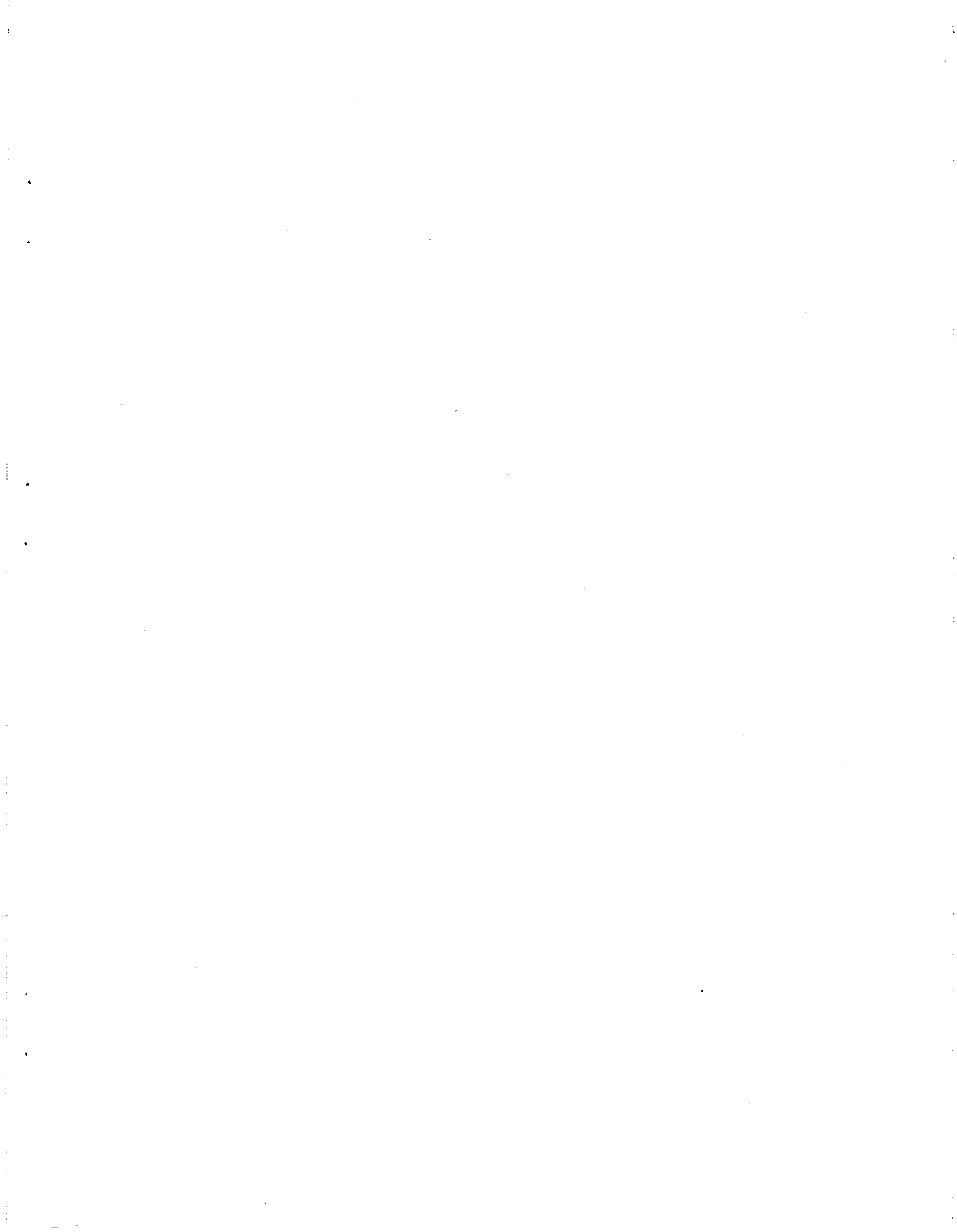
Species	Sex	05/06/57 L.(mm)	Angling time 1/2 hr. Age	Wt.(lb)	Mesh size	Degree maturity	Stomach content
N. pike	M	510	13	1.5		-	1 insect larvae
"	F	510	-	1.5		spawned	empty
"	F	660	14	3.5		"	"
"	F	640	14	3.25		"	"
05/06/57 Gillnets* 2000 hr - 1330 hr 06/06/57 size 1, 2, 3, and 4" mesh							
N. pike	F	510	13	-	4"	spawned	-
"	M	435	8	1	3"	-	1 lamprey
"	M	500	12	1.75	3"	-	1 lamprey













Name of Stream TATCHUN RIVER	Tributary to YUKON RIVER	River System YUKON
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LOCATION Flows WNW into Yukon R. near Five Finger Rapid,

N. of Carmacks	POSITION	62 136 SE
LENGTH 47 mi.	WIDTH 32 feet	DRAINAGE 474 sq. mi.

0-.5 mi.

(Klondike Highway) Average width 32', streambed composition estimated 75% boulder, 13% coarse gravel and 12% fine gravel. Stream is approx. 75% rapids in this stretch and has a moderately fast current.

Bridge - .75 mi.

Average width 32', estimated streambed composition 40% coarse and 40% fine gravel, and 20% silt and sand. Moderate current in this section with about 25% rapids.

.75-1.5 mi.

Average width 32', estimated streambed composition 20% boulder, 60% coarse gravel, 10% fine gravel, and 10% silt and sand. Moderate velocity with 50% of area consisting of rapids.

1.5-2.5 mi.

32' average width, estimated streambed composition 50% boulder, 30% coarse gravel, 10% fine gravel, and 10% silt and sand. Moderate velocity 75% rapids.

2.5-3.5 mi.

Average width 50', estimated streambed composition 10% boulder, 70% coarse gravel, 10% fine gravel, and 10% silt and sand. Moderate velocity 20% rapids.

3.5-4 mi.

(Tatchun L.) 75' average width, streambed composition estimated 50% boulder, 30% coarse gravel, 10% fine gravel, and 10% silt and sand. Low velocity area, 10% rapids and some areas of weedy bottom.

Small pool riffle stream. A government campsite located at the Klondike Highway crossing provides access to this area of the stream and a back road (4-wheel drive in parts) from Mile Post 118 follows along most of this stream and along Frenchman Lake permitting access to this part of the watershed. This road exits on the Campbell Highway near the site of Little Salmon. Stream is non-navigable. Log jams present throughout. A spring area approx. .25 mi. in length is present about 1 mi. above inlet to Tachun Lake. Water temperature was 35°F 10/09/73/.

Water temperature: 61°F 22/07/73, 65°F 25/07/73, 60°F 12/08/73  
65°F 26/08/73, 53°F 10/09/73

Estimated discharge: 80 cfs 26/08/73

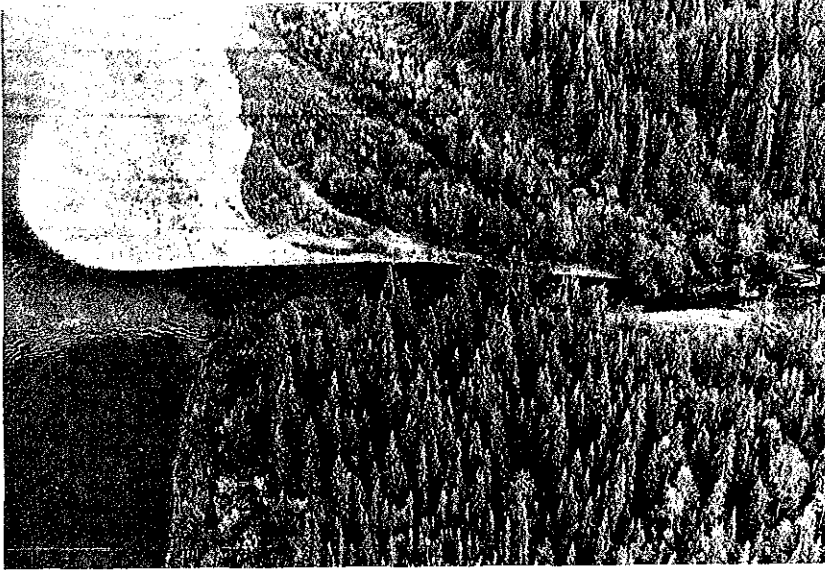
Water chemistry: 26/08/73 (Hach kit)

Alkalinity: Phenol 0; MO 10 gpg

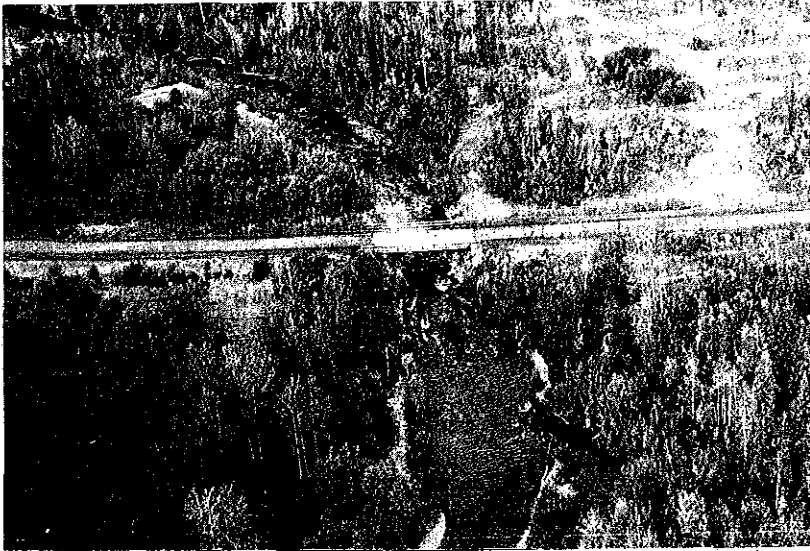
Hardness: CaCO<sub>3</sub> 14 gpg

Acidity: Free 0. PH: 8.

Organic color (high water) when checked.



1. Tatchun River -  
junction with Yukon  
River.



2. Tatchun River - view-  
ing downstream at highway  
crossing.



3. Tatchun River - up-  
stream view near camp-  
ground.

Species known present are chinook salmon and Arctic grayling. Northern pike frequent the lake outlet area. The main chinook spawning grounds are from 2.5 - 3.5 mi. with only scattered spawning below this area. Salmon may spawn in the streams tributary to the lake but this is unconfirmed at present. A subsistence fishery for chinook salmon occurs in the vicinity of the mouth of this stream. Sport fishing for grayling and to a lesser degree for chinook salmon takes place during the summer

Date	Species	Count		Section counted	Agency
		live	dead		
20/08/70	Chinook	50		200 yd. stretch above camp ground	ADFG
31/08/71	"	120	30	Throughout	"
26/08/73	"	97	2	Mouth - Lake outlet	CF

#### Tributaries:

Tatchun Lake; lies in an EW direction and is approx. 7 miles by 1 mile (at widest point). Water temperature 67°F 25/07/73, 60°F 12/08/73. Pike, humpback and round whitefish are present and a subsistence fishery is conducted for these fish. A local native who nets fish in this lake reports that lake trout frequented this lake in the "old days" but are no longer present.

- Unnamed tributary flowing from Kelly Lake into Tatchun Lake was measured at 15' wide at bridge crossing. Streambed composition was estimated at 20% boulder, 30% coarse gravel, 40% fine gravel, and 10% silt and sand (bridge vicinity). Stream is non-navigable.

Water temperature 59.5°F 25/07/73, 41.5°F 10/09/73

Estimated discharge 35 cfs 10/09/73. Water organic coloration.

Water chemistry 10/09/73 (Hach kit).

Alkalinity: Phenol 0; MO 9 gpg

Hardness: CaCO<sub>3</sub> 9 gpg Acidity: Free 0

PH: 8.5 DO: 13 ppm

Seining and sport fishing in the bridge area did not produce any fish on 10/09/73. Stream probably supports grayling at some time during the year.

Upper Tatchun River. The average width from the bridge for one mile upstream was 25' and the streambed composition was estimated 20% boulder, 50% coarse gravel, 20% fine gravel, and 10% silt and sand in this section; from the bridge for ½ mile downstream, the average width is 35' and composition was estimated 5% boulder, 20% coarse gravel, 50% fine gravel, and 25% silt and sand.

Water temperature: 57°F 25/07/73, 41°F 10/09/73.

Estimated discharge 80 cfs 10/09/73.

Water chemistry: 10/09/73 (Hach kit).

Alkalinity: Phenol 0; MO 8 gpg

Hardness: CaCO<sub>3</sub> 9 gpg Acidity: Free 0

PH: 8.5 DO: 14 ppm

Water organic color.

Fry were observed in stream on 10/09/73 but angling and seining failed to catch any fish.

- Frenchman Lake, 12 by 1 mile at widest point. Outlet stream (approx.



4. Tatchun River - up-  
stream view midway  
between Yukon River and  
Tatchun Lake.



5. Tatchun River -  
3 miles above mouth.



6. Tatchun Lake -  
looking west.

1 mi. long) joins with Tatchun R. approx. 5 miles up from Tatchun L. Access from back road along North side of lake. A subsistence fishery exists on this lake and the species caught are northern pike, Arctic grayling, longnose sucker, lake trout, burbot, and humpback whitefish.



7. Midway between  
Tatchun and Frenchman  
Lakes.

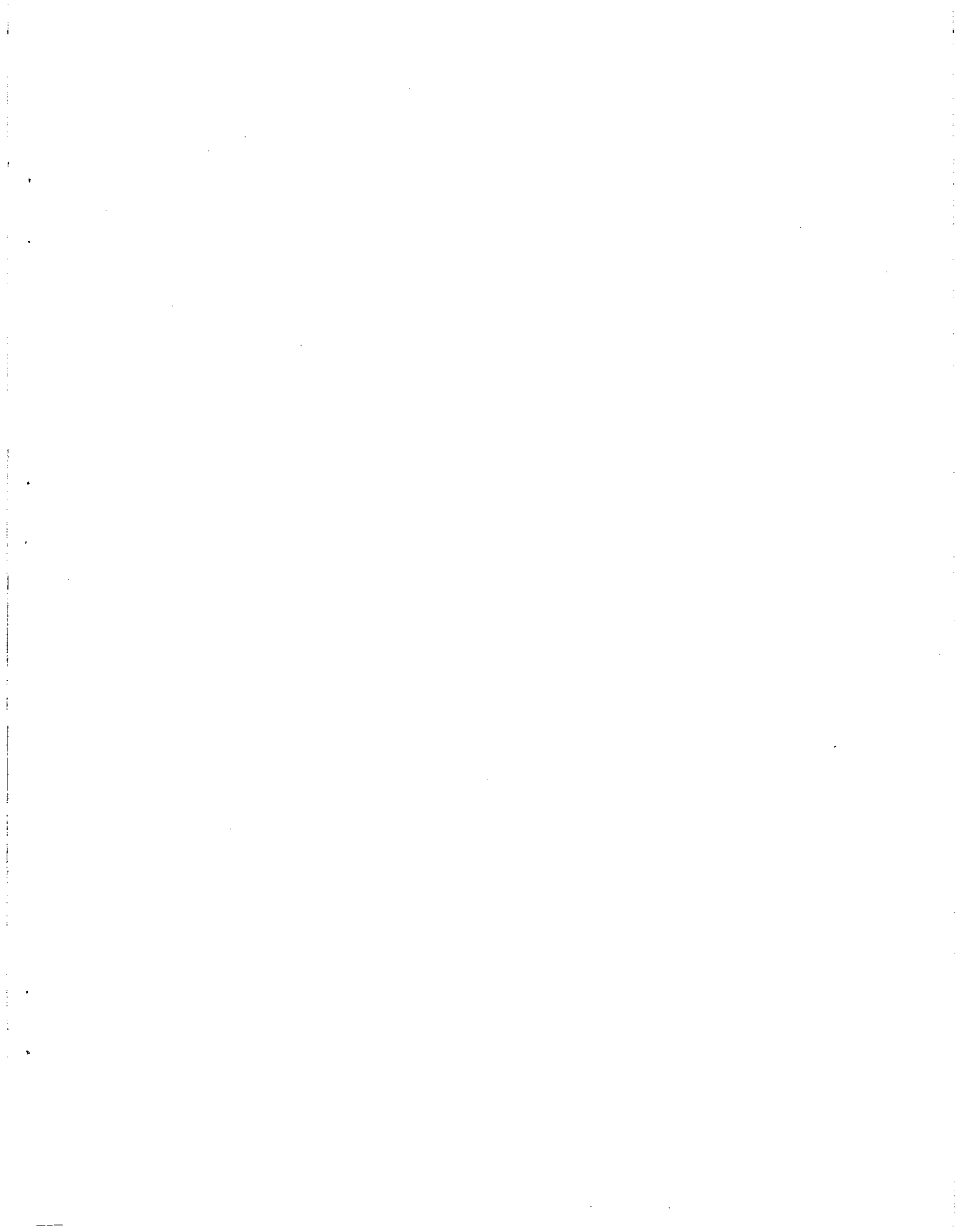


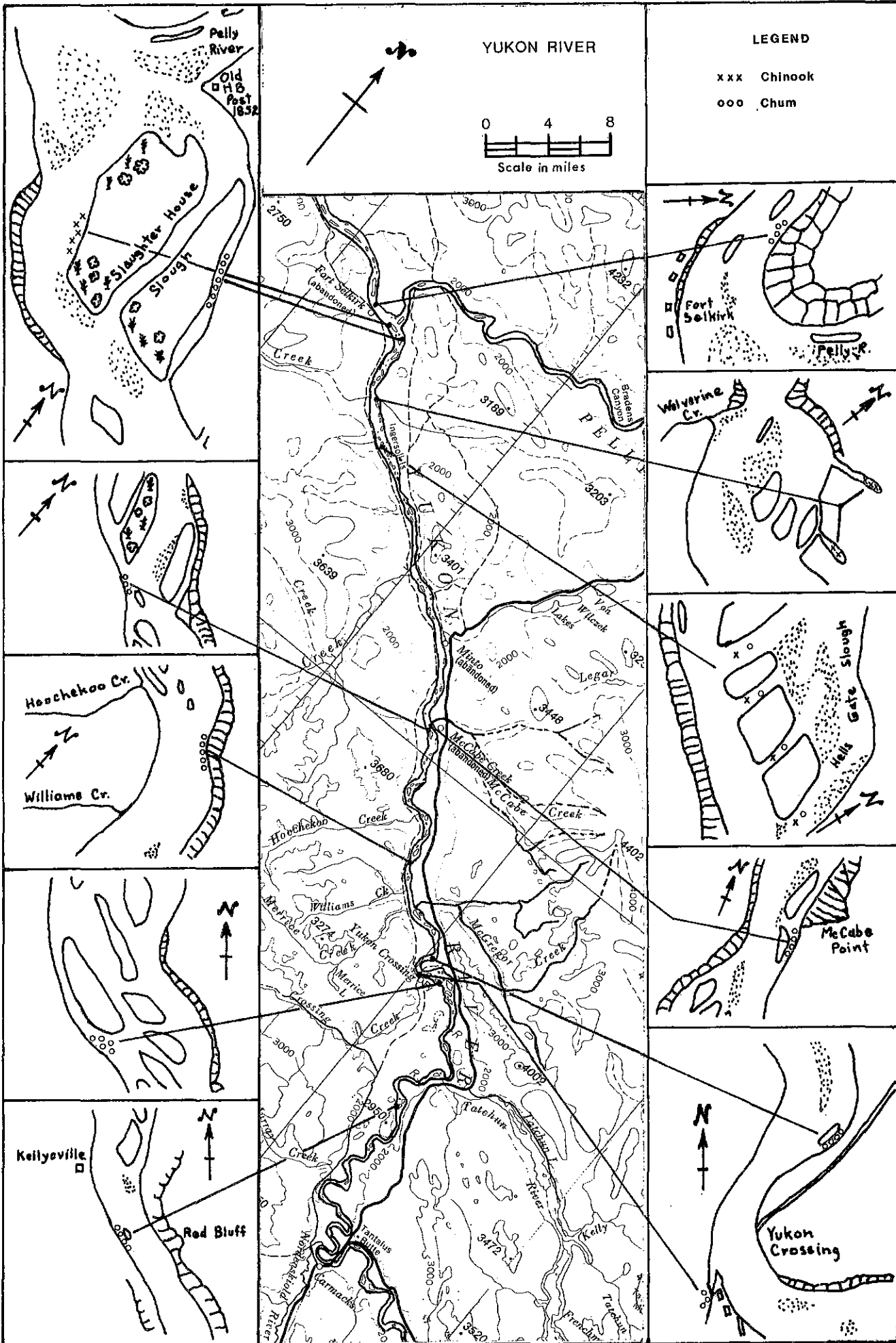
8. Upper Tatchun  
River - view upstream  
from road crossing.



9. Frenchman Lake -  
looking S.E.



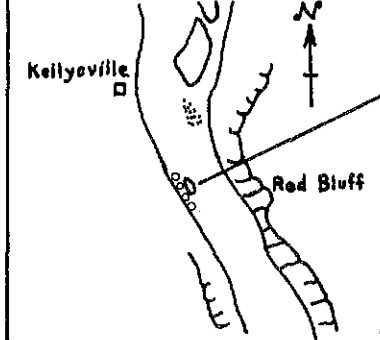
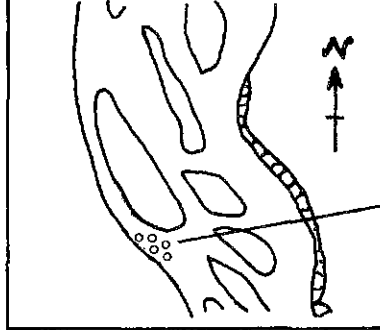
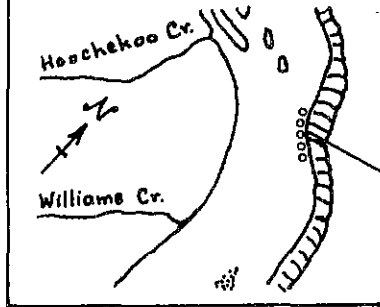
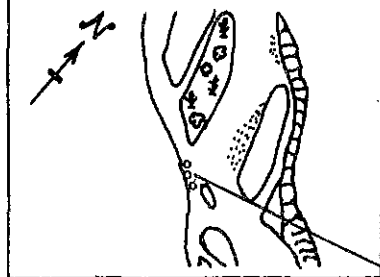
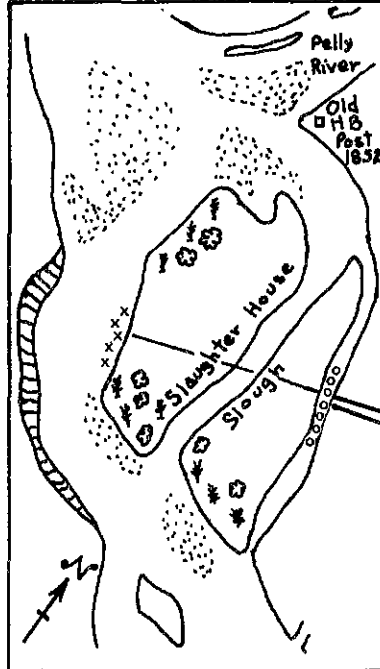
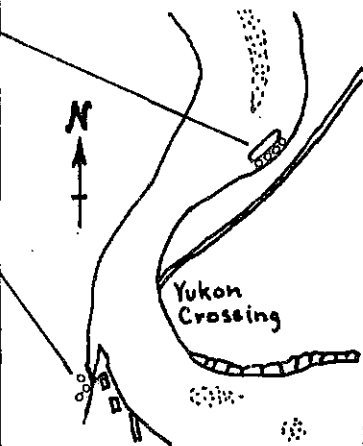
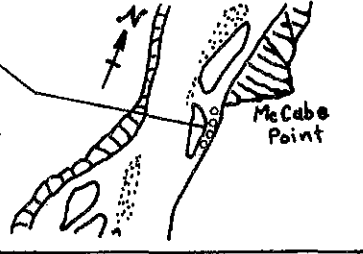
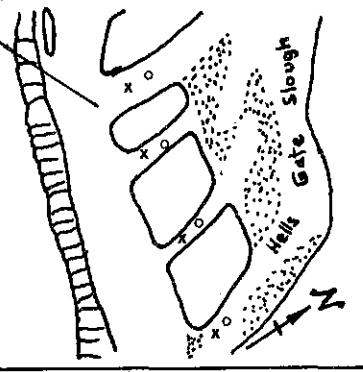
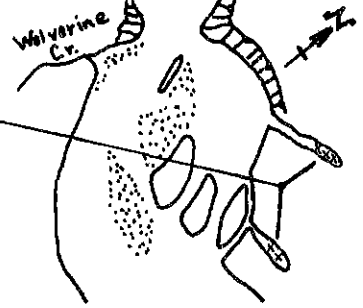
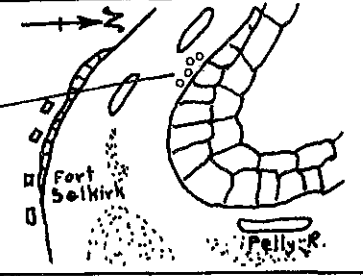
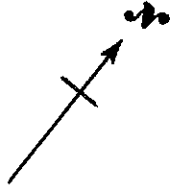
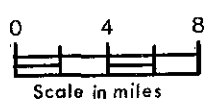




YUKON RIVER

LEGEND

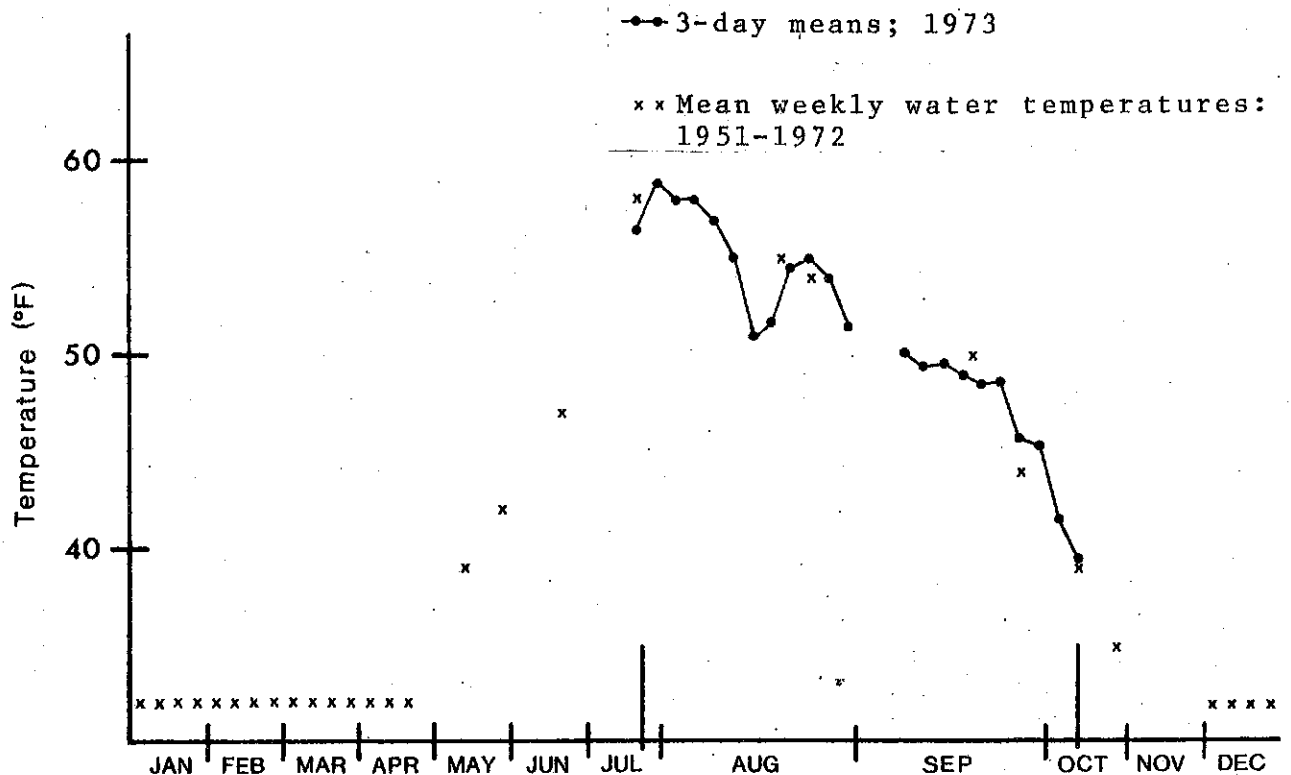
- xxx Chinook
- ooo Chum



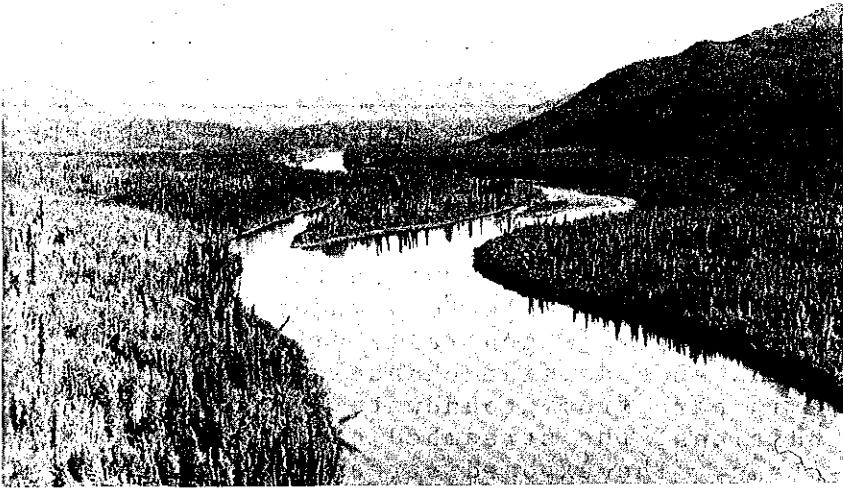
Name of Stream	Tributary to	River System
YUKON RIVER		YUKON
LOCATION	Flows NW and SW into S. side of Norton Sd., Bering Sea	
(Mouth 62 164 NW)	POSITION	64 141 NE
LENGTH 194 mi.*	WIDTH 400-800'	DRAINAGE

The stream width is generally greater than 500' in the study area and is normally turbid varying from cloudy milk to a muddy silt color during runoff. Streambed visibility is generally difficult with the exception of certain areas such as side channels where the water source appears to be in part from groundwater outflows or springs. Under the right set of conditions, the streambed can usually be observed in shallow riffle areas. The exposed streambanks and bars of the river are composed mainly of boulder and coarse gravel heavily compacted with sand. The streambed is probably similar throughout the study area. A layer of silt is present in the high water channels and very slow backwater areas. Clean gravel was present in some shallow riffle areas and in the channels fed by intra-gravel flows. The Yukon River is navigable and was a very important means of transportation for the first half of this century.

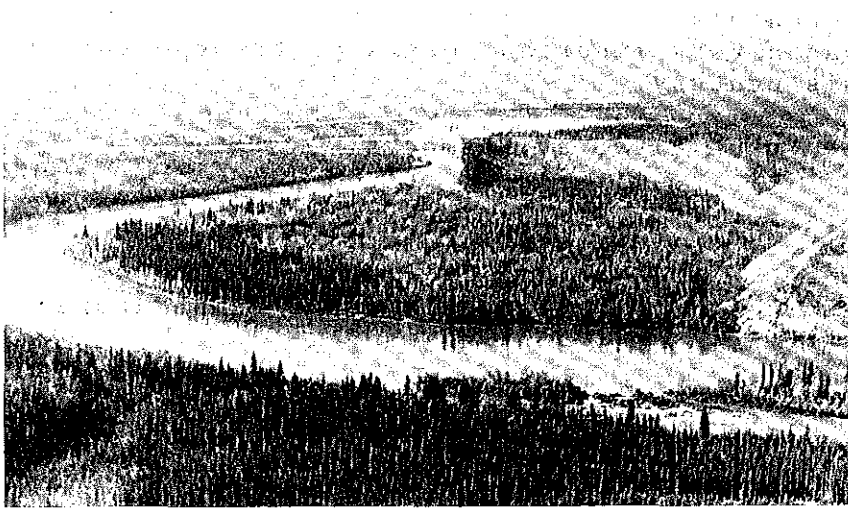
Water temperatures of the Yukon River at Carmacks:



\* Length in Carmacks study area



Yukon River near  
Klondike Bend.



Yukon River below  
confluence with Big  
Salmon River.



Yukon River near  
Mandanna Lake.

Discharge: Mean daily discharge approx. 26,000 cfs, maximum 127,000 24/06/62, minimum 4,800 15-27/03/52.

Width at Carmacks water survey station approx. 600 ft. wide and a maximum depth of 22'.

Water chemistry: available from Environment Canada, Inland Waters Directorate, Pacific Region, Water Survey of Canada.

Species present:

All species reported in the introduction are present throughout the Yukon River in the Carmacks study area. Reported spawning locations are shown on the map page. (This may not represent all spawning sites). A small creek at Yukon Crossing is reported to have a chum salmon run (escapement and spawning area unknown). Chum salmon are also reported to spawn in the vicinity of McCabe Creek.

Date	Species	Count		Part of system counted	Agency
		live	dead		
19/10/64	Chum	1000		vicinity of Fort Selkirk	CF
"	"	500		" Yukon Crossing	"
- /08/73	Chinook	10		" Fort Selkirk	"
05/09/73	"	8		" Wolverine Cr.	"
"	"		17	below Big Salmon R. junction	"
02/10/73	Chum	5		S. of Tatchun R. junction	"
"	"	50		vicinity of Yukon Crossing	"
03/10/73	"	15	2	" McCabe Cr.	"
04/10/73	"	130	3	Williams Cr. - Hoochekoo Cr.	"
04/10/73	"		250	Tatchun R. - Minto	"

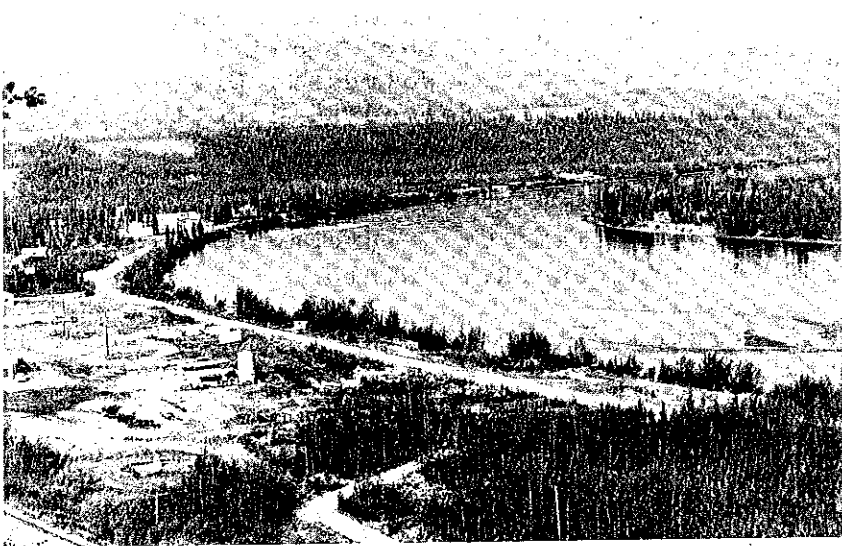
In 1973 fisheries personnel operated gillnets which ranged in mesh size from 4½ to 7¼ inches (stretched) at a point 20 river miles upstream of Carmacks from July 23 to October 13. This netting provided the following information:

species	number caught	time of catch		
		5%	50%	95%
chinook salmon	151	Jul 29	Aug 12	Sep 8
chum salmon	338	Sep 18	Sep 28	Oct 16
inconnu	26	Jul 24	Aug 29	Oct 10
humpback whitefish	14	Jul 30	Sep 15	Oct 4
broad whitefish	1			
grayling	5			
pike	12			

The data for salmon and inconnu may be interpreted as time of upstream migration.



Yukon River above  
junction with Little Sal-  
mon River.



Yukon River at  
Carmacks.



Yukon River at Yukon  
Crossing.

Species	Sex	No.	Fork length (mm)			Weight (kg)			
			min.	max.	mean	No.	min.	max.	mean
Chinook salmon	m	103	468	1300	782	35	1.0	12.7	5.0
	f	41	775	1015	890	20	4.8	11.2	8.0
Chum salmon	m	169	614	795	693	60	2.9	5.6	4.0
	f	150	555	776	648	54	1.8	4.6	3.3
Inconnu	m + f	22	388	715	595	22	1.2	5.4	2.3
Humpback whitefish	m + f	9	384	485	437	7	1.0	1.5	1.2
Broad whitefish	m	1			518				
N. pike	m + f	11	340	840	644	8	1.9	6.2	3.0

Stomach contents of inconnu largely contained juvenile chinook salmon.

Additionally, seines in the order of 15 x 2 m with mesh sizes ranging from 3-25 mm were utilized to capture juvenile fish. Consequently six kinds of juvenile fish were captured in the Yukon River during late summer and early fall of 1973. The chinook salmon lay alongside relatively steep sloping banks in areas of good velocity and were readily observed as a "band" of fish. The chinooks were present for at least 20 linear miles in the vicinity of Carmacks and may have been distributed throughout the study area. In 1972 T. R. Merrell (pers. comm.) reported catching and releasing juvenile chinook 50-60 mm long in mid-August at the southeast end of Little Salmon Lake and in the Little Salmon River. Juvenile whitefish and longnose sucker occupied weedy pool areas outside of the stream flow. Arctic grayling fry were found at the entry point of creek flows to the Yukon River as well as along the main stream bank with juvenile chinooks. Fork lengths of fry were as follows:

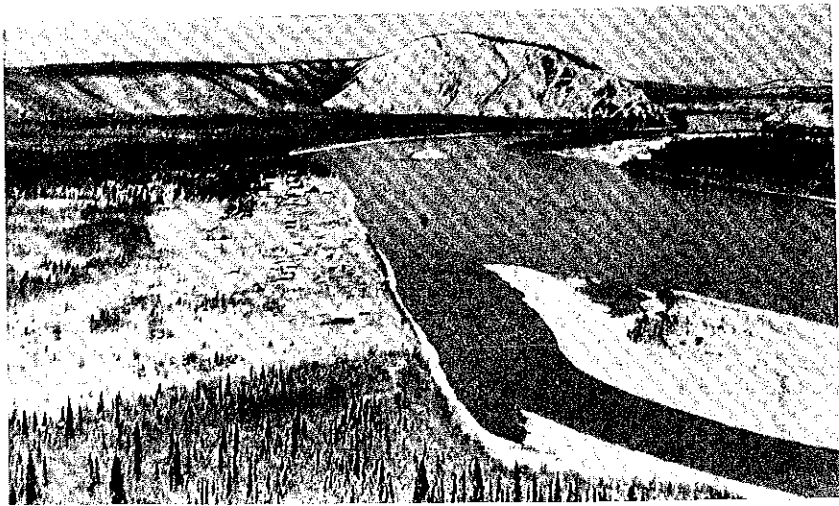
Species	Date	Length range (mm)	Modal length (mm)	Sample size
chinook	July 24	45 - 73	53 - 56	51
chinook	Aug 28	65 - 89	72 and 81	41
round whitefish	July 27	46 - 72	65	48
Arctic grayling	July 27	52 - 74	65 and 66	26
sucker	July 27	46 - 55		5



Yukon River near McCabe  
Creek - chum spawning area.



Yukon River -  
Ingersoll Islands.



Yukon River at  
Fort Selkirk.



## Tributaries:

McGregor Creek: Width 10' at culvert area of Klondike Highway crossing (M.P. 131); estimated streambed composition 50% fine gravel and 50% silt and sand in this area. Non-navigable.

Water temperature 48.5°F 20/08/73/  
 Estimated discharge: 85 cfs 20/08/73.  
 Water chemistry: 20/08/73 (Hach kit)  
 Alkalinity: Phenol 0; MO 7 gpg  
 Hardness: CaCO<sub>3</sub> 7 gpg Acidity: Free 0  
 PH: 8 DO: 11 ppm

Water brown - high and turbid.

Grayling are reported to be present in the fall.

McCabe Creek: Width 10' at highway bridge crossing (M.P. 142.5). Estimated streambed composition in vicinity of bridge 40% boulder, 20% coarse gravel, 20% fine gravel, and 20% silt and sand. Non-navigable.

Water temperature: 46°F 20/08/73  
 Estimated discharge: 40 cfs, 20/08/73.  
 Water chemistry: 20/08/73 (Hach kit)  
 Alkalinity: Phenol 0; MO 5 gpg  
 Hardness: CaCO<sub>3</sub> 7 gpg Acidity: Free 0.  
 PH: 8.5 CO: 11 ppm

Water color organic (high water).

Grayling are reported present in the spring.

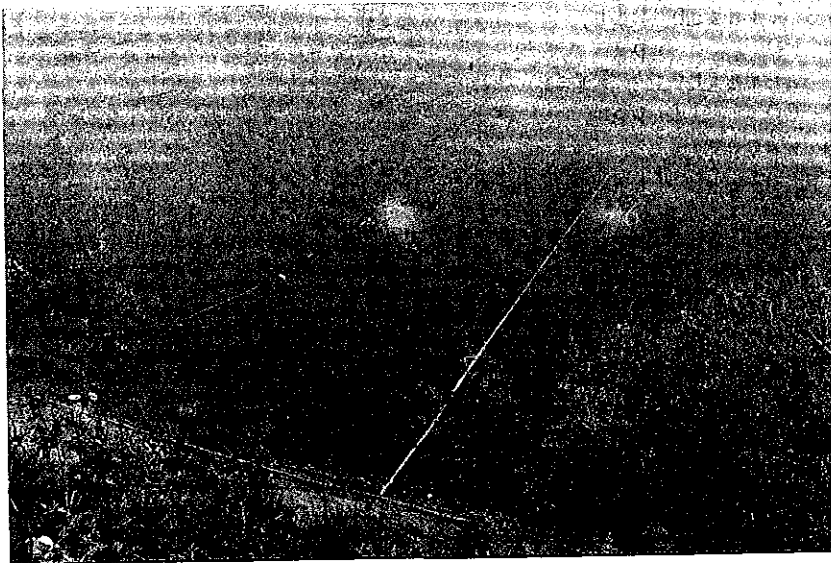
Wolverine Creek: Width 15-20 ft. at lower end. Large beaver dam at 1 mile from mouth; no salmon or redds observed. Grayling observed above dam. Estimated streambed composition: 10% boulder, 20% coarse gravel, 30% fine gravel, 40% sand and silt.

Water temperature 45° F 05/09/73.

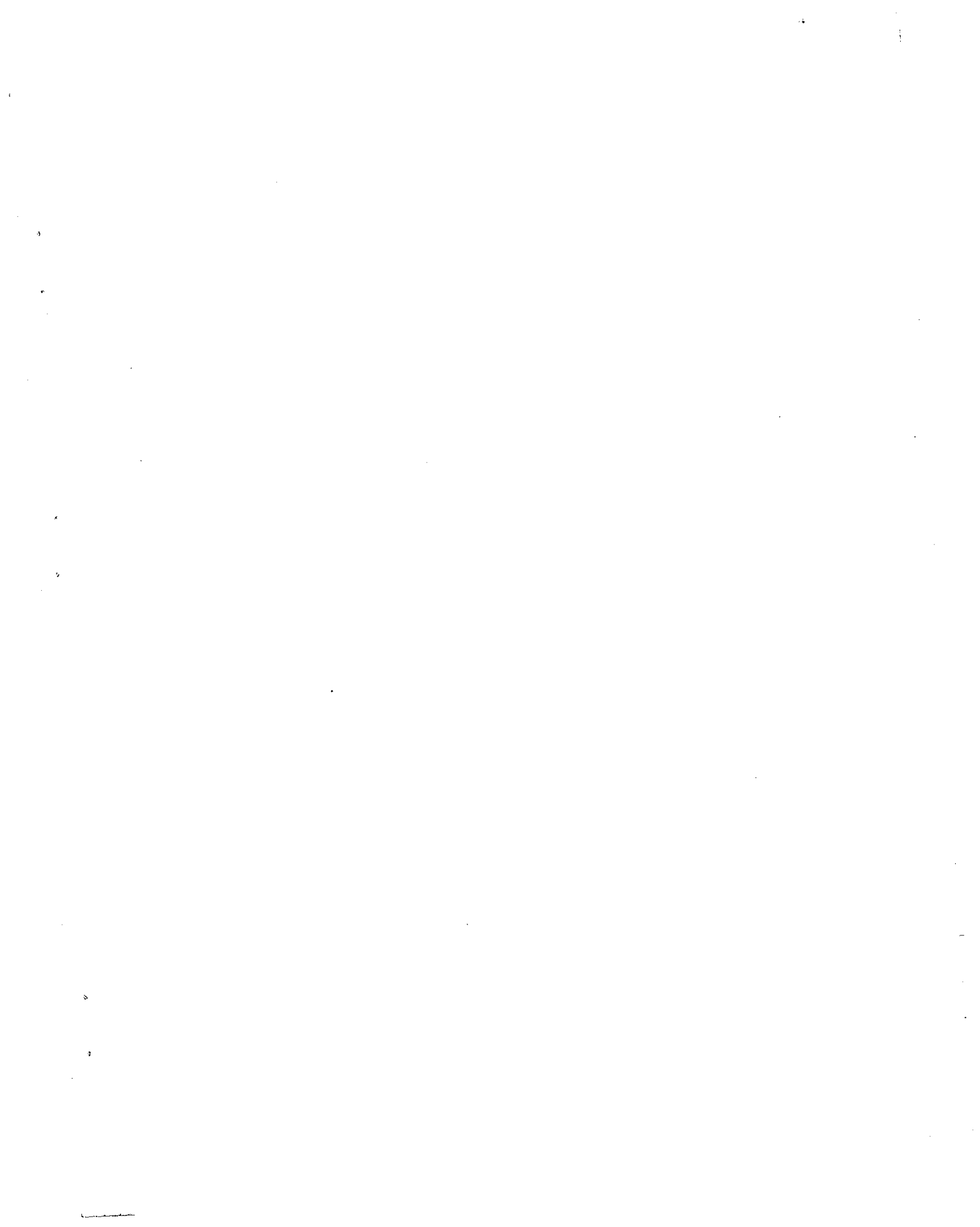
Many other small tributaries of the catalogue area have not been checked at present.

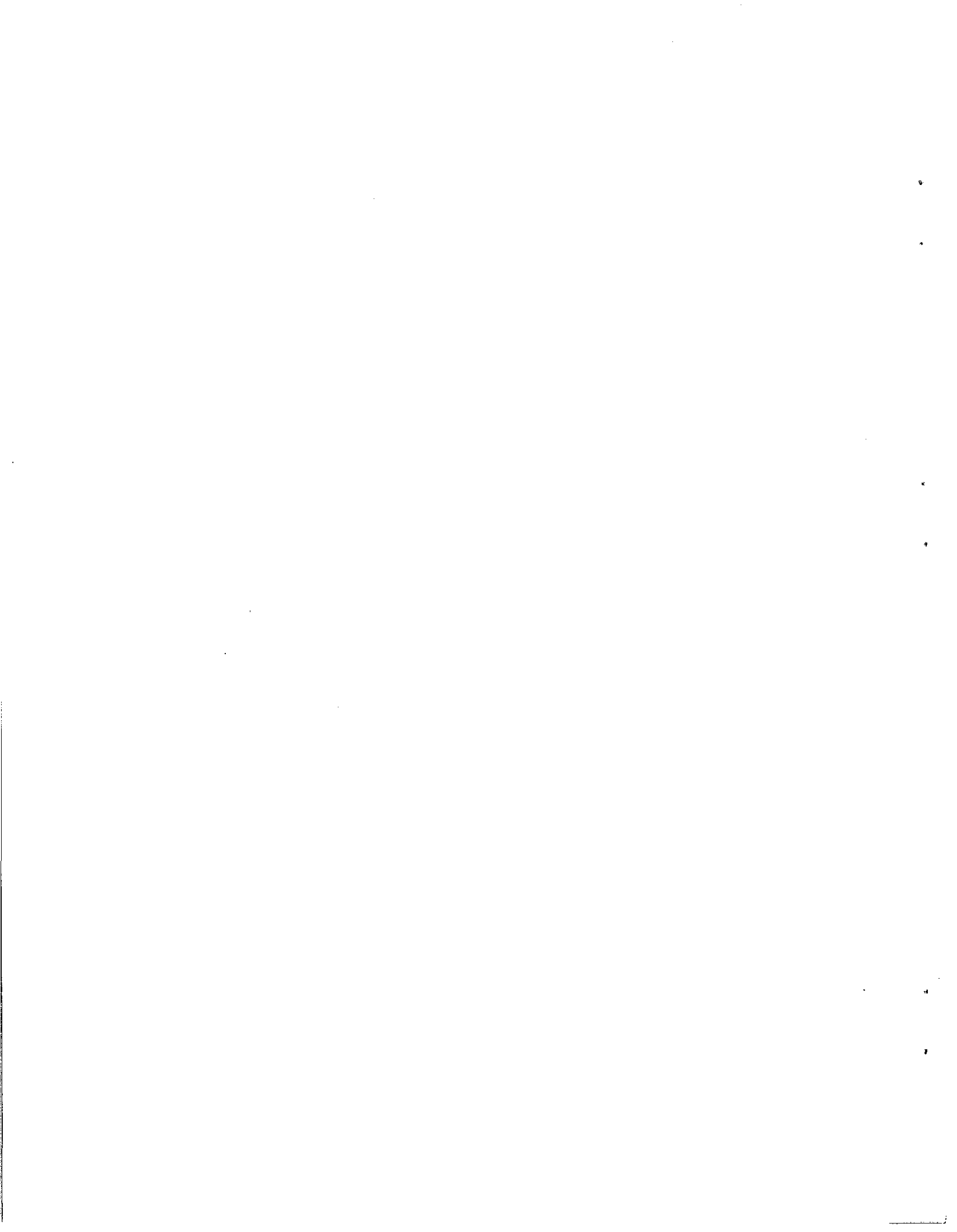


Yukon River test  
fishing site approxi-  
mately 20 miles upstream  
from Carmacks.



Yukon River -  
native set net (Chinook  
fishery at Carmacks).





METRIC EQUIVALENTS

<u>Length</u>				<u>Area</u>			
Cm.	=	0.3937	In.	Sq. Cm.	=	0.1550	Sq. In.
Meter	=	3.28	Ft.	Sq. M.	=	10.76	Sq. Ft.
Meter	=	1.094	Yd.	Sq. M.	=	1.196	Sq. Yd.
Kilom.	=	0.621	Mile	Sq. Kilom.	=	.386	Sq. Mi.
In.	=	2.54	Cm.	Sq. In.	=	6.45	Sq. Cm.
Ft.	=	0.3048	Meter	Sq. Ft.	=	.0929	Sq. M.
Yd.	=	0.9144	Meter	Sq. Yd.	=	.836	Sq. M.
Mile	=	1.61	Kilom.	Sq. Mi.	=	2.59	Sq. Kilom.
				Acre	=	0.405	Hectare
				Hectare	=	2.47	Acres
				Acre	=	43560	Sq. Ft.

<u>Volume</u>				<u>Capacity</u>			
Cu. Cm.	=	.061	Cu. In.	Liter	=	.0353	Cu. Ft.
Cu. M.	=	35.315	Cu. Ft.	Liter	=	.21998	Gal. (Br.)
Cu. M.	=	1.308	Cu. Yd.	Liter	=	61.023	Cu. In.
Cu. In.	=	16.38	Cu. Cm.	Cu. In.	=	.0164	Liter
Cu. Ft.	=	.028	Cu. M.	Cu. Ft.	=	28.32	Liter
Cu. Yd.	=	.7645	Cu. M.	Gal.	=	4.5459	Liter (Br.)

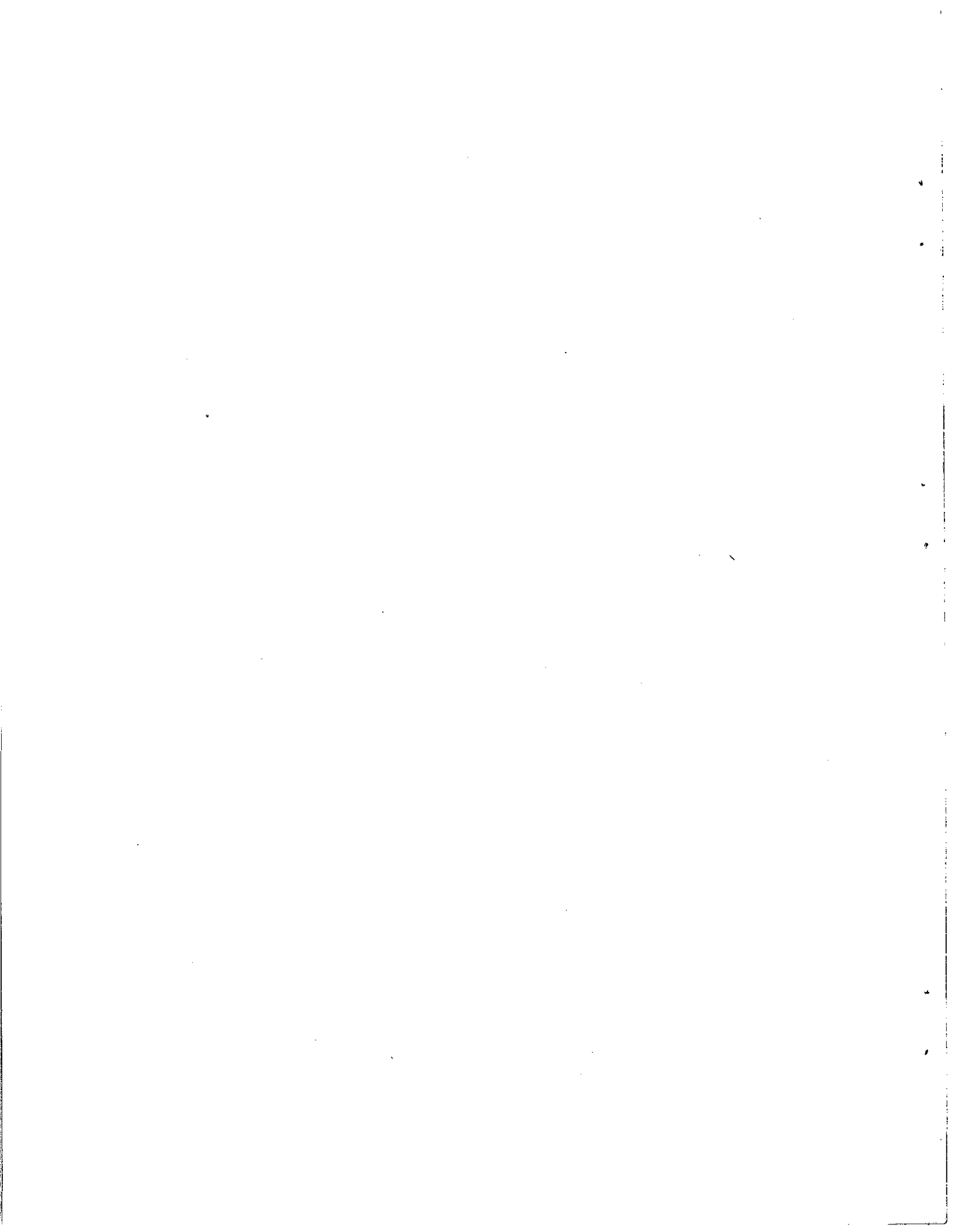
Weight

Gram	=	15.432	Grains	Ounce	=	28.35	Gram
Gram	=	.0353	Ounce	Lb.	=	.454	Kilgm.
Kilogram	=	2.2046	Lbs.	Ton (Sht)	=	907.18	Kilgm.
Kilogram	=	.0011	Ton (Sht)	Ton (Sht)	=	.907	Met. Ton
Met. Ton	=	1.1025	Ton (Sht)	Ton (Sht)	=	2,000	Lbs.
Grain	=	.0648	Gram				

Degrees Centigrade	=	5/9 (Degrees Fahr. - 32)
Degrees Fahrenheit	=	9/5 (Degrees Cent.) + 32.

WATER QUANTITIES AND FLOW MEASUREMENTS

1 cubic foot per second (cfs) or second foot	=	373.2 gallons per min. (gpm)
1 cubic foot per second (cfs) or second foot	=	.537408 million gallons
1 second foot	=	approximately 2 acre-feet per day
1 second foot	=	86,400 cubic feet per day
1 million gallons per day	=	1.86 cfs.
1 acre-foot	=	43,560 cubic feet or 271,379 ga.
1 cubic foot of water	=	6.23 ga. and weighs 62.4 pounds.
1 cubic meter per second	=	35.31 cubic feet per sec. (cfs)
1 meter per second	=	3.28 feet per second
1233.5 cubic meters	=	1 acre-foot



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Cover photo and photo's opposite introduction courtesy of the government of the Yukon Territory, Tourism and Information Branch.

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