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[EXTERNAL] RE: Comments on Coastal PLain O&G DEIS references part 3

1 message

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2 attachments

McCart ed Jan 1977 ArcticGasBiolReptSeries Vol 40.pdf
7850K

WilsonEtal 1977 FWS-OBS-77-06 MapWinterWaterSourcesWinterHabitatFishWildlife.pdf
2979K

Arctic Gas

BIOLOGICAL REPORT SERIES
VOLUME NINETEEN

CATALOGUE OF STREAMS, LAKES AND COASTAL AREAS IN ALASKA ALONG ROUTES OF THE PROPOSED GAS PIPELINE FROM PRUDHOE BAY, ALASKA TO THE ALASKAN/CANADIAN BORDER

D. WARD AND P. CRAIG

Prepared by
AQUATIC ENVIRONMENTS LIMITED

CANADIAN ARCTIC GAS STUDY LIMITED

ALASKAN ARCTIC GAS STUDY COMPANY

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The Canadian Arctic Gas Study Limited Biological Report Series of which this volume is a part, is a series of consultant project reports presenting data based on field and laboratory studies. The format and presentation varies among reports in accordance with the authors discretion.

The data for this work were obtained as a result of investigations carried out by Aquatic Environments Limited for Alaska Arctic Gas Study Limited. The text of this report may be quoted provided the usual credits are given.

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INTRODUCTION

The stream catalogue is a compilation of information on streams in northeast Alaska within a broadly defined corridor on either side of the major routes under consideration by the gas pipeline proposed by Alaskan Arctic Gas Study Company (Figure 1). The data are those which were publicly available up to February 1, 1974. We would appreciate hearing of any omissions or additions to the body of public information so that the catalogue can be kept up to date. The sources from which data were extracted are indicated in a numbered list which follows the Introduction. They are indicated by number on the data sheets--eg., all information from Aquatic Environments Limited data files is indicated by the number 1.

The maps which accompany the report indicate the location of streams and individual sampling sites. Plates 1-8 show typical habitats found in the study area.

Further details on the methods used in obtaining and coding data in each section are described below.

Description of Water Body

1. Some officially unnamed streams have been given temporary designations by survey parties. In these cases the designation and a number indicating the source of the designation are both included within brackets--eg., (Lake 22-1) indicates that the name Lake 22 is a designation applied by Reference Source 1, Aquatic Environments Limited.

2. The map number indicates the number of the accompanying figure on which the waterbody or sampling site is located.

3. Nearest milepost (MP) indicates the position of the waterbody with respect to the nearest point on the gas pipeline route. Where applicable, it is noted that the stream is crossed by the Prudhoe Bay Supply Route (PB), Alternative Interior Route (I) or both. For example, "3.7 mi S MP 167.7-PB" indicates that the sampling location is 3.7 miles south of milepost 167.7 along the Prudhoe Bay Supply Route.

Assessment

Within each major division of the catalogue, a general description of the waterbodies is included, followed by individual assessments on subsequent pages. Where information is insufficient (eg., the Inshore Section), individual assessments are omitted.

Fish

1. Sources are numbered to correspond to accompanying list of references--eg., where the number 1 appears as the source of data, the information was obtained from Aquatic Environments Limited data files.

2. Sampling sites are indicated by a letter (A,B,C, etc.) for stream locations and by a number (1-40) for coastal locations. The approximate locations of these sites are marked on the map listed in the Waterbody section for each stream.

Benthic Invertebrates

1. Benthic invertebrates were collected from the stream bottom with a standard Surber Sampler (9 threads/cm). Most sample collections consisted of three replicates at both 7-10 cm (3-4 inch) and 25-30 cm (10-12 inch) depths in a single riffle for a total of 6 Surber Samples at each locality. In some cases only three Surbers were taken because the stream was too shallow to allow the 25-30 cm (10-12 inch) samples to be taken.

2. The samples were identified and counted in the laboratory. Collections containing numerous organisms were sub-sampled by first picking our the larger specimens and then diluting the sample by a known amount. An aliquot was then removed for the sub-sample. Organisms in the aliquot were counted and the total for the entire sample was calculated by direct proportion.

3. The unbracketed number is the mean number of organisms per square foot found in samples taken at a specific site. The bracketed number is the standard error of the mean. Total numbers of benthic invertebrates are given as no./ft^2 and no./m^2. Small differences between the given total number of invertebrates and the sum of invertebrates in listed taxa result from rounding-off numbers in computation.

4. The letter P indicates that a particular organism was present though no quantitative data are available.

5. Locations are indicated by the same method used in the Fish section.

Water Chemistry and Winter Conditions

1. Except where otherwise indicated, the following units are used in the catalogue:

depth	meters
temperature	°C
conductivity	micromhos/cm
turbidity	Jackson Turbidity Units (JTU)
suspended sediments	ml/l (Imhoff Cone)
salinity	parts per thousand
discharge	m^3/sec
pH	pH units
dissolved oxygen (D.O.)	mg/l
alkalinity	mg/l
hardness	mg/l
anions and cations:	mg/l
HCO_3^-, $SO_4^=$, Cl^-, $PO_4^=$,	
SiO_2, Ca^{++}, Mg^{++}, Na^+, Fe^{++}, Mn^{++})	

2. When a range of values is given, the number of samples on which the range is based follows as a bracketed number.

3. Of the water chemistry credited to Reference Source 1

a) all oxygen, pH, alkalinity, hardness measurements (Hach Kit model DR-EL), conductivity (Beckman Conductivity Meter Model RA-2A), salinity and temperatures were taken in the field. Turbidities (Hellige Turbidometer Model TR 3000), suspended sediments by volume (Imhoff Cone) and water velocities for discharge measurements (Gurley Pygmy Current Meter) were also measured.

b) detailed analysis of samples from groundwater sources (springs) was performed by Dr. R.O. van Everdingen, Hydrology Research Division, Water Resources Branch, Environment Canada, Calgary, Alberta.

4. Locations are indicated by the same method used in the Fish section.

LIST OF FISH SPECIES

Common Name	Scientific Name	Code
Arctic char	*Salvelinus alpinus*	CHAR
grayling	*Thymallus arcticus*	GRAY
lake trout	*Salvelinus namaycush*	LKTR
round whitefish	*Prosopium cylindraceum*	RDWT
broad whitefish	*Coregonus nasus*	BDWT
humpback whitefish	*Coregonus clupeaformis*	HMWT
longnose sucker	*Catastomus catastomus*	LNSK
Arctic cisco	*Coregonus autumnalis*	ARCS
least cisco	*Coregonus sardinella*	LSCS
four-horned sculpin	*Myoxocephalus quadricornis*	FHSC
burbot	*Lota lota*	BURB
ninespine stickleback	*Pungitius pungitius*	NNST
northern pike	*Esox lucius*	PIKE
Arctic cod	*Boreogadus saida*	ARCD
slimy sculpin	*Cottus cognatus*	SLSC
pink salmon	*Oncorhynchus gorbuscha*	PINK
chum salmon	*Oncorhynchus keta*	CHUM
Arctic flounder	*Liopsetta glacialis*	ARFL

PLATE 1: Braided mountain stream (Okpilak River) flowing across the Arctic Coastal Plain.

PLATE 2: Headwaters of Kongakut River in the Brooks Mountain Range.

PLATE 3: Delta of the Shaviovik River.

PLATE 4: Setting gillnet in a coastal lake (North Slope Lake #6).

PLATE 5: Tundra Stream (Weir Creek) flowing into a braided mountain stream (Kavik River) on the North Slope.

PLATE 6: Seining in a tundra stream (Weir Creek), Beaufort Sea Drainage.

PLATE 7: Chandalar Valley, Yukon River Drainage.

PLATE 8: Strangle Woman Creek, Porcupine River Drainage.

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INSHORE HABITATS

WATER BODY INSHORE HABITATS

Approx. lat. _____ long. _____

Nearest milepost _____ Map number _____

Aquatic habitats in a variety of inshore areas (Plate 3) are included in this section: ocean, coastal and inland beaches, lagoons, spits and stream mouths. Sampling stations (numbered 1-40) were generally in shallow waters within two miles of the shoreline.

In this region, the inshore areas become ice-free in mid- or late June. Salinities are often low.

Four fish species are common in the inshore habitat: Arctic char, Arctic cisco, least cisco and four-horned sculpin. Grayling are occasionally caught when salinities are low. The inshore habitat is an important feeding area for these fishes. Amphipods, isopods, euphasids, coelenterates and chaetognaths are abundant during the summer months. Winter utilization of inshore habitats by fish is not known, although it is suspected that some areas, especially the deltas of large rivers, may be important to overwintering fish.

Sensitive May to November.

WATER BODY

FOGGY ISLAND

Approx. lat. 70°15'15" N long. 147°45'30" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1,17

	fry	other
Thymallus arcticus		
Salvelinus namaycush		
Salvelinus alpinus		x
Coregonus clupeaformis		
Coregonus nosus		
Prosopium cylindraceum		
Coregonus autumnalis		x
Coregonus sardinella		x
Boreogadus saida		x (in char stomachs)

	fry	other
Esox lucius		
Lota lota		
Myoxocephalus quadricornis		
Catastomus catastomus		
Pungitius pungitius		
Cottus cognatus		

(see bottom of next page)

WINTER CONDITIONS

Sources	1
Date	8 Nov 73
Location	1
Snow depth	
Ice depth	
Water depth	
Discharge	
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	
Salinity	9.2
Comments	

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

Source 1
Date 23 Aug 73
Loc. 1
Fish caught CHAR, ARCS

WATER BODY

UNNAMED ISLAND (near Kadleroshilik River)

Approx. lat. 70°12'30" N long. 147°32'30" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1

	fry	other
Thymallus arcticus		
Salvelinus namaycush		
Salvelinus alpinus		
Coregonus clupeaformis		
Coregonus nasus		
Prosopium cylindraceum		
Coregonus autumnalis		x
Coregonus sardinella		
Esox lucius		
Lota lota		
Myoxocephalus quadricornis		x
Catastomus catastomus		
Pungitius pungitius		
Cottus cognatus		

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{x}/ft^2$
$\bar{x}/m^2$

Source	1
Date	23 Aug 73
Loc.	2
Fish caught	CHAR
	FHSC

WATER BODY

UNNAMED LAGOON (near Shaviovik River)

Approx. lat. 70°10'45" N long. 147°13'00" W

Nearest milepost _____ Map number 2, Plate 3

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		x
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindroceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella					
Boreogadus saida		x (in char stomachs)			

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	23 Aug 73	28 Aug 73
Location	3	3
Temperature		6
Conductivity		
pH		
D.O.		
Turbidity		high
Suspend. sed.		
Discharge		
Salinity	19	5.6
Hardness		
Alkalinity		

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source		
Date		
Location		
Method		
No. samples		
Trichoptera		
Plecoptera		
Ephemeroptera		
Diptera:		
Simulidae		
Tipulidae		
Chironomidae		
Empididae		
Muscidae		
Dolichopodidae		
Liriopeidae		
Unidentified		
Oligochaeta		
Nematoda		
Arachnida		
Triclad		
Copepod		
Miscellaneous		
TOTAL $\bar{X}/ft^2$		
$\bar{X}/m^2$		

Source	1	1
Date	23 Aug 73	28 Aug 73
Location	3	3
Fish caught	CHAR	CHAR
	ARCS	ARCS
	LSCS	LSCS

WATER BODY

TIGVARIAK ISLAND

Approx. lat. 70°12'30" N long. 147°09'30" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1

	fry	other
Thymallus arcticus		
Salvelinus namaycush		
Salvelinus alpinus		x
Coregonus clupeaformis		
Coregonus nasus		
Prosopium cylindraceum		
Coregonus autumnalis		x
Coregonus sardinella		

	fry	other
Esox lucius		
Lota lota		
Myoxocephalus quadricornis		
Catastomus catastomus		
Pungitius pungitius		
Cottus cognatus		

(see bottom of next page)

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	23 Jul 73
Location	4
Temperature	
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	6.6
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	∑

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

Source	1
Date	23 Jul 73
Location	4
Fish caught	CHAR
	ARCS

WATER BODY UNNAMED LAGOON (near Bullen Point)

Approx. lat. 70°10'30" N long. 146°46'30" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1

	fry	other
Thymallus arcticus		
Salvelinus namaycush		
Salvelinus alpinus		x
Coregonus clupeaformis		
Coregonus nasus		
Prosopium cylindraceum		
Coregonus autumnalis		
Coregonus sardinella		
Boreogadus saida		x (in char stomachs)

	fry	other
Esox lucius		
Lota loto		
Myoxocephalus quadricornis		
Catostomus catastomus		
Pungitius pungitius		
Cottus cognatus		

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	16 Jul 73
Location	5
Temperature	
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	5.2
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{x}/ft^2$	
$\bar{x}/m^2$	

Source	1
Date	16 Jul 73
Location	5
Fish caught	CHAR

WATER BODY

POINT GORDON

Approx. lat. 70°14'00" N long. 146°37'00" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		x
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	16 Jul 73	16 Jul 73
Location	6 (outside spit)	6 (inside spit)
Temperature		
Conductivity		
pH		
D.O.		
Turbidity		
Suspend. sed.		
Discharge		
Salinity	7.2	6.6
Hardness		
Alkalinity		

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

Source	1
Date	16 Jul 73
Location	6 inside spit
Fish caught	CHAR FHSC

WATER BODY

ALASKA ISLAND

Approx. lat. 70°14'00" N long. 146°34'00" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	30 Aug 73
Location	7 (outside spit)
Temperature	4.5
Conductivity	
pH	
D.O.	
Turbidity	low
Suspend. sed.	
Discharge	
Salinity	16.4
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

Source	1
Date	30 Aug 73
Loc.	7 (outside spit)
Fish caught	CHAR

WATER BODY

POINT HOPSON (Lagoon and offshore)

Approx. lat. 70°11'00" N long. 146°32'00" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis	x	
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					
Boreogadus saida		x			

(see bottom of next page)

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	30 Aug 73
Location	8 (offhsore)
Temperature	3.5
Conductivity	
pH	
D.O.	
Turbidity	low
Suspend. sed.	
Discharge	
Salinity	15.2
Hardness	
Alkalinity	

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source			
Date			
Location			
Method			
No. samples			
Trichoptera			
Plecoptera			
Ephemeroptera			
Diptera:			
Simulidae			
Tipulidae			
Chironomidae			
Empididae			
Muscidae			
Dolichopodidae			
Liriopeidae			
Unidentified			
Oligochaeta			
Nematoda			
Arachnida			
Triclad			
Copepod			
Miscellaneous			
TOTAL	$\bar{X}/ft^2$		
	$\bar{X}/m^2$		

Source	1	1
Date	30 Aug 73	30 Aug 73
Location	8 (offshore)	8 (lagoon)
Fish caught	CHAR	FHSC
		NNST
		ARCD

WATER BODY

NORTH STAR ISLAND

Approx. lat. 70°13'15" N long. 146°19'30" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeoformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkolinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

Source	1
Date	16 Jul 73
Location	9
Fish caught	CHAR

WATER BODY

UNNAMED POINT (near Staines River)

Approx. lat. 70°08'45" N long. 146°04'00" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella		x			

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{x}/ft^2$
$\bar{x}/m^2$

Source	1
Date	23 Aug 73
Location	10
Fish caught	CHAR
	ARCS
	LSCS

WATER BODY

FLAXMAN ISLAND

Approx. lat. 70°11'00" N long. 146°00'30" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosapium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	14	1
Date	29 Jul 70	30 Aug 73
Location	1 mi off east	11
Temperature	tip of Island	2.0
Conductivity		
pH		
D.O.		
Turbidity		
Suspend. sed.		
Discharge		
Salinity	9.5	15.8
Hardness		
Alkalinity		

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source		
Date		
Location		
Method		
No. samples		
Trichoptera		
Plecoptera		
Ephemeroptera		
Diptera:		
Simulidae		
Tipulidae		
Chironomidae		
Empididae		
Muscidae		
Dolichopodidae		
Liriopeidae		
Unidentified		
Oligochaeta		
Nematoda		
Arachnida		
Triclad		
Copepod		
Miscellaneous		
TOTAL $\bar{x}/ft^2$		
$\bar{x}/m^2$		

Source	1	1
Date	15 Jul 73	30 Aug 73
Location	12	11
Fish caught	CHAR	CHAR ARCS

WATER BODY

UNNAMED LAGOON (off Staines River)

Approx. lat. 70°09'15" N long. 145°55'00" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namoycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Dischorge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

Source	1
Date	30 Aug 73
Location	13
Fish caught	CHAR

WATER BODY

BROWNLOW POINT

Approx. lat. 70°07'15" N long. 145°49'00"W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1,14

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		x
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	14	14	1
Date	29 Jul 70	29 Jul 70	30 Aug 73
Location	14	15	14 (between islands)
Temperature			10.5
Conductivity			
pH			
D.O.			
Turbidity			moderate
Suspend. sed.			
Discharge			
Salinity	1.0	3.0	<1.4
Hardness			
Alkalinity			

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source			
Date			
Location			
Method			
No. samples			
Trichoptera			
Plecoptera			
Ephemeroptera			
Diptera:			
Simulidae			
Tipulidae			
Chironomidae			
Empididae			
Muscidae			
Dolichopodidae			
Liriopeidae			
Unidentified			
Oligochaeta			
Nematoda			
Arachnida			
Triclad			
Copepod			
Miscellaneous			
TOTAL $\bar{x}/ft^2$			
$\bar{x}/m^2$			

Source	14	14	1
Date	29 Jul 70	29 Jul 70	30 Aug 73
Location	14	15	14 (between islands)
Fish caught	CHAR ARCS FHSC	CHAR FHSC	CHAR

WATER BODY

UNNAMED LAGOON (off Canning River near Mud Island)

Approx. lat. 70°06'00" N long. 145°37'30" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		x
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus		x	Pungitius pungitius		
Prosapium cylindraceum		x	Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella		x			
Boreogadus saida		x(in char stomachs)			

(see bottom of next page)

WINTER CONDITIONS

Sources	1
Date	8 Nov 73
Location	19 (open water channel)
Snow depth	
Ice depth	
Water depth	
Discharge	
Temperature	-1.0
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	
Salinity	8.5
Comments	

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{x}/ft^2$
$\bar{x}/m^2$

Source	1	1	1	1	1	1
Date	15 Jul 73	18 Aug 73	24 Aug 73	21 Sept 73	21 Sept 73	21 Sept 73
Location	20	20	17	16	18	19
Fish caught	CHAR RDWT BDWT GRAY	CHAR FHSC LSCS	CHAR	none	CHAR ARCS FHSC	none

WATER BODY

KONGANEVIK POINT

Approx. lat. 70°01'00" N long. 145°10'00" W

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources 1,14

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		x
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	14	14
Date	27 Jul 70	29 Jul 70
Location	22	21
Temperature		
Conductivity		
pH		
D.O.		
Turbidity		
Suspend. sed.		
Discharge		
Salinity	4.0	6.0
Hardness		
Alkalinity		

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source			
Date			
Location			
Method			
No. samples			
Trichoptera			
Plecoptera			
Ephemeroptera			
Diptera:			
Simulidae			
Tipulidae			
Chironamidae			
Empididae			
Muscidae			
Dolichopodidae			
Liriopeidae			
Unidentified			
Oligochaeta			
Nematoda			
Arachnida			
Triclad			
Copepod			
Miscellaneous			
TOTAL $\bar{X}/ft^2$			
$\bar{X}/m^2$			

Source	14	14	1
Date	27 Jul 70	29 Jul 70	11 Jul 73
Location	22	21	21
Fish caught	CHAR	CHAR	CHAR
	ARCS	ARCS	
	FHSC		

WATER BODY

OCEAN (off Katakturuk River)

Approx. lat. 69°59'00" N long. 145°02'00" W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1,16
Date	7 Nov 73
Location	23 (1 mi offshore)
Snow depth	0
Ice depth	0.05
Water depth	1.7
Discharge	
Temperature	-2.0
D.O.	
Turbidity	
Suspend. sed.	
pH	7.8 (@ 25°C)
Alkalinity	
Hardness	
Conductivity	47,800 (@ 25°C)
Salinity	8.5
Comments	seal airhole; continued in water chemistry section

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source 1,16
Date 7 Nov 73
Location Ocean (1 mi off Katakturuk River mouth)

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
377	1213	10,000	720	-	-	173.2	0.0	1140	18,500	0.8	0.04	-	1.0	32125

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

SIMPSON COVE

Approx. lat. 69°59' N long. 144°45' W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	14
Date	27 Jul 70
Location	24
Temperature	
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	15.5
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeraptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

Source	14
Date	27 Jul 70
Location	24
Fish caught	CHAR
	ARCS

WATER BODY

ANDERSON POINT

Approx. lat. 70°02' N long. 144°28' W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other
Thymallus arcticus		
Salvelinus namaycush		
Salvelinus alpinus		x
Coregonus clupeaformis		
Coregonus nasus		
Prosopium cylindraceum		
Coregonus autumnalis		x
Coregonus sardinella		
Esox lucius		
Lota lota		
Myoxocephalus quadricornis		x
Catastomus catastomus		
Pungitius pungitius		
Cottus cognatus		

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	14
Date	26 Jul 70
Location	25
Temperature	
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	17.0
Hardness	
Alkalinity	

Source	
Date	
Locotion	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

Source	14
Date	26 Jul 70
Location	25
Fish caught	CHAR
	ARCS
	FHSC

WATER BODY

BARTER ISLAND (Float Plane Cove)

Approx. lat. 70°08' N long. 143°36' W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other
Thymallus arcticus		
Salvelinus namaycush		
Salvelinus alpinus		x
Coregonus clupeaformis		
Coregonus nasus		
Prosopium cylindraceum		
Coregonus autumnalis		
Coregonus sardinella		
Esox lucius		
Lota lota		x
Myoxocephalus quadricornis		
Catostomus catostomus		
Pungitius pungitius		
Cottus cognatus		

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	14	14	14	14
Date	21 Jul 70	25 Jul 70	26 Jul 70	28 Jul 70
Location	26(inside reef)	26(outside)	26(outside west tip)	26(inside west tip)
Temperature				
Conductivity				
pH				
D.O.				
Turbidity				
Suspend. sed.				
Discharge				
Salinity	14.0	32.0	32.0	15.0
Hardness				
Alkalinity				

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

Source	14
Date	25 Jul 70
Location	26 (outside reef)
Fish caught	CHAR FHSC

WATER BODY

JAGO SPIT

Approx. lat. 70°09' N long. 143°17' W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	14	14
Date	25 Jul 70	25 Jul 70
Location	27(inside spit)	27 (outside spit)
Temperature		
Conductivity		
pH		
D.O.		
Turbidity		
Suspend. sed.		
Discharge		
Salinity	8.0	32.0
Hardness		
Alkalinity		

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source		
Date		
Location		
Method		
No. samples		
Trichoptera		
Plecoptera		
Ephemeroptera		
Diptera:		
Simulidae		
Tipulidae		
Chironomidae		
Empididae		
Muscidae		
Dolichopodidae		
Liriopeidae		
Unidentified		
Oligochaeta		
Nematoda		
Arachnida		
Triclad		
Copepod		
Miscellaneous		
TOTAL $\bar{X}/ft^2$		
$\bar{X}/m^2$		

Source	14	14
Date	25 Jul 70	25 Jul 70
Location	27(inside spit)	27(outside spit)
Fish caught	CHAR ARCS	none

WATER BODY

ORUKTALIK LAGOON

Approx. lat. 70°04' N long. 142°53' W

Neorest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocepholus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	14
Date	24 Jul 70
Location	28 (1/4 mi outside entrance)
Temperature	
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	5.0
Hardness	
Alkalinity	

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

Source	14
Date	25 Jul 70
Location	28 (inside reef)
Fish caught	CHAR ARCS

WATER BODY

POKOK BAY REEF

Approx. lat. 69°59'30" N long. 142°33' W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	14	14
Date	24 Jul 70	24 Jul 70
Location	29(Outside reef)	29(inside reef)
Temperature		
Conductivity		
pH		
D.O.		
Turbidity		
Suspend. sed.		
Discharge		
Salinity	3.0	4.0
Hardness		
Alkalinity		

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source		
Date		
Location		
Method		
No. samples		
Trichoptera		
Plecoptera		
Ephemeroptera		
Diptera:		
Simulidae		
Tipulidae		
Chironomidae		
Empididae		
Muscidae		
Dolichopodidae		
Liriopeidae		
Unidentified		
Oligochaeta		
Nematoda		
Arachnida		
Triclad		
Copepod		
Miscellaneous		
TOTAL $\bar{X}/ft^2$		
$\bar{X}/m^2$		

Source	14	14
Date	24 Jul 70	24 Jul 70
Location	29(outside reef)	29 (inside reef)
Fish caught	CHAR	CHAR
	ARCS	ARCS

WATER BODY

ANGUN POINT

Approx. lat. 69°51' N long. 142°21' W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	14	14	14
Date	22 Jul 70	23 Jul 70	23 Jul 70
Location	30(inside east end)	30	30(3/4 mi outside point)
Temperature			
Conductivity			
pH			
D.O.			
Turbidity			
Suspend. sed.			
Discharge			
Salinity	2.0	3.0	2.0
Hardness			
Alkalinity			

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source			
Date			
Location			
Method			
No. samples			
Trichoptera			
Plecoptera			
Ephemeroptera			
Diptera:			
Simulidae			
Tipulidae			
Chironomidae			
Empididae			
Muscidae			
Dolichopodidae			
Liriopeidae			
Unidentified			
Oligochaeta			
Nematoda			
Arachnida			
Triclad			
Copepod			
Miscellaneous			
TOTAL $\bar{X}/ft^2$			
$\bar{X}/m^2$			

Source	14	14
Date	23 Jul 70	24 Jul 70
Location	30	30(reef at Angun Lagoon)
Fish caught	ARCS	CHAR ARCS

WATER BODY

UNNAMED CREEKS (near Nuvagapak Point)

Approx. lat. 69°54' N long. 142°21' W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		x
Coregonus clupeaformis			Catostomus catastomus		
Coregonus nasus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Solinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

Source	14	14
Date	29 Jun 70	30 Jun 70
Location	32 (small creek and lake at Nuvagapak Pt.)	31 (small creek 1 mi W of Nuvagapak Pt.)
	FHSC	FHSC
	NNST	NNST

WATER BODY

NUVAGAPAK POINT

Approx. lat. 69°53' N long. 142°18' W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		x
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	14	14	14	14	14	14
Date	22 Jul 70	23 Jul 70	20 Aug 70	21 Aug 70	21 Aug 70	28 Aug 70
Location	33(inside reef)	33	33	33(inside reef)	33(outside reef)	33
Temperature						
Conductivity						
pH						
D.O.						
Turbidity						
Suspend. sed.						
Discharge						
Salinity	1.0	2.0	22.0	26.0	29.0	19.0
Hardness						
Alkalinity						

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ	

BENTHIC INVERTEBRATES

Source			
Date			
Location			
Method			
No. samples			
Trichoptera			
Plecoptera			
Ephemeroptera			
Diptera:			
Simulidae			
Tipulidae			
Chironomidae			
Empididae			
Muscidae			
Dolichopodidae			
Liriopeidae			
Unidentified			
Oligochaeta			
Nematoda			
Arachnida			
Triclad			
Copepod			
Miscellaneous			
TOTAL $\bar{X}/ft^2$			
$\bar{X}/m^2$			

Source	14	14	14
Date	22 Jul 70	20 Aug 70	7 Sept 70
Location	33 (inside reef)	33	33
Fish caught	CHAR ARCS	CHAR ARCS	CHAR ARCS FHSC

WATER BODY

KOGOTPAK RIVER MOUTH

Approx. lat. 69°51'45" N long. 142°15'30" W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		x
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	14	14
Date	22 Jul 70	22 Jul 70
Location	34	1 mi West of site 34
Temperature		
Conductivity		
pH		
D.O.		
Turbidity		
Suspend. sed.		
Discharge		
Salinity	3.0	3.0
Hardness		
Alkalinity		

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

Source	14
Date	22 Jul 70
Location	34
Fish caught	CHAR FHSC

WATER BODY

AICHILIK RIVER MOUTH

Approx. lat. 69°51' N long. 142°07' W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		x
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	∑

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

Source	14	14	14
Date	20-25 Jun 70	25 Aug 70	4 Sept 70
Location	35	35	35
Fish caught	CHAR GRAY FHSC	CHAR	CHAR ARCS FHSC

WATER BODY

EGAKSRAK RIVER MOUTH

Approx. lat. 69°50' N long. 142°03' W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		X	Myoxocephalus quadricornis		
Coregonus clupeaformis			Cotastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochoeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{x}/ft^2$
$\bar{x}/m^2$

Source	14	14
Date	26-27 Jun 70	3 Jul 70
Location	36	36
Fish caught	GRAY CHAR	GRAY

WATER BODY

SIKU LAGOON

Approx. lat. 69°49' N long. 141°43' W

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 14

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		x
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prasopium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x	Liopsetta glacialis		x
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources	1
Date	5 Nov 73
Location	38
Snow depth	
Ice depth	0.44
Water depth	0.44
Discharge	
Temperature	
D.O.	
Turbidity	2.7
Suspend. sed.	0
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source	14
Date	6 Jul 70
Location	37
Temperature	
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	1.0
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

Source	14	14	14	14
Date	3 Jul 70	6 Jul 70	7 Jul 70	8 Jul 70
Location	40(Pigokraluk Pt. Reef - inside)	37	39(Raluk Reef-inside)	38(inside reef)
Fish caught	CHAR ARCS GRAY ARFL FHSC	GRAY CHAR	GRAY CHAR ARCS ARFL FHSC	CHAR ARCS FHSC

NORTH SLOPE LAKES

WATER BODY NORTH SLOPE LAKES

Approx. lat. _____ long. _____

Nearest milepost _____ Map number _____

The characteristics of North Slope Lakes (Plate 4) are highly variable. They range from small bodies of water devoid of fish to large lakes with permanent fish populations. Lakes in the Canning River drainage (except in the delta region) are presented in the section "Canning Lakes". The other 44 lakes sampled are of three general types:

1) Mountain Lakes. There are relatively few lakes in the northern portion of the Brooks Range (Wahoo, Porcupine, Schrader and Peter Lakes). These tend to be deep lakes containing Arctic char or lake trout. All but the "Canning Lakes" are located away from the pipeline route.

2) Coastal Plain Lakes. Between the Sagavanirktok and Canning Rivers, in the Teshekpuk Section of the Arctic Coastal Plain, bodies of water are numerous. Most are small, shallow tundra ponds which contain only a limited fish fauna. Ninespine sticklebacks are often the only species present, but grayling are occasionally found. Most of these lakes, however, support no fish due to their susceptibility to freeze-up completely in the winter.

3) Coastal Lakes. Several lakes near or open to the ocean contain white-fishes, ciscoes and other species. Some of these lakes may serve as summer feeding areas and others may be deep enough to support permanent fish populations.

WATER BODY

UNNAMED COASTAL PLAIN LAKES (see below)

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 4

ASSESSMENT

The following is a list of 27 small, shallow tundra lakes on the Coastal Plain between the Sagavanirktok and Canning Rivers. They do not appear to contain fish populations. The lakes were fished by gillnet and/or seine, but no fish were caught. Although these lakes, and the many other similar shallow lakes in the area, are within the pipeline corridors, they appear to be a low risk area.

Lake #	(Source)	Location	Date	Method
#92	(1)	70°01'30" N, 149°39' W	20 Aug 73	gillnet
#79	(1)	70°04'30" N, 147°07' W	23 Aug 73	gillnet, seine
#62	(1)	69°59'45" N, 147°40'00" W	20 Aug 73	gillnet
#61	(1)	69°58'00" N, 147°35'45" W	20 Aug 73	gillnet
#44	(1)	70°04'45" N, 147°23'30" W	24 Jul 73	gillnet
#60	(1)	69°57'45" N, 147°15'30" W	20 Aug 73	gillnet
#63	(1)	69°45'30" N, 147°13'00" W	8 Aug 73	gillnet, seine
#16	(1)	69°45' N, 146°52' W	23,31 Aug 73	gillnet, seine
#188	(1)	69°56'15" N, 147°02'30" W	18 Aug 73	gillnet
#15	(1)	69°34'30" N, 146°51'30" W	12 Jul 73	seine
#53	(1)	70°02'45" N, 146°44'00" W	15 Sep 73	seine
#6 *	(1)	70°06'15" N, 146°44'30" W	4 Jul 73	gillnet
#50	(1)	70°06'30" N, 146°44' W	10 Aug 73	gillnet
#54	(1)	70°01'15" N, 146°39'00" W	15 Sep 73	seine
#68	(1)	69°38'45" N, 145°59'15" W	13 Jul 73	gillnet
#27	(1)	69°38' N, 146°39' W	30 Aug 73	gillnet, seine
#52	(1)	70°06'30" N, 146°32'00" W	10 Aug 73	gillnet
#55	(1)	69°21'30" N, 146°17'30" W	5 Aug 73	gillnet
#51	(1)	70°08'30" N, 146°07' W	10 Aug 73	gillnet
#11	(1)	70°08'00" N, 145°48'00" W	9 Jul 73	gillnet
#7	(1)	70°06'30" N, 145°43'00" W	8 Jul 73	gillnet
#2	(1)	70°03'45" N, 145°35'30" W	3 Jul 73	gillnet
#4	(1)	70°03' N, 145°31'30" W	3,4 Jul 73	gillnet
#9	(1)	70°01'30" N, 145°31'30" W	8 Jul 73	gillnet
#13	(1)	70°01'30" N, 145°27' W	9 Jul 73	gillnet
#14	(1)	70°00'15" N, 145°20' W	8 Jul 73	gillnet
#10	(1)	70°00'45" N, 145°25' W	8 Jul 73	gillnet

* shown in Plate 4.

WATER CHEMISTRY

Source	1	1	1	1	1
Date	13 Jul 72	8 Jul 73	8 Jul 73	24 Jul 73	24 Aug 73
Location	Lake #68	Lake #7	Lake #10	Lake #44	Lake #79
Temperature	17.5	10.6	4.5	17.5	
Conductivity	23				
pH	7.0	8.4			8.6
D.O.	9.6			11.2	10.6
Turbidity				moderate	
Suspend. sed.					
Discharge					
Salinity					1.2
Hardness	34	90		185	95
Alkalinity	85	95		95	85
			50% ice cover		
Source					
Date					
Location					

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED COASTAL PLAIN LAKES (see below)

Approx. lat. _____ long. _____

Nearest milepost _____ Map number _____

ASSESSMENT

This list of 7 lakes differs from that on the previous page in that ninespine sticklebacks, and only ninespine sticklebacks, were caught. These are also small, shallow tundra lakes on the Coastal Plain between the Sagavanirktok and Canning Rivers.

Lake #	(source)	Location	Date	Method
#78	(1)	70°04'30" N, 147°56' W	23 Aug 73	gillnet,seine
#20	(1)	70°04'15" N, 147°61' W	23 Aug 73	gillnet,seine
#26	(1)	70°06'15" N, 147°31' W	24 Jul 73	gillnet,seine
#25	(1)	69°43'45" N, 146°41'30" W	3 Jul 73	gillnet,seine
#459	(1)	69°54' N, 146°36' W	20,30 Aug 73	gillnet,seine
#36	(1)	69°45'15" N, 146°34' W	16 Jul 72	gillnet,seine
#24	(1)	69°57' N, 146°36' W	31 Aug 73	seine

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	31 May 73	27 Sep 73
Location	Lake #459	Lake #36
Snow depth		
Ice depth	1.1-1.24+ (2)	
Water depth	0 (1)	
Discharge		
Temperature		
D.O.		
Turbidity		
Suspend. sed.		
pH		
Alkalinity		
Hardness		
Conductivity		
Comments		100% ice cover

WATER CHEMISTRY

Source	1	1	1
Date	20 Aug 73	23 Aug 73	23 Aug 73
Location	Lake #459	Lake #78	Lake #20
Temperature	13.0		
Conductivity			
pH	8.5	8.4	8.5
D.O.		10.4	10.8
Turbidity			
Suspend. sed.			
Discharge			
Salinity			
Hardness	130	110	90
Alkalinity	110	85	70

Source														
Date														
Locotion														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED LAKE (#21 - 1)

Approx. lat. 70°05' N long. 148°11' W

Nearest milepost 7.5 mi S MP 14 PB Map number 4

ASSESSMENT

Lake #21 supports a large population of ninespine sticklebacks. A single grayling was caught in a gillnet set on August 23, 1973.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	23 Aug 73
Location	
Temperature	
Conductivity	
pH	8.3
D.O.	10.4
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	35
Alkalinity	30

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{x}/ft^2$
$\bar{x}/m^2$

WATER BODY

CACHE ONE LAKE

Approx. lat. 69°18'00" N long. 147°26'30" W

Nearest milepost 36 mi S MP 46.5 - I Map number 4

ASSESSMENT

Cache One Lake is a shallow, tundra lake in the foothills near the Echooka River. Grayling and ninespine sticklebacks were caught.

The lake is not on the pipeline route.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	1 Aug 72
Location	
Temperature	15
Conductivity	80
pH	9.0
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	40
Alkalinity	68

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Locotion
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE (Shaviovik River Delta - #100-1)

Approx. lat. 70°11'00" N long. 147°15'30" W

Nearest milepost 10 mi N MP 37.6 Map number 4

ASSESSMENT

This lake, located in the delta of the Shaviovik River, has an open channel to the ocean. It is likely that the ciscoes caught here would overwinter elsewhere.

The lake is not on the pipeline route nor near any coastal staging areas.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis		x			
Coregonus sardinella		x			

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	28 Aug 73
Location	
Temperature	6.5
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	5.4
Hardness	
Alkalinity	

Source	
Date	
Locotion	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

WAHOO LAKE

Approx. lat. 69°01'30" N long. 146°56'00" W

Nearest milepost 54 mi S MP 60 - I Map number not shown

ASSESSMENT

Wahoo lake supports a population of lake trout. The lake is located in the headwaters of the Echooka River, approximately 20 miles from the Interior Pipeline Route.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush		x	Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	1 Aug 72
Location	
Temperature	12
Conductivity	142.5
pH	8.5
D.O.	10.0
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	80
Alkalinity	50

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

PORCUPINE LAKE

Approx. lat. 68°47'15" N long. 146°26'00" W

Nearest milepost 22 mi W MP 145-I Map number 6

ASSESSMENT

Porcupine Lake, one of the larger lakes in the study area, lies at an elevation of 3100 feet. Emergent vegetation is abundant near the inlet and outlet streams and in other shallow areas. Littoral substrates consist primarily of small stones, sand, silt and organic matter.

The lake supports a resident population of Arctic char and possibly grayling. Fishing and possible water removal should be carefully regulated. Sensitive year round.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		?	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	3 Apr 73
Location	100 m off S bank
Snow depth	0.5
Ice depth	1.5
Water depth	1.6-1.65 (2)
Discharge	
Temperature	0
D.O.	12.2
Turbidity	
Suspend. sed.	
pH	7.5
Alkalinity	30
Hardness	65
Conductivity	125

Comments

WATER CHEMISTRY

Source	2	1	1
Date	21 Jul 70	14 Jun 72	26 Jul 73
Location	outlet		
Temperature	10		12.5
Conductivity			
pH			
D.O.			
Turbidity			
Suspend. sed.			
Discharge			
Salinity			
Hardness			
Alkalinity			
	(see below)	lake ice-covered except around edge	

Source	2
Date	21 Jul 70
Location	Outlet

Co	Mg	Na	K	Fe *	Mn*	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤
21.0	4.4	0.2	1.2	<25	<6									

Sr*:120; Ba*:16; Al*:9.4; Pb*:5.2; Ga*:<0.1; Cd*:<1; Co*:<0.05; Zn*:110

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeraptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclod
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

* parts per billion

WATER BODY

UNNAMED LAKE, CANNING DELTA (#5 - 1)

Approx. lat. 70°07'45" N long. 145°57'50" W

Nearest milepost 14 mi N MP 72- PB Map number 4

ASSESSMENT

Lake #5, located in the Canning delta, is open to the ocean. Grayling and Arctic flounder were caught here.

The lake is not near any coastal staging areas.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindroceum			Cottus cognatus		
Coregonus autumnalis			Liopsetta glacialis		x
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING DELTA (#1 - 1)

Approx. lat. 70°02'45" N long. 145°43'00" W

Nearest milepost 15.5 mi N MP 78.5 Map number 4

ASSESSMENT

Lake #1, located in the Canning delta, contained grayling and two species of whitefish. The large amount of surface ice remaining on the lake in early July suggests that the lake is relatively deep.

The lake is not on the pipeline route.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus		x	Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	3 Jul 73
Location	
Temperature	4.0
Conductivity	
pH	8.0
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	75
Alkalinity	70
	50% ice cover

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING DELTA (#12 - 1)

Approx. lat. 70°00'45" N long. 145°37'00" W

Nearest milepost 12 mi N MP 80- PB Map number 4

ASSESSMENT

Lake #12 contained the most diverse fish fauna in lakes in the Canning delta. Arctic char, grayling and whitefishes were present. The lake has an open channel to the lower Canning River.

The lake is not on the pipeline route.

FISH

Sources 1

	fry	other		fry	other
Thymallus orcticus		X	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		X	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastamus catastomus		
Coregonus nasus		X	Pungitius pungitius		
Prosopium cylindraceum		X	Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkolinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING DELTA (#8 - 1)

Approx. lat. 70°02'45" N long. 145°37'00" W

Nearest milepost 13.5 mi N MP 80-PB Map number 4

ASSESSMENT

Lake #8, located in the Canning delta, contained Arctic char and round whitefish.

The lake is not on the pipeline route.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeoformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	8 Jul 73
Location	
Temperature	7.8
Conductivity	
pH	8.2
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	65
Alkalinity	70

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

LAKE SCHRADER

Approx. lat. 69°23'00" N long. 144°59'00" W

Nearest milepost _____ Map number 3

ASSESSMENT

Lake Schrader is located in the headwaters of the Sadlerochit drainage. It is the largest (13.2 km^2) and deepest (57 m) lake in this region. The lake supports permanent populations of Arctic char, grayling and lake trout. Salmonid fry were caught in Spawning Creek. A more detailed description of Lake Schrader is available in Source #7.

The lake is approximately 25 miles off the pipeline route. Angling pressure should be regulated.

FISH

Sources 1,8

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus namaycush		X	Lota lota		
Salvelinus alpinus	X	X	Myoxocepholus quadricornis		
Coregonus clupeoformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	16 May 72
Location	
Snow depth	
Ice depth	
Water depth	
Discharge	
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	
Comments	100% ice cover

WATER CHEMISTRY

Source	7	7	7	1
Date	15 Jul 59	15 Jul 59	15 Jul 59	15 Jul 72
Location	Spawning Creek	Coke Creek	Lake Peters-Schrader channel	
Temperature				
Conductivity				
pH				
D.O.				
Turbidity				
Suspend. sed.				
Discharge	0.1	1.0	12.0	
Salinity				
Hordness				
Alkalinity				
				50% ice cover

Source 2
Date 24 Jul 59
Location Schrader Lake surface

Ca	Mg	Na	K	Fe*	Mn*	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
7.2	2.7	0.1	2.3	3.6	2.5									

Sr*:40; Ba*:4.5; Al*:320; Cu*:5.3; Pb*:3.3; Ga*:<0.1; Cd*:3.3; Co*:<0.05

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

* parts per billion

WATER BODY

LAKE PETERS

Approx. lat. 69°19'00" N long. 145°52'30" W

Nearest milepost _____ Map number 3

ASSESSMENT

Lake Peters is located adjacent to Lake Schrader in the headwaters of the Sadlerochit drainage. It is a large (6.9 km^2) and deep (50 m) lake, second only to Lake Schrader in this region. Arctic char, grayling and lake trout are present. A more detailed description of Lake Peters is available in Sources 7 and 8.

The lake is approximately 30 miles off the pipeline route. Angling pressure should be regulated.

FISH

Sources 8

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus namaycush		X	Lota lota		
Salvelinus alpinus		X	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	8
Date	8 Jun 52
Location	Lake Peters
Snow depth	
Ice depth	1.06-1.08
Water depth	0-36.6 (12)
Discharge	
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	
Comments	

		Cond. @ 25°C	HCO_3^-	$SO_4^=$	Cl^-	Ca^{++}	Mg^{++}	Na^+	K^+	Si_4^+
Source	8									
Date	1961									
Location	Lake Peters	60	25.0	9.4	0.3	8.2	1.9	0.2	0.3	0.17
Source	8									
Date	1961									
Location	Precipitation @ Lake Peters	8.1	5 4	0.4	0.0	0.7	0.1	0.3	0.1	0.0
Source	8									
Date	1961									
Location	Inlet stream at camp, Loc. A	97	35.0	19	0.2	12	3.3	0.2	0.1	0.28
Source	8									
Date	7 Jul 61									
Location	Glacial stream entering Lake Peters	11	9.0	1.4	0.2	1.5	0.1	0.1	0.0	0.06
Source	7									
Date	2 Sep 59									
Location	Surface Lake Peters									

Ca	Mg	Na	K	HCO_3	CO_3	SO_4	Cl	NH_4	NO_3	Sr	SiO_2	D.S.
8.2	1.9	0.2	0.1	25	0	9.4	0.3	0.0	0.0	0.00	0.8	3.3

Cond.@ 25°C: 60.3; pH: 7.0

WATER BODY

OKPILAK LAKE

Approx. lat. 69°28'15" N long. 144°03'00" W

Nearest milepost 22.5 mi S MP 120-C Map number 3

ASSESSMENT

Okpilak Lake is located in the foothill region of the Okpilak River drainage. Additional water chemistry data on inlet streams and other small, unnamed streams in this area are presented in Source #2.

The lake is over 20 miles from the pipeline route.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	2
Date	14 Aug 59
Location	outlet stream
Temperature	8.3
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source 2
Date 14 Aug 59
Location

Ca	Mg	Na	K	Fe*	Mn*	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
4.9	2.5	4.1	2.2	49	20									

Sn*: 11; Al*: 21; Pb*: 0.5; Ga*: <0.1; Cd*: <1; Co*: <0.05; Zn*: 18

BENTHIC INVERTEBRATES

Source
Date
Locotion
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

* parts per billion

NORTH SLOPE STREAMS

WATER BODY NORTH SLOPE STREAMS

Approx. lat. _____ long. _____

Nearest milepost _____ Map number _____

This section lists streams in Beaufort Sea drainages between Prudhoe Bay and the Alaskan/Canadian border (Plates 1,2,5,6). The Canning River, however, is listed separately in the following section of the catalogue.

The North Slope streams crossed by the proposed pipeline routes range in size from small tundra streams to large mountain rivers. These are described more fully in McCart et al.(1972) and Craig and McCart (1974b).

WATER BODY

SAGAVANIRKTOK RIVER

Approx. lat. 70°14'15" N long. 148°20'30" W

Nearest milepost 8.5 M- PB Map number 2

ASSESSMENT

The Sagavanirktok River is the largest river in the study area. It contains large populations of Arctic char and grayling, and 11 additional species of fish have been caught in the drainage. Considerable information is available for the river, particularly for the upstream regions (Sources 1,3,4,6,12,15,17,9,13).

The delta region of this river is an overwintering site for Arctic char and grayling. Throughout the winter, fish were reportedly taken near Deadhorse by sport fishermen. Construction workers also reported that small fish clogged their water pump at a location approximately 15 miles south of Deadhorse.

Additional information about the location of overwintering fish in the vicinity of the proposed pipeline crossing is needed. Sensitive year round.

FISH

Sources 1,3,4,6,12,15,17,9

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush		x	Lota lota		x
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis	x	x	Catastomus catastomus		
Coregonus nasus		x	Pungitius pungitius		x
Prosopium cylindraceum	x	x	Cottus cognatus	x	x
Coregonus autumnalis *			Oncorhynchus keta		x
Coregonus sardinella *			Oncorhynchus gorbuscha		x

* see inshore section

WINTER CONDITIONS

Sources	13	13	1	1
Date	20 Nov 70	18 Mar 72	18 Apr 73	6 Nov 73
Location	A	A	B	A
Snow depth			0.6	0.1
Ice depth	0.9	2.0	0.3-0.5	0.45
Water depth			0	0.35
Discharge		0.05	0	
Temperature	0	0.2	0	0
D.O.	8.0		0	
Turbidity				3.5
Suspend. sed.				
pH	7.4	7.7		
Alkalinity	95			
Hardness				
Conductivity				
Comments				

Chlorophyll "a" 0 µg/l

WATER CHEMISTRY

Source	13
Date	6 Sept 70
Location	A
Temperature	1.0
Conductivity	223
pH	8.2
D.O.	13.3
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochoeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{x}/ft^2$
$\bar{x}/m^2$

WATER BODY

KADLEROSHILIK RIVER

Approx. lat. 70°05'30" N long. 147°39' W

Nearest milepost 27.5-PB Map number 2

ASSESSMENT

In its upper reaches the Kadleroshilik River is a meandering stream with highly stained water, and in the lower reaches the stream is braided. Small numbers of grayling and other fishes have been caught. The stream freezes solid near the pipeline crossings during winter.

Sensitive May to November.

FISH

Sources 1,9

	fry	other		fry	other
Thymallus orcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis *		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis			Cottidae		x
Coregonus sardinella *					

* see inshore section

WINTER CONDITIONS

Sources	1	1	1
Date	18 Apr 73	19 Apr 73	4 Nov 73
Location	B	C	C
Snow depth	1.6-2.0(2)	0.6-1.9(3)	0.46-0.5(2)
Ice depth	0.6-1.0(2)	0.6-0.9(3)	0.6
Water depth	0	0	0
Discharge	0	0	0
Temperature			
D.O.	0	0	0
Turbidity			
Suspend. sed.			
pH			
Alkalinity			
Hardness			
Conductivity			
Comments			

WATER CHEMISTRY

Source	1	1	1	1	1
Date	3 Jul 72	5 Aug 72	5 Aug 72	5 Aug 72	20 Sept 72
Location	C	D	A	B	A-C
Temperature	14.0	14.0	12.0	15.0	
Conductivity	110	185	170	175	
pH	8.5	8.0	8.5	8.5	
D.O.	12.0	10.0	10.2	10.8	
Turbidity					
Suspend. sed.					
Discharge					minimal
Salinity					
Hardness	103	80	65	70	
Alkalinity	103	154	137	137	
					mostly frozen

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ	

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED TRIBUTARY OF SHAVIOVIK RIVER

Approx. lat. 70°04'30" N long. 147°31' W

Nearest milepost MP 31- PB Map number 2

ASSESSMENT

This Shaviovik tributary is a meandering tundra stream characterized by deep pools and shallow riffles. Substrate consists primarily of organic matter and silt.

During the open water period, ninespine sticklebacks are abundant. A single juvenile Arctic char was also caught near the stream mouth. It is unlikely that there is any winter flow in the stream.

Sensitive June through October.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nosus			Pungitius pungitius	x	x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources 1

Date 27 Sept 73

Location A

Snow depth

Ice depth

Water depth

Discharge low

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments no ice cover yet

WATER CHEMISTRY

Source	1
Date	19 Aug 73
Location	A
Temperature	8.5
Conductivity	
pH	7.6
D.O.	10.4
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hordness	75
Alkalinity	65

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

SHAVIOVIK RIVER

Approx. lat. 70°02'15" N long. 147°27' W

Nearest milepost 36.5- PB Map number 2

ASSESSMENT

The Shaviovik River is a braided, mountain stream with a gravel and sand substrate. Grayling and char utilize this river for spawning and rearing. A single overwintering area is located approximately 2 miles upstream of the Alternative Interior Route crossing. This area is sensitive the year round.

The pipeline route crosses the Shaviovik River at a location which freezes solid during the winter. On November 3, 1973 there was flowing water at the crossing, but it was frozen solid when drilled on April 18, 1973. Effective erosion control is necessary.

FISH

Sources 1,3,5

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1	1,16
Date	11 Apr 73	18 Apr 73	19 Apr 73	3 Nov 73	3 Nov 73
Location	D (spring)	B	C	C	D (spring)
Snow depth	0	0.3	0.6	0.01	0.25
Ice depth	0	0.3-0.6(2)	0.3-0.5(2)	0.2-0.42(10)	0
Water depth	0.12-0.48(6)	0	0		0.01-0.44(10)
Discharge	0.48	0	0	0.77	0.81
Temperature	1.5			1.0	2.0
D.O.	7.0			9.8	11.8
Turbidity				0.1	0.5
Suspend. sed.				0	0
pH	7.3			7.5	7.0
Alkalinity	50				
Hardness	70				
Conductivity					256 (@ 25°C)
Comments					continued in water chemistry section.

WATER CHEMISTRY

Source	1	1
Date	31 May 72	3 Jul 72
Location		E
Temperature		13
Conductivity		155
pH		7.5
D.O.		11.0
Turbidity		
Suspend. sed.		
Discharge		
Salinity		
Hardness		137
Alkalinity		137
	river open and turbid	

Source 1,16
Date 3 Nov 73
Location D (spring)

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
45.0	4.3	1.3	0.5	-	-	140.3	0.0	14.0	1.1	<.05	0.15	-	3.7	210.3

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

JUNIPER CREEK (TRIBUTARY TO SHAVIOVIK RIVER)

Approx. lat. 69°39'30" N long. 147°44'45"W

Nearest milepost 21 mi S MP 37.5-I Map number 2

ASSESSMENT

Juniper Creek is a braided tributary of the Shaviovik River. Although our data suggest that this creek is not an important fish area, grayling have been caught in the middle reaches of the stream.

This creek probably freezes solid during the winter. It is not on the pipeline route.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocepholus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	7 Nov 72	7 Nov 73
Location	G	G
Snow depth		
Ice depth		
Water depth		0
Discharge	negligible	0
Temperature		
D.O.		
Turbidity		
Suspend. sed.		
pH		
Alkalinity		
Hardness		
Conductivity		
Comments	almost frozen solid	

WATER CHEMISTRY

Source	1	1	1
Date	31 May 72	7 June 72	20 Sep 72
Location	F-G	F	
Temperature			
Conductivity		63	
pH		7.8	
D.O.		11	
Turbidity		high	
Suspend. sed.			
Discharge			
Solinity			
Hardness		68	
Alkalinity		68	
	Juniper and Fin Creek open and turbid		Juniper and Fin Creek almost frozen
Source			
Date			
Location			

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochoeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

KAVIK RIVER

Approx. lat. 70°02' N long. 147°18' W

Nearest milepost 49.5-PB Map number 2, Plate 5

ASSESSMENT

The Kavik River is a braided mountain stream with a gravel and sand substrate. It is a spawning, rearing and overwintering area for Arctic char and grayling. Two spring-fed overwintering areas are located at Stations J and K. These areas are sensitive the year round.

Both pipeline routes cross this river and the Alternative Interior Route parallels it for approximately 30 miles. The Kavik River at the stream crossings is frozen solid during the winter months. Low risk area for the Prudhoe Bay Supply Route, but a moderate risk area for the Alternative Interior Route due to the distance paralleling the stream. Effective erosion control measures are necessary. Possible water removal or angling in the vicinity of Stations J and K should be closely regulated.

FISH

Sources 1,3,6,5

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1,5,16	1	1	1	1
Date	31 May 72	5 Nov 72	Apr 11 73	18 Apr 73	20 May 73	25 May 73
Location	A-G	J(spring)	G	D	G	G
Snow depth					0.02-0.30(10)	
Ice depth			0.5-1.0(2)	1	0.15-0.37(10)	
Water depth			0		0	
Discharge			0			0.692
Temperature		0.0	0			0
D.O.		10.8	0			10.2
Turbidity						3.5
Suspend. sed.						0
pH						7.5
Alkalinity						95
Hardness						75
Conductivity						
Comments	river open and turbid	continued in water chemistry section				mostly flow over ice

WATER CHEMISTRY

Source	1	1	1	1	1	1	1
Date	3 Jun 72	7 Jun 72	30 Jun 72	24 Aug 72	29 May 73	11 Jun 73	14 Jul73
Location	K(spring)	H	K(spring)	K(spring)	G	G	G
Temperature	4.5	1.0	2.0	10.0	1.0	3.0	11.5
Conductivity		19	160	-			
pH		7.0	7.8	8.5	7.5	7.5	7.2
D.O.		12.0	11.0	10.0	10.8	13.0	
Turbidity	low	low	low	low	35	65	<5
Suspend. sed.					0.1	0.38	0.0
Discharge		1.63					
Salinity							
Hardness		17	171	75	75	45	100
Alkalinity		17	137	55	100	35	110

(continued)

Source	1,4,16														
Date	5 Nov 72														
Location	K(spring)														
	Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
	47.9	4.0	1.0	0.3	-	-	146.4	0.0	18.4	0.2	0.32	0.3	-	2.6	220.9

BENTHIC INVERTEBRATES

Source	1	1	1	1	1
Date	June 15 73	7 Jul 73	16 Jul 73	28 Jul 73	17 Aug 73
Location	G	G	G	G	G
Method	surber	surber	surber	surber	surber
No. samples	6	6	6	2	6
Trichoptera					
Plecoptera	13.8(2.83)	7.2(1.75)	30.0(6.15)	0.1(0.12)	4.0(0.82)
Ephemeroptera	69.8(20.62)	1.2(0.37)	13.0(3.46)	0.7(0.30)	13.3(2.73)
Diptera:					
Simulidae			1.2(0.50)		
Tipulidae			0.3(0.19)		
Chironomidae	315.0(96.65)	3.7(0.87)	3.0(1.39)	0.2(0.15)	0.7(0.31)
Empididae	3.7(0.69)	0.2(0.15)			
Muscidae		0.2(0.15)			
Dolichopodidae					
Liriopeidae					
Unidentified		0.2(0.15)	0.2(0.15)		
Oligochaeta	0.3(0.19)	0.8(0.37)	4.2(1.94)	0.2(0.15)	1.8(1.14)
Nematoda					
Arachnida		0.2(0.15)	1.3(0.45)		
Triclad			0.2(0.15)		
Copepod			0.2(0.15)		
Miscellaneous					
TOTAL $\bar{x}/ft^2$	402.6(120.98)		54.5(6.29)	1.2(0.71)	19.3(4.86)
$\bar{x}/m^2$	4327.2	13.5(2.27)	586.4	12.9	207.5
		145.3			

WATER BODY

KAVIK RIVER (continued)

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 2

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1	1	1	1
Date	29 May 73	31 May 73	31 May 73	31 May 73	30 Oct 73	31 Nov 73	31Nov
Location	C	F	I	H	G	A	D
Snow depth	0.15-0.4(5)	0-0.55(8)	.7-1.4(4)	.2-.8(4)		0.03	0
Ice depth	.21-.53(5)	0-.12(8)	0	0		.44-.46(4)	.34-.36
Water depth	0	0	0	0		0	0
Discharge	0	0	0	0		0	0
Temperature					1.5		
D.O.					12.4		
Turbidity							
Suspend. sed.							
pH							
Alkalinity							
Hardness							
Conductivity							
Comments	melt water accumulating	melt water accumulating	melt water accum-ulating	melt water accumulating			

WATER CHEMISTRY

Source	1	1	1	1	1	1
Date	22 Jul 73	4 Aug 73	8 Aug 73	21 Aug 73	31 Aug 73	15 Sept73
Location	K	G	K(spring)	G	J(spring)	G
Temperature		12.5	3.5	8.0	4.5	5.5
Conductivity						
pH				8.0		8.4
D.O.		10.2		10.4		11.8
Turbidity		0.0	low	25	low	
Suspend. sed.		0.0		0.05		
Discharge		4.62				2.57
Salinity						
Hardness		120		95		125
Alkalinity		100		85		120
	1.6 m ice depth at aufeis					
Source						
Date						
Location						

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{x}/ft^2$
$\bar{x}/m^2$

WATER BODY

UNNAMED KAVIK RIVER TRIBUTARY (WEIR CREEK - 1)

Approx. lat. 69°41'15" N long. 147°07'30" W

Nearest milepost 3.5 mi S MP 56-I Map number 2, Plates 5 and 6

ASSESSMENT

This stream is a typical tundra stream with gravel, silt and sand substrates. The water is highly stained and some flooding occurs. In the lower reaches, the stream banks are unstable. This stream is principally used by grayling for spawning and rearing. A detailed description of this stream is given by Craig and Poulin (1974).

The stream freezes solid during the winter months. Sensitive May to October.

FISH

Sources 1, 5

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1	1	1
Date	11 Apr 73	11 Apr 73	11 Apr 73	29 May 73	29 May 73	4 Nov 73
Location	A	B	C	A	B	A
Snow depth	0.5-1(4)	1(4)	0	0.5-1.1(4)	0.33-0.63(4)	0.1
Ice depth	0.5(4)	0.8(4)	0	0.16-0.42(4)	0.09-0.2(4)	0.36-0.58(5)
Water depth	0	0	0	0	0	
Discharge	0	0	0	0	0	0
Temperature						0.0
D.O.						
Turbidity						4.2
Suspend. sed.						0
pH						
Alkalinity						
Hardness						
Conductivity						
Comments						some standing water under ice

WATER CHEMISTRY

Source	1	1	1	1	1
Date	26 Jul 72	31 May 73	19Jun 73	1 Jul 73	15 Jul 73
Location	C	A	A	A	A
Temperature	13.0	1.0	10.0	14.5	10.0
Conductivity	108				
pH	8.0	6.7	7.3		
D.O.	11.0	14.8	10.6	9.2	
Turbidity		2.7	2.5	4.0	2.0
Suspend. sed.		0	0	0	0
Discharge	0.14	0.19	1.29	0.43	0.47
Salinity					
Hardness		10	25	35	
Alkolinity		10	25	45	

(continued)

Source	Date	Location	Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1	1	1	1
Date	21 Aug 72	5 Jul 73	15 Jul 73	27 Aug 73
Location	A	A	A	A
Method	surber	surber	surber	surber
No. samples	6	6	6	6
Trichoptera				
Plecoptera	6.5(1.13)	9.7(1.82)	7.5(1.78)	3.7(0.96)
Ephemeroptera	4.8(0.80)	1.2(0.44)	8.5(2.35)	0.2(0.15)
Diptera:				
Simulidae		0.2(0.15)	0.2(0.15)	
Tipulidae		0.3(0.30)	0.8(0.15)	
Chironomidae	1.0(0.33)	3.8(1.55)	20.7(6.10)	3.2(1.59)
Empididae			0.2(0.15)	
Muscidae				
Dolichopodidae				
Liriopeidae				
Unidentified		0.7(0.45)	2.5(0.91)	
Ceratopogonidae			1.2(0.50)	
Oligochaeta	1.8(0.96)	0.2(0.15)	2.3(0.56)	
Nematoda		0.3(0.30)	1.7(0.99)	
Arachnida	0.3(0.19)	0.8(0.37)	0.8(0.15)	0.5(0.20)
Triclad				
Copepod				
Miscellaneous				
TOTAL $\bar{X}/ft^2$	14.5(2.15)	16.8(3.59)	45.3(9.85)	7.5(2.26)
$\bar{X}/m^2$	155.8	180.6	486.9	80.6

(continued)

WATER CHEMISTRY (WEIR CREEK - 1) continued

Source	31 Jul 73	31 Jul 73	4 Aug 73	15 Aug 73
Date	1	1	1	1
Location	D	F	A	A
Temperature	13.0	12.5	14.0	4.4
Conductivity				
pH	7.5	6.4		7.6
D.O.	9.2	9.4		11.2
Turbidity				1.5
Suspend. sed.				0
Discharge	0.2	0.2	0.18	3.94
Salinity				
Hardness	25	25		25
Alkalinity	50	35		25

(continued)

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	∑	

BENTHIC INVERTEBRATES

Source	1
Date	10 Sept 73
Location	A
Method	surber
No. samples	6
Trichoptera	0.2(0.15)
Plecoptera	11.2(4.23)
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	4.3(0.96)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	1.3(0.61)
Nematoda	
Arachnida	1.2(0.15)
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	17.0(5.12)
$\bar{X}/m^2$	182.7

(WEIR CREEK - 1) continued

WATER CHEMISTRY

Source	1	1	1	1
Date	4 Sept 73	12 Sept 73	25 Sept 73	6 Oct 73
Location	A	A	A	A
Temperature	4.4	5.0	0.0	0.0
Conductivity				
pH	8.3	8.3	8.5	7.5
D.O.	11.4	11.2	12.2	10.6
Turbidity	42			
Suspend. sed.	0	0		
Discharge		0.28	0.25	0.35
Salinity				
Hardness	50	65	75	100
Alkalinity	50	70	70	85

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ	

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED STREAM (FIRST STREAM EAST OF KAVIK RIVER)

Approx. lat. 69°57'45" N long. 146°54' W

Nearest milepost 1 mi N MP 48- PB Map number 2

ASSESSMENT

This is a small tundra stream which flows directly into the Beaufort Sea. It is probably used by grayling and ninespine sticklebacks during the summer months. There is no winter flow.

Sensitive June-October.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus nomaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindroceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1
Date	26 May 73	26 May 73	31 May 73	5 Nov 73
Location	B	A	C	B
Snow depth	1.2(3)	0.15-0.38(11)	1.2-1.6(3)	
Ice depth	0	0-1.25(11)	0	
Water depth	0	0	0	0
Discharge	0	0	0	0
Temperature				
D.O.				
Turbidity				
Suspend. sed.				
pH				
Alkalinity				
Hordness				
Conductivity				
Comments			stream flooding on 2 Jun 73	

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Solinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED STREAM (SECOND EAST OF KAVIK RIVER)

Approx. lat. 70°56'30" N long. 146°45'29" W

Nearest milepost MP 58.5- PB Map number 2

ASSESSMENT

This stream is a beaded tundra drainage with sand and silt substrate. Numerous isopods were collected near the delta. There appears to be little fish utilization except by ninespine sticklebacks and slimy sculpins.

Sensitive June through October.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		x
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	7 Nov 73
Location	B
Snow depth	
Ice depth	
Water depth	0
Discharge	0
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source	1	1
Date	23 Jul 73	23 Jul 73
Location	A	B
Temperature	10.5	9.5
Conductivity		
pH		
D.O.	11.0	11.8
Turbidity		
Suspend. sed.		
Discharge		
Salinity	1.4	
Hardness	210	85
Alkalinity	90	90

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichaptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chiranomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{x}/ft^2$	
$\bar{x}/m^2$	

WATER BODY

TAMAYARIAK RIVER

Approx. lat. 69°50'45" N long. 145°34'30" W

Nearest milepost 82.5- PB Map number 2

ASSESSMENT

The Tamayariak River is a braided stream with lightly stained water and a sand and gravel substrate. Grayling use the upper reaches for spawning and rearing and possibly the lower end for overwintering.

The delta region is sensitive year round. The upper end, which has no winter flow, is sensitive June-October.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus	X	X	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quodricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1
Date	26 May 73	26 May 73	7 Nov 73	7 Nov 73
Location	A	C	A	B
Snow depth	0.5-0.64(3)	0.95-1.1(4)	0.02-0.05(2)	0
Ice depth	0.2-0.34(3)	0(4)	0	0
Water depth	0	0	0.13-0.35(6)	0
Discharge	0	0	0.45	0
Temperature			2.0	
D.O.			12.6	
Turbidity			1.0	
Suspend. sed.			0	
pH			8.0	
Alkalinity				
Hardness				
Conductivity				
Comments				

WATER CHEMISTRY

Source	1
Date	21 Sept 72
Location	
Temperature	
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	minimal
Salinity	
Hardness	
Alkalinity	

mostly frozen

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopadidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematada	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

KATAKTURUK RIVER

Approx. lat. 69°49'45" N long. 145°21'00" W

Nearest milepost 87.5- PB Map number 2 and 3

ASSESSMENT

The Katakturuk River is a braided river originating in the Sadlerochit Mountains. There are two principal sources of groundwater located on both forks of the river, 7-8 miles upstream of the pipeline crossing. Apparently Arctic char do not utilize these areas for spawning, rearing or overwintering. No fish were caught by angling or gillnet, and none were sighted during several aerial surveys.

There is no winter flow near the pipeline crossing.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	7 Nov 73
Location	A
Snow depth	
Ice depth	0
Water depth	0
Discharge	0
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source	1	1	1
Date	8 Jun 72	13 Jul 72	13 Jul 72
Location	A	C(spring)	B(spring)
Temperature	8.0	12.0	4.5
Conductivity	63	149	135
pH	7.5	8.0	9.0
D.O.	12.0	11.8	12.2
Turbidity	high	clear	clear
Suspend. sed.	6" visibility		
Discharge	flood		
Salinity			
Hardness	68	137	137
Alkalinity	63	154	154

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{x}/ft^2$	
$\bar{x}/m^2$	

WATER BODY

SADLEROCHIT SPRINGS

Approx. lat. 69°44'30" N long. 144°21'30" W

Nearest milepost 113 -PB Map number 3

ASSESSMENT

Sadlerochit Spring, one of the larger perennial springs on the North Slope, flows north for several miles before entering the Sadlerochit River. The spring supports lush growths of aquatic and emergent vegetation. Densities of benthic invertebrates are high. Our data suggest that this spring is utilized as a rearing grounds for juvenile Arctic char. No anadromous char or char fry were observed.

The proposed pipeline route crosses the spring 5.8 miles downstream of the orifice and about 0-1 mile downstream of the springs' large *aufeis* field. The spring area is sensitive the year round.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		X	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1,4
Date	4 Apr 72	4 Apr 72	11 Apr 72	19 May 72
Location	C	E	E	D
Snow depth				0
Ice depth				0
Water depth				0.14
Discharge				0.63
Temperature	8.3	13.3	11.1	10.5
D.O.	11.0	8.6	6.0	
Turbidity				clear
Suspend. sed.				
pH				8.5
Alkalinity				154
Hardness				256
Conductivity				
Comments	30% algal cover			

(continued)

WATER CHEMISTRY

Source	10	1	1
Date	1 Jun 66	25 May 72	13 Jul 72
Location	E(orifice)	E	C
Temperature	12.5	11.5	14.0
Conductivity			200+
pH		9.0	8.5
D.O.		7.2	16.8
Turbidity			low
Suspend. sed.			
Discharge			
Salinity			
Hardness		222	171
Alkalinity		154	137

Source	10
Date	14 Jun 66
Location	E

(continued)

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
42	19	7.35	1.39	<0.05	<0.02									

Cond at 18°C 337; TDS 243; Zn: <0.05

BENTHIC INVERTEBRATES

Source	1	1	1
Date	May 5 72	25 May 72	13 Jul 72
Location	D	D	D
Method	surber	surber	surber
No. samples	2	3	5
Trichoptera	56.0(16.97)	15.7(3.81)	4.0(0.98)
Plecoptera	22.5(1.06)	13.0(3.86)	11.2(7.57)
Ephemeroptera	51.0(2.12)	138.0(43.69)	44.8(13.92)
Diptera:			
Simulidae			
Tipulidae	42.0(3.54)	15.7(8.57)	
Chironomidae	71.0(21.22)	470.3(298.51)	757.8(338.75)
Empididae			
Muscidae			
Dolichopodidae			
Liriopeidae			
Unidentified	1.0(0.0)	11.3(5.0)	13.4(8.34)
Oligochaeta	11.0(0.71)	95.3(74.17)	4.6(2.79)
Nematoda		0.3(0.27)	
Arachnida		1.3(0.54)	
Triclad	2.0(0.0)	7.7(5.08)	1.4(0.67)
Copepod			
Miscellaneous	13.0(2.83)*	191.0(113.82)*	107.8(40.94)*
TOTAL $\bar{X}/ft^2$	299.5(42.79)	956.7(549.25)	945.0(397.34)
$\bar{X}/m^2$	3219.6	10284.5	10168.2
	*amphipods	*amphipods	*amphpods snails

WATER BODY

SADLEROCHIT SPRINGS (continued)

Approx. lat. _____ long. _____

Nearest milepost _____ Map number _____

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocepholus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1,16
Date	12 Apr 73	7 Nov 73
Location	D	A
Snow depth	0	0
Ice depth	0	0
Water depth	0.15-0.27(12)	0.09-0.21(10)
Discharge	1.30	0.76
Temperature	11.0	2.0
D.O.	10.4	12.2
Turbidity	clear	0.5
Suspend. sed.		0.0
pH	8.8	7.5
Alkalinity	60	
Hardness	115	
Conductivity		395 (@ 25°C)
Comments		continued in water chemistry section.

WATER CHEMISTRY

Source	1	1
Date	27 Aug 72	4 Jun 73
Location	E	E
Temperature	13.0	13.0
Conductivity		
pH		8.5
D.O.		11.0
Turbidity		1.2
Suspend. sed.		0.0
Discharge		1.08
Salinity		
Hardness		200
Alkalinity		100

Source	1,16	aufeis at Station
Date	7 Nov 73	A 5.5 m thick
Location	A	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
50.0	16.8	7.4	1.0	-	-	164.7	0.0	71.0	4.4	0.57	0.08	-	11.0	327

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

SADLEROCHIT SPRINGS

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 3, 3A (corrected locations given in Map 3A.)

ASSESSMENT

Analysis of fish caught on July 23, 1974 suggests that Sadlerochit Springs contains an isolated population of dwarf char similar to those described in Source #11 and by McCart and Bain (1974). Maturing females (160 mm fork length) and fry were collected.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	23 Jul 74
Location	B
Temperature	14
Conductivity	300
pH	8.6
D.O.	10.0
Turbidity	clear
Suspend. sed.	0.0
Discharge	1.84
Salinity	0.1
Hardness	
Alkolinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	1
Date	23 Jul 74
Location	B
Method	Surber
No. samples	6
Trichoptera	10.7(4.12)
Plecoptera	9.3(1.74)
Ephemeroptera	41.5(7.5)
Diptera:	10.8(8.4)
Simulidae	1.3(0.61)
Tipulidae	
Chironomidae	26.3(14.23)
Empididae	4.5(1.22)
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	29.5(5.47)
Nematoda	2.8(1.23)
Arachnida	
Triclod	0.3(0.19)
Copepod	
Miscellaneous	3.5(1.49)*
TOTAL $\bar{X}/ft^2$	141.2(30.56)
$\bar{X}/m^2$	1,519.0

* Amphipoda

WATER BODY

SADLEROCHIT RIVER

Approx. lat. 69°44'30" N long. 144°21'45" W

Nearest milepost 114-PB Map number 3

ASSESSMENT

The Sadlerochit River is a braided mountain stream that is largely dry or frozen solid during the winter. It appears that fish utilization of this river is minor.

The pipeline crossing was frozen solid November 7, 1973.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	25 May 72	7 Nov 73
Location	A	A
Snow depth		0
Ice depth		0
Water depth		0
Discharge		0
Temperature		
D.O.		
Turbidity		
Suspend. sed.		
pH		
Alkalinity		
Hardness		
Conductivity		
Comments	breakup starting	

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecaptera
Ephemeroptera
Diptera:
  Simulidae
  Tipulidae
  Chironomidae
  Empididae
  Muscidae
  Dolichopodidae
  Liriopeidae
  Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

SADLEROCHIT RIVER

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 3, 3A

ASSESSMENT

Newly emerged grayling fry were common at location A (July 23, 1974).

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindroceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sordinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	23 Jul 74
Location	A
Temperature	9.0
Conductivity	110
pH	8.4
D.O.	11.0
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source	
Date	
Locotion	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1
Date	23 Jul 74
Locotion	A
Method	Surber
No. samples	6
Trichoptera	
Plecoptera	2.8(2.06)
Ephemeroptera	20.4(3.58)
Diptera:	1.0(0.4)
Simulidae	5.8(2.52)
Tipulidae	
Chironomidae	1.2(0.71)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	0.4(0.36)
Nematoda	0.2(0.18)
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	31.8(8.75)
$\bar{X}/m^2$	342.2

WATER BODY

HULAHULA RIVER

Approx. lat. 69°43'45" N long. 144°08'30" W

Nearest milepost 117.5 P.B. Map number 3

ASSESSMENT

The Hulahula River is a large, braided stream. The region between Old Woman and Katak Creeks appears to be the major spawning and overwintering area for Arctic char. A smaller overwintering area is located two miles downstream of the pipeline crossing (Station A). Villagers from Barter Island fish at both locations.

The Hulahula River at the pipeline crossing is frozen solid, but effective erosion control measures are necessary to prevent siltation of the downstream overwintering area. Angling and water removal should be regulated.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus nomaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1
Date	4 Apr 72	11 Apr 72	27 Apr 72	5 May 72
Location	C	C	E	D
Snow depth				
Ice depth	1.0-1.3	0.66	0.66	0.3-1.6
Water depth		1.5	1.0	
Discharge				
Temperature	2.0	0.0	1.7	5.0
D.O.	11.2	10.8	9.8	11.8
Turbidity				
Suspend. sed.				
pH			7.1	
Alkalinity				
Hardness				
Conductivity				
Comments				

(continued)

WATER CHEMISTRY

Source	1
Date	25 May 72
Location	F
Temperature	0.5
Conductivity	
pH	8.0
D.O.	12.0
Turbidity	high
Suspend. sed.	
Discharge	flood
Salinity	
Hardness	137
Alkalinity	68

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1
Date	5 May 72
Location	F
Method	surber
No. samples	2
Trichoptera	
Plecoptera	3.0(0.0)
Ephemeroptera	8.0(2.12)
Diptera:	
Simulidae	
Tipulidae	9.0(2.83)
Chironomidae	3.0(1.41)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	2.0(0.71)
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	25.0(5.66)
$\bar{X}/m^2$	268.7

WATER BODY

HULAHULA RIVER (continued)

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1
Date	18 Apr 73	5 Nov 73	7 Nov 73
Location	B	A	B
Snow depth	0		
Ice depth	0	0	0
Water depth		0.08-0.25	
Discharge	0	1.35	0
Temperature		1.5	
D.O.			
Turbidity		0.0	
Suspend. sed.		0.0	
pH		7.5	
Alkalinity			
Hardness			
Conductivity			
Comments			

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeraptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

AKUTOKTAK (AKOOTOAKTUK) RIVER

Approx. lat. 69°44' long. 143°58'

Nearest milepost 121.5 Map number 3A

ASSESSMENT

The Akutoktak is a small meandering tributary of the Okpilak River. It flows through a gravel floodplain 50-100m in width. No fish were caught by seine.

It is likely that this stream freezes solid in the winter. Sensitive May to October.

FISH

Sources 1. No fish caught by seine (23 July, 1974).

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sordinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	23 Jul 74
Location	A
Temperature	9.0
Conductivity	70
pH	7.4
D.O.	10.0
Turbidity	clear but stained color
Suspend. sed.	
Discharge	0.92
Salinity	
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	1
Date	23 Jul 74
Location	A
Method	Surber
No. samples	6
Trichoptera	
Plecoptera	4.5(1.51)
Ephemeroptera	22.0(7.30)
Diptera:	1.7(0.9)
Simulidae	361.3(91.85)
Tipulidae	1.5(0.39)
Chironomidae	14.0(6.71)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	5.5(1.88)
Nematoda	4.3(1.95)
Arachnida	0.8(0.49)
Triclad	0.2(0.15)
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	416.0(101.68)
$\bar{X}/m^2$	4,476.2

WATER BODY

OKPILAK RIVER

Approx. lat. 69°43'30" N long.

Nearest milepost 125 -P.B. Map number 3, Plate 1

ASSESSMENT

There is no winter flow at the pipeline crossing. Sensitive May-October. Brown et al (1962) present water chemistry data for additional unnamed tributaries of the Okpilak River.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	7 Nov 73
Location	A
Snow depth	0
Ice depth	0
Water depth	0
Discharge	0
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source 2
Date 10 Jul 59
Location "Stream emerging from Lisburne limestone bedrock and fan, W side Okpilak Valley"

Ca	Mg	Na	K	Fe *	Mn *	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
40.2	11.3	2.3	1.5	215	41									

Sn*: 24, Al*:155, Pb*:9.1, Ga*:<0.1, Cd*: 8.1, Co*:1.4

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclod
Copepod
Miscelloneous

TOTAL $\bar{x}/ft^2$
$\bar{x}/m^2$

* parts per billion

WATER BODY

OKPILAK RIVER

Approx. lat. 69°43'30" long. 143°50'

Nearest milepost 124 Map number 3, 3A

ASSESSMENT

FISH

Sources 1. No fish caught by seine (23 July, 1974)

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	23 Jul 74
Location	A
Temperature	8.0
Conductivity	80
pH	8.4
D.O.	11.0
Turbidity	51.0 FTU*
Suspend. sed.	325 mg/l
Discharge	
Salinity	
Hardness	
Alkalinity	

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1
Date	23 Jul 74
Location	A
Method	Surber
No. samples	6
Trichoptera	
Plecoptera	0.4(0.22)
Ephemeroptera	0.8(0.52)
Diptera:	
Simulidae	1.0(0.69)
Tipulidae	0.2(0.18)
Chironomidae	0.6(0.54)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	1.4(1.04)
Nematoda	
Arachnida	
Triclad	
Copepod	0.2(0.18)
Miscellaneous	
TOTAL $\bar{X}/ft^2$	4.6(2.6)
$\bar{X}/m^2$	49.5

* Formazin Turbidity Units

WATER BODY

JAGO RIVER

Approx. lat. 69°43'00" N long. 143°35'30" W

Nearest milepost 131.5 -P.B. Map number 3

ASSESSMENT

The Jago River is a braided mountain stream. There is no winter flow at the pipeline crossing. Sensitive May-November. Effective erosion control measures are necessary.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	18 Apr 73	7 Nov 73
Location	A	A
Snow depth		0.05
Ice depth	0	0.26
Water depth	0	0
Discharge	0	0
Temperature		
D.O.		
Turbidity		
Suspend. sed.		
pH		
Alkalinity		
Hardness		
Conductivity		

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematada
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

JAGO RIVER

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 3, 3A

ASSESSMENT

FISH

Sources 1. No fish caught by seine at location B (23 July, 1974).

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocepholus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	23 Jul 74
Location	B
Temperature	6.2
Conductivity	116
pH	8.5
D.O.	11.0
Turbidity	175.0 FTU*
Suspend. sed.	530.0 mg/1
Discharge	
Salinity	
Hardness	
Alkalinity	

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	1
Date	23 Jul 74
Location	B
Method	Surber
No. samples	6
Trichoptera	
Plecoptera	1.6(0.35)
Ephemeroptera	0.3(0.19)
Diptera:	0.8(0.44)
Simulidae	0.2(0.15)
Tipulidae	0.5(0.20)
Chironomidae	1.2(0.44)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	8.2(3.46)
Nematoda	
Arachnida	
Triclad	0.2(0.15)
Copepod	
Miscellaneous	
TOTAL $\bar{x}/ft^2$	9.3(3.18)
$\bar{x}/m^2$	100.4

WATER BODY

OKEROKOVIK RIVER

Approx. lat. 69°43'00" N long. 143°14'45" W

Nearest milepost 139.4-PB Map number 3

ASSESSMENT

The Okerokovik, a main tributary of the Jago, is a braided mountain stream with a wide gravel flood plain. A spring is located near the pipeline crossing.

Although no fish were observed in the spring in November, 1973, it is a possible overwintering site for fish. Effective erosion control measures are necessary. Sensitive year round.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1,16
Date	7 Nov 73
Location	A (spring)
Snow depth	
Ice depth	0
Water depth	0.1-0.2
Discharge	0.3 (approximate)
Temperature	2.5
D.O.	10.0
Turbidity	0.0
Suspend. sed.	0.0
pH	7.5
Alkalinity	
Hardness	
Conductivity	295 (@ 25°C)
Comments	Continued in water chemistry section.

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hordness
Alkalinity

Source 1,16
Date 7 Nov 73
Location A (spring)

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
48.0	8.8	0.7	0.4	-	-	158.6	0.0	23.0	0.5	0.05	0.23	-	3.2	243.5

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

OKEROKOVIK RIVER

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 3, 3A

ASSESSMENT

Site B is located in a spring-fed channel located approximately 0.5 km north (downstream) of the pipeline crossing. The spring appears typical of those described in Source #4, but it does not appear that this spring-fed region is utilized by Arctic char.

No fish were caught by seine at either Site A or Site B.

FISH

Sources 1. No fish caught by seine at Site A or B (23 July, 1974).

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocepholus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	23 Jul 74	23 Jul 74
Location	A	B (spring)
Temperature	6.1	3.0
Conductivity	186	210
pH	8.5	8.4
D.O.	11.0	8.0
Turbidity	clear	clear
Suspend. sed.		0.0
Discharge		0.07
Salinity		0.2
Hardness		
Alkalinity		

Source	1
Date	23 Jul 74
Location	B (spring)

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
44.5	7.0	12.4	1.9	tr.		129.0	0	15.9	16.8		744.4	tr.	1233.5	

NO_2:tr; NH_3:tr; TDN:224.7; TDP:9.5

BENTHIC INVERTEBRATES

Source	1	1
Date	23 Jul 74	23 Jul 74
Location	A	B (spring)
Method	Surber	Surber
No. samples	6	6
Trichoptera		
Plecoptera	23.0(8.82)	0.3(0.19)
Ephemeroptera	9.7(5.64)	
Diptera:	0.8(0.28)	0.2(0.15)
Simulidae	0.5(0.20)	1.2(0.44)
Tipulidae	5.3(0.93)	1.3(0.45)
Chironomidae	15.5(2.87)	141.2(55.19)
Empididae		
Muscidae	0.2(0.15)	
Dolichopodidae		
Liriopeidae		
Unidentified		
Oligochaeta	17.5(9.00)	53.7(16.77)
Nematoda	0.2(0.15)	0.8(0.44)
Arachnida		
Triclad		0.8(0.49)
Copepod		
Miscellaneous	1.2(0.44)*	5.0(1.73)*
TOTAL $\bar{X}/ft^2$	73.8(11.30)	204.0(70.64)
$\bar{X}/m^2$	794.41	2,195.04

*Amphipoda

*Amphipoda, snail

WATER BODY

NIGUANAK RIVER

Approx. lat. 69°43'15" N long. 143°08'W

Nearest milepost 142 P.B. Map number 3

ASSESSMENT

The Niguanak River was frozen solid at the pipeline crossing in November, 1973. Sensitive May to October.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	5 Nov 73
Location	A
Snow depth	
Ice depth	
Water depth	
Discharge	0
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkolinity

Source
Date
Locotion

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

KOGOTPAK RIVER

Approx. lat. 69°41'30"N long. 142°48'00"W

Nearest milepost 150 P.B. Map number 3

ASSESSMENT

The Kogotpak River was frozen at the pipeline crossing in November, 1973.

Sensitive May to October.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	5 Nov 73
Location	A
Snow depth	
Ice depth	
Water depth	
Discharge	0
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

AICHILIK RIVER

Approx. lat. 69°41'00" N long. 142°46'00" W

Nearest milepost 151.5 -P.B. Map number 3

ASSESSMENT

The Aichilik River is a braided mountain stream. A spawning and over-wintering area for Arctic char is located approximately 25 miles upstream of the pipeline route. The Aichilik River at the pipeline crossing was frozen solid on November 7, 1973.

Sensitive May to November.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindroceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	5 Nov 73	7 Nov 73
Location	B	A
Snow depth	0.01-0.02	0.03
Ice depth	0	0.66
Water depth	0	0
Discharge	0	0
Temperature		
D.O.		
Turbidity		
Suspend. sed.		
pH		
Alkalinity		
Hardness		
Conductivity		
Comments		

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

AICHILIK RIVER

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 3,3A (corrected location on Map 3A)

ASSESSMENT

Site B is located on a small unnamed tributary of the Aichilik River (the largest tributary between the Aichilik and Egaksrak Rivers). The stream is braided and flows through a gravel floodplain. It is likely that this tributary freezes solid in the winter.

No fish were caught by seine at Site B, but char and grayling juveniles were caught at Site A.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus nomaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	20 Jul 74	20 Jul 74
Location	A	B
Temperature	8.0	7.0
Conductivity	125	200
pH	8.1	8.3
D.O.	11.0	11.0
Turbidity	64 FTU*	
Suspend. sed.	370 mg/1	
Discharge		1.9
Salinity		
Hardness		
Alkalinity		

Source	1
Date	20 Jul 74
Location	A

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
23.8	4.5	11.8	1.3	0.05		82.0	0	13.0	0.4		332.8	11.5	1141.1	

NO_2:tr; NH_3:tr; TDN:164.5; TDP:10.5

BENTHIC INVERTEBRATES

Source	1	1
Date	20 Jul 74	20 Jul 74
Location	A	B
Method	Surber	Surber
No. samples	6	6
Trichoptera		
Plecoptera	0.8(0.28)	2.8(0.93)
Ephemeroptera		0.2(0.15)
Diptera:	0.3(0.19)	
Simulidae		6.2(3.15)
Tipulidae	0.2(0.15)	3.7(1.24)
Chironomidae	0.8(0.49)	5.8(0.8)
Empididae		
Muscidae		
Dolichopodidae		
Liriopeidae		
Unidentified		
Oligochaeta	0.2(0.15)	2.0(0.71)
Nematoda	0.2(0.15)	
Arachnida		
Triclad		1.0(0.62)
Copepod		
Miscellaneous		8.8(5.97)**
TOTAL $\bar{X}/ft^2$	2.5(0.51)	30.3(7.66)
$\bar{X}/m^2$	26.9	326.4

*Formazin Turbidity Units

** Amphipoda

WATER BODY

EGAKSRAK RIVER

Approx. lat. 69°37'45" N long. 142°20'30" W

Nearest milepost 162.2 -P.B. Map number 3

ASSESSMENT

The Egaksrak River is a braided mountain stream. A spawning and over-wintering area for Arctic char is located approximately 20 miles upstream of the pipeline route.

Sensitive May to November.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus			Esax lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	5 Nov 73
Location	A
Snow depth	0.05
Ice depth	0
Water depth	0.05
Discharge	0.01
Temperature	3.0
D.O.	12.6
Turbidity	0
Suspend. sed.	0
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Solinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

EGAKSRAK RIVER

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		X	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	20 Jul 74
Location	A
Temperature	12.0
Conductivity	112
pH	8.3
D.O.	11.0
Turbidity	36.0 FTU*
Suspend. sed.	88.0 mg/1
Discharge	
Salinity	
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	∑

BENTHIC INVERTEBRATES

Source	1
Date	20 Jul 74
Location	A
Method	Surber
No. samples	6
Trichoptera	
Plecoptera	5.5(1.91)
Ephemeroptera	2.2(1.62)
Diptera:	
Simulidae	0.8(0.37)
Tipulidae	1.0(0.58)
Chironomidae	2.8(1.23)
Empididae	0.2(0.15)
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	8.5(4.07)
Nematoda	0.2(0.15)
Arachnida	
Triclad	0.8(0.76)
Copepod	
Miscellaneous	1.3(0.77)**
TOTAL $\bar{X}/ft^2$	23.8(10.07)
$\bar{X}/m^2$	256.4

*Formazin Turbidity Units
**Snails, amphipoda

WATER BODY

EKALUAKAT RIVER

Approx. lat. 69°39'45" N long. 142°10'00" W

Nearest milepost 166 -P.B. Map number 3

ASSESSMENT

The Ekaluakat River, a large tributary of the Egaksrak River, supports a large population of Arctic char. A spawning and overwintering area is located approximately 5 miles upstream of the pipeline crossing. The stream crossing itself was almost frozen solid on November 5, 1973.

Effective erosion control measures are necessary. Sensitive May to November.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosapium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1 ,16
Date	5 Nov 73
Location	A
Snow depth	0.05
Ice depth	0.34-0.42(3)
Water depth	0.0-0.1
Discharge	0
Temperature	1.0
D.O.	
Turbidity	0.1
Suspend. sed.	0.0
pH	
Alkalinity	
Hardness	
Conductivity	424 (@ 25°C)
Comments	Standing water under ice. Continued in water chemistry section.

WATER CHEMISTRY

Source	1
Date	29 Aug 73
Location	B
Temperature	7.5
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

1.3 m aufeis thickness

Source	1,16
Date	5 Nov 73
Location	A (standing water under ice)

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	∑
73.0	9.4	4.0	0.5	-	-	203.7	0.0	55.0	4.6	0.19	0.13	-	4.4	355

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

SIKSIKPALAK RIVER

Approx. lat. 60°30'15" N long. 142°06'00" W

Nearest milepost 167-PB Map number 3

ASSESSMENT

The Siksikpalak River is a small mountain stream. There appears to be an overwintering site for Arctic char approximately 7 miles upstream of the pipeline route.

Sensitive May to November.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nosus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkolinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeraptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

KALOKUT CREEK

Approx. lat. 69°38'30" long. 141°59'30"

Nearest milepost 170 Map number 3A

ASSESSMENT

Kalokut Creek is a small, single-channeled tundra stream. Mid-summer discharge levels were low and it is likely that flow becomes intermittent in the vicinity of the pipeline crossing. No fish were caught by seine.

FISH

Sources 1. No fish caught by seine at Site A (20 July, 1974).

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quodricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coreganus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	20 Jul 74
Location	A
Temperature	9.0
Conductivity	165
pH	8.2
D.O.	8.0
Turbidity	clear
Suspend. sed.	
Discharge	0.03
Salinity	
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1
Date	20 Jul 74
Location	A
Method	Surber
No. samples	3
Trichoptera	
Plecoptera	27.0(6.86)
Ephemeroptera	67.7(45.80)
Diptera:	2.7(1.09)
Simulidae	12.7(3.03)
Tipulidae	3.3(0.98)
Chironomidae	38.7(7.86)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	12.0(1.64)
Nematoda	2.3(0.72)
Arachnida	
Triclad	
Copepod	
Miscellaneous	2.3(1.18)*
TOTAL $\bar{X}/ft^2$	215.7(52.98)
$\bar{X}/m^2$	2,320.6

*Amphipoda
collembola

WATER BODY

KONGAKUT RIVER

Approx. lat. 69°39'00" N long. 141°41'00" W

Nearest milepost 173 -P.B. Map number 3. Plate 2

ASSESSMENT

The Kongakut River is probably one of the most important Arctic char streams in this region. Major spawning and overwintering areas are located 5-25 miles upstream of the pipeline route and the extensive spring-fed areas downstream of the pipeline route support large numbers of overwintering juvenile char. On November 5, 1973, water had almost ceased flowing the the proposed pipeline crossing.

Effective erosion control measures are essential. Sensitive May to November.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quodricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1	1
Date	4 Apr 72	5 Nov 73	5 Nov 73	5 Nov 73	5 Nov 73
Location	B-C	38	C	A	B
Snow depth					
Ice depth		0.44	0	0	0
Water depth					
Discharge					minimal
Temperature	1.5		2.5	2.5	
D.O.	12.2				
Turbidity		2.7	0.0	1.5	
Suspend. sed.		0	0.0	0.0	
pH					
Alkalinity					
Hardness					
Conductivity					
Comments	little flow in this area				

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

KONGAKUT RIVER

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 3

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus	X		Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	18 Jul 74
Location	B
Temperature	13.0
Conductivity	138
pH	8.0
D.O.	10.0
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source	1
Date	18 Jul 74
Location	B

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤
26.9	3.9	7.4	1.5	0.01		86.5	0	9.7	7.1		432.9	tr.	978.8	

NO_2:10.7; NH_3:tr.; TDN:140.2; TDP:7.8

BENTHIC INVERTEBRATES

Source	1
Date	18 Jul 74
Location	B
Method	Surber
No. samples	6
Trichoptera	
Plecoptera	0.2(0.15)
Ephemeroptera	1.3(0.65)
Diptera:	
Simulidae	1.8(1.16)
Tipulidae	0.2(0.15)
Chironomidae	
Empididae	0.2(0.15)
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	1.3(1.04)
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	6.8(2.27)
$\bar{X}/m^2$	73.5

WATER BODY

TURNER RIVER

Approx. lat. 69°36' long. 141°25'

Nearest milepost 184.5 Map number 3A

ASSESSMENT

The Turner River is a small tundra stream which flows into Demarcation Bay. There is generally a single channel flowing through a gravel floodplain 50-100 m in width.

No fish were caught by seine at either Site A or Site B. This does not appear to be an important fish stream.

FISH

Sources 1. No fish caught at Sites A or B (18,22 July, 1974).

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	18 Jul 74	27 Jul 74
Location	A	B
Temperature	14.0	6.2
Conductivity	220	180
pH	8.2	
D.O.	10.0	11.0
Turbidity		clear
Suspend. sed.		
Discharge	0.5	0.4
Salinity		
Hardness		
Alkalinity		

Source	1
Date	18 Jul 74
Location	A

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤
56.5	4.9	6.1	1.4	0.01		144.0	0	1.6	8.2		721.4	tr.	898.3	

BENTHIC INVERTEBRATES

Source	1
Date	18 Jul 74
Location	A
Method	Surber
No. samples	6
Trichoptera	
Plecoptera	4.0(1.03)
Ephemeroptera	0.7(0.61)
Diptera:	
Simulidae	0.8(0.28)
Tipulidae	0.3(0.31)
Chironomidae	0.7(0.31)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	4.8(1.32)
Nematoda	
Arachnida	
Triclad	0.3(0.19)
Copepod	
Miscellaneous	1.6(0.54)*
TOTAL $\bar{x}/ft^2$	13.5(2.61)
$\bar{x}/m^2$	145.3

*Amphipods

WATER BODY

PUTUGOOK CREEK

Approx. lat. 69°35'30" long. 141°16'

Nearest milepost 188.5 Map number 3A

ASSESSMENT

Putugook Creek is a small, slightly braided stream which flows into Demarcation Bay. The stream flows through a gravel floodplain 20 m in width.

No fish were caught by seine. This does not appear to be an important fish stream.

FISH

Sources 1. No fish caught by seine (20 July, 1974).

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	20 Jul 74
Location	A
Temperature	9.5
Conductivity	225
pH	8.4
D.O.	11.0
Turbidity	clear
Suspend. sed.	
Discharge	0.15
Salinity	
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1
Date	20 Jul 74
Location	A
Method	Surber
No. samples	3
Trichoptera	0.3(0.27)
Plecoptera	0.7(0.54)
Ephemeroptera	0.7(0.27)
Diptera:	0.3(0.27)
Simulidae	1.3(0.27)
Tipulidae	3.3(0.54)
Chironomidae	2.3(0.54)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	7.3(2.18)
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	48.0(11.91)*
TOTAL $\bar{X}/ft^2$	64.3(31.66)
$\bar{X}/m^2$	692.2

*Amphipods
triclad

WATER BODY

CLARENCE RIVER

Approx. lat. 69°36'30" long. 141°00'30"

Nearest milepost 194 Map number 3A

ASSESSMENT

The Clarence River is a braided mountain stream which flows through a wide gravel floodplain. Several fields of *aufeis* were located in the vicinity of Site B and it is likely that some char spawning occurs in that region.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindroceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	18 Jul 74	20 Jul 74
Location	A	B
Temperature	15.0	6.5
Conductivity	160	125
pH	8.3	8.2
D.O.	10.0	11.0
Turbidity	clear	4.5 FTU*
Suspend. sed.		11.0 mg/1
Discharge		
Salinity		
Hardness		
Alkalinity		

Source	1
Date	20 Jul 74
Location	B

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤
25.3	4.2	5.5	1.1	0.01		81.0	0	18.5	0.2		392.0	tr.	1070.4	

NO_2:tr.; NH_3:tr.

BENTHIC INVERTEBRATES

Source	1
Date	18 Jul 74
Location	A
Method	Surber
No. samples	6
Trichoptera	
Plecoptera	0.3(0.19)
Ephemeroptera	0.5(0.7)
Diptera:	
Simulidae	
Tipulidae	0.2(0.15)
Chironomidae	
Empididae	0.2(0.15)
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochoeta	4.5(1.93)
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{x}/ft^2$	6.0(2.3)
$\bar{x}/m^2$	64.6

*Formazin Turbidity Units

CANNING RIVER DRAINAGE

WATER BODY CANNING RIVER DRAINAGE

Approx. lat. _____ long. _____

Nearest milepost _____ Map number _____

Considerable emphasis has been placed on studies of the Canning River for the following reasons:

a) the Canning River is common to both proposed pipeline routes. It is crossed by the Prudhoe Bay Supply Route and paralleled by the Alternative Interior Route for approximately 47 miles.

b) the Canning River appears physically representative of the other major North Slope drainages, and like these drainages, it contains populations of Arctic char and grayling.

c) the Canning River forms the western boundary of the Arctic Wildlife Refuge.

The Canning River is a large mountain stream which flows for about one half its length through narrow mountain valleys and the other half across the rolling tundra of the Arctic Coastal Plain. Throughout its length, the Canning is a braided stream with a wide gravel floodplain. As evidenced by the large *aufeis* fields in the upper and middle reaches of the stream, there is considerable groundwater activity. These spring-fed areas serve as spawning and overwintering areas for Arctic char. Many such areas have been located in the Canning River and Marsh Fork.

Arctic char, grayling and round whitefish are common in the drainage. The Canning is also an important migratory pathway for anadromous char during the early spring (May-June) and mid-summer (July-August) periods as they migrate to the ocean to feed and return again in August to spawn or overwinter.

The Canning River is an important fish stream. Angling pressure, water removal or any disturbance to spring areas should be carefully regulated. Sensitive year round and a high risk area.

In what follows, we have divided the Canning drainage into four catalogue sections:

1) Canning River (mainstream)
2) Canning tributaries (CT1, etc.)
3) Canning springs (CS1, etc.)
4) Canning lakes

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus	X	X	Esox lucius		
Salvelinus namaycush		X	Lota lota		X
Salvelinus alpinus	X	X	Myoxocephalus quadricornis *		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus		X	Pungitius pungitius		X
Prosopium cylindraceum	X	X	Cottus cognatus		
Coregonus autumnalis *					
Coregonus sardinella *					

* (see Inshore Section)

WATER BODY

CANNING RIVER (lower region)

Approx. lat. 70°04'30" N long. 145°33'30" W

Nearest milepost 63 Map number 5

ASSESSMENT

Station A on the Canning has unstable sand and silt substrates and during the summer months is in tidal influence. Banks are unstable and frequently slumped. Little terrestrial vegetation is present.

Numerous grayling, char, round whitefish and other species (see Inshore section, Canning Delta) have been caught in this area. Some fish may overwinter in the delta region.

Because this area is downstream of the pipeline crossing, effective erosion control measures are necessary. The pipeline crossing itself is frozen solid during the winter. Water removal and angling should be regulated.

FISH

Sources 1,3 ,4,11

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus		x	Pungitius pungitius		
Prosopium cylindraceum	x	x	Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

(see also Inshore Section)

WINTER CONDITIONS

Sources	1	1	1
Date	18 Apr 73	5 Nov 73	5 Nov 73
Location	D	E	C
Snow depth	0		0
Ice depth	2.3		0.3-0.5
Water depth	0	0	0
Discharge	0	0	0
Temperature			
D.O.			
Turbidity			
Suspend. sed.			
pH			
Alkalinity			
Hordness			
Conductivity			
Comments			

WATER CHEMISTRY

Source	1	1	1	1
Date	4 Jun 72	8 Jun 72	20 Jun 72	11 Jul 72
Location	A-D	B	D	D
Temperature		2.0	4.0	12.5
Conductivity		12	110	162.5
pH		7.0	8.0	8.5
D.O.		12.0	11.0	11.0
Turbidity			high	low
Suspend. sed.				
Discharge				
Salinity				
Hardness			154	60
Alkalinity		17	103	136
Source	river open and turbid	stained water overflowing onto tundra		
Date				
Location				

(continued)

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1	1	1	1
Date	20 Jun 72	27 Jul 72	9 Aug 72	15 Sep 72
Location	D	D	D	D
Method	surber	surber	surber	surber
No. samples	6	6	6	6
Trichoptera				
Plecoptera	2.7(0.93)	2.0(0.47)	1.0(0.41)	6.5(2.27)
Ephemeroptera	0.5(0.46)	9.3(1.47)	0.5(0.31)	
Diptera:				
Simulidae				
Tipulidae	1.5(0.70)	0.5(0.31)	0.3(0.31)	1.8(0.44)
Chironomidae	0.7(0.39)			0.8(0.28)
Empididae				
Muscidae				
Dolichopodidae				
Liriopeidae				
Unidentified				
Oligochaeta	2.5(1.33)	13.7(5.49)	0.3(0.19)	1.7(1.80)
Nematoda				
Arachnida				
Triclad				
Copepod				
Miscellaneous				0.2(0.15)*
TOTAL $\bar{x}/ft^2$	7.8(1.42)	26.0(6.53)	2.2(0.80)	11.2(2.67)
$\bar{x}/m^2$	83.9	279.8	23.7	120.4

*collembola

CANNING RIVER (lower region) continued

WATER CHEMISTRY

Source	1	1	1
Date	27 Jul 72	8 Aug 72	15 Sept 72
Location	D	D	D
Temperature	9.0	11.0	0.5
Conductivity	150	165	
pH	8.5	8.5	8.0
D.O.	11.0	9.8	11.2
Turbidity	low	low	low
Suspend. sed.			
Discharge			
Salinity			
Hardness	154	80	80
Alkalinity	120	50	60
			ice depth 0.02-0.04
Source			
Date			
Location			

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{x}/ft^2$	
$\bar{x}/m^2$	

WATER BODY

CANNING RIVER (mid region)

Approx. lat. 69°27'15" N long. 146°13'15" W

Nearest milepost 4.5 mi E MP 82.5-I Map number 5

ASSESSMENT

This region is an important spawning, rearing and overwintering area for Arctic char. Throughout the summer, Arctic char, grayling and round whitefish were collected in the vicinity of Station H. Grayling were caught through the ice at Station G on November 4, 1973.

Shublik Spring is the principal source of water to this area during the winter months. This region is sensitive year round.

FISH

Sources 1,3,4,11

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1,4,16	1
Date	23 May 72	24 May 72	3 Nov 72	11 Apr 73
Location	G	H	H	H
Snow depth		0		0
Ice depth		0		
Water depth				
Discharge				
Temperature	0	0.5	0.5	
D.O.	13.6	11.4	13.4	13.2
Turbidity		high		
Suspend. sed.				
pH	8.0	8.1	8.1	8.5
Alkalinity	120			60
Hardness	171			125
Conductivity			30	
Comments		break-up in progress		open for 300 m below Shublik Spring

(continued)

WATER CHEMISTRY

Source	1	1	1	1
Date	18 Jun 72	19 Jun 72	9 Jul 72	27 Jul 72
Location	H	H	H	H
Temperature	10.0	5.0	12.0	10.0
Conductivity	119	105	140	165
pH	8.0	8.5	8.5	8.0
D.O.	10.0	12.2		12.0
Turbidity		high		low
Suspend. sed.				
Discharge				
Salinity				
Hardness	120	120	137	171
Alkalinity	120	137	120	154

Source 4,16
Date 3 Nov 72
Location H

(continued)

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
44.8	8.8	0.1	0.3			151.3		23.3	0.3	0.26	0.08	<0.003	3.4	233.5

BENTHIC INVERTEBRATES

Source	1	1	1	1
Date	24 May 72	19 Jun 72	9 Jul 72	27 Jul 72
Location	H	H	H	H
Method	surber	surber	surber	surber
No. samples	6	6	6	6
Trichoptera				
Plecoptera	8.7(4.95)	1.3(0.45)	0.5(0.2)	0.3(0.19)
Ephemeroptera	1.8(0.64)	1.0(0.47)	3.5(1.33)	1.0(0.33)
Diptera:				
Simulidae				
Tipulidae	0.5(0.46)	0.2(0.15)	0.2(0.15)	0.2(0.15)
Chironomidae	3.8(1.32)	0.7(0.45)	7.7(1.56)	1.0(0.24)
Empididae				
Muscidae				
Dolichopodidae				
Liriopeidae				
Unidentified	7.8(5.04)	0.2(0.15)	0.2(0.15)	0.3(0.19)
Oligochaeta	0.3(0.31)		4.0(1.67)	0.8(0.28)
Nematoda				
Arachnida				
Triclad				
Copepod				
Miscellaneous				
TOTAL $\bar{x}/ft^2$	23.0(1.39)	3.5(0.84)	16.0(4.29)	3.7(0.61)
$\bar{x}/m^2$	247.3	37.6	172.2	39.8

(continued)

WATER BODY

CANNING RIVER (mid region) (continued)

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 5

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocepholus quadricornis		
Caregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1
Date	3 Nov 73	3 Nov 73	7 Nov 73
Location	H	F	F
Snow depth		0	0
Ice depth	0	0.30(2)	0.41-1.03(4)
Water depth	0-2.0	0.2-0.25(2)	0-1.45(4)
Discharge			
Temperature	2.0	1.5	1.0
D.O.			12.6
Turbidity	0.2	0.1	0
Suspend. sed.	0.0	0	0
pH			7.5
Alkalinity			
Hardness			
Conductivity			
Comments			

continued in water chemistry section.

WATER CHEMISTRY

Source	1	1	1	1
Date	27 Jul 72	8 Aug 72	28 Aug 72	15 Sept 72
Location	F	H	H	H
Temperature	10.0	8.5	8.8	1.0
Conductivity	140	155		
pH	8.5	8.5	8.5	8.5
D.O.	11.0	11.2	12.0	11.6
Turbidity				
Suspend. sed.				
Discharge				
Salinity				
Hardness	154	80	75	105
Alkalinity	137	50	50	50

Source	1,16											ice forming		
Date	7 Nov 73													
Locotion	F													
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤
54.0	8.8	2.1	0.4	-	-	165.8	0.0	33.0	7.4	0.27	0.1	-	3.5	275.5

Conductivity @ 25°C = 385

BENTHIC INVERTEBRATES

Source	1	1
Date	9 Aug 72	14 Sept 72
Location	H	H
Method	surber	surber
No. samples	6	6
Trichoptera	0.5(0.31)	
Plecoptera	2.8(0.96)	3.2(0.68)
Ephemeroptera	7.8(1.04)	4.3(1.26)
Diptera:		
Simulidae		
Tipulidae	0.7(0.31)	0.7(0.31)
Chironomidae	7.2(1.48)	61.3(16.59)
Empididae		
Muscidae		
Dolichopodidae		
Liriopeidae		
Unidentified	0.2(0.15)	2.2(0.80)
Oligochaeta	0.3(0.19)	1.3(0.77)
Nematoda		
Arachnida	0.2(0.15)	0.2(0.15)
Triclad		
Copepod		
Miscellaneous		
TOTAL $\bar{X}/ft^2$	19.7(2.52)	73.2(18.05)
$\bar{X}/m^2$	211.8	786.9

WATER BODY

CANNING RIVER (1/2 mile below Marsh Fork)

Approx. lat. 69°14'15"N long. 145°52'30"W

Nearest milepost 106-I Map number 5

ASSESSMENT

Arctic char overwinter in this region (Source 3).

Effective erosion control measures are necessary. Sensitive year round.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	24 May 72
Location	I
Temperature	0.5
Conductivity	-
pH	8.5
D.O.	11.4
Turbidity	high
Suspend. sed.	
Discharge	
Salinity	
Hardness	11
Alkalinity	10

ice flowing in river

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

CANNING RIVER (main fork)

Approx. lat. 69°10'30" N long. 145°49'00" W

Neorest milepost 3 mi E MP 107.5-I Map number 5

ASSESSMENT

The main branch of the Canning River is a braided stream which flows through a narrow valley. The stream is occasionally discontinuous during both the summer and winter. Several small springs provide a limited amount of water during the winter. Locations of overwintering areas are given in Source 3.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Solinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

MARSH FORK (CANNING RIVER) (lower region, Station K)

Approx. lat. 69°06'00" N long. 145°59'00"W

Nearest milepost 113.5-I Map number 5

ASSESSMENT

The Marsh Fork, at Station K, is a braided mountain stream which flows through a wide floodsplain. This region is an important overwintering area for Arctic char (Source 3).

Effective erosion control measures in this region are essential. Water removal and angling should be closely regulated.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	3 Nov 73
Location	K
Snow depth	
Ice depth	
Water depth	
Discharge	
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments some flow under ice

WATER CHEMISTRY

Source	1	1	1	1	1
Date	18 May 73	23 May 73	4 Jun 73	24 Jun 73	12 Jul 73
Location	K	K	K	K	K
Temperature	1.0	2.0	3.0	4.0	4.5
Conductivity					
pH	8.5				8.5
D.O.	13.0	15.4	15.0	11.0	11.2
Turbidity		13	22	1.2	0
Suspend. sed.		0.01	0.02	0	0
Discharge					
Salinity					
Hardness	120	75	105	130	115
Alkalinity	85	105	105	120	75

Source															(continued)
Date															
Locotion															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤	

BENTHIC INVERTEBRATES

Source	1	1	1	1	1
Date	7 Jul 73	13 Jul 73	23 Jul 73	23 Aug 73	13 Sept 73
Location	K	K	K	K	K
Method	surber	surber	surber	surber	surber
No. samples	6	6	6	6	6
Trichoptera			0.2(0.15)		
Plecoptera	1.7(0.69)	1.5(0.87)	0.8(0.44)	13.0(4.80)	8.3(3.67)
Ephemeroptera	4.7(1.69)	8.0(4.29)	1.3(0.51)	3.7(1.54)	9.7(5.29)
Diptera:					
Simulidae		0.2(0.15)			
Tipulidae	0.2(0.15)		0.3(0.19)	0.7(0.19)	1.7(0.84)
Chironomidae	84.3(23.44)	294.5(82.65)	267.7(55.43)	10.2(3.41)	8.7(4.48)
Empididae					
Muscidae					
Dolichopodidae					
Liriopeidae					
Unidentified	0.5(0.46)		4.2(1.74)	0.8(0.44)	
Oligochaeta		0.2(0.15)	0.8(0.15)	0.2(0.15)	
Nematoda			0.2(0.15)		
Arachnida					
Triclad					
Copepod				0.2(0.15)	
Miscellaneous			4.7(4.26)*		0.3(0.19)*
TOTAL $\bar{X}/ft^2$	91.3(22.06)	304.3(84.27)	280.2(55.81)	28.7(9.64)	28.7(14.28)
$\bar{X}/m^2$	982.4	3274.3	3015.0	308.5	308.5

*collembola * collembola

Note: the large numbers of benthic invertebrates at this location probably reflects the proximity of Canning Spring-10 which enters the Canning River approximately 150 m upstream of Station K.

WATER CHEMISTRY

Source	1	1	1	1	1
Date	3 Aug 73	16 Aug 73	29 Aug 73	16 Sept 73	4 Oct 73
Location	K	K	K	K	K
Temperature	9.0	5.6	5.0	6.0	0.0
Conductivity					
pH	11.8	10.4	8.75	8.75	8.5
D.O.	8.5	8.7		11.4	12.8
Turbidity	75		2.3	0.0	0.0
Suspend. sed.	1.2		0	0	0
Discharge		21.9	24.4		5.97
Salinity					
Hardness	120	115	135	135	145
Alkalinity	75	65	80	80	90

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ	

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

MARSH FORK (lower region, Station L)

Approx. lat. 69°04'30" N long. 146°00'00" W

Nearest milepost 119-I Map number 5

ASSESSMENT

Station L is the only location on the Canning that consists of a single deep channel. Here the stream flows through a narrow rock gorge. The substrate consists of some solid rock and gravel.

Arctic char and grayling have been caught at this location.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocepholus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1
Date	5 May 72	10 May 72	25 May 72	9 Nov 73
Location	L	L	L	L
Snow depth			0	
Ice depth			0	
Water depth				
Discharge				
Temperature	0.0	0.5	0.5	0.5
D.O.	11.9	12.9	13.0	12.6
Turbidity			low	1.0
Suspend. sed.				0
pH			8.0	
Alkalinity			85	
Hardness			188	
Conductivity				
Comments	open water in this region			open water in this region

WATER CHEMISTRY

Source	1	1	1	1
Date	17 Jun 72	26 Jul 72	10 Aug 72	13 Sept 72
Location	L	L	L	L
Temperature	9.0	10.0	8.0	1.0
Conductivity		170	160	
pH	8.5	8.5	8.5	8.5
D.O.	11.2	10.6	10.0	11.6
Turbidity				
Suspend. sed.				
Discharge				
Salinity				
Hardness	137	154	80	90
Alkalinity	103	154	55	55

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ	

BENTHIC INVERTEBRATES

Source	1	1	1	1
Date	17 Jun 72	26 Jul 72	10 Aug 72	13 Sept 72
Location	L	L	L	L
Method	surber	surber	surber	surber
No. samples	6	6	6	6
Trichoptera			0.2(0.15)	1.8(0.83)
Plecoptera	1.3(0.72)	0.2(0.15)	1.2(0.55)	24.3(4.36)
Ephemeroptera		1.0(0.75)	0.2(0.15)	5.7(1.94)
Diptera:				
Simulidae				
Tipulidae	0.3(0.27)			0.7(0.19)
Chironomidae	1.7(0.98)	6.2(1.54)	10.5(3.74)	58.0(16.15)
Empididae				
Muscidae				
Dolichopodidae				
Liriopeidae				
Unidentified		7.7(1.64)	1.5(0.51)	3.7(0.93)
Oligochaeta	0.7(0.27)	0.2(0.15)	0.8(0.28)	5.8(1.36)
Nematoda				0.2(0.15)
Arachnida				
Triclad				
Copepod				
Miscellaneous				
TOTAL $\bar{X}/ft^2$	4.0(0.47)	15.2(3.52)	14.7(4.47)	100.2(16.09)
$\bar{X}/m^2$	43	163.6	158	1077.1

WATER BODY

MARSH FORK - CANNING RIVER (upper region)

Approx. lat. 68°52'15" N long. 146°04'30" W

Nearest milepost 129-I Map number 5

ASSESSMENT

This area is not extensively braided. Lush willow growths are present around the nearby spring areas (see Canning Springs section) which supply perennial flow to the river. The 5 mile region around Station M is one of the most important char spawning grounds in the study area. Grayling and round whitefish have also been collected here.

Because the Interior Alternative Route closely parallels this section, it is a high risk area. Water removal and angling should be regulated. Good erosion control is essential. Sensitive year round.

The pipeline route crosses the Marsh Fork upstream of this spawning area; the stream at the pipeline crossing is frozen solid during the winter.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1,3,4,16	1	1
Date	4 Apr 72	3 Nov 72	10 Apr 73	4 Nov 73
Location	M	M	M	M
Snow depth				0.05
Ice depth		0	1.5 m on sides	0
Water depth	0.3-0.4(2)		0.09-0.44(8)	0.18-0.46(9)
Discharge		4.37	1.02	2.40
Temperature	2.5			0
D.O.	12.8			12.6
Turbidity				0
Suspend. sed.				0
pH				7.75
Alkalinity				
Hardness				
Conductivity				
Comments	30% algal cover on substrate	additional data in water chem. section; open water channel in this region.		

WATER CHEMISTRY

Source	1	1	1	1
Date	16 Jun 72	6 Jul 72	26 Jul 72	10 Aug 72
Location	M	M	M	M
Temperature	9.0	10.0	8.0	8.0
Conductivity		167	177	115
pH	8.5	8.0	8.5	8.5
D.O.	11.0	12.2	11.0	9.8
Turbidity				
Suspend. sed.				
Discharge				
Salinity				
Hardness	137	137	137	80
Alkalinity	137	137	120	65

(continued)

Source 1,3,4,16
Date 3 Nov 72
Location Q

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
36.3	9.1	0.7	0.3			130.5		22.6	0.3		0.07	<.003	4.4	157.873

BENTHIC INVERTEBRATES

Source	1	1	1	1	1
Date	16 Jun 72	6 Jul 72	26 Jul 72	10 Aug 72	1 Sept 72
Location	M	M	M	M	M
Method	surber	surber	surber	surber	surber
No. samples	6	6	6	6	6
Trichoptera					
Plecoptera	0.3(0.19)		0.3(0.30)	0.3(0.19)	8.0(1.62)
Ephemeroptera			0.5(0.20)	0.2(0.15)	0.3(0.19)
Diptera:					
Simulidae					
Tipulidae					
Chiranomidae	1.0(0.24)		0.6(0.30)	1.0(0.58)	46.7(13.06)
Empididae					
Muscidae					
Dolichopodidae					
Liriopeidae					
Unidentified	1.7(0.99)	0.2(0.15)	0.3(0.19)		0.8(0.44)
Oligochaeta		0.2(0.15)	0.2(0.15)	0.2(0.15)	
Nematada					
Arachnida					0.2(0.15)
Triclad					
Copepod					
Miscellaneous					
TOTAL $\bar{X}/ft^2$	3.0(0.75)	0.3(0.19)	2.0(0.85)	1.7(0.61)	56.0(14.77)
$\bar{X}/m^2$	32.2	3.2	21.5	18.2	602

WATER CHEMISTRY

Source	1	1	1
Date	1 Sept 72	13 Sept 72	3 Nov 72
Location	M	M	M
Temperature	5.0	4.0	0.5
Conductivity			
pH	8.5	8.5	8.5
D.O.	11.6	11.6	12.8
Turbidity	clear	clear	
Suspend. sed.			
Discharge			4.37
Salinity			
Hardness	90	90	
Alkalinity	70	50	
		ice forming on still water	

Source														
Date														
Locotion														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	
Date	
Locotion	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepad	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

CANNING RIVER TRIBUTARIES

WATER BODY CANNING RIVER TRIBUTARIES

Approx. lat. _____ long. _____

Nearest milepost _____ Map number _____

Most of the unnamed tributaries to the Canning River and Marsh Fork are small streams less than 10 miles in length. They tend to be of three general types:

1) Foothill and Coastal Plain tributaries (north of Eagle Creek). These streams meander through the tundra before entering the Canning. There is a single channel of water, 1-5 m wide, often with substrates of silt, sand and organic matter. These tributaries overflow onto the surrounding tundra during the spring flood. A few streams have intermittent summer flow and none have recorded winter flow. Grayling are commonly found and these fish may use the larger tundra streams as spawning and rearing areas.

2) Mountain tributaries (south of Eagle Creek). These are steep, gravel-bottomed streams which are subject to scouring by floodwaters. Many have intermittent summer flow and almost all are frozen solid during the winter. The fish utilization of these streams appears small compared to utilization of the Canning itself. Small numbers of grayling and Arctic char were caught and no fry were collected. It is unlikely that spawning occurs in these headwater tributaries (with the possible exception of CT45). Densities of benthic invertebrates are much lower than in streams draining the tundra.

3) Spring-fed tributaries. These are discussed in the following catalogue section.

WATER BODY

UNNAMED CANNING TRIBUTARY (CT5 - 1)

Approx. lat. 69°45'00" N long. 146°21'00" W

Nearest milepost 11 mi S MP 62.5-PB Map number 5

ASSESSMENT

Deep pools connected by shallow grassy riffles.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	31 May 73
Location	near mouth
Snow depth	1.8+
Ice depth	0
Water depth	0
Discharge	0
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	
Comments	melt water accumulating

WATER CHEMISTRY

Source	1
Date	10 Jul 72
Location	mouth
Temperature	13
Conductivity	94
pH	7.8
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	103
Alkolinity	86

Source	
Date	
Locotion	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

NANOOK CREEK

Approx. lat. 69°34'30" N long. 146°16'00" W

Nearest milepost 23 mi S MP 65- PB Map number 5

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	3 Nov 73
Location	near mouth
Snow depth	
Ice depth	
Water depth	
Discharge	0
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source	1	1
Date	10 Jul 72	27 Jul 72
Location	near mouth	near mouth
Temperature		10.0
Conductivity	133	140
pH	8.3	8.5
D.O.	12.0	12.0
Turbidity		
Suspend. sed.		
Discharge		0.43
Salinity		
Hardness	137	154
Alkalinity	120	154

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	∑

BENTHIC INVERTEBRATES

Source	1
Date	27 Jul 72
Location	1/4 mi above mouth
Method	surber
No. samples	6
Trichoptera	
Plecoptera	40.5(5.99)
Ephemeroptera	13.7(2.82)
Diptera:	
Simulidae	7.0(1.94)
Tipulidae	0.8(0.37)
Chironomidae	11.2(2.24)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	7.3(1.64)
Oligochaeta	84.0(21.38)
Nematoda	0.3(0.30)
Arachnida	
Triclad	2.0(1.47)
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	167.3(25.49)
$\bar{X}/m^2$	1798.5

WATER BODY

IGNEK CREEK

Approx. lat. 69°35'30" N long. 146°17'00" W

Nearest milepost 22 mi S MP 65-PB Map number 5

ASSESSMENT

Grayling seen on June 23, 1972 and 10 July, 1972

FISH

Sources

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	16 May 72	3 Nov 73
Location	near mouth	near mouth
Snow depth		
Ice depth	0	0
Water depth	0	0
Discharge	0	0
Temperature		
D.O.		
Turbidity		
Suspend. sed.		
pH		
Alkalinity		
Hardness		
Conductivity		

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkolinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING TRIBUTARY (CT18-1)

Approx. lat. 69°32'45" N long. 146°15'45" W

Nearest milepost 10 mi E MP 73-I Map number 5

ASSESSMENT

Small tundra stream. Ripe grayling caught on June 19, 1972.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coreganus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	19 Jun 72	27 Jul 72
Location	near mouth	near mouth
Temperature	7.0	11.0
Conductivity		200
pH		8.0
D.O.		10.0
Turbidity		
Suspend. sed.		
Discharge		0.04
Salinity		
Hardness		205
Alkalinity		188

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	1
Date	27 Jul 72
Location	above mouth
Method	surber
No. samples	6
Trichoptera	
Plecoptera	4.4(0.61)
Ephemeroptera	12.8(3.03)
Diptera:	
Simulidae	1.0(0.40)
Tipulidae	5.8(1.37)
Chironomidae	51.6(9.36)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	2.0(0.63)
Oligochaeta	20.2(6.34)
Nematoda	1.6(1.00)
Arachnida	0.8(0.34)
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	100.2(5.92)
$\bar{X}/m^2$	1078.2

WATER BODY

UNNAMED CANNING TRIBUTARY (CT21-1)

Approx. lat. 69°37'30" N long. 146°17'45" W

Nearest milepost 12 mi E MP 68.5-I Map number 5

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	10 Jul 72
Location	near mouth
Temperature	15.5
Conductivity	108
pH	8.0
D.O.	10.0
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	120
Alkalinity	103

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING TRIBUTARY (CT24-1)

Approx. lat. 69°29'30" N long. 146°16'30" W

Nearest milepost 5.5 mi E MP 79-I Map number 5

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	9 Jul 72
Location	near mouth
Temperature	12.5
Conductivity	200+
pH	8.5
D.O.	10.4
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	171
Alkalinity	171

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeraptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING TRIBUTARY (CT25-1)

Approx. lat. 69°35'30" N long. 146°19'30" W

Nearest milepost 10 mi E MP 70-I Map number 5

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus nomaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	27 Jul 72
Location	200 m from mouth
Temperature	9.5
Conductivity	200+
pH	7.7
D.O.	9.0
Turbidity	low
Suspend. sed.	
Discharge	
Salinity	
Hardness	239
Alkolinity	205

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1
Date	27 Jul 72
Location	200 m from mouth
Method	surber
No. samples	3
Trichoptera	
Plecoptera	1.3(0.54)
Ephemeroptera	34.3(2.76)
Diptera:	
Simulidae	1.7(1.36)
Tipulidae	1.3(0.54)
Chironomidae	7.7(2.23)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	0.3(0.27)
Oligochaeta	2.0(0.47)
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	48.7(7.58)
$\bar{X}/m^2$	524.0

WATER BODY

UNNAMED CANNING TRIBUTARY (CT26-1)

Approx. lat. 69°26'30" N long. 146°10'30" W

Nearest milepost 4 mi E MP 85-I Map number 5

ASSESSMENT

There is a perennial spring on this tributary (see CT26 Spring in Canning Spring Section) which contains an isolated population of dwarf Arctic char.

FISH

Sources 1,4

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Cotastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	4
Date	18 Jun 72	27 Jul 72
Location	near mouth	near mouth
Temperature	8.5	11.0
Conductivity	1030	185
pH	8.0	8.5
D.O.		11.0
Turbidity		
Suspend. sed.		
Discharge		0.46
Salinity		
Hardness	137	171
Alkalinity	120	137

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1
Date	27 Jul 72
Location	1.5 mi above mouth
Method	surber
No. samples	6
Trichoptera	1.0(0.47)
Plecoptera	9.3(2.10)
Ephemeroptera	10.2(1.38)
Diptera:	
Simulidae	
Tipulidae	7.2(2.31)
Chironomidae	22.5(3.65)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	1.5(0.70)
Oligachaeta	200.5(41.47)
Nematoda	
Arachnida	
Triclad	2.2(1.01)
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	256.0(47.60)
$\bar{X}/m^2$	2754.6

WATER BODY

UNNAMED CANNING TRIBUTARY (CT28-1)

Approx. lat. 69°25'30" N long. 146°08'00" W

Nearest milepost 2.5 mi E MP 87.5-I Map number 5

ASSESSMENT

FISH

Sources 1,

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	19 Jun 72	19 Jul 72
Location	near mouth	near mouth
Temperature	5.0	
Conductivity	100	185
pH	7.5	8.5
D.O.	11.6	12.6
Turbidity		
Suspend. sed.		
Discharge		
Salinity		
Hardness	120	154
Alkalinity	171	171
		intermittent flow
Source		
Date		
Locotion		

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

CACHE CREEK

Approx. lat. 69°23'45" N long. 146°05'00" W

Nearest milepost 2.5 mi E MP 89-I Map number 5

ASSESSMENT

The mouth of this stream was almost dry on August 29, 1972. On June 19, 1972, ripe grayling were caught. Large stand of poplar trees located 3 miles upstream of stream mouth.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nosus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	19 Jun 72	27 Jul 72
Location	100 m above	100 m above mouth
Temperature	5.0	11.0
Conductivity		150
pH		8.5
D.O.		11.0
Turbidity		
Suspend. sed.		
Discharge		0.26
Salinity		
Hardness		137
Alkalinity		137

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	1
Date	27 Jul 72
Location	100 m above mouth
Method	surber
No. samples	6
Trichoptera	
Plecoptera	2.7(0.80)
Ephemeroptera	48.3(16.24)
Diptera:	
Simulidae	0.3(0.19)
Tipulidae	0.7(0.30)
Chironomidae	16.5(4.51)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	0.7(0.30)
Oligochaeta	11.2(1.85)
Nematoda	0.2(0.15)
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	80.6(12.26)
$\bar{X}/m^2$	866.5

WATER BODY

EAGLE CREEK

Approx. lat. 69°23'15" N long. 146°04'00" W

Nearest milepost 3 mi E MP 90-I Map number 5

ASSESSMENT

A spawning and overwintering site for Arctic char is present on Eagle Creek (Source 3).

FISH

Sources 1,3,4

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1,4,16
Date	16 May 72	4 Nov 72
Location	1 mi above mouth	1 mi above mouth
Snow depth		
Ice depth		
Water depth		
Discharge	0	
Temperature		0
D.O.		14.0
Turbidity		
Suspend. sed.		
pH		8.2
Alkalinity		
Hardness		
Conductivity		273
Comments		see water chem section.

WATER CHEMISTRY

Source	1
Date	22 Jul 73
Location	4 mi above mouth
Temperature	
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

aufeis 2.17 m thick

Source 4,16
Date 4 Nov 72
Location 1 mi above mouth

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
43.7	5.8	0.5	0.2			133.0		22.8	0.2	0.1	0.03	<.003	1.9	208.2

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematode
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING TRIBUTARY (CT35 - 1)

Approx. lat. 69°30'45" N long. 146°19'30" W

Nearest milepost 87.5-1 Map number 5

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	1 Jun 73
Location	mid-stream
Temperature	5.0
Conductivity	
pH	
D.O.	
Turbidity	2.7
Suspend. sed.	0.0
Discharge	
Salinity	
Hordness	
Alkalinity	
	water very stained
Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED CANNING TRIBUTARY (CT37 - 1)

Approx. lat. 69°29'00"N long. 146°19 30"W

Nearest milepost 88.2-I Map number

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Cotastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	1 Jun 73
Location	near mouth
Temperature	3.0
Conductivity	
pH	
D.O.	
Turbidity	3.5
Suspend. sed.	0.02
Discharge	
Salinity	
Hardness	
Alkalinity	

upper half of stream frozen

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

Source	1
Date	1 June 73
Location	lower half
Comments	no fish caught by electro-fishing

WATER BODY

UNNAMED CANNING TRIBUTARY (CT39 - 1)

Approx. lat. 69°27'00" N long. 146°14'00" W

Nearest milepost 89.2-I Map number 5

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1	1	1
Date	11 Jun 72	13 Jun 72	9 Jul 72	1 Jun 73
Location	near mouth	near mouth	mid-stream	near mouth
Temperature	8.5	9.0		0.0
Conductivity	67.5	87.5		
pH				
D.O.	11.8	10.6		
Turbidity				4.5
Suspend. sed.				0.01
Discharge	0.6			
Salinity				
Hardness	120	103		
Alkalinity	68	103		
			intermittent flow	

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING TRIBUTARY (CT40-1)

Approx. lat. 69°14'30" N long. 145°55'30" W

Nearest milepost 2 mi E MP 102-I Map number 5

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus nomaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	11 Jun 72
Location	near mouth
Temperature	6.5
Conductivity	145
pH	
D.O.	11.2
Turbidity	low
Suspend. sed.	
Discharge	
Salinity	
Hardness	171
Alkalinity	103

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING TRIBUTARY (CT41-1)

Approx. lat. 69°23'45" N long. 146°09'00" W

Nearest milepost 1 mi E MP 90-I Map number 5

ASSESSMENT

Ripe grayling were caught in the lower reaches of this tributary on June 13, 1972. A small spring, located in the headwaters (see CT41C in Canning Spring section) supports a permanent population of dwarf Arctic char. This area is sensitive throughout the year.

The pipeline route crosses the lower reaches of CT41. This section probably freezes solid during the winter months. Sensitive May-October.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	X	X	Myoxocepholus quodricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	13 Jun 72	27 Jul 72
Location	near mouth	near mouth
Temperature	7.5	7.0
Conductivity	135	185
pH		8.5
D.O.	12.0	12.0
Turbidity		
Suspend. sed.		
Discharge		1.38
Salinity		
Hardness	239	205
Alkalinity	137	154

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1
Date	27 Jul 72
Location	near mouth
Method	surber
No. samples	6
Trichoptera	
Plecoptera	1.8(0.72)
Ephemeroptera	18.2(4.33)
Diptera:	
Simulidae	2.7(0.81)
Tipulidae	1.5(0.61)
Chironamidae	20.3(6.45)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	5.2(1.36)
Oligachaeta	12.3(1.95)
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	62.0(9.43)
$\bar{X}/m^2$	675.1

WATER BODY

UNNAMED CANNING TRIBUTARY (CT42-1)

Approx. lat. 69°13'45" N long. 145°55'00" W

Nearest milepost 2.5 mi E MP 103-I Map number 5

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	8 Jul 72
Location	2 mi from mouth
Temperature	9.5
Conductivity	31
pH	7.4
D.O.	11.0
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	34
Alkalinity	34

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING TRIBUTARY (CT45-1)

Approx. lat. 69°18'00" N long. 146°02'00" W

Nearest milepost 97.2-I Map number 5

ASSESSMENT

A fall catch (September 4, 1972) of several Arctic char suggests that minor numbers of fish may overwinter in this tributary.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocepholus quadricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1	1
Date	8 Jul 72	4 Sept 72	16 Jul 73
Location	**	**	**
Temperature	13.0	5.5	
Conductivity	173		
pH	8.5		
D.O.	11.0		
Turbidity			
Suspend. sed.			
Discharge			1.31
Salinity			
Hordness	154		
Alkalinity	120		

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

** 300 m above mouth

WATER BODY

UNNAMED CANNING TRIBUTARY (CT50-1)

Approx. lat. 69°05'00" N long. 145°59'30" W

Nearest milepost 0.5 mi E MP 117-I Map number 5

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkolinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	8 Jul 72
Location	near mouth
Temperature	9.0
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED CANNING TRIBUTARY (CT57-1)

Approx. lat. 69°09'00" N long. 145°53'00" W

Nearest milepost 109-I Map number 5

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	20 Sep 72	9 Nov 73
Location	near mouth	near mouth
Snow depth		
Ice depth		
Water depth		0
Discharge		0
Temperature		
D.O.		
Turbidity		
Suspend. sed.		
pH		
Alkalinity		
Hardness		
Conductivity		
Comments	stream almost frozen	

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING TRIBUTARY (CT59-1)

Approx. lat. 69°06'45" N long. 145°58'00" W

Nearest milepost 112.2-I Map number 5

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	20 Sep 72	9 Nov 73
Location	near mouth	near mouth
Snow depth		
Ice depth		
Water depth	0	0
Discharge	0	0
Temperature		
D.O.		
Turbidity		
Suspend. sed.		
pH		
Alkalinity		
Hardness		
Conductivity		

Comments

WATER CHEMISTRY

Source	1	1
Date	17 Jun 72	15 Jul 72
Location	near mouth	near mouth
Temperature		
Conductivity		
pH		
D.O.		
Turbidity		
Suspend. sed.		
Discharge	0	0
Salinity		
Hardness		
Alkalinity		

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED CANNING TRIBUTARY (CT60-1)

Approx. lat. 68°50'45" N long. 146°02'30" W

Nearest milepost 133-I Map number 5

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	15 Jun 72	7 Jul 72
Location	near mouth	near mouth
Temperature	13.0	7.5
Conductivity		200+
pH		8.5
D.O.	10.6	9.8
Turbidity		
Suspend. sed.		
Discharge		
Salinity		
Hardness	137	205
Alkalinity	171	171

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING TRIBUTARY (CT61-1)

Approx. lat. 68°05'30" N long. 146°00'15" W

Nearest milepost 118.5-I Map number 5

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Careganus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prasopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	9 Nov 73
Location	near mouth
Snow depth	
Ice depth	
Water depth	
Discharge	0
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source	1
Date	26 Jul 72
Location	near mouth
Temperature	9.0
Conductivity	180
pH	8.5
D.O.	8.8
Turbidity	low
Suspend. sed.	
Discharge	
Salinity	
Hardness	171
Alkalinity	120

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1
Date	26 Jul 72
Location	10 m from mouth
Method	surber
No. samples	3
Trichoptera	
Plecoptera	9.3(4.25)
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	0.3(0.27)
Chironomidae	15.7(4.01)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	0.7(0.27)
Oligochaeta	42.7(17.19)
Nematoda	
Arachnida	
Triclad	2.0(0.47)
Copepod	
Miscellaneous	
TOTAL $\bar{x}/ft^2$	70.0(25.95)
$\bar{x}/m^2$	760.7

WATER BODY

UNNAMED CANNING TRIBUTARY (CT63-1)

Approx. lat. 69°02'15" N long. 146°04'00" W

Nearest milepost 121-I Map number 5

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	9 Nov 73
Location	near mouth
Snow depth	
Ice depth	
Water depth	
Discharge	0
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source	1	1
Date	8 Jul 72	15 Jul 72
Location	near mouth	near mouth
Temperature		
Conductivity		
pH		
D.O.		
Turbidity		
Suspend. sed.		
Discharge	0	0
Salinity		
Hardness		
Alkalinity		

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED CANNING TRIBUTARY (CT69-1)

Approx. lat. 68°55'00" N long. 146°05'00" W

Nearest milepost 127-I Map number 5

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	9 Nov 73
Location	near mouth
Snow depth	
Ice depth	
Water depth	
Discharge	0
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source	1
Date	17 Jun 72
Location	mouth
Temperature	
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	0
Salinity	
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopadidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED CANNING TRIBUTARY (CT71-1)

Approx. lat. 68°52'45" N long. 146°06'30" W

Nearest milepost 0.2 mi W MP 129.5 -I Map number 5

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nosus			Pungitius pungitius		
Prosopium cylindroceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	20 Sep 72	9 Nov 73
Location	near mouth	near mouth
Snow depth		
Ice depth		
Water depth		
Discharge	0	0
Temperature		
D.O.		
Turbidity		
Suspend. sed.		
pH		
Alkalinity		
Hardness		
Conductivity		

Comments

WATER CHEMISTRY

Source	1
Date	6 Jul 72
Location	near mouth
Temperature	
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	0
Salinity	
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED CANNING TRIBUTARY (CT73-1)

Approx. lat. 68°52'15" N long. 145°35'30" W

Neorest milepost 0.5 mi W MP 131-I Map number 5

ASSESSMENT

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	20 Sep 72	9 Nov 73
Location		near mouth
Snow depth		
Ice depth		
Water depth		0
Discharge		0
Temperature		
D.O.		
Turbidity		
Suspend. sed.		
pH		
Alkalinity		
Hardness		
Conductivity		
Comments	flow in upper reaches only	

WATER CHEMISTRY

Source	1	1
Date	15 Jul 72	26 Jul 72
Location	near mouth	near mouth
Temperature		13.0
Conductivity		200+
pH		8.5
D.O.		10.2
Turbidity		
Suspend. sed.		
Discharge	0	
Salinity		
Hardness		154
Alkalinity		188

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1
Date	26 Jul 72
Location	near mouth
Method	surber
No. samples	6
Trichoptera	
Plecoptera	1.17(0.60)
Ephemeroptera	1.3(0.45)
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	3.7(2.29)
Empididae	
Muscidae	0.2(0.15)
Dolichopodidae	
Liriopeidae	
Unidentified	0.2(0.15)
Oligochaeta	
Nematoda	
Arachnida	0.3(0.30)
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{x}/ft^2$	6.8(3.35)
$\bar{x}/m^2$	73.2

CANNING RIVER SPRINGS

WATER BODY CANNING RIVER SPRINGS

Approx. lat. _____ long. _____

Nearest milepost _____ Map number _____

This section lists 13 springs in the Canning drainage. Along this river, and other North Slope rivers as well, springs are generally located within the mountain valleys, along the mountain front or in the nearby foothills. Few are found on the Arctic Coastal Plain. Springs may have their source in the riverbed itself or in nearby orifices. During the summer, spring areas are often recognizable by the presence of large fields of *aufeis* or layered ice. *Aufeis* is formed during the winter as water cools and freezes downstream of the spring source. A more detailed description of springs in the study area may be found in McCart et al.(1972) and Craig and McCart (1974 a & b).

Springs are often associated with "critical areas" for fish populations. In general, these are spring-fed areas which provide a continual supply of water during the winter months, a time when other stream sections may freeze solid or go dry. Arctic char typically spawn and overwinter in the braided, gravel-bottomed stream channels in the vicinity of *aufeis* areas. Grayling and round whitefish may also overwinter in these spring-fed areas.

The localities in which fall spawning and overwintering can successfully be carried out are limited and some are spring-fed areas which lie very close to the Alternative Interior Route (Craig and McCart,1974a). Any activity which altered the water quality in such areas might have detrimental effects on the entire population.

WATER BODY

SHUBLIK SPRING

Approx. lat. 69°27'15" N long. 146°12'00" W

Nearest milepost 5 mi E MP 82.5 -I Map number 6

ASSESSMENT

Shublik Spring originates from several sources at the base of Mount Copelston in the Shublik Mountains. The spring is approximately 1 km long, 4-8 m wide and 15-45 cm deep. The stream has a steep gradient, dropping about 107 m over its length. There is a 8.8 m waterfall where the stream enters the Canning River. The falls are a barrier to migration, and dwarf resident char were the only fish taken upstream (Source 11). Sources 4 and 10 present a detailed description of this spring.

During the winter, Shublik Spring is a major source of water to a fish overwintering area located nearby in the Canning River. Sensitive year round.

FISH

Sources 1,3,4,10,11

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1,4,16	1
Date	4 Apr 72	4 Apr 72	4 Nov 72	12 Apr 73
Location	A	W. orifice	A	A
Snow depth				0
Ice depth	0		0	0
Water depth	0.3-0.5			0.07-0.32
Discharge				0.88
Temperature	4.4	4.5	3.5	3.5
D.O.	10.6	8.6	12.6	13.2
Turbidity				
Suspend. sed.				
pH			8.1	8.7
Alkalinity				55
Hardness				80
Conductivity			252	
Comments			see below*	

* Ca:36.5, Mg:6.5, Na:0.8, K:0.2, Fe:-, Mn:-, HCO_3:122.0, CO_3:0.0, SO_4:20.4, Cl:0.3, F:0.25, NO_3:0.03, PO_4:0.004, SiO_3:4.6, Sum: 191.7

WATER CHEMISTRY

Source	10	10	1	1
Date	3 Jun 66	3 Jun 66	11 Jun 72	9 Jul 72
Location	W orifice	E orifice	B	B
Temperature	5.5	4.0	6.5	8.0
Conductivity	232(18°C)	194(18°C)	157.5	165
pH	8.1-8.2	8.6	8.5	8.3
D.O.			12.8	11.8
Turbidity			low	low
Suspend. sed.				
Discharge				
Salinity				
Hardness			154	171
Alkalinity			137	137
	continued below	continued below		

(continued)

Source 10
Date 14 Jun 66
Location EF: east fork; WF: west fork

	Ca	Mg	Na	K	Fe	Mn	HCO_3	Zn	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
EF	30.5	9.9	0.83	0.22	<.05	<.02	<.05				TDS:139					
WF	33.0	12.1	1.45	0.26	<.05	<.02	<.05				TDS: 153					

BENTHIC INVERTEBRATES

Source	1	1	1	1	1
Date	5 Apr 72	11 Jun 72	9 Jul 72	22 Aug 72	14 Sep 72
Location	A	A	A	A	A
Method	surber	surber	surber	surber	surber
No. samples	4	6	6	3	3
Trichoptera	2.9(0.68)	6.8(5.88)	present	82.0(25.96)	336.7(113.17)
Plecoptera	72.0(20.02)	21.8(3.10)	21.7(5.35)	57.3(20.58)	183.3(32.09)
Ephemeroptera	14.8(8.86)	85.2(10.29)	92.8(16.32)	23.7(10.72)	
Diptera:					
Simulidae		28.0(14.43)	3.0(0.67)	5.3(2.13)	
Tipulidae	4.5(1.60)	1.8(0.72)	1.5(0.51)	0.7(0.54)	10.0(4.71)
Chironomidae	512.8(63.43)	556.5(224.62)	221.6(49.74)	611.7(247.73)	460.0(21.60)
Empididae				0.3(0.27)	23.3(2.72)
Muscidae				5.0(1.70)	
Dolichopodidae				0.3(0.27)	
Liriopeidae				8.0(6.53)	6.7(2.72)
Unidentified		3.7(1.93)	8.7(1.56)	3.3(2.72)	
Oligochaeta	17.3(5.60)	124.5(48.84)	221.0(49.73)	149.7(18.15)	473.3(66.05)
Nematoda	0.25(0.22)		0.2(0.15)	0.3(0.27)	3.3(2.72)
Arachnida	5.0(4.33)	14.7(9.69)	1.5(0.74)	20.0(16.33)	56.7(21.25)
Triclad	5.8(2.19)	19.3(7.13)	24.5(8.53)	10.3(3.07)	13.3(7.20)
Copepod					
Miscellaneous	2.0(1.73)*				
TOTAL $\bar{x}/ft^2$	637.5(321.25)	862.3(262.84)	528.4(95.60)	1032.7(359.95)	1566.7(175.53)
$\bar{x}/m^2$	685.31	9269.7	6504.4	11111.9	16857.7

* amphipods
snails

SHUBLIK SPRING (continued)

WATER CHEMISTRY

Source	1	1	1
Date	14 Jul 72	23 Aug 72	14 Sept 72
Location	B	A	A
Temperature	4.0	6.0	4.0
Conductivity	145		
pH	8.5	8.5	8.5
D.O.	10.8	10.8	11.8
Turbidity	low	low	low
Suspend. sed.			
Discharge		1.51	
Salinity			
Hardness	154	80	90
Alkalinity	154	60	50

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclod	
Copepod	
Miscelloneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED CANNING RIVER SPRING (CT26 Spring - 1)

Approx. lat. 69°28'30" N long. 146°02'45"W

Nearest milepost _____ Map number 6

ASSESSMENT

This spring contains an isolated population of dwarf Arctic char. Poplar trees grow near the spring orifices.

FISH

Sources 1,4

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	19 Jun 72
Location	100 m below orifice
Temperature	6.0
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING SPRING (CT41C-1)

Approx. lat. 69°22'45" N long. 146°07'30" W

Nearest milepost 92.5-I Map number 6

ASSESSMENT

CT-41C is a perennial spring originating in the northern foothills of the Franklin Mountains. It flows into the Canning River 13 km south of Shublik Springs. The stream originates in a number of spring orifices at the base of a talus slope. The stream gradient is low and the stream falls only 61 m in the 7.3 km distance from its origin to its mouth. In the area immediately downstream of its source, the stream consists of gravel riffles alternating with mud-bottomed pools. About 1.3 km downstream of its source, the stream enters an area of *aufeis*. A dwarf population of Arctic char inhabit this upper section (Source 11). This section is sensitive year round.

Downstream of the *aufeis*, the character of the stream changes. It flows through a narrow, winding, mud-bottomed channel typical of the tundra drainages in the area. Grayling occur here. The Interior Alternative crosses the stream in this lower section. There is probably no winter flow at the pipeline crossing. Sensitive May to October in this section. (See CT41 in Canning Tributary section).

FISH

Sources 1,3,4,11

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosapium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	4 Nov 73
Location	
Snow depth	
Ice depth	
Water depth	
Discharge	
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments water open for 1 km upstream of aufeis, frozen downstream of aufeis.

WATER CHEMISTRY

Source	1	1	1	1
Date	19 Jul 72	8 Aug 72	1 Sept 72	14 Sep 72
Location	**	**	**	**
Temperature	8.0	9.0	3.0	3.0
Conductivity		155		
pH		8.0	8.0	9.0
D.O.		13.0	12.0	13.2
Turbidity		low		
Suspend. sed.				
Discharge		0.37		0.11
Salinity				
Hardness		70	65	100
Alkalinity		49	100	70

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ	

BENTHIC INVERTEBRATES

Source	1	1	1
Date	8 Aug 72	13 Sep 72	14 Sep 72
Location	**	**	**
Method	surber	surber	surber
No. samples	2	6	3
Trichoptera			1.7(0.72)
Plecoptera	27.0(14.85)	5.3(1.61)	5.7(1.19)
Ephemeroptera	26.0(10.61)	7.2(2.96)	0.7(0.27)
Diptera:			
Simulidae			
Tipulidae		3.8(2.97)	1.3(0.72)
Chironomidae	366.0(28.29)	452.7(34.37)	269.3(22.14)
Empididae	4.5(1.77)	0.2(0.15)	
Muscidae		0.7(0.45)	
Dolichopodidae			
Liriopeidae			
Unidentified	16.5(1.77)	4.7(2.31)	0.3(0.27)
Oligochaeta	90.5(54.81)	53.8(7.85)	30.3(5.09)
Nematoda	11.5(6.72)	3.3(2.21)	0.7(0.27)
Arachnida	1.5(1.06)	3.8(1.36)	5.0(4.08)
Triclad			
Copepod		3.3(3.0)	
Miscellaneous		26.0(17.36)*	1.3(1.09)*
TOTAL $\bar{X}/ft^2$	543.5(47.74)	564.8(159.76)	315.3(29.14)
$\bar{X}/m^2$	5848.1	6077.3	3342.6
		*conco stracods cladocerans	*conco stracods amphipods

** 300 m below orifice

WATER BODY

UNNAMED CANNING SPRING (CS1-1)

Approx. lat. 69°52'15" N long. 146°04'30" W

Nearest milepost 129-I Map number 6

ASSESSMENT

CS-1 is a small perennial spring in the headwaters of the Canning River. It is approximately 0.5 m in length and has a substrate of mud in the upper reaches and gravel in the lower reaches.

The spring is a rearing area for Arctic char and grayling. The lower portion of the spring and the Canning River in this region are major spawning grounds for Arctic char. These areas are sensitive the year round. Effective erosion control measures are essential. Water removal and angling should be closely regulated. The spring source is on the opposite side (east) of the valley from the proposed pipeline route.

FISH

Sources 1,3,4

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1,4,16	1	1,16	1
Date	3 Nov 72	7 Apr 73	4 Nov 73	9 Nov 73
Location	near mouth	near mouth	near mouth	near mouth
Snow depth		0	0	0
Ice depth		0	0	0
Water depth		0.1-0.28	0.01-0.39	
Discharge		0.79	1.4	
Temperature	0.5	1.0	1.5	1.5
D.O.	12.8	12.0	11.4	11.4
Turbidity			0	0
Suspend. sed.			0	0
pH	8.0	7.5	8.0	8.0
Alkalinity		65		
Hardness		95		
Conductivity				
Comments	continued in water chemistry section.		continued in water chemistry section.	

WATER CHEMISTRY

Source	1	1	1	1
Date	13 Jun 72	16 Jun 72	26 Jun 72	7 Jul 72
Location	near mouth	near mouth	orifice	near mouth
Temperature	9.0	9.0	7.5	9.0
Conductivity	195		182.5	200
pH		8.5	8.0	8.0
D.O.	10.4	10.0	9.8	13.0
Turbidity				
Suspend. sed.				
Discharge				0.20
Salinity				
Hardness	222	205	171	188
Alkalinity	188	154	154	154

(continued)

Source	4,16
Date	3 Nov 72
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
36.3	9.1	0.7	0.2	-		130.5	0.0	22.6	0.3	0.59	0.07	<.003	4.4	204.9

BENTHIC INVERTEBRATES

Source	1	1	1
Date	16 Jun 72	26 Jul 72	13 Sep 72
Location	near mouth	orifice	near mouth
Method	surber	surber	surber
No. samples	3	3	3
Trichoptera	15.3(7.06)	83.7(10.71)	30.3(11.71)
Plecoptera	70.0(34.23)	435.7(133.96)	200.3(66.76)
Ephemeroptera	11.0(5.74)	6.3(0.72)	
Diptera:			
Simulidae			
Tipulidae	6.3(5.17)	0.7(0.27)	2.7(1.44)
Chironomidae	2048.7(708.46)	3723.0(815.64)	4220.0(1368.53)
Empididae		9.3(4.48)	3.0(1.70)
Muscidae		0.3(0.27)	1.0(0.47)
Dolichopodidae			
Liriopeidae		0.3(0.27)	5.7(4.63)
Unidentified	83.0(33.81)	425.7(104.66)	5.0(1.70)
Ceratopogonidae		106.7(87.09)	
Oligochaeta		0.7(0.54)	
Coleoptera		0.3(0.27)	
Arachnida	39.0(25.22)	226.7(111.98)	25.7(18.19)
Triclad			
Copepod		26.7(21.77)	
Miscellaneous			
TOTAL $\bar{X}/ft^2$	227.3(788.36)	4945.0(984.14)	4507.3(1395.55)
$\bar{X}/m^2$	24437.9	52911.0	48453.5

WATER CHEMISTRY

Source	1	1	1	1
Date	15 Jul 72	10 Aug 72	1 Sept 72	13 Sept 73
Location	near mouth	near mouth	mouth	mouth
Temperature	7.0	7.5	6.0	3.0
Conductivity	185	200+		
pH	8.0	8.0	8.0	8.0
D.O.	9.2	9.0	10.0	9.2
Turbidity				
Suspend. sed.				
Discharge		0.14	0.18	
Salinity				
Hardness	205	105	90	
Alkalinity	171	60	137	

Source 1,16
Date 4 Nov 73
Location orifice

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
45.0	8.2	0.8	0.3	-	-	144.0	0.0	25.0	0.3	0.52	0.07	-	4.3	228.4

Conductivity @ 25°C = 277

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING SPRING (CS2-1)

Approx. lat. 68°54'15" N long. 146°06'30" W

Nearest milepost 127.5-I Map number 6

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymollus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	X	X	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindroceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkolinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	16 Jun 72	7 Jul 72
Location	near mouth	near mouth
Temperature	5.5	6.0
Conductivity		143
pH	8.5	8.0
D.O.	11.0	11.4
Turbidity		
Suspend. sed.		
Discharge		0.13
Salinity		
Hardness	188	154
Alkalinity	154	137

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED CANNING SPRING (CS3-1)

Approx. lat. 68°47'15" N lang. 146°05'30" W

Nearest milepost 9.5 mi S MP 130-I Map number 6

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		X	Myoxocepholus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	15 Jun 72	6 Jul 72
Location	near mouth	near orifice
Temperature	4.5	3.5
Conductivity		135
pH		8.0
D.O.	10.8	11.2
Turbidity		
Suspend. sed.		
Discharge		0.21
Salinity		
Hordness	171	154
Alkalinity	188	137

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED CANNING SPRING (CS4-1)

Approx. lat. 68°44'00" N long. 146°07'00" W

Nearest milepost 10.5 mi S MP 130-I Map number 6

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkolinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	6 Jul 72
Location	near mouth
Temperature	7.0
Conductivity	143
pH	8.5
D.O.	12.0
Turbidity	
Suspend. sed.	
Discharge	0.88
Salinity	
Hardness	137
Alkalinity	137

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	∑

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING SPRING (CS5-1)

Approx. lat. 68°53'30" N long. 146°04'30" W

Nearest milepost 129.5-I Map number 6

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	X	X	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources

Date

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source	1	1	1
Date	15 Jun 72	17 Jun 72	7 Jul 72
Location	near mouth	orifice	near mouth
Temperature	12.0	7.5	14.0
Conductivity			200+
pH	8.5	8.0	8.0
D.O.	9.0	11.2	10.2
Turbidity	clear	clear	
Suspend. sed.			
Discharge			0.07
Salinity			
Hardness	154	154	188
Alkalinity	137	171	154

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ	

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED CANNING SPRING (CS6-1)

Approx. lat. 69°08'30" N long. 145°55'00" W

Nearest milepost 118.0-I Map number 6

ASSESSMENT

This spring has numerous orifices. It has a braided channel with a substrate of silt, sand and some organic matter.

Anadromous char, char fry and grayling have been caught. The pipeline route passes close to this spring and effective erosion control measures are necessary.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1	1
Date	17 Jun 72	8 Jul 72	26 Jul 72
Location	near mouth	near mouth	near mouth
Temperature	5.5	5.0	4.0
Conductivity		143	150
pH	8.5	8.0	7.5
D.O.	12.6	10.0	10.0
Turbidity	clear	clear	clear
Suspend. sed.			
Discharge		0.22	
Salinity			
Hardness	171	171	171
Alkalinity	154	120	154

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤	

BENTHIC INVERTEBRATES

Source	1
Date	26 Jul 72
Location	near mouth
Method	surber
No. samples	6
Trichoptera	cases only
Plecoptera	17.8(3.19)
Ephemeroptera	15.8(2.11)
Diptera:	
Simulidae	
Tipulidae	1.3(0.38)
Chironomidae	67.3(11.84)
Empididae	0.2(0.15)
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	26.7(6.84)
Oligochaeta	286.5(56.97)
Nematoda	
Arachnida	
Triclad	1.8(0.72)
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	418.0(71.32)
$\bar{X}/m^2$	4497.7

WATER BODY

UNNAMED CANNING SPRING (CS7-1)

Approx. lat. 69°03'00" N long. 146°03'30" W

Nearest milepost 108.5-I Map number 6

ASSESSMENT

This spring closely resembles CS-6 except that it is more extensively braided. Willows in excess of 10 feet tall are common. Substrates consist of silt and sand. Most of this spring is innundated during flooding of the Canning River. Char have been caught and grayling were observed.

The spring is crossed by the pipeline. Effective erosion control measures are necessary because the spring is a source of winter flow to the Canning River. Sensitive the year round.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	8 Jul 72
Location	near orifice
Temperature	2.0
Conductivity	
pH	8.0
D.O.	14.0
Turbidity	
Suspend. sed.	
Discharge	0.18
Salinity	
Hardness	205
Alkalinity	137

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING SPRING (CS8-1)

Approx. lat. 69°21'15" N long. 146°01'00" W

Nearest milepost 2 mi S MP 93.5-I Map number 6

ASSESSMENT

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	X		Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	9 Jul 72	27 Jul 72
Location	near mouth	near mouth
Temperature	4.0	5.0
Conductivity	135	140
pH	8.0	8.0
D.O.	13.0	13.0
Turbidity		
Suspend. sed.		
Discharge		1.02
Salinity		
Hardness	154	154
Alkalinity	137	154

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	1
Date	27 Jul 72
Location	near mouth
Method	surber
No. samples	3
Trichoptera	
Plecoptera	0.3(0.27)
Ephemeroptera	
Diptera:	
Simulidae	5.7(4.23)
Tipulidae	2.0(1.63)
Chironomidae	227.7(37.81)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	17.0(6.18)
Oligochaeta	328.7(85.13)
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{x}/ft^2$	579.3(120.75)
$\bar{x}/m^2$	6233.3

WATER BODY

UNNAMED CANNING SPRING (CS9-1)

Approx. lat. 69°21'30" N long. 146°01'45' W

Nearest milepost 2 mi E MP 93.0-I Map number 6

ASSESSMENT

Juvenile Arctic char were observed in CS-9 on July 9, 1972.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkolinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	9 Jul 72
Location	near mouth
Temperature	8.0
Conductivity	180
pH	8.5
D.O.	11.8
Turbidity	low
Suspend. sed.	
Discharge	
Salinity	
Hardness	171
Alkalinity	171

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CANNING SPRING (CS10-1)

Approx. lat. 69°05'45" N long. 145°59'30" W

Nearest milepost 114.0-I Map number 6

ASSESSMENT

CS-10 is a perennial spring originating on the side of the Marsh Fork Valley approximately 25 m above the Canning River streambed. Poplar trees and junipers grow around the spring orifices. The spring averages 1 km in length, but the length varies as the result of flooding and channel shifting in the Marsh Fork. More detailed information is presented in Source #4.

The spring is a rearing area for Arctic char and grayling. The lower reaches of the spring and the Canning River in this region are important spawning and overwintering areas for Arctic char.

The Interior Alternative Route passes close by this region. Effective erosion control measures are essential. Water removal and angling should be regulated. Sensitive the year round.

FISH

Sources 1,3,4

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Caregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		
Caregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1,4,16	1	1	1	1
Date	5 Nov 72	7 Apr 73	7 Apr 73	4 Nov 73	9 Nov 73
Location	near mouth	orifice	**	**	**
Snow depth				0.03	0
Ice depth	0	0	0	0	0
Water depth		0.11-0.33(11)	0.1-0.4(18)		0.11-0.53(14)
Discharge		0.35	1.05		0.93
Temperature	2.0	4.5	4.5	1.0	0.0
D.O.	11.8	12.4	13.2	12.8	12.6
Turbidity				0.0	0
Suspend. sed.				0.0	0
pH	8.0	8.5	8.7	7.5	7.75
Alkalinity		45	50		
Hardness		70	75		
Conductivity	247				

Comments continued in water chemistry section

continued in water chemistry section

** 150 m below orifice

WATER CHEMISTRY

Source	1	1	1	1
Date	22 May 73	24 May 73	5 Jun 73	5 Jul 73
Location	**	**	**	**
Temperature		6.0	5.5	6.0
Conductivity				
pH			8.7	8.5
D.O.		12.2	14.4	11.2
Turbidity			2.0	0.0
Suspend. sed.			0.0	0.0
Discharge	0.51	2.56	0.72	0.74
Salinity				
Hardness		110	110	110
Alkalinity		105	100	70
		there is overflow from Canning River		

Source	4,16
Date	5 Nov 72
Location	mouth

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
37.0	8.9	0.4	0.2	-	-	119.1	0.0	24.7	0.2	0.28	0.08	<.003	4.1	194.9

BENTHIC INVERTEBRATES

Source	1	1	1	1
Date	24 May 73	3 Jun 73	13 Jul 73	23 Jul 73
Location	**	**	**	**
Method	surber	surber	surber	surber
No. samples	6	6	6	6
Trichoptera				
Plecoptera	2.5(0.57)	2.5(0.94)	17.5(8.11)	0.8(0.37)
Ephemeroptera	21.0(4.32)	24.8(9.15)	30.7(8.71)	38.8(12.70)
Diptera:				
Simulidae				9.3(7.45)
Tipulidae	0.3(0.19)	0.7(0.31)		0.5(0.20)
Chironomidae	82.7(13.68)	75.2(22.89)	510.2(176.29)	216.2(44.14)
Empididae			0.2(0.15)	
Muscidae				
Dolichopodidae				
Liriopeidae	0.3(0.19)			
Unidentified	9.0(1.43)	9.7(3.64)	27.7(15.80)	13.5(8.25)
Ceratopogonidae	2.8(2.59)			
Oligochaeta		0.2(0.15)	31.0(16.86)	83.0(33.09)
Nematoda				
Arachnida	0.2(0.15)			
Triclad				
Copepod				
Miscellaneous			0.2(0.15)*	
TOTAL $\bar{x}/ft^2$	120.7(17.49)	119.0(30.99)	617.3(214.39)	363.0(93.57)
$\bar{x}/m^2$	1297.5	1279.3	6642.1	3905.9

*snail

** 150 m below orifice

WATER CHEMISTRY

Source	1	1	1	1	1
Date	23 Jul 73	15 Aug 73	24 Aug 73	6 Sep 73	4 Oct 73
Location	**	**	**	**	**
Temperature	4.0	4.5	7.0	5.0	4.0
Conductivity					
pH		8.7	7.8	7.8	8.5
D.O.	11.6	11.0	11.4	10.6	11.4
Turbidity	0.0	3.0	3.0	0.0	
Suspend. sed.	0.0	0.0	0.0	0.0	
Discharge	0.85	0.89	1.17		1.21
Salinity					
Hardness	115	115	120	135	120
Alkalinity		70	70	60	80

Source 1,16
Date 4 Nov 73
Location 770 m below orifice

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	∑
35.0	7.7	0.8	0.2	-	-	108.6	0.0	30.0	0.3	0.32	0.10	-	4.5	187.5

Conductivity @ 25°C= 230

BENTHIC INVERTEBRATES

Source	1	1
Date	13 Aug 73	13 Sep 73
Location	**	**
Method	surber	surber
No. samples	4	6
Trichoptera		0.2(0.15)
Plecoptera	9.0(5.72)	24.2(14.15)
Ephemeroptera	1.5(1.03)	4.7(4.26)
Diptera:		
Simulidae	0.5(0.25)	
Tipulidae	0.3(0.22)	0.7(0.45)
Chironomidae	471.0(179.74)	147.0(58.69)
Empididae		
Muscidae	0.3(0.22)	
Dolichopodidae		
Liriopeidae		
Unidentified	54.0(12.10)	0.2(0.15)
Oligochaeta	44.3(15.88)	14.8(8.51)
Nematoda		
Arachnida	7.0(6.06)	
Triclad	0.5(0.43)	
Copepod		
Miscellaneous		
TOTAL $\bar{X}/ft^2$	588.3(213.69)	191.0(74.10)
$\bar{X}/m^2$	6324.2	2093.3

** 150 m below orifice

CANNING RIVER LAKES

WATER BODY CANNING RIVER LAKES

Approx. lat. _____ long. _____

Nearest milepost _____ Map number _____

This section lists 13 lakes in the mid and upper reaches of the Canning River drainage. Additional lakes in or near the Canning delta have been included in the section "North Slope Lakes".

WATER BODY

UNNAMED LAKE - CANNING RIVER (#22 - 1)

Approx. lat. 69°53'30" N long. 146°20'00" W

Neorest milepost 1 mi S MP 193 - PB Map number 6

ASSESSMENT

Lake #22 is a typical coastal plain lake with slumping banks. The waters are stained and contain little aquatic vegetation. Substrates consist of silt and organic matter. The lake is utilized by grayling and ninespine sticklebacks during the ice free months and possibly during the winter months.

Sensitive year round.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	18 Apr 73
Location	
Snow depth	0.0
Ice depth	2.3
Water depth	0(1)
Discharge	
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	
Comments	

WATER CHEMISTRY

Source	1	1
Date	23 Aug 72	31 Aug 73
Location		
Temperature	14	10.5
Conductivity		
pH	7.5	7.9
D.O.	11	10.2
Turbidity		
Suspend. sed.		
Discharge		
Salinity		
Hardness	55	115
Alkalinity	154	115

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED LAKE - CANNING RIVER (#23 - 1)

Approx. lat. 69°53'15" N long. 146°17'30" W

Nearest milepost 1 mi S MP 64 - PB Map number 6

ASSESSMENT

Lake #23 is morphologically similar to Lake #22. Ninespine sticklebacks were collected, but no fish were caught by gillnet.

The lake is on the pipeline route.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	31 Aug 73
Location	
Temperature	9.5
Conductivity	
pH	7.6
D.O.	10.0
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	55
Alkalinity	60

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING RIVER (CT1 Lake - 1)

Approx. lat. 69°41'45" N long. 146°21' W

Nearest milepost 11 mi S MP 59- PB Map number 6

ASSESSMENT

This is a small lake with maximum recorded depths of 4.5 meters. The waters are slightly stained and littoral vegetation is abundant. The lake supports a permanent but small population of lake trout and ninespine sticklebacks.

Angling and water removal should be carefully regulated. Sensitive year round.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush		x	Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		x(in lake trout stomach)
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	9 Sep 72
Location	
Snow depth	
Ice depth	0
Water depth	
Discharge	
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source	1	1	1
Date	10 Jul 72	12 Jul 72	23 Aug 72
Location			
Temperature	15	14	12
Conductivity	125		
pH	8.0		
D.O.	10.0		
Turbidity			
Suspend. sed.			
Discharge			
Solinity			
Hardness	103		
Alkalinity	103		

Source
Date
Location

Ca	Mg	No	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING RIVER (CT7 Lake - 1)

Approx. lat. 69°44' N long. 146°17'30" W

Nearest milepost 12 mi S MP 63.5-PB Map number 6

ASSESSMENT

CT7 Lake is morphologically similar to CT9 Lake. Emergent vegetation is abundant around most of the shoreline. The lake supports a resident population of lake trout and ninespine sticklebacks.

Angling and water removal should be regulated. Sensitive year round.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush		x	Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeoformis			Catastomus catastomus		
Coregonus nosus			Pungitius pungitius		x
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	30 Sept 73
Location	
Snow depth	
Ice depth	0
Water depth	
Discharge	
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source	1
Date	10 Jul 72
Location	
Temperature	14
Conductivity	133
pH	8.2
D.O.	11
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	120
Alkalinity	104

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	∑

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING RIVER (CT9 Lake - 1)

Approx. lat. 69°41'45" N long. 146°20' W

Nearest milepost 15 mi S MP 63- PB Map number 6

ASSESSMENT

CT9 Lake is a clear water lake with sand and silt substrate. Emergent vegetation is restricted to the west end. The lake supports a large population of grayling.

Water removal and angling should be regulated. Sensitive year round.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources 1

Date 30 Sept 73

Location

Snow depth

Ice depth 0

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING RIVER (CT28 Lake - 1)

Approx. lat. 60°26'30" N long. 146°00'30" W

Nearest milepost 5.5 mi NE MP 90-I Map number 6

ASSESSMENT

CT28 Lake is a small, deep lake with steeply sloping sides and little aquatic vegetation. The inlet stream is a spring-fed tributary one half mile in length. Lake and stream banks are stable and covered with willow and penny birch. The lake supports a resident population of Arctic char.

Sensitive year round.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus	x	x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	12 Apr 73
Location	center
Snow depth	0.5
Ice depth	0.8
Water depth	11.8
Discharge	
Temperature	0
D.O.	10.8
Turbidity	
Suspend. sed.	
pH	7.4
Alkalinity	50
Hardness	45
Conductivity	

Comments

WATER CHEMISTRY

Source	1	1	1	1
Date	14 Jul 72	9 Aug 72	28 Aug 72	15 Sept 72
Location				
Temperature	20	12.5	12.0	5.0
Conductivity	90	90		
pH	7.5	7.5	7.8	7.5
D.O.	9.2	9.0	10.0	11.2
Turbidity		low		
Suspend. sed.				
Discharge				
Salinity				
Hardness	68	35	20	60
Alkalinity	68	20	85	35
				ice forming around edge

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING RIVER (CT41 a,b Lake - 1)

Approx. lat. 69°22'30" N long. 145°42'00" W

Nearest milepost 92-I Map number 6

ASSESSMENT

CT41 a,b Lake is a small lake located near milepost 92. It supports a large population of grayling.

Water removal and angling should be restricted. Sensitive year round.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	10 Apr 73	19 Apr 73
Location		
Snow depth	0.05	0
Ice depth	1.8+	1.6
Water depth		
Discharge		
Temperature		0.0
D.O.		6.5
Turbidity		
Suspend. sed.		
pH		7.0
Alkalinity		60
Hardness		80
Conductivity		80

Comments

WATER CHEMISTRY

Source	1	1
Date	14 Jul 72	22 Jul 73
Location		
Temperature	19	10
Conductivity	85	
pH	8.0	
D.O.	9.8	9.0
Turbidity		
Suspend. sed.		
Discharge		
Salinity		
Hardness	52	45
Alkolinity	52	70

Source
Date
Location

Ca	Mg	No	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING RIVER (EAGLE CREEK LAKE - 1)

Approx. lat. 69°23'45" N long. 145°53'00" W

Nearest milepost 6 mi NE MP 92.5-I Map number 6

ASSESSMENT

Eagle Creek Lake is a clear water lake with silt and sand substrate. Emergent vegetation is abundant along the shoreline. The lake supports a large population of round whitefish. Two juvenile char were also caught.

Sensitive year round.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	10 Apr 73
Location	
Snow depth	1.0
Ice depth	1.2
Water depth	13.2-14.1 (3)
Discharge	
Temperature	1.0
D.O.	4.4
Turbidity	
Suspend. sed.	
pH	7.6
Alkalinity	65
Hardness	90
Conductivity	

Comments

WATER CHEMISTRY

Source	1	1
Date	22 Jul 73	25 Aug 73
Location		
Temperature	8.5	9.5
Conductivity		
pH		
D.O.	9.6	
Turbidity		
Suspend. sed.		
Discharge		
Salinity		
Hardness		
Alkalinity	140	

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED LAKE - CANNING RIVER (LAKE A - 1)

Approx. lat. 69°17'00" N long. 145°59'45" W

Nearest milepost 1 mi E MP 98.5-I Map number 6

ASSESSMENT

Lake A is a small, clear water lake adjacent to the Canning River. It does not appear to be an important fish lake. A single juvenile Arctic char was caught in 2 gillnet sets.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources 1

Date 20 Sep 72

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments 100% ice cover

WATER CHEMISTRY

Source	1
Date	6 Sep 72
Location	
Temperature	
Conductivity	
pH	8.7
D.O.	11.8
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	50
Alkalinity	25

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING RIVER (LAKE B - 1)

Approx. lat. 69°16'45" N long. 145°59'00" W

Nearest milepost 1 mi E MP 99-I Map number 6

ASSESSMENT

Lake B is a small, clear water lake supporting limited numbers of grayling and Arctic char. Emergent vegetation is abundant along the shorelines near the outlet and on some submerged gravel bars.

Sensitive year round.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources 1

Date 20 Sept 73

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments 100% ice cover

WATER CHEMISTRY

Source	1
Date	6 Sept 72
Location	
Temperature	7.0
Conductivity	
pH	8.5
D.O.	12.2
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	100
Alkalinity	55

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING RIVER (LAKE C - 1)

Approx. lat. 69°15'45" N long. 58°00' W

Nearest milepost _____ Map number 6

ASSESSMENT

This is a small, clear water lake with steeply sloping sides. Emergent vegetation is absent, except at the outlet. The lake contains a large and varied fish fauna. Resident populations of grayling, Arctic char, burbot and round whitefish are present.

Sensitive year round.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		x
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1
Date	20 Sep 72	10 Apr 73	19 Apr 73
Location			
Snow depth		0.05	0.05
Ice depth		1.8+	1.8
Water depth			6.0
Discharge			
Temperature			0.0
D.O.			12.0
Turbidity			
Suspend. sed.			
pH			7.8
Alkalinity			115
Hardness			105
Conductivity			200+
Comments	100% ice cover		

WATER CHEMISTRY

Source	1
Date	6 Sep 72
Location	
Temperature	9.5
Conductivity	
pH	7.5
D.O.	12.4
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	85
Alkalinity	

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING RIVER (CANNING FORK LAKE - 1)

Approx. lat. 69°09'45" N long. 145°42'30" W

Nearest milepost _____ Map number 6

ASSESSMENT

Canning Fork Lake, a typical clear water mountain lake, is located along the main fork of the Canning River. The substrate consists of rocks, gravel, sand and some silt. The lake supports a resident population of Arctic char.

Sensitive year round.

FISH

Sources 1

	fry	other		fry	other
Thymallus orcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hordness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED LAKE - CANNING RIVER (BIG LAKE - 1)

Approx. lat. 68°48'45" N long. 145°50'30" W

Nearest milepost MP 138-I Map number 6

ASSESSMENT

Big Lake, one of the larger lakes in the study area, is located in the headwaters of the Canning River. It is a clear water lake with measured depths of 20-41 meters. The substrate consists of silt, sand and organic matter with some littoral vegetation along the shoreline. The lake supports a large population of Arctic char. Juvenile char also forage in the inlet stream.

Effective erosion control measures are necessary to avoid siltation of the lake or inlet. High risk area.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1
Date	15 Jun 72	5 Nov 72	8 Apr 73	19 Apr 73
Location				
Snow depth			0.5	
Ice depth			1.2	1.0
Water depth			20-41 (3)	16
Discharge				
Temperature			0.0	0.0
D.O.			10.8	
Turbidity				
Suspend. sed.				
pH			8.2	
Alkalinity			70	
Hardness			105	
Conductivity				120
Comments	50% ice cover	100% ice cover		

WATER CHEMISTRY

Source	1	1	1	1	1
Date	15 Jun 72	6 Jul 72	15 Jul 72	26 Jul 73	26 Jul 73
Location			inlet	inlet	lake shallows
Temperature	10.5	10.5	18	9.5	14.0
Conductivity		200	200+		
pH		8.0	8.0		
D.O.	10.6	9.8	10.4		
Turbidity					
Suspend. sed.					
Discharge					
Salinity					
Hardness	154	205	120		
Alkalinity	222	137	137		

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ	

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL	$\bar{X}/ft^2$
	$\bar{X}/m^2$

SOUTH SLOPE STREAMS

WATER BODY SOUTH SLOPE STREAMS

Approx. lat. _____ long. _____

Nearest milepost _____ Map number _____

South of the Continental Divide the Alternative Interior Route crosses several tributaries of the Yukon and Porcupine River Drainages. These are described below.

1) Large Tributaries (Plate 7). Three large Yukon and Porcupine tributaries are crossed: the Chandalar, Sheenjek and Coleen Rivers. The headwaters of these streams, which are traversed by the pipeline route, support large populations of grayling and round whitefish. Other species such as pike, broad and humpback whitefish and longnose suckers are common further downstream. The Alaska Department of Fish and Game also reports that salmon are present in the Chandalar and Sheenjek Rivers, but these are found in the lower reaches of the rivers, well downstream of the proposed pipeline route.

During the winter months, when pipeline construction is scheduled, there is flowing water at or near the pipeline crossing on all three of these tributaries.

2) Small Streams (Plate 8). For much of its length, the pipeline route in this region parallels small streams. These include Cane, Old Woman, Monument, Pass and Strangle Woman creeks. The fish fauna in all these streams is very similar. Grayling are the predominant fish and round whitefish and slimy sculpin are less common. In general, these streams freeze solid during the winter months. It is likely that their fish population overwinter downstream in the larger tributaries of the Yukon and Porcupine Rivers.

WATER BODY

CHANDALAR RIVER

Approx. lat. 68°33'00" N long. 144°05'00" W

Nearest milepost 169.5 Map number 7, Plate 7

ASSESSMENT

In the vicinity of the pipeline crossing the Chandalar River is a braided mountain stream. Adult and juvenile grayling and round whitefish inhabit these headwaters during the summer and appear to overwinter in nearby spring-fed sections of stream.

This region is apparently not an important spawning area since few fry of any species have been found. Fry are abundant, however, further downstream where the character of the Chandalar abruptly changes to a single meandering channel which is deeper and more turbid. Ripe grayling and grayling fry were common in the Chandalar downstream of Below Tree Lake. Other species such as longnose suckers and whitefish are also common. Salmon are netted from the Chandalar River by villagers at Venetie, but the fish apparently do not migrate upstream as far as Arctic Village. Interviews with residents of this village showed that grayling and whitefish species constitute most of their year-round catch. These villagers fish primarily in the lakes and streams near Arctic Village although they travelled as far east as Old John Lake and as far north on the Chandalar River as Vettetrin Lake. The Chandalar River pipeline crossing is 11 miles upstream of Vettetrin L.

(continued p. 295)

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		x
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus	x	x
Coregonus nasus	?	x	Pungitius pungitius		
Prosopium cylindraceum	x	x	Cottus cognatus		x
Coregonus autumnalis					
Coregonus sardinella					

(additional comments on bottom of next page)

WINTER CONDITIONS

Sources	1	1	1	1	1	1
Date	4 Apr 72	26 Apr 72	26 Sep 72	20 Apr 73	24 May 73	9 Nov 73
Location	E	E	A-G	E	G	E
Snow depth				1.3-2.6		
Ice depth		0.8-1.3 (5)		1.3-3.0		
Water depth		1.0-1.5		0		
Discharge				0		
Temperature	2.0	1.5			2.0	0
D.O.	9.6	7.0			12.0	
Turbidity					30	1.5
Suspend. sed.					0.31	0
pH		8.2				
Alkalinity					70	
Hardness					100	
Conductivity						
Comments	small open water channel	grayling caught through ice	river 70% frozen		small open water channel	90% frozen

WATER CHEMISTRY

Source	1	1	1	1	1	1
Date	26 May 72	14 Aug 72	24 May 73	30 Jun 73	26 Jul 73	25 Sep 73
Location	H	E	G	E	E	E
Temperature	2.0	10	2.0	5.0	11.5	1.0
Conductivity		170				
pH	8.0	8.5			8.0	
D.O.	13.0	11.0	12.0	12.4		11.0
Turbidity	high		30	7.5	3.5	
Suspend. sed.			0.31	0.1	0.5	
Discharge			63.5			8.36
Salinity						
Hardness	103	80	100	155	100	60
Alkalinity	85	55	70	150	70	90
Source				spring-fed backwater	nearby spring 6.0°C	
Date						
Location						

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1	1
Date	28 Jul 72	14 Aug 72
Location	H	H
Method	Surber	Surber
No. samples	6	6
Trichoptera		
Plecoptera	0.3(0.19)	0.3(0.19)
Ephemeroptera	0.5(0.2)	
Diptera:		
Simulidae		
Tipulidae		
Chironomidae	0.5(0.31)	1.0(0.24)
Empididae		
Muscidae		
Dolichopodidae		
Liriopeidae		
Unidentified		1.7(0.99)
Oligochaeta	0.2(0.15)	
Nematoda		
Arachnida		
Triclad		
Copepod		
Miscellaneous	0.2(0.15)*	
TOTAL $\bar{X}/ft^2$	1.7(0.38)	3.0(0.75)
$\bar{X}/m^2$	18.3	32.2

*coleoptera larvae

Source	1	1
Date	28 Jul 73	28 Jul 73
Location	A (spring)	B
Fish caught	none	none

WATER BODY

CHANDALAR RIVER (continued)

Approx. lat. 68°33'00" N long. 144°05'00" W

Nearest milepost 169.5 Map number 7

ASSESSMENT

The Chandalar River in the vicinity of the pipeline crossing is sensitive year round.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindroceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	4 Apr 72	18 May 72
Location	P	G
Snow depth	0	
Ice depth	3 (1)	
Water depth	0.5	
Discharge		
Temperature	2.0	3.0
D.O.	8.0	11.6
Turbidity		clear
Suspend. sed.		
pH		8.0
Alkalinity		171
Hardness		171
Conductivity		
Comments		River only 4 m wide and 10-20 cm deep

WATER CHEMISTRY

Source	1	1	1	1	1	1	1
Date	12 May 72	24 Jun 72	25 Jun 72	28 Jul 72	10 Jun 73	28 Jul 73	28 Jul 73
Location	P	H	E	H	E	B	A(spring)
Temperature	0	11.5	8.0			11.0	13.0
Conductivity		142	120	150			
pH		8.5	8.2	8.5			
D.O.	13.1						
Turbidity		low			27.5		
Suspend. sed.							
Discharge							
Salinity							
Hardness		137	137	80			
Alkalinity		120	103	137			
Source	Break-up starting 0 .5 m over-flow on ice		aufeis about 1.1 m thick				
Date							
Location							

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{x}/ft^2$
$\bar{x}/m^2$

WATER BODY

UNNAMED TRIBUTARY OF CHANDALAR RIVER (EF 6 - 1)

Approx. lat. 68°48'45" N long. 144°36'30" W

Nearest milepost 14 mi NE MP 169.5 Map number 7

ASSESSMENT

This is a small headwater tributary of the Chandalar River. Grayling were caught near the stream mouth.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus nomaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	28 Jul 73
Location	C
Temperature	11.0
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

RED SHEEP CREEK (spring)

Approx. lat. 68°43'45" N long. 144°51'00" W

Nearest milepost 5 mi N MP 169 Map number 7

ASSESSMENT

A spring-fed tributary flowing into Red Sheep Creek near its mouth. This spring appears to be one of the only areas upstream of the pipeline crossing where grayling are known to spawn.

The spring is not on the pipeline route.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myaxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	11 Jun 73	14 Jun 73
Location	D(spring)	D(spring orifice)
Temperature	4.0	4.5
Conductivity		
pH	8.6	
D.O.	11.0	
Turbidity	low	
Suspend. sed.		
Discharge		
Salinity		
Hardness	140	
Alkalinity	95	

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

CANE CREEK

Approx. lat. 68°39'30" N long. 144°54'00" W

Nearest milepost 169 Map number 7

ASSESSMENT

Cane Creek is a mountain tributary of the Chandalar River. During the summer, flow in the upper reaches may be intermittent or absent. Several small springs and *aufeis* fields are present in the lower reaches. The springs contribute little flow during the winter and it does not appear that the stream supports any overwintering populations of fish. Small numbers of grayling are found in the stream during the summer.

The pipeline route parallels Cane Creek for much of the stream's length. Although the stream does not appear to be an important area for fish, effective erosion control measures are necessary to prevent siltation of downstream areas.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1
Date	26 May 72	26 Sept 72	19 Apr 73
Location	D	A-D	D
Snow depth			
Ice depth			
Water depth			
Discharge			
Temperature	1.5		0
D.O.	13.0		10.4
Turbidity			
Suspend. sed.			
pH	8.0		8.5
Alkalinity	120		95
Hardness	120		135
Conductivity			65
Comments	lower 1/3 of creek open and flowing	almost no flow in creek	

WATER CHEMISTRY

Source	1	1	1	1	1	1	1
Date	25 Jun72	28 Jul 72	17 Aug 72	10 Jun 73	25 Jul 73	25 Jul 73	25 Jul 73
Location	A	D	C	C(spring)	D	B(spring)	C(spring)
Temperature	5.0	9.0	8.0	3.0	12.5	9.0	9.0
Conductivity	128	137.5					
pH	8.0	8.5	8.5	8.0	8.5		8.2
D.O.		10.8	12.0	10.6	10.8		11.4
Turbidity	low		low	1.6	low		low
Suspend. sed.							
Discharge			3.04				2.45
Salinity							
Hardness	154	80	70	130	150		110
Alkalinity	120	137	55	90	100		75
Source	no flow in headwaters or small t ributaries			aufeis below spring 2 m thick		heavy algal cover	
Date							
Location							

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1	1
Date	28 Jul 72	18 Aug 72
Location	D	D
Method	Surber	Surber
No. samples	6	4
Trichoptera		
Plecoptera	11.5(2.22)	3.5(1.09)
Ephemeroptera	8.8(3.20)	1.5(0.56)
Diptera:		
Simulidae		0.3(0.22)
Tipulidae	0.2(0.15)	0.75(0.22)
Chironomidae	6.17(0.83)	6.8(1.52)
Empididae		
Muscidae	0.2(0.15)	
Dolichopodidae		
Liriopeidae		
Unidentified	0.5(0.46)	1.3(0.22)
Oligochaeta	2.5(0.31)	22.8(2.66)
Nematoda		
Arachnida		
Triclad		0.8(0.22)
Copepod		
Miscellaneous		
TOTAL $\bar{x}/ft^2$	29.8(5.65)	37.0(2.90)
$\bar{x}/m^2$	320.6	397.8

WATER BODY

UNNAMED TRIBUTARY OF CHANDALAR RIVER (Short Creek - 1)

Approx. lat. 68°37'45" N long. 144°40'45" W

Nearest milepost Mp 170-173 Map number 7

ASSESSMENT

This is a short mountain tributary of the Chandalar River. There are several small spring sources and *aufeis* areas but no known overwintering areas for fish. Fish utilization of this stream during the summer appears small. Grayling and slimy sculpin were caught, but no fry of any species were found.

The pipeline route parallels this stream. Although fish use of this stream is minor, effective erosion control measures are necessary to prevent siltation of downstream areas.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		x
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1	1	1
Date	25 Jun 72	28 May 73	29 Jun 73	28 Jul 73
Location	F	F	F	F
Temperature	8	2	9	9
Conductivity	153			
pH	8.5	8.0		
D.O.		13.0	10.0	
Turbidity		23.0	3.0	
Suspend. sed.		0.03	0	
Discharge		3.13	0.8	
Salinity				
Hardness	171	80	135	
Alkalinity	137	85	90	
	upstream aufeis 0.7 m thick			

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED TRIBUTARY OF CHANDALAR RIVER (Grayling Creek - 1)

Approx. lat. 68°25'00" N long. 145°12'00" W

Nearest milepost 23 mi S MP 157.5-I Map number 7

ASSESSMENT

This is a small bog-fed tributary of the Chandalar River near Tetsyek Lake. It is an important spawning and rearing area for grayling. Slimy sculpin and a few round whitefish were also caught.

The stream is not on the pipeline route.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		x
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	26 Sep 72
Location	I
Snow depth	
Ice depth	
Water depth	
Discharge	0
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source	1	1	1	1	1	1	1
Date	27 May 72	24 Jun 72	28 Jul 72	13 Aug 72	24 May 73	11 Jun 73	30 Jun73
Location	J	I	I	I	J	J	J
Temperature	13.5	20.0	8.0	7.0	8.5	11.0	18.0
Conductivity		178	180	175			
pH	7.5	7.7	8.0	8.5	7.5		
D.O.	10.2	8.0	10.4	11.0	10.2	9.0	9.4
Turbidity	low	low			1.5		
Suspend. sed.					0		
Discharge				0.17			
Salinity							
Hardness	120	137	80	75	80	65	120
Alkalinity	103	154	154	60	70	50	75
		water stained				banks over-flowing due to rainfall	

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ	

BENTHIC INVERTEBRATES

Source	1
Date	28 Jul 72
Location	J
Method	Surber
No. samples	4
Trichoptera	present
Plecoptera	17.8(7.18)
Ephemeroptera	8.0(2.47)
Diptera:	
Simulidae	5.5(2.84)
Tipulidae	4.5(1.15)
Chironomidae	69.8(29.82)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	8.0(3.98)
Oligochaeta	39.0(2.57)
Nematoda	0.3(0.22)
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	145.3(40.88)
$\bar{X}/m^2$	1561.9

WATER BODY

UNNAMED TRIBUTARY OF CHANDALAR RIVER (EF 30 - 1)

Approx. lat. 68°21'30" N long. 145°20'00" W

Nearest milepost 23 mi SW MP 69.5 Map number 7

ASSESSMENT

This is a small Chandalar tributary west of Below Tree Lake. Grayling adults are present.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocepholus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkolinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	28 Jul 73
Location	K
Temperature	6.5
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED TRIBUTARY OF CHANDALAR RIVER (EF 36 - 1)

Approx. lat. 68°18'15" N long. 145°21'30" W

Nearest milepost 27 mi SW MP 169.5 Map number 7

ASSESSMENT

This is a small tributary to the Chandalar River north of Noah Lake. It is used by grayling for spawning.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	28 Jul 73
Location	L
Temperature	9.5
Conductivity	
pH	
D.O.	
Turbidity	clear
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematada	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED TRIBUTARY OF CHANDALAR RIVER (EF.37 - 1)

Approx. lat. 68°16'45" N long. 145°22'30" W

Nearest milepost 29 mi SW MP 169.5 Map number 7

ASSESSMENT

This is a small Chandalar tributary south of Noah Lake. It is an important grayling spawning stream. Longnose suckers and whitefish were also caught near the stream mouth.

The stream is not on the pipeline route.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quodricornis		
Coregonus clupeaformis			Catastomus catastomus	x	
Coregonus nasus	?	x	Pungitius pungitius		
Prosopium cylindraceum	x		Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1	1
Date	27 May 72	26 Jul 73
Location	M	M
Temperature	4	17.5
Conductivity		
pH		
D.O.		
Turbidity	clear	
Suspend. sed.		
Discharge		
Salinity		
Hardness		
Alkalinity		

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED TRIBUTARY OF CHANDALAR RIVER (EF 39 - 1)

Approx. lat. 68°13'20" N long. 145°22'00" W

Nearest milepost 35 mi SW MP 169.5 Map number 7

ASSESSMENT

This is a short (1/2 mile) and narrow (1 m) channel connecting a small lake to the Chandalar River. Ripe and spawned out grayling were caught.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		x
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus		x	Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	28 May 72
Location	N
Temperature	5.0
Conductivity	
pH	7.5
D.O.	6.6
Turbidity	slight
Suspend. sed.	
Discharge	0.15
Salinity	
Hardness	137
Alkalinity	103

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED TRIBUTARY OF CHANDALAR RIVER (EF 40 - 1)

Approx. lat. 68°12'45" N long. 145°24'30" W

Nearest milepost 36 mi SW MP 169.5 Map number 7

ASSESSMENT

Location O is a small tributary connecting several lakes with the Chandalar River. Grayling and whitefish were caught. There is an old, possibly abandoned, native fish weir on this stream.

The stream is not on the pipeline route.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quodricornis		
Coregonus clupeaformis			Catostomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis			Whitefish spp.		x
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

JUNJIK RIVER

Approx. lat. 68°13'15" N long. 145°29'30" W

Nearest milepost 37 mi S MP 150-I Map number 7

ASSESSMENT

The Junjik River is a large tributary of the Chandalar River near Arctic Village. Grayling, round whitefish and slimy sculpin are common and longnose suckers have also been caught in the lower reaches of the stream. Ripe grayling were caught at Location B.

Spring sources and *aufeis* fields occur on the Junjik River and many of its tributaries.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		x
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		x
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1
Date	4 Apr 72	28 Apr 72	10 May 72
Location	C	A	A
Snow depth			
Ice depth	0		
Water depth	0.3-0.6		
Discharge			
Temperature	2.5	2.0	0.5
D.O.	11.6	9.2	12.8
Turbidity			
Suspend. sed.			
pH		7.0	
Alkalinity			
Hardness			
Conductivity			
Comments	only open water in area	heavy algal cover	break-up slowly starting; mostly frozen

WATER CHEMISTRY

Source	1	1	1	1	1	1
Date	10 May 72	27 May 72	24 Jun 72	24 Jun 72	14 Aug 72	23 May 73
Location	C	D	A (spring)	E	E	B
Temperature	0.5	4.5	9.0	9.0	8.0	3.0
Conductivity			180	132.5	159	100
pH		8.0	8.5	8.0	8.5	7.5
D.O.	12.8	11.0	11.0	13.0	12.0	10.0
Turbidity			low		low	5.0
Suspend. sed.						0.09
Discharge						
Salinity						
Hardness		120	188	137	75	90
Alkalinity		102	154	103	55	80
		some floating ice in river	aufeis 2 mi downstream is 0.7 m thick			
Source						
Date						
Location						

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	1
Date	14 Aug 72
Location	C
Method	Surber
No. samples	6
Trichoptera	
Plecoptera	2.0(0.53)
Ephemeroptera	1.8(0.80)
Diptera:	
Simulidae	
Tipulidae	0.5(0.2)
Chironomidae	70.2(11.28)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	6.5(0.87)
Nematoda	
Arachnida	0.7(0.15)
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{x}/ft^2$	81.3(10.98)
$\bar{x}/m^2$	874

WATER BODY

SPRING CREEK

Approx. lat. 68°31'00" N long. 146°05'00" W

Nearest milepost 38 mi SW MP 169.5 Map number 7

ASSESSMENT

Spring Creek, a tributary of the Junjik River, is a braided mountain stream. There are spring sources and *aufeis* fields in the lower reaches, but summer flow is discontinuous in the upper reaches. Grayling and slimy sculpin were caught.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		X
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	28 Apr 72
Location	B
Snow depth	
Ice depth	0
Water depth	
Discharge	
Temperature	2.0
D.O.	10.2
Turbidity	
Suspend. sed.	
pH	6.9
Alkalinity	
Hardness	
Conductivity	

Comments lower 1/4 of creek open and flowing

WATER CHEMISTRY

Source	1
Date	24 Jun 72
Location	A
Temperature	5.5
Conductivity	113
pH	8.2
D.O.	11.0
Turbidity	slight
Suspend. sed.	
Discharge	
Salinity	
Hardness	154
Alkalinity	120

	intermittent flow
Source	in upper reaches
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

DEADMAN CREEK

Approx. lat. 68°13'30" N long. 145°37'45" W

Nearest milepost 40 mi S MP 142.5 - I Map number 7

ASSESSMENT

Deadman Creek is a tributary of the Chandalar near Arctic Village. The stream is used primarily by grayling which are most abundant in the lower reaches. Grayling also overwinter at a spring-fed area about mid-way upstream.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		x
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	7 Apr 73
Location	A (aufeis area)
Snow depth	
Ice depth	0
Water depth	0-0.38
Discharge	0.17
Temperature	2.0
D.O.	9.2
Turbidity	
Suspend. sed.	
pH	8.0
Alkalinity	70
Hardness	95
Conductivity	

Comments

WATER CHEMISTRY

Source	1
Date	28 Jul 73
Location	A
Temperature	5.5
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

OLD WOMAN CREEK

Approx. lat. 68°21'00" N long. 144°00'00" W

Nearest milepost 174-205-I Map number 7 and 8

ASSESSMENT

Old Woman Creek meanders extensively before entering the Sheenjek River. It is an important spawning and rearing area for grayling. During the winter the stream freezes solid in most areas and there are no known areas where fish overwinter.

The pipeline route parallels the upper reaches of Old Woman Creek. Good erosion control measures are necessary.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quodricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus	x	x
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1	1
Date	18 May 72	18 May 72	26 Sep 72	7 Nov 72	6 Apr 73
Location	A-C	B	C	C	A
Snow depth					
Ice depth					0.5-1.0(2)
Water depth					
Discharge		0			0
Temperature		1.0	-0.5	0	
D.O.			11.2	10.6	
Turbidity					
Suspend. sed.					
pH		7.0	8.0	7.0	
Alkalinity		34	40	40	
Hardness		36	100	75	
Conductivity					
Comments	no flow in creek except small amount near mouth	heavily stained melt water pool	mostly frozen	No flow in stream except in this area. Additional data in water chemistry section.	

WATER CHEMISTRY

Source	1	1	1	1	1
Date	28 Jul 72	28 Jul 72	15 Aug 72	29 Jun 73	1 Aug 73
Location	C	B	C	A	C
Temperature	11.5	9.5		5.5	11.5
Conductivity	85	73	80		
pH	7.7	7.8	8.0		8.0
D.O.	9.4	10.4	10.0	11.8	9.6
Turbidity				3.0	
Suspend. sed.					
Discharge				4.9	
Salinity					
Hardness	35	60	40	45	45
Alkalinity	86	68	45	25	40

Source	1
Date	7 Nov 72
Location	m outh

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
37.5	4.2	0.7	0.3	-	-	124.4	0.0	10.7	0.2	0.07	0.11	<.003	2.5	180.7

BENTHIC INVERTEBRATES

Source	1	1
Date	28 Jul	28 Jul
Location	B	C
Method	Surber	Surber
No. samples	6	6
Trichoptera		present
Plecoptera	0.2(0.15)	1.2(0.6)
Ephemeroptera	0.5(0.31)	0.5(0.31)
Diptera:		
Simulidae		
Tipulidae	1.3(0.87)	1.0(0.47)
Chironomidae	1.8(1.14)	12.7(5.08)
Empididae		0.2(0.15)
Muscidae		
Dolichopodidae		
Liriopeidae		
Unidentified		
Oligochaeta	0.3(0.19)	27.5(6.46)
Nematoda	0.2(0.15)	
Arachnida		0.3(0.3)
Triclad		1.8(0.83)
Copepod		
Miscellaneous		
TOTAL $\bar{x}/ft^2$	3.3(1.19)	45.3(11.64)
$\bar{x}/m^2$	35.5	487.4

WATER BODY

MONUMENT CREEK

Approx. lat. 67°57'45" N long. 143°13'00" W

Nearest milepost 210.2-236 - I Map number 8

ASSESSMENT

Monument Creek meanders extensively before entering the Sheenjek River. It is an important spawning and rearing area for grayling. Slimy sculpin and a few round whitefish were also caught. During the winter, the stream freezes solid in most areas and there are no known areas where fish overwinter.

The pipeline route parallels Monument Creek for much of the stream's length. Effective erosion control measures are necessary.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus	x	x
Coregonus autumnalis					
Coregonus sardinella					

(see bottom of next page)

WINTER CONDITIONS

Sources	1	1	1	1	1	1
Date	20 Apr 72	16 May 72	7 Nov 72	6 Apr 73	6 Apr 73	6 Apr 73
Location	H		H	H	F	E
Snow depth				0.3	1.0	
Ice depth	1.5 (3)			0.5-1.7 (2)	0.5-1.7(2)	
Water depth	0			0	0	0-0.24 (5)
Discharge	0			0	0	
Temperature			0			0.5
D.O.			10.2			7.0
Turbidity						
Suspend. sed.						
pH			7.0			7.0
Alkalinity			80			65
Hardness			45			150
Conductivity						
Comments		95% frozen	Very little flowing water and no flow in many areas. Additional data in water chemistry section.			

WATER CHEMISTRY

Source	1	1	1	1	1	1	1
Date	25 Jun 72	29 Jul 72	17 Aug 72	27 May 73	27 May 73	27 May 73	28 May 73
Location	D	H	F	H	C	G	C
Temperature	9.0	13.5	9.0	3.5	2.5	3.5	2.0
Conductivity	185	120					
pH	7.0		7.5				5.7
D.O.		9.4	11.0	11.6			12.8
Turbidity	low		low	8.0	3.0	4.5	10.5
Suspend. sed.				0.05	0.01	0.01	0.08
Discharge						0.89	flood
Salinity							
Hardness	34	50	30	35			20
Alkalinity	34	103	25	30			40
						no ice	

Source 1 ,16
Date 7 Nov 72
Location H

(continued)

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
25.3	3.7	0.5	0.2	-	-	85.4	0.0	8.6	0.2	<.05	0.10	<.003	4.2	128.3

Conductivity 160

BENTHIC INVERTEBRATES

Source	1	1	1
Date	28 Jul 72	28 Jul 72	14 Aug 72
Location	A	H	F
Method	Surber	Surber	Surber
No. samples	6	6	6
Trichoptera	0.2(0.15)	1.8(0.72)	0.5(0.45)
Plecoptera	1.0(0.3)	0.8(0.28)	0.3(0.31)
Ephemeroptera	1.0(0.58)	39.2(7.37)	1.8(0.83)
Diptera:			
Simulidae		5.5(3.22)	
Tipulidae	0.7(0.30)	1.2(0.60)	0.8(0.44)
Chironomidae	3.0(0.82)	19.7(8.03)	1.7(0.90)
Empididae			
Muscidae			
Dolichopodidae	0.2(0.15)		
Liriopeidae			
Unidentified	0.3(0.19)	0.7(0.30)	
Oligochoeta	4.8(2.03)	21.0(9.37)	6.3(2.76)
Nematoda		0.3(0.30)	
Arachnida			
Triclad		0.14(0.13)	
Copepod			
Miscellaneous	2.8(2.23) *	39.7(12.73) *	
TOTAL $\bar{x}/ft^2$	14.0(2.83)	129.8(31.50)	11.5(5.03)
$\bar{x}/m^2$	150.5	1396.6	123.6

* amphipods
coleoptera larvae

* amphipods

Source 1
Location H
Date 25 Jun 73
Fish Sculpin eggs and newly hatched fry found

WATER CHEMISTRY

Source	1	1	1	1	1	1	1
Date	25 Jun 73	26 Jun 73	26 Jun 73	27 Jun 73	27 Jun 73	29 Jun 73	8 Oct 73
Location	H	G	B-C	D	D	H	H
Temperature	7.5	8.0	7.0	11.0	9.0	12.0	
Conductivity							
pH						7.5	
D.O.	10.0	9.2	10.4	9.6	10.6		
Turbidity	1.5	3.0		3.0	4.5		
Suspend. sed.	0.0	0.0		0.0	0.0		
Discharge	2.09	0.04	0.95	1.53	1.28	0.74	0.84
Salinity							
Hardness	65	60	190	15	15	70	
Alkalinity	115	50	95	15	15	60	
Source			Spring source approx. 8 mi upstream				
Date							
Location							

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

SHEENJEK RIVER

Approx. lat. 67°37'45" N lang. 143°17'00" W

Nearest milepost 236-I Map number 8

ASSESSMENT

The Sheenjek River in the vicinity of the pipeline crossing is used by grayling, round whitefish and slimy sculpin during the summer months. There are known overwintering areas in the vicinity of locations B and D. It is uncertain whether the latter area extends as far downstream as the pipeline crossing. Open water was present at the crossing during the winter, but only a single slimy sculpin was found.

Effective erosion control is necessary, especially in open water areas. Sensitive year round.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus nomaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindroceum		x	Cottus cognatus		x
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1	1
Date	20 Apr 72	20 Apr 72	7 May 72	18 May 72	20 Apr 73
Location	D	A(small trib.)	D	D	D
Snow depth					
Ice depth					
Water depth					
Discharge					
Temperature	0.0	3.0	2.0	0.5	
D.O.	10.6	2.6	12.1	13.0	5.2
Turbidity		high			clear
Suspend. sed.					
pH	8.1	8.3		8.2	7.5
Alkalinity				120	65
Hardness				154	70
Conductivity					125
Comments	abundant algal growth			river about 25% open	considerable algal growth on substrate

WATER CHEMISTRY

Source	1	1	1	1
Date	25 Jun 72	29 Jul 72	17 Aug 72	25 Jun 73
Location	C	D	E	C
Temperature	10.0	15.5	14.0	13.0
Conductivity	145	175		
pH	8.0	8.5	8.5	
D.O.		10.6	10.0	10.2
Turbidity			high	31
Suspend. sed.				0.10
Discharge				
Salinity				
Hardness	137	75	50	95
Alkalinity	120	137	70	80

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ	

BENTHIC INVERTEBRATES

Source	1
Date	29 Jul 72
Location	D
Method	surber
No. samples	6
Trichoptera	0.5(0.31)
Plecoptera	0.2(0.55)
Ephemeroptera	12.3(2.80)
Diptera:	
Simulidae	0.2(0.15)
Tipulidae	0.3(0.30)
Chironomidae	6.7(2.64)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	0.7(0.38)
Oligochaeta	1.2(0.44)
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	0.3(0.19) *
TOTAL $\bar{X}/ft^2$	24.2(5.17)
$\bar{X}/m^2$	260.4

* amphipods

WATER BODY

PASS CREEK

Approx. lat. 67°53'15" N long. 142°50'00" W

Nearest milepost 246 and 247.5 Map number 8

ASSESSMENT

Pass Creek, a tributary of the Coleen River, supports a large grayling population during the summer months. For the most part, however, it is not used by fish during the winter months. A small overwintering area was located on a headwater tributary, but the stream was frozen solid along the pipeline route.

Sensitive May-October.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		x
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	4 Apr 73
Location	C
Snow depth	0.66
Ice depth	1.1
Water depth	
Discharge	0.0
Temperature	1.0
D.O.	0.0
Turbidity	
Suspend. sed.	
pH	7.5
Alkalinity	395
Hardness	1150
Conductivity	
Comments	H_2S odour; standing water under ice

WATER CHEMISTRY

Source	1	1	1	1
Date	21 Jul 72	29 Jul 72	18 Aug 72	28 Jun 73
Location	B	B	D	A
Temperature	15.0	14.0		8.0
Conductivity		200		
pH		8.0	8.5	
D.O.		9.8	9.0	11.2
Turbidity			low	
Suspend. sed.				
Discharge			0.62	
Salinity				
Hardness		105	80	180
Alkalinity		171	45	120
		abundant algal growth on substrate		abundant algal cover
Source				
Date				
Location				

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source	1	1
Date	29 Jul 72	18 Aug 72
Location	B	B
Method	surber	surber
No. samples	6	6
Trichoptera	0.3(0.19)	0.5(0.43)
Plecoptera	1.8(0.83)	2.5(0.43)
Ephemeroptera	11.3(4.34)	1.8(0.65)
Diptera:		
Simulidae		
Tipulidae	7.4(1.34)	1.3(0.55)
Chironomidae	27.0(8.74)	0.8(0.22)
Empididae		
Muscidae		
Dolichopodidae		
Liriopeidae		
Unidentified		
Oligochaeta	43.7(3.08)	18.5(7.25)
Nematoda	1.5(0.77)	
Arachnida	1.8(0.83)	
Triclad		
Copepod		
Miscellaneous	1.5(0.46)*	
TOTAL $\bar{X}/ft^2$	97.5(13.86)	25.3(7.90)
$\bar{X}/m^2$	1048.1	271.9

* coleoptera larva
collembolans
snails

WATER BODY

COLEEN RIVER

Approx. lat. 67°47'30" N long. 142°09'00" W

Nearest milepost 267 Map number 8

ASSESSMENT

In the vicinity of the pipeline crossing, grayling were abundant during the summer months. It appears, however, that this area is not used by fish during the winter months although there are stretches of flowing water at this time.

Effective erosion control is necessary, especially in open water areas.

A known overwintering area, located in the vicinity of location A, is not on the pipeline route.

FISH

Sources 1,3

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus nomaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catostomus catostomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindroceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1	1
Date	4 Apr 72	7 May 72	7 Nov 72	4 Apr 73	20 Apr 73
Location	A	C	D	D	D
Snow depth					0.5
Ice depth				1.0	0.6
Water depth	0.05-0.1				0
Discharge					0
Temperature	2.0	3.0			
D.O.	10.4	10.8			
Turbidity					
Suspend. sed.					
pH					
Alkalinity					
Hardness					
Conductivity					
Comments	heavy algal cover	some open stretches	80 % frozen		

WATER CHEMISTRY

Source	1	1	1
Date	25 Jun 72	29 Jul 72	28 Jun 73
Location	D	C	B
Temperature	9.0	17.0	8.0
Conductivity	148	200	
pH	8.0	8.5	
D.O.		9.8	10.4
Turbidity	low	low	1.5
Suspend. sed.			0.0
Discharge			
Salinity			
Hardness	154	85	130
Alkalinity	137	154	90

Source															
Date															
Locotion															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ	

BENTHIC INVERTEBRATES

Source	1
Date	29 Jul 72
Location	D
Method	surber
No. samples	6
Trichoptera	present
Plecoptera	0.8(0.37)
Ephemeroptera	0.5(0.20)
Diptera:	
Simulidae	
Tipulidae	1.2(0.28)
Chironomidae	42.7(6.21)
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	3.3(0.69)
Oligochaeta	12.2(3.88)
Nematoda	0.8(0.37)
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	65.0(6.69)
$\bar{X}/m^2$	699.4

WATER BODY

STRANGLE WOMAN CREEK

Approx. lat. 67°50'00" N long. 141°41'30" W

Nearest milepost 270-287 Map number 8, Plate 8

ASSESSMENT

Strangle Woman Creek meanders extensively before entering the Coleen River. It is an important spawning and rearing area for grayling. Grayling fry are present throughout its length. For the most part, the stream is not used by fish during the winter months. A possible overwintering area was found at location E, but the stream was frozen solid along the pipeline route.

FISH

Sources 1,3

	fry	other		fry	other
Thymollus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		x
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		x
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1	1	1
Date	26 Apr 72	7 Nov 72	4 Apr 73	4 Apr 73	4 Apr 73	4 Apr 73
Location	F	E	B	C	D	E
Snow depth			0.5	0.25	0.25	0.3
Ice depth	1-1.5 (3)	0.1-0.2(4)	0.5-0.75(2)	1.25	1.5	1.8
Water depth	0	0.2				
Discharge			0	0	0	0
Temperature		0				
D.O.		10.2				
Turbidity						
Suspend. sed.						
pH		7.5				
Alkalinity		45				
Hardness		35				
Conductivity						
Comments		a) data continued in water chemistry section b) no flow at stream mouth				

WATER CHEMISTRY

Source	1	1	1	1	1	1	1
Date	22 May 72	25 Jun 72	29 Jul 72	18 Aug 72	27 Jun 73	28 Jun 73	2 Aug 73
Location	E	E	F	F	A	E	F
Temperature	4.5	-	16.0	12.0	11.5	11.0	12.5
Conductivity		14	28.5				
pH		7.0	7.0	6.5			6.8
D.O.	11.6		9.6	11.0	10.0	9.8	8.2
Turbidity		low		high	2.0		
Suspend. sed.					0		
Discharge				flooding	2.42	3.84	
Salinity							
Hardness		17	15	20	10	15	15
Alkalinity		17	2	10	10	10	20

Source	1,16
Date	4 Nov 72
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ
3.14	1.01	0.9	0.3	-	-	10.8	0.0	5.7	0.3	0.05	0.08	0.004	6.2	28.5

BENTHIC INVERTEBRATES

Source	1	1
Date	29 Jul 72	29 Jul 72
Location	F	A
Method	Surber	Surber
No. samples	6	6
Trichoptera	1.5(1.02)	4.2(1.07)
Plecoptera		0.2(0.15)
Ephemeroptera	2.0(0.71)	41.5(3.36)
Diptera:		
Simulidae		2.8(0.68)
Tipulidae	1.8(0.72)	2.8(0.86)
Chironomidae	14.7(3.69)	71.5(14.38)
Empididae		0.8(0.50)
Muscidae		
Dolichopodidae		
Liriopeidae		
Unidentified	0.3(0.19)	2.3(0.73)
Oligochaeta	12.2(1.14)	13.3(3.12)
Nematoda		0.7(0.30)
Arachnida		11.0(2.61)
Triclad		0.3(0.19)
Copepod		
Miscellaneous	0.3(0.15) *	0.3(0.19)*
TOTAL $\bar{x}/ft^2$	31.0(5.28)	151.8(18.73)
$\bar{x}/m^2$	333.6	1633.4

* coleoptera larva * amphipod

SOUTH SLOPE LAKES

WATER BODY SOUTH SLOPE LAKES

Approx. lat. _____ long. _____

Nearest milepost _____ Map number _____

South of the Continental Divide, there are few large lakes but approximately 20 small lakes and ponds within one mile of the pipeline route. The smallest of these were not sampled but it is likely that they are shallow and do not contain permanent populations of fish. Three of the small lakes that were netted yielded no fish, and the low winter levels of oxygen in three other lakes suggest that they do not contain permanent fish populations.

As in the streams in this region, grayling were the most common species of fish sampled. Other species caught in lakes near the pipeline route include burbot, round and broad whitefish, longnose suckers and slimy sculpin, and in the larger lakes south of the route, humpback whitefish, lake trout, pike and Arctic char.

WATER BODY

UNNAMED SOUTH SLOPE LAKES (see below)

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 8,9

ASSESSMENT

The following is a list of three small lakes in the vicinity of the pipeline route which do not appear to support any populations of fish. Each was fished by gillnet, but no fish were caught.

Lake #	(source)	Drainage	lat., long.		Date	Method
#12	(1)	Chandalar	68°36'30" N,	144°52'00" W	14 Jun 73 26 Sep 73	gillnet gillnet
#27	(1)	Koness	68°22'15"	144°12'30"	30 Jul 73	gillnet, angling
#32	(1)	Coleen	63°49'15"	142°07'00"	2 Aug 73	gillnet

FISH

Sources 1 (no fish caught)

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CHANDALAR RIVER LAKE (Junjik Lake-1)

Approx. lat. 68°17'15" N long. 146°27'30" W

Nearest milepost 32 mi S MP 150-I Map number 8

ASSESSMENT

This lake supports a permanent population of pike. Angling pressure should be regulated.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		x
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindroceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1
Date	10-13 May 72	18 May 72	8 Apr 73	27 May 73
Location				
Snow depth				
Ice depth	0.7-1.0		2.6-3.8 (3)	
Water depth				
Discharge				
Temperature	0.5-1.0		2.0	
D.O.	6.2-8.8			
Turbidity				
Suspend. sed.				
pH		8.0		
Alkalinity		85.5		
Hardness		120		
Conductivity				
Comments	surface ice beginning to rot			95% ice cover

WATER CHEMISTRY

Source	1	1	1
Date	24 Jun 72	14 Aug 72	26 Sep 72
Location			
Temperature	16.5	16	
Conductivity	122	160	
pH	8.5	8.5	
D.O.	10.0	10.0	
Turbidity			
Suspend. sed.			
Discharge			
Salinity			
Hardness	120	60	
Alkalinity	120	45	
			surface ice forming

Source															
Date															
Location															
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ	

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED LAKE (Airport Lake-1)

Approx. lat. 68°06'30" N long. 145°34'45" W

Nearest milepost _____ Map number 8

ASSESSMENT

This lake is located off the airstrip at Arctic Village. It is moderately deep and supports a permanent population of pike. The lake is not on the pipeline route.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		x
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1
Date	4 Apr 72	11 May 72	5 Apr 73
Location			
Snow depth	0.5	0.08	0.7
Ice depth	1.0	0.66-1.0	1.1 (2)
Water depth	1.0		1.0-1.5 (2)
Discharge			
Temperature	2.5	0.5	0.5
D.O.	3.6	6.2	
Turbidity			
Suspend. sed.			
pH		7.5	
Alkalinity		103	
Hardness		136	
Conductivity			
Comments		ice beginning to rot	

WATER CHEMISTRY

Source	1
Date	10 Jun 73
Location	lake edge
Temperature	15.5
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source														
Date														
Location														
Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{x}/ft^2$	
$\bar{x}/m^2$	

WATER BODY

UNNAMED CHANDALAR RIVER LAKE (#36 - 1)

Approx. lat. 68°07'30" N long. 145°31'30"

Nearest milepost _____ Map number 8

ASSESSMENT

This small lake is located next to the National Guard Armory at Arctic Village. The lake is shallow and winter levels of oxygen appear inadequate for overwintering fish.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	4 Apr 72
Location	
Snow depth	
Ice depth	1.1
Water depth	
Discharge	
Temperature	2.5
D.O.	0.8
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

BLACKFISH LAKE

Approx. lat. 68°11'45" N long. 145°18'00"

Nearest milepost 40 mi S MP 155-I Map number 8

ASSESSMENT

Blackfish Lake is a deep lake containing a permanent population of lake trout.

FISH

Sources 1

	fry	other		fry	other
Thymallus orcticus			Esox lucius		
Salvelinus namaycush		x	Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	5 Apr 73
Location	
Snow depth	0.5
Ice depth	1.1
Water depth	4.9-6 (3)
Discharge	
Temperature	1.0
D.O.	10.0
Turbidity	
Suspend. sed.	
pH	8.0
Alkalinity	60
Hardness	90
Conductivity	

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkolinity

Source
Date
Location

Co	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

REDFISH LAKE

Approx. lat. 68°10'30" N long. 145°13'30" W

Nearest milepost 41 mi S MP 156 Map number 8

ASSESSMENT

Redfish Lake is a deep lake containing a resident population of Arctic char.

FISH

Sources 1

	fry	other		fry	other
Thymallus orcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus		x	Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		x
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	12 Apr 72	7 Nov 72
Location		
Snow depth		
Ice depth	0.8	1.0 (12)
Water depth		1.0-9.0 (12)
Discharge		
Temperature	0	
D.O.	8.6	
Turbidity		
Suspend. sed.		
pH		
Alkalinity		
Hardness		
Conductivity		
Comments		total ice cover

WATER CHEMISTRY

Source	1	1
Date	24 May 73	24 Jul 73
Location		
Temperature	3	15.5
Conductivity		
pH	7.0	8.0
D.O.	9.4	9.8
Turbidity		
Suspend. sed.		
Discharge		
Salinity		
Hardness	50	95
Alkalinity	40	80

Source	lake open around edges
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	≤

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

VETTATRIN LAKE

Approx. lat. 68°32'00" N long. 145°05'00" W

Nearest milepost 15 mi S MP 161-I Map number 8

ASSESSMENT

Vettetrin Lake is a deep lake containing pike. Grayling were also sighted.

FISH

Sources 1

	fry	other		fry	other
Thymallus orcticus		x	Esox lucius		x
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source	1
Date	15 Jun 73
Location	
Temperature	16
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

OLD JOHN LAKE

Approx. lat. 68°04'30" N long. 145°02'30" W

Nearest milepost 41 mi S MP 163-I Map number 8

ASSESSMENT

Old John is the largest and deepest lake in this region and it supports a varied fish fauna.

Although it is not on the pipeline route, angling pressure should be regulated.

FISH

Sources 1

	fry	other		fry	other
Thymallus orcticus	x	x	Esox lucius		*
Salvelinus namaycush		x	Lota lota		x
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis		x	Catastomus catastomus		
Coregonus nasus	x	x	Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		x
Coregonus autumnalis					
Coregonus sardinella					

* in lake trout stomach

WINTER CONDITIONS

Sources	1	1	1	1	1
Date	10 Apr 72	7 Nov 72	3-5 Apr 73	24 May 73	8 Oct 73
Location				inlet stream: mouth, south side	
Snow depth	0.3		0.5		
Ice depth	1.1		1.1-1.1 (7)		
Water depth	10.0		7.3-18 (7)		
Discharge					
Temperature	0		1.0-2.0 (2)	5.0	
D.O.	11		8.4-12.6 (2)	10.2	
Turbidity				2.5	
Suspend. sed.				0	
pH			8.5 (2)	7.5	
Alkalinity			50-60 (2)	70	
Hardness			110 (2)	90	
Conductivity			78-85 (2)		
Comments		100% ice cover		lake open around edges and inlet	100% ice cover

WATER CHEMISTRY

Source	1
Date	25 Jul 73
Location	
Temperature	15
Conductivity	
pH	8.0
D.O.	10.4
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	100
Alkalinity	80

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	∑

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED CHANDALAR LAKES NEAR CANE CREEK (see below)

Approx. lat. _____ long. _____

Nearest milepost _____ Map number 8

ASSESSMENT

The following is a list of 7 lakes in the Chandalar Valley near Cane Creek. All are small lakes containing grayling. Round whitefish were also found in Lake #18 and slimy sculpin in Lake #19. The lakes serve as summer feeding areas for grayling and some lakes may be deep enough to support permanent fish populations.

These lakes are within the pipeline corridor. Angling pressure and possible water removal should be regulated.

Lake #	(source)	Location	Date	Method
#20	(1)	68°32'30" N, 145°01'00" W	15 Jun 73	gillnet
#18	(1)	68°40'15" N, 145°02'00" W	14 Jun 73	gillnet
#8	(1)	68°35'15" N, 144°55'00" W	15 Jun 73	gillnet
#19	(1)	68°37'30" N, 144°54'00" W	15 Jun 73	gillnet
#9b	(1)	68°36'30" N, 144°52'45" W	16 Jun 73	gillnet
#5	(1)	68°37'45" N, 144°49'00" W	16 Jun 73	gillnet
#24	(1)	68°37'30" N, 144°41'00" W	2 Aug 73	angling

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		X	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		(Lake #18)	Cottus cognatus		(Lake #19)
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1	1
Date	26 Sep 73	27 Sep 73	27 Sep 73	8 Oct 73	8 Oct 73
Location	Lake #9b	Lake #8	Lake #5	Lake #5	Lake #24
Snow depth					
Ice depth					
Water depth					
Discharge					
Temperature					
D.O.					
Turbidity					
Suspend. sed.					
pH					
Alkalinity					
Hardness					
Conductivity					
ice cover	100%	100%	0%	100%	100%

WATER CHEMISTRY

Source	1	1	1	1	1	1
Date	14 Jun 73	15 Jun 73	15 Jun 73	15 Jun 73	16 Jun 73	16 Jun73
Location	Lake #18	Lake #20	Lake #8	Lake #19	Lake #9b	Lake #5
Temperature	9.5 near spring	16.5	19	11	16	14
Conductivity						
pH	8.5					
D.O.	12.6					
Turbidity						
Suspend. sed.						
Discharge						
Salinity						
Hardness	100					
Alkalinity	65					

Source
Date
Locotion

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED OLD WOMAN CREEK LAKE (#23 - 1)

Approx. lat. 68°36'30" N long. 144°39'30" W

Nearest milepost 174 Map number 8

ASSESSMENT

This is a small headwater lake on Old Woman Creek. A few grayling have been sighted in the lake, but winter conditions are not favorable for overwintering fish.

The lake is on the pipeline route. Effective erosion control measures are necessary to prevent siltation of lake and outlet areas.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindroceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1
Date	20 Apr 73	8 Oct 73
Location		
Snow depth	0.13	
Ice depth	0.8	
Water depth	3.4	
Discharge		
Temperature	0	
D.O.	0.8	
Turbidity		
Suspend. sed.		
pH	7.5	
Alkalinity	120	
Hardness	160	
Conductivity	200+	
Comments		100% ice cover

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkolinity

Source
Date
Locotion

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED OLD WOMAN CREEK LAKE (#28 - 1)

Approx. lat. 68°25'45" N long. 144°14'30" W

Nearest milepost 3 mi NE MP 191.5 Map number 8

ASSESSMENT

This is a large lake which drains into Old Woman Creek. During the summer months, it supports a varied fish fauna, but winter conditions do not appear favorable for overwintering.

The lake lies close to the pipeline route. Angling pressure and possible water removal should be regulated.

FISH

Sources 1

	fry	other		fry	other
Thymollus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		x
Coregonus nasus		x	Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		x
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1
Date	6 Apr 73	8 Apr 73	8 Oct 73
Location			
Snow depth	0.5	1.0	
Ice depth	1.1 (4)	1.0	
Water depth	0.5-2.34 (4)	5.2-5.9 (4)	
Discharge			
Temperature	1.0	1.0	
D.O.	2.6		
Turbidity			
Suspend. sed.			
pH	7.0		
Alkalinity	60		
Hardness	80		
Conductivity			
Comments			100% ice cover

WATER CHEMISTRY

Source	1
Date	30 Jul 73
Location	
Temperature	11.5
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source	
Date	
Location	

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED OLD WOMAN CREEK LAKE (#31 - 1)

Approx. lat. 60°22'45" N long. 144°12'45" W

Nearest milepost _____ Map number 8

ASSESSMENT

This is a small lake which drains into Old Woman Creek. Fish utilization of the lake appears small. A single burbot was caught by gillnet.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		x
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	8 Oct 73
Location	
Snow depth	
Ice depth	
Water depth	
Discharge	
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	
Comments	100% ice cover

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED KONESS RIVER LAKE (#39 - 1)

Approx. lat. 68°26'00" N long. 144°23'00" W

Nearest milepost 4 mi SW MP 190 Mop number 8

ASSESSMENT

This is a small headwater lake of the Koness River. Winter conditions do not appear favorable for overwintering fish.

FISH

Sources

	fry	other		fry	other
Thymallus orcticus			Esox lucius		
Salvelinus nomaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	20 Apr 73
Location	
Snow depth	0.3
Ice depth	1.0
Water depth	2.3
Discharge	
Temperature	0
D.O.	1.2
Turbidity	
Suspend. sed.	
pH	6.3
Alkalinity	25
Hardness	25
Conductivity	45

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

UNNAMED KONESS RIVER LAKE (#30 - 1)

Approx. lat. 68°22'30" N long. 144°13'30" W

Nearest milepost 1 mi NE MP 194.5 Map number 8

ASSESSMENT

This is a small headwater lake of the Koness River. It is a spawning, rearing and, possibly, overwintering area for grayling.

The lake is near the pipeline route.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus	x	x	Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources 1

Date 8 Oct 73

Location

Snow depth

Ice depth

Water depth

Discharge

Temperature

D.O.

Turbidity

Suspend. sed.

pH

Alkalinity

Hardness

Conductivity

Comments 100% ice cover

WATER CHEMISTRY

Source	1
Date	2 Aug 73
Location	
Temperature	13.5
Conductivity	
pH	
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	
Alkalinity	

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source	
Date	
Location	
Method	
No. samples	
Trichoptera	
Plecoptera	
Ephemeroptera	
Diptera:	
Simulidae	
Tipulidae	
Chironomidae	
Empididae	
Muscidae	
Dolichopodidae	
Liriopeidae	
Unidentified	
Oligochaeta	
Nematoda	
Arachnida	
Triclad	
Copepod	
Miscellaneous	
TOTAL $\bar{X}/ft^2$	
$\bar{X}/m^2$	

WATER BODY

UNNAMED KONESS RIVER LAKE (#26 - 1)

Approx. lat. _____ long. _____

Nearest milepost 1.5 mi SW MP 198 Map number 8

ASSESSMENT

This lake, located in the headwaters of the Koness River, is one of the larger lakes in this region. It supports populations of grayling, round whitefish and burbot.

The lake is near the pipeline route. Angling pressure and possible water removal should be regulated.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus		x	Esox lucius		
Salvelinus namaycush			Lota lota		x
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum		x	Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1
Date	8 Oct 73
Location	
Snow depth	
Ice depth	
Water depth	
Discharge	
Temperature	
D.O.	
Turbidity	
Suspend. sed.	
pH	
Alkalinity	
Hardness	
Conductivity	
Comments	100% ice cover

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

BIG FISH LAKE

Approx. lat. 67°55'45" N long. 144°06'00" W

Nearest milepost _____ Map number not shown

ASSESSMENT

Big Fish Lake, located along the Koness River, is one of the largest lakes in this region. It supports populations of broad whitefish and pike.

FISH

Sources 1

	fry	other		fry	other
Thymallus arcticus			Esox lucius		x
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastomus		
Coregonus nasus		x	Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources
Date
Location
Snow depth
Ice depth
Water depth
Discharge
Temperature
D.O.
Turbidity
Suspend. sed.
pH
Alkalinity
Hardness
Conductivity

Comments

WATER CHEMISTRY

Source
Date
Location
Temperature
Conductivity
pH
D.O.
Turbidity
Suspend. sed.
Discharge
Salinity
Hardness
Alkalinity

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
Simulidae
Tipulidae
Chironomidae
Empididae
Muscidae
Dolichopodidae
Liriopeidae
Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

WATER BODY

GRAYLING LAKE

Approx. lat. 67°57'45" N long. 143°05'45" W

Nearest milepost 1/2 mi N MP 240.5 Map number 9

ASSESSMENT

Grayling Lake is located on a tributary of the Sheenjek River. Winter conditions do not appear favorable for overwintering fish.

The lake is on the pipeline route. Good erosion control measures are necessary to avoid siltation of the lake or outlet.

FISH

Sources

	fry	other		fry	other
Thymallus arcticus			Esox lucius		
Salvelinus namaycush			Lota lota		
Salvelinus alpinus			Myoxocephalus quadricornis		
Coregonus clupeaformis			Catastomus catastamus		
Coregonus nasus			Pungitius pungitius		
Prosopium cylindraceum			Cottus cognatus		
Coregonus autumnalis					
Coregonus sardinella					

WINTER CONDITIONS

Sources	1	1	1	1	1
Date	20 Apr 72	6 Apr 73	20 Apr 73	19 May 73	8 Oct 73
Location					
Snow depth	0.15	0.3	0.3		
Ice depth	1.6	1.1-1.3 (2)	1.3	1.0	
Water depth		0.05-0.2 (2)	0.2		
Discharge					
Temperature	0	0			
D.O.	0.0	0.0			
Turbidity					
Suspend. sed.					
pH	6.7	7.0			
Alkalinity		260			
Hardness		275			
Conductivity					
Comments				some melting around lake edge	100% ice cover

WATER CHEMISTRY

Source	1
Date	25 Jun 72
Location	
Temperature	15
Conductivity	80
pH	7.5
D.O.	
Turbidity	
Suspend. sed.	
Discharge	
Salinity	
Hardness	68.4
Alkolinity	68.4

Source
Date
Location

Ca	Mg	Na	K	Fe	Mn	HCO_3	CO_3	SO_4	Cl	F	NO_3	PO_4	SiO_2	Σ

BENTHIC INVERTEBRATES

Source
Date
Location
Method
No. samples
Trichoptera
Plecoptera
Ephemeroptera
Diptera:
- Simulidae
- Tipulidae
- Chironomidae
- Empididae
- Muscidae
- Dolichopodidae
- Liriopeidae
- Unidentified

Oligochaeta
Nematoda
Arachnida
Triclad
Copepod
Miscellaneous

TOTAL $\bar{X}/ft^2$
$\bar{X}/m^2$

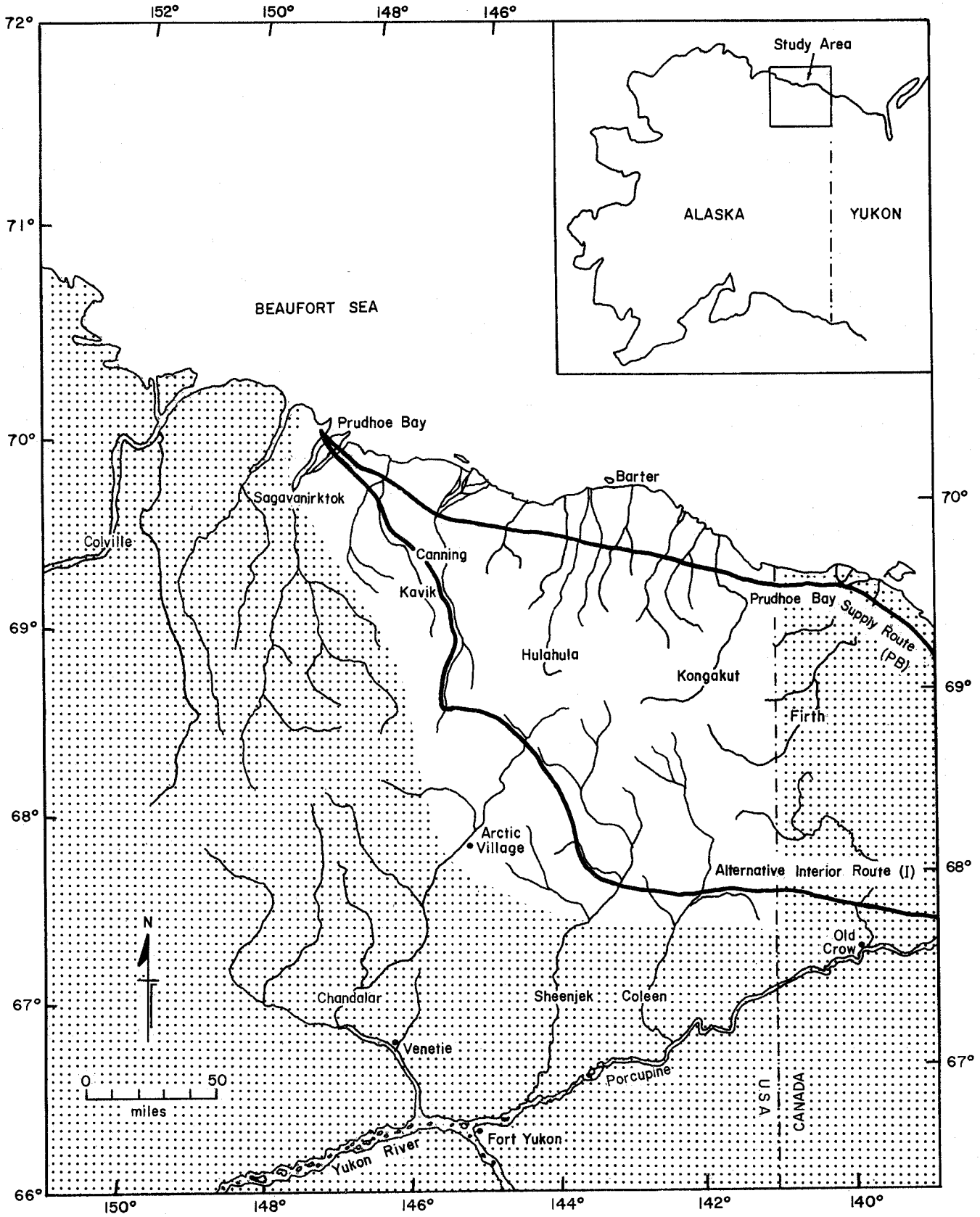


Figure 1. Map of the study area (unstippled portion) in northeastern Alaska. Routes of the proposed gas pipeline (Prudhoe Bay Supply Route and Alternative Interior Route) are indicated.

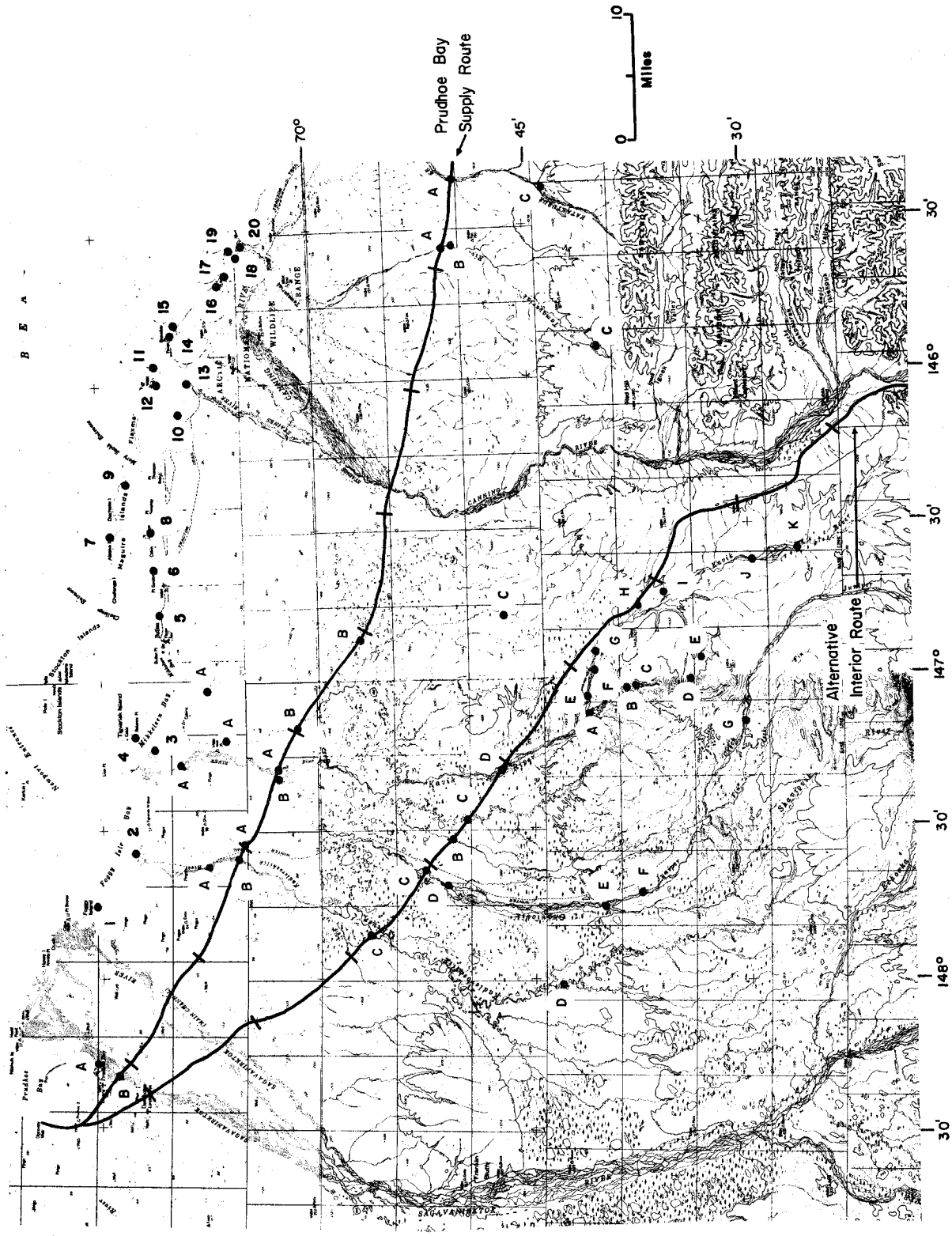


Figure 2. North Slope: inshore and stream sampling stations along the Prudhoe Bay Supply Route and Alternative Interior Route.

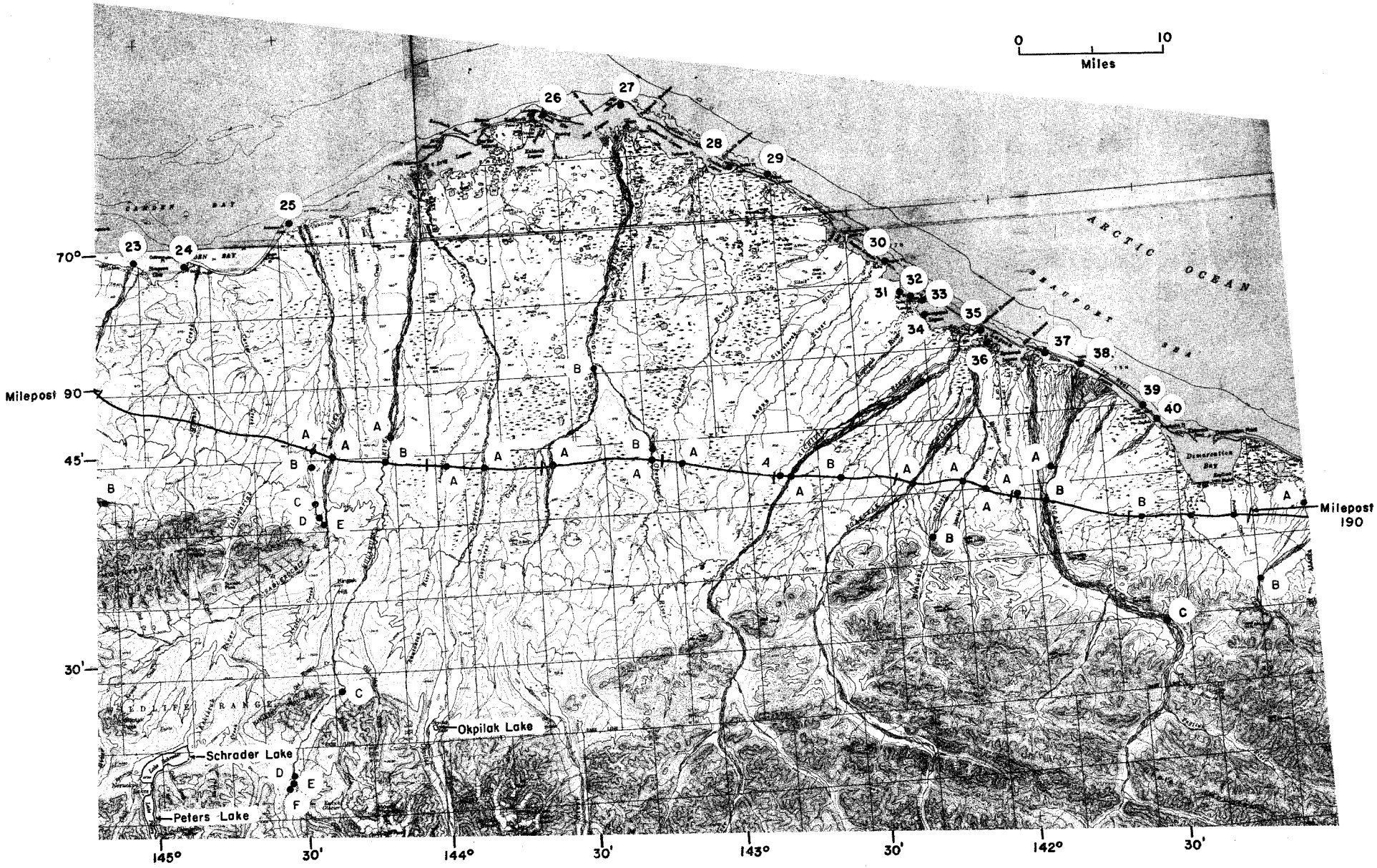


Figure 3. North Slope: inshore, stream and lake sampling stations along the prime route.

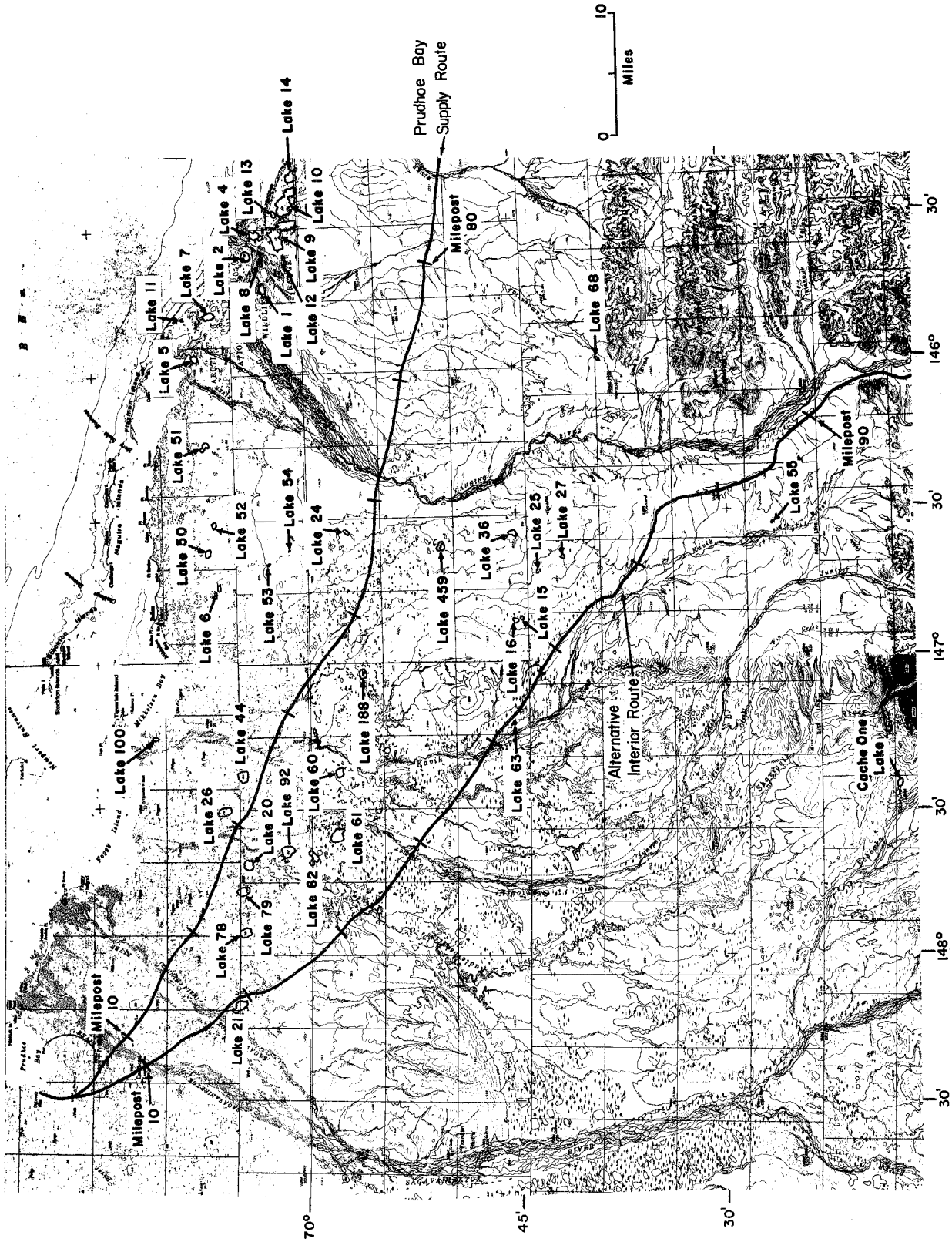


Figure 4. North Slope: lake sampling stations along the Prudhoe Bay Supply Route and Alternative Interior Route.

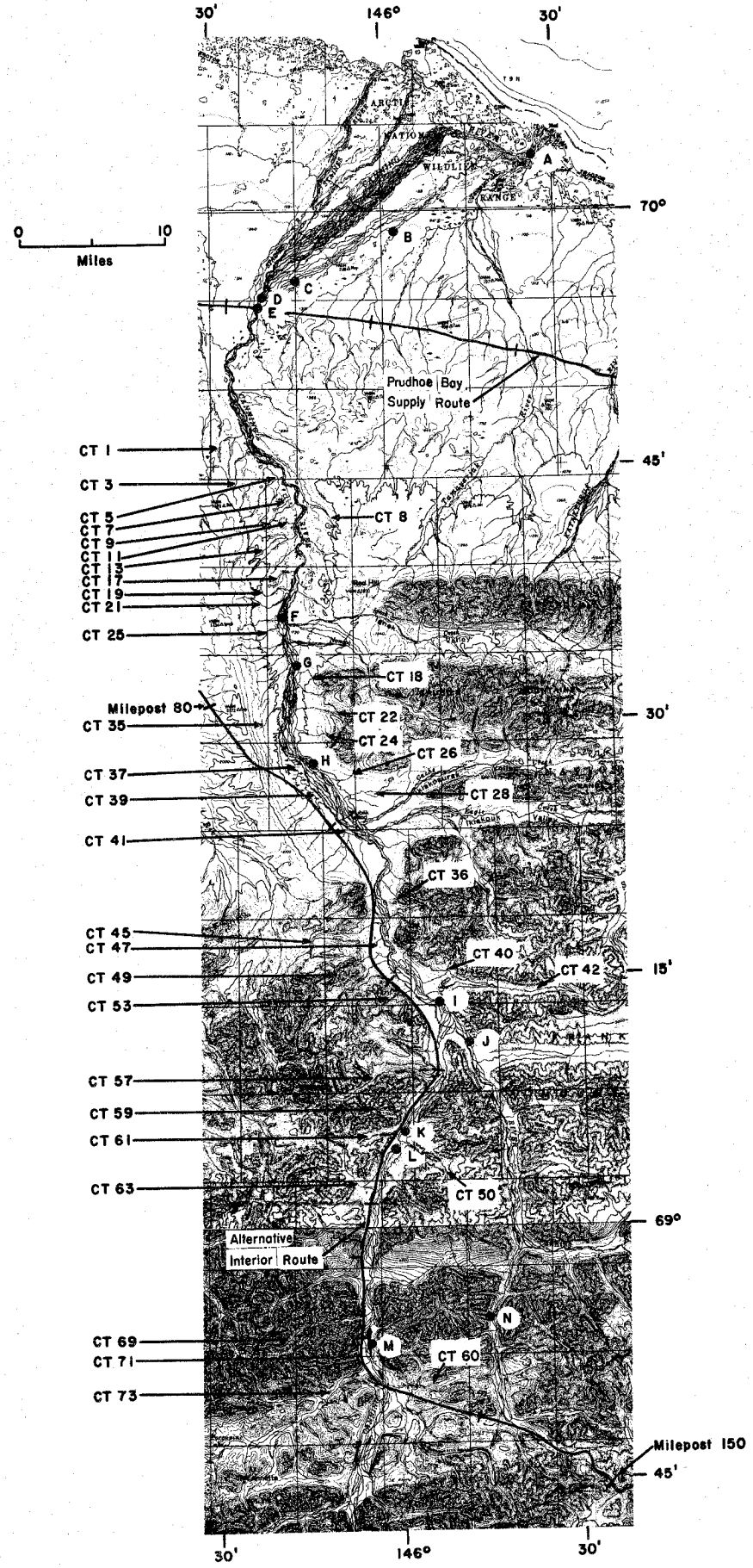


Figure 5. Canning River Drainage: river and tributary sampling stations along the Prudhoe Bay Supply Route and Alternative Interior Route.

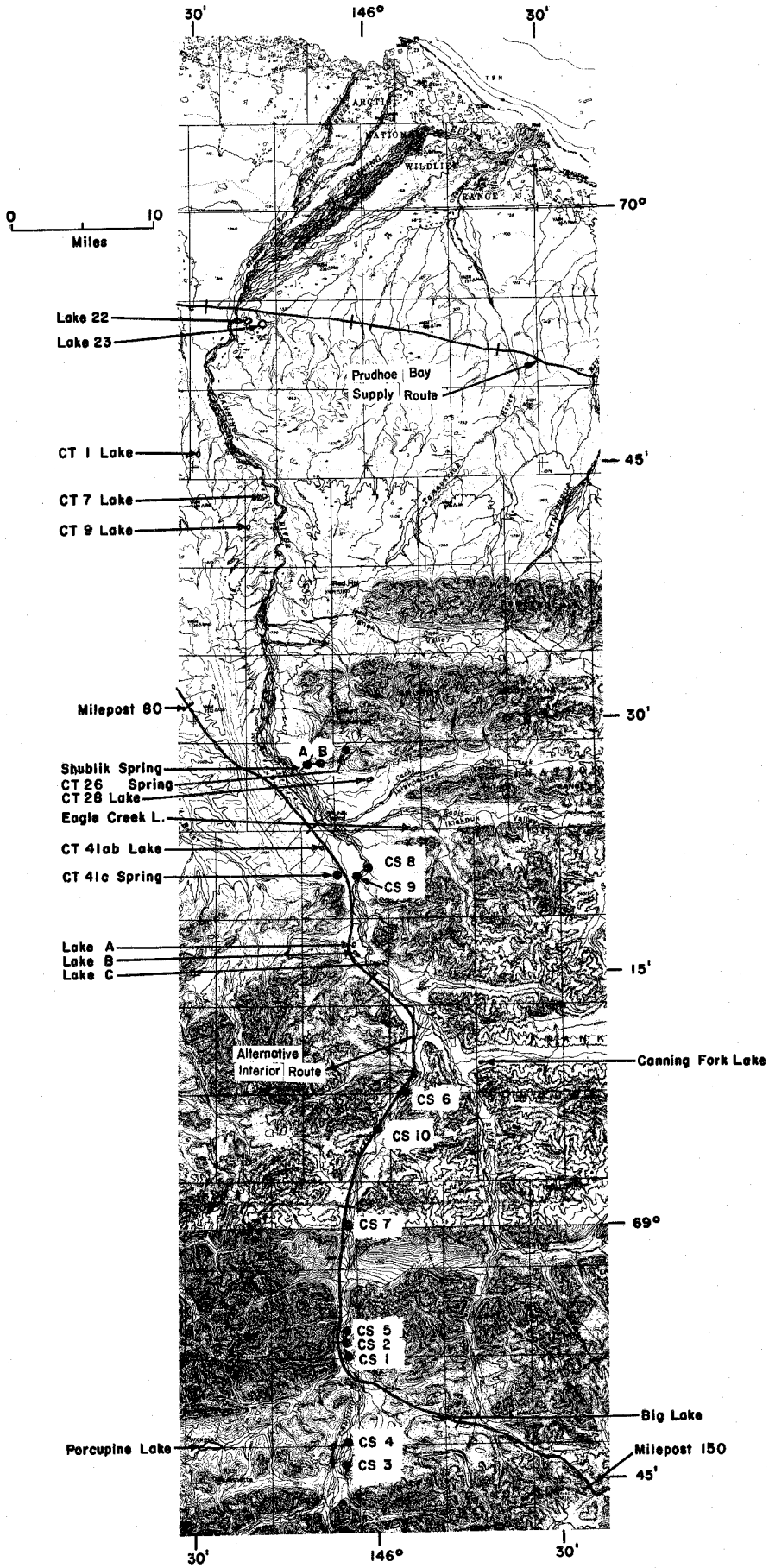


Figure 6. Canning River Drainage: spring and lake sampling stations along the Prudhoe Bay Supply Route and Alternative Interior Route.

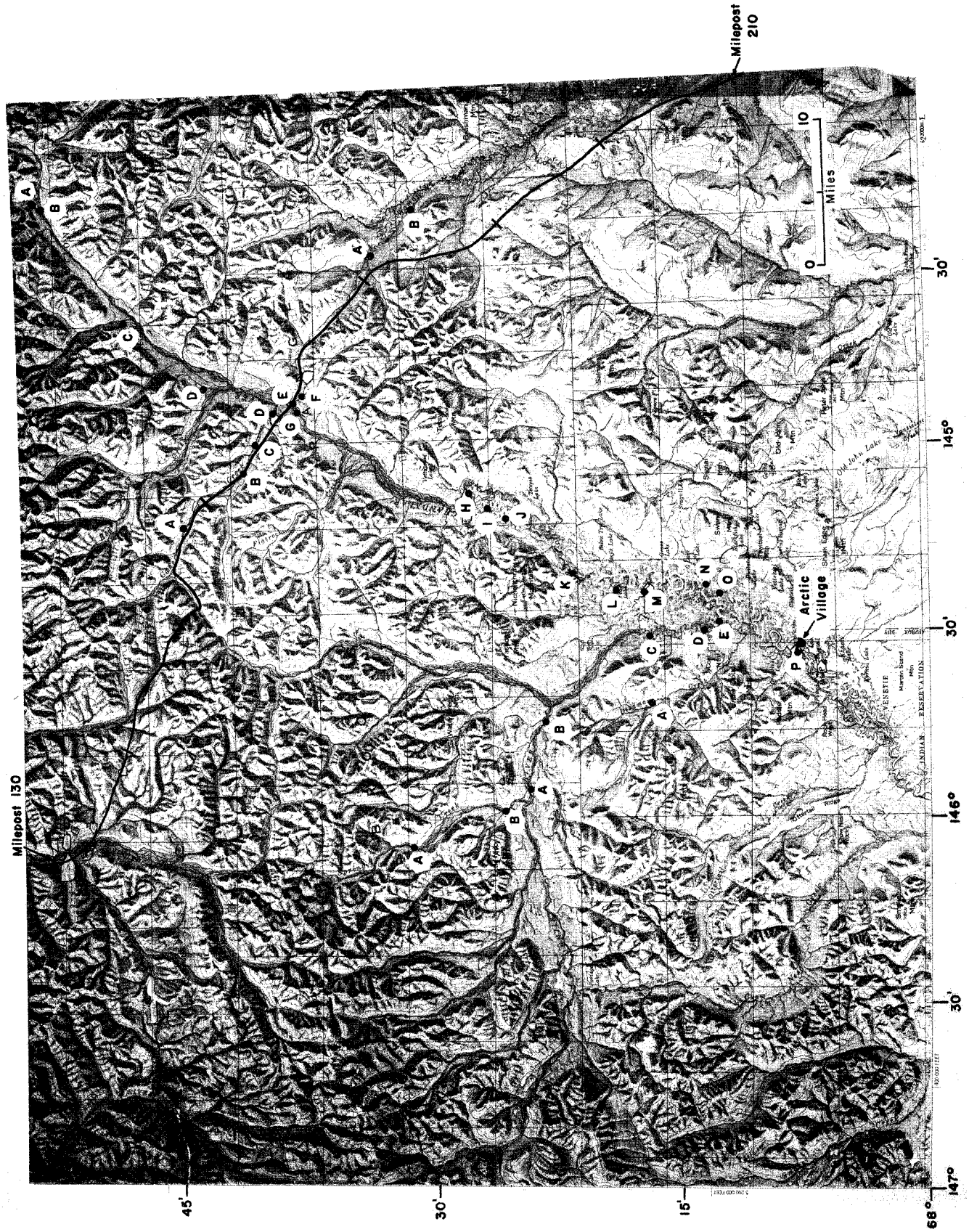


Figure 7. South Slope: river and tributary sampling stations along the Alternative Interior Route.

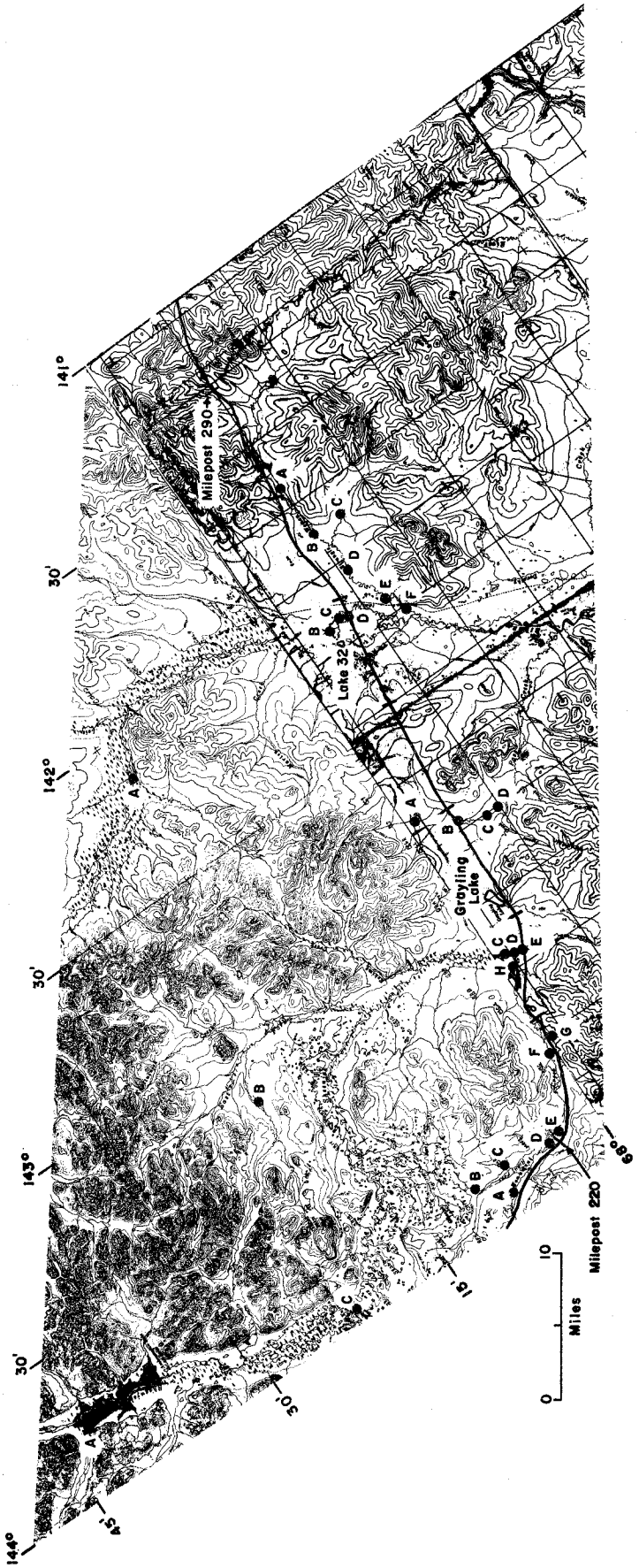


Figure 8. South Slope: river, tributary and lake sampling stations along the Alternative Interior Route.

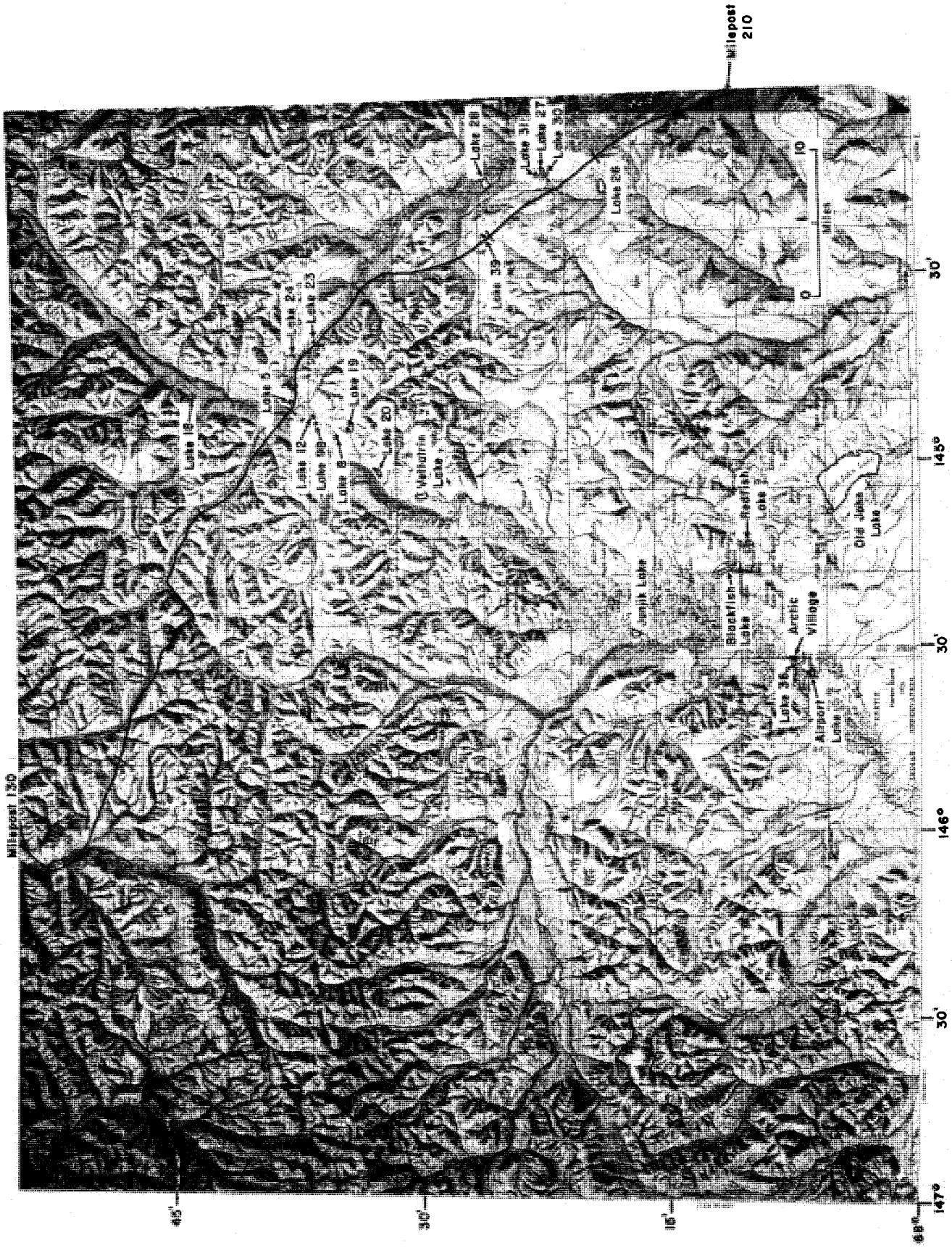


Figure 9. South Slope: lake sampling stations along the Alternative Interior Route.

WINTER WATER SOURCES
AND
WINTER HABITAT FOR FISH AND WILDLIFE
ARCTIC ALASKA
MARCH 1977

SCALE

10 0 10 20 30 40 MILES

10 0 10 20 30 40 50 KILOMETERS

Prepared by Arctic Environmental Information and Data Center

Legend

Water Use by Fish and Wildlife (overwintering)

- Known Sites (river)
- Possible Sites (river)
- Known Sites (lake)
- Possible Sites (lake)

Icings - source

- Sloan et al. 1976
- U.S. Geological Survey Files
- Landsat Interpretation

Boundaries

- Arctic Region - Study Area Boundary
- Coastal Lake Province Boundary (Carson and Hussey 1962)
- Boundary between Foothill and Mountain Physiographic Provinces

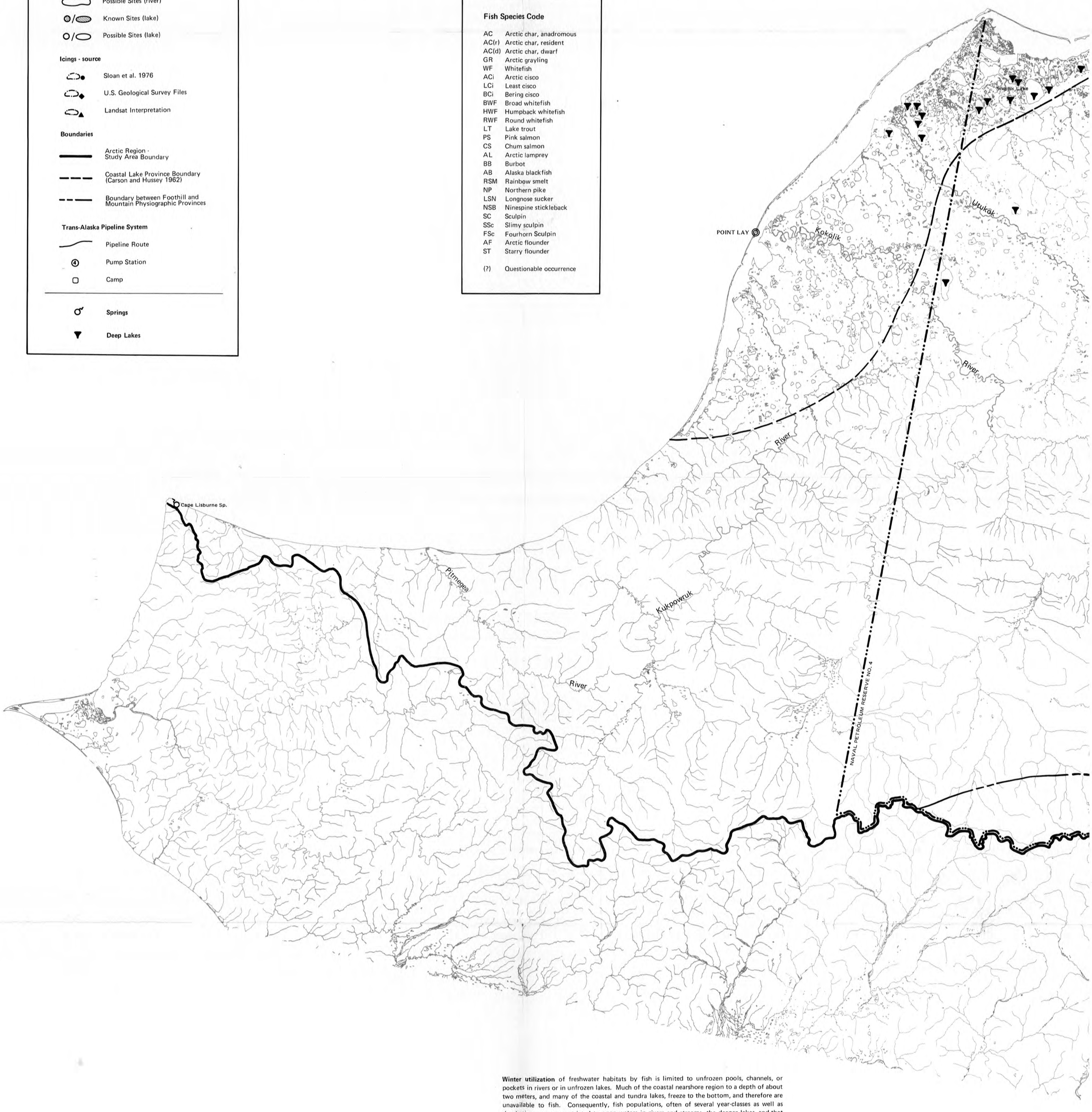
Trans-Alaska Pipeline System

- Pipeline Route
- Pump Station
- Camp

- **Springs**
- **Deep Lakes**

Fish Species Code

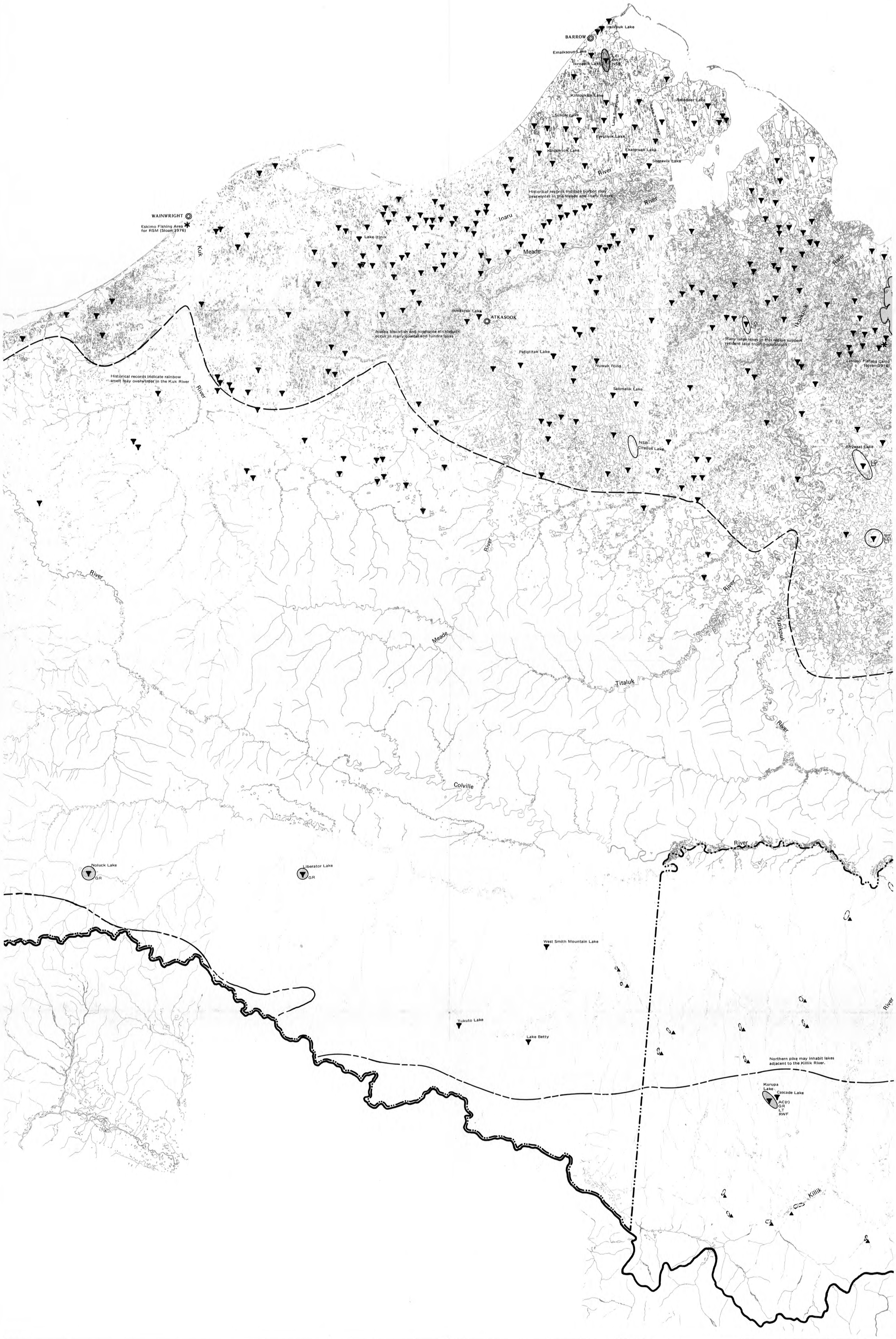
AC	Arctic char, anadromous
AC(r)	Arctic char, resident
AC(d)	Arctic char, dwarf
GR	Arctic grayling
WF	Whitefish
ACi	Arctic cisco
LCi	Least cisco
BCi	Bering cisco
BWF	Broad whitefish
HWF	Humpback whitefish
RWF	Round whitefish
LT	Lake trout
PS	Pink salmon
CS	Chum salmon
AL	Arctic lamprey
BB	Burbot
AB	Alaska blackfish
RSM	Rainbow smelt
NP	Northern pike
LSN	Longnose sucker
NSB	Ninespine stickleback
SC	Sculpin
SSc	Slimy sculpin
FSc	Fourhorn Sculpin
AF	Arctic flounder
ST	Starry flounder
(?)	Questionable occurrence

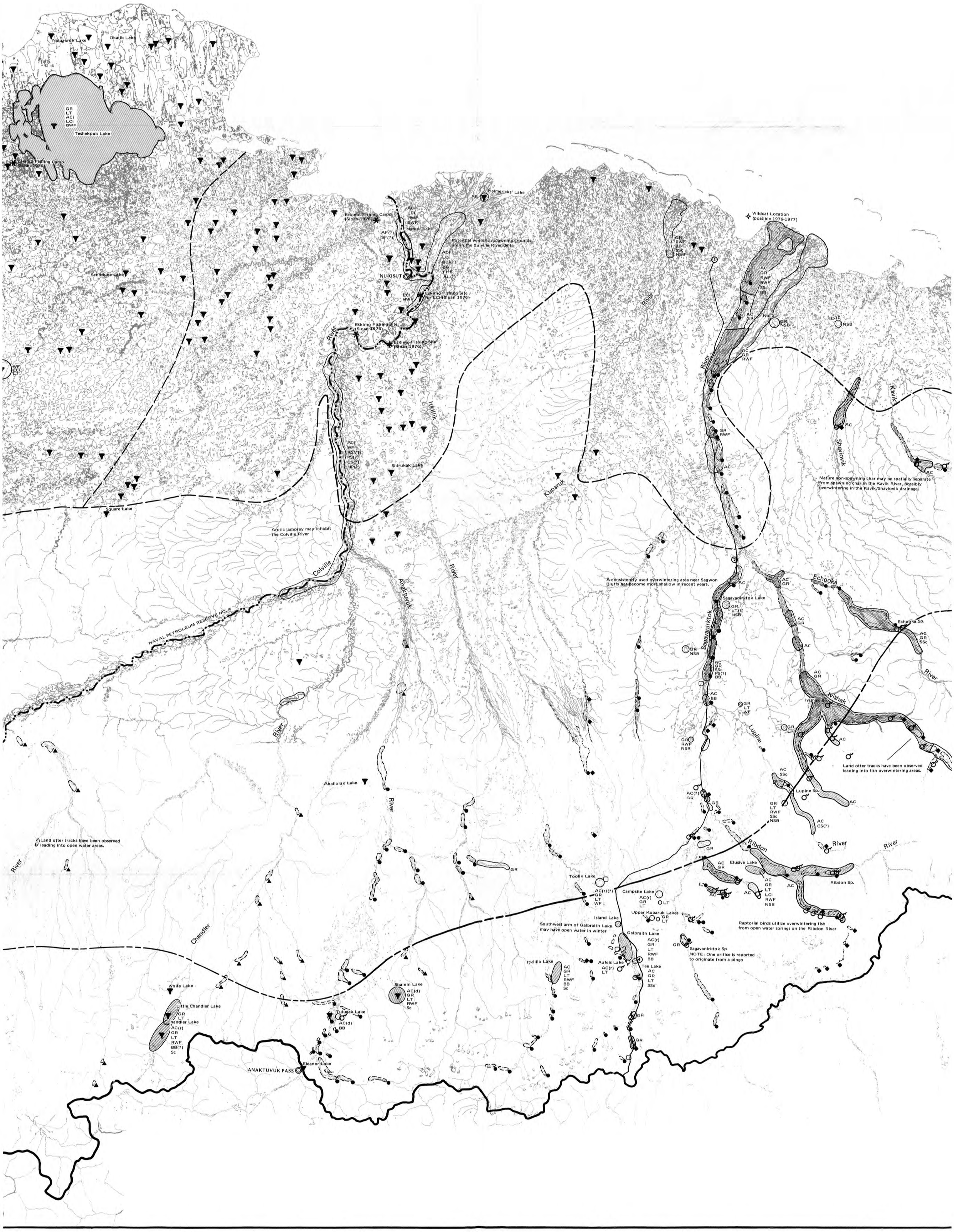


Winter utilization of freshwater habitats by fish is limited to unfrozen pools, channels, or pockets in rivers or in unfrozen lakes. Much of the coastal nearshore region to a depth of about two meters, and many of the coastal and tundra lakes, freeze to the bottom, and therefore are unavailable to fish. Consequently, fish populations, often of several year-classes as well as developing eggs, are restricted to open waters in rivers and streams, the deeper lakes, and that part of the marine environment which is greater than two meters in depth. Due to this restriction, winter is a critical period for all life cycle phases of freshwater fish.

Overwintering areas identified on this map may change in areal extent annually. As streams rechannel and groundwater flow pattern changes with season, the amount of available habitat in a given identified overwintering area may subsequently change.

Late fall surveys may indicate populations of fish spawning in a particular area, but as winter ensues these adults may move away from this area into other up- or downstream areas to take advantage of protective ice cover. This normal behavioral activity naturally enlarges the size of the overwintering areas.


Imikpuk Lake
BARROW
Emaiksoun Lake
Ikroavik Lake
LCI
GWF
NSB
Kimouksik Lake
Lake Simpsoyoak
Lake Tuktoyaktuk
Reindeer Lake
Sukok Lake
Evrulivik Lake
Kiligiktok Lake
Ekalgruak Lake
Sisgravik Lake
River
Historical records indicate burbot may overwinter in the Meade and Inaru Rivers
WAINWRIGHT
Eskimo Fishing Area for RSM (Sloan 1976)
Kuk
Lake Itinik
Inaru
Meade
River
Ikpikpuk
Ikmakrak Lake
ATKASOOK
Alaska blackfish and ninespine stickleback occur in many coastal and tundra lakes
Many large lakes in this region support resident lake trout populations
Eskimo Fishing Camp (Sloan 1976)
Patigitak Lake
Nuwuk Pond
Sakmalik Lake
Historical records indicate rainbow smelt may overwinter in the Kuk River
River
NSB
Citellus Lake
Anvanat Lake
LCI
LT
WF
LCI
LT
River
Meade
Titaluk
Ikpikpuk
River
Colville
River
Noluck Lake
GR
Liberator Lake
GR
River
West Smith Mountain Lake
Tukuto Lake
Lake Betty
River
Northern pike may inhabit lakes adjacent to the Killik River.
Kurupa Lake
Cascade Lake
AC(r)
GR
LT
RWF
Killik

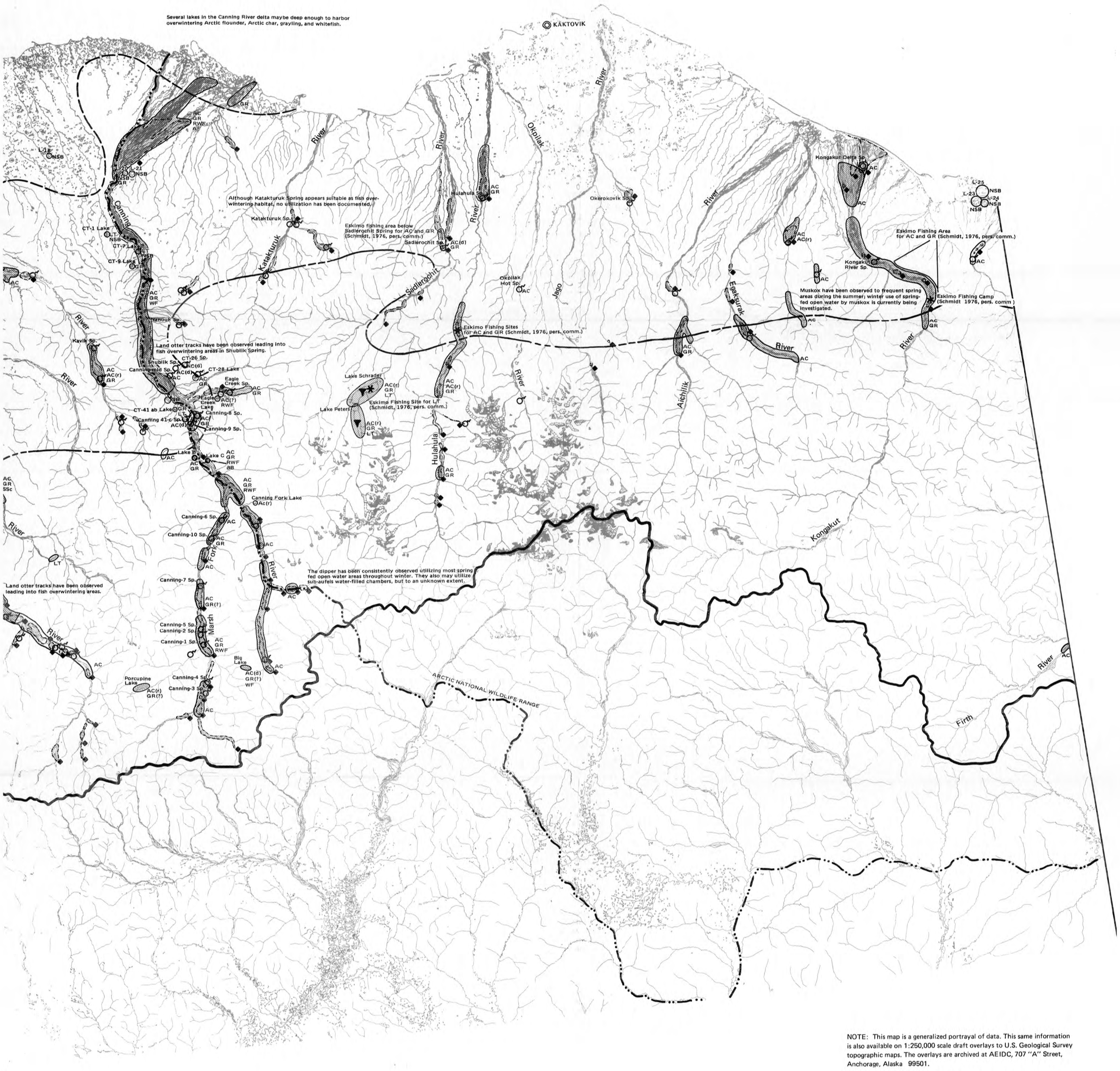

Nalupkruk Lake
Okalik Lake
GR
LT
ACI
LCI
BWF
Teshekpuk Lake
Eskimo Fishing Camp (Sloan 1976)
Helmericks' Lake
AB
Eskimo Fishing Camp (Sloan 1976)
ACI
LCI
HWF
BWF
Nanuk Lake
AF(?)
SF(?)
Potential whitefish spawning grounds are in the Colville River delta
ACI
LCI
BCI(?)
BB
FHS
AL(?)
NUIQSUT
LCI
HWF
Eskimo Fishing Site for LCI (Sloan 1976)
Eskimo Fishing Site (Sloan 1976)
Eskimo Fishing Site (Sloan 1976)
Sanddune Lake
WF
LCI
LT
River
Itkillik
ACI
WF
RSM(?)
PS(?)
CS(?)
NP(?)
Shirukak Lake
Square Lake
Arctic lamprey may inhabit the Colville River
Colville
Anaktuvuk
River
NAVAL PETROLEUM RESERVE NO. 4
River
Ahaliorak Lake
River
Land otter tracks have been observed leading into open water areas.
River
GR
Toolik Lake
AC(r)(?)
GR
LT
WF
Campsite Lake
AC(r)
GR
LT
LT
Upper Kuparuk Lakes
GR
LT
Island Lake
Southwest arm of Galbraith Lake may have open water in winter
Galbraith Lake
AC(r)
GR
LT
RWF
BB
Aufeis Lake
AC(r)
LT
Tee Lake
AC
GR
LT
SSc
Itkillik Lake
AC
GR
LT
RWF
BB
Sc
Chandler
White Lake
Little Chandler Lake
GR
LT
Chandler Lake
AC(r)
GR
LT
RWF
BB(?)
Sc
Shainin Lake
AC(d)
GR
LT
RWF
Sc
Tulugak Lake
AC(d)
BB
Eleanor Lake
ANAKTUVUK PASS
Kuparuk
River
GR
RWF
BB
SSc
NSB
Wildcat Location (possible 1976-1977)
AC
GR
RWF
BWF
SSc
BB
AC
GR
No. 21
GR
NSB
L-10
NSB
AC
GR
RWF
River
GR
RWF
AC
Kavik
AC
Shaviovik
AC
Mature non-spawning char may be spatially separate from spawning char in the Kavik River, possibly overwintering in the Kavik/Shaviovik drainage.
A consistently used overwintering area near Sagwon Bluffs has become more shallow in recent years.
AC
AC
GR
Sagavanirktok Lake
GR
LT(?)
NSB
Sagavanirktok
GR
NSB
AC
GR
SSc
PS(?)
BB
AC
BB
GR
LT
WF
Lupine
GR
RWF
NSB
GR
LT
AC
Echooka
AC
GR
Echooka Sp.
AC
GR
SSc
River
AC
GR
Wishak
Ivishak Sp.
AC
Land otter tracks have been observed leading into fish overwintering areas.
AC
SSc
Lupine Sp.
AC
GR
LT
RWF
SSc
NSB
AC
CS(?)
AC(?)
GR
GR
River
River
Ribdon
Elusive Lake
AC
GR
AC
GR
LT
LCI
RWF
NSB
AC
AC
AC
Ribdon Sp.
Raptorial birds utilize overwintering fish from open water springs on the Ribdon River
GR
Sagavanirktok Sp.
NOTE: One orifice is reported to originate from a pingo
GR
GR

Marine overwintering areas are generally outside the zone of bottomfast ice. Areas are generally greater than six feet in depth, and although temperatures range down to -4°C, the water does not freeze due to high salinity. Fish are adapted to withstand these temperatures without freezing of body fluids. Marine fish overwintering here include fourhorn sculpin, Arctic cod, Arctic flounder, and others.

River delta overwintering areas extend inland from the area of bottomfast ice to the maximum extent of saltwater intrusion. This area is characterized by depths greater than six feet which do not freeze to the bottom due to high salinity. Fish which overwinter in this area include Arctic cisco, least cisco, fourhorn sculpin, burbot, and humpback whitefish. Arctic char, an anadromous fish, and many freshwater species such as grayling, slimy sculpin, round whitefish, and longnose sucker will not occur seaward of the maximum extent of saltwater intrusion. These fish are relatively intolerant of salinity and cannot withstand subfreezing temperatures.

In areas **upstream,** away from saline influences, are found overwintering areas near springs and in deeper pockets of rivers and streams. These areas do not freeze to the bottom in winter and provide the only aquatic habitat available in the river systems. They are also important as areas in which eggs and fry can survive. Fish found here include freshwater species and the anadromous Arctic char. Feeding is very limited during winter months.

Coastal lakes are near or connected to the Beaufort Sea. Several contain populations of grayling, Arctic char, and broad whitefish. Deeper lakes support winter fish populations, but some serve only as summer feeding areas. Most shallow **tundra lakes** and ponds freeze to the bottom during the winter and do not support permanent fish populations. A few, however, which are deep enough or which are connected by an unfrozen outlet to drainages which can support overwintering fish may have populations of ninespine stickleback or grayling. **Deeper lakes** located at the headwaters of major river drainages may support permanent populations of Arctic char, lake trout, and grayling.



NOTE: This map is a generalized portrayal of data. This same information is also available on 1:250,000 scale draft overlays to U.S. Geological Survey topographic maps. The overlays are archived at AEIDC, 707 "A" Street, Anchorage, Alaska 99501.